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**Subject:** Colorado River Basin Region Water Quality Data - July 1997 forward

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To: newk@rb7.swrcb.ca.gov

Subject: Colorado River Basin Region Water  
Quality data- July 1997 forward

Teresa Newkirk,

We have retrieved the water quality data for your region from our database for July 1997 and forward. The data is in ascii text files called crbr.txt, crbr.txt.pamames and crbrtbl.txt

The crbr.txt file is the data in a format which can be placed in another software program such as EXCEL. The file crbr.txt.pamames are the parameter names associated with the data in crbr.txt.

The file crbrtbl.txt is the same data in a table format. This data can be printed. We will not be sending hard copy.

To get the files with FTP software:

ftp ftpdcascr.wr.usgs.gov

login as anonymous

```
cd data
get filename
quit
```

To get the files with a Netscape browser:

Type in where the http etc is <ftp://ftpdascr.wr.usgs.gov/data/>  
(try clicking on the ftp:// etc above and you should go directly  
to the ftp directory and then choose your file.)  
put the filename of the file you want after that last / and you  
will go directly to the file.  
(the one you are trying to get from the directory.  
EX: <ftp://ftpdascr.wr.usgs.gov/data/sm92>

Please let me know when you have successfully downloaded the file or  
files so I can erase them.

Thanks.

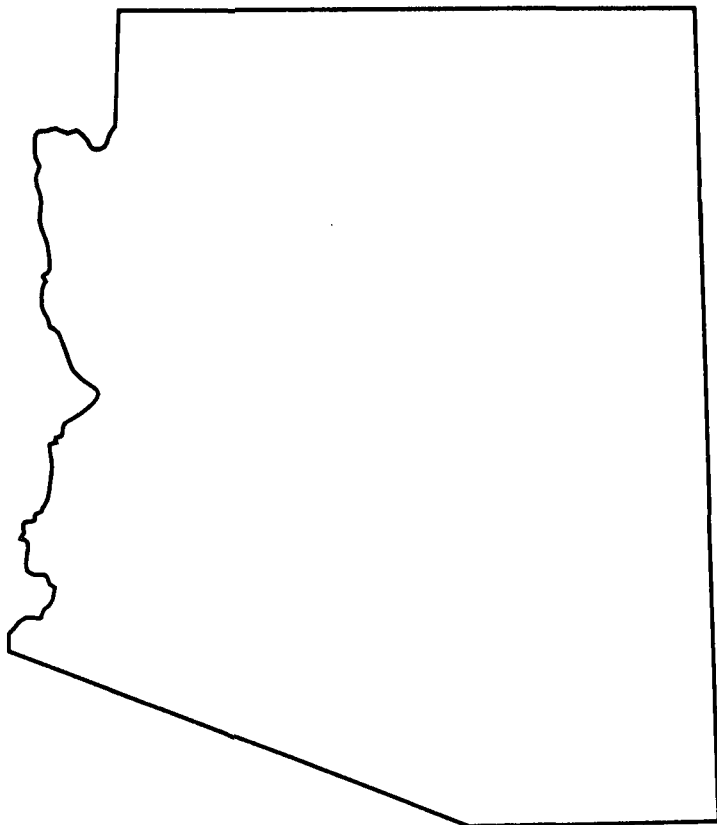
If you have questions, let me know.

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*Supplemental Info*

# Water Resources Data Arizona Water Year 1999

Water-Data Report AZ-99-1



U.S. Department of the Interior  
U.S. Geological Survey



Prepared in cooperation with the  
State of Arizona  
and with other agencies



# CALENDAR FOR WATER YEAR 1999

1998

OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
				1	2	3	1	2	4	4	5	6	7			1	2	3	4	5
4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12
11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	15	17	18	19
18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26
25	26	27	28	29	30	31	29	30						27	28	29	30	31		

1999

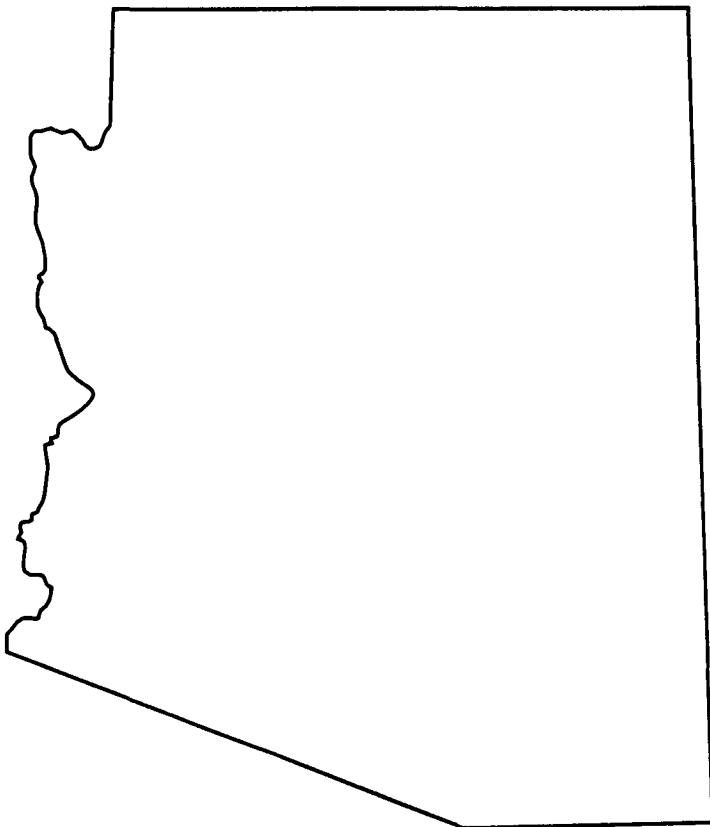
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					1	2		1	2	3	4	5	6		1	2	3	4	5	6
3	4	5	6	7	8	9	7	8	9	10	11	12	13	7	8	9	10	11	12	13
10	11	12	13	14	15	16	14	15	16	17	18	19	20	14	15	16	17	18	19	20
17	18	19	20	21	22	23	21	22	23	24	25	26	27	21	22	23	24	25	26	27
24	25	26	27	28	29	30	28							28	29	30	31			
31																				
APRIL							MAY							JUNE						
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18	19	20	21	22	23	24	16	17	18	19	20	21	22	20	21	22	23	24	25	26
25	26	27	28	29	30		23	24	25	26	27	28	29	27	28	29	30			
							30	31												
JULY							AUGUST							SEPTEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
				1	2	3	1	2	3	4	5	6	7				1	2	3	4
4	5	6	7	8	9	10	9	9	10	11	12	13	14	5	6	7	8	9	10	11
11	12	13	14	15	16	17	15	16	17	18	19	20	21	12	13	14	15	16	17	18
18	19	20	21	22	23	24	22	23	24	25	26	27	28	19	20	21	22	23	24	25
25	26	27	28	29	30	31	29	30	31					26	27	28	29	30		

U.S. Department of the Interior  
U.S. Geological Survey

# Water Resources Data Arizona Water Year 1999

By S.Tadayon, N.R. Duet, G.G. Fisk, H.F. McCormack, C.K. Partin,  
G.L. Pope, and P.D. Rigas

Water-Data Report AZ-99-1



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Prepared in cooperation with the  
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UNITED STATES DEPARTMENT OF THE INTERIOR

BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY

Charles G. Groat, Director

For information on the water program in Arizona write to  
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U.S. Geological Survey  
520 North Park Avenue, Suite 221  
Tucson, Arizona 85719-5035

## PREFACE

This volume of the annual hydrologic data report of Arizona is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each state, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. The authors had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines. The following individuals contributed significantly to the collection, processing, and tabulation of the data:

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This report was prepared in cooperation with the State of Arizona and with other agencies, under the general supervision of C.F. Smith, Data Chief, Arizona.

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE March 2000		3. REPORT TYPE AND DATES COVERED Annual--Oct 1, 1998 to Sept. 30, 1999
4. TITLE AND SUBTITLE Water Resources Data for Arizona, Water Year 1999			5. FUNDING NUMBERS	
6. AUTHOR(S) S. Tadayon, N.R. Duet, G.G. Fisk, H.F. McCormack, C.K. Partin, G.L. Pope, and P.D. Rigas				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Geological Survey, WRD 520 North Park Avenue, Suite 221 Tucson, Arizona 85719			8. PERFORMING ORGANIZATION REPORT NUMBER USGS-WDR-AZ-99-1	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Geological Survey, WRD 520 North Park Avenue, Suite 221 Tucson, Arizona 85719			10. SPONSORING / MONITORING AGENCY REPORT NUMBER USGS-WDR-AZ-99-1	
11. SUPPLEMENTARY NOTES Prepared in cooperation with the State of Arizona and with other agencies.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT No restriction on distribution. This report may be purchased from: National Technical Information Service, Springfield, VA 22161			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) Water discharge data for the 1999 water year for Arizona consist of records of stage, discharge, and water quality of streams; stage, contents, water quality of lakes and reservoirs; water levels of observation wells; and quality of ground water. This report contains discharge records for 190 gaging stations, annual peaks for 29 crest-stage partial-record stations; contents only records for 8 lakes and reservoirs; stage and (or) contents for 1 lake; elevation only for 1 streamflow station; included with gaging-station records, consisting of monthend or monthly stage, contents, and evaporation of lakes and reservoirs, diversions, and return flows; water-quality records for 17 continuous-record stations; water-quality data for water from 156 wells. The data represent that part of the National Water Data System operated by the U.S. Geological Survey cooperating Federal and State agencies in Arizona.				
14. SUBJECT TERMS *Arizona, *Hydrologic data, *Surface water, *Ground water, *Water quality, Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediment, Water Temperatures, Sampling sites, Water levels, Water analyses.			15. NUMBER OF PAGES 392 pages	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT	

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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN  
THIS VOLUME

[Letters after station name designate type of data: (c) chemical; (d) discharge; (e) elevation; (g) gage height; (m) microbiological (bacteria); (p) pesticide; (q) specific conductance (daily); (r) radiochemical; (s) suspended sediment; (t) water temperature (daily); (v) contents]

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Pinal Creek at Inspiration Dam, near Globe (c, d, m, s).....	09498400	205
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The following continuous-record streamflow stations in Arizona have been discontinued or converted to partial-record stations. Daily streamflow records were collected and published for the period of record shown for each station

Station name	Station number	Drainage area, in square miles	Period of record (water years)
Lee Valley Creek above Lee Valley Reservoir near Greer, AZ .....	09383200	a1.3	1966-72
Lee Valley tributary near Greer, AZ .....	09383220	a.5	1966-72
Lee Valley Creek below Lee Valley Reservoir, near Greer, AZ .....	09383250	a1.9	1966-72
Filler ditch at Greer, AZ .....	09383300	---	1960-77
Little Colorado River at Greer, AZ .....	09383400	29.1	1960-82
Nutriso Creek above Nelson Reservoir, near Springerville, AZ .....	09383500	83.3	1967-82
Nutriso Creek below Nelson Reservoir, near Springerville, AZ .....	09383550	86.7	1967-82
Lyman Reservoir near St. Johns, AZ .....	09384500	b811	1940-78
Lyman Canal below Lyman Reservoir, near St. Johns, AZ .....	09385000	---	1950-80
Little Colorado River below Lyman Reservoir, near St. Johns, AZ .....	09385500	b811	1941-80
Little Colorado River at St. Johns, AZ .....	09386000	b964	1906-7; 1909; 1929-33; 1935-40
Little Colorado River above Zuni River, near Hunt, AZ .....	09386500	b3,741	1940-72
Little Colorado River near Hunt, AZ .....	09388000	b6,383	1929-33; 1940-72
Silver Creek near Shumway, AZ .....	09390000	b172	1942-55
Show Low Creek at Show Low, AZ .....	09392500	90.2	1944-55
Silver Creek at Snowflake, AZ .....	09393000	b488	1906
Cottonwood Wash at Snowflake, AZ .....	09393400	262	1981-84
Silver Creek near Snowflake, AZ .....	09393500	925	1950-95
Silver Creek near Woodruff, AZ .....	09394000	b966	1929-33; 1935-52
Puerco River near Church Rock, NM .....	09395350	205	1977-82; 1989-91
Puerco River near Lupton, AZ .....	09395650	a1,050	1971-72
Black Creek near Lupton, AZ .....	09395900	494	1964-72; 1974-82
Black Creek below West Fork Black Creek, near Houck, AZ .....	09395990	628	1989-91
Puerco River near Adamana, AZ .....	09396500	b2,654	1940-49
Little Colorado River at Holbrook, AZ .....	09397000	b11,462	1905-7; 1949-73
Chevelon Creek near Winslow, AZ .....	09398000	b785	1905-6; 1915-19; 1929-72
Clear Creek below Willow Creek, near Winslow, AZ .....	09398500	317	1947-91
Clear Creek near Winslow, AZ .....	09399000	621	1906; 1929-82

a Approximately.

b Includes area that is probably noncontributing.

## DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS—Continued

Station name	Station number	Drainage area, in square miles	Period of record (water years)
Jacks Canyon Creek near Winslow, AZ .....	09399400	295	1969-72
Salt Creek near Winslow, AZ .....	09399500	287	1939-41
Little Colorado River near Winslow, AZ .....	09400000	a16,100	1954-56
Rio de Flag at Flagstaff, AZ .....	09400600	51.0	1955-60
Little Colorado River at Grand Falls, AZ .....	09401000	b21,068	1925-60; 1989-94
Coal Mine Wash tributary near Kayenta, AZ .....	09401226	.62	1977-81
Coal Mine Wash tributary No. 2 near Kayenta, AZ .....	09401229	.06	1977-79
Coal Mine Wash at mouth, near Shonto, AZ .....	09401239	137	1978-82
Moenkopi Wash near Moenkopi, AZ .....	09401250	a1,650	1973-76
Moenkopi Wash near Tuba City, AZ .....	09401280	1,904	1926-41
Moenkopi Wash near Tuba City, AZ .....	09401400	2,492	1941-53; 1965-78
Moenkopi Wash near Cameron, AZ .....	09401500	2,662	1953-65
Bright Angel Creek near Grand Canyon, AZ .....	09403000	101	1923-74
Kanab Creek near Fredonia, AZ .....	09403780	1,085	1963-80
Dogtown Wash above Dogtown Reservoir near Williams, AZ .....	09403990	4.69	1964-66
Dogtown Wash above Kaibab Reservoir, near Williams, AZ .....	09404020	15.4	1964-66
Cataract Creek near Williams, AZ .....	09404040	46.4	1965-72
Colorado River near Topock, AZ .....	09424000	ab176,300	1917-82
Cottonwood Wash No. 1 near Kingman, AZ .....	09424200	143	1964-78
Francis Creek near Bagdad, AZ .....	09424432	134	1985-93
Burro Creek at old U.S. 93 bridge near Bagdad, AZ .....	09424447	b611	1980-93
Kirkland Creek near Kirkland, AZ .....	09424470	109	1973-83
Date Creek near Congress, AZ .....	09425000	127	1939-43
Santa Maria River near Alamo, AZ .....	09425500	1,439	1939-66
Bill Williams River at Planet, AZ .....	09426500	5,054	1913-15; 1928-46
Colorado River at Palo Verde Dam, AZ-CA .....	09429010	ab186,200	1969-88
Cibola Lake inlet near Cibola, AZ .....	09429280	---	1975-89
Cibola Lake outlet near Cibola, AZ .....	09429290	---	1975-89
Colorado River below Cibola Valley, AZ .....	09429300	ab187,800	1956-88
Gila River at New Mexico-Arizona State Line, near Virden, NM .....	09438000	3,349	1939-49
Pipe Springs above Tonto Trail near Grand Canyon, AZ .....	09403010	1.70	1994-96
Sediment Tank at Indian Garden near Grand Canyon, AZ .....	09403012	---	1994-06
Havasu Creek above the mouth, near Supai, AZ .....	09404115	3,020	1990-97
Blue River near Clifton, AZ .....	09444200	506	1967-91
Willow Creek near Point of Pines, near Morenci, AZ .....	09445500	102	1944-67
Willow Creek near Double Circle Ranch, near Morenci, AZ .....	09446000	149	1944-67
Eagle Creek near Double Circle Ranch, near Morenci, AZ .....	09446500	377	1944-67

a Approximately.

b Includes area that is probably noncontributing.

## DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS—Continued

Station name	Station number	Drainage area, in square miles	Period of record (water years)
Gila River near Solomon, AZ.....	09451000	7,896	1914-32; 1940-50
Cave Creek near Paradise, AZ.....	09454500	a39	1919-25
Cave Creek Canal near Paradise, AZ.....	09455000	---	1919-25
East Turkey Creek at Paradise, AZ.....	09455500	a8.2	1919-25
San Simon River near San Simon, AZ.....	09456000	814	1919-25; 1931-33; 1935-41
San Simon River below fandrop detention dam, near Bowie, AZ.....	09456200	1,400	1955-59
Gold Gulch below Creighton detention dam, near Bowie, AZ.....	09456600	104	1956-59
Gold Gulch below H-X detention dam, near Bowie, AZ.....	09456700	144	1956-59
San Simon River at Tanque, AZ.....	09456800	1,953	1957-59
Goat Well Wash below drop structure, near Solomon, AZ.....	09456900	77.2	1956-59
San Simon River near Solomon, AZ.....	09457000	2,192	1931-32; 1935-82
Marijilda Wash near Safford, AZ.....	09458050	10.9	1971-78
Deadman Creek near Safford, AZ.....	09458200	4.78	1989-93
Gila River at Safford, AZ.....	09458500	10,459	1940-49; 1956-65
Frye Creek at Thatcher, AZ.....	09460200	24.3	1963-74
Gila River at Black Point, near Geronimo, AZ.....	09466000	11,329	1943-45
Gila River at Winkelman, AZ.....	09470000	13,268	1917-18; 1941-80; 1984-94
Huachuca Canyon near Fort Huachuca, AZ.....	09471300	3.24	1961-64
San Pedro River at Fairbank, AZ.....	09471500	1,672	1926-28
St. David ditch near St. David, AZ.....	09471560	---	1967-72
Pomerene Canal near St. David, AZ.....	09471590	---	1967-72
San Pedro River near Benson, AZ.....	09471800	2,490	1966-76
San Pedro River near Redington, AZ.....	09472000	2,927	1943-47; 1950-98
Peck Canyon tributary near Redington, AZ.....	09472100	8.02	1967-72
San Pedro River near Mammoth, AZ.....	09472500	3,583	1931-41
Aravaipa Creek near Feldman, AZ.....	09473020	557	1919-21
San Pedro River below Aravaipa Creek, near Mammoth, AZ.....	09473100	4,343	1979-83
San Pedro River near Winkelman, AZ.....	09473400	4,430	1962-65
San Pedro River at Winkelman, AZ.....	09473500	4,453	1966-78
Gila River at the Buttes, AZ.....	09474500	a18,300	1898-99
Queen Creek at Whitlow Dam site (Whitlow's Ranch), near Superior, AZ.....	09478500	144	1948-59
Queen Creek near Florence Junction, AZ.....	09479000	192	1939-41
Queen Creek tributary at Apache Junction, AZ.....	09479200	.51	1961-68
Gila River near Laveen, AZ.....	09479500	20,615	1940-95

a Approximately.

b Includes area that is probably noncontributing.



## DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS—Continued

Station name	Station number	Drainage area, in square miles	Period of record (water years)
Nogales Wash at Nogales, AZ.....	09481000	a37	1932-34
Sonoita Creek near Patagonia, AZ.....	09481500	209	1930-33; 1935-72
Airport Wash at Tucson, AZ.....	09482400	23.0	1965-81
Tucson Arroyo at Vine Avenue, Tucson, AZ.....	09483000	8.2	1944-81
High School Wash at Tucson, AZ.....	09483010	.95	1973-83
Tanque Verde Creek near Tucson, AZ.....	09483100	43.0	1959-74
Sabino Creek near Mount Lemmon, AZ.....	09483300	3.19	1951-59
Bear Creek near Tucson, AZ.....	09484200	16.3	1959-74
Cienega Creek near Pantano, AZ.....	09484560	289	1968-75
Davidson Canyon Wash near Vail, AZ.....	09484590	50.5	1968-75
Atterbury West tributary at Tucson, AZ.....	09485390	4.97	1975-83
Pantano Wash at (near) Tucson, AZ.....	09485500	602	1940-41
Arcadia Wash at Tucson, AZ.....	09485550	2.72	1975-83
Rillito Creek near Tucson, AZ.....	09485850	892	1913-75
Canada del Oro near Oracle Junction, AZ.....	09486100	42.3	1985-91
Canada del Oro near Tucson, AZ.....	09486300	250	1965-78
Santa Cruz River at Ina Road, near Tucson, AZ.....	09486490	3,489	1991-93
Santa Cruz River near Rillito.....	09486510	3,559	1991
Arivaca Wash near Arivaca, AZ.....	09486600	78.4	1967-72
Santa Rosa Wash at Gu Komelik, near Sells, AZ.....	09487500	629	1954-59
Kohatk Wash near Chiapuk, near Sells, AZ.....	09488000	185	1954-59
Santa Rosa Wash near Vaiva Vo, near Sells, AZ.....	09488500	1,782	1954-80
North Fork of East Fork Black River near Alpine, AZ.....	09489070	38.1	1965-78
North Fork Thomas Creek near Alpine, AZ.....	09489082	0.73	1986-91
Black River near Maverick, AZ.....	09489100	315	1962-82
Wacheta Creek at Maverick, AZ.....	09489200	14.8	1957-80
Big Bonito Creek near Fort Apache, AZ.....	09489700	119	1957-81
North Fork White River near Greer, AZ.....	09490800	a39	1965-78
North Fork White River near McNary, AZ.....	09491000	a66	1945-54; 1957-85
North Fork White River at Whiteriver, AZ.....	09492000	357	1916-22
Rock Creek near Fort Apache, AZ.....	09492500	20.3	1955-60
East Fork White River at Fort Apache, AZ.....	09493000	135	1912-20
White River at Fort Apache, AZ.....	09493500	499	1912-19; 1921-22
Carrizo Creek above Corduroy Creek, near Show Low, AZ.....	09494300	225	1953-67
Corduroy Creek above Forestdale Creek, near Show Low, AZ.....	09494500	57.0	1952-61
Forestdale Creek near Show Low, AZ.....	09495500	33.4	1952-61
Corduroy Creek near Mouth, near Show Low, AZ.....	09496000	203	1951-75
Cibecue No. 1 tributary to Carrizo Creek, near Show Low, AZ.....	09496600	.099	1958-71
Cibecue No. 2 tributary to Carrizo Creek, near Show Low, AZ.....	09496700	.065	1958-71
Canyon Creek near Globe, AZ.....	09497850	316	1975-81

a Approximately.

b Includes area that is probably noncontributing.

## DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS—Continued

Station name	Station number	Drainage area, in square miles	Period of record (water years)
Cherry Creek near Young, AZ.....	09497900	62.1	1963-77
Tonto Creek near Gisela, AZ.....	09498800	430	1964-75
Rye Creek near Gisela, AZ.....	09498870	122	1965-85
Tonto Creek near Roosevelt, AZ.....	09499500	838	1913-40
Salt River at Roosevelt (at reservoir site) (nr Livingstone), AZ.....	09500500	5,824	1904-7
Salt River at McDowell, AZ.....	09502500	6,268	1904-9
Williamson Valley Wash near Paulden, AZ.....	09502800	255	1965-85
Willow Creek near Prescott, AZ.....	09503500	25.2	1932-37
Hell Canyon near Williams, AZ.....	09503720	14.9	1965-72
Volunteer Wash near Belmont, AZ.....	09503800	b130	1965-72
Verde River at Camp Verde, AZ.....	09505000	b4,215	1913-20
Rocky Gulch near Rimrock, AZ.....	09505220	1.4	1985-92
Red Tank Draw near Rimrock, AZ.....	09505250	49.4	1957-78
Montezuma Well Outlet near Rimrock, AZ.....	09505260	---	1977-92
Rattlesnake Canyon near Rimrock, AZ.....	09505300	24.6	1957-80
Beaver Creek at Camp Verde, AZ.....	09505500	433	1912-20
Verde River below Camp Verde, AZ.....	09505550	b4,653	1971-78
Verde River at Childs, near Camp Verde, AZ.....	09506500	b5,098	1913
East Verde River near Pine, AZ.....	09507600	6.34	1961-71
Webber Creek above West Fork Webber Creek, near Pine, AZ.....	09507700	4.79	1959-74
West Fork Webber Creek near Pine, AZ.....	09507800	4.07	1959-65
Webber Creek below West Fork Webber Creek, near Pine, AZ.....	09507900	9.63	1959-65
East Verde River near Payson, AZ.....	09507950	272	1961-65
Verde River below East Verde River, near Pine, AZ.....	09508000	b5,606	1934-41
Verde River above Bartlett Reservoir, near Cave Creek, AZ.....	09509000	b6,036	1938-45
West Fork Sycamore Creek above McFarland Canyon, near Sunflower, AZ.....	09510070	4.62	1965-74; 1982-86
West Fork Sycamore (Adler) Creek near Sunflower, AZ.....	09510080	9.82	1961-74
East Fork Sycamore Creek near Sunflower, AZ.....	09510100	4.52	1961-86
Sycamore Creek near Sunflower, AZ.....	09510150	52.3	1961-76
Rock Creek near Sunflower, AZ.....	09510180	15.2	1963-72
Salt River at Alma School Road, near Mesa, AZ.....	09512060	12,995	1981-86; 1992-93
Indian Bend Wash near Scottsdale, AZ.....	09512100	62	1961-84
Salt River at Jointhead Dam, near Phoenix, AZ.....	09512170	13,225	1977-80
Salt River tributary No. 2 at Phoenix, AZ.....	09512180	a.035	1963-65
Salt River at 24th Street at Phoenix, AZ.....	09512190	13,391	1989-92
Cave Creek near Cave Creek, AZ.....	09512300	121	1958-67
Cave Creek at Phoenix, AZ.....	09512400	252	1958-90
Turkey Creek near Cleator, AZ.....	09512600	89.4	1979-92
Boulder Creek near Rock Springs, AZ.....	09512830	37.8	1983-93
Cottonwood Creek near Waddell Dam, AZ.....	09512970	9.28	1983-93
Agua Fria River at Waddell Dam, AZ.....	09513000	1,433	1911-24; 1933-91

a Approximately.

b Includes area that is probably noncontributing.

## DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS—Continued

Station name	Station number	Drainage area, in square miles	Period of record (water years)
Lake Pleasant at Waddell Dam, AZ .....	09513500	1,433	1928-91
Agua Fria River tributary at Youngtown, AZ .....	09513700	.13	1961-68
New River at New River (near Black Canyon), AZ .....	09513800	84.6	1960-82
New River at Bell Road, near Peoria, AZ .....	09513835	185	1968-84; 1990-93
Agua Fria River at Avondale, AZ .....	09513970	2,066	1967-82
Gila River at U.S. Highway 85, near Buckeye, AZ .....	09514300	46,345	1979; 1989-92
Hassayampa River near Wagoner, AZ .....	09514500	77.9	1940-46
Hassayampa River at Walnut Grove, near Wagoner, AZ .....	09515000	106	1912-15; 1917-18; 1980-83
Hassayampa River at Box damsite, near Wickenburg, AZ .....	09515500	417	1938; 1946-82
Centennial Wash near Arlington, AZ .....	09517500	1,870	1961-79
Gila River near Sentinel, AZ .....	09520000	51,610	1913-14
Rio Comez near Ajo, AZ .....	09520170	243	1967-78
Gila River near Mohawk, AZ .....	09520360	55,430	1966; 1973-93
Gila River at mouth, near Yuma, AZ .....	09520700	57,950	1975-83
Colorado River at Yuma, AZ .....	09521000	ab246,500	1902-64
Colorado River and Pilot Knob wasteway (Colorado River) at Rockwood Gate, CA .....	09521500	ab246,600	1945-50
Colorado River at southerly international boundary, near San Luis, AZ	09522200	ab246,700	1960-85
Mittry Lake Outlet Channel near Yuma, AZ .....	09527900	---	1975-83; 1985-89
Yuma Canal at Laguna Dam, AZ-CA .....	09528000	---	1910-48
Laguna Canal Wasteway, AZ .....	09528600	---	1960-97
North Gila Drain No. 3 near Yuma, AZ .....	09529050	---	1962-89
Fortuna Wasteway near Yuma, AZ .....	09529100	---	1961-89
Bruce Church Drain, AZ .....	09529200	---	1962-97
South Gila Drain No. 2 near Yuma, AZ .....	09529400	---	1961-89
Quitobaquito Spring near Lukeville .....	09535900	---	1982-89; 1991-92
West Turkey Creek near Light, AZ .....	09536500	a19	1919-25
Whitewater Draw near Rucker, AZ .....	09537000	38.7	1919-25
Whitewater Draw (White, White Water River) near Douglas, AZ .....	09537500	1,023	1912-13; 1918-19; 1930-33; 1935-82

a Approximately.

b Includes area that is probably noncontributing.

### DISCONTINUED SURFACE-WATER QUALITY STATIONS

The following surface-water-quality stations in Arizona have been discontinued or converted to partial-record stations. Water-quality data (daily or periodic samples with collection frequency not less than quarterly) were collected and published for the period of record shown for each station. Discontinued project stations with less than 3 years of record are not included. Information regarding these stations may be obtained from the district Chief at the address given on the back of the title page of this report.

[Type of record: (C) chemical, (S) sediment, (T) temperature]

Station name	Station number	Drainage area, in square miles	Type of record	Period of record
Paria River at Lees Ferry, AZ.....	09382000	1,410		1942, 1947-76, 1978-79
			C,S,T	
Little Colorado River at Greer, AZ .....	09383400	29.1		1972-73, 1976-79, 1981-84, 1987-88
			C,S,T	
Little Colorado River abv Lyman Lake, near St. Johns, AZ .....	09384000	a706	C,S,T	1976-83
Little Colorado River abv Zion Reservoir, near St. Johns, AZ .....	09386030	1,007	C,T	1975-94
Zuni River above Black Rock Reservoir, NM .....	09386950	848		1978-92, 1993
			C	
Show Low Creek near Lakeside, AZ .....	09390500	68.6	C,S,T	1976-79
Cottonwood Creek at Snowflake, AZ.....	09393400	262	C,S,T	1982-84
Little Colorado River at Woodruff, AZ .....	09394500	a8,072		1905-06, 1950-57
			C,S,T	
Puerco River near Church Rock, NM .....	09395350	205		1979, 1988-91
			C,S,T	
Little Colorado River near Joseph City, AZ.....	09397300	12,384	C,S,T	1979-94
Little Colorado River at Grand Falls, AZ.....	09401000	a21,068	C,S,T	1991-94
Little Colorado River at Cameron, AZ.....	09401200	a23,119		1948-70, 1975-86, 1995
			C,S,T	
Moenkopi Wash near Moenkopi, AZ .....	09401250	---	C,T	1973-76
Moenkopi Wash at Moenkopi, AZ .....	09401260	1,629	C,S,T	1974-81
Little Colorado River near Cameron, AZ.....	09402000	26,459		1970-72; 1990-91
			C,S	
Colorado River near Grand Canyon, AZ.....	09402500	ab141,600	C,S,T	1925-88
Bright Angel Creek near Grand Canyon, AZ.....	09403000	101		1944-49, 1952-58, 1962-74
			C,T	
Kanab Creek near Fredonia, AZ .....	09403780	1,085	C,S,T	1964-73
Havasu Creek above the mouth, near Supai, AZ.....	09404115	3,020	C,T	1990-97
Las Vegas Wash near Henderson, NV .....	09419700	a2,125	C,T	1957-92
Las Vegas Wash above Three Kids Wash below Henderson, NV .....	09419753	b2,180	C,T	1988-92
Lake Mead at Hoover Dam, AZ .....	09421000	ab171,700		1941-62, 1964-85
			C,T	
Colorado River below Davis Dam, AZ .....	09423000	ab173,300	C,T	1969-87
Topock Marsh Outlet near Needles, CA .....	09423640	---		1980-81, 1983
			C,T	

\*Unpublished data.

a Includes area that is probably noncontributing.

b Approximately.

## DISCONTINUED SURFACE-WATER QUALITY STATIONS—Continued

Station name	Station number	Drainage area, in square miles	Type of record	Period of record
Topock Marsh Outlet near Topock, AZ.....	09423650	---	C,T	1975-77
Colorado River near Topock, AZ .....	09424000	ab176,300		1925-27, 1952-62, C,T 1969-82
Central Arizona Project Canal at MP 7.98 near Parker.....	09426700	---	C,M,P	1985-95
Central Arizona Project Canal at MP 162.3 at Phoenix.....	09427100	---	C,M,P,S	1985-95
Central Arizona Project Canal at MP 252 near Coolidge .....	09427300	---	C,M,P	1987-95
Colorado River Indian Reservation Main Canal near Parker, AZ.....	09428500	---	C,T	1970-83
Colorado River Indian Reservation Poston Canal Wasteway near Parker, AZ.....	09428510	---		1969-83
Palo Verde Canal near Blythe, CA .....	09429000	---	C,T	1970-85
Palo Verde Drain near Parker, AZ .....	09429030	---		*1962-68, C,T 1969-83
Colorado River Indian Reservation Lower Main Drain near Parker, AZ .....	09429060	---		*1962-68, C,T 1969-83
Colorado River below Palo Verde Dam, AZ .....	09429100	ab186,200	T	1956-66
Palo Verde Irrigation District Olive Lake Drain near Blythe, CA .....	09429130	---		*1963-65, C,T 1969-81
Colorado River at Taylor Ferry, near Blythe, CA .....	09429188	ab187,700	C,T	1970-83
Palo Verde Irrigation District Outfall Drain near Palo Verde, CA .....	09429220	---		*1962-65, *1967-68, C,T 1969-83
Palo Verde Irrigation District Anderson Drain near Palo Verde, CA .....	09429225	---		1969-81
Colorado River below Cibola Valley, AZ.....	09429300	ab187,800		1956-66, C,T 1969-83
Colorado River below Laguna Dam, AZ .....	09429600	ab188,600	C,T	1972-83
Colorado River above Gila River, near Yuma, AZ .....	09429690	ab188,700		*1961-68, C,T 1969-79
Gila River near Clifton, AZ.....	09442000	4,010	C,S,T	1976-79
Blue River near Clifton, AZ .....	09444200	506	C	1990-93
San Francisco River at Clifton, AZ.....	09444500	a2,766		1943-44, C,S,T 1964-67
San Francisco River near Clifton, AZ .....	09444600	a2,770		1976-79, 1981-84, 1987-88, C 1990-93
Gila River at Safford, AZ .....	09458500	10,459	C,T	1941-44
Gila River at Fort Thomas, AZ.....	---	---		1940-41, C,T 1943-44
Gila River at Calva, AZ.....	09466500	11,470		1943-44; C,T 1974-94
San Carlos River near Peridot, AZ.....	09468500	1,026	C	1990-91
Gila River at Winkleman, AZ.....	09470000	a13,268	C,S,T	1976-84

\*Unpublished data.

a Includes area that is probably noncontributing.

b Approximately.

## DISCONTINUED SURFACE-WATER QUALITY STATIONS—Continued

Station name	Station number	Drainage area, in square miles	Type of record	Period of record
Garden Canyon near Fort Huachuca, AZ .....	09470800	8.38	C,S,T	1962-64
San Pedro River near Benson, AZ .....	09471800	2,500	S	1966-74
San Pedro River near Winkleman, AZ .....	09473400	4,449	C,S,T	1962-66
San Pedro River at Winkleman, AZ .....	09473500	4,471	C,S,T	1966-80
Mineral Wash at Kelvin, AZ .....	09473900	97.9	C,T	1956-58, 1962-64
Santa Cruz River near Nogales, AZ .....	09480500	533	S,T	1966-74
Santa Cruz River at Rio Rico, AZ .....	09481710	1,004	C,T	1976-78
Santa Cruz River near Laveen, AZ .....	09489000	8,581	C,S,T	1976, 1978-79
Black River near Fort Apache, AZ .....	09490500	1,232	C,S,T	1976-79
White River near Fort Apache, AZ .....	09494000	632	C,S,T	1976-79
Tonto Creek above Gun Creek, near Roosevelt, AZ .....	09499000	675	C,S,T	1976-79, 1983
Salt River below Stewart Mountain Dam, AZ .....	09502000	6,232	C,S,T	1950-92
Oak Creek at Red Rock Crossing near Sedona, AZ .....	09504440	252	C,T	1978-83; 1986-94
Oak Creek near Cornville, AZ .....	09504500	357	C,T	1954-64, 1976-78
Verde River near Camp Verde, AZ .....	09506000	a5,009	C,S,T	1977, 1979-84
Verde River below Bartlett Dam, AZ .....	09510000	a6.161	C,S,T	1950-92
Turkey Creek near Cleator .....	09512600	89.4	C,T	1980-82
Agua Fria River below Waddell Dam, AZ .....	09513600	1,459	C,T	1950-58; 1975; 1982-89; 1991-94
Gila River near Dome .....	09520500	b57.850	C,S,T	1973, 1979, 1984-92
Gila River near mouth, near Yuma .....	09520700	b57.950	C,S,T	*1961-68, 1969-84
Colorado River at Yuma .....	09521000	ab246,500	C,S,T	1905, 1926-28, 1943-44, 1947-63
Colorado River below Yuma Main Canal Wasteway, at Yuma, AZ .....	09521100	ab246,500	C,T	1976, 1987-88
Colorado River at southerly international boundary, near San Luis, AZ .....	09522200	ab246,700	C,T	*1962-66, 1969-79
Gila Gravity Main Canal at Imperial Dam, AZ .....	09522500	---	C,T	1956-81
Yuma Main Canal below Colorado River Siphon, at Yuma, AZ .....	09525500	---	C,T	*1926-28, 1943-70
Mittrey Lake Outlet Channel near Yuma, AZ .....	09527900	---	C,T	1974-83
North Gila Drain No. 1, near Yuma, AZ .....	09529000	---	C,T	*1966-68, 1969-81

\*Unpublished data.

a Includes area that is probably noncontributing.

b Approximately.

## DISCONTINUED SURFACE-WATER QUALITY STATIONS—Continued

Station name	Station number	Drainage area, in square miles	Type of record	Period of record
North Gila Drain No. 3, near Yuma, AZ .....	09529050	---	C,T	*1966-68, 1969-81
South Gila Pump Outlet Channel No. 3, near Yuma, AZ.....	09529160	---	C,T	1969-83
Bruce Church Drain near Yuma, AZ .....	09529200	---	C,T	*1966, 1969-81
South Gila Pump Outlet Channel No. 2, near Yuma, AZ.....	09529240	---	C,T	*1968, 1969-83
Wellton-Mohawk Main Outlet Drain near Yuma, AZ.....	09529300	---	C,T	*1961-68, 1969-83
South Gila Pump Outlet Channel No. 1, near Yuma, AZ.....	09529360	---	C,T	*1968, 1969-83
South Gila Pump Outlet Channel No. 4, near Yuma, AZ.....	09529440	---	C,T	1969-82
Reservation Main Drain No. 4 at Yuma, AZ .....	09530000	---	C,T	*1964-68, 1969-81
Yuma Mesa Outlet Drain near Yuma, AZ.....	09530200	---	C,T	1972-83, 1987-88
Drain 8-B near Yuma, AZ.....	09530500	---	C,T	1970-81, 1987-88
Wellton-Mohawk Main Outlet Drain near Yuma, AZ .....	09531700	---	C,T	1969-74, 1983-85
Main Outlet Drain Extension below Morelos Dam, AZ .....	09531900	---	C	1972-76
Main Drain at southerly international boundary, near San Luis, AZ .....	09534000	---	C,T	*1962-68, 1969-83
West Main Canal Wasteway at Arizona-Sonora boundary, AZ.....	09534300	---	C,T	1971-79
East Main Canal Wasteway at Arizona-Sonora boundary, AZ.....	09534500	---	C,T	*1965-68, 1969-79
Vamori Wash at Kom Vo, AZ .....	09535300	1,250	C,S,T	1978-86
Whitewater Draw near Douglas, AZ.....	09537500	1,023	C,T	1978-81

\*Unpublished data.

a Includes area that is probably noncontributing.

b Approximately.

# **WATER RESOURCES DATA FOR ARIZONA, WATER YEAR 1999**

## **INTRODUCTION**

The Water Resources Division of the U.S. Geological Survey (USGS), in cooperation with State agencies, obtains a large amount of data on the water resources of Arizona each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the USGS, the data are published annually in a report series entitled "Water Resources Data for Arizona."

This report includes records on both surface water and ground water in the State. Specifically, it contains: (1) Discharge records for 190 streamflow-gaging stations, for 29 crest-stage, partial-record streamflow stations, and 8 miscellaneous sites; (2) stage and (or) content records for 9 lakes and reservoirs; (3) water-quality records for 17 streamflow-gaging stations, 13 miscellaneous sites, and 156 wells.

This series of annual reports for Arizona began with the 1961 water year with a report that contained only data relating to surface water. For the 1964 water year, a similar report was introduced that contained only data on water quality. Beginning with the 1975 water year, the report format was changed to present, in one volume, data on quantities of surface water, quality of surface water and ground water, and ground-water levels.

Before introduction of this series and for several water years concurrent with it, water-resources data for Arizona were published in the USGS Water-Supply Paper series. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960 were published annually under the title "Surface-Water Supply of the United States, Part 9." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-Supply Papers may be consulted in the libraries of the University of Arizona, Arizona State University, and the State of Arizona in Phoenix; principal cities in the United States; or may be purchased from the Branch of Information Services, USGS, Box 25286, Denver Federal Center, Denver, Colorado 80225-0046.

Publications similar to this report are published annually by the USGS for all States. These official USGS reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "USGS Water-Data Report AZ-99-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. Information for ordering specific reports and data retrievals may be obtained from the District Chief at the address given on the back of the title page or by telephone (520) 670-6671.

## **COOPERATION**

The USGS and organizations of the State of Arizona have had cooperative agreements for the systematic collection of surface-water records since 1912, for ground-water levels since 1939, and for water-quality records since 1969. Organizations that assisted in collecting data through cooperative agreement with the Survey are:



Arizona Department of Environmental Quality  
 Arizona Department of Water Resources  
 Central Arizona Water Conservation District  
 City of Tucson  
 Flood Control District of Maricopa County  
 Gila Valley Irrigation District  
 Maricopa Water District  
 Metropolitan Water District of Southern California  
 Pima County Department of Transportation and Flood Control  
 Salt River Valley Water Users' Association  
 Show Low Irrigation Company

Assistance in the form of funds or services was given by the Bureau of Land Management, Bureau of Reclamation, U.S. Fish and Wildlife Service, and National Park Service, U.S. Department of the Interior; U.S. Army Corps of Engineers; Forest Service, U.S. Department of Agriculture; International Boundary and Water Commission, U.S. Department of State; and by the Federal Power Commission. Assistance in collecting records was furnished by the Arizona Public Service Co. Organizations that supplied data are acknowledged in station descriptions.

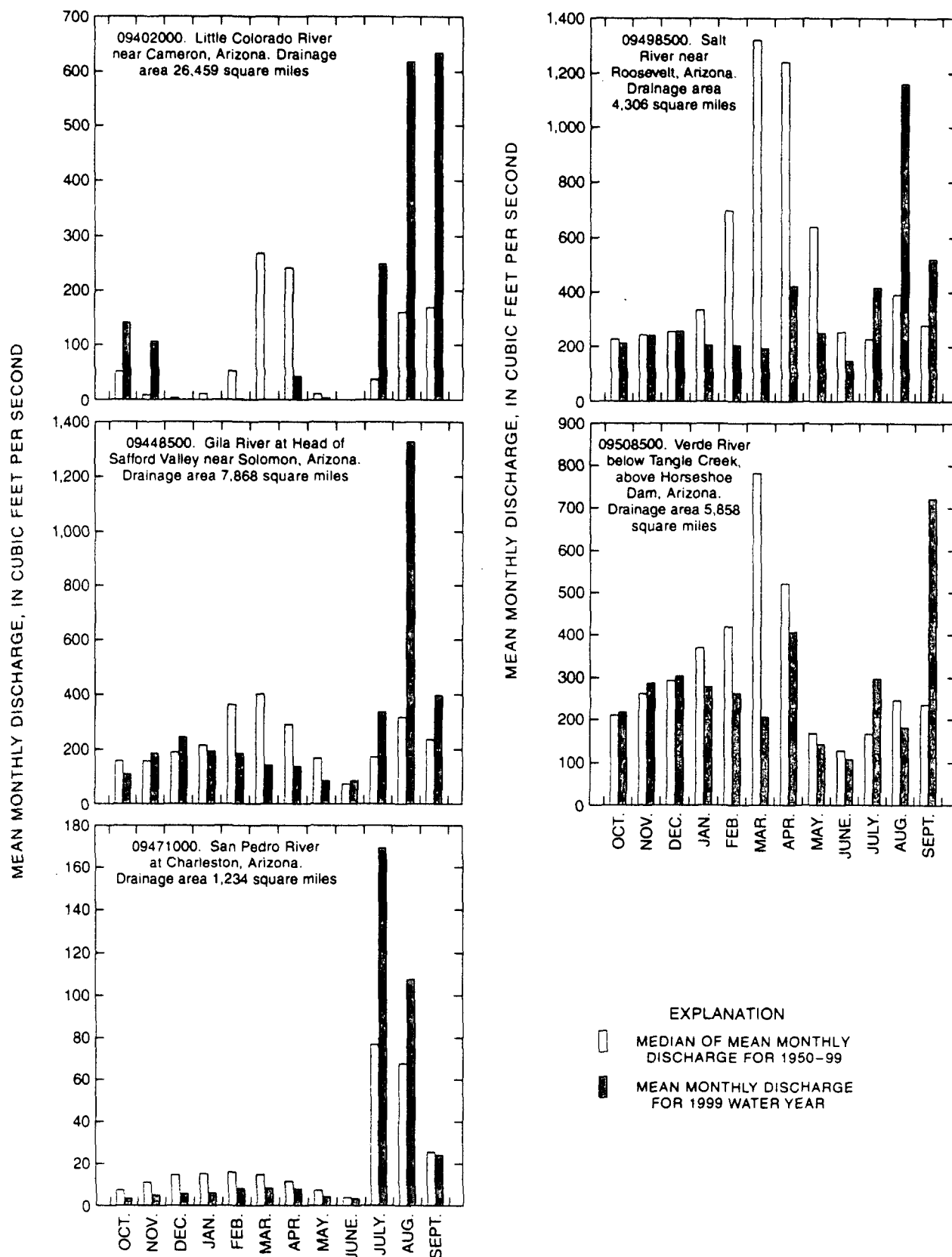
## HYDROLOGIC CONDITIONS

As is common in Arizona, streamflow varied greatly in the 1999 water year—from month to month throughout the year and from place to place in the State. The variations are related to differences in precipitation, temperature, topography, and geology. The yearly discharge at five key streamflow-gaging stations ranged from 54 to 88 percent of the median of yearly discharges. The median of the yearly discharges is defined as the middle value of discharge when arranged in order of size. For the index stations, the median is computed from the yearly discharges for the 1950-99 period of record.

The yearly discharge for the 1999 water year was within the normal range at all five stations. Excessive discharge is defined as a discharge greater than the 75-percent quartile, that is greater than 75-percent of the values arranged in order of magnitude; deficient discharge is less than the 25-percent quartile. The yearly discharge for the 1999 water year and the relation to the median of yearly discharges for the period 1950-99 for the five index gaging stations are given below.

Station	Discharge (acre-feet)	Percent of median
Little Colorado River near Cameron.....	108,595	80
Gila River at head of Safford Valley, near Solomon .....	207,054	88
San Pedro River at Charleston .....	21,429	86
Salt River near Roosevelt.....	255,560	54
Verde River below Tangle Creek, above Horseshoe Dam.....	206,331	60

Figure 1 shows the mean monthly discharge for the 1999 water year compared with the median of mean monthly discharge for the period 1950-99 at five representative gaging stations for which long-term records are available.



**Figure 1.** Mean monthly discharge for the 1999 water year compared with median of mean monthly discharge for period 1950-99 at five representative gaging stations for which long-term records are available.

## Water Use

Arizona is an arid state in which economic development is influenced largely by the location of adequate water supplies. Water demand is met by pumping ground water from aquifers or by conveying surface water through a system of reservoirs and canals. Data on the nature and extent of the aquifers, quantity and quality of available ground water, and the effect of aquifer development are necessary for proper management of this valuable resource.

The USGS in cooperation with the Arizona Department of Water Resources (ADWR) has published a series of reports entitled "Annual Summary of Ground-Water Conditions in Arizona" and "Summary of Ground-Water Conditions in Arizona" prior to 1991. The annual ground-water withdrawals prior to 1991 were compiled and published using ground-water basin boundaries established by the USGS. Ground-water withdrawals for the years 1991 and beyond will be compiled and published using the ground-water basin boundaries established by the ADWR. Annual ground-water withdrawals for municipal, industrial, and irrigation uses outside of the Active Management Areas for calendar year 1998 are summarized in this report. Municipal use includes water provided by private and public water suppliers for commercial and domestic purposes. Primary industrial users are electric-power producers and mining operations. The ADWR ground-water basins are shown in figure 8, and the distribution of ground-water withdrawals by each use is shown in pages 321 and 322.

## GROUND-WATER LEVELS AND COMPACTION VALUES

Since the 1940's, declines of several feet per year in ground-water levels have resulted in aquifer compaction in the Picacho Basin, Avra Valley, and Tucson Basin. The U.S. Geological Survey, in cooperation with the City of Tucson and the Arizona Department of Water Resources, has been collecting aquifer-compaction data with the use of vertical pipe extensometers in southern Arizona since 1979. Water-level and compaction data for 19 sites in the 1999 water year are summarized in this report. The 19 sites are shown in figure 9, and the water-level and compaction data are listed on pages 324-341. Historic data is available from the District Office in Tucson, Arizona.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is produced for local needs.

Water-level measurements in this report are given in feet with reference to land-surface datum (lsd). Land surface datum is a datum plane that is approximately at land surface at each well. Water levels in wells equipped with recording gages are reported continuously. Water levels are reported to a tenth or a hundredth of a foot, but compaction sediment data are reported to a thousands of a foot.

## SPECIAL NETWORKS AND PROGRAMS

Special networks and sampling programs have been established on the state and national level to monitor certain hydrologic conditions and trends. The following sections describe each program and are summarized at the end with a table listing stations which comprise each network.

Hydrologic Benchmark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins—the Mississippi, Columbia, Colorado, and Rio Grande. The network consists of 39 stations. Samples are collected with sufficient frequency that the flux of a wide range

of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and remobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation through the United States. As the lead Federal agency, the USGS works together with over 100 organizations to accomplish the following objectives: (1) provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 191 precipitation chemistry-monitoring sites, (2) provide the mechanism to evaluate the effectiveness of the significant reduction in  $\text{SO}_2$  emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred, and (3) provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for  $\text{SO}_2$  and  $\text{NO}_x$  scheduled to begin in 2000.

Data from the network, as well as information about individual sites, are available through the World Wide Web at <<http://nadp.nrel.colostate.edu/NADP>>.

The National Water-Quality Assessment (NAWQA) Program of the USGS is a long-term program with goals to describe the status and trends of water-quality conditions for a large, diverse, and geographically distributed part of the Nation's ground-water and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are ongoing in 53 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents will be measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other Federal, State, and local interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key Federal, State, and local water-resources agencies, Indian Nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs; monitoring plans and progress; desired information products; and to collaborate efforts among the agencies.

The Central Arizona Basins (CAZB) NAWQA, which includes much of the Gila River above Gillespie Dam and the Phoenix and Tucson areas, began in 1994. Data on physical, chemical, and biological properties of surface- and ground-water resources in the CAZB study unit will be combined with data from as many as 53 other study units to represent water-quality conditions of resources that provide more than 60 percent of the Nation's public supplies.

Additional information about the NAWQA Program is available through the World Wide Web at <[http://www.rvares.er.usgs.gov/nawqa/nawqa\\_home.html](http://www.rvares.er.usgs.gov/nawqa/nawqa_home.html)>.

Arizona Fixed Station Network is part of the State quality monitoring program and includes a network of water-quality sites at established surface-water stations, except for Verde River above West Clear Creek. Some sites are sampled in conjunction with NASQAN and NAWQA. This network provides essential data

for State water-quality assessment programs including the biennial report required by the Federal Clean Water Act.

Station name	Station number	NASQAN	Arizona Fixed Station Network	NAWQA
Colorado River at Lees Ferry .....	09380000	X	X	
Colorado River above Diamond Creek.....	09404200	X		
Colorado River above Imperial Dam.....	09429490	X		
Colorado River below Parker Dam.....	09427520		X	
Gila River near Virden .....	09432000		X	
Gila River at the head of Safford Valley near Solomon.....	09448500		X	
Gila River at Calva .....	09466500		X	
San Pedro River at Charleston.....	09471000			X
Pinal Creek at Inspiration Dam, near Globe.....	09498400		X	
Salt River near Roosevelt .....	09498500		X	
Salt River below Stewart Mountain Dam .....	09502000		X	
Verde River near Clarkdale.....	09504000		X	
West Clear Creek near Camp Verde .....	09505800			X
East Verde River near Childs .....	09507980		X	
Verde River below Tangle Creek above Horseshoe Dam .....	09508500		X	
Verde River below Bartlett Dam.....	09510000		X	
Gila River above diversions at Gillespie Dam.....	09518000		X	

### Miscellaneous Stations

Station name	Latitude/ Longitude	Arizona Fixed Station Network	Yavapai Prescott Indian Tribe.	National Park Service Fort Hubbel Trading Post
Salt River near Coon Bluff .....	333300111385701	X		
Verde River at Beasley Flats near Verde.....	342848111475700	X		
Verde River above Dead Horse Ranch State Park.....	344500112013001	X		
Verde River below Dead Horse Ranch State Park.....	344505112010001	X		
Verde River at Tuzigoot Bridge near Clarkdale .....	344557112014600	X		
Verde River at Sewage Disposal Pond .....	344610112022501	X		
Verde River above Sewage Disposal Pond.....	344615112023501	X		
Verde River below Diversion Dam .....	344650112025501	X		
Verde River below Tapco Substation.....	344744112032701	X		
YP-8 .....	343349112263701		X	
YP-12 .....	343308112274201		X	
Pueblo Colorado Wash near Ganado.....	354236109331400			X
A-27-26 (27cac) .....	354237109331201			X

### EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for the 1999 water year that began October 1, 1998, and ended September 30, 1999. A calendar of the water year is provided on the

inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for surface water and ground water, and ground-water-level data. The locations of the stations where the data were collected are shown in figures 4 through 7. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

### **Station Identification Numbers**

Each data station, whether stream site or well, in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the USGS to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for wells and, in Arizona, for surface-water stations where only miscellaneous measurements are made.

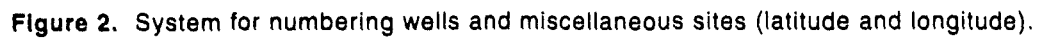
#### **Downstream Order System**

Since October 1, 1950, the order of listing hydrologic-station records in USGS reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indention in the "List of Stations" in the front of this report. Each indention represents one rank. This downstream order and system of indention show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station, such as 09402500, which appears just to the left of the station name, includes the two-digit part number "09" plus the six-digit downstream-order number "402500." The part number "09" designates the major river basin (Colorado River Basin).

#### **Latitude-Longitude System**

The identification numbers for wells and miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the wells or other sites within a 1-second grid. This site-identification number, once assigned, is a pure number, and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number, however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description (fig. 2).



**R. 5 E.**

**T. 4 S.**

**WELL (D-04-05)19caa**

**Quadrant D, Township 04 South, Range 05 East, section 19, quarter section c, quarter section a, quarter section a**

**Figure 3. Well-numbering and naming system.**

### Local Well Numbers

A local well number is assigned to each ground-water site on the basis of the Gila and Salt River meridian and base line (fig. 3). A different numbering system is used on the Navajo and Hopi Indian Reservations. The Navajo Indian Reservation is divided into 17 administrative districts, numbered 1 to 5 and 7 to 18, and the Hopi Indian Reservation comprises district 6. The area is further divided into 15-minute quadrangles arbitrarily numbered from 1 to 151 starting in the northeast corner of the area and numbered consecutively in rows from east to west. Within the 15-minute quadrangle the well is located in miles south and west from the northeast corner of the quadrangle. The first two numbers in the well number represent the district, the next three numbers are the quadrangle, the decimal numbers are miles west by (X) miles south of the northeast corner of the quadrangle. Thus, the number 02 021-05.28X10.68 states that the well is in district 2, quadrangle 21, and is 5.28 miles west by 10.68 miles south of the northeast corner of the quadrangle.

The well numbers used by the USGS in Arizona are in accordance with the Bureau of Land Management's system of land subdivision. The land survey in Arizona is based on the Gila and Salt River meridian and base line, which divide the State into four quadrants. These quadrants are designated counterclockwise by the capital letters A, B, C, and D. All land north and east of the point of origin is in A quadrant, that north and west in B quadrant, that south and west in C quadrant, and that south and east in D quadrant. The first digit of a well number indicates the township, the second the range, and the third the section in which the well is situated. The lowercase letters a, b, c, and d after the section number indicate the well location within the section. The first letter denotes a particular 160-acre tract, the second the 40-acre tract, and the third the 10-acre tract. These letters also are assigned in a counterclockwise direction, beginning in the northeast quarter. If the location is known within the 10-acre tract, three lowercase letters are shown in the well number. In the example shown, well number (D-04-05)19caa designates the well as being in the NE1/4NE1/4SW1/4 sec. 19, T. 4 S., R. 5 E. Where more than one well is within a 10-acre tract, consecutive numbers beginning with 1 are added as suffixes.

### Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time or any period of time during the period of record. Complete records of lake and reservoir contents are those for which stage or contents may be computed or estimated with reasonable accuracy for any time or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report. Location of all complete-record and crest-stage partial-record stations for which data are given in this report are shown in figures 4 through 7.

### Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding



factors that may affect the relation between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relation between stage and lake contents. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adapted by the USGS as a result of experience accumulated since 1880. These methods are described in standard textbooks, Water-Supply Paper 2175, and the U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI's), book 3, chap. A1 through A19 and book 8, chaps. A2 and B2. The methods are consistent with the American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves then are constructed. From these curves, rating tables indicating the approximate discharge are prepared for any stage within the range of the measurements. If it is necessary to define extremes of discharge outside the range of current-meter measurements, the curves are extended using (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow-over-dam or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method in which correction factors based on individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relation that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes or observations, and records for other stations in the same or nearby basins for comparable periods.

At some streamflow-gaging stations, the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations, the stage-discharge relation is affected by changing stage; at these stations, the rate of change in stage is used as a factor in computing discharge.

In computing records of lake or reservoir contents, it is necessary to have available surveys, curves, or tables to define the relation between stage and contents. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relation changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relation. When this is done, the contents computed may become increasingly in error as time increases since the last survey. Discharges over lake or reservoir spillways are computed from stage-discharge relations in the same manner as other stream discharges are computed.

For some gaging stations, there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This condition occurs when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basin. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining

how estimated daily values of discharges are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

### **Data Presentation**

Streamflow data in this report are presented in a format that is considerably different from the format in data reports prior to the 1992 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table and less information is provided in the text or station manuscript above the table. These changes represent the results of a pilot program to reformat the annual water-data report to meet current user needs and data preferences.

The records published for each continuous-record surface-water discharge station (gaging station) now consist of four parts, the manuscript or station description; the data table of daily mean values of discharge for the current water year with summary data; a tabular statistical summary of monthly mean flow data for a designated period, by water year; and a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration.

### **Station Manuscript**

The manuscript provides, under various headings, descriptive information such as station location, period of record, historical extremes outside the period of record, record accuracy, and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

**LOCATION.**—Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given.

**DRAINAGE AREA.**—Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

**PERIOD OF RECORD.**—The period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time when the present station was not in operation and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

**REVISED RECORDS.**—Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

**GAGE.**—The type of gage in current use, the datum of the current gage referred to sea level (see Definition of Terms), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

**REMARKS.**—All periods of estimated daily discharge record will either be identified by date in this paragraph for discharge stations or flagged in the daily discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a REMARKS statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph also is used to present

information relative to the accuracy of the records, to special methods of computation, to conditions that affect natural flow at the station, and possibly to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

**COOPERATION.**—Records provided by a cooperating organization or obtained for the USGS by a cooperating organization are identified here.

**AVERAGE DISCHARGE.**—The discharge value given is the arithmetic mean of the water-year mean discharges. Average discharge is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water developments significantly altering flow at a station are put into use after the station has been in operation for a period of years, a new average is computed as soon as 5 water years of record have accumulated following the development. The median of yearly mean discharges also is given under this heading for stations having 10 or more water years of record, if the median differs from the average given by more than 10 percent.

**EXTREMES FOR PERIOD OF RECORD.**—Extremes may include maximum and minimum discharges or contents. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and is determined and is reported in the same manner as the maximum.

**EXTREMES OUTSIDE PERIOD OF RECORD.**—Information is included on major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the USGS.

**EXTREMES FOR CURRENT YEAR.**—Extremes given are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

**REVISIONS.**—If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the offices whose addresses are given on the back of the title page of this report to determine if the published records were ever revised after the station was discontinued. Of course, if the data were obtained by computer retrieval, the data would be current, and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for streamflow-gaging stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

#### Data Table of Daily Mean Values

The daily table for streamflow-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL"

gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

#### Statistics of Monthly Mean Data

A tabular summary of the mean (line headed "MEAN"), maximum (line headed "MAX"), and minimum (line headed "MIN") of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as "FOR WATER YEARS \_\_\_\_ - \_\_\_\_, BY WATER YEAR (WY)," and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. The summary will consist of all the station records within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive unless a break in the station record is indicated in the manuscript.

#### Summary Statistics

A table titled "SUMMARY STATISTICS" follows the statistics of monthly mean data tabulation. This table consists of four columns, and the first column contains the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, "WATER YEARS \_\_\_\_ - \_\_\_\_" will consist of all the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (see line headings below) except for the "ANNUAL 7-DAY MINIMUM" statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Reported occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. The designated period may not be the same as the station period of record published in the manuscript. Occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column, therefore, may not be within the selected water years listed in the heading. When this occurs, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow-duration-curve statistics and runoff data also are given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments that follow clarify information presented under the various line headings of the summary-statistics table.

**ANNUAL TOTAL.**—The sum of the daily mean values of discharge for the year. At some stations, the annual total discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

**ANNUAL MEAN.**—The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes. At least 5 complete years of record must be available before this statistic is published for the designated period.

**HIGHEST ANNUAL MEAN.**—The maximum annual mean discharge occurring for the designated period.

**LOWEST ANNUAL MEAN.**—The minimum annual mean discharge occurring for the designated period.

**HIGHEST DAILY MEAN.**—The maximum daily mean discharge for the year or for the designated period.

**LOWEST DAILY MEAN.**—The minimum daily mean discharge for the year or for the designated period.

**ANNUAL 7-DAY MINIMUM.**—The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1–March 31). The date shown in the summary statistics table is the first day of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

**ANNUAL RUNOFF.**—Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

Acre-foot (AC-FT) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equal to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area for the year.

Inches (INCHES) indicates the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

**10 PERCENT EXCEEDS.**—The discharge that has been exceeded 10 percent of the time for the designated period.

**50 PERCENT EXCEEDS.**—The discharge that has been exceeded 50 percent of the time for the designated period.

**90 PERCENT EXCEEDS.**—The discharge that has been exceeded 90 percent of the time for the designated period.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in a table of annual maximum stage and discharge at crest-stage stations. The table of crest-stage stations is followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements generally are made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

### **Identifying Estimated Daily Discharge**

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified by flagging individual daily values with the letter symbol “e” and printing the table footnote, “e Estimated.”

### Accuracy of the Records

The accuracy of streamflow records depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements; and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the true; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second ( $\text{ft}^3/\text{s}$ ) for values less than  $1 \text{ ft}^3/\text{s}$ , to the nearest tenth between  $1.0$  and  $10 \text{ ft}^3/\text{s}$ , to whole numbers between  $10$  and  $1,000 \text{ ft}^3/\text{s}$ , and to three significant figures for more than  $1,000 \text{ ft}^3/\text{s}$ . The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

### Other Records Available

The National Water Data Exchange (NAWDEx), USGS, Reston, VA 20192, maintains an index of sites as well as an index of records of discharge collected by other agencies but not published by the USGS. Information on records at specific sites can be obtained from that office upon request.

Several components of the National Water Information System (NWIS) are on the Arizona District computer. Many of the data published in this report and much additional information can be retrieved from the data bases. The Ground Water Site Inventory (GWSI) data base contains station numbers, well and miscellaneous site numbers, local well numbers, locations, and other descriptive data for all USGS data-collection sites. GWSI contains most of the data collected for wells except for chemical analyses. The Automated Data Processing System (ADAPS) contains most surface-water data except for site descriptions and chemical analyses. The Water Quality Data Processing System (QW) contains chemical analyses of water from ground-water and surface-water sites.

Data retrievals from the three data bases are available at cost on paper, floppy disk, or nine-track computer tape. Some of the retrievals produce data in a format suitable for machine reading that does not contain blank lines or page headers.

### Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near streamflow-gaging stations because interpretation of records of surface-water quality almost always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

### Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A *continuous-record station* is a site where data are collected on a regularly scheduled basis. Frequency may be one or more times daily, weekly, monthly, or quarterly. A *partial-record station* is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A *miscellaneous sampling site* is a location, other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuing records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figures 5 and 6.

### Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream order. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

### Onsite Measurement and Sample Collection

In obtaining water-quality data, a major concern is the assurance that the data obtained represent the in-situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, are made onsite when samples are taken. To assure that measurements made in the laboratory also represent the in-situ water, carefully prescribed procedures are followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are detailed in the TWRI, book 1, chap. D2; book 3, chap. C2; and book 5, chap. A1, A3, and A4. These references are listed in the section entitled "Publications on Techniques of Water-Resources Investigations." These methods are consistent with ASTM standards and generally follow ISO standards.

One sample can adequately define the water quality at a given time if the mixture of solutes throughout the cross section is homogeneous. The concentration of solutes at different locations in the cross section, however, may vary widely with different rates of water discharge depending on the source of material and turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (see definitions) are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals depends on flow conditions and other factors that must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative value available for the stations listed. The values represent water-quality conditions at the time of sampling as much as possible and are consistent with available sampling techniques and methods of analysis. In the rare

case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum and minimum values for each constituent measured and are based on hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the District office whose address is given on the back of the title page of this report.

### **Water Temperature**

Water temperatures are measured at the water-quality stations. In addition, water temperatures are taken at the time discharge measurements are made for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may closely follow the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the District office.

### **Sediment**

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and the coefficient applied to determine the mean concentration in the cross section.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). For those days when the published sediment-discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge. Methods used in the computation of sediment records are described in the TWRI, book 3, chap. C1 and C3. These methods are consistent with ASTM standards and generally follow ISO standards.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream. In addition to the records of suspended-sediment discharge, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

### **Cross-Sectional Data**

Cross-sectional surveys of water temperature, pH, specific conductance, dissolved oxygen, and suspended sediment are performed at all NASQAN and Hydrologic Benchmark Stations during various



seasons and surface-water discharges. Documentation of cross-section variation of water quality is essential in order to determine how many samples in a cross section are necessary to ensure a representative composite sample.

### Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the USGS National Water-Quality Laboratory in Arvada, Colorado. Methods used to analyze sediment samples and to compute sediment records are described in the TWRI Book 5, Chapter C1. Methods used by the USGS laboratories are given in the TWRI, book 1, chap. D2; book 3, chap. C2; and book 5, chaps. A1, A3, A4, and A5. These methods are consistent with ASTM standards and generally follow ISO standards.

MBAS determinations made from January 1, 1970, through August 29, 1993, at the National Water-Quality Laboratory in Denver (Analyzing Agency Code 80020) are positively biased. These data can be corrected on the basis of the following equation, if concentrations of dissolved nitrate plus nitrite, as nitrogen, and dissolved chloride, determined concurrently with the MBAS data, are applied:

$$\text{MBASCOR} = M - 0.0088N - 0.00019C$$

where

- MBASCOR = corrected MBAS concentrations, in milligrams per liter;
- M = reported MBAS concentration, in milligrams per liter
- N = dissolved nitrate plus nitrite, as nitrogen, concentration, in milligrams per liter; and
- C = dissolved chloride concentration, in milligrams per liter.

The detection limit of the new method is 0.02 mg/L, whereas the detection limit for the old method was 0.01 mg/L. A detection limit of 0.02 mg/L should be used with corrected MBAS data from January 1, 1970, through August 29, 1993. In March 1989, the National Water-Quality Laboratory discovered a bias in the turbidimetric method for sulfate analysis, indicating that values below 75 mg/L have a median positive bias of 2 mg/L above the true value for the period between 1982 and 1989.

### Identifying Estimated Pesticide Concentrations

Estimated pesticide concentrations published in this report are identified by flagging individual values with the symbol "E" and printing a table footnote "E, estimated." The "E" is assigned by the laboratory under the following circumstances: (1) a reported concentration is less than the detection limit or less than 0.004 µg/L, whichever is greater for the peak that is measured at the correct retention time and qualified with a spectral match of the target analyte; (2) a reported concentration is greater than the highest calibration point (equivalent to an analyte concentration of 4 µg/L in the sample; or (3) a reported concentration for carbaryl, carbofuran, dethylatrazine, terbeccl, or methyl azinphos is of uncertain accuracy.

### Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and other data obtained at a frequency less than daily are presented first. Tables of "daily values" of

specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge-gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.—See "Data Presentation" under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.—See "Data Presentation" under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.—This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the individual parameters.

INSTRUMENTATION.—Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.—Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.—Records provided by a cooperating organization or obtained for the USGS by a cooperating organization are identified here.

EXTREMES.—Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for the period of record and for the current water year.

REVISIONS.—If errors in water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the USGS's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's (USEPA) STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of USGS water-quality data are encouraged to obtain all required data from the appropriate computer file to ensure the most recent updates.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

### Remark Codes

The following remark codes may appear with the water-quality data in this report:

Printed output	Remarks
e or E	Estimated value.
>	Actual value is known to be greater than value shown.
<	Actual value is known to be less than value shown.
K	Based on non-ideal colony count.
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted).
D	Biological organism count equal or to greater than 15 percent (dominant).
&	Biological organism estimated as dominant.
P	Water level measured while well was being pumped.
R	Water level measured had been recently pumped.
V	Sample may have been contaminated during collection. Actual value is less than or equal to value shown.
Y	Unable to measure water level.

Samples where the dissolved concentration of a constituent (which is theoretically less than or equal to the total concentration) exceeds the respective total, may be due to unavoidable errors associated with subsampling and sample processing, or limitations on precision and accuracy of the analytical procedure.

### Dissolved Trace-Element Concentrations

Note: Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter ( $\mu\text{g/L}$ ) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nanograms per liter ( $\text{ng/L}$ ). Data above the  $\mu\text{g/L}$  level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the USGS began using new trace-element protocols at some stations in water year 1994.

### Change in National Trends Network Procedures

Note: Sample handling procedures at all National Trends Network stations were changed substantially on January 11, 1994, in order to reduce contamination from the sample shipping container. The data for samples before and after that date are different and not directly comparable. A tabular summary of the differences based on a special intercomparison study, is available from the NADP/NTN Coordination Office, Colorado State University, Fort Collins, CO 80523 (Telephone: 303-491-5643).

### Water-Quality Control Data

Data generated from quality-control (QC) samples are a requisite for evaluating the quality of the sampling and processing techniques as well as data from the actual samples. Without QC data, environmental sample data cannot be adequately interpreted because the errors associated with the sample data are unknown. The various types of QC samples collected by this District are described in the following section. Procedures have been established for the storage of water-quality-control data within the USGS. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples.

### **Blank Samples**

Blank samples are collected and analyzed to ensure that environmental samples have not been contaminated by the overall data-collection process. The blank solution used to develop specific types of blank samples is a solution that is free of the analytes of interest. Any measured value signal in a blank sample for an analyte (a specific component measured in a chemical analysis) that was absent in the blank solution is believed to be due to contamination. Many types of blank samples are possible, and each is designed to segregate a different part of the overall data-collection process. The type of blank samples collected in this District are:

**Field blank**—A blank solution that is subjected to all aspects of sample collection, field processing, preservation, transportation, and laboratory handling as an environmental sample.

**Trip blank**—A blank solution that is put in the same type of bottle used for an environmental sample and kept with the set of sample bottles before and after sample collection.

**Equipment blank**—a blank solution that is processed through all equipment used for collecting and processing an environmental sample (similar to a field blank but normally done in the more controlled conditions of the office).

**Sampler blank**—A blank solution that is poured or pumped through the same field sampler used for collecting an environmental sample.

**Filter blank**—A blank solution that is filtered in the same manner and through the same filter apparatus used for an environmental sample.

**Splitter blank**—A blank solution that is mixed and separated using a field splitter in the same manner and through the same apparatus used for an environmental sample.

**Preservation blank**—A blank solution that is treated with the sampler preservatives used for an environmental samples.

**Canister blank**—Blank water placed into a storage canister for VOC sampler and subsequently placed into sample container; operations are performed in a clean environment.

**Source solution blank**—Blank water placed directly in the sample container but in a clean environment.

**Ambient blank**—Blank water placed directly in the sample container in the same environment as the environmental sample.

### **Reference Samples**

Reference material is a solution or material prepared by a laboratory whose composition is certified for one or more properties so that it can be used to assess a measurement method. Samples of reference material are submitted for analysis to ensure that an analytical method is accurate for the known properties of the reference material. Generally, the selected reference material properties are similar to the environmental sample properties.

### **Replicate Samples**

Replicate samples are a set of environmental samples collected in a manner so that the samples are thought to be essentially identical in composition. Replicate is the general case for which a duplicate is the special case consisting of two samples. Replicate samples are collected and analyzed to establish the amount of variability in the data contributed by some part of the collection and analytical process. Many types of replicate samples are possible. Each may yield slightly different results in a dynamic hydrologic setting, such as a flowing stream. The types of replicate samples collected in this District are:

**Concurrent samples**—Samples collected by two or more persons collecting sample simultaneously, or by one person alternating the samples between two or more collection containers.

**Sequential samples**—A type of replicate sample in which the samples are collected one after the other, typically over a short time.

**Split sample**—A type of replicate sample in which a sample is split into subsamples contemporaneous in time and space.

#### **Spike Samples**

Spike samples are samples to which known quantities of a solution with one or more well-established analyte concentrations have been added. These samples are analyzed to determine the extent of matrix interference or degradation on the analyte concentration during sample processing and analysis.

### **Records of Ground-Water Quality**

Records of ground-water quality in this report differ from other types of records in that for most sampling sites they consist of only one set of measurements for the water year. The quality of ground water ordinarily changes only slowly; therefore, for most general purposes, one annual sampling, or only a few samples taken at infrequent intervals during the year, is sufficient. Frequent measurement of the same constituents is not necessary unless one is concerned with a particular problem, such as monitoring for trends in nitrate concentration. In the special cases where the quality of ground water may change more rapidly, more frequent measurements are made to identify the nature of the changes.

#### **Data Collection and Computation**

The majority of the records of ground-water quality in this report were collected by Arizona Department of Water Resources personnel. Ground-water samples are collected annually from a network of about 150 wells and springs throughout the State. The samples are analyzed for major ions, nutrients, and some cases, for metals if they are known to be present. The remaining records were obtained as a part of special studies in specific areas. A number of chemical analyses are presented for some ground-water areas but none are presented for others. As a result, the records for this year, by themselves, do not provide a balanced view of ground-water quality Statewide. Such a view can be attained only by considering records for this year in context with similar records obtained for these and other ground-water areas in earlier years.

Most methods for collecting and analyzing water samples are described in the USGS TWRI publications referred to in the "On-site Measurements and Sample Collection" and the "Laboratory Measurements" sections in this data report. In addition, the TWRI, book 1, chap. D2, describes guidelines for the collection and field analysis of ground-water samples for selected unstable constituents. The values reported in this report represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. These methods are consistent with ASTM standards and generally follow ISO standards. All samples were obtained by trained personnel. The wells sampled were pumped long enough to assure that the water collected came directly from the aquifer and had not been exposed to the atmosphere and to the well-casing material.

#### **Data Presentation**

The records of ground-water quality are published in a section titled "Quality of Water in Selected Wells in Ground-Water Areas in Arizona" immediately following the water-level records. Data for quality

of ground water are listed alphabetically by ground-water area, and are identified by local well number. Each record consists of two parts—the site information table and the table containing the chemical analyses of the ground water. The REMARK codes listed for surface-water-quality records also are applicable to ground-water-quality records.

## ACCESS TO WATSTORE DATA

The USGS is the principal Federal water-data agency and, as such, collects and disseminates about 70 percent of the water data currently being used by numerous State, local, private, and other Federal agencies to develop and manage our water resources. As part of the USGS's program of releasing water data to the public, a large-scale computerized system has been developed for the storage and retrieval of water data collected through its activities. The National Water Data Storage and Retrieval System (WATSTORE) was established in 1972 to provide an effective and efficient means for the processing and maintenance of water data collected through the activities of the USGS and to facilitate release of the data to the public. A variety of useful products, ranging from data tables to complex statistical analyses such as log-Pearson Type III, can be produced using WATSTORE. The system resides on the central computer facilities of the USGS at its National Center in Reston, Virginia, and consists of related files and data bases.

- \* Station Header File—Contains descriptive information on more than 440,000 sites throughout the United States and its territories where the USGS collects or has collected data.
- \* Daily Value File—Contains more than 220 million daily values of streamflows, stages, reservoir contents, water temperatures, specific conductances, sediment concentrations, sediment discharges, and ground-water levels.
- \* Peak Flow File—Contains approximately 500,000 maximum (peak) streamflow and gage-height values at surface-water sites.
- \* Water Quality File—Contains approximately 2 million analyses of water samples that describe the chemical, physical, biological, and radiochemical characteristics of surface water and ground water.
- \* Ground-Water Site Inventory Data Base—Contains inventory data for more than 900,000 wells, springs, and other sources of ground water. The data includes site location, geohydrologic characteristics, well-construction history, and one-time field measurements, such as water temperature.

In 1976, the USGS opened WATSTORE to the public for direct access. The signing of a Memorandum of Agreement with the Survey is required to obtain direct access to WATSTORE. The system can be accessed either synchronously or asynchronously. The requester will be expected to pay all computer costs that are incurred. Direct access may be obtained by contacting:

U.S. Geological Survey  
National Water Data Exchange  
421 USGS National Center  
Reston, VA 20192

In addition to providing direct access to WATSTORE, data can be provided in various machine-readable formats on magnetic tape or 5-1/4-inch floppy disk; and, as noted in the introduction, on CD-ROM discs. Beginning with the 1990 water year, all water-data reports will also be available on Compact Disc - Read Only Memory (CD-ROM). All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division's District offices (See address on back of the

title page). A limited number of CD-ROM discs will be available for sale by the USGS Information Services, Box 25286, Denver Federal Center, Denver, Colorado 80225.

## DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report are defined below. See the table for converting inch-pound units to International System (SI) Units on the inside of the back cover.

*Acre-foot* (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

*Algae* are mostly aquatic single-celled, colonial, or multicelled plants containing chlorophyll and lacking roots, stems, and leaves.

*Alkalinity* is the capacity of solutes in an aqueous system to neutralize acid.

*Aquifer* is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

*Artesian* means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by a well. A flowing artesian well is one in which the water level is above the land surface.

*Bacteria* are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, and often clumped into colonies. Some bacteria cause disease, while others perform an essential role in nature in the recycling of materials such as by decomposing organic matter into a form available for reuse by plants.

*Total coliform bacteria* are a particular group of bacteria that are used as indicators of possible sewage pollution. This group includes coliforms that inhabit the intestine of warm-blooded animals and those that inhabit soils. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria, which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C±1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

*Fecal coliform bacteria* are bacteria that are present in the intestines or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory, they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44.5°C±0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

*Fecal streptococcal bacteria* are bacteria found in the intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria that are capable of growth in brain-heart infusion broth. In the laboratory, they are defined as all the organisms that produce red or pink colonies within 48 hours at 35°C±1.0°C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as numbers of colonies per 100 mL of sample.

*Bed material* is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

*Biochemical oxygen demand* (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by micro-organisms, such as bacteria.

*Biomass* is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

*Ash mass* is the mass or amount of residue present after the residue from the dry-mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash-mass values of zooplankton and phytoplankton are expressed in grams per cubic meter ( $\text{g/m}^3$ ), and periphyton and benthic organisms in grams per square meter ( $\text{g/m}^2$ ).

*Dry mass* refers to the mass of residue present after drying in an oven at 105°C for zooplankton and periphyton until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass.

*Organic mass* or volatile mass of the living substance is the difference between the dry mass and the ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

*Wet mass* is the mass of living matter plus contained water.

*Blank solution* is a solution that is free of the analytes of interest.

*Bottom material*: See "Bed Material."

*Cells/volume* refers to the number of cells of any organism that are counted by using a microscope and grid or counting cells. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually in milliliters (mL) or liters (L).

*Chemical oxygen demand* (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with BOD or with carbonaceous organic pollution from sewage or industrial wastes.

*Chlorophyll* refers to the green pigments of plants. Chlorophyll *a* and *b* are the two most common pigments in plants.

*Color unit* is produced by 1 mg/L of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

*Contents* is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

*Control* designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

*Control structure* as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of saltwater.

*Cubic foot per second* ( $\text{ft}^3/\text{s}$ ) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute.

*Cubic foot per second-day* (cfs.d) is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. The flow is equivalent to 86,400 cubic feet, which is about 1.9835 acre-feet, or about 646,000 gallons or 2,445 cubic meters.

*Discharge* is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

*Annual 7-day minimum* is the lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1–March 31). The date shown in the summary statistics table is the first day of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

*Mean discharge* (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

*Instantaneous discharge* is the discharge at a particular instant of time.

*Dissolved* refers to that material in a representative water sample that passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

*Dissolved-solids concentration* of water is determined either analytically or by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual



constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

*Diversity index* is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = - \sum_{i=1}^s \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

where  $n_i$  is the number of individuals per taxon,  $n$  is the total number of individuals, and  $s$  is the total number of taxa in the sample of the community. Diversity-index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

*Drainage area* of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given include all closed basins, or noncontributing areas, within the area unless otherwise noted.

*Drainage basin* is a part of the surface of the Earth that is occupied by a drainage system, which consists of a surface stream or body of impounded surface water, together with all tributary surface streams and bodies of impounded surface water.

*Gage datum* is the elevation of the zero point of the reference gage from which gage height is determined as compared to the National Geodetic Vertical Datum of 1929. This elevation is established by a system of levels from known bench marks or by approximation from topographic maps.

*Gage height* (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

*Gaging station* is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

*Hardness* of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap that is required to produce lather. It is computed as the sum of equivalents of polyvalent cations and is expressed as the equivalent concentration of calcium carbonate ( $\text{CaCO}_3$ ).

*Hydrologic Benchmark Network* is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

*Hydrologic unit* is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

*Land-surface datum* (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

*Measuring point* (MP) is an arbitrary permanent reference point from which the distance to the water surface in a well is measured to obtain the water level.

*Micrograms per gram* (UG/G,  $\mu\text{g/g}$ ) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

*Micrograms per liter* (UG/L,  $\mu\text{g/L}$ ) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

*Microsiemens per centimeter* (US/CM,  $\mu\text{S}/\text{cm}$ ) is a unit expressing the amount of electrical conductivity of a solution as measured between opposite faces of a centimeter cube of solution at a specified temperature. Siemens is the International System of units nomenclature, is synonymous with mhos, and is the reciprocal of resistance in ohms.

*Milligrams per liter* (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in milligrams per liter and is based on the mass of dry sediment per liter of water-sediment mixture.

*Miscellaneous site* is a location other than continuous- or partial-record stations where random discharge measurements are made or samples are collected to give better areal coverage of unusual flow events or water-quality conditions in a river basin.

*Most probable number* (MPN) is an index of the number of coliform bacteria, which more probably than any other number, would give the results shown by the laboratory examination; it is not an actual enumeration. MPN is determined from the distribution of gas-positive culture among multiple inoculated tubes.

*National Geodetic Vertical Datum of 1929* (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

*Organism* is any living entity, such as an insect, phytoplankter, or zooplankter.

*Organism count/area* refers to the number of organisms collected and enumerated in a sample and adjusted to the number per unit area of the habitat, usually square meter ( $\text{m}^2$ ), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

*Organism count/volume* refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

*Total organism count* is the total number of organisms collected and enumerated in any particular sample.

*Parameter code* is a 5-digit number used in the USGS computerized data system, National Water Information System (NWIS) to uniquely identify a specific constituent. The codes used in NWIS are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The U.S. Environmental Protection Agency assigns and approves all requests for new codes.

*Partial-record station* is a particular site where limited streamflow and (or) water-quality data are collected systematically over a period of years for use in hydrologic analyses.

*Particle size* is the diameter, in millimeters (mm), of a particle determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

*Particle-size classification* used in this report agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classifi- cation	Size (millimeters)	Method of analysis	Classifi- cation	Size (millimeters)	Method of analysis
Clay	0.00024–0.004	Sedimentation	Sand	0.062–2.0	Sedimentation or sieve
Silt	.004–.062	Sedimentation	Gravel	2.0–64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic matter is removed, and the sample is subjected to mechanical

and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for analysis of native water.

*Percent composition* is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population in terms of types, numbers, mass, or volume.

*Periphyton* is the assemblage of micro-organisms attached to and living on submerged solid surfaces. Although periphyton primarily consist of algae, periphyton also include bacteria, fungi, protozoa, rotifers, and other small organisms.

*Pesticides* are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

*pH* of water is the negative logarithm of the hydrogen-ion activity. Solutions with pH less than 7 are acidic, solutions with a pH greater than 7 are basic, and solutions with a pH of 7 are neutral. The presence and concentration of many dissolved chemical constituents found in water are, in part, influenced by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms also are influenced, in part, by the hydrogen-ion activity of water.

*Picocurie* (PC, pCi) is one trillionth ( $1 \times 10^{-12}$ ) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields  $3.7 \times 10^{10}$  radioactive disintegrations per second. A picocurie yields 2.22 disintegrations per minute (dpm).

*Plankton* is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

*Phytoplankton* is the plant part of the plankton. They usually are microscopic, and their movement is subject to water currents. Phytoplankton growth depends upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect on the quality of the water. They are the primary food producers in the aquatic environment and are commonly known as algae.

*Blue-green algae* are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

*Diatoms* are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

*Green algae* have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

*Zooplankton* is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column, and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

*Polychlorinated biphenyls* (PCB's) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

*Primary productivity* is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

*Milligrams of carbon per area or volume per unit time* [ $\text{mgC}/(\text{m}^2/\text{time})$ ] for periphyton and macrophytes and [ $\text{mgC}/(\text{m}^3/\text{time})$ ] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon-14 method is of greater sensitivity than the oxygen-light and dark-bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

*Milligrams of oxygen per area or volume per unit time [mgO/(m<sup>2</sup>/time)] for periphyton and macrophytes and [mgO/(m<sup>3</sup>/time)] for phytoplankton* are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light- and dark-bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day depending on the incubation period.

*Radiochemical program* is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

*Recoverable from bottom material* is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

*Return period* is the average time interval between occurrence of a hydrological event of a given or greater magnitude, usually expressed in years. The return period also may be called recurrence interval.

*Runoff in inches (IN, in)* shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

*Sea level:* In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD 1929)—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

*Sediment* is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

*Bed load* is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed in close proximity to the streambed. In this report, bed load is considered to consist of particles in transit within 0.25 ft of the streambed.

*Bed-load discharge* (tons per day) is the quantity of bed load measured by dry weight that moves past a section as bed load in a given time.

*Suspended sediment* is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

*Suspended-sediment concentration* is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture. The entire sample is used for the analysis.

*Mean concentration* is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

*Suspended-sediment discharge* (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day as follows: concentration, in milligrams per liter, times discharge, in cubic feet per second, times 0.0027.

*Suspended-sediment load* is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

*Suspended total residue at 105°C concentration* is the concentration of suspended sediment in the sampled zone expressed as milligrams of dry sediment per liter of water-sediment mixture in milligrams per liter. A small aliquot of the sample is used for the analysis.

*Total sediment discharge* (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry mass or volume, that passes a section during a given time.

*Total-sediment load* or total load is a term that refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

*Sodium-adsorption-ratio* (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those that can be used for irrigation on almost all soils to those that generally are unsatisfactory for irrigation.

*Solute* is any substance that is dissolved in water.

*Specific conductance* is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solutions and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is from 55 to 75 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

*Stable isotope ratio per mil* ( $\delta$ ), is a measure of the isotopic composition of a water sample compared to the composition of a standard reference. Different sources of an element may have unique isotopic compositions that act as identification tools for that source. This ratio is calculated using the following equation:

$$\delta = \frac{R(\text{sample}) - R(\text{reference})}{R(\text{reference})} \times 1,000,$$

where  $R$  equals the ratio as isotopic concentrations. The standard reference for the hydrogen and oxygen isotope ratios presented in this report is Vienna Standard Mean Ocean Water (*V-SMOW*).

*Stage-discharge relation* is the relation between gage height (stage) and the volume of water, per unit of time, flowing in a channel.

*Streamflow* is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

*Substrate* is the physical surface upon which an organism lives.

*Natural substrate* refers to any naturally occurring immersed or submersed solid surface, such as a rock or tree, on which an organism lives.

*Artificial substrate* is a device that is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton.

*Surface area* of a lake is that area outlined on the latest USGS topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimeted. All areas shown are those for the stage when the planimeted map was made.

*Surficial bed material* is the part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

*Suspended* (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. The term "suspended" is associated with material retained on a 0.45-micrometer filter.

*Suspended, recoverable* is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45-micrometer membrane filter has been digested by a method (usually using a dilute-acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results. Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

*Suspended, total* is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45-micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total." Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

*Taxonomy* is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, *Hexagenia limbata*, is the following:

Kingdom	Animal
Phylum	Arthropoda
Class	Insecta
Order	Ephemeroptera
Family	Ephemeridae
Genus	<i>Hexageria</i>
Species	<i>Hexagenia limbata</i>

*Thermograph* is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table headings and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

*Time-weighted average* is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

*Tons per acre-foot* indicates the dry mass of dissolved solids in 1 acre-ft of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

*Tons per day (T/DAY)* is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

*Total* is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note

that the word "total" does double duty here, indicating that the sample consists of a water-suspended sediment mixture and that the analytical method determined all of the constituent in the sample.)

*Total discharge* is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

*Total, recoverable* is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses, because different digestion procedures are likely to produce different analytical results.

*Turbidity* of a sample is the reduction of transparency due to the presence of particulate matter. In this report it is expressed in nephelometric turbidity units (NTU), obtained from the nephelometric method for turbidity determination which measures the intensity of light scattered by suspended particles at 90° from the path of incident light source.

*Volatile organic compounds (VOC)* are organic compounds that can be isolated from the water phase of a sample by purging the water sample with inert gas, such as helium, and subsequently analyzing by gas chromatography. Many VOC's are manmade chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. VOC's often are components of fuels, solvents, hydraulic fluids, paint thinners, and dry-cleaning agents commonly used in urban settings. Contamination of drinking-water supplies by VOC's is a human health concern because many VOC's are toxic and are known or suspected human carcinogens.

*Water year* in USGS reports dealing with surface-water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and includes 9 of the 12 months. Thus, the year ending September 30, 1999, is called the "1999 water year."

*WDR* is used as an abbreviation for "Water-Data Reports" in the summary REVISIONS paragraph to refer to previously published State annual basic-data reports.

*Weighted average* is the discharge-weighted average and it is computed by multiplying the discharge for a sampling period by the concentration of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

*WSP* is used as an abbreviation for "Water-Supply Paper" in reference to previously published reports.

**TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS OF THE U.S. GEOLOGICAL SURVEY**

The U.S.G.S. publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, section A of book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S.G.S., Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be made in the form of a check or money order payable to the "U.S. Geological Survey." Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and mention the "U.S. Geological Survey Techniques of Water-Resources Investigations."

**Book 1. Collection of Water Data by Direct Measurement****Section D. Water Quality**

- 1-D1. *Water temperature—influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J.F. Ficke, and G. F. Smoot: USGS-TWRI book 1, chap. D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W.W. Wood: USGS-TWRI book 1, chap. D2. 1976. 24 pages.

**Book 2. Collection of Environmental Data****Section D. Surface Geophysical Methods**

- 2-D1. *Application of surface geophysics to ground-water investigations*, by A.A. R. Zohdy, G.P. Eaton, and D.R. Mabey: USGS-TWRI book 2, chap. D1. 1974. 116 pages.
- 2-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F.P. Haeni: USGS-TWRI book 2, chap. D2. 1988. 86 pages.

**Section E. Subsurface Geophysical Methods**

- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W.S. Keys and L.M. MacCary: USGS-TWRI book 2, chap. E1. 1971. 126 pages.
- 2-E2. *Borehole geophysics applied to ground-water investigations*, by W.S. Keys: USGS-TWRI book 2, chap. E2. 1990. 150 pages.

**Section F. Drilling and Sampling Methods**

- 2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W.E. Teasdale: USGS-TWRI book 2, chap. F1. 1989. 97 pages.

**Book 3. Applications of Hydraulics****Section A. Surface-Water Techniques**

- 3-A1. *General field and office procedures for indirect discharge measurements*, by M.A. Benson and Tate Dalrymple: USGS-TWRI book 3, chap. A1. 1967. 30 pages.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M.A. Benson: USGS-TWRI book 3, chap. A2. 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G.L. Bodhaine: USGS-TWRI book 3, chap. A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H.F. Matthai: USGS-TWRI book 3, chap. A4. 1967. 44 pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS-TWRI book 3, chap. A5. 1967. 29 pages.



- 3-A6. *General procedure for gaging streams*, by R.W. Carter and Jacob Davidian: USGS-TWRI book 3, chap. A6. 1968. 13 pages.
- 3-A7. *Stage measurement at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS-TWRI book 3, chap. A7. 1968. 28 pages.
- 3-A8. *Discharge measurements at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS-TWRI book 3, chap. A8. 1969. 65 pages.
- 3-A9. *Measurement of time of travel in streams by dye tracing*, by F.A. Kilpatrick and J.F. Wilson, Jr.: USGS-TWRI book 3, chap. A9. 1989. 27 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E.J. Kennedy: USGS-TWRI book 3, chap. A10. 1984. 59 pages.
- 3-A11. *Measurement of discharge by the moving-boat method*, by G.F. Smoot and C.E. Novak: USGS-TWRI book 3, chap. A11. 1969. 22 pages.
- 3-A12. *Fluorometric procedures for dye tracing*, Revised, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS-TWRI book 3, chap. A12. 1986. 34 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E.J. Kennedy: USGS-TWRI book 3, chap. A13. 1983. 53 pages.
- 3-A14. *Use of flumes in measuring discharge*, by F.A. Kilpatrick and V.R. Schneider: USGS-TWRI book 3, chap. A14. 1983. 46 pages.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS-TWRI book 3, chap. A15. 1984. 48 pages.
- 3-A16. *Measurement of discharge using tracers*, by F.A. Kilpatrick and E.D. Cobb: USGS-TWRI book 3, chap. A16. 1985. 52 pages.
- 3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS-TWRI book 3, chap. A17. 1985. 38 pages.
- 3-A18. *Determination of stream reaeration coefficients by use of tracers*, by F.A. Kilpatrick, R.E. Rathbun, Nobuhiro Yotsukura, G.W. Parker, and L.L. DeLong: USGS-TWRI book 3, chap. A18. 1989. 52 pages.
- 3-A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS-TWRI book 3, chap. A19. 1990. 31 pages.
- 3-A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F.A. Kilpatrick: USGS-TWRI book 3, chap. A20. 1993. 38 pages.
- 3-A21. *Stream-gaging cableways*, by C. Russell Wagner: USGS-TWRI book 3, chap. A21. 1995. 56 pages.

#### **Section B. Ground-Water Techniques**

- 3-B1. *Aquifer-test design, observation, and data analysis*, by R.W. Stallman: USGS-TWRI book 3, chap. B1. 1971. 26 pages.
- 3-B2. *Introduction to ground-water hydraulics, a programmed text for self-instruction*, by G.D. Bennett: USGS-TWRI book 3, chap. B2. 1976. 172 pages.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J.E. Reed: USGS-TWRI book 3, chap. B3. 1980. 106 pages.
- 3-B4. *Regression modeling of ground-water flow*, by R.L. Cooley and R.L. Naff: USGS-TWRI book 3, chap. B4. 1990. 232 pages.
- 3-B4. *Supplement 1. Regression modeling of ground-water flow --Modifications to the computer code for nonlinear regression solution of steady-state ground-water flow problems*, by R.L. Cooley: USGS-TWRI book 3, chap. B4. 1993. 8 pages.
- 3-B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems—An introduction*, by O.L. Franke, T.E. Reilly, and G.D. Bennett: USGS-TWRI book 3, chap. B5. 1987. 15 pages.

- 3-B6. *The principle of superposition and its application in ground-water hydraulics*, by T.E. Reilly, O.L. Franke, and G.D. Bennett: USGS-TWRI book 3, chap. B6. 1987. 28 pages.
- 3-B7. *Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uniform flow*, by E.J. Wexler: USGS-TWRI book 3, chap. B7. 1992. 190 pages.

### **Section C. Sedimentation and Erosion Techniques**

- 3-C1. *Fluvial sediment concepts*, by H.P. Guy: USGS-TWRI book 3, chap. C1. 1970. 55 pages.
- 3-C2. *Field methods for measurement of fluvial sediment*, by H.P. Guy and V.W. Norman: USGS-TWRI book 3, chap. C2. 1970. 59 pages.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS-TWRI book 3, chap. C3. 1972. 66 pages.

## **Book 4. Hydrologic Analysis and Interpretation**

### **Section A. Statistical Analysis**

- 4-A1. *Some statistical tools in hydrology*, by H.C. Riggs: USGS-TWRI book 4, chap. A1. 1968. 39 pages.
- 4-A2. *Frequency curves*, by H.C. Riggs: USGS-TWRI book 4, chap. A2. 1968. 15 pages.

### **Section B. Surface Water**

- 4-B1. *Low-flow investigations*, by H.C. Riggs: USGS-TWRI book 4, chap. B1. 1972. 18 pages.
- 4-B2. *Storage analyses for water supply*, by H.C. Riggs and C.H. Hardison: USGS-TWRI book 4, chap. B2. 1973. 20 pages.
- 4-B3. *Regional analyses of streamflow characteristics*, by H.C. Riggs: USGS-TWRI book 4, chap. B3. 1973. 15 pages.

### **Section D. Interrelated Phases of the Hydrologic Cycle**

- 4-D1. *Computation of rate and volume of stream depletion by wells*, by C.T. Jenkins: USGS-TWRI book 4, chap. D1. 1970. 17 pages.

## **Book 5. Laboratory Analysis**

### **Section A. Water Analysis**

- 5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M.J. Fishman and L.C. Friedman, editors: USGS-TWRI book 5, chap. A1. 1989. 545 pages.
- 5-A2. *Determination of minor elements in water by emission spectroscopy*, by P.R. Barnett and E.C. Mallory, Jr.: USGS-TWRI book 5, chap. A2. 1971. 31 pages.
- 5-A3. *Methods for the determination of organic substances in water and fluvial sediments*, edited by R.L. Wershaw, M.J. Fishman, R.R. Grabbe, and L.E. Lowe: USGS-TWRI book 5, chap. A3. 1987. 80 pages.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, by L.J. Britton and P.E. Greenson, editors: USGS-TWRI book 5, chap. A4. 1989. 363 pages.
- 5-A5. *Methods for determination of radioactive substances in water and fluvial sediments*, by L.L. Thatcher, V.J. Janzer, and K.W. Edwards: USGS-TWRI book 5, chap. A5. 1977. 95 pages.
- 5-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments*, by L.C. Friedman and D.E. Erdmann: USGS-TWRI book 5, chap. A6. 1982. 181 pages.

### **Section C. Sediment Analysis**

- 5-C1. *Laboratory theory and methods for sediment analysis*, by H.P. Guy: USGS-TWRI book 5, chap. C1. 1969. 58 pages.

**Book 6. Modeling Techniques****Section A. Ground Water**

- 6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M.G. McDonald and A.W. Harbaugh: USGS-TWRI book 6, chap. A1. 1988. 586 pages.
- 6-A2. *Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model*, by S.A. Leake and D.E. Prudic: USGS-TWRI book 6, chap. A2. 1991. 68 pages.
- 6-A3. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 1: Model Description and User's Manual*, by L.J. Torak: USGS-TWRI book 6, chap. A3. 1993. 136 pages.
- 6-A4. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 2: Derivation of finite-element equations and comparisons with analytical solutions*, by R.L. Cooley: USGS-TWRI book 6, chap. A4. 1992. 108 pages.
- 6-A5. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 3: Design philosophy and programming details*, by L.J. Torak: USGS-TWRI book 6, chap. A5, 1993. 243 pages.
- 6-A6. *A coupled surface-water and ground-water flow model (MODBRANCH) for simulation of stream-aquifer interaction*, by Eric D. Swain and Eliezer J. Wexler. 1996. 125 pages.

**Book 7. Automated Data Processing and Computations****Section C. Computer Programs**

- 7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P.C. Trescott, G.F. Pinder, and S.P. Larson: USGS-TWRI book 7, chap. C1. 1976. 116 pages.
- 7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L.F. Konikow and J.D. Bredehoeft: USGS-TWRI book 7, chap. C2. 1978. 90 pages.
- 7-C3. *A model for simulation of flow in singular and interconnected channels*, by R.W. Schaffranek, R.A. Baltzer, and D.E. Goldberg: USGS-TWRI book 7, chap. C3. 1981. 110 pages.

**Book 8. Instrumentation****Section A. Instruments for Measurement of Water Level**

- 8-A1. *Methods of measuring water levels in deep wells*, by M.S. Garber and F.C. Koopman: USGS-TWRI book 8, chap. A1. 1968. 23 pages.
- 8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J.D. Craig: USGS-TWRI book 8, chap. A2. 1983. 57 pages.

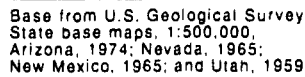
**Section B. Instruments for Measurement of Discharge**

- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G.F. Smoot and C.E. Novak: USGS-TWRI book 8, chap. B2. 1968. 15 pages.

**Book 9. Handbooks for Water-Resources Investigations****Section A. National Field Manual for the Collection of Water-Quality Data**

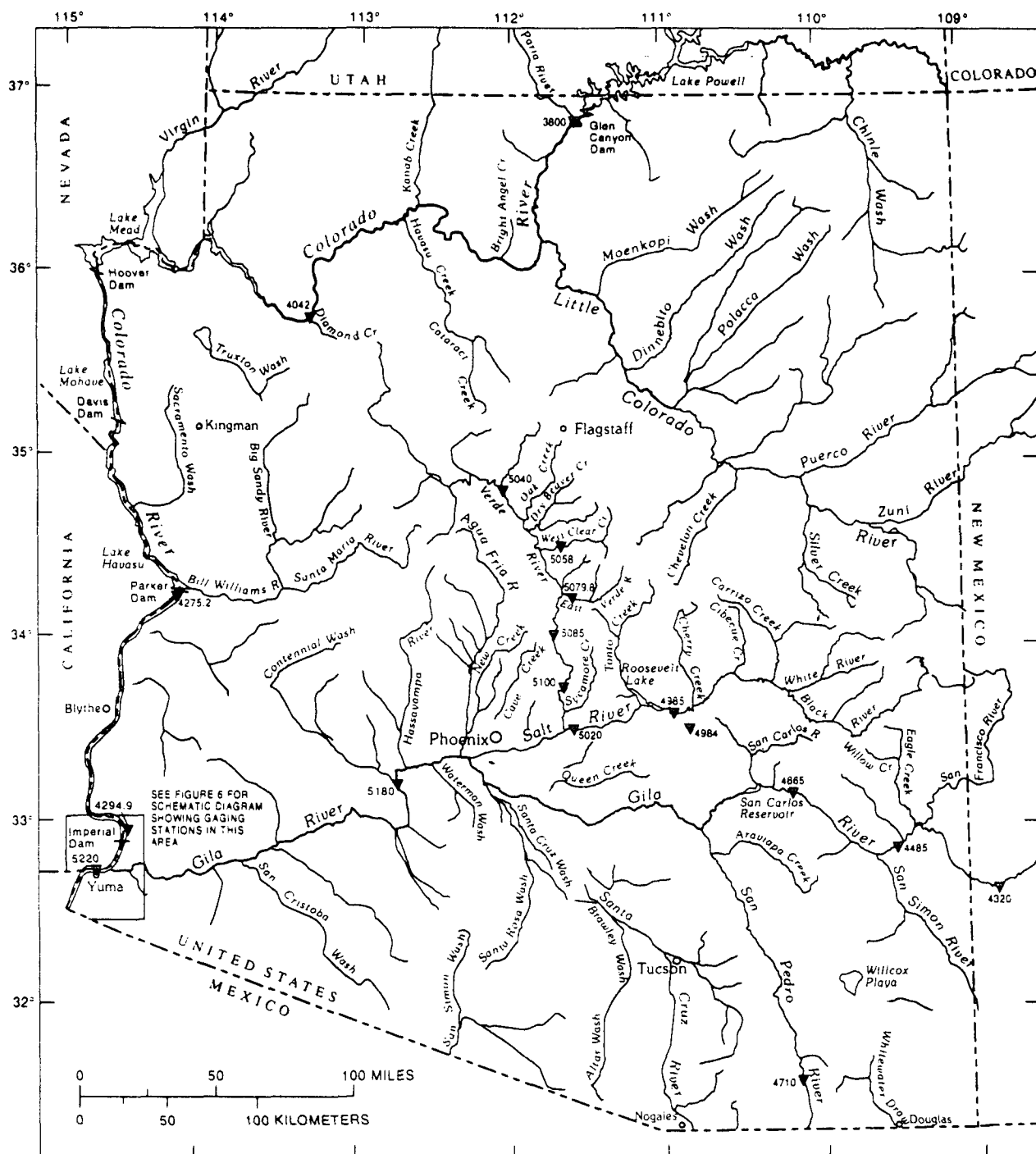
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- 9-A2. *National Field Manual for the Collection of Water-Quality Data: Selection of Equipment for Water Sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS-TWRI book 9, chap. A2. 1998. 94 p.

- 9-A3. *National Field Manual for the Collection of Water-Quality Data: Cleaning of Equipment for Water Sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS-TWRI book 9, chap. A3. 1998. 75 p.
- 9-A4. *National Field Manual for the Collection of Water-Quality Data: Collection of Water Samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS-TWRI book 9, chap. A4. 1999. 156 p.
- 9-A5. *National Field Manual for the Collection of Water-Quality Data: Processing of Water Samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS-TWRI book 9, chap. A5. 1999, 149 p.
- 9-A6. *National Field Manual for the Collection of Water-Quality Data: Field Measurements*, edited by F.D. Wilde and D.B. Radtke: USGS-TWRI book 9, chap. A6. 1998. Variously paginated.
- 9-A7. *National Field Manual for the Collection of Water-Quality Data: Biological Indicators*, edited by D.N. Myers and F.D. Wilde: USGS-TWRI book 9, chap. A7. 1997 and 1999. Variously paginated.
- 9-A8. *National Field Manual for the Collection of Water-Quality Data: Bottom-material samples*, by D.B. Radtke: USGS-TWRI book 9, chap. A8. 1998. 48 pages.
- 9-A9. *National Field Manual for the Collection of Water-Quality Data: Safety in Field Activities*, by S.L. Lane and R.G. Fay: USGS-TWRI book 9, chap. A9. 1998. 60 pages.



▲ 4685 STREAMFLOW-GAGING STATION AND  
ABBREVIATED NUMBER—Complete  
station number is 09466500

**Figure 4. Streamflow-gaging stations, water year 1999.**



Base from U.S. Geological Survey  
State base maps, 1:500,000,  
Arizona, 1974; Nevada, 1965;  
New Mexico, 1965; and Utah, 1959

#### EXPLANATION

4710 ▼ WATER-QUALITY STATION AND ABBRE-  
VIATED NUMBER—Complete station  
number is 09471000

Figure 5. Surface-water-quality stations, water year 1999.

## HYDROLOGIC-DATA STATION RECORDS

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## LITTLE COLORADO RIVER BASIN

09379180 LAGUNA CREEK AT DENNEHOTSO, AZ

LOCATION.--Lat 36°51'14", long 109°50'43", in unsurveyed Apache County, Hydrologic Unit 14080204, on right bank about 50 ft upstream from bridge, at Dennehotso, AZ.

DRAINAGE AREA.--414 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1996 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,985 ft above sea level, from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD --Maximum discharge, 1,690 ft<sup>3</sup>/s, Sept. 16, 1997, gage height, 11.39 ft; minimum daily discharge, 0.00 ft<sup>3</sup>/s on many days.EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,380 ft<sup>3</sup>/s, July 28, gage height 10.21 ft; minimum daily discharge, 0.00 ft<sup>3</sup>/s on many days.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	19	5.1	e1.7	e.40	1.4	2.8	.18	.00	.00	6.4	7.1
2	2.6	6.6	5.1	e2.9	e.70	.95	.79	.14	.00	.00	4.6	10
3	1.5	7.0	4.3	e5.5	e3.8	.82	3.7	.17	.00	.00	17	4.3
4	.83	4.8	4.3	e4.4	e3.2	.67	11	.20	.00	.00	54	2.3
5	.59	3.7	3.9	e3.4	e3.8	.48	25	.15	.00	.00	62	.95
6	3.1	3.7	3.3	e3.2	e3.8	.45	13	1.7	.90	.00	11	.48
7	2.2	4.0	3.6	e3.7	e2.9	.40	5.8	.16	.00	.00	5.8	.19
8	1.9	5.1	1.0	e1.9	6.2	.38	2.4	.13	.00	.08	2.2	.07
9	2.3	47	1.1	e1.6	4.5	.38	1.6	.04	.00	14	3.5	.30
10	1.9	27	.66	e3.5	5.0	2.2	.65	.00	.00	87	1.8	.04
11	1.6	9.6	1.5	e3.8	2.8	1.5	.46	.00	.00	9.1	5.9	66
12	.98	6.6	.94	e3.6	e.80	.52	.47	.00	.00	2.3	2.7	53
13	.33	7.2	.20	e2.5	e.60	.57	.50	.00	.00	.81	1.6	11
14	.07	6.3	.05	e2.9	e.50	1.0	.53	.00	.00	.39	.93	10
15	.21	4.8	.01	e3.6	e1.4	1.5	.80	.00	.00	38	1.0	4.1
16	.22	4.8	.25	7.7	e3.8	1.6	.50	.00	.00	28	47	7.3
17	.31	4.9	1.3	6.6	e4.4	1.1	.48	.00	.00	4.5	7.3	9.4
18	1.6	3.9	12	e2.5	e2.8	.99	.51	.00	19	1.6	11	10
19	.87	3.5	10	e4.9	e2.2	.51	.58	.00	13	.73	115	5.2
20	.27	2.6	16	e8.5	e2.4	1.5	.35	.00	1.5	.66	122	2.2
21	2.9	2.0	3.6	7.9	2.1	1.1	.18	.00	.93	.06	22	1.1
22	209	2.3	2.2	4.8	1.7	.51	.26	.00	.00	1.9	5.8	.09
23	30	3.8	2.8	e2.3	2.0	.34	1.1	.00	.00	1.5	3.0	.00
24	13	5.5	1.6	e2.5	.95	.25	13	.00	.00	.03	2.0	4.0
25	11	4.9	5.6	e3.3	1.1	.23	7.3	.00	.00	.00	29	8.3
26	197	3.9	.63	6.7	4.0	1.0	1.6	.00	.00	.00	25	3.4
27	32	3.1	1.2	4.4	5.2	.52	.62	.00	.00	.00	14	1.7
28	13	4.0	.34	3.4	3.2	.55	.31	.00	.00	563	22	.70
29	7.0	4.4	.44	e1.6	---	.55	.27	.00	.00	134	10	.32
30	5.5	4.4	4.1	e.50	---	.54	.15	.00	.00	23	3.2	.33
31	51	---	2.2	e.40	---	1.8	---	.00	---	13	4.7	---
TOTAL	596.48	220.4	105.52	116.20	76.25	26.21	96.71	2.87	33.53	923.06	624.43	223.87
MEAN	19.2	7.35	3.40	3.75	2.72	.65	3.22	.093	1.12	29.8	20.1	7.46
MAX	209	47	16	8.5	6.2	2.2	25	1.7	19	563	122	66
MIN	.07	2.0	.01	.43	.40	.23	.15	.00	.00	.00	.93	.00
AC-FT	1180	437	209	230	151	52	192	5.7	27	1830	1240	444
CAL YR 1998	TOTAL	2484.56	MEAN	6.81	MAX	514	MIN	.00	AC-FT	4930		
WTR YR 1999	TOTAL	3045.53	MEAN	8.34	MAX	563	MIN	.00	AC-FT	6040		

e Estimated

**LOCATION.**---Lat 36°56'38" long 109°42'36" in sec.19, T.41 N., R.25 E. (unsurveyed), Apache County, Hydrologic Unit 14080204, in Navajo Indian Reservation, on right bank 150 ft upstream from bridge on U.S. Highway 160, 3 mi upstream from Walker Creek, 4 mi southwest of Mexican Water, 5 mi downstream from confluence of Chinle Creek and Laguna Creek, and 8 mi upstream from Arizona-Utah State line.

**PERIOD OF RECORD.**--October 1964 to current year (monthly discharge only for 1979). Prior to October 1970 published as Chinle Wash near Mexican Water.

**REVISED RECORDS.--WDR AZ-88-1: Drainage area.**

**GAGE.**--Water-stage recorder, crest-stage gage, and concrete control. Datum of gage is 4,720 ft above sea level.

**REMARKS.**—Records fair except for estimated daily discharges, which are poor. Some diversions upstream for irrigation, livestock tanks, and domestic use. Many Farms Reservoir, about 25 mi upstream, was built in 1939 with an original capacity of 25,000 acre-ft. The reservoir provides off-channel storage for irrigation of about 1,600 acres.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 12,000 m<sup>3</sup>/s Aug. 24, 1982, gage height, 13.87 ft. from rating curve extended above 3,100 m<sup>3</sup>/s on basis of slope-area measurement at gage height 12.50 ft; no flow at times in each year.

**EXTREMES FOR CURRENT PERIOD.--**Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 10.....	1230	2,330	7.15	Aug. 22 .....	2030	869	5.38
July 24.....	1245	1,680	6.46	Aug. 28 .....	2300	1,210	5.90
July 28.....	1930	*6,180	*10.25	Sept. 24 .....	1815	1,430	6.22
Aug. 20.....	2300	892	5.43				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2.5	e30	6.6	e2.5	.81	2.7	e1.1	.78	e.50	.00	e10	316
2	e2.1	e7.0	8.1	e3.0	1.3	2.0	e2.5	.69	e.40	.00	e7.0	e80
3	3.0	e7.0	7.9	e7.0	7.5	2.0	e2.2	.91	e.30	.00	e20	59
4	2.1	e5.0	7.8	e5.0	6.2	2.0	e7.0	.87	.15	.00	e70	14
5	1.3	e4.0	7.9	e4.0	7.3	2.1	e18	.59	.20	.00	e80	17
6	1.5	e4.0	7.1	e4.0	7.4	2.3	e20	.57	.40	.00	e15	17
7	5.1	e10	5.7	e4.0	5.7	2.3	.1	1.1	.27	.00	e5.0	9.8
8	3.9	e8.0	2.2	e3.0	5.7	2.7	3.9	.50	.13	.00	e3.0	3.8
9	3.2	e50	4.1	e3.2	e6.0	2.8	2.7	.34	.66	.69	66	7.3
10	4.1	e30	2.4	e5.0	5.8	2.4	1.9	.41	.04	407	e20	3.2
11	3.2	e15	2.4	e5.0	3.7	4.1	1.3	.32	.77	78	e15	e80
12	2.9	e10	2.6	e5.0	1.7	4.6	1.4	.29	.14	e20	e7.0	e50
13	2.3	e10	2.2	e4.0	1.3	2.7	1.4	.29	.13	e10	e7.0	e20
14	1.5	e8.0	3.3	e4.0	1.0	1.8	.89	.45	.12	e5.0	e5.0	e15
15	.83	e7.0	2.5	e4.0	2.8	2.2	.49	.57	.09	e70	e5.0	e10
16	1.5	e6.0	2.3	e8.0	7.5	2.5	1.8	1.1	.00	e50	e70	e10
17	2.1	e6.0	2.0	e7.0	8.5	3.0	.98	1.2	.60	e15	e50	189
18	1.4	7.7	e12	4.9	5.6	2.8	.87	1.4	.65	e5.0	e30	40
19	3.6	8.5	e10	9.5	4.1	2.2	.66	1.6	e30	e2.0	61	21
20	2.0	7.7	16	17	4.3	1.4	1.0	1.5	e20	e1.2	652	e26
21	4.6	5.5	17	11	2.8	2.1	.72	1.5	e2.0	11	431	e9.3
22	e350	3.6	5.9	8.5	e20.0	2.1	1.8	1.4	.24	7.7	464	3.7
23	e60	4.7	e3.0	4.5	e2.0	1.5	e4.7	1.6	.60	27	135	9.8
24	e15	5.1	e2.0	5.0	e2.5	1.2	e25	1.6	.00	239	29	309
25	e10	5.9	e6.0	6.3	e2.5	.98	6.8	2.0	.00	.87	47	184
26	a300	5.6	1.4	7.2	e4.0	.87	5.0	2.7	.06	.07	44	e11
27	e60	5.5	2.0	5.8	e4.0	1.2	2.1	1.5	.00	.05	51	e3.0
28	e25	4.9	2.5	4.3	2.7	1.7	1.2	2.2	.00	726	420	e7.5
29	e14	6.0	1.5	2.1	---	1.0	1.1	2.8	.00	838	436	5.4
30	e10	6.3	e4.5	1.0	---	1.1	.85	2.4	.00	639	604	3.9
31	e100	---	e2.5	.74	---	1.4	---	e.71	---	142	523	---
TOTAL	998.73	294.0	163.4	165.54	116.71	65.75	126.46	35.89	55.29	3362.89	4382.0	1544.7
MEAN	32.2	9.80	5.27	5.34	4.17	2.12	4.22	1.16	1.84	108	141	51.5
MAX	350	50	17	17	8.5	4.6	25	2.8	30	838	652	316
MIN	.83	3.6	1.4	.74	.81	.87	.49	.29	.00	.00	3.0	3.0
AC-FT	1980	583	324	328	231	130	251	71	110	6670	8690	3060

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1999, BY WATER YEAR (WY)

MEAN	23.1	15.4	8.98	18.3	28.9	25.4	62.1	54.0	5.70	26.2	58.1	39.8
MAX	142	144	41.2	151	169	215	402	294	72.5	129	501	342
(WY)	1973	1988	1966	1993	1988	1983	1985	1980	1973	1975	1982	1982
MIN	.90	.41	1.09	1.60	2.25	.67	.53	.26	.000	.000	.000	.000
(WY)	1978	1991	1978	1996	1996	1967	1996	1989	1975	1979	1974	1979

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1965 - 1999
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ANNUAL TOTAL	7778.21		11311.36						
ANNUAL MEAN	21.3		31.0			30.5			
HIGHEST ANNUAL MEAN						94.2		1982	
LOWEST ANNUAL MEAN						4.47		1974	
HIGHEST DAILY MEAN	560	Sep 13	838	Jul 29		6000	Aug 25	1982	
LOWEST DAILY MEAN	.00	Jun 3	.00	Jun 16		.00	Jul 4	1965	
ANNUAL SEVEN-DAY MINIMUM	.00	Jun 3	.00	Jun 23		.00	Jun 12	1966	
ANNUAL RUNOFF (AC-FT)	15430		22440			22100			
10 PERCENT EXCEEDS	74		50			65			
50 PERCENT EXCEEDS	4.0		3.9			3.3			
90 PERCENT EXCEEDS	.00		.31			.00			

e Estimated .



## 09379900 LAKE POWELL AT GLEN CANYON DAM, AZ

**LOCATION**--Lat 36°56'12", long 111°29'00", in sec.24, T.41 N., R.8 E., Coconino County, Hydrologic Unit 14070006, at Glen Canyon Dam on Colorado River, 900 ft upstream from bridge on U.S. Highway 89, 1.4 mi downstream from Wahweap Creek, 2 mi northwest of Page, and 12 mi downstream from Utah-Arizona State line.

**DRAINAGE AREA**--111,700 mi<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, which is noncontributing.

**PERIOD OF RECORD**--March 1963 to current year.

**GAGE**--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1964, nonrecording gage at same site and datum.

**REMARKS**--Reservoir is formed by concrete-arch gravity dam; storage began Mar. 13, 1963; dam completed September 1963. Total capacity, (from capacity table computed by U.S. Bureau of Reclamations, based on a survey completed in 1985; used since October 1, 1990) 26,215,000 acre-ft consisting of the following: dead storage, 1,893,000 acre-ft below elevation 3,370 ft-sill of outlet gates; usable contents, 24,322,000 acre-ft between elevations 3,370 ft and 3,700 ft-top of conservation pool. Reservoir is used for power development, to provide storage replacement for upstream irrigation development, and to meet downstream requirements under the Colorado River Compact of 1922. Figures given herein represent usable contents; prior to Oct. 1, 1968, figures of total contents were published (prior to sealing of diversion tunnel July 7, 1965, all storage was usable).

**COOPERATION**--Records furnished by U.S. Bureau of Reclamation.

**EXTREMES (at 2400) FOR PERIOD OF RECORD**--Maximum contents, 26,373,000 acre-ft July 14, 1983, elevation, 3,708.34 ft; minimum since power pool level was reached (Aug. 16, 1964), 4,166,000 acre-ft Mar. 18, 1965, elevation, 3,490.76 ft.

**EXTREMES (at 2400) FOR CURRENT YEAR**--Maximum contents, 23,486,000 acre-ft July 18, elevation, 3,694.73 ft; minimum, 20,853,000 acre-ft Apr. 21, 23, elevation, 3,677.20 ft.

Capacity table (elevation, in feet, and usable contents, in acre-feet)

3,610	12,730,000	3,670	19,838,000
3,622	13,976,000	3,682	21,553,000
3,634	15,306,000	3,694	23,373,000
3,646	16,723,000	3,706	25,304,000
3,658	18,232,000		

RESERVOIR STORAGE IN THOUSANDS OF ACRE FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22393	22204	22065	21651	21337	21081	20912	20912	21619	23328	23370	23287
2	22373	22206	22056	21636	21321	21069	20905	20934	21685	23349	23357	23275
3	22376	22201	22044	21626	21316	21056	20918	20955	21755	23368	23362	23264
4	22341	22194	22032	21614	21308	21055	20911	20986	21813	23388	23351	23268
5	22335	22185	22029	21599	21293	21052	20909	21009	21890	23406	23345	23273
6	22319	22182	22018	21585	21287	21040	20909	21029	21955	23414	23345	23279
7	22302	22174	22005	21573	21274	21033	20905	21049	22021	23421	23345	23284
8	22292	22186	21995	21561	21270	21032	20904	21061	22080	23446	23346	23276
9	22233	22182	21991	21549	21267	21026	20905	21072	22134	23450	23340	23267
10	22269	22182	21970	21541	21255	21023	20906	21079	22200	23454	23332	23259
11	22267	22189	21960	21529	21246	21007	20909	21075	22254	23473	23331	23245
12	22258	22177	21948	21513	21239	21006	20902	21071	22317	23476	23328	23247
13	22243	22173	21939	21503	21229	21003	20892	21077	22378	23475	23334	23234
14	22231	22168	21927	21496	21219	21001	20889	21074	22426	23475	23324	23228
15	22216	22165	21912	21489	21211	20990	20880	21078	22472	23468	23332	23215
16	22213	22165	21897	21476	21198	20981	20872	21103	22549	23486	23326	23201
17	22204	22155	21882	21470	21191	20975	20869	21103	22583	23484	23320	23192
18	22195	22149	21866	21463	21180	20967	20866	21108	22653	23486	23314	23167
19	22182	22140	21844	21455	21174	20964	20862	21113	22717	23471	23314	23180
20	22168	22132	21847	21445	21165	20951	20863	21129	22797	23471	23306	23158
21	22165	22122	21845	21430	21142	20942	20853	21140	22866	23471	23310	23130
22	22173	22120	21826	21422	21139	20951	20857	21155	22911	23456	23322	23115
23	22162	22116	21807	21417	21136	20944	20853	21178	22977	23450	23315	23099
24	22159	22108	21793	21417	21127	20939	20857	21204	23094	23435	23320	23088
25	22183	22102	21764	21407	21114	20935	20856	21245	23093	23435	23314	23076
26	22179	22098	21744	21392	21103	20932	20856	21283	23142	23415	23309	23074
27	22171	22090	21725	21385	21097	20932	20863	21332	23189	23417	23310	23059
28	22192	22087	21703	21375	21088	20929	20878	21384	23231	23398	23301	23034
29	22200	22077	21688	21362	---	20922	20888	21439	23273	23388	23296	23015
30	22203	22077	21676	21354	---	20928	20893	21494	23304	23373	23292	22997
31	22198	---	21654	21344	---	20916	---	21561	---	23378	23292	---
TOTAL	683445	664506	678443	666087	593926	650582	626553	655432	675378	726405	723103	695486
MEAN	22240	22150	21885	21487	21212	20987	20885	21143	22513	23432	23326	23183
MAX	22393	22206	22065	21651	21337	21081	20918	21561	23304	23486	23370	23287
MIN	22169	22077	21654	21344	21088	20916	20853	20912	21619	23328	23292	22997
(*)	3686.35	3685.54	3682.70	3680.59	3678.83	3677.64	3677.48	3642.07	3693.57	3694.04	3693.49	3691.59
(**)	-205000	-121000	-423000	-310000	-256000	-172000	-23000	-668000	-1743000	-74000	-86000	-295000
CAL YR 1998	TOTAL	8033179	MEAN	22009	MAX	23853	MIN	20230	(**)	+59000		
WTR YR 1999	TOTAL	8045346	MEAN	22042	MAX	23486	MIN	20853	(**)	+593000		

(\*) Elevation, in feet, at end of month.  
(\*\*) Change in contents, in acre-feet.

## COLORADO RIVER MAIN STEM

09380000 COLORADO RIVER AT LEES FERRY, AZ  
(National stream-quality accounting network)

LOCATION.--Lat 36°51'53", long 111°35'15", in NE1/4SE1/4, sec.13, T.40 N., R.7 E., Coconino County, Hydrologic Unit 14070006, in Navajo Indian Reservation, on left bank at head of Marble Gorge at Lees Ferry, just upstream from Paria River, 16 mi downstream from Glen Canyon Dam, 28 mi downstream from Utah-Arizona State line, and 61.5 mi upstream from Little Colorado River.

DRAINAGE AREA.--111,800 mi<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide Basin in southern Wyoming, which is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1896 to current year. Estimates of monthly and annual discharge only for some periods, published in WSP 1313.

REVISED RECORDS.--WSP 859: 1921-23. WSP 1313: 1914-21.

GAGE.--Water-stage recorder. Datum of gage is 3,106.16 ft above sea level. Prior to Jan. 19, 1923, nonrecording gages or reference points within 400 ft of present gage, at different datums.

REMARKS.--No estimated daily discharge. Records good. Flow regulated since Mar. 13, 1963, by Lake Powell, 16 mi upstream. Many diversions above Lake Powell for irrigation, municipal, and industrial use. No diversions or inflow between Lake Powell and the gage.

AVERAGE DISCHARGE.--51 years (water years 1912-62), 17,850 ft<sup>3</sup>/s, 12,930,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--1895-1962: Maximum discharge, 220,000 ft<sup>3</sup>/s June 18, 1921, gage height, 26.5 ft, from floodmarks, from rating curve extended above 120,000 ft<sup>3</sup>/s on basis of discharge computed for station near Grand Canyon; minimum, 750 ft<sup>3</sup>/s Dec. 27, 1924.

1963-99: Maximum discharge, 97,300 ft<sup>3</sup>/s June 29, 1983, gage height, 18.14 ft; minimum daily, 700 ft<sup>3</sup>/s Jan. 23, 24, 1963, result of closing coffer dam at Glen Canyon Dam.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1868, about 300,000 ft<sup>3</sup>/s July 7, 1884, gage height, 31.5 ft, present site and datum, from floodmark at mouth of Paria River, from rating curve extended above 120,000 ft<sup>3</sup>/s on basis of discharge computed for flood of June 18, 1921, for station near Grand Canyon.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,100 ft<sup>3</sup>/s Sept. 20, 21, gage height, 11.35 ft; minimum daily, 10,300 ft<sup>3</sup>/s May 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16500	11800	15100	14200	14400	14300	13100	11600	18200	18200	17700	19900
2	15500	14200	15100	16600	14600	14700	12400	10300	18200	18100	19300	19700
3	15000	14500	15100	14300	14600	13800	12000	12200	17300	17700	19400	19700
4	13000	14500	15000	17100	14700	13700	10900	12200	16300	17000	19200	15700
5	15300	14500	14600	17400	14700	13700	12400	12200	15500	16900	19400	15300
6	15600	14400	13800	17500	14400	12900	12400	12600	14500	17800	19400	15300
7	15700	13800	14900	17400	13200	11200	12500	14500	16000	18100	19300	19400
8	15600	11600	14800	17500	14600	13500	12300	17000	16200	18300	17700	19700
9	15600	14100	15000	16400	14700	13900	12300	16700	16200	18200	19200	19600
10	15000	14300	15100	14300	14800	13700	11900	19300	16200	17800	19600	19800
11	13000	14400	15200	16500	14700	13700	10800	19300	16200	17000	19600	18700
12	15300	14400	14500	14500	14700	13800	12200	19200	15500	18200	19600	16900
13	15600	14400	14000	14400	14600	13000	12400	19200	15000	18200	19600	19600
14	15600	13900	15200	14400	13400	11200	12400	19300	18200	18200	19500	19800
15	15600	11600	15300	14400	14600	13600	13800	18600	18500	18300	17800	19800
16	15600	14100	15200	14200	14800	13600	13800	16900	16700	18700	19200	19700
17	14600	14200	15200	11600	14900	13800	12600	19100	16200	18000	19600	19600
18	12800	14300	15200	14100	14800	13600	10800	19200	16200	17100	19400	18400
19	15200	14400	14600	14400	14800	13600	12200	19100	16800	18600	19500	17100
20	15500	14400	14000	14400	14400	13300	12500	19200	14600	18700	19600	22200
21	15600	13800	15000	14400	13300	11400	12400	19200	16200	18700	19000	25000
22	15500	11600	15400	14400	14700	13300	12400	19200	16500	18700	17600	21600
23	15500	14100	15800	14000	15200	13600	12400	17500	16500	18700	19300	19700
24	14400	14400	15900	11600	15200	13600	12000	19100	18300	18100	19300	19700
25	12900	14400	14300	14000	15100	13600	10900	19100	18100	17100	19400	18500
26	15200	13400	14800	14500	15200	13600	12200	19000	17900	18300	19400	15700
27	15400	14300	14300	14500	14700	13100	12300	19300	14900	18800	19400	19200
28	15500	13800	15600	14400	13400	11500	12100	19000	17400	18500	19400	19600
29	15400	11600	15500	14500	---	13400	12000	19100	17600	18600	17800	19600
30	15500	14200	15400	14200	---	13600	12100	17200	17500	19200	19300	19600
31	14700	---	15400	12100	---	13700	---	16700	---	19300	19400	---
TOTAL	467200	413400	464300	458200	407200	413000	366500	532100	499400	563100	592900	574100
MEAN	15070	13780	14980	14780	14540	13320	12220	17160	16650	18160	19130	19140
MAX	16500	14500	15900	17500	15200	14700	13800	19300	18500	19300	19600	25000
MIN	12900	11600	13800	11600	13200	11200	10800	10300	14500	16900	17600	15300
AC-FT	925700	820000	920900	908800	807700	819200	727000	1055000	990600	1117000	1176000	1139000
CAL YR 1998	TOTAL	6278150	MEAN	17200	MAX	21600	MIN	8790	AC-FT	12450000		
WTR YR 1999	TOTAL	5751400	MEAN	15760	MAX	25000	MIN	10300	AC-FT	11410000		

## WATER-QUALITY RECORDS

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

					DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US CM / (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	
DATE	TIME	SAMPLE TYPE											
NOV													
10...	1410	ENVIRONMENTAL			16200	637	8.1	13.0	10.0	.31	690	8.5	
10...	1411	ENVIRONMENTAL (ADEQ)			16200	637	8.1	13.0	10.0	.18	690	8.5	
10...	1420	CONCURRENT REPLICATE			16200	--	--	--	--	--	--	--	
FEB													
02...	0920	ENVIRONMENTAL			14000	655	8.0	--	8.5	.50	692	8.5	
02...	0930	CONCURRENT REPLICATE			13900	--	--	--	8.5	--	--	--	
APR													
13...	1310	ENVIRONMENTAL			14000	783	8.2	20.0	9.0	1.1	681	8.1	
13...	1311	ENVIRONMENTAL (ADEQ)			14000	783	8.2	20.0	9.0	.28	681	8.1	
JUN													
01...	1445	ENVIRONMENTAL			20600	736	8.2	21.0	11.5	.29	680	10.1	
01...	1446	ENVIRONMENTAL (ADEQ)			20600	736	8.2	21.0	11.5	.27	680	10.1	
01...	1455	CONCURRENT REPLICATE			20600	--	--	21.0	11.5	--	--	--	
22...	0910	ENVIRONMENTAL			13800	717	8.0	28.5	12.0	1.1	680	9.9	
22...	0920	CONCURRENT REPLICATE			13800	717	8.0	28.5	12.0	1.2	680	9.9	
AUG													
17...	0850	ENVIRONMENTAL			16400	714	8.0	18.5	11.0	.27	690	7.4	
17...	0851	ENVIRONMENTAL (ADEQ)			16400	714	8.0	18.5	11.0	.23	690	7.4	
17...	0900	CONCURRENT REPLICATE			16400	--	--	18.5	11.0	--	--	--	
DATE		OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	COLI-FORM, FECAL, 0.7 UM-MF (COLS. / 100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	HARD-NESS NONCARBONATE DIS-SOLV FLD. AS CACO3 (MG/L) (00904)	CALCIUM TOTAL RECOV-ERABLE (MG/L AS CA) (00916)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS MG) (00927)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)
NOV													
10...	83	<5	--	--	--	210	90	51	56	17	18	47	1
10...	83	<5	K1	<1	--	220	96	51	57	17	19	44	1
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
02...	80	--	--	--	--	210	88	--	53	--	19	51	2
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
13...	79	<5	--	--	--	260	130	63	66	22	23	60	2
13...	79	<5	<1	<1	--	250	120	63	64	22	22	60	2
JUN													
01...	104	--	--	--	--	240	110	61	62	21	22	56	2
01...	104	--	<1	K1	--	240	99	61	60	21	21	57	2
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	103	--	--	--	--	230	99	--	59	--	21	54	2
22...	103	--	--	--	--	230	97	--	58	--	21	53	2
AUG													
17...	74	--	--	--	--	230	100	--	60	--	20	52	1
17...	74	--	K1	<1	--	210	99	62	59	11	20	57	2
17...	--	--	--	--	--	--	--	--	--	--	--	--	--

## 09380000 COLORADO RIVER AT LEES FERRY, AZ--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

	NITRO- GEN, NITRATE DIS- SOLVED	NITRO- GEN, NITRATE DIS- SOLVED	NITRO- GEN, NITRITE DIS- SOLVED	NITRO- GEN, NO2+NO3 DIS- SOLVED	NITRO- GEN, NO2+NO3 DIS- SOLVED	NITRO- GEN, AMMONIA DIS- SOLVED	NITRO- GEN, AMMONIA DIS- SOLVED	NITRO- GEN, ORGANIC DIS- SOLVED	NITRO- GEN, AM- MONIA + ORGANIC TOTAL	NITRO- GEN, AM- MONIA + ORGANIC TOTAL	NITRO- GEN,
DATE	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)
AS (N)	AS (N)	AS (N)	AS (N)	AS (N)	AS (N)	AS (N)	AS (N)	AS (N)	AS (N)	AS (N)	AS (N)
(00618)	(71851)	(00613)	(00630)	(00631)	(00610)	(00608)	(00605)	(00617)	(00625)	(00623)	(00600)

[illegible]

DATE	NITRO- GEN DIS- SOLVED	NITRO- GEN, AMMONIA TOTAL	NITRO- GEN, TOTAL	PHOS- PHORUS TOTAL	PHOS- PHORUS DIS- SOLVED	PHOS- PHATE, ORTHO, DIS- SOLVED	ANTI- MONY, DIS- SOLVED	ARSENIC TOTAL	DIS- SOLVED
	(MG/L	(MG/L	(MG/L	(MG/L	(MG/L	(MG/L	(UG/L	(UG/L	(UG/L
	AS N)	AS NH4)	AS NO3)	AS P)	AS P)	AS PO4)	AS SB)	AS AS)	AS AS)
(00602)	(71845)	(71887)	(00665)	(00666)	(00671)	(00660)	(01097)	(1095)	(01002)

[illegible]



DATE	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	SED. SUSP. SIEVE DIAM. FINER THAN (.062 MM 70331)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	-ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	DEETHYL -ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	BEN- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)
	NOV										
	10...	<.20	37	2	87	<.0020	<.002	.004	<.0020	<.0010	<.0020
10...	--	--	2	87	--	--	--	--	--	--	--
10...	--	50	1	44	--	--	--	--	--	--	--
FEB											
02...	<.20	--	2	76	<.0020	<.002	<.001	<.0020	<.0010	<.0020	<.0020
02...	--	--	4	150	--	--	--	--	--	--	--
APR											
13...	<.20	--	2	76	<.0020	<.002	E.003	<.0020	<.0010	<.0020	<.0020
13...	--	--	2	76	--	--	--	--	--	--	--
JUN											
01...	.20	--	--	--	<.0020	<.002	<.004	<.0020	<.0010	<.0020	<.0020
01...	--	--	5	256	--	--	--	--	--	--	--
01...	--	42	5	256	--	--	--	--	--	--	--
22...	<.20	--	--	--	<.0020	<.002	<.001	<.0020	<.0010	<.0020	<.0020
22...	<.20	--	--	--	<.0020	<.002	<.001	<.0020	<.0010	<.0020	<.0020
AUG											
17...	--	90	2	89	<.0020	E.003	.007	<.0020	<.0010	<.0020	<.0020
17...	--	--	2	89	--	--	--	--	--	--	--
17...	--	31	4	177	--	--	--	--	--	--	--
DATE	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82590)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P,P'- DDE DISSOLV (UG/L) (34653)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DIAZ- INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)
NOV											
10...	<.0030	<.0030	<.0040	<.0040	E.0018	<.0060	<.002	a109	<.001	<.0030	<.0170
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
FEB											
02...	<.0030	<.0030	<.0040	<.0040	E.0009	<.0060	<.002	a88.2	<.001	<.0030	<.0170
02...	--	--	--	--	--	--	--	--	--	--	--
APR											
13...	<.0030	<.0030	<.0040	<.0040	<.0020	<.0060	<.002	a91.2	<.001	<.0030	<.0170
13...	--	--	--	--	--	--	--	--	--	--	--
JUN											
01...	<.0030	<.0030	<.0040	<.0040	E.0013	<.0060	<.002	a108	<.001	<.0030	<.0170
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
22...	<.0030	<.0030	<.0040	<.0040	<.0020	<.0060	<.002	a98.8	<.001	<.0030	<.0170
22...	<.0030	<.0030	<.0040	<.0040	<.0020	<.0060	<.002	a103	<.001	<.0030	<.0170
AUG											
17...	<.0030	<.0030	<.0040	<.0040	E.0014	<.0060	<.002	a123	<.001	<.0030	<.0170
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
DATE	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	LINDANE 0.7 U DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL MALA- THION, DIS- SOLVED (UG/L) (39532)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METRI- BUZIN SENSOR WATER DISSOLV (UG/L) (82630)
NOV											
10...	<.0020	<.0040	<.0030	<.0030	<.0020	a96.2	<.004	<.0020	<.005	<.0060	<.004
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
FEB											
02...	<.0020	<.0040	<.0030	<.0030	<.0020	a84.4	<.004	<.0020	<.005	<.0060	<.004
02...	--	--	--	--	--	--	--	--	--	--	--
APR											
13...	<.0020	<.0040	<.0030	<.0030	<.0020	a95.9	<.004	<.0020	<.005	<.0060	<.004
13...	--	--	--	--	--	--	--	--	--	--	--
JUN											
01...	<.0020	<.0040	<.0030	<.0030	<.0020	a108	<.004	<.0020	<.005	<.0060	<.004
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
22...	<.0020	<.0040	<.0030	<.0030	<.0020	a94.2	<.004	<.0020	<.005	<.0060	<.004
22...	<.0020	<.0040	<.0030	<.0030	<.0020	a98.0	<.004	<.0020	<.005	<.0060	<.004
AUG											
17...	<.0020	<.0040	<.0030	<.0030	<.0020	a101	<.004	<.0020	<.005	<.0060	<.004
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--

COLORADO RIVER MAIN STEM

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09380000 COLORADO RIVER AT LEES FERRY, AZ--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82654)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)
NOV											
10...	E.003	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	E.0030	<.0030	<.0070
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
FEB											
02...	E.004	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
02...	--	--	--	--	--	--	--	--	--	--	--
APR											
13...	E.001	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
13...	--	--	--	--	--	--	--	--	--	--	--
JUN											
01...	E.004	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
22...	<.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
22...	<.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
AUG											
17...	E.003	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	E.0030	<.0030	<.0070
17...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
DATE	PRO- PANIL WATER FLTRD GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD GF, REC (UG/L) (82685)	SI- MAZINE, WATER, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD GF, REC (UG/L) (82675)	TERBUTH YLADINE SURROGT WAT FLT GF, REC PERCENT (81064)	THIO- BENCARB WATER FLTRD GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT GF, REC (UG/L) (82661)	
NOV											
10...	<.0040	<.0130	<.0050	E.0042	<.0070	<.0130	a10	<.0020	<.0010	<.0020	
10...	--	--	--	--	--	--	--	--	--	--	
10...	--	--	--	--	--	--	--	--	--	--	
FEB											
02...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	a80.4	<.0020	<.0010	<.0020	
02...	--	--	--	--	--	--	--	--	--	--	
APR											
13...	<.0040	<.0400	<.0050	<.0100	<.0070	<.0130	a103	<.0020	<.0010	<.0020	
13...	--	--	--	--	--	--	--	--	--	--	
JUN											
01...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020	
01...	--	--	--	--	--	--	--	--	--	--	
01...	--	--	--	--	--	--	--	--	--	--	
22...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020	
22...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020	
AUG											
17...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020	
17...	--	--	--	--	--	--	--	--	--	--	
17...	--	--	--	--	--	--	--	--	--	--	

< Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

a Listed values are recovery percentages for the indicated compounds. These compounds are added to the sample to determine the relative recovery of other organic compounds that are detected using the same analytical method.

## COLORADO RIVER MAIN STEM

09380000 COLORADO RIVER AT LEES FERRY, AZ—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Water-quality measurements in the following table were made as part of the National Stream-Quality Accounting Network. The following analyses are quality-assurance samples processed during the 1999 sampling period and are defined in the introductory text section titled "Water-Quality Control Data".

			CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)			
NOV 10...	1418	FIELD BLANK	.006	<.001	<.025	<.020	.001	<.005	<.002	.001	.00			
JUN 01...	1453	FIELD BLANK	.005	<.001	.027	.18	<.001	<.005	.006	.001	.00			
AUG 17...	0853	FIELD SPIKE	--	--	--	--	--	--	--	--	--			
DATE	TIME	QUALITY ASSURANCE SAMPLE (TYPE)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM, DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
NOV 10...	<.30	<.20	<.20	<.20	<2.0	<.30	<.20	<.20	<.20	<3.0	<.30	<.10		
JUN 01...	<.30	<.20	<.20	<.20	<2.0	<.30	<1.0	<.20	<.20	<3.0	<.30	<.10		
AUG 17...	--	--	--	--	--	--	--	--	--	--	--	--		
DATE	TIME	QUALITY ASSURANCE SAMPLE (TYPE)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM, NATURAL DIS- SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)
NOV 10...	<.20	<.50	<.20	<.10	.72	<.20	.30	<.20	<.0020	<.002	<.001	<.0020		
JUN 01...	<.20	<.50	<.20	<.10	.46	<.20	v2.6	<.20	--	--	--	--		
AUG 17...	--	--	--	--	--	--	--	--	--	.131	.133	.104	E.0643	
DATE	TIME	QUALITY ASSURANCE SAMPLE (TYPE)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCEP, WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P, P' DDE DISSOLV (UG/L) (34653)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DIO SRG WAT FLT 0.7 U GF, REC PERCENT (UG/L) (91063)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)
NOV 10...	<.0010	<.0020	<.0020	<.0030	<.0030	<.0040	<.0040	<.0020	<.0060	<.002	a122	<.001		
JUN 01...	--	--	--	--	--	--	--	--	--	--	--	--		
AUG 17...	E.209	.103	.116	E.243	E.256	.108	.140	.109	.0742	.113	a121	.127		
DATE	TIME	QUALITY ASSURANCE SAMPLE (TYPE)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (UG/L) (91065)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)
NOV 10...	<.0030	<.0170	<.0020	<.0040	<.0030	<.0030	<.0020	a98.2	<.004	<.0020	<.005	<.0060		
JUN 01...	--	--	--	--	--	--	--	--	--	--	--	--		
AUG 17...	.109	.0847	.114	.111	.116	.111	.106	a98.2	.111	.150	.121	.119		



COLORADO RIVER MAIN STEM

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09380000 COLORADO RIVER AT LEES FERRY, AZ--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	METRI- BUZIN WATER DISSOLV (UG/L) (82630)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)
NOV 10...	<.004	<.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030
JUN 01...	--	--	--	--	--	--	--	--	--	--	--
AUG 17...	.120	.136	.115	.147	.122	.115	.117	.0733	.0889	.129	.115
DATE	PROP- CHLOR, WATER DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TERBUTH YLIAZINE SURROGT WAT FLT 0.7 U PERCENT (91064)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
NOV 10...	<.0070	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	a113	<.0020	<.0010	<.0020
JUN 01...	--	--	--	--	--	--	--	--	--	--	--
AUG 17...	.134	.122	.189	.135	.140	E.236	.0895	--	.119	.116	.103

< Actual value is known to be less than the value shown.

v Sample was contaminated during sampling or analysis. Actual value is less than value shown.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

a Listed values are recovery percentages for the indicated compounds. These compounds are added to the sample to determine the relative recovery of other organic compounds that are detected using the same analytical method.

## 09382000 PARIA RIVER AT LEES FERRY, AZ

**LOCATION.**--Lat 36°52'20", long 111°35'38", in NW1/4NE1/4 sec.13, T.40 N., R.7 E., Coconino County, Hydrologic Unit 14070007, on left bank 0.6 mi northwest of Lees Ferry, and 1.1 mi upstream from mouth.

**DRAINAGE AREA.**--1,410 mi<sup>2</sup>.

**PERIOD OF RECORD.**--October 1923 to current year.

**REVISED RECORDS.**--WSP 1825: 1858(M), drainage area.

**GAGE.**--Water-stage recorder. Datum of gage is 3,123.68 ft above sea level. Prior to Oct. 5, 1925 nonrecording gage at site 2,000 ft upstream at different datum. Oct. 13, 1925, to Sept. 11, 1929, nonrecording gage at present site and datum.

**REMARKS.**--Records fair except for estimated daily discharges, which are poor. Diversions above station for irrigation of about 3,300 acres, mostly in southern Utah.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 16,100 ft<sup>3</sup>/s Oct. 5, 1925, gage height, 16.3 ft, from floodmark, from rating curve extended above 2,000 ft<sup>3</sup>/s on basis of float-area measurement of peak flow; maximum gage height, 16.65 ft Sept. 9, 1980; minimum daily discharge, 1 ft<sup>3</sup>/s in most years prior to 1931.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 1,400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 22 .....	0252	1,610	9.89	Sept. 15 .....	unknown	*2,500	a*11.28
Aug. 31 .....	0230	2,210	10.86				

a From highwater mark.

Minimum daily discharge, 2.6 ft<sup>3</sup>/s, June 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e7.5	e30	32	29	18	12	5.1	18	4.2	2.7	e141	e112
2	6.4	23	26	25	19	12	5.6	16	4.3	2.7	e58	107
3	7.0	22	24	17	e18	11	5.8	14	6.2	2.8	58	84
4	6.2	21	22	15	16	10	7.2	21	27	3.0	60	35
5	6.4	20	21	15	20	9.5	25	22	25	3.0	166	e7.0
6	6.3	20	20	19	29	9.6	23	17	26	3.4	e117	e14
7	6.7	19	17	22	23	10	17	16	24	3.4	e76	39
8	10	20	16	21	18	13	15	15	16	45	e33	e8.6
9	11	e88	13	18	18	14	15	e11	9.7	e85	e14	e6.8
10	9.6	e40	12	15	19	12	14	7.9	7.0	e67	14	e6.8
11	8.9	e28	14	21	25	11	15	e5.6	5.5	54	e177	e20
12	8.0	37	10	20	15	9.1	13	e4.5	5.5	43	e75	78
13	7.1	30	16	22	14	11	10	e4.5	4.5	38	23	31
14	6.7	28	19	19	17	12	8.2	3.9	4.3	40	e21	26
15	6.4	29	20	18	19	12	6.0	3.8	4.4	186	e21	e235
16	5.9	30	20	19	17	13	5.0	3.8	4.1	e88	e17	e490
17	6.2	28	25	21	14	11	4.5	3.9	5.1	e44	e17	e131
18	12	27	27	22	14	10	4.5	4.1	6.0	22	81	28
19	17	25	24	22	14	11	4.7	4.4	4.6	20	e96	61
20	15	24	24	22	14	12	4.4	4.3	3.9	e18	e66	67
21	24	23	23	23	12	11	4.6	4.5	3.9	e14	e46	44
22	190	23	11	21	13	9.0	5.1	4.3	4.0	e25	e383	33
23	157	24	9.4	17	12	7.5	19	3.8	3.3	18	e105	e21
24	101	24	9.3	18	13	6.2	55	3.8	3.2	13	e50	e13
25	82	24	11	21	13	6.4	36	4.0	3.6	12	e20	12
26	e154	24	12	20	12	6.4	31	4.4	3.1	12	e16	11
27	e174	24	10	22	12	5.8	25	5.2	3.4	39	e27	9.3
28	e77	24	16	21	13	5.6	22	5.5	2.9	e45	97	8.2
29	43	36	28	17	---	5.4	e20	5.3	3.0	e87	90	7.1
30	e41	48	29	16	---	5.2	e17	4.7	2.6	e132	175	5.9
31	e30	---	26	18	---	4.9	---	7.0	---	e98	e887	---
TOTAL	1243.3	863	586.7	616	461	298.6	442.7	253.2	230.3	1266.0	3227	1751.7
MEAN	40.1	28.8	18.9	19.9	16.5	9.63	14.8	8.17	7.68	40.8	104	58.4
MAX	190	88	32	29	29	14	55	22	27	186	887	490
MIN	5.9	19	9.3	15	12	4.9	4.4	3.8	2.6	2.7	14	5.9
AC-FT	2470	1710	1160	1220	914	592	878	502	457	2510	6400	3470

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1999, BY WATER YEAR (WY)

	MEAN	29.6	23.6	21.1	22.7	38.2	39.0	21.1	10.7	7.21	24.8	55.3	54.4
MAX	288	123	69.4	96.7	242	216	93.3	52.4	58.3	172	237	424	
(WY)	1926	1958	1967	1969	1980	1979	1979	1934	1972	1936	1932	1927	
MIN	5.99	10.1	8.81	8.03	15.5	8.86	4.93	2.03	1.97	2.32	4.51	4.18	
(WY)	1956	1991	1931	1961	1972	1930	1927	1926	1939	1976	1968		

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1924 - 1999
ANNUAL TOTAL	10513.4	11239.5	
ANNUAL MEAN	28.8	30.9	28.9
HIGHEST ANNUAL MEAN			65.1
LOWEST ANNUAL MEAN			11.4
HIGHEST DAILY MEAN	1440	887	6750
LOWEST DAILY MEAN	3.2	2.6	1.0
ANNUAL SEVEN-DAY MINIMUM	3.4	2.8	1.0
ANNUAL RUNOFF (AC-FT)	20850	22290	20960
10 PERCENT EXCEEDS	32	67	43
50 PERCENT EXCEEDS	19	17	14
90 PERCENT EXCEEDS	6.0	4.5	3.8

e Estimated

## 09383000 COLORADO RIVER AT COMPACT POINT, NEAR LEES FERRY, AZ

**LOCATION.**--Lat 36°51'06", long 111°36'21", in NE1/4SE1/4 sec.23, T.40 N., R.7 E., Coconino County, Hydrologic Units 14070006, 15010001, (see REMARKS), 1.0 mi downstream from Paria River, 1.4 mi downstream from gage on Colorado River at Lees Ferry, and 29 mi downstream from Utah-Arizona State line.

**DRAINAGE AREA.**--112,000 mi<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, which is noncontributing.

**PERIOD OF RECORD.**--October 1913 to current year (monthly discharge only). Prior to October 1950, published in WSP 1313.

**DETERMINATION OF DISCHARGE.**--There is no gage. Monthly and yearly discharge computed as the sum of flow at stations on Colorado River and Paria River at Lees Ferry.

**REMARKS.**--This location on the Colorado River is the dividing point between the Upper Basin and Lower Basin, as defined in the Colorado River Compact of 1922. Flow substantially regulated by Lake Powell beginning Mar. 13, 1963. (See elsewhere in this report.)

**AVERAGE DISCHARGE.**--49 years (water years 1914-62), 17,760 ft<sup>3</sup>/s, 12,870,000 acre-ft/yr; 35 years (water years 1965-99), 14,810 ft<sup>3</sup>/s, 10,370,000 acre-ft/yr

Monthly discharge, water year October 1998 to September 1999

Month	Mean in cubic feet per second	Runoff in acre-feet
October.....	15,110	929,200
November.....	13,810	821,700
December.....	15,000	922,100
Calendar year 1998.....	17,220	12,470,000
January.....	14,800	910,100
February.....	14,560	808,600
March.....	13,330	819,800
April.....	12,230	727,800
May.....	17,170	1,056,000
June.....	16,650	991,000
July.....	18,210	1,119,000
August.....	19,230	1,182,000
September.....	19,200	1,142,000
Water year 1999.....	15,790	11,430,000

NOTE.--Record shown is sum of flow at stations on Colorado River and Paria River at Lees Ferry.

**LOCATION.**--Lat 36°12'08", long 111°48'59", Coconino County, Hydrologic Unit 15010001, in Grand Canyon National Park, on the right bank 0.2 mi upstream from the confluence with the Little Colorado River, 11 mi east-northeast of Desert View, 77.1 mi downstream of Glen Canyon Dam, and 293 mi upstream from Hoover Dam.

**DRAINAGE AREA.**--114,272 mi<sup>2</sup> approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming and 108 mi<sup>2</sup> on the Paria Plateau, which is noncontributing.

**PERIOD OF RECORD.**--June 1983 to December 1983, September 1985 to February 1986, September 1989 to current year.

**GAGE.**--Water-stage recorder on right bank. Elevation of gage is 2,688.74 ft above sea level, from GPS levels. Prior to Sept. 1989, recording gages within 100 ft of present gage, at different datum.

**REMARKS.**--No estimated daily discharges. Records good. Flow regulated since Mar. 13, 1963, by Glen Canyon Dam 77.1 mi upstream.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 96,200 ft<sup>3</sup>/s, June 29, 1983, gage height, unknown; minimum, 2,940 ft<sup>3</sup>/s, Oct. 30, 1990, gage height 21.38 ft.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Maximum discharge since at least 1868, about 300,000 ft<sup>3</sup>/s, July 7, 1884, based on flood studies at Lees Ferry.

**EXTREMES FOR CURRENT YEAR.**--Maximum discharge, 25,500 ft<sup>3</sup>/s, Sept. 21, gage height 32.90 ft; minimum daily, 10,500 ft<sup>3</sup>/s, May 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17800	14500	14700	15700	12200	13400	13500	12000	16900	17900	18900	19500
2	15500	12300	15100	14500	14800	14700	12600	11500	18400	18100	18200	19900
3	15300	15000	15200	16400	14700	14600	12400	10500	18400	17900	19300	19900
4	14400	14800	15100	14800	14700	13800	12000	12400	16700	17700	19800	18900
5	13200	14700	15000	17400	14800	13800	11100	12300	16200	17000	19500	15200
6	15400	14600	14500	17500	14600	13700	12500	12400	15400	17200	19600	15300
7	15500	14300	14200	17400	14400	12900	12500	13200	15300	18000	19400	16100
8	15500	13700	14800	17600	13500	11500	12400	15500	16400	18400	19100	19600
9	15500	11900	14900	17200	14800	13900	12300	17100	16400	18500	18100	19500
10	15400	14600	15200	16100	14800	13900	12300	17600	16400	18400	19700	19500
11	14300	14400	15300	14700	14800	13700	11900	19200	16400	18200	19700	19100
12	13200	14500	15100	16300	14800	13800	10900	19200	16200	17700	19700	18400
13	15400	14400	14600	13900	14600	13600	12400	19300	15700	18400	19600	17500
14	15500	14300	14400	14500	14600	12900	12400	19400	16100	18400	19300	19800
15	15500	13700	15400	14500	13700	11600	13000	19100	18600	18900	19200	20300
16	15400	11800	15400	14300	14800	13700	13700	18300	18200	18900	18000	19800
17	15200	14400	15300	14200	14900	13800	13500	17700	16300	18500	20000	20200
18	14000	14300	15300	11700	14900	13900	11900	19300	16400	18100	20200	19000
19	13200	14300	15000	14500	14900	13700	10800	19300	15600	17700	19800	18000
20	15400	14400	14600	14500	14700	13600	12300	19300	16400	18800	20100	19200
21	15600	14200	14300	14500	14400	13000	12500	19300	15000	18800	18700	25200
22	15700	13500	15500	14400	13600	11600	12400	19200	16400	18700	18900	23100
23	15800	11800	15500	14300	15000	13600	12500	19300	16500	18700	17900	19900
24	15300	14400	16000	14100	15300	13500	12400	17700	17200	18400	19200	20000
25	14100	14400	15600	11600	15200	13600	12100	19300	18300	17900	19400	19600
26	13700	14200	14300	14500	15200	13600	11000	19500	18100	17400	19400	18200
27	15900	13500	14900	14700	15000	13500	12400	19300	17300	18900	19400	16200
28	16200	14300	14700	14500	14700	13000	12400	19500	15300	18900	19300	19800
29	16400	13600	15600	14600	---	11500	12100	19000	17600	18500	18500	19800
30	16000	11800	15500	14400	---	13600	12100	19200	17600	18800	17400	19700
31	15600	---	15500	14100	---	13600	---	16300	---	19600	19900	---
TOTAL	470900	416600	466500	463400	408400	414600	368300	532800	502800	567300	595200	576300
MEAN	15190	13890	15050	14950	14590	13370	12280	17190	16760	18300	19200	19210
MAX	17800	15000	16000	17600	15300	14700	13700	19500	18600	19600	20200	25200
MIN	13200	11800	14200	11600	12200	11500	10800	10500	15000	17000	17400	15200
AC-FT	934000	826300	925300	919200	810100	822400	730500	1057000	997300	1125000	1181000	1143000
CAL YR 1998	TOTAL 6301360		MEAN 17480	MAX 22200		MIN 9880	AC-FT 12660000					
WTR YR 1999	TOTAL 5783100		MEAN 15840	MAX 25200		MIN 10500	AC-FT 11470000					

**EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (\*):**

e Estimated

08386020 CARRIZO WASH NEAR ST. JOHNS, AZ

**LOCATION.**--Lat 34°36'53", long 109°19'04", T.14 N., R.28 E., unsurveyed, Apache County, Hydrologic Unit 15020002, on east side of Carrizo Wash bridge pier on U.S. Highway 161 (Arizona Highway 61), 8.5 mi north of St. Johns.

**DRAINAGE AREA.**--Not determined.

**PERIOD OF RECORD.**--August 1988 to current year.

**GAGE.**--Water-stage recorder and crest-stage gage. Datum of gage is 8,610.5 ft above sea level, from ADOT bench mark on highway bridge.

REMARKS.—Records fair except for estimated daily discharges and flows above 200 ft<sup>3</sup>/s, which are poor.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 600 ft<sup>3</sup>/s Aug. 15, 1999, gage height, 10.08 ft; no flow most of each year.

**EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*):**

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 28 .....	1000	344	8.65	Aug. 15 .....	2300	*600	*10.08
Aug. 5 .....	2100	347	8.67	Aug. 28 .....	0200	243	7.98
Aug. 10 .....	1500	281	8.24				

**No flow for many days.**

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

[illegible]

## LITTLE COLORADO RIVER BASIN

57

## 09386020 CARRIZO WASH NEAR ST. JOHNS, AZ-Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.10	28
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.10	e9.0
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.20
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.6	.83
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	136	e1.0
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e2.0	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.10	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.80	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	101	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	69	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8.3	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e80	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	e1.0	e24	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e1.0	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e1.0	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.7	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.7	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.30	34	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.20	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	e1.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.6	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	74	39	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	e3.5	e.20	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	14	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	e2.5	1.2	---
TOTAL	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.90	553.00	39.03
MEAN	.048	.000	.000	.000	.000	.000	.000	.000	.000	3.13	17.8	1.30
MAX	1.5	.00	.00	.00	.00	.00	.00	.00	.00	74	136	28
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	3.0	.00	.00	.00	.00	.00	.00	.00	.00	192	1100	77

WTR YR 1999 TOTAL 690.43 MEAN 1.89 MAX 136 MIN .00 AC-FT 1370

e Estimated

## LITTLE COLORADO RIVER BASIN

## 09386030 LITTLE COLORADO RIVER ABOVE ZION RESERVOIR, NEAR ST. JOHNS, AZ

**LOCATION.**--Lat 34°35'01", long 109°24'23", in SE1/4SE1/4 sec.30, T.14 N., R.28 E., Apache County, Hydrologic Unit 15020002, on downstream side of center pier of bridge on private road, 1.5 mi upstream from Carnizo Creek, 4 mi upstream from Zion Reservoir, and 5.8 mi northwest of St. Johns.

**DRAINAGE AREA.**--1,007 mi<sup>2</sup>, of which 2.5 mi<sup>2</sup> is noncontributing.

**PERIOD OF RECORD.**--October 1975 to current year.

**REVISED RECORDS.**--WDR AZ-88-1: Drainage area.

**GAGE.**--Water-stage recorder. Elevation of gage is 5,560 ft above sea level, from topographic map.

**REMARKS.**--Records fair except for estimated daily discharges, which are poor. Diversions above station for irrigation of about 10,200 acres, including 1,500 acres served by Lyman Canal. Regulation by many reservoirs above station (combined capacity, 46,900 acre-ft), the largest of which is Lyman Lake. Records do not include flow bypassing the station through an abandoned irrigation ditch during higher stages.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 590 ft<sup>3</sup>/s July 31, 1994, gage height, 4.16 ft; minimum daily, 0.03 ft<sup>3</sup>/s May 17-18, 21-28, June 1-3, 16-22, 24-30, July 1-2, 13, 1999.

**EXTREMES FOR CURRENT YEAR.**--Maximum discharge, 42 ft<sup>3</sup>/s July 10, gage height, 1.96 ft; minimum daily, 0.03 ft<sup>3</sup>/s on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e .07	.86	.59	2.4	2.8	2.4	.45	.17	.03	.03	e1.0	1.1
2	e .07	.91	.58	2.0	1.8	2.5	.95	.17	.03	.03	e1.0	1.9
3	e .07	.83	.58	1.7	2.1	2.4	1.2	.17	.03	.04	e1.0	16
4	e .07	.79	.58	1.8	2.3	2.4	1.6	.12	.04	.04	e .80	4.2
5	e .07	.65	.58	1.9	2.6	1.9	1.4	.10	.04	.04	.58	1.4
6	e .07	.58	.57	2.5	2.4	.72	.39	.09	.04	.04	.69	.54
7	e .07	.58	.39	3.7	2.5	.46	1.0	.08	.04	.04	.47	.93
8	e .07	.58	.29	3.9	2.5	.49	1.1	.08	.04	.04	.40	1.5
9	e .07	.58	.33	2.1	2.4	.52	.39	.07	.04	.04	.33	1.8
10	e .07	.58	.41	2.1	2.3	.72	.27	.06	.04	15	3.1	2.1
11	e .07	.58	.67	3.5	1.6	.62	.23	.04	.04	2.3	14	2.3
12	e .06	.58	.77	3.8	1.5	.40	.19	.04	.04	1.2	5.1	4.2
13	e .06	.58	.94	2.6	1.8	.40	.13	.04	.04	.10	2.8	2.9
14	e .06	.58	.75	2.4	2.5	.38	.11	.04	.04	.03	2.1	2.0
15	e .06	.58	1.0	2.3	2.5	.40	.10	.04	.04	.07	1.9	1.9
16	e .06	.56	1.2	2.8	2.1	1.1	.09	.04	.03	.07	21	1.8
17	e .06	.52	.83	2.5	2.2	2.0	.09	.03	.03	.04	9.3	1.8
18	e .06	.49	.86	2.2	2.4	2.1	.10	.03	.03	.04	2.8	1.4
19	e .06	.49	.96	1.8	2.3	2.3	.11	.06	.03	1.5	4.1	.93
20	e .06	.53	.87	2.1	2.2	2.2	.13	.04	.03	.29	3.1	.81
21	e .06	.48	.80	2.3	2.3	2.1	.13	.03	.03	.09	2.6	.74
22	.06	.40	.55	2.0	2.3	1.9	.11	.03	.03	.27	3.2	.62
23	1.7	.41	.56	2.1	2.2	1.8	.12	.03	.04	.89	2.2	.73
24	.57	.45	.38	2.8	2.6	1.8	.12	.03	.03	e10	1.7	4.1
25	.25	.44	.38	2.8	2.6	1.5	.15	.03	.03	e1.5	8.0	2.9
26	e12	.43	.49	2.6	2.5	1.8	.30	.03	.03	e10	6.8	1.1
27	8.8	.41	1.1	2.1	2.5	1.8	.33	.03	.03	e5.0	6.2	.87
28	2.8	.48	2.1	2.3	2.4	1.9	.46	.03	.03	e2.0	e13	.55
29	1.2	.49	2.9	2.2	---	1.8	.91	.03	.03	e12	21	.49
30	.86	.52	2.7	2.1	---	1.4	.30	.04	.03	e4.0	5.8	.49
31	.79	---	2.5	2.5	---	.26	---	.04	---	e2.0	1.6	---
TOTAL	30.40	16.94	28.21	75.9	64.2	44.47	12.96	1.86	1.03	68.73	147.67	64.10
MEAN	.98	.56	.91	2.45	2.29	1.43	.43	.060	.034	2.22	4.76	2.14
MAX	12	.91	2.9	3.9	2.8	2.5	1.6	.17	.04	15	21	16
MIN	.06	.40	.29	1.7	1.5	.26	.09	.03	.03	.03	.33	.49
AC-FT	60	34	56	151	127	88	26	3.7	2.0	136	293	127

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1999, BY WATER YEAR (WY)

	MEAN	7.39	8.69	8.74	9.11	11.8	18.7	11.4	2.57	3.44	7.07	4.43
MAX	79.1	31.7	32.6	30.2	21.0	75.0	118	75.5	34.7	11.7	33.4	16.5
(WY)	1984	1984	1984	1984	1984	1985	1985	1979	1979	1979	1982	1984
MIN	.074	.076	.082	.092	1.89	1.43	.43	.060	.034	.11	.23	.15
(WY)	1998	1998	1998	1998	1998	1999	1999	1999	1999	1995	1991	1998

## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1976 - 1999

ANNUAL TOTAL	468.81	556.47	
ANNUAL MEAN	1.28	1.52	8.46
HIGHEST ANNUAL MEAN			26.8
LOWEST ANNUAL MEAN			1.10
HIGHEST DAILY MEAN	23	21	270
LOWEST DAILY MEAN	.06 Oct 12	.03 May 17	.03 Apr 28 1979
ANNUAL SEVEN-DAY MINIMUM	.06 Oct 12	.03 May 21	.03 May 17 1999
ANNUAL RUNOFF (AC-FT)	930	1100	6130
10 PERCENT EXCEEDS	4.2	2.8	14
50 PERCENT EXCEEDS	.33	.62	4.3
90 PERCENT EXCEEDS	.08	.04	.11

e Estimated



## 59

**LOCATION.** --Lat 34°36'17", long 109°29'19", in SE1/4NW1/4 sec 21, T.14 N., R.27 E., Apache County, Hydrologic Unit 15020002, on left bank 0.50 mi downstream from Zion Reservoir, 10 mi northwest of St. Johns.

**PERIOD OF RECORD.**--September 1998 to current year.

**GAGE.**--Water-stage recorder and crest-stage gage. Elevation of gage is 5,530 ft above sea level, from topographic map.

**REMARKS.**—Records fair. Flow regulated by many small reservoirs - combined capacity, about 15,500 acre-ft. Diversions for irrigation of about 6,700 acres above station.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 45 ft<sup>3</sup>/s Sept. 9, 1999, gage height, 4.88 ft; minimum daily, no flow on many days.

**EXTREMES FOR CURRENT YEAR.**--Maximum discharge, 45 ft<sup>3</sup>/s Sept 9, gage height, 4.88 ft; minimum daily, no flow on many days

DISCHARGE, CUBIC FEET PER SECOND. WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

[illegible]

## LITTLE COLORADO RIVER BASIN

09386100 LITTLE COLORADO RIVER BELOW ZION RESERVOIR, NEAR ST. JOHNS, AZ--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.04	1.5
2	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00	e.02	1.7
3	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00	e.00	1.7
4	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00	e.00	1.7
5	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.02	1.7
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.21	1.6
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.13	1.7
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	1.7
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	3.6
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.04	1.8
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	1.8
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	1.4
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.67
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.01	.26
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.06	.41
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.46	1.4
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.90	1.4
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	1.0	1.0
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	1.1	.83
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	1.1	.79
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	1.1	.65
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	1.1	.39
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	1.0	.15
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.79	.07
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.33	.03
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.59	.08	.01
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.2	.02	.01
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.2	.23	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	1.0	1.1	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.28	1.2	.00
31	.00	---	.00	.00	---	e.00	---	.00	---	.10	1.3	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.09	13.43	29.97
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.39	.43	1.00
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.2	1.3	3.6
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	24	27	59

WTR YR 1999 TOTAL 55.49 MEAN .15 MAX 6.2 MIN .00 AC-FT 110

e Estimated

## LITTLE COLORADO RIVER BASIN

61

## 09386960 ZUNI RIVER ABOVE BLACK ROCK RESERVOIR, NM

LOCATION.--Lat 35°08'03", long 108°45'03", in NE  $\frac{1}{4}$  sec. 17, T. 10 N., R. 18 W., McKinley County, Hydrologic Unit 15020004, on Zuni Indian Reservation, on left bank downstream from highway bridge on State Highway 36, 0.8 mi upstream from flow line of Black Rock Reservoir, 2.3 mi northeast of Black Rock, and 5.9 mi northeast of Zuni Pueblo.

DRAINAGE AREA.--848 mi<sup>2</sup>, of which 13 mi<sup>2</sup> is non-contributing.

PERIOD OF RECORD.--October 1969 to current year. Prior to October 1974 published as "above Zuni Reservoir."

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Elevation of gage is 6,480 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Several observations of water temperature were made during the year. No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	2.9	2.3	2.1	1.4	.79	.46	.39	.00	.00	.00	.00
2	.00	1.9	1.8	1.6	1.1	.71	1.4	.59	.00	.00	57	.00
3	.00	1.1	1.6	1.4	e.96	.62	2.6	.48	.00	.00	8.9	.10
4	.00	.78	1.5	1.3	e1.2	.58	2.5	1.0	.00	.00	3.1	.03
5	.00	.86	e1.3	e1.1	e1.4	.60	2.5	1.8	.00	4.0	3.7	.00
6	.00	.83	e1.1	e1.0	e1.5	.55	2.8	1.1	.00	.21	5.2	.00
7	.00	.84	e1.0	e1.2	e1.4	.63	2.4	.82	.00	.01	2.0	.00
8	.00	1.2	e.98	1.4	e1.3	.61	2.2	.49	.00	.01	.12	.00
9	.00	4.5	e1.0	e1.1	e1.4	.64	2.0	.32	.03	.00	.00	.00
10	.00	7.3	e1.2	e1.0	1.5	.67	1.6	.27	.00	.00	.00	.00
11	.00	4.0	1.1	e1.6	e.98	.71	.96	.17	.00	.00	.00	.00
12	.00	3.1	1.0	e1.3	e1.0	.75	.68	.09	.00	.00	.00	.00
13	.00	2.5	1.2	1.1	e1.2	.87	.65	.05	.00	.00	.00	.00
14	.00	2.1	1.3	.99	1.4	.74	.71	.08	.00	.00	.00	.07
15	.00	1.7	1.4	.95	1.3	.82	.74	.07	.00	.00	.00	.00
16	.00	1.5	1.4	1.2	e1.1	.86	.68	.03	.00	.00	.37	.00
17	.00	1.3	1.5	1.1	e1.0	1.2	.58	.01	.00	.00	.02	.00
18	.00	1.2	1.6	1.5	e1.1	2.1	.47	.00	.00	.48	.13	.13
19	.00	1.2	1.7	1.4	e1.0	2.6	.39	.00	.00	.04	.44	.05
20	.00	1.2	1.7	1.5	e1.1	2.1	.48	.00	.00	.00	.00	.00
21	.00	1.1	1.5	e1.3	e1.4	1.8	.52	.00	.00	.00	.00	.00
22	.00	1.2	e1.1	e1.1	e1.3	1.4	.27	.00	.00	.91	.00	.00
23	.00	1.3	e.98	e1.0	e1.0	1.1	.15	.00	.00	.36	.00	.00
24	.00	e1.4	e.90	e1.1	e1.1	.73	.16	.00	.00	.00	.13	.00
25	.00	e1.2	e1.0	e1.4	e1.3	.56	e.40	.00	.00	.00	.00	.00
26	8.7	e1.0	1.2	1.5	1.2	.59	e.64	.00	.00	.11	.00	.00
27	8.7	1.2	1.3	1.4	1.1	1.0	e.88	.00	.00	.23	1.1	.00
28	8.1	1.4	1.3	1.2	.90	1.0	e1.1	.00	.00	.31	1.1	.00
29	3.1	2.5	1.4	1.1	---	.80	e1.4	.00	.00	.64	.84	.00
30	1.7	3.2	1.6	1.2	---	.75	.40	.00	.00	.34	.32	.00
31	2.8	---	1.8	1.2	---	.56	---	.00	---	.00	.00	---
TOTAL	33.10	57.51	41.76	39.34	33.64	29.44	32.71	7.76	0.00	7.05	84.47	0.38
MEAN	1.07	1.92	1.35	1.27	1.20	.95	1.09	.25	.000	.23	2.72	.013
MAX	8.7	7.3	2.3	2.1	1.5	2.6	2.8	1.8	.00	4.0	57	.13
MIN	.00	.78	.90	.95	.90	.55	.15	.00	.00	.00	.00	.00
AC-FT	66	114	83	78	67	58	65	15	.00	14	168	.8

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1999, BY WATER YEAR (WY)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	1.55	1.45	1.32	2.92	10.1	42.6	50.7	5.28	.19	3.75	5.74	2.42																			
MAX	12.6	13.7	5.87	41.9	73.4	263	308	65.3	1.97	23.6	23.6	17.5																			
(WY)	1984	1984	1984	1993	1980	1985	1973	1973	1979	1977	1977	1984																			
MIN	.000	.000	.013	.11	.33	.66	.009	.000	.000	.000	.000	.000																			
(WY)	1974	1971	1971	1977	1972	1971	1972	1997	1970	1971	1986	1979																			

## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1970 - 1999

ANNUAL TOTAL	2185.05	367.16	
ANNUAL MEAN	5.99	1.01	10.6
HIGHEST ANNUAL MEAN			45.9
LOWEST ANNUAL MEAN			.50
HIGHEST DAILY MEAN	212	57	1530
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		1080	5200
INSTANTANEOUS PEAK STAGE		5.28	6.61
INSTANTANEOUS LOW FLOW		.00	.00
ANNUAL RUNOFF (AC-FT)	4330	728	7640
10 PERCENT EXCEEDS	13	1.8	10
50 PERCENT EXCEEDS	.98	.64	.77
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

a From rating curve extended above 670 ft<sup>3</sup>/s, on basis of slope-area measurements at gage heights, 4.05 ft, 3.95 ft, and 6.61 ft.

## LITTLE COLORADO RIVER BASIN

## 09390600 SHOW LOW CREEK NEAR LAKESIDE, AZ

**LOCATION.**--Lat 34°10'46", long 109°59'14", in SW1/4NW1/4 sec.14, T.9 N., R.22 E., Navajo County, Hydrologic Unit 15020005, on left bank 1 mi upstream from pumping plant on Show Low Lake, 1.9 mi northwest of Lakeside, 2.2 mi upstream from Jaques Dam, and 6 mi southeast of Show Low.

**DRAINAGE AREA.**--68.6 mi<sup>2</sup>.

**PERIOD OF RECORD.**--May 1963 to current year.

**REVISED RECORDS.**--WSP 1513: 1954-66. WSP 1926: Drainage area. WRD Ariz. 1971: 1970(M).

**GAGE.**--Water-stage recorder and concrete-dam control with V-notch sharp-crested weir. Elevation of gage is 6,610 ft above sea level, from topographic map.

**REMARKS.**--Records fair except for estimated daily discharges, which are poor. Record shows inflow to Show Low Lake. Flow partly regulated by several small reservoirs, largest of which are Rainbow Lake and Scott Reservoir, combined capacity, 2,400 acre-ft. Diversions for irrigation of about 250 acres above station.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 5,550 ft<sup>3</sup>/s Dec. 18, 1978, gage height, 9.16 ft, from rating curve extended above 2,500 ft<sup>3</sup>/s; maximum gage height, 9.53 ft Dec. 26, 1971; no flow Oct. 5, 6, Dec. 10-19, 1964, Jan. 4-15, 1970.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 26.....	1800	*234	*3.50
Aug. 28.....	1615	168	3.24

Minimum daily discharge, 0.28 ft<sup>3</sup>/s, Mar. 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.56	1.4	2.5	.68	.38	2.3	e1.0	8.6	5.9	.60	3.3	14
2	.59	.88	1.8	.67	.36	1.5	e5.0	8.9	5.3	.50	3.0	8.0
3	.72	.82	1.4	.67	.35	.97	e5.0	9.0	5.2	.55	5.8	6.3
4	.71	.64	1.1	.66	.33	.91	e5.0	7.7	5.4	.64	13	3.2
5	.67	.55	.95	.65	.44	.93	e5.0	6.8	5.3	.61	14	3.1
6	.64	.51	1.1	.65	.72	.93	e7.0	6.6	5.3	1.5	24	2.6
7	.64	.47	1.0	.66	.64	.94	e11	6.6	5.3	3.7	7.0	2.1
8	.60	.48	.94	.66	.61	.96	e12	7.0	5.3	2.0	4.7	2.0
9	.63	2.4	.89	.65	.67	.87	e9.0	6.8	4.9	1.1	8.4	2.1
10	.62	1.6	.82	.65	.69	.71	e9.0	6.6	4.8	1.0	16	3.2
11	.63	.86	.77	.69	.69	.64	e10	6.5	4.8	1.6	11	2.5
12	.65	.75	.74	.71	.61	.61	e9.0	6.5	4.7	1.6	7.4	2.9
13	3.8	.75	.75	.66	.57	.57	7.1	7.1	4.7	.84	4.8	2.4
14	4.6	.71	.76	.64	.62	.52	9.3	6.8	4.6	1.0	3.7	2.2
15	4.7	.68	.75	.63	.65	.50	6.2	6.3	4.7	1.2	2.9	6.8
16	4.8	.65	.77	.64	.91	.51	3.8	7.9	4.7	.81	3.0	6.0
17	5.3	.62	.76	.65	2.3	.52	3.2	6.9	4.5	.71	2.3	4.6
18	6.0	.60	.77	.72	2.8	.56	2.4	6.1	4.4	.74	3.1	3.0
19	6.2	.57	.76	.70	4.6	.67	2.0	6.1	4.2	1.1	3.0	3.0
20	6.1	.57	.74	.67	4.2	.68	1.9	5.9	4.0	.78	2.6	2.8
21	6.3	.57	.72	.68	3.9	.63	1.7	5.8	3.3	.76	2.8	2.3
22	5.5	.57	.67	.68	3.4	.63	1.5	5.7	2.7	.79	2.2	2.3
23	4.9	.57	.67	.63	2.7	.61	1.3	5.8	2.4	.82	1.9	3.8
24	4.7	.57	.67	.50	2.6	.50	1.2	5.8	2.0	.97	2.6	10
25	5.6	.56	.67	.43	2.5	.45	1.2	5.9	1.3	2.0	3.9	5.3
26	11	.57	.68	.41	2.5	.40	1.1	6.0	.73	61	3.2	3.8
27	3.0	.57	.73	.41	2.4	.37	1.4	5.9	1.1	64	3.8	3.4
28	1.1	.60	.68	.42	2.3	.35	4.3	6.0	4.6	11	67	2.6
29	.84	4.6	.78	.42	---	.33	9.0	5.9	1.4	38	46	1.9
30	.70	2.7	.68	.41	---	.30	8.7	5.9	.67	9.6	28	1.5
31	1.4	---	.68	.39	---	.28	---	6.3	---	4.4	12	---
TOTAL	94.20	28.39	27.70	18.69	45.44	21.65	155.3	205.7	118.20	215.92	316.4	119.7
MEAN	3.04	.95	.89	.60	1.62	.70	5.18	6.64	3.94	6.97	10.2	3.99
MAX	11	4.6	2.5	.72	4.6	2.3	12	9.0	5.9	64	67	14
MIN	.56	.47	.67	.39	.33	.28	1.0	5.7	.67	.50	1.9	1.5
AC-FT	187	56	55	37	90	43	308	408	234	428	628	237

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1999, BY WATER YEAR (WY)

MEAN	6.12	5.59	22.2	13.9	31.6	45.3	19.7	7.58	6.15	5.82	5.59	4.76
MAX	57.4	54.3	285	200	225	189	197	72.0	13.2	10.8	20.1	18.5
(WY)	1985	1979	1985	1993	1980	1978	1973	1973	1992	1987	1988	1988
MIN	.73	.29	.20	.10	.19	.70	.97	1.68	1.82	1.07	1.37	1.11
(WY)	1965	1971	1965	1971	1964	1999	1957	1960	1990	1996	1964	1998

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1954 - 1999
ANNUAL TOTAL	3623.53	1367.29	
ANNUAL MEAN	9.93	3.75	14.5
HIGHEST ANNUAL MEAN			56.8 1965
LOWEST ANNUAL MEAN			1.61 1990
HIGHEST DAILY MEAN	136 Mar 27	67 Aug 28	3520 Dec 18 1973
LOWEST DAILY MEAN	.47 Sep 25	.28 Mar 31	.00 Feb 14 1954
ANNUAL SEVEN-DAY MINIMUM	.57 Nov 19	.35 Mar 25	.00 Dec 10 1964
ANNUAL RUNOFF (AC-FT)	7190	2710	10470
10 PERCENT EXCEEDS	20	7.0	20
50 PERCENT EXCEEDS	4.5	1.6	4.5
90 PERCENT EXCEEDS	.64	.57	.77

e Estimated

## 08391000 SHOW LOW LAKE NEAR SHOW LOW, AZ

**LOCATION.**--Lat 34°11'35", long 110°00'15", in NW1/4 sec. 10, T.9 N., R.22 E., Navajo County, Hydrologic Unit 15020005, on upstream side of right end of Jaques Dam on Show Low Creek, 3.4 mi northwest of Lakeside, and 4.5 mi southeast of Show Low.

**DRAINAGE AREA.**--73.0 mi<sup>2</sup>.

**PERIOD OF RECORD.**--June 1953 to current year. Periodic readings of elevation and contents only, 1953-1985, published with record of Show Low Creek below Jaques Dam near Show Low, AZ (09392000).

**GAGE.**--Water-stage recorder, with periodic supplemental lake elevation readings. Elevation of gage is 6500.0 ft above sea level.

**REMARKS.**--Records good. Lake is formed by an earthen-rock dam; storage began in spring of 1953. The spillway is a concrete, broad-crested Ogee weir. Total capacity to spillway, 6,180 acre-ft, consisting of 1,070 acre-ft dead storage below elevation 6,535.0 ft (sill of outlet structure) and 5,110 acre-ft usable storage between elevation 6,535.0 ft and 6,570.0 ft (sill of overflow spillway). Capacity table prepared by Leeds, Hill, and Jewett, consulting engineers, from surveys by the firm. Water cannot be pumped when lake elevation is below 6,538.5 ft (sill of intake to pumping plant), but can be released to stream channel down to elevation 6,535.0 ft. Figures given herein represent total contents.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum contents, 6,920 acre-ft Dec. 18, 1978 and Dec. 27, 1984; maximum elevation, 6,573.72 ft Dec. 27, 1984; minimum contents, not determined.

**EXTREMES FOR CURRENT YEAR.**--Maximum contents, 3,680 acre-ft Sept. 27-28, elevation 6,555.78 ft; minimum contents 2,530 acre-ft Oct. 29-Nov. 8, Nov. 23-27; minimum elevation 6,547.83 ft Oct. 30.

Capacity table (elevation, in feet, and contents, in acre-feet)

6,535	1,070	6,565	5,240
6,545	2,160	6,575	7,180
6,555	3,560		

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3130	2530	2560	2580	2580	2630	2570	2760	2810	2670	2990	3570
2	3100	2530	2560	2580	2570	2640	2590	2770	2810	2660	2990	3580
3	3060	2530	2570	2580	2570	2640	2600	2770	2800	2650	2990	3590
4	3030	2530	2570	2580	2580	2630	2610	2770	2800	2640	3010	3600
5	2990	2530	2570	2580	2580	2630	2620	2780	2800	2630	3040	3600
6	2970	2530	2570	2580	2580	2630	2630	2780	2790	2630	3070	3590
7	2940	2530	2580	2580	2580	2630	2650	2780	2790	2630	3070	3590
8	2910	2530	2580	2580	2580	2630	2660	2790	2790	2630	3070	3580
9	2880	2540	2580	2580	2580	2630	2680	2790	2790	2620	3080	3570
10	2840	2540	2580	2580	2580	2620	2700	2790	2790	2610	3120	3570
11	2810	2540	2580	2580	2580	2620	2720	2790	2780	2610	3140	3570
12	2780	2540	2580	2580	2580	2620	2730	2790	2780	2600	3150	3570
13	2750	2540	2580	2580	2580	2620	2750	2790	2780	2600	3160	3560
14	2730	2540	2580	2580	2580	2610	2760	2800	2780	2600	3160	3570
15	2710	2540	2580	2580	2580	2610	2770	2800	2770	2600	3160	3590
16	2690	2540	2580	2580	2580	2610	2780	2800	2770	2600	3160	3600
17	2660	2540	2580	2580	2580	2610	2780	2800	2770	2600	3160	3610
18	2650	2540	2580	2580	2580	2600	2780	2800	2770	2600	3160	3620
19	2630	2540	2580	2580	2590	2600	2780	2800	2770	2600	3160	3620
20	2610	2540	2580	2580	2600	2600	2780	2800	2770	2600	3170	3620
21	2600	2540	2580	2580	2600	2600	2770	2800	2760	2600	3170	3620
22	2590	2540	2580	2580	2610	2600	2770	2800	2750	2600	3170	3630
23	2580	2530	2580	2580	2610	2590	2760	2800	2750	2600	3170	3640
24	2570	2530	2580	2580	2620	2590	2760	2800	2740	2600	3170	3650
25	2580	2530	2580	2580	2620	2590	2750	2800	2730	2610	3170	3670
26	2580	2530	2580	2580	2620	2580	2750	2800	2720	2750	3170	3670
27	2570	2530	2580	2580	2630	2580	2740	2800	2710	2900	3170	3680
28	2550	2540	2580	2580	2630	2590	2740	2810	2700	2920	3340	3680
29	2530	2550	2580	2580	---	2570	2740	2810	2700	2990	3440	3670
30	2530	2560	2580	2580	---	2570	2750	2810	2680	3000	3500	3670
31	2530	---	2580	2580	---	2570	---	2810	---	3000	3530	---
MAX	3130	2560	2580	2580	2630	2640	2780	2810	2810	3000	3530	3680
MIN	2530	2530	2560	2580	2570	2570	2570	2760	2680	2600	2990	3560
(*)	6547.87	6548.07	6548.23	6548.22	6548.62	6548.13	6549.49	6549.90	6549.01	6551.25	6554.85	6555.71
(**)	-630	+30	+20	0	+50	-60	+180	+60	-130	+320	-530	+140
CAL YR 1998	MAX	6230	MIN	1750	(**)	+810						
WTR YR 1999	MAX	3680	MIN	2530	(**)	+510						

(\*) Elevation, in feet, at end of month.

(\*\*) Change in contents, in acre-feet.

## LITTLE COLORADO RIVER BASIN

## 09392000 SHOW LOW CREEK BELOW JACQUES DAM, NEAR SHOW LOW, AZ

**LOCATION.**--Lat 34°11'47", long 110°00'13", in NW 1/4 sec. 10, T. 8 N., R. 22 E., Navajo County, Hydrologic Unit 15020005, on right bank just downstream from Jacques Dam, 3.5 mi northwest of Lakeside, and 4.5 mi southeast of Show Low.

**DRAINAGE AREA.**--73.0 mi<sup>2</sup>.

**PERIOD OF RECORD.**--November 1941 to January 1945, June 1953 to September 1955 (monthly discharge only), October 1955 to current year. Monthly discharge only November 1941 to January 1945, published in WSP 1313. Published as "at Jacques damsite, near Lakeside" 1941-45.

**REVISED RECORDS.**--WSP 1928: Drainage area. WDR AZ-81-1: 1979 (M).

**GAGE.**--Water-stage recorder and sharp-crested weir, with supplementary water-stage recorder on lake for recording flow over concrete spillway. Elevation of gage is 6,530 ft above sea level, from topographic map. November 1941 to January 1945 nonrecording gage at site 100 ft upstream at different datum.

**REMARKS.**--No estimated daily discharges. Records good. Discharge record is the sum of the diversions from Show Low Lake into Show Low Creek (09392000) and flows over the Show Low Lake spillway that enters Show Low Creek about 1/4 mi downstream of station 09392000. No flow over the spillway this year. Record since 1953 shows release from Show Low Lake. Flow regulated by several reservoirs, largest of which are Show Low Lake, completed in 1953; Rainbow Lake, completed prior to 1941; and Scott Reservoir, completed in 1946 (combined capacity, 8,800 acre-ft). Diversions for irrigation of about 250 acres above Show Low Lake and diversion by pumping of floodwater stored in Show Low Lake to Forestdale Creek in Salt River basin (see record for Forestdale Creek diversion from Show Low Creek, near Show Low, elsewhere in this report).

**AVERAGE DISCHARGE.**--46 years (water years 1954-99), 9.18 ft<sup>3</sup>/s, 6,650 acre-ft/yr; median of yearly mean discharges, 4.30 ft<sup>3</sup>/s, 3,100 acre-ft/yr.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 4,800 ft<sup>3</sup>/s, spillway flow entering 0.2 mi downstream from station, Dec. 27, 1984, lake elevation, 6,573.72 ft, from rating curve extended above 270 ft<sup>3</sup>/s; no flow at times.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Flood of January 18, 1952, discharge, 6,250 ft<sup>3</sup>/s at site 5 mi downstream at Show Low, is the largest since at least 1940.

**EXTREMES FOR CURRENT YEAR.**--Maximum daily discharge, 5.1 ft<sup>3</sup>/s Oct. 1-14; minimum daily 0.29 ft<sup>3</sup>/s for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.1	.44	.44	.44	.36	.39	1.2	4.7	4.7	4.7	4.5	1.0
2	5.1	.44	.44	.44	.36	.36	1.2	4.7	4.7	4.7	4.9	1.0
3	5.1	.44	.44	.44	.37	.51	.86	4.7	4.7	4.7	4.9	1.0
4	5.1	.44	.44	.44	.41	.81	.44	4.7	4.7	4.7	4.9	1.0
5	5.1	.44	.44	.44	.44	1.2	.44	4.7	4.7	4.7	4.9	1.7
6	5.1	.44	.44	.44	.44	1.2	.44	4.7	4.7	4.7	4.7	3.7
7	5.1	.44	.44	.44	.44	1.2	.39	4.7	4.7	4.7	4.7	3.7
8	5.1	.44	.44	.44	.44	1.2	.36	4.7	4.7	4.7	4.7	4.0
9	5.1	.44	.44	.44	.44	1.2	.36	4.7	4.7	4.7	4.7	4.4
10	5.1	.45	.44	.44	.44	1.2	.36	4.7	4.7	4.7	3.6	4.4
11	5.1	.44	.44	.44	.44	1.2	.66	4.7	4.7	4.7	.38	4.5
12	5.1	.44	.44	.44	.44	1.2	.81	4.7	4.7	4.7	.29	4.7
13	5.1	.44	.44	.44	.44	1.2	.81	4.7	4.7	4.7	.29	3.9
14	5.1	.44	.44	.44	.44	1.2	.94	4.7	4.7	3.5	1.1	.44
15	5.0	.44	.44	.40	.44	1.2	1.3	4.7	4.7	.44	4.1	.44
16	4.9	.44	.44	.36	.44	1.2	1.5	4.7	4.7	.44	4.2	.44
17	4.9	.44	.44	.36	.44	1.2	1.7	4.7	4.7	.44	2.3	.44
18	4.9	.44	.44	.36	.44	1.2	1.7	4.7	4.7	.44	1.3	.44
19	4.9	.44	.44	.37	.44	1.2	2.0	4.7	4.7	.44	1.3	.44
20	4.9	.44	.44	.38	.44	1.2	2.5	4.7	4.7	.44	1.3	.44
21	4.9	.44	.44	.32	.44	1.2	3.0	4.7	4.7	.43	1.3	.44
22	3.1	.44	.44	.29	.44	1.2	3.4	4.7	4.7	.31	1.3	.44
23	.44	.44	.44	.29	.44	1.2	3.4	4.7	4.7	.29	1.3	.44
24	.44	.44	.44	.29	.42	1.2	3.4	4.7	4.7	.29	1.3	.44
25	.44	.44	.44	.30	.43	1.2	3.4	4.7	4.7	.30	1.9	.43
26	.44	.44	.44	.29	.44	1.2	3.6	4.7	4.7	.35	4.2	.39
27	.44	.44	.44	.29	.44	1.2	3.7	4.7	4.7	.44	4.2	.42
28	.44	.44	.44	.36	.44	1.2	3.7	4.7	4.7	.44	1.9	.44
29	.44	.44	.44	.38	---	1.2	3.7	4.7	4.7	.44	1.0	2.1
30	.44	.44	.44	.36	---	1.2	3.9	4.7	4.7	2.0	1.0	4.2
31	.44	---	.44	.36	---	1.2	---	4.7	---	4.1	1.0	---
TOTAL	112.86	13.21	13.64	11.92	12.03	34.47	55.17	145.7	141.0	76.63	83.46	51.82
MEAN	3.64	.44	.44	.38	.43	1.11	1.84	4.70	4.70	2.47	2.69	1.73
MAX	5.1	.45	.44	.44	.44	1.2	3.9	4.7	4.7	4.7	4.9	4.7
MIN	.44	.44	.44	.29	.36	.36	.36	4.7	4.7	.29	.29	.39
AC-FT	224	26	27	24	24	68	109	289	280	152	166	103
CAL YR 1998	TOTAL	1780.11	MEAN	4.88	MAX	92	MIN	.12	AC-FT	3530		
WTR YR 1999	TOTAL	751.91	MEAN	2.06	MAX	5.1	MIN	.29	AC-FT	1490		

## 09394600 LITTLE COLORADO RIVER AT WOODRUFF, AZ

LOCATION:--Lat 34°48'58", long 110°02'37", in NE1/4SW1/4 sec.17, T.16 N., R.22 E., Navajo County, Hydrologic Unit 15020002, on left bank at abandoned county road bridge in Woodruff, 3.7 mi downstream from Silver Creek.

DRAINAGE AREA:--8,072 mi<sup>2</sup>, of which 297 mi<sup>2</sup> is noncontributing.

PERIOD OF RECORD:--March to May 1905; June to July 1905 (gage heights only); August 1905 to May 1907; July 1907 to April 1908, July to October 1908, December 1908, and December 1915 to September 1916 (gage heights only); October 1916 to August 1917 (monthly discharge only); September 1917 to March 1918, December 1918 to December 1919, April 1929 to December 1933, September 1935 to current year. Published as "near Woodruff" 1916-19, 1929-48.

REVISED RECORDS:--WSP 1049: 1917. WSP 1213: 1906, 1919(M). WDR AZ-88-1: Drainage area.

GAGE:--Water-stage recorder. Datum of gage is 5,130.3 ft above sea level. See WSP 1733 for history of changes prior to Sept. 22, 1949.

REMARKS:--Records good except for estimated daily discharges, which are poor. Diversions above station for irrigation of about 22,000 acres, including a pump installation 1,000 ft upstream installed in spring of 1973. Some regulation by reservoirs above station, combined capacity, about 81,400 acre-ft.

AVERAGE DISCHARGE:--70 years (water years 1906, 1917, 1930-33, 1936-99), 49.9 ft<sup>3</sup>/s, 36,200 acre-ft/yr; median of yearly mean discharges, 42 ft<sup>3</sup>/s, 30,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD:--Maximum discharge not determined, occurred Jan. 19, 1916; maximum discharge recorded, 25,000 ft<sup>3</sup>/s Dec. 5, 1919; maximum gage height, 22.9 ft from high-water mark in gage well, Dec. 19, 1978, no flow at times in most years prior to 1960 and in 1974, 1976, 1983, 1999.

EXTREMES FOR CURRENT YEAR:--Peak discharges greater than base discharge of 1,900 ft<sup>3</sup>/s and maximum (†): :

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 1 .....	0415	*3.110	*14.25

Minimum daily discharge, no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	105	3.1	3.9	3.2	1.3	1.0	.69	.21	.00	33	1530
2	2.1	27	3.7	3.9	3.0	1.2	1.9	.68	.04	.00	21	e60
3	2.3	14	5.3	3.8	3.2	.89	1.7	1.5	.35	.00	62	20
4	2.2	e8.0	3.8	3.5	1.0	.07	1.5	.63	.50	.00	66	11
5	1.6	5.1	3.8	3.7	3.1	.05	1.5	.93	.43	.00	43	9.1
6	.28	4.7	3.8	3.6	2.3	.72	1.4	1.2	.20	17	e18	9.8
7	1.3	5.2	3.7	3.7	3.2	1.1	1.4	1.2	.17	2.7	e11	11
8	3.9	5.3	3.5	3.7	2.6	.83	1.3	.94	.04	27	e2.5	4.5
9	3.4	5.3	3.8	3.9	3.4	1.0	1.3	.95	.00	20	e2.0	3.5
10	4.2	37	3.7	3.8	3.1	.79	1.3	1.1	.00	23	e1.5	8.1
11	3.3	32	3.5	3.7	3.4	.73	1.4	.60	.06	28	15	21
12	3.9	15	3.6	3.6	2.7	.97	1.3	.69	.12	7.9	6.2	52
13	1.1	8.7	3.5	3.7	2.3	1.1	.81	.72	.00	3.5	6.7	19
14	1.6	5.1	3.4	3.6	1.7	1.1	.17	1.5	.06	2.3	8.5	27
15	1.9	4.0	3.5	3.4	1.1	1.6	.72	.93	.02	67	64	206
16	2.3	3.2	3.5	3.3	1.4	1.5	1.1	1.2	.00	31	54	83
17	4.2	3.7	3.5	3.5	1.6	1.5	1.3	1.2	.00	12	339	36
18	3.7	3.5	3.5	3.5	1.6	1.5	1.2	.40	.02	8.5	207	16
19	6.0	3.1	3.5	3.6	1.4	1.0	.81	.36	.06	3.0	84	9.0
20	2.6	3.0	3.5	3.5	1.4	.11	.14	.55	.04	4.7	190	30
21	2.8	3.4	3.3	3.3	1.5	.45	.63	.59	.01	15	57	13
22	5.7	3.5	3.5	3.3	1.5	.80	1.0	.55	.00	229	22	4.7
23	3.9	3.3	3.3	3.2	1.2	.92	1.1	.51	.00	212	19	7.0
24	3.8	3.6	3.2	3.2	1.2	1.1	1.0	.54	.00	103	12	64
25	3.2	3.6	3.4	3.2	1.4	.81	1.0	.39	.00	291	9.1	50
26	101	3.4	3.5	3.3	1.3	.70	.34	.54	.00	498	134	19
27	184	3.2	3.6	3.2	1.3	.70	.43	.74	.00	321	61	7.1
28	46	3.2	3.7	3.2	1.3	1.0	.78	.49	.01	169	43	3.3
29	23	3.0	3.9	3.2	---	.84	.71	.50	.00	e20	223	2.7
30	24	2.8	3.9	3.3	---	.13	.59	.41	.00	677	266	4.0
31	261	---	3.9	3.2	---	.62	---	.27	---	293	764	---
TOTAL	712.28	331.0	112.4	108.5	59.4	27.13	30.83	23.51	2.34	3085.60	2844.5	2340.8
MEAN	23.0	11.0	3.63	3.50	2.12	.88	1.03	.76	.078	99.5	91.8	78.0
MAX	261	105	5.3	3.9	3.4	1.6	1.9	1.5	.50	677	764	1530
MIN	.28	2.8	3.1	3.2	1.1	.05	.14	.27	.00	.00	1.5	2.7
AC-FT	1410	657	223	215	116	54	61	47	4.6	6120	5640	4640

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 1999, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1905	39.7	301	1973	1.05	1951
1906	24.4	543	1906	3.00	1976
1907	34.7	382	1920	2.26	1974
1908	42.2	599	1993	2.99	1990
1909	59.3	827	1932	2.12	1999
1910	77.9	610	1941	.88	1999
1911	56.5	789	1905	.003	1956
1912	21.3	488	1973	.000	1929
1913	6.52	37.8	1955	.000	1929
1914	73.1	810	1919	.53	1942
1915	143	951	1955	3.57	1950
1916	85.9	630	1929	.71	1956

## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1905 - 1999

ANNUAL TOTAL	6455.42	9678.29	
ANNUAL MEAN	17.7	26.5	49.8
HIGHEST ANNUAL MEAN			161
LOWEST ANNUAL MEAN			9.62
HIGHEST DAILY MEAN	1970 Aug 1	1530 Sep 1	10000 Nov 27 1905
LOWEST DAILY MEAN	.05 Jul 1	.00 Jun 9	.00 Jun 10 1919
ANNUAL SEVEN-DAY MINIMUM	.52 Jun 27	.60 Jun 29	.00 May 1 1929
INSTANTANEOUS PEAK STAGE			22.90 Dec 19 1978
ANNUAL RUNOFF (AC-FT)	12800	19200	36060
10 PERCENT EXCEEDS	27	44	107
50 PERCENT EXCEEDS	3.5	3.2	7.1
90 PERCENT EXCEEDS	.96	.19	1.0

e Estimated

## LITTLE COLORADO RIVER BASIN

## 00300100 PUERCO RIVER NEAR CHAMBERS, AZ

**LOCATION.**--Lat 35°10'56", long 109°26'47", in NW1/4NE1/4 sec.35, T.21 N., R.27 E., Apache County, Hydrologic Unit 15020007, on right bank 0.5 mi upstream from Atchison, Topeka, and Santa Fe Railway Co. bridge, and 1.0 mi southwest of Chambers.

**DRAINAGE AREA.**--2,156 mi<sup>2</sup>, of which 50 mi<sup>2</sup> is noncontributing.

**PERIOD OF RECORD.**--Water years 1971-72 (annual maximums only), January 1973 to current year (daily mean discharge above 500 ft<sup>3</sup>/s only).

**REVISED RECORDS.**--WDR AZ-88-1: Drainage area.

**GAGE.**--Water-stage recorder. Elevation of gage is 5,720 ft above sea level, from topographic map. Prior to Mar. 7, 1989, water stage recorder at site 0.5 mi downstream at different datum, now used as supplementary gage.

**REMARKS.**--Records poor. Only daily mean discharges above 500 ft<sup>3</sup>/s are published. Small diversions above station for irrigation and livestock. Red Lake, near the headwaters of Black Creek, was built in 1954; the capacity was 9,700 acre-ft, but capacity may have been reduced by silting.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 17,800 ft<sup>3</sup>/s Sept. 30, 1971, gage height, 9.65 ft, site and datum then in use; no flow observed on many days each year.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 26.....	1400	*4,600	*5.38

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	844	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	700	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	1990	---	---	---	---	---	---	---	---	---	---	---
27	e750	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	606	---
29	---	---	---	---	---	---	---	---	---	---	558	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

e Estimated



## 09397300 LITTLE COLORADO RIVER NEAR JOSEPH CITY, AZ

**LOCATION**--Lat 34°54'04", long 110°15'17", in NE1/4SE1/4 sec. 8, T. 17 N., R. 20 E., Navajo County, Hydrologic Unit 15020008, on left bank just upstream from diversion dam, 5.4 mi west of Holbrook, 5.7 mi southeast of Joseph City, and 8.5 mi downstream from Puerto River.

**DRAINAGE AREA**--12,384 mi<sup>2</sup>, of which 347 mi<sup>2</sup> are noncontributing.

**PERIOD OF RECORD**--July 1973 to current year (daily discharge only for those days on which instantaneous discharge exceeds 500 ft<sup>3</sup>/s).

**REVISED RECORDS**--WDR AZ-88-1: Drainage area.

**GAGE**--Water-stage recorder, crest-stage gage, and concrete diversion dam. Datum of gage is 5,031.10 ft above sea level (Corps of Engineers bench mark). From Oct. 1, 1990, to Mar. 19, 1993, on right bank at same datum.

**REMARKS**--Records fair except for estimated daily discharges, which are poor. Published record includes only those days when instantaneous discharge over the crest of the dam exceeds 500 ft<sup>3</sup>/s. Diversions above station for irrigation of about 23,000 acres, diversions at dam on right bank of most low flows for irrigation of about 1,500 acres in vicinity of Joseph City. Some regulation by reservoirs; combined capacity of principal reservoirs, about 91,400 acre-ft.

**EXTREMES FOR PERIOD OF RECORD**--Maximum discharge, 25,400 ft<sup>3</sup>/s Dec. 19, 1978, gage height, 7.64 ft, from rating curve extended above 7,400 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 6.82 ft.

**EXTREMES OUTSIDE PERIOD OF RECORD**--A discharge of 60,000 ft<sup>3</sup>/s was determined for peak of Sept. 19, 1923, at Holbrook (see prior records for sta 09397000, Little Colorado River at Holbrook, for this peak and other peaks 1905-6, 1949-73).

**EXTREMES FOR CURRENT YEAR**--Peak discharges greater than base discharge of 5,000 ft<sup>3</sup>/s and maximum (""):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 31.....	0730	5,190	5.34	Aug. 28.....	1015	*6,300	*5.78
Aug. 16.....	1015	5,090	5.30				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	e270	---	---	---	---	---	---	---	---	---	2370
2	---	---	---	---	---	---	---	---	---	---	e140	655
3	---	---	125	---	---	---	---	---	---	---	e270	324
4	---	---	---	---	---	---	---	---	---	---	e1200	e180
5	---	---	---	---	---	---	---	---	---	---	e1200	---
6	---	---	---	---	---	---	---	---	---	---	e550	---
7	---	---	---	---	---	---	---	---	---	---	e330	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	220	---	---
11	---	---	---	---	---	---	---	---	---	114	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	283	---	---
15	---	---	---	---	---	---	---	---	---	e310	857	e1200
16	---	---	---	---	---	---	---	---	---	---	e2600	---
17	---	---	---	---	---	---	---	---	---	---	e600	---
18	---	---	---	---	---	---	---	---	---	---	e1200	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	e280	---
21	---	---	---	---	---	---	---	---	---	---	e350	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	148	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	e550	---	272
25	---	---	---	---	---	---	---	---	---	e920	---	---
26	e1800	---	---	---	---	---	---	---	---	e500	e190	---
27	e2800	---	---	---	---	---	---	---	---	e240	e440	---
28	e670	---	---	---	---	---	---	---	---	e1400	e3000	---
29	---	---	---	---	---	---	---	---	---	e160	e2100	---
30	e110	---	---	---	---	---	---	---	---	818	e1000	---
31	e2500	---	---	---	---	---	---	---	---	e520	e750	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

e Estimated

## LITTLE COLORADO RIVER BASIN

## 06387500 CHEVLON CREEK BELOW WILDCAT CANYON NEAR WINSLOW, AZ

LOCATION.--Lat 34°38'11", long 110°42'48", in SW1/4 sec.36, T.15 N., R.15 E., Navajo County, Hydrologic Unit 15020010, Sitgreaves National Forest, on right bank 0.4 mi downstream from Wildcat Canyon and 25 mi south of Winslow.

DRAINAGE AREA--271 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1947 to September 1970 (daily discharge), 1979, 1982-95 (annual maximum only), October 1995 to current year.

REVISED RECORDS.--WSP 1179: 1949(p), WSP 1283: 1951(m).

GAGE.--Water-stage recorder. Datum of gage is 5,905.18 ft above sea level, from Bureau of Reclamation bench mark.

REMARKS.--No estimated daily discharges. Records good except for flows during July and September, which are fair. Storage and regulation by Cheylon Canyon Lake (capacity 6,193 acre-ft) 17 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,700 ft<sup>3</sup>/s Jan. 8, 1993, gage height, 20.78 ft; no flow on many days.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 15.....	1245	*511	*5.01

No flow on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	5.1	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	3.2	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	1.5	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.84	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.36	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.19	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.09	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	114	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	319	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	389	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	308	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	200	.00	.00	.00	.00	31
18	.00	.00	.00	.00	.00	.00	139	.00	.00	.00	.00	44
19	.00	.00	.00	.00	.00	.00	118	.00	.00	.00	.00	29
20	.00	.00	.00	.00	.00	.00	102	.00	.00	.00	.00	21
21	.00	.00	.00	.00	.00	.00	81	.00	.00	.00	.00	16
22	.00	.00	.00	.00	.00	.00	62	.00	.00	.00	.00	12
23	.00	.00	.00	.00	.00	.00	45	.00	.00	.00	.00	10
24	.00	.00	.00	.00	.00	.00	33	.00	.00	.00	.00	21
25	.00	.00	.00	.00	.00	.00	22	.00	.00	.00	.00	150
26	.00	.00	.00	.00	.00	.00	17	.00	.00	.00	.00	81
27	.00	.00	.00	.00	.00	.00	13	.00	.00	.00	.00	46
28	.00	.00	.00	.00	.00	.00	9.8	.00	.00	.18	.00	27
29	.00	.00	.00	.00	---	.00	7.9	.00	.00	.21	.00	17
30	.00	.00	.00	.00	---	.00	6.6	.00	.00	.06	.00	11
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	1986.30	11.45	0.00	0.45	0.00	516.00
MEAN	.000	.000	.000	.000	.000	.000	66.2	.37	.000	.015	.000	17.2
MAX	.00	.00	.00	.00	.00	.00	389	5.1	.00	.21	.00	150
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	3940	23	.00	.9	.00	1020

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1999, BY WATER YEAR (WY)

	MEAN	2.33	7.83	39.3	81.5	56.9	161	156	9.72	.074	.24	14.6	16.1
MAX	45.9	108	320	523	308	473	658	47.4	1.70	4.45	205	210	
(WY)	1959	1960	1966	1952	1957	1960	1952	1952	1955	1964	1951	1970	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
(WY)	1949	1949	1951	1951	1954	1996	1996	1947	1947	1947	1948	1948	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1947 - 1999
ANNUAL TOTAL	19689.03	2514.20	
ANNUAL MEAN	53.9	6.89	45.5
HIGHEST ANNUAL MEAN			132
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	838	389	6860
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	39050	4990	32970
10 PERCENT EXCEEDS	184	.55	93
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

## LITTLE COLORADO RIVER BASIN

69

## 06398300 BLUE RIDGE RESERVOIR NEAR PINE, AZ

**LOCATION.**--Lat 34°33'19", long 111°11'00", in NE1/4SE1/4 sec.33, T.14 N., R.11 E., Coconino County, Hydrologic Unit 15020006, in Coconino National Forest, on upstream side of left end of spillway structure of Blue Ridge Dam on East Clear Creek, at mouth of General Springs Canyon, 7.3 mi east of Clints Well, and 20 mi northeast of Pine.

**DRAINAGE AREA.**--71.1 mi<sup>2</sup>.

**PERIOD OF RECORD.**--December 1964 to March 1965 (periodic elevations only), April 1965 to current year.

**GAGE.**--Water-stage recorder. Datum of gage is 6,620 ft above sea level; gage readings have been reduced to elevations NGVD. Prior to Apr. 2, 1965, nonrecording-gage readings (at intervals of 3 to 8 days) at NGVD.

**REMARKS.**--Reservoir is formed by a concrete arch dam. Dam completed and storage began in December 1964. Total capacity is 19,500 acre-ft at elevation 6,735 ft, of which 15,000 acre-ft is usable storage below 6,720 ft, the spillway crest. Drawdown below 6,646.3 ft, 2,620 acre-ft restricted by sill at mouth of diversion tunnel since November 1981. Reservoir serves as a basin from which water is pumped to the East Verde River. (See records for East Verde River diversion from East Clear Creek, near Pine.) Release is possible through valve in base of dam. Figures given herein represent total contents.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum contents, 17,230 acre-ft Feb. 19, 1993, elevation, 6,727.56 ft; minimum contents since reservoir filled (April 1965), 1,450 acre-ft Nov. 18-27, 1981; minimum elevation, 6,630.75 ft Nov. 26, 1981.

**EXTREMES FOR CURRENT YEAR.**--Maximum contents, 8,610 acre-ft Oct. 1, elevation, 6,691.76 ft; minimum daily contents, 4,090 acre-ft Sept. 22; minimum elevation 6,660.95 ft Sept. 23.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on surveys by Leeds, Hill, and Jewett, Inc., January 1962)

6,645	2,520	6,695	9,260
6,655	3,420	6,705	11,320
6,665	4,520	6,715	13,700
6,675	5,880	6,725	16,460
6,685	7,380		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e8560	7320	6570	5710	4420	4540	4610	7280	6890	5840	5300	4700
2	8520	7280	6570	5670	4410	4540	4620	7280	6850	5800	5270	4670
3	e8450	7240	6570	5630	4410	4550	4620	7280	6810	5770	5230	4630
4	e8420	7200	6580	5580	4410	4560	4630	7280	6770	5740	5200	4600
5	e8380	7170	6580	5540	4420	4560	4640	7270	6730	5710	5160	4570
6	8340	7130	6570	5500	4420	4560	4650	7270	6700	5680	5120	4540
7	8290	7090	6540	5460	4420	4570	4670	7260	6660	5640	5090	4510
8	8250	7060	6520	5420	4420	4570	4730	7260	6620	5610	5060	4470
9	8200	7090	6490	5370	4420	4580	4830	7250	6580	5580	5010	4440
10	8150	7090	e6460	5330	4410	4580	4920	7240	6550	5550	e4980	4410
11	8110	7080	e6420	5290	4410	4580	5050	7230	6520	5520	4950	4370
12	8060	7040	e6390	5250	4420	4590	5240	7220	6480	5490	4920	4340
13	8030	7010	e6360	5200	4430	4590	5470	7210	6450	5450	4880	4310
14	8000	6970	6330	5160	4430	4590	5710	7200	6420	5450	4840	4290
15	7950	6930	6290	5120	4430	4590	6000	7190	6390	5570	4810	4260
16	7910	6890	6250	5070	4430	4590	6220	7180	6350	5610	4770	4240
17	7870	6850	6220	5030	4440	4590	6400	7170	6320	5600	4740	4210
18	7820	6810	6180	4990	4440	4600	6560	7160	6290	5570	4730	4190
19	7780	6760	6150	4940	4450	4600	6750	7150	6260	5550	4730	4170
20	7740	6720	6110	4900	4460	4610	6910	7140	6220	5520	4730	4140
21	7710	6680	6070	4860	4470	4610	7030	7130	6190	5500	4720	4110
22	7680	6640	6040	4810	4480	4610	7110	e7120	6150	5520	4720	4090
23	7640	6590	6000	4770	4490	4610	7170	e7110	6120	5530	4710	4410
24	7590	6550	5960	4730	4490	4610	7200	e7100	6090	5530	4710	4810
25	7570	6520	5920	4690	4500	4610	7230	e7090	6050	5520	4710	4890
26	7550	6480	5880	4660	4510	4610	7250	e7070	6020	5500	4710	4910
27	7510	6440	5840	4620	4520	4610	7260	7070	5980	5470	4710	4900
28	7470	6420	5810	4580	4530	4610	7270	7040	5950	5440	4720	4880
29	7430	6540	5810	4540	---	4610	7270	7000	5910	5400	4720	4850
30	7390	6570	5790	4500	---	4600	7280	6960	5880	5370	4720	4830
31	7360	---	5750	4460	---	4600	---	6920	---	5340	4700	---
MAX	8560	7320	6580	5710	4530	4610	7280	7280	6890	5840	5300	4910
MIN	7360	6420	5750	4460	4410	4540	4610	6920	5880	5340	4700	4090
(*)	6684.85	6679.90	6674.09	6664.52	6665.07	6665.67	6684.36	6682.14	6674.99	6671.13	6666.54	6667.48
(**)	-1250	-790	-820	-1290	+70	+70	+2680	-360	-1080	-540	-640	+130

CAL YR 1998 MAX 15550 MIN 3390 (\*\*) +1420  
WTR YR 1999 MAX 8560 MIN 4090 (\*\*) -3780

e Estimated

(\*\*) Elevation, in feet, at end of month.

(\*\*) Change in contents, in acre-feet.

## LITTLE COLORADO RIVER BASIN

## 00400562 ORAIBI WASH NEAR TOLANI LAKE, AZ

LOCATION.--Lat 35°34'47", long 110°48'24", NW 1/4 SW 1/4 SE 1/4, sec. 7 T.25 N., R. 15 E., Navajo County, Hydrologic Unit 15020012, on right bank, about 27 mi northeast of Leupp, AZ.

DRAINAGE AREA.--635 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,025 ft above sea level, from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 799 ft<sup>3</sup>/s, Aug. 6, 1997, gage height 11.66 ft; minimum daily discharge, 0.00 ft<sup>3</sup>/s on many days.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 376 ft<sup>3</sup>/s, Aug. 21, gage height 8.72 ft; minimum daily discharge, 0.00 ft<sup>3</sup>/s on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	e.10	.00	.00	.00	.00	.00	.00	.00	.00	e1.0	132
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	56
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	19	6.4
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	49	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	82	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.4	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.6	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.24	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.4
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.3
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	21
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.9
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	e3.1	.00	13
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.9	.00	2.3
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.28	.00	34
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	5.3
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	32	e.20
21	5.8	.00	.00	.00	.00	.00	.00	.00	.00	e.00	214	e.00
22	5.5	.00	.00	.00	.00	.00	.00	.00	.00	e.00	13	.00
23	6.6	.00	.00	.00	.00	.00	.00	.00	.00	e.00	1.2	68
24	2.1	.00	.00	.00	.00	.00	.00	.00	.00	17	.50	15
25	6.2	.00	.00	.00	.00	.00	.00	.00	.00	2.5	8.3	e1.0
26	24	.00	.00	.00	.00	.00	.00	.00	.00	1.1	25	e.00
27	65	.00	.00	.00	.00	.00	.00	.00	.00	.24	4.2	.00
28	8.7	.00	.00	.00	.00	.00	.00	.00	.00	40	2.0	.00
29	2.8	.00	.00	.00	---	.00	.00	.00	.00	80	98	.00
30	1.3	.00	.00	.00	---	.00	.00	.00	.00	22	166	.00
31	.24	---	.00	.00	---	.00	---	.00	---	9.8	164	---
TOTAL	128.24	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	177.92	912.44	370.80
MEAN	4.14	.003	.000	.000	.000	.000	.000	.000	.000	5.74	29.4	12.4
MAX	65	.10	.00	.00	.00	.00	.00	.00	.00	80	214	132
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	254	.2	.00	.00	.00	.00	.00	.00	.00	353	1810	735
CAL YR 1998	TOTAL	323.36	MEAN	.89	MAX	65	MIN	.00	AC-FT	641		
WTR YR 1999	TOTAL	1589.50	MEAN	4.35	MAX	214	MIN	.00	AC-FT	3150		

e Estimated

## LITTLE COLORADO RIVER BASIN

71

## 09400668 POLACCA WASH NEAR SECOND MESA, AZ

LOCATION.--Lat 35°39'21", long 110°33'41", SE 1/4 NE 1/4 SW 1/4, sec. 18 T. 26 N., R. 17 E., Navajo County, Hydrologic Unit 15020013 on the right bank, about 10 mi southwest of Second Mesa.

DRAINAGE AREA.--905 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,240 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,020 ft<sup>3</sup>/s, Aug. 5, 1997, gage height 8.00 ft; minimum daily discharge, 0.01 ft<sup>3</sup>/s on many days.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 416 ft<sup>3</sup>/s, Oct. 26, gage height 6.09 ft, maximum gage height 6.23 ft, Aug. 20; minimum daily discharge, 0.02 ft<sup>3</sup>/s, Oct. 1-6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	19	.17	.21	.25	.26	.82	.23	.09	.07	.49	26
2	.02	4.9	.17	.20	.25	.26	.95	.22	.10	.08	8.2	4.5
3	.02	.95	.17	.20	.26	.25	.45	.22	.11	.17	8.1	.44
4	.02	.13	.17	.21	.25	.23	.37	.28	.09	.09	4.4	.06
5	.02	.12	.18	.23	.25	.25	.33	.21	.10	.08	67	.06
6	.02	.12	.16	.25	.23	.25	.26	.21	.10	.08	32	.06
7	.03	.11	.16	.25	.24	.24	.24	.21	.09	.07	1.9	.05
8	.03	.14	.14	.23	.24	.24	.25	.20	.08	.05	.14	.05
9	.03	.31	.17	.23	.23	.25	.26	.17	.08	.05	.07	.05
10	.03	.12	.19	.25	.24	.24	.23	.16	.08	.21	.06	.05
11	.03	.13	.18	.26	.24	.25	.25	.17	.08	.11	.05	20
12	.03	.14	.19	.22	.32	.24	.22	.17	.08	.06	.04	1.5
13	.03	.13	.20	.22	.32	.25	.24	.16	.09	.06	.04	33
14	.03	.13	.21	.23	.31	.25	.22	.14	.08	.90	.04	22
15	.03	.14	.20	.26	.25	.25	.22	.14	.07	1.9	.06	4.1
16	.03	.14	.20	.24	.25	.26	.22	.14	.07	.12	.05	.26
17	.03	.13	.19	.23	.25	.38	.23	.15	.08	.07	.05	34
18	.04	.13	.20	.23	.25	.29	.21	.15	.14	.07	.06	4.6
19	.04	.14	.20	.22	.25	.28	.23	.14	.08	.08	14	15
20	.04	.14	.20	.22	.25	.25	.23	.14	.07	.07	130	4.8
21	.18	.15	.17	.25	.24	.23	.22	.14	.07	.07	73	.26
22	.13	.15	.17	.22	.23	.23	.22	.13	.06	.07	12	.12
23	.15	.15	.17	.25	.26	.23	.22	.12	.06	.08	4.1	17
24	.05	.15	.15	.23	.26	.24	.22	.12	.06	.08	1.5	88
25	.67	.16	.18	.22	.25	.24	.25	.14	.07	.07	.21	15
26	201	.16	.20	.23	.25	.25	.23	.15	.06	13	4.4	1.5
27	179	.17	.21	.22	.25	.24	.22	.14	.06	18	23	.17
28	18	.18	.25	.23	.25	.23	.21	.13	.07	4.4	139	.30
29	2.1	.20	.25	.24	---	.23	.20	.11	.07	1.4	143	.11
30	.41	.17	.24	.26	---	.23	.21	.10	.07	11	214	.11
31	.16	---	.25	.30	---	.22	---	.10	---	1.2	87	---
TOTAL	402.42	23.89	5.89	7.24	7.12	7.74	8.71	4.99	2.41	53.76	967.96	292.95
MEAN	13.0	.96	.19	.23	.25	.25	.29	.16	.090	1.73	31.2	9.77
MAX	201	19	.25	.30	.32	.38	.85	.28	.14	18	214	53
MIN	.02	.11	.14	.20	.23	.22	.20	.10	.06	.05	.04	.05
AC-FT	798	57	12	14	14	15	17	9.9	4.8	107	1920	581

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1999, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1994	4.18	13.0	1999	.074	1995
1995	.35	.96	1999	.12	1997
1996	.23	.35	1995	.15	1997
1997	.27	.40	1995	.21	1997
1998	.31	.55	1995	.21	1996
1999	.24	.28	1998	.20	1997
2000	.24	.29	1999	.16	1997
2001	.17	.25	1995	.10	1997
2002	.075	.092	1998	.060	1997
2003	1.46	6.83	1998	.037	1994
2004	10.5	31.2	1999	.061	1994
2005	7.24	21.5	1997	.019	1998

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1994 - 1999
ANNUAL TOTAL	708.70	1790.08	
ANNUAL MEAN	1.94	4.90	2.44
HIGHEST ANNUAL MEAN			4.90
LOWEST ANNUAL MEAN			.27
HIGHEST DAILY MEAN	201 Oct 26	214 Aug 30	327 Aug 6 1997
LOWEST DAILY MEAN	.01 Aug 8	.02 Oct 1	.01 Aug 8 1998
ANNUAL SEVEN-DAY MINIMUM	.01 Aug 13	.02 Oct 1	.01 Aug 13 1998
ANNUAL RUNOFF (AC-FT)	1410	3550	1770
10 PERCENT EXCEEDS	.30	4.2	.41
50 PERCENT EXCEEDS	.17	.21	.17
90 PERCENT EXCEEDS	.02	.05	.04

## LITTLE COLORADO RIVER BASIN

## 09400683 JEDDITO WASH NEAR JEDDITO, AZ

LOCATION.--Lat 35°34'39", long 110°27'42", NE 1/4 NW 1/4 NW 1/4, sec. 18 T. 25 N., R. 18 E., Navajo County, Hydrologic Unit 15020014, on right upstream side of State Highway 87 bridge, about 20 mi southwest of Second Mesa, AZ.

DRAINAGE AREA.--147 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1993 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,440 ft above sea level, from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,220 ft<sup>3</sup>/s, Aug. 19, 1999, gage height 9.31 ft; minimum daily discharge, 0.00 ft<sup>3</sup>/s on many days.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,220 ft<sup>3</sup>/s, Aug. 19, gage height 9.31 ft; minimum daily discharge, 0.00 ft<sup>3</sup>/s on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.40
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.30
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.30
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.30
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e34	e.30
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e1.0	e.30
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.30	e.30
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.30	e.30
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	e75	e.30	e.30
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.50	e.25	e.30
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.30	e.25	e.30
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.30	e.18	e.30
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.15	e.17	e.30
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.05	e.15	e.30
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.70	e2.0	e.15
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.20	e.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.20	e.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.80	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e66	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e21	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e34	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.20	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.20	e1.5
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.10	e.30
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00	e.00
26	6.2	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.06	e.00
27	1.3	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.10	e.00
28	.20	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e3.0	.00
29	.08	.00	.00	.00	---	.00	.00	.00	.00	e.00	e47	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	e.50	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	e.50	---
TOTAL	7.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	77.00	212.76	6.25
MEAN	.25	.000	.000	.000	.000	.000	.000	.000	.000	2.48	6.86	.21
MAX	6.2	.00	.00	.00	.00	.00	.00	.00	.00	.75	.66	1.5
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MED	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.25	.30
AC-FT	15	.00	.00	.00	.00	.00	.00	.00	.00	153	422	12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1999, BY WATER YEAR (WY)

	MEAN	.51	.000	.000	.000	.000	.000	.000	.000	.75	1.51	.34
MAX	2.81	.000	.000	.000	.000	.000	.000	.000	.000	2.48	6.86	1.73
(WY)	1994	1994	1994	1994	1994	1994	1994	1994	1994	1999	1999	1994
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1995	1994	1994	1994	1994	1994	1994	1994	1994	1996	1998	1995

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1994 - 1999

ANNUAL TOTAL	7.78	303.79	
ANNUAL MEAN	.021	.83	.26
HIGHEST ANNUAL MEAN			.83
LOWEST ANNUAL MEAN			.002
HIGHEST DAILY MEAN	6.2 Oct 26	75 Jul 9	75 Jul 9 1999
LOWEST DAILY MEAN	.00 Jan 1	.00 Oct 1	.00 Oct 1 1993
ANNUAL SEVEN-DAY MINIMUM	.00 Jan 1	.00 Oct 1	.00 Oct 12 1993
ANNUAL RUNOFF (AC-FT)	15	603	190
10 PERCENT EXCEEDS	.00	.30	.00
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

## 09401110 DINNEBITO WASH NEAR SAND SPRINGS, AZ

LOCATION.--Lat 35°46'52", long 110°55'57", in SW1/4SE1/4 sec.34, T.28 N., R.13 E., Navajo County, Hydrologic Unit 15020017, on the right bank, about 15 mi west of Old Oraibi.

DRAINAGE AREA.--473 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1993 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,160 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,840 ft<sup>3</sup>/s, Aug. 5, 1997, gage height 10.62 ft from high-water mark; minimum daily discharge, 0.08 ft<sup>3</sup>/s, Aug. 8, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,340 ft<sup>3</sup>/s, Sept. 17, gage height 9.16 ft; minimum daily discharge, 0.13 ft<sup>3</sup>/s, Aug. 6-16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.17	e.93	.44	.48	.46	.42	.54	.48	.25	e.20	e10	e340
2	.19	e.60	.44	.41	.44	.42	.73	.44	.30	e.20	e1.1	e45
3	.17	e.33	.44	.42	.48	.40	.50	.43	.30	e.20	e7.3	e1.2
4	.18	e.30	.43	.38	.48	.37	.52	.74	.22	e.20	e20	e.40
5	.18	e.27	.43	.42	.49	.38	.49	.47	.30	e.20	e.48	e.39
6	.21	e.24	.41	.45	.47	.41	.42	.47	.29	e.20	e.13	e.39
7	.23	.45	.37	.45	.46	.38	.39	.48	.23	.36	e.13	e.34
8	.24	.43	.37	.43	.46	.39	.42	.44	.20	e5.8	e.13	.33
9	.25	1.8	.42	.41	.43	.41	.38	.39	.21	e15	e.13	.32
10	.25	1.4	.41	.43	.50	.42	.44	.41	.20	e130	e.13	.32
11	.24	.57	.40	.46	.39	.41	.45	.43	.21	e5.4	e.13	102
12	.26	.51	.45	.26	.44	.40	.41	.44	.22	e4.4	e.13	23
13	.26	.47	.45	.44	.47	.41	.43	.37	.21	e1.2	e.13	2.5
14	.25	.46	.47	.45	.47	.44	.40	.33	.20	e2.6	e.13	2.0
15	.23	.45	.47	.41	.48	.41	.40	.34	.19	e79	e.13	.83
16	.24	.45	.45	.48	.44	.42	.43	.37	.19	e14	e.13	.36
17	.27	.42	.45	.47	.47	.46	.47	.40	.22	2.7	e5.6	78
18	.28	.43	.46	.49	.46	.44	.47	.42	e21	.64	e30	5.6
19	.29	.44	.45	.49	.45	.43	.47	.39	e.20	.31	e79	1.5
20	.29	.43	.42	.48	.44	.41	.45	.37	e.20	.25	e42	.80
21	e8.9	.45	.38	.49	.42	.42	.43	.38	e.20	.24	e12	.44
22	e21	.47	.36	.43	.39	.44	.45	.33	e.20	.59	e1.7	.38
23	e8.6	.46	.35	.46	.42	.43	.57	.30	e.20	e15	e.76	.76
24	e7.5	.42	.36	.50	.46	.45	.44	.32	e.20	e6.7	e1.5	1.0
25	e17	.35	.39	.45	.42	.46	.56	.39	e.20	e1.3	e.56	2.8
26	e190	.35	.43	.46	.42	.42	.47	.40	e.20	e1.2	e61	1.0
27	e12	.65	.43	.46	.44	.38	.44	.35	e.20	e.31	e24	.38
28	e3.8	.48	.45	.43	.45	.37	.41	.32	e.20	e24	e160	.33
29	e1.5	.51	.48	.41	---	.39	.43	.27	e.20	e56	e160	.36
30	e.64	.44	.49	.41	---	.40	.47	.25	e.20	e41	e120	.38
31	e1.2	---	.47	.46	---	.34	---	.25	---	e19	e67	---
TOTAL	276.82	15.96	13.22	13.67	12.60	12.73	13.86	12.18	29.34	428.20	805.43	613.11
MEAN	8.93	.53	.43	.44	.45	.41	.46	.39	.98	13.8	26.0	20.4
MAX	190	1.8	.49	.50	.50	.46	.73	.74	23	130	160	340
MIN	.17	.24	.35	.26	.39	.34	.38	.25	.19	.20	.13	.32
AC-FT	549	32	26	27	25	25	28	24	58	849	1620	1220

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1999, BY WATER YEAR (WY)

MEAN	5.13	.52	.47	.50	.46	1.06	.40	.34	.37	3.76	9.97	11.2
MAX	19.2	.62	.57	.67	.58	2.69	.50	.44	.98	13.8	32.4	31.9
(WY)	1998	1997	1994	1995	1994	1998	1994	1994	1999	1999	1997	1997
MIN	.25	.43	.37	.42	.39	.37	.27	.21	.19	.25	.29	.33
(WY)	1996	1995	1997	1997	1997	1995	1997	1997	1998	1993	1994	1994

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1993 - 1999
ANNUAL TOTAL	910.14	2247.14	
ANNUAL MEAN	2.49	6.16	3.19
HIGHEST ANNUAL MEAN			6.16
LOWEST ANNUAL MEAN			.56
HIGHEST DAILY MEAN	190	Oct 26	379
LOWEST DAILY MEAN	.13	Jul 13	.08
ANNUAL SEVEN-DAY MINIMUM	.14	Jul 8	.13
ANNUAL RUNOFF (AC-FT)	1810	4460	2310
10 PERCENT EXCEEDS	1.5	6.2	.72
50 PERCENT EXCEEDS	.36	.43	.39
90 PERCENT EXCEEDS	.17	.20	.20

e Estimated

## LITTLE COLORADO RIVER BASIN

## 09401260 MOENKOPI WASH AT MOENKOPI, AZ

**LOCATION.**--Lat 36°06'18", long 111°12'04", in NW1/4NE1/4 sec.3, T.31 N., R.11 E. (unsurveyed), Coconino County, Hydrologic Unit 15020018, in Hopi Indian Reservation on right bank, 100 ft upstream from bridge on State Highway 264, 1.3 mi southeast of Moenkopi, 2.5 mi downstream from former gaging station 09401250, and 12.5 mi downstream from Begashito Wash.

**DRAINAGE AREA.**--1,829 mi<sup>2</sup>.

**PERIOD OF RECORD.**--July 1976 to current year. Records for October 1973 to July 1976, at site 2.5 mi upstream, not equivalent below 1.5 ft<sup>3</sup>/s due to channel losses.

**REVISED RECORDS.**--WDR AZ-88-1: Drainage area.

**GAGE.**--Water-stage recorder and crest stage gages. Elevation of gage is 4,610 ft above sea level, from topographic map.

**REMARKS.**--Records fair except for estimated daily discharges and the period July through September, which are poor.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 10,100 ft<sup>3</sup>/s Sept. 30, 1983, gage height, 15.10 ft, from rating curve extended above 220 ft<sup>3</sup>/s on basis of step-backwater computation at gage heights 12.2 ft, 15.0 ft, and 17.8 ft; no flow at times each year.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--A discharge of 15,100 ft<sup>3</sup>/s occurred Aug. 4, 1929, at former gaging station site 3.5 mi downstream.

**EXTREMES FOR CURRENT PERIOD.**--Peak discharges greater than base discharge of 1,200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 28.....	0900	2,490	7.47	Aug. 29.....	0545	4,860	9.41
Aug. 20.....	0230	5,340	9.83	Sept. 1.....	0715	3,890	8.68
Aug. 28.....	0130	*5,490	*9.97				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	2.7	3.2	4.2	e3.7	2.5	3.2	3.1	e.30	.00	13	1200
2	.10	2.7	3.2	2.6	e2.7	2.6	3.3	3.0	e2.0	.00	e30	156
3	.09	2.4	3.2	2.1	e2.7	2.6	3.6	3.3	14	.00	6.8	44
4	.06	2.6	3.2	1.7	e2.7	2.4	3.4	14	2.7	.00	69	17
5	.10	2.8	3.2	2.7	3.5	2.4	3.6	7.6	.83	.00	29	9.5
6	.30	3.0	3.8	2.9	3.2	2.3	3.5	1.5	.97	.00	e10	5.3
7	.79	2.5	3.2	3.5	3.1	2.4	3.0	1.6	.63	.22	e10	3.1
8	1.1	2.7	1.7	3.3	3.2	2.5	2.4	1.1	.14	4.1	e5.0	2.2
9	1.5	2.4	2.7	3.0	3.1	2.4	3.2	.50	.01	4.4	e4.0	1.5
10	1.5	2.3	3.6	3.2	3.3	2.3	3.1	.23	.00	5.0	e3.0	.94
11	1.5	2.2	3.7	3.2	2.9	2.4	3.2	.23	.03	4.9	e3.0	22
12	1.4	2.4	3.4	4.0	2.4	2.5	2.9	.17	.03	4.8	e3.0	88
13	1.8	2.5	3.3	e3.7	2.8	2.3	3.9	.22	.00	e4.0	e3.0	14
14	1.8	2.4	3.5	e2.7	e2.7	2.2	3.4	.09	.00	e4.0	e3.0	8.2
15	1.0	2.5	4.0	e2.7	3.0	2.4	3.1	.37	.00	e90	e3.0	6.7
16	2.1	2.5	3.7	e3.7	e2.2	2.6	2.8	1.3	.00	3.8	e7.0	8.7
17	2.1	2.9	3.9	e3.7	2.5	3.2	3.1	1.8	.00	e1.0	e7.0	38
18	2.1	3.5	3.9	3.3	2.5	3.2	3.3	1.8	.00	e.50	e4.4	9.7
19	1.8	3.5	4.4	3.1	e2.2	3.0	3.0	2.0	.00	e.50	120	e4.0
20	2.0	3.0	3.5	3.2	2.6	2.8	2.6	e4.0	.00	.55	860	e2.0
21	2.6	3.3	3.9	3.2	2.4	2.7	3.3	8.8	.00	.19	65	e1.5
22	3.2	e2.7	1.8	e3.0	2.3	2.7	3.5	5.2	.00	e.20	23	1.4
23	3.1	3.0	e2.2	e3.0	2.7	2.8	4.2	.77	.00	e2.0	e10	10
24	3.0	2.7	e2.7	3.3	2.5	2.8	3.9	.82	.00	21	e10	29
25	2.8	2.7	3.3	2.8	2.5	2.9	3.4	.64	.00	11	e10	7.1
26	2.7	2.7	3.1	3.1	2.5	2.9	3.2	.66	.00	1.2	21	e1.8
27	2.2	2.7	3.6	e3.2	2.6	2.9	3.0	1.6	.00	e.70	56	e1.0
28	2.5	3.0	3.5	e3.7	2.7	2.8	2.8	2.4	.00	674	1050	.80
29	2.4	3.2	3.4	3.3	---	2.7	2.9	e2.0	.00	100	917	.81
30	2.3	3.2	3.3	4.2	---	2.8	3.4	e.60	.00	14	301	1.1
31	2.4	---	3.6	3.9	---	2.8	---	e.40	.00	2.2	48	---
TOTAL	52.52	82.7	102.7	99.2	77.2	81.8	97.2	71.80	21.64	954.26	3704.2	1695.35
MEAN	1.69	2.76	3.31	3.20	2.76	2.64	3.24	2.32	.72	30.8	119	56.5
MAX	3.2	3.5	4.4	4.2	3.7	3.2	4.2	14	14	674	1050	1200
MIN	.06	2.2	1.7	1.7	2.2	2.2	2.4	.09	.00	.00	3.0	.80
AC-FT	104	164	204	197	153	162	193	142	43	1890	7350	3360

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 1999, BY WATER YEAR (WY)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	10.8	6.59	3.52	4.98	7.64	3.76	2.41	2.26	.68	13.4	27.0	26.0											
MAX	81.8	70.6	13.5	28.1	47.6	10.5	8.54	15.5	10.6	91.6	129	134											
(WY)	1982	1988	1979	1993	1993	1993	1988	1992	1988	1977	1984	1983											
MIN	.24	1.14	.62	1.98	2.16	1.68	1.01	.31	.000	.000	.000	.000											
(WY)	1992	1981	1981	1982	1981	1997	1979	1984	1984	1979	1978	1979											

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1977 - 1999
ANNUAL TOTAL	833.09	7040.57	
ANNUAL MEAN	2.28	19.3	9.10
HIGHEST ANNUAL MEAN			19.3
LOWEST ANNUAL MEAN			2.14
HIGHEST DAILY MEAN	21	1200	3500
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	1650	13960	6590
10 PERCENT EXCEEDS	3.7	10	6.5
50 PERCENT EXCEEDS	2.4	2.8	2.0
90 PERCENT EXCEEDS	.00	.19	.00

e Estimated



**LOCATION.**—Lat 35°55'35", long 111°34'00", in NW¼ sec.5, T.28 N., R.8 E. (unsurveyed), Coconino County, Hydrologic Unit 15020016, in Navajo Indian Reservation, on left bank 3 mi downstream from Coconino damsite, 9.5 mi downstream from Moenkopi Wash, 9.5 mi northwest of Cameron, and 45 mi upstream from mouth.

**PERIOD OF RECORD.**--June 1947 to current year.

**GAGE.**—Water-stage recorder. Datum of gage is 3,979.2 ft above sea level.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 24,900 ft<sup>3</sup>/s Jan. 21, 1952, gage height, 20.7 ft; no flow at times in each year.

**EXTREMES FOR CURRENT YEAR.--**Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*)

No flow for many days.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	322	.76	.00	.00	.47	.00	16	.00	.00	884	2500
2	.00	1280	.79	.04	.00	.80	.00	7.5	.00	.00	553	e2440
3	.00	609	.72	.28	.55	.66	.00	3.4	.00	118	684	2160
4	.00	298	.66	.12	.35	.28	.00	10	.00	.26	306	948
5	.00	161	.65	.07	.36	.06	.00	11	.00	.00	126	479
6	.00	92	.65	.01	1.0	.01	.00	7.1	.00	.00	770	310
7	.00	57	.31	.00	.80	.00	.00	2.7	.00	.00	809	145
8	.00	41	.09	.00	.80	.00	.00	3.5	.00	56	705	81
9	.00	29	.03	.00	.62	.00	.00	1.5	.00	54	512	49
10	.00	20	.01	.00	.71	.00	.00	.55	.00	194	224	34
11	.00	14	.00	.00	.46	.00	.00	.11	.00	144	92	1320
12	.00	10	.00	.00	.11	.20	.00	.05	.00	23	54	490
13	.00	6.5	.00	.00	.06	.84	.00	.02	.00	e9	37	121
14	.00	5.2	.00	.00	.02	.68	.00	.00	.00	e350	28	267
15	.00	42	.00	.00	.73	.87	.00	.00	.00	e650	372	455
16	.00	46	.00	.00	1.5	.69	.00	.00	.00	e200	464	1270
17	.00	34	.00	.00	1.7	.13	.00	.00	.00	e140	1100	1500
18	.00	27	.00	.35	1.4	.03	.00	.00	.00	e150	1510	598
19	.00	17	.00	1.5	1.4	.05	29	.00	.00	e140	e985	295
20	.00	9.3	.35	1.5	1.1	.05	160	.00	.00	43	1170	168
21	.00	5.7	.81	.91	1.6	.61	141	.00	.00	30	547	84
22	.00	4.1	.20	.57	1.5	.00	136	.00	.00	15	490	50
23	30	3.4	.04	.32	1.4	.00	165	.00	.00	5.1	419	306
24	11	2.5	.03	.21	1.4	.00	150	.00	.00	2.0	181	439
25	4.2	2.0	.00	.34	1.2	.00	133	.00	.00	106	86	1190
26	187	1.5	.00	.59	.84	.00	104	.00	.00	833	59	667
27	414	1.1	.00	.49	.77	.00	77	.00	.00	586	71	334
28	1370	.97	.00	.32	.48	.00	56	.00	.00	1180	438	180
29	1480	.84	.00	.07	---	.00	37	.00	.00	898	950	92
30	505	.71	.00	.04	---	.00	26	.00	.00	1230	2340	58
31	354	---	.00	.01	---	.00	---	.00	---	507	2160	---
TOTAL	4355.20	3142.82	6.10	7.74	22.86	5.83	1214.00	62.43	0.00	7673.36	19126	19030
MEAN	140	105	.20	.25	.92	.19	40.5	2.05	.000	248	617	634
MAX	1480	1280	.81	1.5	1.7	.87	165	16	.00	1230	2340	2500
MIN	.00	.71	.00	.00	.00	.00	.00	.00	.00	.00	28	34
AC-FT	8640	6230	12	15	45	12	2410	126	.00	15220	37940	37750

MEAN	210	74.7	102	237	265	484	588	135	16.4	112	368	228
MAX	4192	753	1689	4692	2723	1873	3970	2882	595	616	2264	832
(WY)	1973	1988	1979	1993	1993	1978	1973	1973	1955	1954	1955	1970
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1951	1956	1957	1964	1964	1951	1971	1950	1950	1960	1960	1979

ANNUAL TOTAL	69560.89		54647.34			
ANNUAL MEAN	191		150		235	
HIGHEST ANNUAL MEAN					1127	1973
LOWEST ANNUAL MEAN					23.5	1996
HIGHEST DAILY MEAN	1800	Apr 26	2500	Sep 1	18400	Oct 19 1972
LOWEST DAILY MEAN	.00	May 28	.00	Oct 1	.00	Oct 1 1947
ANNUAL SEVEN-DAY MINIMUM	.00	May 28	.00	Oct 1	.00	Oct 1 1947
ANNUAL RUNOFF (AC-FT)	138000		108400		170200	
10 PERCENT EXCEEDS	737		506		646	
50 PERCENT EXCEEDS	8.3		.55		3.0	
90 PERCENT EXCEEDS	.00		.00		.00	

e Estimated

## COLORADO RIVER MAIN STEM

## 09402500 COLORADO RIVER NEAR GRAND CANYON, AZ

**LOCATION.**--Lat 36°08'05", long 112°06'08", in sec. 5, T. 31 N., R. 3 E. (unsurveyed), Coconino County, Hydrologic Unit 15010001, in Grand Canyon National Park, on left bank 0.2 mi upstream from Kaibab Bridge, 0.4 mi upstream from Bright Angel Creek, 4.5 mi northeast of village of Grand Canyon, 26 mi downstream from Little Colorado River, and 267 mi upstream from Hoover Dam.

**DRAINAGE AREA.**--141,600 mi<sup>2</sup> approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming which is noncontributing.

**PERIOD OF RECORD.**--October 1922 to current year. Prior to 1944, published as "Colorado River at Bright Angel Creek, near Grand Canyon." Gage-height records collected 1.5 mi downstream 1908-13, published in reports of U.S. Weather Bureau.

**GAGE.**--Water-stage recorder. Datum of gage is 2,418.7 ft above sea level.

**REMARKS.**--Records good. Flow completely regulated by Lake Powell, 104 mi upstream, since Mar. 13, 1963. (See elsewhere in this report.) Many diversions above station for irrigation, municipal, and industrial uses.

**EXTREMES FOR PERIOD OF RECORD.**--1922-62: Maximum discharge, 127,000 ft<sup>3</sup>/s July 2, 1927, gage height, 29.25 ft; minimum, 700 ft<sup>3</sup>/s Dec. 28, 1924, gage height, -0.70 ft. 1963-99: Maximum discharge, 96,200 ft<sup>3</sup>/s June 29, 1983, gage height, 26.26 ft; minimum, 850 ft<sup>3</sup>/s Jan. 26, 1963, gage height, -0.55 ft, result of closing coffer dam at Glen Canyon Dam.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Maximum discharge since at least 1884, 300,000 ft<sup>3</sup>/s about July 8, 1884 (computed on basis of flood studies at Lees Ferry). Crest discharge of flood of June 19, 1921, was 220,000 ft<sup>3</sup>/s, gage height, 37.5 ft from floodmarks, from rating curve extended above 120,000 ft<sup>3</sup>/s.

**EXTREMES FOR CURRENT YEAR.**--Maximum discharge, 25,900 ft<sup>3</sup>/s Aug. 31, gage height, 14.29 ft; minimum daily, 10,600 ft<sup>3</sup>/s May 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18200	15100	14600	15800	12200	13600	13900	12400	15700	17900	20100	22300
2	16000	12500	15200	14500	14900	14800	13100	11900	18600	18400	18400	22300
3	15600	15500	15200	16800	15000	15000	12800	10600	18800	18300	19900	22000
4	14900	15200	15200	14500	15000	14100	12400	12700	17000	18100	20400	21300
5	13000	15000	15200	17500	15100	14100	11200	12500	16500	17200	19700	16300
6	15600	14900	14800	17500	15000	14100	12800	12500	15600	17100	19800	16000
7	15600	e14600	14100	17600	14700	13200	12800	13100	15000	18000	20300	e16000
8	15700	e14000	15000	17600	13500	11500	12800	15200	16400	18500	20400	e19700
9	15600	e11900	15000	17500	15000	14000	12600	17400	16400	18700	18200	e20000
10	15700	e14300	15200	16500	15100	14200	12600	17100	16500	18700	20100	e19900
11	14900	e14600	15300	14600	15100	14000	12300	19500	16500	18500	20000	19900
12	13100	e14600	15400	16800	15100	14100	11100	19500	16400	17600	19900	19900
13	15600	14600	14800	14300	15100	14100	12600	19600	15700	18600	19800	17200
14	15600	14500	14200	14700	14900	13300	12700	19600	15600	18800	19600	20100
15	15700	14100	15500	14700	13700	11500	12900	19700	18800	19700	19600	20400
16	15600	11700	15600	14700	15100	14000	14100	18900	18800	19300	17800	20500
17	15600	14500	15500	14600	15100	14000	14000	17300	16500	19100	20400	21600
18	14500	14400	15400	11700	15200	14100	12600	19600	16500	18500	20900	20500
19	13000	14500	15400	14700	15200	14000	11100	19600	16600	17500	20600	18900
20	15500	14500	14900	14800	15200	14000	12600	19500	16800	19100	20600	17900
21	15700	14500	14300	14800	14700	13500	12900	19600	15000	19000	20400	25300
22	15800	14000	15500	14700	13600	11700	12800	19500	16500	19000	20000	24000
23	15900	11700	15600	14800	15100	13800	12800	19900	16700	18900	18100	20200
24	15700	14500	16100	14500	15500	13800	12900	17300	16800	18900	19700	20000
25	14600	14600	16100	11700	15400	13900	12500	19500	18600	18300	19500	20200
26	13400	14600	14500	14700	15400	13900	11300	19600	18500	17500	19400	19900
27	15900	13600	15200	14800	15400	13900	12700	19400	17800	19300	19500	16200
28	16600	14500	14600	14800	15000	13300	12700	19700	15100	19600	19400	20200
29	17200	14000	15900	14800	---	11700	12400	19200	17800	19800	19900	20100
30	16600	11700	15700	14900	---	13900	12400	19800	17800	20200	19200	20100
31	16100	---	15700	14500	---	13900	---	17100	---	20300	23500	---
TOTAL	478500	422700	470700	470400	415300	423000	378400	538800	506300	578400	615100	598900
MEAN	15440	14090	15180	15170	14830	13650	12610	17380	16880	18660	19840	19960
MAX	18200	15500	16100	17600	15500	15000	14100	19900	18800	20300	23500	25300
MIN	13000	11700	14100	11700	12200	11500	11100	10600	15000	17100	17800	16000
AC-FT	949100	838400	933600	933000	823700	839000	750600	1069000	1004000	1147000	1220000	1188000
CAL YR 1998	TOTAL	6458630	MEAN	17690	MAX	22800	MIN	9730	AC-FT	12810000		
WTR YR 1999	TOTAL	5896500	MEAN	16150	MAX	25300	MIN	10600	AC-FT	11700000		

e Estimated

## KANAB CREEK BASIN

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## 08403600 KANAB CREEK NEAR KANAB, UT

LOCATION.--Lat 37°06'02", long 112°32'50", in NE ¼ NE ¼ SW ¼ sec. 5, T. 43 S., R. 6 W., Kane County, Hydrologic Unit 15010003, on left bank at upstream side of bridge on U.S. Highway 89, 300 ft upstream from Tiny Canyon and 3.5 mi north of Kanab.

DRAINAGE AREA.--198 mi<sup>2</sup>

PERIOD OF RECORD.--July 1969 to September 1968 (peaks only), January 1979 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 5,060 ft above sea level, from topographic map. A crest-stage gage from Jul 22, 1969 to Sep 30, 1968 at different datum. July 6, 1979 to Sep 18, 1984 water-stage recorder at same site, different datum.

REMARKS.--Records poor. Several diversions above station for irrigation and stock watering.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,030 ft<sup>3</sup>/s Sep 8, 1961, gage height, 8.39 ft, from rating curve extended above 31 ft<sup>3</sup>/s on basis of slope area measurement at gage height, 7.09 ft; minimum daily discharge, 3.0 ft<sup>3</sup>/s Jun 15, 1986, Jul 20, 1994, and Sep 1-3, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum ("):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 25.....	1700	262	4.46	July 28 .....	0200	774	6.51
Oct. 27.....	0130	212	4.22	Aug. 5 .....	2030	754	6.47
July 9.....	1715	277	4.49	Aug. 30 .....	1735	427	5.20

Minimum daily discharge, 4.9 ft<sup>3</sup>/s, Sept. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	8.5	12	11	14	11	7.6	8.1	7.6	7.7	7.3	5.0
2	10	9.5	12	12	14	14	7.3	8.1	9.2	6.6	6.1	17
3	8.8	9.3	11	10	13	16	7.8	8.3	7.2	6.6	5.8	6.6
4	8.2	8.2	12	12	14	15	7.8	9.3	9.6	7.0	5.8	8.8
5	7.8	8.1	12	11	15	14	7.6	9.9	8.0	6.6	6.2	7.9
6	8.9	8.4	12	13	14	13	7.0	8.6	7.8	7.5	27	7.7
7	7.7	9.5	e11	13	15	14	6.9	6.7	7.1	8.1	6.0	7.1
8	9.4	10	e10	13	13	18	7.2	7.0	7.8	8.2	5.5	6.1
9	8.5	9.7	e10	13	14	13	7.1	7.0	8.0	26	5.2	8.2
10	8.4	10	e10	13	24	12	7.8	6.6	7.2	14	6.3	5.0
11	8.3	11	e11	15	10	12	7.6	8.0	8.5	10	6.2	8.3
12	10	12	11	15	11	13	7.2	7.8	8.4	8.1	6.2	5.1
13	10	12	11	15	10	13	6.4	7.7	7.6	11	6.1	5.8
14	8.9	12	14	12	13	10	6.3	7.2	7.7	29	5.8	5.6
15	9.9	11	13	14	12	9.7	6.1	8.0	6.7	8.4	5.0	4.9
16	8.7	12	16	15	13	8.7	6.3	7.9	6.6	7.9	6.9	5.1
17	10	13	16	14	11	8.7	6.4	7.6	6.6	6.9	6.2	12
18	10	14	12	16	12	8.2	6.0	6.8	7.9	6.6	5.4	6.1
19	9.8	13	12	15	12	8.2	5.8	8.2	8.1	6.5	5.4	9.0
20	11	12	13	15	12	9.2	5.4	6.8	6.7	6.3	5.3	6.5
21	11	12	11	16	11	9.4	5.9	6.0	7.6	5.9	6.9	6.8
22	20	12	e10	18	12	8.7	6.1	6.1	7.1	5.5	7.9	6.5
23	8.8	11	e10	19	11	9.0	8.1	6.3	7.7	5.3	6.1	8.2
24	9.1	12	e11	16	11	8.2	9.4	6.8	7.4	5.1	6.6	8.6
25	7.1	13	e12	16	11	7.8	9.2	7.4	7.0	5.0	5.5	9.2
26	21	13	e13	15	11	7.7	11	6.7	8.2	5.3	6.0	7.8
27	47	13	14	15	11	8.0	9.8	6.7	8.2	6.0	5.3	6.9
28	9.3	14	14	14	11	7.7	11	6.4	8.1	74	5.9	5.8
29	8.7	13	11	14	---	7.4	8.1	6.5	6.5	77	5.7	5.5
30	8.9	15	12	15	---	7.2	7.3	7.0	6.8	12	41	6.7
31	8.6	---	12	14	---	7.4	---	6.9	---	19	58	---
TOTAL	408.7	341.2	371	439	355	329.2	223.4	228.4	228.9	419.1	371.9	220.8
MEAN	13.2	11.4	12.0	14.2	12.7	10.6	7.45	7.37	7.63	13.5	12.0	7.16
MAX	71	15	16	19	24	18	11	9.9	9.6	77	82	17
MIN	7.7	8.1	10	10	10	7.2	5.4	6.0	6.5	5.0	5.2	4.9
AC-FT	811	677	736	871	704	653	443	453	454	831	738	438

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1999, BY WATER YEAR (WY)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	10.9	10.5	11.5	13.2	17.0	25.5	24.3	10.2	7.26	7.47	8.76	10.4								
MAX	25.7	15.2	21.7	27.9	45.1	72.4	132	27.6	12.1	13.8	16.5	28.1								
(WY)	1982	1988	1980	1997	1980	1983	1980	1980	1981	1981	1981	1998								
MIN	5.46	6.58	5.31	6.18	9.04	9.68	6.81	6.45	4.37	4.19	4.07	5.43								
(WY)	1996	1990	1990	1987	1992	1988	1990	1997	1986	1982	1995	1989								

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1980 - 1999
ANNUAL TOTAL	5440.2	3936.6	
ANNUAL MEAN	14.9	10.8	13.0
HIGHEST ANNUAL MEAN			28.4
LOWEST ANNUAL MEAN			7.54
HIGHEST DAILY MEAN	226 Sep 11	32 Aug 5	354 Apr 6 1980
LOWEST DAILY MEAN	4.3 Jul 30	4.9 Sep 15	3.0 Jun 15 1986
ANNUAL SEVEN-DAY MINIMUM	4.9 Jul 29	5.4 Jul 21	3.0 Jun 13 1986
ANNUAL RUNOFF (AC-FT)	10790	7810	9450
10 PERCENT EXCEEDS	28	15	19
50 PERCENT EXCEEDS	10	8.8	9.5
90 PERCENT EXCEEDS	5.7	6.1	5.6

e Estimated

## HAVASU CREEK BASIN

## 08404110 HAVASU CREEK AT SUPAI, AZ

LOCATION.--Lat 36°13'37", long 112°41'15" (unsurveyed), in Coconino County, Hydrologic Unit 15010004, on the Havasupai Indian Reservation on the right bank, about 1.5 mi upstream from Supai.

DRAINAGE AREA.--2,809 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,240 ft above sea level from topographic map.

REMARKS.--Records poor. Several diversions and small impoundments upstream for irrigation and public supply.

EXTREMES OUTSIDE PERIOD OF RECORD.--Jan. 2, 1910, maximum discharge unknown, flood wave reported as about 20 ft high through Supai Village. Sept. 3, 1990, 20,300 ft<sup>3</sup>/s, based on slope-area computation for site 12 mi downstream at the mouth. Flood wave through Supai Village reported as about 14 ft for this event; minimum discharge unknown.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, unknown, Aug. 10, 1997, gage height, 20.8 ft (estimated from highwater mark); minimum daily 58 ft<sup>3</sup>/s, Mar. 9, 1997.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, unknown, Aug. 20, gage height 18.46 ft; minimum daily, 56 ft<sup>3</sup>/s for Dec. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	66	68	64	66	66	71	68	61	66	e66	e65
2	63	65	68	65	65	65	70	67	64	66	e66	e65
3	64	64	68	64	64	65	69	68	65	67	e66	e65
4	65	62	67	64	64	66	71	69	64	66	e66	e65
5	65	62	68	64	65	68	68	67	64	65	e66	e65
6	65	62	68	64	65	67	67	66	63	65	e66	e65
7	63	60	68	63	64	67	68	67	64	65	e66	e65
8	62	57	66	64	64	68	68	69	64	65	e66	e65
9	61	61	64	64	65	68	68	69	65	65	e66	e65
10	62	64	62	63	66	68	68	69	64	65	e66	e80
11	62	63	61	63	67	69	70	68	66	79	e66	e70
12	62	62	62	64	65	67	69	68	66	e66	e66	e65
13	62	61	60	65	65	66	68	69	67	e80	e66	e65
14	63	59	57	63	65	65	68	68	68	e75	e66	e65
15	64	57	56	61	66	67	66	66	69	e100	e66	e64
16	62	58	57	62	66	69	64	65	70	e66	e66	e64
17	63	58	57	61	65	67	63	64	71	e66	e66	e64
18	62	63	57	60	65	66	63	64	70	e66	e66	e64
19	67	66	58	59	66	66	64	64	71	e66	e66	e64
20	66	65	63	60	65	66	69	63	68	e66	e150	e64
21	65	64	69	60	65	69	75	63	68	e66	73	e64
22	65	61	68	63	65	69	75	63	67	e66	62	e64
23	65	61	68	63	65	68	76	62	67	e66	61	e64
24	64	60	67	64	65	68	74	62	69	e66	62	e64
25	68	61	65	63	66	67	73	63	68	e90	65	e64
26	95	64	64	64	65	68	72	62	69	e66	66	e64
27	74	64	64	67	65	67	71	62	69	e66	65	e64
28	66	64	64	67	65	66	72	e62	67	e66	63	e64
29	64	67	63	65	---	66	72	63	67	e66	120	e64
30	65	70	62	65	---	67	69	62	66	e66	111	e64
31	66	---	62	65	---	69	---	61	---	e66	e65	---
TOTAL	2023	1871	1971	1963	1824	2080	2082	2023	2001	2135	2217	1954
MEAN	65.3	62.4	63.6	63.3	65.1	67.1	69.4	65.3	66.7	68.9	71.5	65.1
MAX	95	70	69	67	67	69	76	69	71	100	150	80
MIN	61	57	56	59	64	65	63	61	61	65	61	64
AC-FT	4010	3710	3910	3890	3620	4130	4130	4010	3970	4230	4400	3880
CAL YR 1998	TOTAL	24150	MEAN	66.2	MAX	300	MIN	56	AC-FT	47900		
WTR YR 1999	TOTAL	24144	MEAN	66.1	MAX	150	MIN	56	AC-FT	47890		

.e Estimated

## HAVASU CREEK BASIN

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## 09404112 HAVASU CREEK ABOVE HAVASU FALLS NEAR SUPAI, AZ

**LOCATION.**--Lat 36°15'12", long 112°41'50" (unsurveyed), in Coconino County, Hydrologic Unit 15010004, on the Havasupai Indian Reservation on the right bank, about 2.0 mi downstream from Supai.

**DRAINAGE AREA.**--2,898 mi<sup>2</sup>.

**PERIOD OF RECORD.**--September 1995 to current year.

**GAGE.**--Water-stage recorder. Elevation of gage is 2,900 ft above sea level, from topographic map.

**REMARKS.**--Records fair except for estimated daily discharges, which are poor. Several diversions and small impoundments upstream for irrigation and public supply.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Jan. 2, 1910, maximum discharge unknown, flood wave reported as about 20 ft high through Supai Village. Sept. 3, 1990, 20,300 ft<sup>3</sup>/s, based on slope-area computation for site 9 mi downstream at the mouth. Flood wave through Supai Village reported as about 14 ft for this event. Minimum discharge unknown.

**EXTREMES FOR CURRENT YEAR.**--Maximum discharge, 665 ft<sup>3</sup>/s, Aug. 20, gage height, 50.28 ft, minimum daily, 50 ft<sup>3</sup>/s, July 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	56	57	55	55	54	54	54	53	50	54	e54
2	57	57	57	55	55	54	53	54	54	51	56	e54
3	57	57	56	55	55	54	54	54	54	51	56	e54
4	57	57	56	55	55	54	54	55	54	51	56	e54
5	58	57	56	55	55	54	55	54	54	51	55	e54
6	57	57	56	55	55	54	55	54	54	51	55	e54
7	57	57	56	55	55	54	55	55	54	51	55	e54
8	57	57	56	55	55	54	54	55	54	51	55	e54
9	57	58	55	55	55	54	54	55	53	52	54	e54
10	57	57	55	55	55	53	54	54	53	52	54	e54
11	57	57	55	55	54	54	54	54	53	55	53	e85
12	56	57	55	55	54	54	54	54	53	54	53	e70
13	56	57	55	55	55	53	54	54	53	58	54	e54
14	57	56	55	55	55	54	54	54	53	60	53	e54
15	56	57	55	55	55	53	53	55	53	107	54	e54
16	56	57	55	55	55	53	54	55	53	111	55	e54
17	57	57	55	55	55	53	54	54	53	54	51	e54
18	57	57	55	55	55	53	54	54	52	52	51	e54
19	56	57	56	55	55	53	53	54	52	52	52	e54
20	56	56	55	55	55	53	53	54	52	52	107	e54
21	57	56	55	55	55	53	54	54	52	51	e130	e54
22	57	57	55	55	54	53	54	55	51	51	e54	e54
23	57	56	55	55	54	54	55	55	52	51	54	e54
24	56	56	55	55	54	54	54	54	52	51	54	e54
25	57	57	55	55	55	54	54	55	51	91	54	e54
26	59	56	55	55	55	54	54	55	51	64	54	e54
27	58	56	55	55	54	53	54	54	51	61	e54	e54
28	56	57	55	55	54	53	54	54	51	58	e54	e54
29	57	57	55	55	---	53	54	54	51	56	e130	e54
30	57	57	55	55	---	54	54	53	51	55	e115	e54
31	57	---	55	55	---	54	---	52	---	54	e54	---
TOTAL	1763	1703	1715	1705	1534	1661	1620	1681	1578	1410	1940	1667
MEAN	56.9	56.4	55.4	55.0	54.8	53.6	54.0	54.2	52.6	53.4	62.6	55.6
MAX	59	58	57	55	56	54	55	55	54	111	133	85
MIN	56	56	55	55	54	53	53	52	51	50	51	54
AC-FT	3500	3380	3400	3380	3040	3290	3210	3330	3130	3590	3850	3310
CAL YR 1998	TOTAL	20890	MEAN	57.2	MAX	315	MIN	51	AC-FT	41440		
WTR YR 1999	TOTAL	20378	MEAN	55.8	MAX	130	MIN	50	AC-FT	40420		

e Estimated

## COLORADO RIVER MAIN STEM

## 09404200 COLORADO RIVER ABOVE DIAMOND CREEK NEAR PEACH SPRINGS, AZ

**LOCATION.**--Lat 35°46'25", long 113°21'46", sec.33, T.28 N., R.10 W., unsurveyed, Mohave County, Hydrologic Unit 15010002, in Lake Mead National Recreation Area, on the right bank, 0.6 mi upstream from Diamond Creek, 138 mi downstream from Phantom Ranch, 25 mi north of Peach Springs, 242 mi downstream from Glen Canyon Dam, and 130 mi upstream from Hoover Dam.

**DRAINAGE AREA.**--149,316 mi<sup>2</sup>, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, and 697 mi<sup>2</sup> on the Colorado Plateau, which are noncontributing.

## WATER-DISCHARGE RECORDS

**PERIOD OF RECORD.**--June 1983 to December 1983, September 1985 to February 1986, October 1989 to current year.

**GAGE.**--Water-stage recorder. Elevation of gage is 1,340 ft above sea level, from topographic map.

**REMARKS.**--Records good. Flow regulated since March 13, 1983 by Lake Powell 242 mi upstream. Many diversions above Lake Powell for irrigation, municipal, and industrial use. Several unregulated tributaries below Glen Canyon Dam.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge 97,000 ft<sup>3</sup>/s, June 30, 1983, gage height, unknown; minimum 3,710 ft<sup>3</sup>/s, Mar. 21, 1990, gage height, 43.89 ft.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Maximum discharge since at least 1868, about 300,000 ft<sup>3</sup>/s, about July 8, 1884, based on flow studies at Lees Ferry.

**EXTREMES FOR CURRENT YEAR.**--Maximum discharge, 27,300 ft<sup>3</sup>/s, Sept. 22, gage height 53.51 ft; minimum daily, 10,900 ft<sup>3</sup>/s May 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18900	16600	11800	16000	14800	e15300	14000	12500	17700	18300	21500	24900
2	18900	15500	14800	16200	12400	13800	14100	12500	17300	18400	21400	23700
3	16600	12600	15500	14700	15200	15000	13200	e12200	19200	18900	19800	23800
4	16100	15900	15600	17300	15300	15300	12900	e10900	19300	18800	21400	23600
5	15300	15600	e15500	14700	15400	14300	12500	e12900	17700	18600	21800	22300
6	13200	15300	e15500	18100	15400	14200	11200	e12700	17000	17700	21200	17200
7	15900	15200	e15000	18200	15400	14200	12800	e12800	16000	17800	21300	16800
8	16100	15000	e14300	18200	15100	13400	12800	e13300	15300	19400	21600	17000
9	16200	14500	e15300	18200	13700	11600	12800	e15400	16900	19800	21500	21100
10	16100	11900	e15300	18100	15400	14100	12600	e17800	17000	20000	19700	21100
11	16100	15000	e15500	16900	15300	14400	12600	e17500	17000	20100	21600	21200
12	15200	14900	e15600	14800	15300	14100	12300	e20000	17000	19700	21400	21500
13	13200	15000	e15700	17300	e15300	14200	11100	20200	17000	18800	21300	21200
14	16000	14900	e15100	14500	e15300	14200	12600	20200	16100	20400	21200	18800
15	16100	14900	e14500	14900	e15100	13400	12700	20300	16000	21100	21000	21600
16	16100	14300	e15800	14900	e14000	11600	12900	20200	19400	21900	20900	22500
17	16100	11800	e15800	14900	e15300	14100	14200	19400	19300	20400	19400	22200
18	16100	14800	e15700	14700	e15400	14100	14200	18100	17100	20100	21800	23100
19	14800	14700	e15700	11800	e15400	14300	12800	20200	17000	19500	22300	21800
20	13100	14700	e15700	14800	e15500	14100	11200	20200	17100	18600	22000	20300
21	15900	14800	e15200	14900	e15400	14100	12600	20200	17300	20100	22700	20300
22	16300	14800	e14500	14900	e15000	13600	13000	20200	e15500	20100	21500	27100
23	16300	14200	15700	14900	e13800	11800	13000	20100	e17000	20100	21300	25100
24	16400	11700	15900	14900	e15400	13900	13000	20500	e17200	20000	19700	21600
25	16200	e14800	16400	14600	e15700	14000	13100	18200	e17400	19900	21000	21700
26	15000	14800	16400	11800	e15700	14000	12700	20200	19100	19500	20900	21500
27	13600	14800	14600	14800	e15700	14000	11400	20400	19000	18600	20800	20900
28	16300	13800	15400	15100	e15700	14000	12700	20200	18300	20900	20900	17300
29	17200	14800	14700	15100	---	13400	12800	20400	15400	21000	21100	21400
30	17800	14200	16300	15100	---	11700	12600	19900	18300	21300	21200	21300
31	17200	---	16000	15200	---	13900	---	20300	---	21600	22400	---
TOTAL	494300	435800	474800	480500	422400	428100	382400	549900	520900	611400	657600	643900
MEAN	15950	14530	15320	15500	15090	13810	12750	17740	17360	19720	21210	21460
MAX	18900	16600	16400	18200	15700	15300	14200	20500	19400	21900	22700	27100
MIN	13100	11700	11800	11800	12400	11600	11100	10900	15300	17700	19400	16800
AC-FT	980400	864400	941800	953100	837800	849100	758500	1091000	1033000	1213000	1304000	1277000
CAL. YR 1998	TOTAL	6616040	MEAN	18130	MAX	23700	MIN	9840	AC-FT	13120000		
WTR YR 1999	TOTAL	6102000	MEAN	16720	MAX	27100	MIN	10900	AC-FT	12100000		

e Estimated



**COLORADO RIVER MAIN STEM**

09404200 COLORADO RIVER ABOVE DIAMOND CREEK NEAR PEACH SPRINGS, AZ-Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible][illegible]



## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

## 09404200 COLORADO RIVER ABOVE DIAMOND CREEK NEAR PEACH SPRINGS, AZ--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)	SED. SUSP. SIEVE DIAM. FINER THAN (062 MM 70331)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA- CHLOR, DISS, REC, (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	BEN- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)
DATE											
FEB											
09...	<.20	24	54	2110	<.0020	<.002	.004	<.0020	<.0010	<.0020	<.0020
09...	<.20	17	59	2320	<.0020	<.002	<.001	<.0020	<.0010	<.0020	<.0020
MAR											
02...	.20	16	79	2980	<.0020	<.002	<.001	<.0020	<.0010	<.0020	<.0020
02...	--	16	75	2840	--	--	--	--	--	--	--
30...	.20	22	26	792	<.0020	<.002	E.002	<.0020	<.0010	<.0020	<.0020
30...	--	25	28	860	--	--	--	--	--	--	--
APR											
06...	.20	28	38	1160	<.0020	<.002	<.001	<.0020	<.0010	<.0020	<.0020
06...	--	33	38	1190	--	--	--	--	--	--	--
MAY											
13...	1.6	49	441	25000	<.0020	<.002	E.004	<.0020	<.0010	<.0020	<.0020
13...	--	54	376	21300	--	--	--	--	--	--	--
JUN											
08...	.40	--	144	--	<.0020	<.002	E.003	<.0020	<.0010	<.0020	<.0020
08...	--	33	150	6930	--	--	--	--	--	--	--
JUL											
08...	.70	--	--	--	<.0020	<.002	<.001	<.0020	<.0010	<.0020	<.0020
08...	--	--	--	--	--	--	--	--	--	--	--
AUG											
05...	>5.0	--	3420	10800	<.0020	<.002	E.003	E.0012	<.0010	<.0020	<.0020
05...	>5.0	--	--	--	<.0020	<.002	E.003	<.0020	<.0010	<.0020	<.0020
24...	>5.0	91	3100	175000	<.0020	E.003	.007	E.0034	<.0010	<.0020	<.0020
24...	--	93	2820	160000	--	--	--	--	--	--	--
DATE	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCEPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P,P' DDE DISSOLV (UG/L) (34653)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DIAZ- INON DIO SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	DI- ELDRIN DIS- SOLVED (UG/L) (39383)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)
FEB											
09...	<.0030	<.0030	<.0040	<.0040	E.0012	<.0060	<.002	a97.5	<.001	<.0030	<.0170
09...	<.0030	<.0030	<.0040	<.0040	E.0011	<.0060	<.002	a98.6	<.001	<.0030	<.0170
MAR											
02...	<.0030	<.0030	<.0040	<.0040	E.0011	<.0060	<.002	a89.7	<.001	<.0030	<.0170
02...	--	--	--	--	--	--	--	--	--	--	--
30...	<.0030	<.0030	<.0040	<.0040	<.0020	<.0060	<.002	a81.0	<.001	<.0030	<.0170
30...	--	--	--	--	--	--	--	--	--	--	--
APR											
06...	<.0030	<.0030	<.0040	<.0040	E.0019	<.0060	<.002	a111	<.001	<.0030	<.0170

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

	EPTC WATER FLTRD 0.7 U	ETHAL- FLUR- ALIN WAT FLT 0.7 U	ETHO- PROP WATER FLTRD 0.7 U	FONOFOS WATER DISS REC	ALPHA BHC DIS- SOLVED (UG/L)	HCH ALPHA D6 SRG WAT FLT 0.7 U PERCENT	LINDANE DIS- SOLVED (UG L)	LIN- URON WATER FLTRD 0.7 U (UG/L)	MALA- THION, DIS- SOLVED (UG/L)	METHYL PARA- THION WAT FLT 0.7 U (UG/L)	METRI- BUZIN SENSOR WATER DISSOLV (UG/L)
DATE	GF, REC (82668)	GF, REC (82663)	GF, REC (82672)					GF, REC (82666)	SOLVED (39532)	GF, REC (82667)	DISSOLV (82630)
FEB 09...	<.0020	<.0040	<.0030	<.0030	<.0020	a91.4	<.004	<.0020	<.005	<.0060	<.004
09...	<.0020	<.0040	<.0030	<.0030	<.0020	a94.2	<.004	<.0020	<.005	<.0060	<.004
MAR 02...	<.0020	<.0040	<.0030	<.0030	<.0020	a94.4	<.004	<.0020	<.005	<.0060	<.004
02...	--	--	--	--	--	--	--	--	--	--	--
10...	<.0020	<.0040	<.0030	<.0030	<.0020	a80.1	<.004	<.0020	<.005	<.0060	<.004
10...	--	--	--	--	--	--	--	--	--	--	--
APR 05...	<.0020	<.0040	<.0030	<.0030	<.0020	a93.7	<.004	<.0020	<.005	<.0060	<.004
05...	--	--	--	--	--	--	--	<.0020	<.005	<.0060	<.004
MAY 13...	<.0020	<.0040	<.0030	<.0030	<.0020	a96.6	<.004	<.0020	<.005	<.0060	<.004
13...	--	--	--	--	--	--	--	<.0020	<.005	<.0060	<.004
JUN 03...	<.0020	<.0040	<.0030	<.0030	<.0020	a90.1	<.004	<.0020	<.005	<.0060	<.004
03...	--	--	--	--	--	--	--	--	--	--	--
JUL 08...	<.0020	<.0040	<.0030	<.0030	<.0020	a92.2	<.004	<.0020	<.005	<.0060	<.004
08...	--	--	--	--	--	--	--	<.0020	<.005	<.0060	<.004
AUG 05...	<.0020	<.0040	<.0030	<.0030	<.0020	a103	<.004	<.0020	<.005	<.0060	<.004
05...	<.0020	<.0040	<.0030	<.0030	<.0020	a105	<.004	<.0020	<.005	<.0060	<.004
14...	<.0020	<.0040	<.0030	<.0030	<.0020	a104	<.004	<.0020	<.005	<.0060	<.004
21...	--	--	--	--	--	--	--	--	--	--	--
	METO- LACHLOP WATER DISSOLV (UG L) (39415)	MOL- INATE WATER FLT 0.7 U GF, REC (UG/L) (82671)	NAFEPH- AMIDE WATER FLTRD 1.7 U GF, REC (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PBB- ULATE WATER FILTERD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PBB- METHYRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG L) (32664)	PRO- METON, DISS, REC (UG/L) (04037)	FRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)
DATE	DISSOLV (UG L) (39415)	GF, REC (UG/L) (82671)	GF, REC (UG/L) (82684)	SOLVED (UG/L) (39542)	GF, REC (UG/L) (82669)	GF, REC (UG/L) (82683)	GF, REC (UG/L) (82687)	GF, REC (UG L) (32664)	REC (UG/L) (04037)	GF, REC (UG/L) (82676)	REC (UG/L) (04024)
FEB 09...	.004	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
09...	.004	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
MAR 02...	.004	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
02...	--	--	--	--	--	--	--	--	--	--	--
10...	E.003	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
10...	--	--	--	--	--	--	--	--	--	--	--
APR 05...	E.003	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
05...	--	--	--	--	--	--	--	<.0020	<.0180	<.0030	<.0070
MAY 13...	.004	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
13...	--	--	--	--	--	--	--	--	--	--	--
JUN 03...	.004	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
03...	--	--	--	--	--	--	--	--	--	--	--
JUL 08...	<.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
08...	--	--	--	--	--	--	--	--	--	--	--
AUG 05...	E.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	E.0030	<.0030	<.0070
05...	E.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	E.0030	<.0030	<.0070
14...	E.003	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	E.0079	<.0030	<.0070
21...	--	--	--	--	--	--	--	--	--	--	--

## COLORADO RIVER MAIN STEM

## 09404200 COLORADO RIVER ABOVE DIAMOND CREEK NEAR PEACH SPRINGS, AZ--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TERBUTH YLAZINE SURROG WAT FLT 0.7 U GF, REC (UG/L) (91064)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
FEB										
09...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	a102	<.0020	<.0010	<.0020
09...	<.0040	<.0130	<.0050	E.0056	<.0070	<.0130	a102	<.0020	<.0010	<.0020
MAR										
02...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	a102	<.0020	<.0010	<.0020
02...	--	--	--	--	--	--	--	--	--	--
30...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	a83.6	<.0020	<.0010	<.0020
30...	--	--	--	--	--	--	--	--	--	--
APR										
06...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	a120	<.0020	<.0010	<.0020
06...	--	--	--	--	--	--	--	--	--	--
MAY										
13...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	a107	<.0020	<.0010	<.0020
13...	--	--	--	--	--	--	--	--	--	--
JUN										
08...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020
08...	--	--	--	--	--	--	--	--	--	--
JUL										
08...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020
08...	--	--	--	--	--	--	--	--	--	--
AUG										
05...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020
05...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020
24...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020
24...	--	--	--	--	--	--	--	--	--	--

< Actual value is known to be less than the value shown.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

a Listed values are recovery percentages for the indicated compounds. These compounds are added to the sample to determine the relative recovery of other organic compounds that are detected using the same analytical method.

## 09404200 COLORADO RIVER ABOVE DIAMOND CREEK NEAR PEACH SPRINGS, AZ--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Water-quality measurements in the following table were made as part of the National Stream-Quality Accounting Network. The following analyses are quality-assurance samples processed during the 1999 sampling period and are defined in the introductory text section titled "Water-Quality Control Data".

			CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NIT-NO3 DIS- SOLVED (MG/L AS N) (00611)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS ORTHO DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO DIS- SOLVED (MG/L AS P04) (00660)		
DATE	TIME	QUALITY ASSURANCE SAMPLE (TYPE)											
FEB 09...	1113	FIELD BLANK	<.002	<.001	<.025	<.020	<.001	<.005	.003	.001	.003		
MAY 13...	1153	FIELD BLANK	.004	<.001	.026	.056	<.001	.008	.003	.001	.003		
AUG 24...	0748	FIELD SPIKE	--	--	--	--	--	--	--	--	--		
DATE		ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM, DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
FEB 09...	<.30	<.20	<.20	<.20	<.20	<.20	<.30	<.20	<.20	<.20	<.30	<.30	<.10
MAY 13...	<.30	<.20	<.20	<.20	<.20	<.20	<.30	<.20	<.20	<.20	<.30	<.30	<.10
AUG 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
DATE		MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	UFANIUM NATURAL, DIS- SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC, DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC, SUS- PENDED TOTAL (MG/L AS C) (00689)	ACETIC- CHLOR, WATER, FLTRD REC (UG/L) (49260)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	DEETHYL- ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)
FEB 09...	<.20	<.50	<.20	<.10	<.50	<.20	.20	<.20	<.0020	<.002	<.001	<.0020	
MAY 13...	<.20	<.50	<.20	<.10	<.50	<.20	02.9	<.20	--	--	--	--	
AUG 24...	--	--	--	--	--	--	--	--	155	154	110	109	109
DATE		METHYL- ALIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	BEN- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARRO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR- PYRIFOS WATER, DISS, SOLVED REC (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DECA- WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DIBEN- ZOL P.P. DOE DIS- SOLVED REC (UG/L) (34653)	DIBEN- ZOL, WATER, DISS, SOLVED GF, REC (UG/L) (39572)	DIBEN- ZOL, WAT FLT 0.7 U GF, REC (UG/L) (39563)	DIBEN- ZOL, WAT FLT 0.7 U GF, REC (UG/L) (39381)
FEB 09...	<.0010	<.0020	<.0020	<.0030	<.0030	<.0040	<.0040	<.0020	<.0060	<.002	.101	<.001	
MAY 13...	--	--	--	--	--	--	--	--	--	--	--	--	
AUG 24...	E.236	.109	.121	E.152	E.175	.115	.151	.124	.0810	.123	.127	.143	
DATE		2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPIC WATER FLTRD 0.7 U GF, REC (UG/L) (82658)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED REC (UG/L) (34253)	HCH ALPHA DS SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	LINDANE DIS- SOLVED GF, REC (UG/L) (39341)	LIN- UPON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THION, WAT FLT 0.7 U DIS- SOLVED GF, REC (UG/L) (39532)	METHYL- PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)
FEB 09...	<.0030	<.0170	<.0020	<.0040	<.0030	<.0030	<.0020	.491.6	<.004	<.0020	<.005	<.0060	
MAY 13...	--	--	--	--	--	--	--	--	--	--	--	--	
AUG 24...	.108	.110	.118	.103	.141	.122	.115	.112	.118	.151	.146	.135	

## COLORADO RIVER MAIN STEM

09404200 COLORADO RIVER ABOVE DIAMOND CREEK NEAR PEACH SPRINGS, AZ--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82665)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)
FEB 09...	<.004	<.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030
MAY 13...	--	--	--	--	--	--	--	--	--	--	--
AUG 24...	.140	.160	.126	E.178	.136	.121	.135	E.0888	.118	.117	.134
DATE	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARCITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, FLTRD DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TERBUTH YLAZINE SURROCT WAT FLT 0.7 U GF, REC (UG/L) (91064)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
FEB 09...	<.0070	<.0040	<.0110	<.0050	<.0100	<.0070	<.0130	a105	<.0020	<.0010	<.0020
MAY 13...	--	--	--	--	--	--	--	--	--	--	--
AUG 24...	E.155	E.155	E.176	.142	E.176	E.176	.111	--	.134	.131	.117

&lt; Actual value is known to be less than the value shown.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

a Listed values are recovery percentages for the indicated compounds. These compounds are added to the sample to determine the relative recovery of other organic compounds that are detected using the same analytical method.

v Sample was contaminated during sampling or analysis. Actual value is less than value shown.

COLORADO RIVER BASIN

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09404208 DIAMOND CREEK NEAR PEACH SPRINGS, AZ

LOCATION:--Lat 35°45'54", long 113°22'03", sec. 32, T.28 N., R.10 W., unsurveyed, Mohave County, Hydrologic Unit 15010002, on the Hualapai Reservation, on the right bank, 0.25 mi upstream from mouth, and 20.4 mi north of Peach Springs by dirt road.

DRAINAGE AREA:--279.5 mi<sup>2</sup>.

PERIOD OF RECORD:--May 1993 to current year.

GAGE:--Water-stage recorder. Elevation of gage is 1,400 ft above sea level, from topographic map.

REMARKS:--Records poor.

EXTREMES FOR PERIOD OF RECORD:--Maximum discharge, 9,500 ft<sup>3</sup>/s Sept. 6, 1999, gage height 15.0 from floodmark; minimum daily discharge, 0.64 ft<sup>3</sup>/s, Aug. 9, 1993.

EXTREMES FOR CURRENT YEAR:--Peak discharges greater than base discharge of 600 ft<sup>3</sup>/s and maximum (\*)

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 27.....	unknown	8,700	a14.7
Sept. 16.....	unknown	*9,500	a*15.1

a From floodmark.

Minimum daily discharge, 1.6 ft<sup>3</sup>/s, July 2, 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	4.2	4.4	5.0	4.7	5.0	3.9	3.4	3.1	1.7	e4.0	3.1
2	2.9	4.4	4.4	4.8	4.7	5.0	3.8	3.5	3.5	1.6	e4.0	3.1
3	2.9	4.4	4.4	4.9	4.7	5.0	3.7	3.5	3.6	1.6	3.8	3.1
4	3.0	4.4	4.4	5.0	4.7	5.0	3.9	3.5	3.5	1.7	3.8	3.1
5	3.0	4.4	4.3	5.0	4.8	5.0	3.8	3.5	3.4	1.7	4.2	3.1
6	3.0	4.4	4.3	5.0	4.7	5.0	3.8	3.3	3.1	1.8	4.3	3.1
7	3.2	4.5	4.5	5.0	4.7	5.0	3.8	3.3	3.0	2.1	4.0	3.1
8	3.2	4.5	4.5	5.0	4.7	4.9	3.7	3.1	3.0	e4.0	4.0	3.1
9	3.3	4.5	4.7	4.9	4.7	4.9	3.6	3.1	3.1	e2.5	4.0	3.1
10	3.4	4.5	4.7	4.8	4.7	4.7	3.6	3.1	2.9	e2.5	4.0	3.1
11	3.4	4.5	4.8	4.8	4.8	4.5	3.7	3.1	3.0	e2.5	4.0	e8.0
12	3.5	4.7	4.8	4.8	4.8	4.5	3.7	3.0	2.9	e2.5	4.0	e5.0
13	3.5	4.7	4.8	4.8	4.8	4.5	3.6	3.0	3.0	e2.5	4.0	e5.0
14	3.7	4.7	5.0	4.8	4.8	4.4	3.4	3.1	2.9	e2.5	4.0	e5.0
15	3.6	4.7	5.0	4.8	4.8	4.4	3.4	3.3	3.0	e2.5	3.9	e3.0
16	3.6	4.7	4.9	4.8	4.8	4.4	3.4	3.5	3.0	e1.0	4.0	e2.5
17	3.7	4.7	4.9	4.8	5.0	4.4	3.4	3.6	2.9	e3.0	4.1	e5.0
18	3.7	4.7	4.7	4.8	5.0	4.3	3.5	3.6	2.9	e3.0	3.8	e5.0
19	3.6	4.6	4.7	4.7	5.0	4.2	3.5	3.6	2.8	e3.0	3.9	e5.0
20	3.7	4.5	4.6	4.7	5.1	4.1	3.4	3.5	2.8	e3.0	3.8	e5.0
21	3.7	4.5	5.0	4.7	5.1	4.0	3.4	3.4	2.7	e3.0	4.0	e5.0
22	3.9	4.5	5.1	4.7	5.0	4.0	3.4	3.2	2.8	e3.0	4.2	4.2
23	4.0	4.5	5.1	4.7	5.0	4.0	3.4	3.2	2.4	e3.0	3.9	5.4
24	3.9	4.5	5.1	4.7	5.0	3.9	3.4	3.1	2.1	e3.0	3.1	4.5
25	3.9	4.5	5.1	4.7	4.9	3.9	3.6	3.1	2.0	e2.0	3.1	4.1
26	3.9	4.5	5.1	4.7	4.8	3.9	3.6	3.1	1.9	e5.0	3.1	4.3
27	3.9	4.5	5.1	4.7	4.9	3.9	3.5	2.9	1.9	e2.5	3.1	4.6
28	4.0	5.1	5.1	4.7	4.9	3.9	3.5	3.0	1.8	e5.0	3.1	3.8
29	4.1	4.8	5.1	4.7	---	3.8	3.4	3.3	1.8	e1.0	3.1	3.5
30	4.2	4.5	5.0	4.7	---	3.7	3.4	3.2	1.8	e5.0	3.1	3.5
31	4.2	---	5.0	4.7	---	4.0	---	3.2	---	e4.0	3.1	---
TOTAL	110.7	136.7	148.6	148.9	135.6	136.2	107.2	101.4	82.6	798.7	116.5	558.9
MEAN	3.57	4.56	4.79	4.80	4.84	4.39	3.57	3.27	2.75	25.8	3.76	18.6
MAX	4.2	5.1	5.1	5.0	5.1	5.0	3.9	3.6	3.6	275	4.3	300
MIN	2.9	4.2	4.3	4.7	4.7	3.7	3.4	2.9	1.8	1.6	3.1	3.1
AC-FT	220	271	295	295	269	270	213	201	164	1580	231	1110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1999, BY WATER YEAR (WY)

MEAN	3.01	3.69	4.07	4.36	4.39	5.52	3.85	2.83	2.34	7.09	2.74	5.40
MAX	3.57	4.56	4.79	5.34	4.84	11.3	4.51	3.27	2.77	25.8	3.76	18.6
(WY)	1999	1999	1999	1997	1999	1995	1998	1999	1997	1999	1999	1999
MIN	2.71	3.05	3.17	3.29	3.70	4.05	3.52	2.32	1.92	1.09	1.89	2.26
(WY)	1994	1996	1995	1995	1995	1997	1994	1994	1994	1993	1993	1995

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1993 - 1999

ANNUAL TOTAL	1413.2	2582.0	
ANNUAL MEAN	3.87	7.07	4.25
HIGHEST ANNUAL MEAN			7.07
LOWEST ANNUAL MEAN			3.16
HIGHEST DAILY MEAN	10 Sep 8	300 Sep 15	300 Sep 15 1999
LOWEST DAILY MEAN	1.6 Jul 8	1.6 Jul 2	.64 Aug 9 1993
ANNUAL SEVEN-DAY MINIMUM	1.8 May 25	1.7 Jun 29	.82 Jul 10 1993
ANNUAL RUNOFF (AC-FT)	2800	5120	3080
10 PERCENT EXCEEDS	5.0	5.0	4.8
50 PERCENT EXCEEDS	4.2	4.0	3.3
90 PERCENT EXCEEDS	2.2	3.0	2.0

e Estimated

## LITTLE COLORADO RIVER BASIN

## 09404222 SPENCER CREEK NEAR PEACH SPRINGS, AZ

LOCATION.--Lat 35°48'03", long 113°39'29", in NE1/4SW1/4NE1/4 sec. 22, T.13 W. , R.28 N. , Mohave County, Hydrologic Unit 15010005, on the Hualapai Reservation, on the left bank, about 2.0 mi upstream from the mouth.

DRAINAGE AREA.--Undetermined.

PERIOD OF RECORD.--March 1998 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,820 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,250 ft<sup>3</sup>/s, Aug. 30, 1999, gage height, 10.74 ft, from highwater mark; minimum daily discharge, 2.5 ft<sup>3</sup>/s, Sept. 1-5, 25-30, 1999.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,250 ft<sup>3</sup>/s, Aug. 30, gage height, 10.74 ft from highwater mark; minimum daily discharge, 2.5 ft<sup>3</sup>/s, Sept. 1-5, 25-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	e4.1	4.0	3.7	3.5	3.2	3.0	3.0	2.9	3.1	2.8	2.5
2	4.9	e4.0	3.6	3.7	3.5	3.2	3.0	2.9	3.0	3.1	2.8	2.5
3	4.9	e4.0	3.7	3.5	3.5	3.1	3.0	3.0	2.9	3.2	2.8	2.5
4	4.9	e4.0	3.7	3.5	3.4	3.1	3.0	3.0	3.0	3.2	2.8	2.5
5	4.9	e4.0	3.6	3.5	3.4	3.1	3.0	3.0	3.0	3.2	2.8	2.5
6	5.0	e4.0	3.6	3.5	3.4	3.1	3.0	3.0	2.9	3.3	2.8	2.6
7	5.0	e4.0	3.7	3.4	3.4	3.1	3.0	3.0	2.9	3.3	2.8	2.6
8	4.9	e4.0	3.6	3.4	3.4	3.1	3.0	3.0	2.9	3.4	2.8	2.6
9	4.9	e3.9	3.7	3.4	3.4	3.1	3.0	3.0	2.9	3.4	2.8	2.6
10	4.9	e3.9	3.6	3.4	3.4	3.1	3.0	3.0	2.9	3.8	2.8	2.6
11	4.9	e3.9	3.6	3.4	3.4	3.1	3.0	3.0	2.9	3.1	2.8	2.6
12	4.9	e3.9	3.6	3.4	3.4	3.1	3.0	3.0	2.9	3.0	2.8	2.6
13	4.8	e3.9	3.6	3.4	3.3	3.1	2.9	3.0	2.9	3.1	2.9	2.6
14	4.6	e3.9	3.6	3.4	3.3	3.1	2.9	3.0	2.9	3.0	2.9	2.6
15	4.6	e3.9	3.6	3.3	3.3	3.1	2.9	3.0	2.9	3.0	2.8	2.6
16	4.8	e3.9	3.5	3.3	3.3	3.1	2.9	3.0	2.9	3.2	2.8	2.6
17	4.7	e3.9	3.5	3.3	3.3	3.1	2.9	3.0	3.0	3.0	2.8	2.6
18	4.6	e3.9	3.4	3.4	3.3	3.1	2.9	2.9	3.0	3.0	2.8	2.6
19	e4.6	e3.9	3.4	3.5	3.3	3.1	2.9	2.9	3.0	3.0	2.8	2.6
20	e4.5	3.9	3.5	3.6	3.3	3.1	2.9	2.9	3.0	3.0	2.8	2.6
21	e4.4	3.8	3.5	3.6	3.2	3.1	2.9	2.9	3.0	3.0	2.8	2.6
22	e4.4	3.9	3.5	3.6	3.2	3.1	2.9	2.9	3.0	3.0	2.8	2.7
23	e4.3	3.8	3.5	3.6	3.2	3.1	2.9	2.9	3.0	3.1	2.8	2.7
24	e4.2	3.8	3.5	3.6	3.2	3.0	2.9	2.9	3.0	3.1	2.8	2.6
25	e4.2	3.8	3.5	3.5	3.2	3.0	2.9	2.9	3.0	3.1	2.8	2.6
26	e4.1	3.8	3.5	3.5	3.2	3.0	2.9	2.9	3.0	3.2	2.8	2.5
27	4.2	3.9	3.8	3.5	3.2	3.0	2.9	2.9	3.0	13	2.8	2.5
28	e4.0	3.9	3.9	3.5	3.2	3.0	3.0	2.9	3.1	3.3	2.7	2.5
29	e4.0	4.0	3.9	3.5	---	2.9	3.0	2.9	3.1	3.2	2.7	2.5
30	e4.1	3.9	3.8	3.5	---	2.9	3.0	2.9	3.1	3.0	71	2.5
31	e4.1	---	3.8	3.5	---	2.9	---	2.9	---	2.9	3.1	---
TOTAL	142.3	117.5	112.3	107.9	93.1	95.2	88.5	91.5	89.0	107.3	155.3	77.2
MEAN	4.59	3.92	3.62	3.48	3.33	3.07	2.95	2.95	2.97	3.46	5.01	2.57
MAX	5.0	4.1	4.0	3.7	3.5	3.2	3.0	3.0	3.1	13	71	2.7
MIN	4.0	3.8	3.4	3.3	3.2	2.9	2.9	2.9	2.9	2.9	2.7	2.5
MED	4.6	3.9	3.6	3.5	3.3	3.1	3.0	3.0	3.0	3.1	2.8	2.6
AC-FT	282	233	223	214	185	189	176	181	177	213	308	153

WTR YR 1999 TOTAL 1277.1 MEAN 3.50 MAX 71 MIN 2.5 MED 3.1 AC-FT 2530

e Estimated



COLORADO RIVER BASIN

91

09404343 TRUXTON WASH NEAR VALENTINE, AZ

LOCATION--Lat 35°23'03. long 113°39'25, in SE1/4NE1/4NW1/4, sec. 15, T 23 N., R.13 W., Mohave County, Hydrologic Unit 15010007, on the Hualapai Reservation, just southwest of Valentine, south of old Route 66, 29 mi east of Kingman and 20 mi west of Peach Springs.

DRAINAGE AREA--380.3 mi<sup>2</sup>.

PERIOD OF RECORD--March 1993 to current year.

GAGE--Water-stage recorder. Elevation of gage is 3,770 ft above sea level, from topographic map.

REMARKS--Records poor. Numerous small stock ponds located upstream with a combined capacity of less than 1,500 acre-feet. Several minor diversions.

EXTREMES OUTSIDE CURRENT PERIOD--Maximum discharge July or August 1904, 49,000 ft<sup>3</sup>/s estimated in Truxton Canyon approximately 12 mi upstream, see WSP 147.

EXTREMES FOR PERIOD OF RECORD--Maximum discharge, 7,430 ft<sup>3</sup>/s, Sept. 11, 1999, gage height, 14.07 ft; minimum daily discharge, 0.01 ft<sup>3</sup>/s, June 26, 28, July 15, 1999

EXTREMES FOR CURRENT YEAR--Maximum discharge, 7,430 ft<sup>3</sup>/s, Sept. 11, gage height, 14.07 ft, from floodmark; minimum daily discharge, 0.01 ft<sup>3</sup>/s, June 26, 28, July 15

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.10	.20	e.19	.34	.18	.23	.23	.17	.02	e.10	.03
2	.06	.10	.20	e.19	.31	.20	.24	.23	.19	.02	e.10	.03
3	.06	.10	.20	e.19	.31	.20	.25	.20	.16	.03	e.10	.03
4	.06	.10	.20	e.18	.30	.19	.26	.18	.16	.04	.08	.03
5	.06	.10	.21	e.18	.31	.18	.24	.19	.13	.05	.08	.03
6	.06	.11	.21	e.18	.30	.18	.21	.20	.12	.06	.09	.02
7	.06	.11	.20	e.18	.30	.18	.20	.21	.11	.05	.09	.02
8	.06	.11	.16	.17	.31	.17	.21	.21	.12	.06	.09	.02
9	.06	.11	.17	.17	.31	.18	.20	.19	.12	.05	.09	.02
10	.06	.12	.17	.17	.31	.18	.22	.16	.12	.03	.09	.02
11	.06	.12	.19	.18	.30	.17	.22	.15	.11	.03	.08	158
12	.06	.12	.19	.18	.31	.17	.23	.15	.10	.02	.08	242
13	.07	.13	.19	.17	.30	.16	.22	.16	.10	.02	.08	e.10
14	.08	.12	.19	.17	.30	.12	.22	.16	.10	.02	.08	.09
15	.08	.12	.20	.17	.30	.12	.24	.15	.09	.01	.08	.09
16	.09	.13	.20	.69	.31	.12	.23	.15	.09	46	.08	247
17	.08	.14	.23	1.3	.34	.13	.21	.14	.08	e.10	.08	e.10
18	.08	.14	.23	1.1	.35	.13	.22	.19	.07	e.10	.07	e.10
19	.08	.15	.23	.95	.24	.14	.24	.24	.07	e.10	.07	e.10
20	.08	.15	.24	.81	.21	.15	.28	.24	.06	e.10	.07	e.10
21	.08	.15	.24	.91	.20	.15	.27	.24	.06	e.10	.07	e.10
22	.09	.15	.24	.71	.18	.15	.25	.25	.05	e.10	.07	e.11
23	.08	.15	.27	.44	.18	.16	.27	.25	.04	e.10	.07	e.11
24	.08	.15	.19	.35	.19	.17	.25	.21	.03	e.10	.06	e.11
25	.09	.16	.19	.26	.17	.17	.25	.20	.02	89	.06	e.11
26	.10	.16	.19	.18	.18	.18	.27	.16	.01	e.10	.06	e.12
27	.10	.17	.18	.17	.18	.18	.23	.15	.02	256	.06	e.12
28	.10	.20	.18	.17	.18	.18	.23	.15	.01	e.20	.06	e.12
29	.10	.19	.19	.17	---	.18	.23	.16	.03	49	.06	e.12
30	.10	.19	.19	.18	---	.20	.21	.17	.03	e.20	.04	e.12
31	.10	---	.19	.29	---	.23	---	.18	---	e.15	.03	---
TOTAL	2.37	4.05	6.26	11.35	7.52	5.20	7.03	5.85	2.57	441.96	2.32	649.07
MEAN	.076	.14	.20	.37	.27	.17	.23	.19	.086	14.3	.075	21.6
MAX	.10	.20	.27	1.3	.35	.23	.28	.25	.19	256	.10	247
MIN	.06	.10	.16	.17	.17	.12	.20	.14	.01	.01	.03	.02
AC-FT	4.7	8.0	12	23	15	10	14	12	5.1	877	4.6	1290

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1999, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999
MEAN	.39	.37	.49	1.53	2.18	3.07	.59
MAX	.77	.76	.81	7.09	11.1	16.1	1.26
(WY)	1994	1996	1994	1995	1995	1993	1993
MIN	.076	.14	.20	.14	.24	.17	.19
(WY)	1999	1999	1999	1998	1997	1999	1998

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1993 - 1999

ANNUAL TOTAL	127.76	1145.55	
ANNUAL MEAN	.35	3.14	1.58
HIGHEST ANNUAL MEAN			3.37
LOWEST ANNUAL MEAN			.38
HIGHEST DAILY MEAN	23 Aug 24	256 Jul 27	283 Mar 6 1995
LOWEST DAILY MEAN	.05 Aug 13	.01 Jun 26	.01 Jun 26 1999
ANNUAL SEVEN-DAY MINIMUM	.06 Aug 25	.02 Jun 25	.02 Jun 25 1999
ANNUAL RUNOFF (AC-FT)	253	2270	1150
10 PERCENT EXCEEDS	.20	.27	1.0
50 PERCENT EXCEEDS	.12	.16	.43
90 PERCENT EXCEEDS	.07	.06	.09

e Estimated

## 00413700 VIRGIN RIVER ABOVE THE NARROWS NEAR LITTLEFIELD, AZ

LOCATION.--Lat 36°55'16", long 113°49'52", in NE 1/4 SE 1/4 sec. 29, T.41 N., R. 14 W., Mohave County, Hydrologic Unit 15010010, on right bank, 50 ft east of edge of roadway of I-15, 225 ft south of mile marker 15, 6.8 mi upstream from Littlefield, and 43 mi upstream from Lake Mead.

DRAINAGE AREA.--4,415 mi<sup>2</sup>, approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June to September 1998.

GAGE.--Water-stage recorder. Elevation of gage is 2,000 ft above sea level, from topographic map.

REMARKS.--Records good, except for estimated daily discharges, which are poor. See schematic diagram of Colorado River Basin at beginning of Colorado River Basin section.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of January 1, 1989, 61,000 ft<sup>3</sup>/s, on basis of slope-area measurement of peak flow at site about 1.0 mi downstream, due to failure of Quail Creek Dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,110 ft<sup>3</sup>/s, August 31, gage height, 10.57 ft; minimum daily, 5.5 ft<sup>3</sup>/s, June 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	225	196	215	174	130	63	198	29	9.5	172	242
2	57	224	207	210	174	110	54	190	27	15	113	141
3	52	207	208	208	167	89	69	199	134	7.7	78	101
4	60	180	207	202	176	71	70	361	157	7.2	43	58
5	75	169	209	192	198	77	77	267	204	7.0	28	64
6	83	174	209	201	192	66	94	224	175	6.1	23	80
7	98	162	206	205	182	67	e74	205	157	9.7	30	54
8	78	185	210	195	175	103	e58	207	121	53	27	41
9	83	510	216	195	178	98	e78	194	60	181	42	37
10	103	275	227	196	264	82	e64	208	41	251	36	53
11	90	221	211	201	327	75	e69	194	28	222	47	51
12	105	227	226	182	192	75	e77	174	30	231	144	130
13	110	224	227	149	191	74	139	160	28	165	71	87
14	107	203	231	136	195	71	119	137	34	141	48	60
15	113	200	223	119	193	62	126	135	29	185	33	49
16	121	202	229	141	181	65	91	117	26	382	69	55
17	112	213	226	144	170	71	86	107	20	94	70	59
18	113	206	221	146	166	56	88	111	15	85	69	70
19	110	203	215	145	168	58	99	181	16	75	41	103
20	108	193	220	135	161	58	76	154	20	125	45	92
21	102	255	220	137	158	74	62	92	23	167	61	54
22	193	221	211	144	156	76	60	46	16	64	61	50
23	209	197	201	133	158	67	87	43	12	35	69	64
24	146	189	210	145	158	55	127	65	12	23	62	64
25	352	182	207	156	156	60	155	48	11	20	68	60
26	489	177	222	177	154	53	169	33	13	37	43	54
27	361	175	219	206	147	60	155	25	13	38	49	67
28	224	174	222	182	138	58	180	21	5.5	31	46	53
29	184	181	221	176	---	66	163	27	9.6	298	56	35
30	189	200	219	178	---	51	161	27	13	191	68	42
31	210	---	219	174	---	62	---	27	---	240	714	---
TOTAL	4496	6354	6695	5325	5049	2240	2990	4177	1479.3	3396.2	2526	2170
MEAN	145	212	216	172	180	72.3	99.7	135	49.3	110	81.5	72.3
MAX	489	510	231	215	327	130	180	361	204	382	714	242
MIN	48	162	196	119	138	51	54	21	5.5	6.1	23	35
AC-FT	8920	12600	13280	10560	10010	4440	5930	8290	2930	6740	5010	4300

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 1999, BY WATER YEAR (WY)

	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999
MEAN	145	212	216	172	180	72.3	99.7	135	49.3	131	66.4	224
MAX	145	212	216	172	180	72.3	99.7	135	49.3	153	81.5	376
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1998	1999	1998
MIN	145	212	216	172	180	72.3	99.7	135	49.3	110	51.4	72.3
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1998	1999

## SUMMARY STATISTICS

## FOR 1999 WATER YEAR

## WATER YEARS 1998 - 1999

ANNUAL TOTAL	46897.5	
ANNUAL MEAN	128	128
HIGHEST ANNUAL MEAN		128
LOWEST ANNUAL MEAN		128
HIGHEST DAILY MEAN	714	2600
LOWEST DAILY MEAN	5.5	5.5
ANNUAL SEVEN-DAY MINIMUM	8.9	8.9
INSTANTANEOUS PEAK FLOW	2110	61000
INSTANTANEOUS PEAK STAGE	10.57	
ANNUAL RUNOFF (AC-FT)	93020	93080
10 PERCENT EXCEEDS	221	223
50 PERCENT EXCEEDS	119	110
90 PERCENT EXCEEDS	29	29

e Estimated

## 09413700 VIRGIN RIVER ABOVE NARROWS NEAR LITTLEFIELD, AZ--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD --June 1998 to current year.

REMARKS --In June 1998, station established in cooperation with the Southern Nevada Water Authority.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (000051)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00011)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
NOV									
16...	1015	199	2000.	8.2	16.5	9.0	710.	--	--
JAN									
12...	1100	186	--	7.9	13.5	6.0	--	--	--
MAR									
01...	1020	128	2070.	8.4	--	12.0	--	10.2	--
APP									
13...	1030	155	2900.	8.3	21.0	14.0	710.	9.3	98
MAY									
28...	0945	23	3120.	8.4	--	22.5	708.	9.0	113
JUL									
28...	1000	29	2730	8.5	--	25.5	710.	8.6	114
SEP									
28...	0940	50	2850.	8.5	23.0	15.0	715.	9.6	102

**LOCATION.**--Lat 36°53'30", long 113°55'25", in SW1/4SW1/4 sec. 4, T.40 N., R.15 W., Mohave County, Hydrologic Unit 1115010010, on right bank, 0.5 mi downstream from Beaver Dam Wash, 0.4 mi upstream from Littlefield, and 36 mi upstream from Lake Mead.

### WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 959: 1932. WSP 979: 1930-31, 1933-37. WSP 1313: 1940 (M).

**GAGE.**--Water-stage recorder. Datum of gage is 1,763.68 ft above sea level. Prior to May 28, 1933, nonrecording gage at site 300 ft upstream, and May 28, 1933, to November 7, 1939, at same site, both at datum 2.53 ft higher. November 8, 1939, to March 31, 1942, nonrecording gage at same site at datum 2.00 ft higher. April 1, 1942, to September 30, 1970, water-stage recorder at same site at same datum. October 1, 1970, to August 7, 1979, at site 300 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. See schematic diagram of Colorado River Basin at beginning of Colorado River Basin section.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 61,000 ft<sup>3</sup>/s, January 1, 1989, stage height, 22.37 ft; minimum daily, 40 ft<sup>3</sup>/s, August 6, 1966.

**EXTREMES FOR CURRENT YEAR.--**Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 31.....	0730	*2,670	*7.50

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	117	277	297	295	239	191	122	288	91	66	241	290
2	121	276	307	286	245	174	114	293	113	70	168	204
3	116	266	307	283	235	146	130	294	185	64	140	165
4	123	247	300	277	250	135	135	382	222	62	102	118
5	136	233	297	264	286	142	147	300	249	62	99	120
6	147	243	294	281	279	131	163	247	265	61	89	136
7	157	232	280	285	267	137	139	227	225	66	95	117
8	133	242	282	275	260	179	120	202	181	97	93	101
9	129	630	279	231	262	168	144	211	125	243	103	92
10	149	400	298	277	330	148	126	237	105	326	101	112
11	132	285	240	289	469	139	133	207	95	293	96	102
12	147	271	292	250	270	139	142	185	94	339	188	180
13	155	267	296	205	255	140	186	203	92	247	129	146
14	149	256	308	192	259	136	196	183	96	235	107	124
15	158	247	299	172	256	124	203	192	94	261	88	102
16	160	268	306	193	240	128	162	161	89	570	114	113
17	147	272	308	200	229	132	144	151	83	181	131	113
18	150	263	300	210	225	116	152	161	77	157	128	128
19	146	263	293	212	229	114	171	237	76	150	102	159
20	141	267	296	197	220	110	145	216	76	172	101	170
21	131	316	289	198	224	128	121	146	85	238	125	128
22	199	299	278	208	206	130	116	94	74	134	123	119
23	240	273	259	189	220	120	153	92	71	106	133	131
24	171	262	279	206	218	105	203	108	70	88	125	135
25	304	257	283	224	217	108	264	106	71	85	119	131
26	611	260	292	252	216	102	269	88	71	92	103	120
27	392	265	293	289	214	106	240	80	72	110	97	131
28	276	272	299	258	193	105	266	75	62	92	110	117
29	245	281	295	244	---	114	243	81	65	351	105	95
30	243	302	294	248	---	106	242	84	68	273	123	104
31	259	---	291	251	---	113	---	85	---	283	862	---
TOTAL	5884	8492	9081	7491	7013	4066	5091	5616	3344	5574	4440	4003
MEAN	190	283	293	242	250	131	170	181	111	180	143	133
MAX	611	630	308	295	469	191	269	382	265	570	862	290
MIN	116	232	269	172	193	102	114	75	62	61	88	92
MED	149	267	294	250	240	130	150	185	90	150	110	122
AC-FT	11670	16840	18010	14360	13910	8060	10100	11140	6630	11060	8810	7940

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1999, BY WATER YEAR (WY)

MEAN	149	193	226	239	324	370	411	429	444	109	178	155
MAX	602	552	1247	775	2330	1805	1385	2122	1119	381	976	737
(WY)	1947	1947	1967	1969	1980	1995	1969	1941	1983	1932	1932	1939
MIN	53.4	101	111	108	110	85.4	61.6	49.9	46.8	51.6	50.0	53.3
(WY)	1965	1991	1964	1964	1991	1977	1934	1990	1964	1965	1966	1964

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1930 - 1999
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ANNUAL TOTAL	147433		70095				
ANNUAL MEAN	393		192		244		
HIGHEST ANNUAL MEAN					697		1983
LOWEST ANNUAL MEAN					100		1991
HIGHEST DAILY MEAN	1570	Sep 12	862	Aug 31	17000	Mar 3	1938
LOWEST DAILY MEAN	98	Aug 16	61	Jul 6	40	Aug 6	1966
ANNUAL SEVEN-DAY MINIMUM	98	Aug 14	64	Jul 1	41	Aug 3	1966
INSTANTANEOUS PEAK FLOW			2670	Aug 31	61000	Jan 1	1989
INSTANTANEOUS PEAK STAGE			7.50	Aug 31	22.37	Jan 1	1989
ANNUAL RUNOFF (AC-FT)	284600		139000		176400		
10 PERCENT EXCEEDS	533				293		434
50 PERCENT EXCEEDS	279		174		150		
90 PERCENT EXCEEDS	126		92		62		



## 09416000 VIRGIN RIVER AT LITTLEFIELD, AZ--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	COLI-FORM, FECAL, 0.7 UM-MP (COLS./100 ML) (31625)	STREP-TOCOCO, FECAL, KP AGAR (COLS. PER 100 ML) (31673)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC, DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)
NOV 17...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 26...	K50	400	--	--	7.7	--	--	560	--	--	--	--
MAR 02...	K52	700	--	--	9.2	--	--	620	--	--	--	--
MAY 05...	280	370	--	--	6.7	--	--	360	--	--	--	--
JUN 22...	K45	K33	--	--	7.8	--	--	920	--	--	--	--
AUG 24...	340	260	--	--	9.4	--	--	810	--	--	--	--
24...	--	--	<.3	<.2	--	<.2	<.2	<2	<.3	.259	<.2	<.2
DATE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM, DIS-SOLVED (UG/L AS LI) (01130)	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRONTIUM, DIS-SOLVED (UG/L AS SR) (01080)	THALLIUM, DIS-SOLVED (UG/L AS TL) (01057)	VANADIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV 17...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 26...	<10	--	240	--	--	--	1.3	--	2635	--	5.4	--
MAR 02...	<10	--	280	--	--	--	1.0	--	2690	--	5.5	--
MAY 05...	<10	--	160	--	--	--	<1.0	--	1741	--	3.0	--
JUN 22...	<30	--	410	--	--	--	1.5	--	3644	--	5.7	--
AUG 24...	<30	--	310	--	--	--	1.1	--	3473	--	8.9	--
24...	<3	<.3	--	<.1	<.2	<.5	--	<.2	<.1	<.1	--	<.5
DATE	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	2,6-DI-ETHYL ANILINE, WAT FLT 0.7 U GF, REC (UG/L) (82660)	ACETO-CHLOR, WATER, REC (UG/L) (49260)	ALA-CHLOR, WATER, DISS, REC (UG/L) (46342)	ALPHA BHC, DIS-SOLVED (UG/L) (34253)	ATRA-ZINE, WATER, REC (UG/L) (39632)	BEN-FLUR-ALIN, WAT FLT 0.7 U GF, REC (UG/L) (82673)	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)	CAR-BARYL, WATER, FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO-FURAN, WATER, FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR-PYRIFOS, DIS-SOLVED (UG/L) (38933)
NOV 17...	1.2	0.8	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003	<.004
JAN 26...	1.2	1.1	--	--	--	--	--	--	--	--	--	--
MAR 02...	1.3	0.2	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003	<.004
MAY 05...	2.1	0.6	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003	<.004
JUN 22...	4.6	0.6	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003	<.004
AUG 24...	1.8	1.3	<.003	<.002	<.002	<.002	<.0075	<.002	<.002	<.003	<.003	<.004
24...	<0.1	--	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003	<.004
DATE	CYANA-ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA, WATER, FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	DIAZ-INON, D10 SRG, WAT FLT 0.7 U GF, REC PERCENT (UG/L) (91063)	DI-AZINON, DISS-SOLVED (UG/L) (39572)	DI-ELDRIN, DIS-SOLVED (UG/L) (39381)	DISUL-FOTON, WATER, FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC, WATER, FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL-FLUR-ALIN, WAT FLT 0.7 U GF, REC (UG/L) (32653)	ETHO-PRCP, WATER, FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS, WATER, DISS, REC (UG/L) (04095)	HCH ALPHA D6 SRG, WAT FLT 0.7 U GF, REC PERCENT (UG/L) (91065)
NOV 17...	<.004	<.002	<.002	94.4a	<.002	<.001	<.017	<.002	<.004	<.003	<.003	90.6a
JAN 26...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 02...	<.004	<.002	<.002	109a	E.0024	<.001	<.017	<.002	<.004	<.003	<.003	87.0a
MAY 05...	<.004	<.002	<.002	104a	.0077	<.001	<.017	<.002	<.004	<.003	<.003	90.0a
JUN 22...	<.004	<.002	<.002	105a	.022	<.001	<.017	<.002	<.004	<.003	<.003	91.3a
AUG 24...	<.004	<.002	<.002	119a	.010	<.001	<.017	<.002	<.004	<.003	<.003	106a
24...	<.004	<.002	<.002	96.6a	<.002	<.001	<.017	<.002	<.004	<.003	<.003	94.1a

## 09415000 VIRGIN RIVER AT LITTLEFIELD, AZ-Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82586)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN WATER DISSOLV (UG/L) (82630)	MOL- INATE WATER 0.7 U GF, REC (UG/L) (82671)	HAPPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82584)	P.P.P. ODE DISSOLV (UG/L) (34653)	PARA- THION, DIS- SOLVED (UG/L) (39542)
NOV 17...	<.004	<.002	<.005	<.001	<.006	<.002	<.004	<.004	<.003	<.006	<.004
JAN 26...	--	--	--	--	--	--	--	--	--	--	--
MAR 02...	<.004	<.002	<.005	<.001	<.006	<.002	<.004	<.004	<.003	<.006	<.004
MAY 05...	<.004	<.002	<.005	<.001	<.006	<.002	<.004	<.004	<.003	<.006	<.004
JUN 22...	<.004	<.002	<.005	<.001	<.006	<.002	<.004	<.004	<.003	<.006	<.004
AUG 24...	<.004	<.002	<.005	<.001	<.006	<.002	<.004	<.004	<.003	<.006	<.004
24...	<.004	<.002	<.005	<.001	<.006	<.002	<.004	<.004	<.003	<.006	<.004
DATE	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, DISS, 0.7 U REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, 0.7 U REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, DISS, 0.7 U REC (UG/L) (04035)	TEBU- THURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)
NOV 17...	<.004	<.004	<.005	<.002	<.018	<.003	<.007	<.004	<.013	<.005	<.01
JAN 26...	--	--	--	--	--	--	--	--	--	--	--
MAR 02...	<.004	<.004	<.005	<.002	E.0049	<.003	<.007	<.004	<.013	<.005	E.0058
MAY 05...	<.004	<.004	<.005	<.002	E.015	<.003	<.007	<.004	<.013	<.005	<.01
JUN 22...	<.004	<.004	<.005	<.002	<.018	<.003	<.007	<.004	<.013	<.005	<.01
AUG 24...	<.004	<.004	<.005	<.002	E.0031	<.003	<.007	<.004	<.013	<.005	<.01
24...	<.004	<.004	<.005	<.002	<.018	<.003	<.007	<.004	--	<.005	<.01
DATE	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TERBUTH YLAZINE SURROGT WAT FLT 0.7 U GF, REC (UG/L) (91064)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	URANIUM NATURAL DIS- SOLVED AS U (UG/L) (22703)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T DAY) (80155)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. & FINER THAN .062 MM (70331)	
NOV 17...	<.007	<.013	99.0a	<.002	<.001	<.002	--	911	1230	45	
JAN 26...	--	--	--	--	--	--	--	1070	1560	40	
MAR 02...	<.007	<.013	107a	<.002	<.001	<.002	--	348	763	39	
MAY 05...	<.007	<.013	109a	<.002	<.001	<.002	--	1720	2090	42	
JUN 22...	<.007	<.013	--	<.002	<.001	<.002	--	47	224	14	
AUG 24...	<.007	<.013	--	<.002	<.001	<.002	--	183	526	98	
24...	<.007	<.013	--	<.002	<.001	<.002	<.2	--	--	--	

E: Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations")

R: Non-Ideal Colony Count

a: Listed values are recovery percentages for the indicated compounds. These compounds are added to the sample to determine the relative recovery of other organic compounds that are detected using the same analytical method.

## 09421000 LAKE MEAD AT HOOVER DAM, AZ-NV

**LOCATION**--Lat 36°00'58", long 11°44'13", in NE1/4SW1/4 sec. 3, T.30N., R.23W., Gila and Salt River meridian, Mohave-Clark Counties, Hydrologic Unit 15010005, in center of Hoover Dam on Colorado River.

**DRAINAGE AREA**--171,700 mi<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, which is noncontributing (previously considered part of the Missouri River basin).

**PERIOD OF RECORD**--Contents: February 1935 to current year. Diversions (monthly totals only): to Boulder City area, since October 1935; to Henderson and Las Vegas areas, since April 1942; combined diversions since October 1968. Prior to 1946 published as "at Boulder Dam."

**REVISED RECORDS**--WSP 899: 1935-39.

**GAGE**--Water-stage indicator read once daily at midnight, with supplementary water-stage recorder. Datum of gage is 0.00 ft to Local Powerhouse datum.

**REMARKS**--Reservoir is formed by concrete arch-gravity dam; storage began February 1, 1935; dam completed March 1, 1936. Total capacity (based on 1963-64 resurvey by Coast and Geodetic Survey; capacity table put into use April 1, 1967), 29,755,000 acre-ft, consisting of the following: Dead storage, 2,378,000 acre-ft below gage height 850.0 ft--gage sills in outlet towers; usable contents, 26,159,000 acre-ft between gage heights 895.0 ft and 1,221.4 ft (top of automatic spillway gates in raised position); uncontrolled storage, 1,218,000 acre-ft between gage heights 1,221.4 ft and 1,229.0 ft (maximum water surface). Reservoir is used to store water for flood control, irrigation, municipal water supply, power development, and recreation. Figures given herein represent usable contents. See schematic diagram of Colorado River Basin at beginning of Colorado River Basin section.

**DIVERSIONS FROM LAKE MEAD**--Diversions to Boulder City area at dam; diversions to Henderson and Las Vegas areas from intakes 6 mi upstream. Diversions measured by Venturi meters. Water used for municipal and industrial purposes.

**COOPERATION**--Records of gage height and contents furnished by Bureau of Reclamation. Records of diversions from Lake Mead furnished by Bureau of Reclamation and Colorado River Commission of Nevada.

**EXTREMES FOR PERIOD OF RECORD**--Maximum contents, 27,790,000 acre-ft, July 29, 30, 1941 (on basis of original bathymetry), gage height, 1,220.45 ft; maximum gage height, 1,225.85 ft, July 24, 1983 (equivalent to 26,868,000 acre-ft on basis of resurveyed bathymetry of 1963-64); minimum contents (since 1940), 10,695,000 acre-ft, April 26, 1956, gage height, 1,083.21 ft.

**EXTREMES FOR CURRENT YEAR**--Maximum contents, 25,290,000 acre-ft, Nov. 1, gage height 1,215.84 ft; minimum, 23,857,000 acre-ft, June 30, gage height, 1,206.40 ft.

RESERVOIR STORAGE, IN THOUSANDS OF ACRE FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25140	25290	25112	24787	24832	24887	24645	24214	24001	23860	24002	24225
2	25149	25279	25104	24787	24825	24877	24633	24210	24001	23863	24008	24249
3	25157	25268	25104	24780	24821	24858	24638	24190	24000	23870	24003	24273
4	25176	25268	25095	24764	24813	24850	24635	24165	24012	23883	24009	24305
5	25180	25264	25085	24737	24818	24845	24551	24135	24022	23883	24021	24325
6	25172	25259	25086	24717	24827	24847	24536	24116	24021	23874	24030	24335
7	25179	25261	25060	24703	24835	24847	24510	24090	24008	23873	24040	24334
8	25180	25268	25043	24686	24833	24832	24488	24082	23997	23885	24056	24334
9	25194	25259	25021	24692	24821	24810	24474	24088	23991	23877	24054	24350
10	25211	25255	25008	24697	24825	24809	24477	24074	23984	23882	24058	24367
11	25225	25244	24997	24698	24819	24796	24477	24062	23974	23885	24062	24391
12	25228	25242	25000	24702	24821	24799	24450	24048	23966	23882	24057	24391
13	25220	25241	25006	24709	24832	24798	24432	24018	23958	23874	24045	24415
14	25211	25247	25000	24718	24838	24796	24406	24024	23938	23873	24047	24420
15	25210	25259	24977	24720	24850	24783	24380	24030	23925	23870	24051	24435
16	25200	25251	24957	24738	24861	24770	24364	24042	23925	23885	24051	24447
17	25207	25238	24937	24757	24861	24760	24362	24033	23916	23898	24044	24469
18	25213	25231	24914	24763	24867	24754	24361	24018	23900	23909	24051	24494
19	25196	25225	24905	24775	24864	24747	24346	24015	23901	23919	24062	24519
20	25185	25216	24890	24770	24868	24749	24328	24008	23910	23927	24072	24527
21	25182	25217	24865	24783	24871	24757	24312	23997	23909	23931	24093	24524
22	25180	25216	24835	24798	24868	24752	24293	24008	23898	23936	24105	24536
23	25185	25192	24798	24801	24871	24747	24293	24015	23882	23931	24114	24546
24	25203	25169	24795	24822	24865	24729	24294	24006	23874	23949	24117	24556
25	25217	25154	24813	24813	24861	24712	24299	24004	23864	23966	24122	24575
26	25222	25158	24824	24816	24868	24700	24276	23991	23868	23970	24124	24580
27	25225	25155	24830	24816	24879	24706	24252	23979	23879	23979	24132	24589
28	25241	25138	24827	24815	24899	24717	24236	23972	23868	23985	24156	24581
29	25242	25138	24816	24816	---	24700	24218	23977	23858	23986	24180	24588
30	25256	25128	24802	24830	---	24682	24216	23990	23857	23986	24190	24592
31	25278	---	24781	24836	---	24662	---	24001	---	23988	24207	---
MAX	25278	25290	25112	24836	24899	24887	24645	24214	24022	23988	24207	24592
MIN	25140	25128	24781	24686	24813	24662	24216	23972	23857	23860	24002	24225
*	1215.76	1214.79	1212.53	1212.89	1213.30	1211.75	1208.80	1207.37	1206.40	1207.28	1208.74	1211.29
#	+152000	-150000	-347000	+55000	+63000	-237000	-446000	-215000	-144000	+131000	+219000	+385000
**	35876	31039	28781	29902	28417	34681	34935	41429	37000	38380	37831	34088
**	5.83	3.35	2.80	3.23	4.17	8.46	8.74	12.3	13.5	12.2	10.9	9.45
a	75000	43100	35800	41100	53200	107700	110200	153300	167500	151700	136700	119200

CAL YR 1998 MAX 25298 MIN 24609 # +142000 ## 374738 \*\* 62.6 a 800700  
WTR YR 1999 MAX 25290 MIN 23857 # -534000 ## 412089 \*\* 94.9 a 1194300

- \* Gage height, in feet, at end of month.
- # Change in contents, in acre-feet.
- \*\* Diversions, in acre-feet.
- \*\* Gross evaporation, in inches, from Lake Mead, for Water Year 1999.
- a Gross evaporation, in acre-feet, from Lake Mead, for Water Year 1999.

**NOTE:** Figures on gross evaporation are based on data provided for Lake Mead by National Park Service and at Las Vegas by National Weather Service. Additional data were collected by the USGS from a floating barge on Lake Mead. Only the mass-transfer method described in Geological Survey Professional Paper 298 is used. Starting February 1976, the coefficient of 0.00179 was used in the mass-transfer equation. "Gross" denotes the total evaporation from the lake without deduction for precipitation on the lake surface or for natural losses that would have occurred in the area now occupied by the lake.



COLORADO RIVER MAIN STEM

99

09421600 COLORADO RIVER BELOW HOOVER DAM, AZ-NV  
(National Stream-Quality Accounting Network Station)

LOCATION --Lat 36°00'55", long 114°44'16", in NE1/4SW1/4 sec.3, T.30 N., R.23 W., Gila and Salt River meridian, or SW1/4NE1/4 sec.29, T.22 S., R.65 E., Mount Diablo meridian, Mohave-Clark Counties, Hydrologic Unit 15030101, in powerhouse at downstream side of Hoover Dam

DRAINAGE AREA --171,700 mi<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, which is noncontributing (previously considered part of the Missouri River basin).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD --October 1933 to current year (prior to April 1934, monthly discharge only, published in WSP 1313). Published as "near Willow Beach" 1933-39 and as "below Boulder Dam" 1939-45.

GAGE --Acoustical velocity meters on each turbine in Hoover Dam. Prior to November 1, 1939, water-stage recorder at site 9 mi downstream at datum 594.8 ft above sea level. November 1, 1939, to June 30, 1958, water-stage recorder at site 0.8 mi downstream at datum 600.35 ft above sea level. July 1, 1958, to November 7, 1979, totalizing flowmeter on each turbine.

REMARKS --Flow regulated by Hoover Dam on Lake Mead since February 1, 1935. Many diversions above station for irrigation, industrial, and municipal use. See schematic diagram of Colorado River Basin at beginning of Colorado River Basin section.

COOPERATION --Records furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD --Maximum daily discharge, 50,800 ft<sup>3</sup>/s, July 29, 1983, no flow at Hoover Dam part of February 10, 1935; minimum daily, 152 ft<sup>3</sup>/s, February 10, 1935

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11200	9170	19200	11100	17900	19500	23500	13200	18500	15100	11500	8770
2	9600	19900	19300	15700	14400	21300	17700	11000	13800	13100	14300	6930
3	8100	15200	15800	18100	16800	19500	15700	23900	15600	9980	18800	8160
4	5520	12700	21100	24500	19400	18500	9970	24600	14000	9660	17500	4520
5	10600	15400	15600	27300	13200	19500	20500	25500	11600	16200	12400	9000
6	13200	18400	16500	26300	9950	11600	21200	23100	15400	20300	11000	10600
7	11700	10300	26600	24200	11400	10500	19700	23200	22100	17100	11400	15300
8	12200	11000	22800	25300	14100	19900	20700	14500	18500	15100	11300	13500
9	9950	14700	22400	15700	15500	19200	20400	13300	17100	22200	17200	9770
10	5550	15500	22000	14400	15600	17300	12000	21800	21100	17900	15600	10300
11	7980	17100	21500	18800	15300	18500	11200	23300	19600	15700	16500	7570
12	12400	15800	11500	15400	14300	13300	21500	14900	19100	21800	20500	10100
13	15800	14700	12300	11500	7610	13000	22400	25000	14300	22700	23800	16200
14	17300	10300	20900	9680	7340	14300	24500	19500	25900	19500	17400	10700
15	14100	7870	22200	10700	11900	16500	21700	15600	18700	17700	13600	13700
16	18600	18200	24500	7520	11200	19300	21400	13500	17800	18900	20000	11900
17	9600	14900	25400	6890	12000	16600	13200	23000	21700	11400	19400	9490
18	11400	18500	24400	9610	13800	17200	12800	22000	23300	10200	16500	7080
19	21200	17100	16000	7480	13400	16800	21400	21700	15000	13600	14100	7410
20	18500	17500	19500	9470	12000	10200	20100	22100	10000	12200	13500	14800
21	15500	14600	31400	9100	9750	9200	20800	21900	16100	13700	11600	16800
22	15400	13200	28600	8510	18400	15900	16500	14500	18900	16000	13200	20400
23	11300	24900	30600	8970	14500	16700	15300	15300	19500	17900	15500	17000
24	9350	22700	12900	8990	16200	20000	11900	19900	19200	8670	16800	14600
25	5520	23900	8070	14800	13600	19900	10800	21300	20100	9070	16300	11100
26	12400	11800	9440	12300	13600	15700	23100	23700	14100	14200	15600	13500
27	11100	15700	12900	13700	8740	12200	21000	22700	11900	14400	15000	15500
28	9360	18700	17200	13500	7390	9670	20200	24200	18500	13000	5910	14400
29	14100	18700	16900	13200	---	21500	14900	13100	19500	17800	6440	14200
30	8470	14100	23500	7890	---	17900	18100	11100	18900	20500	8950	15500
31	7410	---	25200	8460	---	18600	---	10100	---	17600	13000	---
TOTAL	363250	479640	616610	429070	369280	509770	545770	402500	531800	483180	454600	358800
MEAN	11720	15990	19890	13840	13190	16440	18290	19440	17730	15590	14650	11960
MAX	21200	24900	31400	27300	19400	21500	24500	25500	25900	22700	23800	20400
MIN	5520	7870	8070	6890	7340	9200	9970	10100	10000	8670	5910	4520
AC-FT	720500	951400	1223000	851100	732500	1011000	1086000	1195000	1055000	958400	901700	711700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 1999, BY WATER YEAR (WY)

	MEAN	11730	11540	11990	12330	12640	14790	15910	16200	15700	15630	15190	13440
MAX	34250	30530	33670	32700	30680	28790	26290	33330	34890	41870	39390	36750	
(WY)	1934	1942	1942	1942	1984	1984	1984	1986	1984	1983	1983	1983	
MIN	3139	1519	4444	3540	1106	5474	7297	2898	3786	10880	9961	6619	
(WY)	1945	1935	1935	1979	1993	1993	1935	1937	1940	1937	1936	1982	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1935 - 1999
ANNUAL TOTAL	6441890	5747270	
ANNUAL MEAN	17650	15750	13940
HIGHEST ANNUAL MEAN			30590
LOWEST ANNUAL MEAN			7674
HIGHEST DAILY MEAN	31400	Dec 21	50800
LOWEST DAILY MEAN	4450	Sep 6	152
ANNUAL SEVEN-DAY MINIMUM	8760	Sep 4	927
ANNUAL RUNOFF (AC-FT)	12780000	11400000	11100000
10 PERCENT EXCEEDS	24000	22700	21700
50 PERCENT EXCEEDS	18200	15600	13400
90 PERCENT EXCEEDS	10100	9090	6510

09421600 COLORADO RIVER BELOW HOOVER DAM, AZ-NV--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1940 to current year.

PERIOD OF DAILY RECORD.--

**CHEMICAL ANALYSES:** October 1939 to September 1944. October 1950 to September 1957. October 1967 to March 1970.

**SPECIFIC CONDUCTANCE:** October 1939 to July 1957, October 1977 to September 198

**WATER TEMPERATURE:** October 1941 to July 1967, October 1977 to September 1987.

REMARKS.—Samples collected at gaging station 0.3 mi downstream from Hoover Dam. Unpublished chemical analyses for period October 1939 to September 1940 available from the U.S. Geological Survey in Tucson, Arizona. Quality-assurance samples are defined in the introductory test section titled "Water Quality-Control Data."

**COOPERATION.**--Instantaneous-discharge data provided by Bureau of Reclamation, Boulder City, Nevada.

**EXTREMES MEASURED FOR PERIOD OF DAILY RECORD SINCE OCTOBER 1977.--**

**SPECIFIC CONDUCTANCE:** Maximum, 1,180 microsiemens, June 10, 1980; minimum, 787 microsiemens, April 20, 1987.

**WATER TEMPERATURE:** Maximum, 21.5°C, July 23, 1983; minimum, 9.0°C January 10, 1978.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible][illegible]

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	NETRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NETRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NETRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOSPH- ORTHOC- DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	UV ABSORB- ANCE 254 NM, WTR FLT (CM) (50624)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	TUR- BID- ITY (NTU) (00076)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
DEC												
16...	16	18	<.01	.531	.002	<.05	--	578.	548.	0.79	.20	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
01...	.14	.37	<.01	.005	.003	<.004	--	577.	538.	0.78	.32	--
01...	--	.005	<.001	--	.001	--	--	--	--	--	--	<.3
03...	--	.005	<.001	--	.001	--	--	--	--	--	--	<.3
03...	.16	.34	<.01	.005	.004	.006	--	577.	538.	0.78	.35	--
MAR												
03...	.30	.31	<.01	.004	.003	.011	.047	582.	545.	0.79	.67	--
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	.13	.32	<.01	.004	.003	.007	.046	592.	548.	0.79	.78	--
APR												
26...	.20	.29	<.01	.004	.006	.004	.046	580.	545.	0.79	1.3	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
23...	.24	.33	<.01	<.004	.003	<.004	.045	574.	538.	0.78	1.5	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
25...	.17	.35	<.01	<.004	<.001	<.004	.050	563.	545.	0.77	.37	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
DATE	ANTI- MONY DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)
DEC												
16...	--	2.9	--	--	100	--	--	--	--	<10	--	37
16...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
03...	--	2.2	--	--	100	--	--	--	--	<10	--	35
03...	<.2	--	<.2	<.2	<.2	<.3	<.2	<.2	<.2	<3	<.3	--
03...	<.2	--	<.2	<.2	<.2	<.3	<.2	<.2	<.2	<3	<.3	--
03...	--	2.1	--	--	100	--	--	--	--	<10	--	36
MAR												
03...	--	2.5	--	--	110	--	--	--	--	<10	--	37
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	2.5	--	--	110	--	--	--	--	<10	--	36
APR												
26...	--	2.7	--	--	110	--	--	--	--	<10	--	40
26...	--	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
23...	--	3.8	--	--	110	--	--	--	--	<10	--	35
23...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
25...	--	2.1	--	--	110	--	--	--	--	<10	--	37
25...	--	--	--	--	--	--	--	--	--	--	--	--

09421500 COLORADO RIVER BELOW HOOVER DAM, AZ-NV--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible][illegible]

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

## 09421500 COLORADO RIVER BELOW HOOVER DAM, AZ-NV--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82559)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82583)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER, DISS, 0.7 U REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, 0.7 U REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, 0.7 U REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)
DEC											
16...	<.004	<.004	<.005	<.002	E.0014	<.003	<.007	<.004	<.013	E.0038	<.01
16...	<.004	<.004	<.005	<.002	<.018	<.003	<.007	<.004	<.013	<.005	<.01
16...	--	--	--	--	--	--	--	--	--	--	--
FEB											
03...	<.004	<.004	<.005	<.002	E.0016	<.003	<.007	<.004	<.013	E.0037	E.0012
03...	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--
03...	<.004	<.004	<.005	<.002	E.0017	<.003	<.007	<.004	<.013	<.005	E.0014
MAR											
03...	<.004	<.004	<.005	<.002	E.0017	<.003	<.007	<.004	<.013	<.005	E.0049
03...	--	--	--	--	--	--	--	--	--	--	--
03...	<.004	<.004	<.005	<.002	E.0022	<.003	<.007	<.004	<.013	<.005	E.0048
APR											
26...	<.004	<.004	<.005	<.002	<.018	<.003	<.007	<.004	<.013	<.005	<.01
26...	.097	.10	.050	.073	.096	.096	.11	.11	.077	.11	.12
26...	--	--	--	--	--	--	--	--	--	--	--
JUN											
23...	<.004	<.004	<.005	<.002	<.018	<.003	<.007	<.004	<.013	.007	E.0058
23...	--	--	--	--	--	--	--	--	--	--	--
AUG											
25...	<.004	<.004	<.005	<.002	<.018	<.003	<.007	<.004	<.013	<.008	<.01
25...	--	--	--	--	--	--	--	--	--	--	--

DATE	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82655)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TERBUTH YLAZINE SURROG WAT FLT 0.7 U GF, REC (UG/L) (91064)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	URANIUM NATURAL DIS- CHARGE, SUS- PENDE (UG/L) AS U (22703)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T'DAY) (80155)	SED- SUSP. SIEVE DIAM. 4 FINER THAN (MG/L) (80154)	SED- SUSP. SIEVE DIAM. 4 FINER THAN (MG/L) (70331)
DEC										
16...	<.007	<.013	90.8	<.002	<.001	<.002	--	E374	4	52
16...	<.007	<.013	93.1	<.002	<.001	<.002	--	--	--	--
16...	--	--	--	--	--	--	--	--	4	54
FEB										
03...	<.007	<.013	85.1	<.002	<.001	<.002	--	E351	5	51
03...	--	--	--	--	--	--	<.2	--	--	--
03...	--	--	--	--	--	--	<.2	--	--	--
03...	<.007	<.013	86.0	<.002	<.001	<.002	--	E280	4	50
MAR										
03...	<.007	<.013	105	<.002	<.001	<.002	--	E273	4	50
03...	--	--	--	--	--	--	--	--	--	--
03...	<.007	<.013	102	<.002	<.001	<.002	--	--	4	53
APR										
26...	<.007	<.013	114	<.002	<.001	<.002	--	E2590	23	67
26...	E.14	.094	103	.088	.079	.10	--	--	--	--
26...	--	--	--	--	--	--	--	--	9	69
JUN										
23...	<.007	<.013	--	<.002	<.001	<.002	--	E826	22	52
23...	--	--	--	--	--	--	--	--	16	60
AUG										
25...	<.007	<.013	--	<.002	<.001	<.002	--	E382	8	74
25...	--	--	--	--	--	--	--	--	3	70

E: Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations")

a Listed values are recovery percentages for the indicated compounds. These compounds are added to the sample to determine the relative recovery of other organic compounds that are detected using the same analytical method.

## 09422500 LAKE MOHAVE AT DAVIS DAM, AZ-NV

**LOCATION.**--Lat 35°11'50", long 114°34'07", in SW1/4SW1/4 sec.18, T.21 N., R.21 W., Gila and Salt River meridian, Mohave County, Arizona, Hydrologic Unit 15030101, on forebay structure on Arizona side of Davis Dam on Colorado River, 29 mi west of Kingman, Az., and 67 mi downstream from Hoover Dam.

**DRAINAGE AREA.**--173,300 mi<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, which is noncontributing.

**PERIOD OF RECORD.**--January 1950 to current year.

**GAGE.**--Water-stage recorder. Datum of gage is sea level.

**REMARKS.**--Reservoir is formed by earthfill and rockfill dam; dam completed in April 1949 and storage began Jan. 17, 1950. Usable capacity, 1,810,000 acre-ft between elevations 533.39 ft - lowest point of penstock outlet - and 647.0 ft - top of spillway gates. A small amount of additional storage is available through use of splashboards on the spillway gates. Dead storage, 8,530 acre-ft below elevation 533.39 ft. Lake is used for power development, regulation for irrigation demand, and to satisfy requirements of the Treaty of 1944 with Mexico. Figures given herein represent usable contents.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum contents, 1,811,000 acre-ft May 24, 1958; May 29, 1963; May 29, 1982; maximum elevation, 647.04 ft May 29, 1963; May 29, 1982; minimum contents (since 1952), 1,168,000 acre-ft Sept. 8, 1953; elevation, 622.15 ft

**EXTREMES FOR CURRENT YEAR.**--Maximum contents, 1,760,000 acre-ft Feb. 11, elevation, 645.22 ft; minimum, 1,503,000 acre-ft Dec. 29, elevation, 635.68 ft.

Capacity table (elevation, in feet, and usable contents, in acre-feet)

632	1,409,000	641	1,644,000
635	1,486,000	644	1,726,000
638	1,564,000	647	1,810,000

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1721000	1638000	1611000	1525000	1666000	1692000	1684000	1661000	1709000	1689000	1688000	1692000
2	1715000	1648000	1610000	1524000	1674000	1702000	1684000	1647000	1708000	1678000	1687000	1680000
3	1708000	1654000	1596000	1527000	1685000	1713000	1680000	1657000	1707000	1665000	1698000	1670000
4	1697000	1653000	1591000	1545000	1702000	1720000	1674000	1671000	1699000	1650000	1702000	1652000
5	1694000	1652000	1576000	1577000	1705000	1725000	1679000	1686000	1684000	1649000	1697000	1648000
6	1696000	1656000	1563000	1595000	1707000	1712000	1685000	1699000	1678000	1655000	1685000	1650000
7	1696000	1646000	1568000	1611000	1710000	1704000	1691000	1707000	1683000	1660000	1676000	1651000
8	1700000	1636000	1573000	1629000	1720000	1714000	1696000	1694000	1681000	1656000	1669000	1660000
9	1693000	1639000	1576000	1627000	1735000	1725000	1698000	1686000	1680000	1666000	1672000	1653000
10	1680000	1639000	1568000	1625000	1751000	1725000	1685000	1694000	1687000	1674000	1671000	1645000
11	1678000	1644000	1578000	1628000	1760000	1733000	1671000	1700000	1692000	1679000	1675000	1634000
12	1679000	1647000	1557000	1628000	1758000	1729000	1674000	1710000	1697000	1686000	1683000	1630000
13	1682000	1646000	1533000	1619000	1746000	1719000	1683000	1718000	1697000	1703000	1697000	1637000
14	1690000	1635000	1530000	1608000	1737000	1714000	1700000	1714000	1711000	1711000	1702000	1637000
15	1697000	1625000	1530000	1615000	1731000	1724000	1707000	1709000	1710000	1726000	1700000	1631000
16	1705000	1625000	1534000	1612000	1728000	1733000	1711000	1701000	1707000	1730000	1709000	1619000
17	1694000	1625000	1551000	1612000	1725000	1731000	1703000	1711000	1713000	1725000	1718000	1607000
18	1690000	1629000	1554000	1615000	1721000	1731000	1694000	1719000	1724000	1717000	1722000	1586000
19	1708000	1622000	1540000	1620000	1719000	1730000	1701000	1722000	1719000	1717000	1720000	1565000
20	1717000	1618000	1538000	1623000	1711000	1711000	1704000	1727000	1706000	1711000	1722000	1560000
21	1721000	1609000	1561000	1629000	1707000	1689000	1705000	1731000	1702000	1707000	1716000	1558000
22	1726000	1599000	1575000	1623000	1717000	1683000	1702000	1720000	1703000	1709000	1718000	1565000
23	1721000	1610000	1590000	1616000	1713000	1681000	1690000	1716000	1704000	1714000	1720000	1561000
24	1708000	1621000	1574000	1617000	1712000	1685000	1677000	1719000	1705000	1698000	1729000	1555000
25	1691000	1629000	1546000	1628000	1711000	1691000	1666000	1725000	1712000	1689000	1732000	1542000
26	1689000	1617000	1522000	1635000	1709000	1686000	1672000	1733000	1703000	1682000	1723000	1537000
27	1681000	1610000	1509000	1644000	1697000	1676000	1681000	1732000	1698000	1679000	1723000	1533000
28	1672000	1629000	1504000	1653000	1677000	1663000	1682000	1731000	1695000	1674000	1713000	1526000
29	1675000	1609000	1503000	1661000	---	1671000	1683000	1730000	1696000	1677000	1710000	1517000
30	1665000	1610000	1512000	1653000	---	1674000	1673000	1724000	1693000	1691000	1700000	1512000
31	1650000	---	1533000	1650700	---	1675000	---	1707000	---	1696000	1698000	---
MAX	1726000	1656000	1611000	1661000	1760000	1733000	1711000	1733000	1724000	1730000	1732000	1692000
MIN	1650000	1599000	1503000	1524000	1666000	1663000	1666000	1647000	1678000	1649000	1669000	1512000
(*)	641.19	639.72	636.82	641.22	642.21	642.15	642.05	643.31	642.79	642.90	642.99	636.02
(**)	-82000	-40000	-77000	+117000	+27000	-2000	-2000	+34000	-14000	+3000	-2000	-186000
CAL YR 1998	MAX	1769000	MIN	1420000	(**)	-173000						
WTR YR 1999	MAX	1760000	MIN	1503000	(**)	-220000						

(\*) Elevation, in feet, at end of month.

(\*\*) Change in contents, in acre-feet.

## 09423000 COLORADO RIVER BELOW DAVIS DAM, AZ-NV

**LOCATION.**--Lat 35°11'30", long 114°34'17", in SE 1/4 NE 1/4 sec. 1, T.32 S., R.66 E., Mount Diablo meridian, in Clark County, Nevada, Hydrologic Unit 15030101, on right bank 0.5 mi downstream from Davis Dam, 29 mi west of Kingman, AZ., and 68 mi downstream from Hoover Dam.

**DRAINAGE AREA.**--173,300 mi<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, which is noncontributing.

**PERIOD OF RECORD.**--June 1906 to September 1907 (published as "at Hardyville"), March 1949 to current year.

**REVISED RECORDS.**--WDR AZ-88-1:1981.

**GAGE.**--Water-stage recorder. Datum of gage is 490.00 ft, sea level; gage readings have been reduced to elevations sea level since Oct. 1, 1967. 1906-7, nonrecording gage at site 4.8 mi downstream at datum about 3.4 ft lower. Mar. 18 to May 3, 1949, water-stage recorder at site 0.5 mi downstream at datum 10.00 ft higher. May 4, 1949, to Feb. 24, 1956, water-stage recorder at site 400 ft upstream at datum 10.00 ft higher. Feb. 25, 1956, to Sept. 30, 1967, water-stage recorder at present site at datum 10.00 ft higher.

**REMARKS.**--No estimated daily discharge. Records excellent. Flow regulated by Lake Mead since Feb. 1, 1935, and by Lake Mohave since Jan. 17, 1950. Many diversions upstream for irrigation, industrial, and municipal uses.

**EXTREMES FOR PERIOD OF RECORD.**--1905-7: Maximum daily discharge, 116,000 ft<sup>3</sup>/s June 20, 1906; minimum daily, 2,850 ft<sup>3</sup>/s Jan. 5, 1906.

1949-99: Maximum discharge, 46,200 ft<sup>3</sup>/s July 2, 1983, elevation, 508.48 ft; maximum elevation, 513.91 ft Apr. 22, 1952; no flow at Davis Dam parts of several days July to September 1950 and Dec. 27, 1950, when gates in dam were closed; minimum daily discharge, 285 ft<sup>3</sup>/s Aug. 3, 1950.

**EXTREMES FOR CURRENT YEAR.**--Maximum discharge, 24,300 ft<sup>3</sup>/s Dec. 27, 29, elevation, 504.73 ft; minimum daily, 6,280 ft<sup>3</sup>/s Jan. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15000	14400	18900	16600	10200	14200	18600	19800	17000	18400	15400	13400
2	12500	14400	19500	16600	9780	13900	18600	19000	17100	18500	16100	13400
3	12500	12900	22900	16000	10400	13700	16500	19400	16500	17500	14000	13300
4	10700	14600	23400	14400	10800	15500	15300	17800	16700	17500	13900	13100
5	11200	15900	23500	10600	10400	16800	18600	17800	20500	16800	16000	11800
6	11400	15600	23600	16600	9210	16800	16300	17700	19300	16800	16200	11200
7	11200	15700	23600	16600	9880	15600	17300	18500	20500	16700	16100	13700
8	10100	15500	20300	16400	9010	14200	18400	20500	20400	16900	14900	14500
9	11100	15300	23400	16400	6650	14400	19400	18500	17900	16700	15700	14400
10	12800	14700	23400	16400	7450	16300	19200	18600	17200	14700	15700	14600
11	10000	15100	16300	16400	11300	15000	19700	19600	17100	14600	15700	13700
12	12100	15200	23700	16400	13800	15500	18400	19700	17700	17100	16500	11400
13	13500	15200	23800	16300	13900	16700	18400	20300	18600	15500	15700	12400
14	12300	15600	24000	14500	12800	15400	18200	22000	18500	14500	15700	12400
15	12900	14100	22600	7550	13800	13900	19300	19800	19800	12400	14600	16400
16	14000	17500	21800	7710	13300	14200	18300	18500	18800	13600	15200	17400
17	14600	17900	15800	7460	13200	17500	17400	17800	19200	14400	15100	17700
18	12900	14400	22200	6920	14400	18300	18300	18700	18100	14400	14100	17300
19	13400	18500	23900	6480	15900	18300	18900	19900	17200	14300	14200	17500
20	13600	18600	20800	6280	15000	19600	18700	19600	16800	15300	14000	18200
21	14300	18700	20300	8330	13400	20000	19000	19800	18700	15300	14100	18200
22	11700	18700	21400	10900	12100	19400	19700	19800	18500	15200	14200	18200
23	12600	18800	22300	11800	15700	18300	20800	18800	19400	15300	13200	18300
24	14800	18700	22400	9430	16000	18300	19400	18700	19600	15900	12700	18100
25	14900	18700	22100	8780	15000	17700	17100	18700	17100	14200	12700	18300
26	14700	18800	22200	8960	14400	16600	18700	18700	17100	17400	13200	18300
27	14300	18800	22200	9570	16200	18700	18600	19300	16100	17600	13200	17200
28	13400	18800	20000	8620	16700	17500	19600	19400	19200	16500	13100	18200
29	14100	18800	18400	8360	---	16400	19400	19600	19400	15100	11600	13200
30	14500	18800	16400	10400	---	17000	20600	18500	18200	14400	13500	13400
31	14400	---	14600	10900	---	17400	---	17900	---	14600	13400	---
TOTAL	401500	498700	659700	368650	350680	513100	556700	592700	548200	488100	449700	469200
MEAN	12950	16620	21280	11890	12520	16550	18560	19120	18270	15750	14510	15640
MAX	15000	18800	24000	16600	16700	20000	20800	22000	20500	18500	16500	18400
MIN	10000	12900	14600	6280	6650	13700	15300	17700	16100	12400	11600	11200
AC-FT	796400	989200	1309000	731200	695600	1018000	1104000	1176000	1087000	968100	892000	930700
CAL YR 1998	TOTAL	6523900	MEAN	17870	MAX	24000	MIN	10000	AC-FT	12940000		
WTR YR 1999	TOTAL	5896930	MEAN	16160	MAX	24000	MIN	6280	AC-FT	11700000		



COLORADO RIVER MAIN STEM

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09423600 COLORADO RIVER AT NEEDLES, CA

LOCATION --Lat 34°51'06", long 114°36'33", in SE1/4SE1/4 sec.19, T.9 N., R.23 E., San Bernardino meridian, San Bernardino County, Hydrologic Unit 15030101, on right bank at Needles, 15 mi upstream from Bureau of Reclamation gaging station near Topock, Az., 30 mi downstream from Davis Dam, and 97 mi downstream from Hoover Dam

DRAINAGE AREA --174,500 mi<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, which is noncontributing.

PERIOD OF RECORD --April 1931 to current year (mean elevations through September 1987; maximum elevations thereafter).

REVISED RECORDS --WSP 1119:1931-47,WDR AZ-89-1:1983-88.

GAGE --Water-stage recorder.Datum of gage is sea level. Prior to May 15, 1942, at site 550 ft downstream and May 15, 1942 to Feb. 16, 1969, at site 200 ft upstream.

REMARKS --Elevation of river below bottom of gage (elevation 459.52 ft) Oct. 12, Jan. 16-21, 25-31, Feb. 2, 3, 5-11 Flow regulated by Lake Mead since Feb. 1, 1935, and by Lake Mohave since Jan. 17, 1950

EXTREMES FOR PERIOD OF RECORD --Maximum elevation, 475.77 ft Nov. 30, 1944; minimum recorded, 457.84 ft Feb. 26, 1973

EXTREMES FOR CURRENT YEAR --Maximum recorded elevation, 464.48 ft Dec. 15.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	462.42	461.35	463.80	463.18	459.64	462.54	463.19	463.79	463.01	463.22	462.21	460.86
2	462.39	461.37	463.83	463.25	---	461.16	463.21	463.70	462.66	463.16	462.54	460.85
3	461.69	461.33	464.12	463.14	---	461.48	463.17	463.62	462.68	463.17	462.69	460.79
4	461.68	461.38	464.19	463.04	459.79	461.74	462.66	463.57	462.68	463.18	461.06	460.81
5	460.38	461.56	464.23	461.62	---	462.41	463.37	463.43	463.38	463.16	461.24	460.71
6	460.52	461.56	464.30	462.62	---	462.48	463.24	463.42	463.41	463.00	462.77	459.93
7	460.60	461.54	464.33	462.94	---	462.53	463.00	463.37	463.44	444.96	462.77	460.69
8	462.54	461.60	464.26	462.99	---	462.42	463.10	463.67	463.47	463.03	462.71	461.13
9	459.62	461.58	464.18	463.02	---	461.18	463.19	463.71	463.49	463.06	462.46	461.12
10	460.58	461.56	464.22	463.06	---	462.49	463.28	463.27	463.11	463.07	462.48	461.06
11	460.65	461.61	464.23	463.11	---	462.54	463.32	463.34	463.13	462.12	462.54	461.07
12	---	461.63	464.31	463.14	461.12	462.72	463.35	463.34	463.04	463.08	462.80	460.98
13	461.09	461.58	464.38	463.08	461.45	463.04	463.21	463.36	463.13	463.08	462.83	460.51
14	460.29	461.66	464.47	462.93	461.72	463.04	463.24	463.48	463.23	462.57	462.50	460.56
15	460.64	461.66	464.48	461.64	461.52	462.87	463.23	463.49	463.30	462.57	462.52	461.33
16	461.10	461.80	464.33	---	461.85	461.06	463.26	463.34	463.30	462.16	462.24	461.48
17	461.26	462.08	463.99	---	461.71	461.56	463.12	463.29	463.30	462.48	462.35	461.54
18	461.24	462.17	464.08	---	461.64	461.69	463.08	463.12	463.30	462.46	462.18	461.16
19	461.74	462.04	464.41	---	461.34	461.70	463.29	463.26	463.18	462.37	461.53	461.54
20	461.11	462.10	464.40	---	461.43	463.29	463.29	463.34	463.04	462.65	461.74	461.62
21	461.25	462.14	464.17	---	461.36	463.38	463.28	463.24	463.13	462.67	461.01	461.62
22	461.28	462.17	464.04	459.78	460.62	463.46	463.32	462.25	463.13	462.73	461.71	461.74
23	460.78	462.18	464.11	460.67	461.31	463.42	463.45	463.28	463.19	462.61	461.87	461.78
24	461.19	462.17	464.17	461.06	461.40	463.36	463.49	463.19	463.31	462.48	460.83	461.78
25	461.36	462.19	464.20	---	461.37	463.36	463.39	463.08	463.29	462.67	460.60	461.77
26	461.37	462.88	464.24	---	461.34	463.17	463.28	463.10	463.05	462.90	460.69	461.77
27	461.32	463.15	464.36	---	461.80	463.30	463.37	463.16	463.05	463.12	460.83	461.77
28	461.26	463.22	464.40	---	462.61	463.34	463.52	463.23	463.25	463.15	460.82	461.75
29	461.38	463.20	463.92	---	---	463.18	463.64	463.25	463.37	462.96	460.76	461.74
30	461.40	463.19	463.92	---	---	463.07	463.74	463.26	463.37	462.05	460.93	461.84
31	461.40	---	463.74	---	---	463.07	---	463.06	---	462.14	460.93	---
MAX	---	463.22	464.48	---	---	463.46	463.74	463.79	463.49	463.22	462.83	461.84
MIN	---	461.33	463.04	---	---	461.06	462.66	463.06	462.66	444.96	460.60	459.93
WTR YR 1999	MAX	464.48	MIN	444.96								

## DIVERSIONS AND RETURN FLOWS BETWEEN DAVIS DAM AND PARKER DAM

## 09423550 TOPOCK MARSH INLET NEAR NEEDLES, CA

**LOCATION.**--Lat 34°50'10", long 114°35'03", in NE1/4NW1/4 sec.33, T.9 N., R.23 E., San Bernardino meridian, in Mohave County, Arizona, Hydrologic Unit 15030101, on left bank of Colorado River on north side of intake structure, 1.3 mi east of Needles.

**PERIOD OF RECORD.**--January 1967 to current year.

**GAGE.**--Water-stage recorders above and below intake gates and on intake gates to record head and gate openings. Datum of gages is 400.00 ft above sea level.

**REMARKS.**--Records fair. Topock Marsh inlet diverts water from the Colorado River into Topock Marsh, an area of 4,260 acres. This water flows through the marsh and returns to the Colorado River through the Topock Marsh outlet. The U.S. Fish and Wildlife Service operate the gate settings that control the flow into marsh. Monthly total return flows through the outlet, sta 09423650, Topock Marsh Outlet near Topock, AZ, are shown in the table below. Prior to June 1978, daily flows for this station were published separately.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum daily discharge, 286 ft<sup>3</sup>/s Mar. 31, 1995; no flow at times in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	63	61	7.9	2.7	8.7	e120	43	106	124	84	51
2	65	45	20	9.8	2.8	9.1	e120	42	112	120	94	49
3	65	20	.00	9.1	2.2	9.9	e120	41	112	106	86	48
4	56	23	.00	7.9	5.4	8.4	e120	37	85	103	60	42
5	46	32	.00	3.5	4.7	84	e120	36	144	95	77	32
6	48	33	5.7	6.4	4.0	109	e120	37	133	97	82	16
7	48	31	16	9.8	.90	92	96	40	144	95	99	20
8	42	32	14	8.6	2.5	84	118	44	139	91	87	81
9	29	30	15	8.8	1.1	76	131	41	131	98	84	57
10	38	30	15	8.8	.80	89	128	55	104	80	91	72
11	44	30	8.5	8.5	1.0	88	131	76	106	57	88	57
12	27	30	15	8.4	7.8	97	125	75	113	102	103	29
13	68	30	15	8.5	7.8	112	120	118	116	91	92	23
14	32	32	15	8.5	7.5	e120	120	146	130	67	90	29
15	58	28	15	2.6	8.0	e120	133	133	136	52	78	81
16	61	34	15	.00	7.9	e120	131	118	128	52	77	129
17	90	37	7.5	.00	6.4	e120	112	110	133	69	78	140
18	68	27	14	.00	9.8	e120	114	116	120	64	74	125
19	69	38	16	.00	11	e120	151	137	112	59	53	133
20	69	40	14	.00	10	e120	126	130	90	76	69	140
21	44	40	13	.00	7.2	e120	104	131	136	77	64	142
22	27	40	14	1.5	4.2	e120	114	128	131	74	52	142
23	68	40	15	4.7	9.1	e120	121	124	130	76	58	116
24	32	40	14	4.8	11	e120	118	124	144	75	38	79
25	58	40	14	1.8	9.6	e120	80	114	121	82	34	80
26	61	38	14	1.2	8.6	e120	88	120	102	77	46	80
27	90	40	14	2.0	8.5	e120	85	126	91	120	51	74
28	72	40	14	2.0	12	e120	57	128	119	99	51	81
29	81	40	8.9	.70	---	e120	42	130	154	89	30	81
30	79	67	7.9	2.2	---	e120	44	124	119	58	46	63
31	82	---	6.5	4.2	---	e120	---	113	---	60	51	---
TOTAL	1801	1090	417.00	142.20	174.50	3027.1	3309	2937	3641	2585	2167	2292
MEAN	58.1	36.3	13.5	4.59	6.23	97.6	110	94.7	121	83.4	69.9	76.4
MAX	90	67	61	9.8	12	120	151	146	154	124	103	142
MIN	27	20	.00	.00	.80	8.4	42	36	85	52	30	16
AC-FT	3570	2160	827	282	346	6000	6560	5830	7220	5130	4300	4550
(*)	1490	1260	0	0	0	0	1160	3960	3830	2670	0	284

CAL YR 1998 TOTAL 28863.64 MEAN 79.1 MAX 178 MIN .00 AC-FT 57250 (\*) 19400  
WTR YR 1999 TOTAL 23582.80 MEAN 64.6 MAX 154 MIN .00 AC-FT 46780 (\*\*) 16660

e Estimated

(\*) Return surface flow, in acre-feet, to Colorado River.

## 09424150 COLORADO RIVER AQUEDUCT NEAR PARKER DAM, AZ-CA

**LOCATION** --Lat 34°18'58", long 114°09'23", in NW1/4SW1/4 sec 28, T.3 N., R.27 E., San Bernardino meridian, in San Bernardino County, California. Hydrologic Unit 15030101, at intake pumping plant of Metropolitan Water District of Southern California on Lake Havasu, 1.8 mi upstream from Parker Dam and 149 mi downstream from Hoover Dam.

**PERIOD OF RECORD** --January 1939 to current year (monthly diversions only, October 1942 to September 1991). Published as a supplement to records for Colorado River below Parker Dam, 1942-50. Percolation return flow (monthly flow only) October 1964 to September 1973; prior to October 1964 miscellaneous measurements only. Prior to 1992, published as monthly discharges.

**GAGE** --Flow obtained from acoustical flowmeters. Prior to August 1990, flow obtained from Venturi meters in pressure lines at intake pumping plant.

**REMARKS** --Pumping began Jan. 7, 1939. Figures of daily streamflow shown represent water pumped from Lake Havasu less return surface flow from Gene and Copper Basin Reservoirs. No water returned as surface flow from these reservoirs this year. Percolation return flow from Gene and Copper Basin Reservoirs is estimated by the U.S. Bureau of Reclamation as 10 acre-ft/day for a yearly total of 3,650 acre-ft, which is used for accounting purposes.

**COOPERATION** --Diversion records furnished by Metropolitan Water District of Southern California.

**EXTREMES FOR PERIOD OF RECORD** --Maximum daily streamflow, 4,351 acre-ft, Sept. 1, 1998, no diversion at times

STREAMFLOW, DAILY, IN ACRE FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2988	3428	3471	3916	2095	2466	3141	3525	3534	3957	3455	3320
2	2959	3446	3489	3231	2476	2517	2957	3489	3553	3941	3460	3894
3	2955	3487	3475	2999	2478	2470	2855	3484	3993	3474	3454	3524
4	2972	3603	3473	3029	2521	1653	3141	3462	3926	3456	3481	3462
5	2941	3316	3470	3044	2495	2965	3403	3524	3451	3428	3458	3425
6	3030	3454	3437	3958	2091	2962	3907	3706	3869	3487	3472	3510
7	1931	3449	3150	3917	2505	2968	3922	3317	3513	3501	3427	3751
8	1955	3823	2929	3900	2505	3010	3868	3530	3454	3547	3494	3318
9	2059	3872	3013	3873	2505	2885	3552	3553	3138	3531	3416	3460
10	2438	3872	2998	3412	3119	2932	3450	3545	3102	4034	3506	3863
11	2975	3847	2993	3430	2981	2480	3486	3515	2976	3577	3482	3422
12	2973	3847	2982	3447	2476	2475	3446	3708	3560	3641	3800	3437
13	2971	3831	2893	3470	2547	2466	3490	3252	3939	3830	3593	3458
14	2941	3493	3005	3456	2539	2928	3444	3514	4008	3652	3857	3478
15	2959	3398	3036	3456	2518	2891	3462	3530	3869	3385	2859	3432
16	2967	3419	3125	3453	2114	2603	2761	3540	3619	3434	3543	3450
17	2976	3427	3435	3897	2103	2299	3465	4245	3499	3512	3401	3450
18	3773	3446	3496	3870	2114	3710	3835	3734	3521	3577	3575	3425
19	3832	3448	3487	604	1123	3844	3771	3860	3514	3451	3218	3445
20	3369	3492	3463	3477	1511	3385	3924	3838	3514	3766	3494	3445
21	3484	3882	3454	1132	2515	3377	3453	3458	3524	3304	3089	3475
22	3335	3883	3485	1158	2514	3373	3450	3509	3533	3471	3494	3595
23	3419	3857	3485	1445	2464	3372	3409	3483	3776	3449	3471	4022
24	3595	3504	3462	1354	2525	3386	2939	3525	3112	3465	3453	3833
25	3869	3401	3446	1081	2466	3406	3364	3515	3552	3478	3456	3414
26	3856	3437	3451	1424	1563	3435	3776	3524	3563	3484	3461	3431
27	3878	3412	3478	1435	1515	3456	4068	3444	3545	3947	3483	3975
28	3788	3515	3496	1356	2126	3827	3490	3489	3510	3929	3497	3951
29	3507	3387	3508	1408	---	3889	3514	3502	3550	3921	3489	3809
30	3372	3462	3835	1432	---	3887	3505	3510	3516	3855	3503	3268
31	3415	---	3911	1489	---	3834	---	3525	---	3545	4026	---
TOTAL	97482	107138	103831	80553	65855	95155	105639	110370	107321	112179	109171	108242
MEAN	3146	3571	3349	2598	2152	3070	3521	3560	3577	3619	3522	3508
MAX	3878	3883	3911	3958	3101	3889	4268	4245	4008	4034	4026	4022
MIN	1931	3316	2893	604	1515	1653	2761	3252	2976	3304	3089	3268
CAL YR 1998	TOTAL	1076295	MEAN	2949	MAX	4351	MIN	1014				
WTR YR 1999	TOTAL	1202946	MEAN	3296	MAX	4245	MIN	604				

## BILL WILLIAMS RIVER BASIN

## 00424450 BIG SANDY RIVER NEAR WIKIEUP, AZ

**LOCATION.**--Lat 34°27'45", long 113°37'25", in SE1/4 sec. 16, T.13 N., R.13 W., Mohave County, Hydrologic Unit 15030201, on left bank 7 mi downstream from Burro Creek, 15 mi upstream from confluence with Santa Maria River, and 17 mi south of Wikieup.

**DRAINAGE AREA.**--2,742 mi<sup>2</sup>, of which 10.1 mi<sup>2</sup> are noncontributing.

**PERIOD OF RECORD.**--March 1966 to current year.

**REVISED RECORDS.**--WDR AZ-68-1: Drainage area.

**GAGE.**--Water-stage recorder. Elevation of gage is 1,400 ft, above sea level, from topographic map. Prior to Oct. 1, 1970, at datum 3.06 ft higher. Oct. 1, 1970, to Oct. 10, 1973, at datum 2.06 ft higher. Supplementary water-stage recorder for low flows at site 75 ft upstream at same datum from Apr. 10, 1975 to Mar. 1, 1978; Mar. 28 to Dec. 7, 1986, and Apr. 2, 1969, to Apr. 9, 1975, at site 0.8 mi downstream at different datum.

**REMARKS.**--No estimated daily discharges. Records fair. Diversions above station for irrigation of about 3,800 acres, mostly by pumping from ground water.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 68,700 ft<sup>3</sup>/s Feb. 9, 1993, gage height, 16.00 ft, from rating curve extended above 2,200 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 1.3 ft<sup>3</sup>/s July 13, 1974.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 28.....	1800	*8.3	*1.70

Minimum daily discharge, 2.1 ft<sup>3</sup>/s, July 22-24, 27-31, Sept. 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	4.0	4.5	4.6	4.1	3.5	3.7	3.5	3.9	4.6	2.2	3.9
2	4.1	3.7	4.2	4.6	4.0	3.5	3.7	3.5	4.4	4.3	2.3	3.9
3	4.1	3.7	3.5	4.6	3.9	3.3	3.7	3.5	4.6	4.1	2.3	3.9
4	4.1	3.7	3.5	4.6	4.0	3.4	3.7	3.3	4.6	4.1	2.4	3.9
5	4.1	3.7	3.5	4.4	4.2	3.6	3.8	3.3	4.6	4.0	2.4	3.9
6	4.2	3.7	3.8	4.3	4.1	3.5	3.9	3.3	4.6	3.7	2.4	3.9
7	4.3	4.1	3.9	4.3	4.1	3.5	3.9	3.3	4.6	3.7	2.4	3.9
8	4.3	3.9	4.1	4.3	3.7	3.5	3.8	3.3	4.6	3.3	2.4	3.9
9	4.3	3.9	4.1	4.3	3.3	3.3	3.7	3.3	5.0	3.3	2.4	3.9
10	4.2	3.9	4.1	4.3	3.5	3.4	3.7	3.3	5.3	3.3	2.4	3.9
11	3.9	3.9	4.1	4.3	3.5	3.6	3.7	3.3	5.3	3.4	2.4	3.6
12	3.9	3.9	4.1	4.3	3.3	3.6	3.7	3.3	5.3	3.2	2.5	3.6
13	4.0	3.9	4.3	4.3	3.3	3.6	3.7	3.2	5.5	2.9	2.6	3.3
14	4.0	3.9	4.6	4.3	3.3	3.8	3.7	3.2	5.5	3.1	2.7	3.3
15	3.9	3.9	4.6	4.3	3.2	3.8	3.7	3.3	5.1	2.7	2.7	3.2
16	3.9	3.9	4.6	4.3	3.2	3.7	3.7	3.3	4.8	2.7	2.9	3.2
17	4.1	4.0	4.6	4.3	3.2	3.8	3.5	3.3	4.8	2.5	3.0	3.2
18	4.1	4.1	4.6	4.3	3.0	4.0	3.5	3.3	4.8	2.4	3.0	3.0
19	4.1	3.9	4.6	4.3	3.0	3.9	3.5	3.3	4.6	2.4	3.1	2.9
20	4.1	3.9	4.6	4.3	3.0	3.9	3.5	3.3	4.6	2.3	3.2	2.8
21	4.1	3.9	4.6	4.3	2.9	4.0	3.5	3.2	4.6	2.2	3.2	2.7
22	4.0	3.9	4.6	4.3	3.1	4.1	3.5	3.2	4.6	2.1	3.3	2.7
23	3.9	3.9	4.6	4.3	3.2	4.1	3.5	3.2	4.6	2.1	3.3	2.6
24	3.9	3.9	4.6	4.3	3.1	4.1	3.5	3.2	4.6	2.1	3.3	2.7
25	3.9	3.9	4.6	4.3	3.1	3.9	3.5	3.2	4.8	2.2	3.3	2.5
26	3.9	3.9	4.6	4.3	3.3	3.9	3.5	3.2	4.8	2.2	3.3	2.4
27	4.0	3.9	4.6	4.3	3.3	3.9	3.5	3.2	4.8	2.1	3.3	2.4
28	4.1	4.7	4.6	4.3	3.4	3.9	3.5	3.2	4.8	2.1	3.5	2.3
29	4.1	4.8	4.6	4.3	---	3.9	3.5	3.2	4.8	2.1	3.9	2.1
30	4.1	4.6	4.6	4.1	---	3.9	3.5	3.3	4.7	2.1	3.9	2.1
31	4.1	---	4.6	4.1	---	3.7	---	3.7	---	2.1	3.9	---
TOTAL	125.9	119.0	134.5	134.2	96.3	115.6	108.8	102.2	143.6	89.4	89.9	95.6
MEAN	4.06	3.97	4.34	4.33	3.44	3.73	3.63	3.30	4.79	2.88	2.90	3.19
MAX	4.3	4.8	4.6	4.6	4.2	4.1	3.9	3.7	5.5	4.6	3.9	3.9
MIN	3.9	3.7	3.5	4.1	2.9	3.3	3.5	3.2	3.9	2.1	2.2	2.1
AC-FT	250	236	267	266	191	229	216	203	285	177	178	190
CFSM	.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1999, BY WATER YEAR (WY)

	MEAN	9.89	20.7	77.1	180	384	303	41.2	8.93	5.17	5.40	21.7	21.2
MAX	100	252	737	2674	3892	1943	259	35.8	14.1	20.8	178	226	
(WY)	1973	1979	1985	1993	1993	1978	1998	1980	1980	1990	1971	1983	
MIN	2.72	2.44	2.14	2.38	3.44	3.73	3.55	2.02	2.10	1.86	2.69	2.84	
(WY)	1976	1991	1997	1992	1995	1999	1971	1990	1971	1974	1975	1975	

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1967 - 1999

ANNUAL TOTAL	39816.7	1355.0	
ANNUAL MEAN	109	3.71	88.4
HIGHEST ANNUAL MEAN			586
LOWEST ANNUAL MEAN			3.71
HIGHEST DAILY MEAN	3050	Feb 15	26100
LOWEST DAILY MEAN	2.3	Jul 19	1.3
ANNUAL SEVEN-DAY MINIMUM	2.7	Jul 15	1.5
ANNUAL RUNOFF (AC-FT)	78980	2690	54050
ANNUAL RUNOFF (CFSM)	.040	.001	.032
ANNUAL RUNOFF (INCHES)	.54	.02	.44
10 PERCENT EXCEEDS	242	4.6	60
50 PERCENT EXCEEDS	5.0	3.9	5.0
90 PERCENT EXCEEDS	3.9	2.7	3.1

## 09424900 SANTA MARIA RIVER NEAR BAGDAD, AZ

LOCATION.--Lat 34°18'21", long 113°20'47", in SE 1/4 sec. 12, T. 11 N., R. 11 W., Mohave County, Hydrologic Unit 15030203, on right bank 4.0 mi east of Palmerita Ranch, 12 mi upstream from confluence with Big Sandy River, and 21 mi southwest of Bagdad.

DRAINAGE AREA.--1,129 mi<sup>2</sup>

PERIOD OF RECORD.--April 1966 to September 1985, October 1988 to current year

REVISED RECORDS.--WDR AZ-89-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,360 ft above sea level, from topographic map.

REMARKS.--Records poor. Diversions above station for irrigation of about 5,300 acres, most of which is by pumping from ground water.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,600 ft<sup>3</sup>/s Mar. 1, 1978, gage height, 7.82 ft, from rating curve extended above 5,000 ft<sup>3</sup>/s on basis of step-backwater computations and slope-area measurements at gage heights 5.50 and 7.82 ft, no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 24 .....	0445	*1,130	*3.06

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	e8.2	e.00	e.00	.00	.00	e31	20
2	.00	.00	.00	.00	.00	e7.8	e.00	e.00	.00	.00	e15	.00
3	.00	.00	.00	.00	.00	e7.6	e.00	e.00	.00	.00	e5.8	7.1
4	.00	.00	.00	.00	e.80	e7.4	e.00	e.00	.00	.00	e1.9	.00
5	.00	.00	.00	.00	e12	e3.9	e4.3	e.00	.00	.00	1.3	.00
6	.00	.00	.00	.00	e24	e3.4	e17	e.00	.00	.00	.00	.00
7	.00	.00	.00	.00	e25	e4.1	e16	e.00	.00	.00	.00	.00
8	.00	.00	.00	.00	e25	e1.3	e15	e.00	.00	.00	.00	.00
9	.00	.00	.00	.00	e22	e1.3	e13	e.00	.00	.00	.00	.00
10	.00	.00	.00	.00	e20	e.38	e8.0	e.00	.00	.00	.00	.00
11	.00	.00	.00	.00	e14	e.24	e8.1	e.00	.00	.00	.00	.00
12	.00	.00	.00	.00	e15	e.00	e4.7	e.00	.00	.00	.00	.00
13	.00	.00	.00	.00	e18	e.00	e1.4	e.00	.00	.00	.00	.00
14	.00	.00	.00	.00	e19	e.00	e2.2	e.00	.00	.00	.00	.00
15	.00	.00	.00	.00	e19	e.00	e.00	e.00	.00	e19	.00	.00
16	.00	.00	.00	.00	e19	e.00	e.00	e.00	.00	e15	.00	48
17	.00	.00	.00	.00	e19	e1.7	e.00	e.00	.00	e3	.00	e20
18	.00	.00	.00	.00	e19	e11	e.00	e.00	.00	e3	.00	e11
19	.00	.00	.00	.00	e18	e11	e.00	e.00	.00	e13	.00	e7.0
20	.00	.00	.00	.00	e15	e11	e.00	e.00	.00	e7	.00	e3.0
21	.00	.00	.00	.00	e15	e7.6	e.00	e.00	.00	72	.00	.85
22	.00	.00	.00	.00	.00	e7.1	e.00	e.00	.00	e3	.00	1.2
23	.00	.00	.00	.00	e9.6	e4.1	e.00	e.00	.00	e5	.00	21
24	.00	.00	.00	.00	e11	e2.7	e.00	e.00	.00	e7	.00	598
25	.00	.00	.00	.00	e12	e1.5	e.00	e.00	.00	e1	.00	175
26	.00	.00	.00	.00	e11	e.50	e.00	.00	.00	e3	.00	74
27	.00	.00	.00	.00	e3.7	e.00	e.00	.00	.00	e5	.00	35
28	.00	.00	.00	.00	e7.3	e.00	e.00	.00	.00	e23	.00	16
29	.00	.00	.00	.00	---	e.00	e.00	.00	.00	e15	.00	6.3
30	.00	.00	.00	.00	---	e.30	e.00	.00	.00	e27	3.9	2.5
31	.00	---	.00	.00	---	e.00	---	.00	---	e55	12	---
TOTAL	0.00	0.00	0.00	0.00	389.40	106.82	89.70	0.00	0.00	1655.00	70.80	1045.95
MEAN	.000	.000	.000	.000	13.9	3.45	2.99	.000	.000	53.4	2.28	34.9
MAX	.00	.00	.00	.00	25	11	17	.00	.00	253	31	598
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	772	212	178	.00	.00	3280	140	2070
CFSM	.00	.00	.00	.00	.01	.00	.00	.00	.00	.05	.00	.03
IN.	.00	.00	.00	.00	.01	.00	.00	.00	.00	.05	.00	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1999, BY WATER YEAR (WY)

	MEAN	22.1	20.2	74.8	121	217	220	37.1	7.16	1.81	3.11	15.6	20.3
MAX	505	392	461	936	1519	1035	204	36.7	16.6	53.4	2.28	34.9	355
(WY)	1973	1979	1979	1980	1980	1973	1976	1995	1993	1999	1992	1983	1983
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1967	1967	1969	1970	1967	1967	1967	1966	1966	1966	1966	1966	1966

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1966 - 1999
ANNUAL TOTAL	25229.68	3357.67	
ANNUAL MEAN	69.1	9.20	62.8
HIGHEST ANNUAL MEAN			232
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	942 Feb. 9	598 Sep. 24	6410 Dec. 18 1978
LOWEST DAILY MEAN	.00 Jan. 1	.00 Oct. 1	.00 Apr. 27 1966
ANNUAL SEVEN-DAY MINIMUM	.00 Jun. 23	.00 Oct. 1	.00 Apr. 27 1966
ANNUAL RUNOFF (AC-FT)	50040	6860	45510
ANNUAL RUNOFF (CFSM)	.061	.008	.056
ANNUAL RUNOFF (INCHES)	.83	.11	.76
10 PERCENT EXCEEDS	215	18	75
50 PERCENT EXCEEDS	1.2	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

## BILL WILLIAMS RIVER BASIN

## 09428000 BILL WILLIAMS RIVER BELOW ALAMO DAM, AZ

**LOCATION.**--Lat 34°13'51", long 113°36'29", in SE1/4SE1/4 sec.4, T.10 N., R.13 W., La Paz County, Hydrologic Unit 15030204, on left bank 0.6 mi downstream from Alamo Dam, 3.7 mi downstream from Bullard Wash, and 8 mi downstream from confluence of Santa Maria and Big Sandy Rivers.

**DRAINAGE AREA.**--4,633 mi<sup>2</sup>, of which 10 mi<sup>2</sup> probably is noncontributing.

**PERIOD OF RECORD.**--October 1939 to current year. Monthly discharge only for October and November 1939, published in WSP 1313. Prior to October 1943, published as "Williams River near Alamo." October 1943 to September 1967, published as "Bill Williams River near Alamo."

**REVISED RECORDS.**--WSP 1213: 1939(M), 1941(P). WDR AZ-89-1: Drainage area.

**GAGE.**--Water-stage recorder. Elevation of gage is 987 ft above sea level, from construction data. Prior to Apr. 9, 1968, at site 1.7 mi upstream at datum 1,002.95 ft above sea level.

**REMARKS.**--Records good. Diversions above station for irrigation of about 9,100 acres, mostly by pumping from ground water. Flow regulated by Alamo Lake, beginning Mar. 2, 1969. Temporary storage and slight regulation of releases through uncontrolled rectangular conduit through Alamo Dam June 23, 1968, to Mar. 27, 1969. Alamo Lake is formed by an earthfill and rockfill dam, completed in 1968. Total capacity of lake is 1,043,000 acre-ft. See table below for monthend contents.

**EXTREMES FOR PERIOD OF RECORD.**--1940-68: Maximum discharge, 65,100 ft<sup>3</sup>/s Aug. 29, 1951, gage height, 30.8 ft, site and datum then in use; minimum daily, 1.1 ft<sup>3</sup>/s Sept. 4, 1958.

1969-99: Maximum discharge, 6,980 ft<sup>3</sup>/s Mar. 16, 22, 1993, gage height, unknown as weir had washed out; no flow at times in most years.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--The history of floods that occurred prior to October 1939 is published in WSP 1683. The peak discharges have been correlated with those for Bill Williams River at Planet. The peak discharge for February 1937 has been determined as 105,000 ft<sup>3</sup>/s at a stage of 46 ft, site and datum then in use, from rating curve extended above 50,000 ft<sup>3</sup>/s on basis of slope-area measurement for flood of Sept. 6, 1939, at a stage of 39.6 ft, discharge of 86,000 ft<sup>3</sup>/s and known stable high-water control.

**EXTREMES FOR CURRENT YEAR.**--Maximum daily discharge, 55 ft<sup>3</sup>/s July 7; minimum, 18 ft<sup>3</sup>/s Nov. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	38	25	23	25	24	24	25	36	53	45	52
2	42	39	25	23	25	25	24	26	36	54	45	54
3	42	40	25	23	25	25	24	26	36	54	46	50
4	42	33	24	22	25	25	24	26	37	55	46	50
5	41	26	25	22	25	25	24	26	37	54	46	51
6	40	27	25	22	25	25	24	34	37	54	45	48
7	40	26	25	21	26	25	24	39	37	55	44	48
8	39	26	25	21	25	25	24	40	37	54	45	49
9	39	27	25	21	25	25	24	39	38	53	44	47
10	37	26	25	21	25	25	24	39	38	52	48	48
11	35	26	25	21	24	25	24	37	39	50	52	51
12	35	26	25	20	25	25	25	37	39	49	53	52
13	36	25	25	21	25	25	25	36	39	53	53	51
14	38	25	25	21	25	24	25	34	40	52	52	50
15	39	25	22	21	25	25	25	34	40	42	51	44
16	39	25	24	21	25	24	25	34	39	49	50	50
17	39	18	24	21	21	24	25	33	40	47	51	49
18	38	23	24	21	25	24	23	33	40	47	42	51
19	39	24	23	23	26	24	25	32	40	46	50	52
20	28	24	23	23	26	24	25	34	40	45	52	52
21	34	24	23	20	25	24	26	34	45	46	51	53
22	34	24	24	23	25	20	25	34	47	46	50	50
23	34	24	25	23	25	24	25	34	47	47	49	50
24	34	24	25	23	26	24	25	35	47	47	48	48
25	34	24	24	24	26	24	25	36	49	47	43	49
26	34	24	24	24	25	24	25	36	49	45	45	49
27	34	24	23	25	25	24	25	36	49	46	42	47
28	34	24	23	25	25	24	26	36	50	46	43	48
29	35	25	22	25	---	24	25	36	51	47	51	47
30	36	24	22	25	---	24	25	36	53	46	50	45
31	37	---	22	25	---	24	---	37	---	46	50	---
TOTAL	1150	790	746	694	700	753	739	1054	1252	1527	1487	1485
MEAN	37.1	26.3	24.1	22.4	25.0	24.3	24.6	34.0	41.7	49.3	48.0	49.5
MAX	42	40	25	25	26	25	26	40	53	55	53	54
MIN	28	18	22	20	21	20	23	25	36	42	42	44
AC-FT	2280	1570	1480	1380	1390	1490	1470	2090	2480	3030	2950	2950
(*)	141300	139350	137700	136600	135700	134100	131600	127900	123100	119100	114800	111100
(**)	-4300	-1950	-1650	-1100	-900	-1600	-2500	-3700	-4800	-4050	-4300	-3700

CAL YR 1998 TOTAL 12785.3 MEAN 5.0 MAX 639 MIN 1.0 AC-FT 25360 (\*\*) +50800  
WTR YR 1999 TOTAL 12377 MEAN 33.9 MAX 55 MIN 18 AC-FT 24550 (\*\*) -34500

(\*) Contents, in acre-feet, at end of month in Alamo Lake, furnished by Corps of Engineers.  
(\*\*) Change in contents, in acre-feet.

## 09428600 BILL WILLIAMS RIVER AT MINERAL WASH, NEAR PLANET, AZ

## WATER-QUALITY RECORDS

LOCATION.--Lat 34°15'18", long 114°00'32", in SE1/4NE1/4 sec 34, T.11 N., R.17 W., on boundary between Mohave and La Paz Counties, Hydrologic Unit 15030204, at convergence with Mineral Wash, 4.0 mi west of Planet Wash, 4.0 mi west of Planet Ranch, 6.1 mi upstream from waterline of Havasu Lake at elevation of 450 ft above sea level, and approximately 30 mi downstream from Alamo Lake.

DRAINAGE AREA.--5,320 mi<sup>2</sup>, of which 688 mi<sup>2</sup> is below Alamo Dam, and 10 mi<sup>2</sup> is noncontributing.

PERIOD OF RECORD.--December 1928 to September 1940, November 1942 to October 1946, January 1970 to January 1972, October 1974 to current year.

REVISED RECORDS.--WDR AZ-91-1: Drainage area.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1981

WATER TEMPERATURES: October 1974 to September 1981

REMARKS.--Streamflow ungaged.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

		DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US. CM. (00095))	PH WATER WHOLE FIELD (STAND-ARD) (00460)	TEMPER-A-TURE AIR (DEG C) (00020)	TEMPER-A-TURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	COLI-FORM, SOLVED, FECAI., 0.7 UM-MF (COLS./100 ML) (00301)	(00025)	
JAN 21...	0930	8.4	1030	8.0	20.0	15.5	8.5	764	6.7	67	55	
JUN 23...	0845	1.5	1010	8.0	25.0	24.0	15	750	7.5	91	K13	
DATE	TIME	STREP-TOCOCCEI FECAL, KF AGAR (COLS. PER 100 ML) (001673)	HARD-NESS NONCARB DISSOLV. AS (MG/L) (00900)	HARD-NESS NONCARB DISSOLV. AS (MG/L) (00904)	CALCIUM DIS-SOLVED (MG/L) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L) (00925)	SODIUM, DIS-SOLVED (MG/L) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L) (00935)	BICAR-BONATE WATER DIS-IT (MG/L) (00453)	CAR-BONATE WATER DIS-IT (MG/L) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L) (00936)
JAN 21...	20	240	1	62	21	111	3	7.2	293	0	240	
JUN 23...	K28	240	5	60	21	114	3	6.3	281	0	230	
DATE	TIME	SULFATE DIS-SOLVED (MG/L) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L) (00950)	SILICA, DIS-SOLVED (MG/L) (00955)	SOLIDS, RESIDUE AT 180 DEG C (MG/L) (00960)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (00961)	SOLIDS, DIS-SOLVED (MG/L) (00962)	NITRO-GEN, DIS-SOLVED (MG/L) (00963)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L) (00964)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L) (00605)	NITRO-GEN, DIS-SOLVED (MG/L) (00606)
JAN 21...	88	130	1.4	29	621	594	.84	<.010	.293	<.020		
JUN 23...	83	130	1.5	33	543	586	.77	<.010	<.050	.021		
DATE	TIME	NITRO-GEN, ORGANIC TOTAL (MG/L) (00605)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L) (00625)	NITRO-GEN, TOTAL (MG/L) (00600)	PHOS-PHURUS, DIS-SOLVED (MG/L) (00665)	PHOS-PHURUS, DIS-SOLVED (MG/L) (00666)	PHOS-PHURUS, ORTHO, DIS-SOLVED (MG/L) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L) (00660)	ALUM-INUM, DIS-SOLVED (MG/L) (01106)	ARSENIC, DIS-SOLVED (MG/L) (01000)	BARIUM, DIS-SOLVED (MG/L) (01005)	
JAN 21...	--	.13	.42	.043	<.050	.025	.08	<.10	6	79		
JUN 23...	.23	.25	--	E.049	<.050	.020	.06	E8.5	6	90		
DATE	TIME	BORON, DIS-SOLVED (UG/L) (01020)	CADMIUM, DIS-SOLVED (UG/L) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L) (01030)	COBALT, DIS-SOLVED (UG/L) (01035)	COPPER, DIS-SOLVED (UG/L) (01040)	IRON, DIS-SOLVED (UG/L) (01045)	LEAD, DIS-SOLVED (UG/L) (01049)	LITHIUM, DIS-SOLVED (UG/L) (01130)	MANGA-NESE, DIS-SOLVED (UG/L) (01055)	MERCURY, DIS-SOLVED (UG/L) (01890)	
JAN 21...	333	<1.0	<1.0	<7.0	<1.0	<10	<1.0	54	28	<.1		
JUN 23...	335	<1.0	<1.0	<7.0	<1.0	<10	<1.0	53	11	<.1		

## BILL WILLIAMS RIVER BASIN

09426600 BILL WILLIAMS RIVER AT MINERAL WASH, NEAR PLANET, AZ--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	MOLYB- DENUM. DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SED. SUSP. SIEVE DIAM. FINER THAN .062 MM (70331)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
JAN 21...	<50	<1.0	<1	<1.0	877	E6	<20	100	85	1.9
JUN 23...	<50	<1.0	<1	<1.0	822	E5	<20	--	33	.13

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").



## 09426620 BILL WILLIAMS RIVER NEAR PARKER, AZ

LOCATION.--Lat 34°15'45", long 114°01'37", in NE1/4SE1/4 sec.28, T.11 N., R.17 W., La Paz County, Hydrologic Unit 15030204, on left bank 1.8 mi downstream from Mineral Wash and Havasu National Wildlife Refuge boundary, 5.3 mi upstream from mouth, 17 mi northeast of Parker, and approximately 31 mi downstream from Alamo Dam.

DRAINAGE AREA.--5,337 mi<sup>2</sup>, of which 703 mi<sup>2</sup> is below Alamo Dam and 10 mi<sup>2</sup> is noncontributing.

PERIOD OF RECORD.--October 1988 to current year.

REVISED RECORDS.--WDR AZ-91-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 500.00 ft above sea level (U.S. Bureau of Reclamation bench mark).

REMARKS.--Estimated daily discharge for entire water year. Records poor. Diversions above station for irrigation, mostly by pumping from ground water. Flow regulated by Alamo Dam.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 6,800 ft<sup>3</sup>/s Mar. 17-26, 1993; no flow for many days most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--The history of floods that occurred at a former site located about 3 mi upstream is published in WSP 1683, Bill Williams River at Planet (sta 09426500).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 13 ft<sup>3</sup>/s Mar. 2-18, minimum daily, no flow Oct. 1-28, July 15 to Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.00	e1.0	e8.0	e9.2	e9.5	e12	e11	e7.7	e3.7	e1.4	e.00	e.00
2	e.00	e1.3	e8.2	e9.2	e9.7	e13	e11	e7.6	e3.6	e1.3	e.00	e.00
3	e.00	e1.6	e8.3	e9.2	e9.8	e13	e11	e7.5	e3.4	e1.2	e.00	e.00
4	e.00	e1.8	e8.5	e9.1	e9.9	e13	e11	e7.4	e3.3	e1.1	e.00	e.00
5	e.00	e2.1	e8.6	e9.1	e10	e13	e11	e7.2	e3.2	e1.0	e.00	e.00
6	e.00	e2.4	e8.8	e9.0	e10	e13	e10	e7.1	e3.0	e.90	e.00	e.00
7	e.00	e2.6	e8.9	e9.0	e10	e13	e10	e7.0	e2.9	e.80	e.00	e.00
8	e.00	e2.9	e9.1	e8.9	e10	e13	e10	e6.9	e2.8	e.70	e.00	e.00
9	e.00	e3.1	e9.2	e8.9	e10	e13	e10	e6.8	e2.6	e.60	e.00	e.00
10	e.00	e3.4	e9.4	e8.9	e10	e13	e10	e6.6	e2.5	e.50	e.00	e.00
11	e.00	e3.7	e9.5	e8.8	e11	e13	e9.9	e6.5	e2.4	e.40	e.00	e.00
12	e.00	e3.9	e9.7	e8.8	e11	e13	e9.8	e6.4	e2.2	e.30	e.00	e.00
13	e.00	e4.2	e9.8	e8.7	e11	e13	e9.7	e6.2	e2.1	e.20	e.00	e.00
14	e.00	e4.4	e10	e8.7	e11	e13	e9.6	e6.1	e2.0	e.10	e.00	e.00
15	e.00	e4.7	e10	e8.7	e11	e13	e9.4	e6.0	e1.9	e.00	e.00	e.00
16	e.00	e5.0	e9.9	e8.6	e11	e13	e9.3	e5.8	e1.7	e.00	e.00	e.00
17	e.00	e5.2	e9.9	e8.6	e11	e13	e9.2	e5.7	e1.6	e.00	e.00	e.00
18	e.00	e5.5	e9.8	e8.5	e11	e13	e9.1	e5.6	e1.5	e.00	e.00	e.00
19	e.00	e5.8	e9.8	e8.5	e11	e12	e9.0	e5.4	e1.5	e.00	e.00	e.00
20	e.00	e6.0	e9.7	e8.4	e12	e12	e8.9	e5.3	e1.6	e.00	e.00	e.00
21	e.00	e6.3	e9.7	e8.4	e12	e12	e8.8	e5.2	e1.5	e.00	e.00	e.00
22	e.00	e6.5	e9.7	e8.5	e12	e12	e8.7	e5.0	e1.5	e.00	e.00	e.00
23	e.00	e6.8	e9.6	e8.6	e12	e12	e8.6	e4.9	e1.5	e.00	e.00	e.00
24	e.00	e7.0	e9.6	e8.7	e12	e12	e8.5	e4.8	e1.5	e.00	e.00	e.00
25	e.00	e7.1	e9.5	e8.8	e12	e12	e8.3	e4.6	e1.5	e.00	e.00	e.00
26	e.00	e7.3	e9.5	e8.9	e12	e12	e8.2	e4.5	e1.5	e.00	e.00	e.00
27	e.00	e7.4	e9.5	e9.0	e12	e12	e8.1	e4.4	e1.5	e.00	e.00	e.00
28	e.00	e7.6	e9.4	e9.1	e12	e11	e8.0	e4.2	e1.5	e.00	e.00	e.00
29	e.30	e7.7	e9.4	e9.2	---	e11	e7.9	e4.1	e1.5	e.00	e.00	e.00
30	e.50	e7.9	e9.3	e9.3	---	e11	e7.8	e4.0	e1.5	e.00	e.00	e.00
31	e.80	---	e9.3	e9.4	---	e11	---	e3.8	---	e.00	e.00	---
TOTAL	1.60	142.2	289.6	274.7	305.9	385	281.8	180.3	64.6	10.50	0.00	0.00
MEAN	.052	4.74	9.34	8.86	10.9	12.4	9.39	5.82	2.15	.34	.000	.000
MAX	.80	7.9	10	9.4	12	13	11	7.7	3.7	1.4	.00	.00
MIN	.00	1.0	8.0	8.4	9.5	11	7.8	3.8	1.5	.00	.00	.00
AC-FT	3.2	282	574	545	607	764	559	358	128	21	.00	.00

CAL YR 1998 TOTAL 2228.90 MEAN 6.11 MAX 160 MIN .00 AC-FT 4420  
WTR YR 1999 TOTAL 1936.20 MEAN 5.30 MAX 13 MIN .00 AC-FT 3840

e Estimated

## DIVERSIONS ABOVE PARKER DAM

## 09426660 CENTRAL ARIZONA PROJECT CANAL AT HAVASU PUMPING PLANT, NEAR PARKER, AZ

**LOCATION.**--Lat 34°17'20", long 114°08'37", in NW1/4NW1/4 sec.23, T.11 N., R.18 W., La Paz County, Hydrologic Unit 15030204, on left bank of Bill Williams River arm of Lake Havasu, 2 mi upstream from Parker Dam and 19 mi northeast of Parker.

**PERIOD OF RECORD.**--October 1984 to current year. Prior to October 1988, published as "CAP Canal Havasu pumping Plant near Parker."

**REMARKS.**--Figures of daily streamflow shown represent water pumped from Lake Havasu for delivery to the Central Arizona Project.

**COOPERATION.**--Diversion records furnished by Bureau of Reclamation.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum daily streamflow, 6,515 acre-ft, May 2, 1993; no diversion on many days each year.

STREAMFLOW, DAILY, IN ACRE FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	354	5073	4413	6088	4573	5429	6122	6155	5049	1919	2768	1407
2	350	3064	3079	6146	4573	5518	6133	6154	4267	1919	1458	1404
3	1228	3089	5098	6142	3921	5515	6127	5073	4299	2978	1150	1407
4	2096	3076	6118	4859	4324	5526	6132	6072	5101	2989	1150	2110
5	529	3736	6124	4564	4593	4245	5690	5790	5123	2990	1138	2112
6	397	3725	6125	4731	6105	6097	5419	5228	5126	1837	1777	1581
7	698	3728	4156	4733	6105	5540	5677	5238	4092	1540	2020	702
8	700	5070	4157	1650	5606	5123	5814	6155	4091	1537	2678	529
9	690	3720	2041	4720	5437	5383	5775	6154	3750	1542	1148	388
10	1218	3396	2043	5099	4204	4953	5855	5515	3318	1541	1147	439
11	2092	3727	3132	4718	5437	5239	5520	5848	5134	2058	1147	438
12	697	3736	6133	4716	5342	5364	5450	5783	5133	2572	1147	438
13	695	3960	6133	4717	6100	5183	5030	5898	5127	1371	2349	438
14	696	3733	1803	4717	6102	5397	4782	5922	3295	1364	2551	265
15	695	5069	1979	4736	6094	5358	5299	5775	2790	908	2424	265
16	695	3104	3367	4720	5508	4381	5709	5901	2783	912	1230	264
17	1220	3741	2349	5088	4893	4349	6160	4955	3251	1204	1231	265
18	2086	3742	2348	5080	5254	5130	6156	5992	4451	905	1232	264
19	848	4400	2343	4694	4685	5358	5003	5819	3050	133	1078	525
20	1567	3786	6142	4697	5068	6109	5480	6171	3303	569	1532	265
21	1680	3806	1945	4530	5066	6107	5172	5279	2988	1314	1462	261
22	1682	6104	1533	4531	4533	5359	6154	6158	2841	1183	1463	261
23	1683	4144	1519	4530	4521	5361	6155	5908	2841	1182	970	265
24	1394	3451	1532	5072	4355	5360	6157	5567	2851	1184	526	262
25	4064	3445	6152	3128	4532	5361	6150	5914	3770	1183	969	268
26	1694	6111	1819	2111	6102	5365	5167	6003	3781	1182	1282	266
27	1678	6109	5452	2786	6097	6035	5904	6008	4103	1095	1426	268
28	1687	6109	1328	1750	6095	5966	5161	5989	3011	712	2114	266
29	1690	6108	2348	3930	---	5749	6148	6174	3009	704	1673	261
30	1684	4713	2346	4890	---	5290	6153	6166	2359	700	1493	267
31	1710	---	2300	5075	---	5654	---	6168	---	703	1407	---
TOTAL	40197	126775	107357	138948	145225	166804	171654	180932	114087	43930	47550	18151
MEAN	1297	4226	3463	4482	5187	5381	5722	5837	3803	1417	1534	605
MAX	4064	6111	6152	6146	6105	6109	6160	6174	5134	2990	2768	2112
MIN	350	3064	1328	1650	3921	4245	4782	4955	2359	133	526	261
CAL YR 1998	TOTAL	1222560	MEAN	3349	MAX	6152	MIN	132				
WTR YR 1999	TOTAL	1301610	MEAN	3566	MAX	6174	MIN	133				

## 09427500 LAKE HAVASU NEAR PARKER DAM, AZ-CA

**LOCATION.**--Lat 34°18'58", long 114°09'23", in NW1/4SW1/4 sec.28, T.3 N., R.27 E., San Bernardino meridian, in San Bernardino County, California, Hydrologic Unit 15030101, at intake pumping plant for Colorado River aqueduct of Metropolitan Water District of Southern California, 1.8 mi upstream from Parker Dam on Colorado River, and 149 mi downstream from Hoover Dam.

**DRAINAGE AREA.**--182,700 mi<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, which is noncontributing.

**PERIOD OF RECORD.**--July 1938 to current year. Published as "Parker Reservoir near Parker Dam" 1938.

**REVISED RECORDS.**--WRD Ariz. 1975: 1974 (elevation).

**GAGE.**--Water-stage recorder. Datum of gage is sea level.

**REMARKS.**--Lake is formed by concrete-arch dam; dam was completed and storage began July 1, 1938. Usable capacity - based on April 1957 re-survey by Bureau of Reclamation between elevations 430.54 ft and 450.54 ft - 619,400 acre-ft between elevations 400.54 ft, sill of regulating gates, and 450.54 ft, top of regulating gates. Prior to Oct. 1, 1956, different capacity table used. Dead storage, 28,600 acre-ft below elevation 400.54 ft, based on original survey. About 0.07 ft fall indicated between gage and Parker Dam under normal operating conditions. Drawdown below elevation 440.54 ft not legally permissible except by consent of the Metropolitan Water District of Southern California or in an emergency affecting the safety of the dam. Lake is used for flood control, power development, regulation of river for irrigation demand, and as a basin from which water is pumped by Metropolitan Water District of Southern California to Colorado River aqueduct. Figures given herein represent usable contents. For record of diversion to Colorado River aqueduct, see record for Colorado River aqueduct near Parker Dam elsewhere in this report.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum storage, 693,000 acre-ft, by temporary use of flashboards, Apr. 18, 1943, June 4, 1953; maximum elevation, 451.23 ft May 27, 1988, affected by wind, minimum storage, 71,400 acre-ft June 25, 1942, elevation, 412.09 ft.

**EXTREMES FOR CURRENT YEAR.**--Maximum storage, 619,600 acre-ft July 15, elevation, 450.55 ft, affected by wind, minimum storage, 514,100 acre-ft Feb. 23, elevation, 444.95 ft.

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	575100	525800	564100	602600	536400	524300	549500	583800	608600	613200	586100	602400
2	575500	525400	565400	604800	534400	522000	557900	582500	609200	613400	588700	606400
3	575600	523400	571600	605600	533200	520900	562200	588000	615200	612000	590500	605200
4	571500	520400	579600	606400	537700	522200	562400	590700	609600	611200	586800	599200
5	564300	527600	587400	605200	539300	524200	565400	592100	604600	607800	589900	594800
6	558500	526500	596400	599800	540700	523800	569000	595000	604800	604600	588200	588200
7	564700	526700	597200	593900	538700	522200	572200	591100	603400	601200	586800	580200
8	566000	525800	596200	589900	539600	522900	570500	587000	603200	607200	586100	575100
9	565100	524700	603200	584800	538700	521500	573900	586200	606400	606600	584900	578100
10	547700	525100	607000	580200	535500	518600	574500	589900	615200	605800	583600	577200
11	544200	525100	604600	576800	526100	522700	576000	587200	612800	603400	583800	571400
12	537700	521000	597200	573400	525100	523100	578700	586600	603600	602800	591300	570300
13	539300	521000	596000	570100	526300	525100	580900	586800	605400	609000	590100	560500
14	539900	521900	601400	569400	524900	524300	584200	589100	604400	611000	590300	553200
15	538600	529600	605400	572800	517900	525400	590700	592100	607200	619600	591500	547600
16	538600	530100	613400	558100	522400	522700	593900	593500	607400	618800	593700	554100
17	538000	533900	610000	553400	521100	524300	592900	592100	616000	613800	598600	557000
18	535500	537100	604600	544000	522400	532100	591100	587600	615800	609600	600500	556000
19	534800	538600	605800	540400	524200	532800	587400	587800	615000	608400	604600	556400
20	533000	543400	603200	537300	525100	525700	585500	590900	611800	604400	607200	559800
21	533300	543400	603800	534100	526000	529600	583400	591900	609400	603400	606400	561700
22	533100	551400	605000	531600	519600	532600	587200	593900	607400	605200	605800	565000
23	532300	554300	609000	531700	514100	534600	586600	597400	607400	606600	608800	575100
24	524500	557300	612600	514600	520900	538000	588700	600000	618800	595600	609600	575600
25	527200	563900	610200	516000	524000	545900	581100	601400	616800	589900	613200	576200
26	527000	561200	610600	536200	524900	545900	574200	601400	613400	582700	614200	576200
27	526400	560000	608600	538700	519700	545400	577700	604000	613400	561300	613800	577900
28	529400	561700	612200	541100	522700	547600	578200	608000	606600	581900	614400	580600
29	523300	562700	608800	540000	---	545200	582800	608200	609400	590300	612400	582300
30	524600	563500	609400	537100	---	541400	583600	608600	609800	594300	609400	585300
31	530100	---	607800	537300	---	544000	---	607400	---	588700	608600	---
MAX	577500	563500	613400	606400	540700	547600	593900	608600	618800	619600	614400	606400
MIN	525400	520400	564100	531500	514100	518600	549500	582500	603200	581300	583600	547600
(**)	-39300	-33400	-44300	-70500	-14600	+21300	-39000	+24400	+2400	-21100	+19900	+23300
QAL YR 1998	MAX	624800	MIN	520400	(**)	+5800						
WTR YR 1999	MAX	619600	MIN	514100	(**)	+15900						

(\*\*) Change in contents, in acre-feet.

## 09427500 LAKE HAVASU NEAR PARKER DAM, AZ-CA--Continued

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	448.28	445.60	447.70	449.70	446.19	445.52	446.92	448.74	450.00	450.23	448.86	449.69
2	448.41	445.58	447.82	449.81	446.08	445.39	447.37	448.67	450.03	450.24	449.00	449.89
3	448.31	445.47	448.10	449.85	446.01	445.33	447.60	448.96	450.33	450.17	449.09	449.83
4	448.09	445.30	448.52	449.89	446.26	445.40	447.61	449.10	450.05	450.13	448.90	449.53
5	447.71	445.70	448.93	449.83	446.35	445.51	447.77	449.17	449.80	449.96	449.06	449.31
6	447.40	445.64	449.39	449.56	446.43	445.49	447.96	449.32	449.81	449.80	448.97	448.97
7	447.20	445.65	449.43	449.26	446.32	445.40	448.13	449.12	449.74	449.63	448.90	448.55
8	447.30	445.60	449.38	449.06	446.37	445.44	448.04	448.91	449.73	449.93	448.86	448.28
9	447.04	445.54	449.73	448.79	446.32	445.36	448.22	448.90	449.89	449.90	448.79	448.44
10	446.82	445.56	449.92	448.55	446.14	445.20	448.25	449.06	450.33	449.86	448.73	448.39
11	446.57	445.56	449.80	448.37	445.62	445.43	448.33	448.92	450.21	449.74	448.74	448.09
12	446.24	445.90	449.43	448.19	445.56	445.45	448.47	448.89	450.00	449.71	449.13	448.03
13	446.16	445.89	449.40	448.02	445.63	445.56	448.58	448.90	449.84	450.02	449.07	447.51
14	446.16	445.94	449.64	447.98	445.55	445.52	448.76	449.02	449.79	450.12	449.08	447.12
15	446.31	445.81	449.84	448.16	445.16	445.58	449.10	449.17	449.93	450.55	449.14	446.81
16	446.31	445.84	450.24	447.38	445.41	445.43	449.26	449.24	449.94	450.51	449.25	447.17
17	446.28	446.05	450.07	447.13	445.34	445.52	449.21	449.17	450.37	450.26	449.50	447.32
18	446.14	446.23	449.80	446.61	445.41	445.95	449.12	448.94	450.36	450.05	449.60	447.27
19	446.10	446.31	449.86	446.41	445.51	445.99	448.93	448.95	450.32	449.99	449.80	447.29
20	446.00	446.58	449.73	446.24	445.56	445.76	448.83	449.11	450.16	449.79	449.93	447.47
21	446.02	446.91	449.76	446.06	445.61	445.81	448.72	449.16	450.04	449.74	449.89	447.57
22	446.34	447.05	449.82	445.92	445.27	445.98	448.92	449.26	449.94	449.83	449.86	447.75
23	445.95	447.16	450.02	445.93	444.95	446.09	448.89	449.44	449.94	449.60	450.01	448.28
24	445.81	447.34	450.20	446.09	445.33	446.28	449.00	449.57	450.51	449.35	450.05	448.31
25	445.68	447.53	450.08	446.17	445.50	446.72	448.60	449.64	450.41	449.01	450.23	448.34
26	445.67	447.49	450.10	446.18	445.55	446.72	448.34	449.65	450.24	448.68	450.28	448.34
27	445.63	447.48	450.00	446.32	445.26	446.70	448.42	449.77	450.09	448.61	450.26	448.43
28	445.58	447.57	450.18	446.45	445.43	446.81	448.50	449.97	449.90	448.64	450.29	348.57
29	445.85	447.59	450.01	446.39	---	446.68	448.69	449.98	450.04	449.08	450.19	348.66
30	445.81	447.67	450.04	446.23	---	446.47	448.70	450.00	450.06	449.28	450.04	348.82
31	445.84	---	449.96	446.24	---	446.61	---	449.94	---	449.00	450.00	---
MAX	448.41	447.67	450.24	449.89	446.43	446.81	449.26	450.00	450.51	450.55	450.29	449.89
MIN	445.58	445.30	447.70	445.92	444.95	445.20	446.92	448.67	449.73	448.61	448.73	446.81
WTR YR	1999	MAX	450.55	MIN	444.95							

## 09427520 COLORADO RIVER BELOW PARKER DAM, AZ-CA

LOCATION.--Lat 34°17'44", long 114°08'22", in NW1/4NW1/4 sec 3, T.2 N., R.27 E., San Bernardino meridian, in San Bernardino County, California. Hydrologic Unit 15030104, on north end of powerplant at Parker Dam, 13 mi northeast of Parker, AZ., and 14 mi upstream from Headgate Rock Dam.

DRAINAGE AREA.--182,700 mi<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, which is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February to September 1934 (gage heights and fragmentary discharge records), October 1934 to current year. Prior to October 1937, published as "near Parker, Ariz."

REVISED RECORDS.--WSP 1313: 1941(M).

GAGE.--Water-stage recorder. Datum of gage is 300.54 ft above sea level. Prior to Oct. 1, 1967, at site 3.8 mi downstream at datum 346.23 ft above sea level.

REMARKS.--Records good. Flow regulated by Lake Mead since Feb. 1, 1935, by Lake Mohave since Jan. 17, 1950, and by Lake Havasu since July 1, 1938. Many diversions above station. For record of diversion to Colorado River aqueduct and return flows, see record for Colorado River aqueduct near Parker Dam, elsewhere in this report.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,400 ft<sup>3</sup>/s Feb. 8, 1937; no flow at Parker Dam for parts of several days in 1942 when gates in dam were closed. An unregulated discharge of probably less than 1,350 ft<sup>3</sup>/s occurred Aug. 18, 1934 (lowest unregulated discharge since 1917 and probably since a much earlier date).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 18,200 ft<sup>3</sup>/s Dec. 7-8, 12-14, 20; minimum daily, 4,890 ft<sup>3</sup>/s Jan. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11400	11300	13700	12100	7670	10600	9350	14200	11900	12800	13200	13600
2	9590	10800	13700	10800	7150	10600	9290	14400	12400	14500	11700	8460
3	11900	10800	13700	e10800	7190	10200	10300	11900	9610	14500	12700	10900
4	11200	10800	13700	e12300	5250	9220	10300	11700	13200	14800	13500	12500
5	12100	7830	13700	e12100	6640	11100	10300	11800	16500	15300	10600	11900
6	11600	12200	13700	e14300	5760	11500	10200	11100	14000	15300	13100	12500
7	11200	11500	18200	14200	5690	11600	9390	15300	16600	15200	13600	12900
8	8610	12100	18200	14200	5290	10700	8840	15500	16000	11700	13100	13900
9	11100	11900	16000	13900	5230	10600	12100	14700	14100	14300	13000	10100
10	11200	11400	16700	13900	5800	11100	13100	14200	9530	13300	13600	12000
11	11700	11400	17600	13800	7610	9200	12800	15200	13900	13200	13200	14100
12	11200	8400	18200	13900	7170	10200	12200	14200	14800	13700	9400	11500
13	10600	11400	18200	14100	8180	11100	12200	13900	14700	11700	12800	14500
14	9680	11300	18200	11800	9670	11100	12100	14900	15200	10600	12000	13700
15	8490	11900	18100	7950	11800	10700	9340	13700	14200	9030	11200	14100
16	10600	11900	14400	11300	7670	11100	11700	13200	14900	11000	10900	11600
17	11600	11800	17200	6550	9990	10700	12600	13700	11100	13700	10700	13700
18	11600	11800	18000	7410	9120	9630	13900	14100	14000	12600	11200	15200
19	10600	11300	18100	6450	10700	12700	14700	14100	14500	13300	8630	14300
20	11000	11700	18200	4890	11200	13400	14600	12700	14900	13700	11200	14300
21	10500	11800	16800	5420	10100	13700	14600	13500	15700	13100	11200	14800
22	8340	11700	16900	6440	11500	13200	12300	13300	15300	11700	11200	14800
23	11200	13400	16800	7420	11500	12600	13700	12300	15200	15300	10100	11300
24	11300	13200	16700	7470	9720	11600	15500	12800	10700	14800	10100	15500
25	11300	13100	17900	6530	9560	9320	15600	12300	15100	14800	8530	15500
26	11400	13500	18000	7020	10600	11700	14700	13100	14600	15900	9360	16000
27	11300	13300	18000	6440	12000	12300	14700	13500	14200	15600	9720	14500
28	10800	13300	17200	6610	10700	11700	13700	11900	15200	14200	10500	14300
29	8390	13200	16900	6260	---	12600	11800	13400	14700	9670	10500	14600
30	11300	13700	14200	6690	---	12300	14200	13400	15000	10400	10500	14600
31	10800	---	14000	7200	---	10800	---	13400	---	13700	10400	---
TOTAL	333600	353730	510900	300250	240460	349370	370110	416400	421840	413400	351440	401360
MEAN	10760	11790	16480	9685	7586	11270	12340	13430	14060	13340	11340	12380
MAX	12100	13700	18200	14300	12000	13700	15600	15500	16600	15900	13600	16000
MIN	8340	7830	13700	4890	5230	9200	8840	11100	9530	9030	8530	8460
AC-FT	661700	701600	1013000	595500	477000	693000	734100	825900	836700	820000	697100	796100
CAL YR 1998	TOTAL	5233240	MEAN	14340	MAX	18900	MIN	7430	AC-FT	10380000		
WTR YR 1999	TOTAL	4462860	MEAN	12230	MAX	18200	MIN	4890	AC-FT	8852000		

e Estimated

## COLORADO RIVER MAIN STEM

09427520 COLORADO RIVER BELOW PARKER DAM, AZ-CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1963 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1982 to current year.

WATER TEMPERATURES: February 1964 to August 1970; September 1982 to current year.

EXTREMES FOR PERIOD OF DAILY RECORDS.--

SPECIFIC CONDUCTANCE: Maximum recorded, 1,510 microsiemens Dec. 14, 1986; minimum recorded, 600 microsiemens Mar. 3, 1993.

WATER TEMPERATURE: Maximum recorded, 28.5°C Aug. 12, 13, 18, 1955; minimum recorded, 7.5°C Jan. 11, 1983.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 943 microsiemens Jan. 5; minimum recorded, 880 microsiemens July 17.

WATER TEMPERATURE: Maximum recorded, 27.8°C July 12; minimum recorded, 9.9°C Jan. 4.

INSTRUMENTATION.--Water temperature recorder from February 1954 to August 1970. Specific conductance and water temperature recorder from September 1982 to current year.

REMARKS.--Prior to October 1968, published as 09428000. More than 10% missing record this year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	SAMPLE TYPE	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)			SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)
DEC 28...	1315	ENVIRONMENTAL	18100			922	8.2	11.0	10.5	.96	775	10.8
JAN 20...	1245	ENVIRONMENTAL	4640			920	8.2	21.0	11.0	.27	771	10.9
APR 21...	1230	ENVIRONMENTAL	18300			925	8.2	28.0	17.5	.29	761	9.9
MAY 19...	1300	ENVIRONMENTAL	18700			915	8.2	27.0	21.0	.17	751	8.9
JUN 22...	1300	ENVIRONMENTAL	19300			913	8.1	31.0	23.0	.44	750	8.7
AUG 18...	1300	ENVIRONMENTAL	11700			906	8.1	34.0	25.0	1.6	751	8.4
18...	1305	CONCURRENT REPLICATE	11700			908	8.1	34.0	25.0	--	751	8.4
DATE		OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	COLI-FORM, FECAL, UM-MF (COLS./100 ML) (31625)	E. COLI WHOLE TOTAL UREASE (COL /100 ML) (31633)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	HARD-NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	CALCIUM TOTAL RECOV-ERABLE (MG/L AS CA) (00916)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS MG) (00927)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
DEC 28...	95	35	<1	<1	270	140	72	70	24	24	85	
JAN 20...	98	--	<1	<1	270	140	73	70	24	24	87	
APR 21...	104	9	<1	<1	270	150	70	70	24	24	77	
MAY 19...	102	11	<1	<1	270	140	70	69	24	24	82	
JUN 22...	103	<5	<1	<1	270	140	70	68	24	24	84	
AUG 18...	103	32	K2	K2	270	140	72	68	24	24	76	
18...	103	--	K1	K2	--	--	--	--	--	--	--	
DATE		SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)
DEC 28...	2	3.8	159	0	130	220	71	.27	590	552	.80	
JAN 20...	2	3.7	164	0	134	220	69	.28	596	555	.81	
APR 21...	2	4.0	156	0	128	230	68	.28	578	550	.79	
MAY 19...	2	4.4	159	0	130	220	68	.28	589	546	.80	
JUN 22...	2	4.2	159	0	130	220	66	.28	636	545	.86	
AUG 18...	2	4.2	159	0	130	220	66	.35	581	537	.79	
18...	--	--	159	0	130	--	--	--	--	--	--	

09427520 COLORADO RIVER BELOW PARKER DAM. AZ-CA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

## COLORADO RIVER MAIN STEM

09427520 COLORADO RIVER BELOW PARKER DAM, AZ-CA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	THAL- LIUM, TOTAL (UG/L AS TL) (01059)	THAL- LIUM, DIS- SOLVED (UG/L AS TL) (01057)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
DEC										
28...	1	<1.0	2	3	<1	<1.0	<2	<2.0	<1.0	<1.0
JAN										
20...	1	<1.0	2	1	<1	<1.0	<2	<2.0	<1.0	<1.0
APR										
21...	1	<1.0	1	1	<1	<1.0	<2	<2.0	<1.0	<1.0
MAY										
19...	<1	<1.0	1	1	<1	<1.0	<2	<2.0	<1.0	4.7
JUN										
22...	<1	<1.0	1	<1	<1	<1.0	<2	<2.0	<1.0	<1.0
AUG										
18...	<1	<1.0	2	1	<1	<1.0	<2	<2.0	<1.0	<1.0
18...	--	--	--	--	--	--	--	--	--	--

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").



## 09427520 COLORADO RIVER BELOW PARKER DAM, AZ-CA--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Water-quality measurements in the following table were made as part of the ADEQ Fixed-Station Network Program. The following analyses are quality-assurance samples processed during the 1999 sampling period and are defined in the introductory text section titled "Water-Quality Control Data".

			CALCIUM DIS- SOLVED (MG/L AS CA) (00915)		MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)		SODIUM, DIS- SOLVED (MG/L AS NA) (00930)		NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)		NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)		NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)		NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)		PHOS- PHORUS TOTAL (MG/L AS P) (00665)	
DATE	TIME	QUALITY ASSURANCE SAMPLE (TYPE)																
MAY 20...	1200	FIELD BLANK	<.020		<.00		<.10		<.020		.020		<.20		.03		<.020	
DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01105)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01055)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)							
MAY 20...	<3.0	<.20	<.50	<.50	<1.0	<1.0	<1.0	<1.0	<.20	<1.0	<1.0							

< Actual value is known to be less than the value shown.

## COLORADO RIVER MAIN STEM

## 09427520 COLORADO RIVER BELOW PARKER DAM, AZ-CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	23.7	23.1	23.4	19.7	19.3	19.5	15.3	14.9	15.1	10.6	10.2	10.4
2	23.4	22.6	23.1	19.6	19.1	19.4	15.3	14.8	15.0	10.6	10.2	10.4
3	22.9	22.1	22.5	19.5	19.1	19.3	15.2	14.8	14.9	10.5	10.1	10.3
4	23.3	22.2	22.8	19.3	18.9	19.1	15.1	14.7	14.8	10.6	9.9	10.3
5	23.3	22.7	23.0	19.1	18.8	19.0	15.1	14.6	14.8	10.6	10.0	10.3
6	23.0	22.3	22.5	18.9	18.4	18.7	14.8	14.3	14.7	10.5	10.0	10.3
7	22.6	22.2	22.4	18.6	18.3	18.4	14.4	14.0	14.2	10.5	10.1	10.3
8	22.6	21.9	22.2	18.3	18.1	18.2	14.0	13.8	13.9	10.4	10.1	10.3
9	22.2	21.8	22.0	18.2	17.7	17.9	13.8	13.3	13.6	10.6	10.0	10.3
10	22.0	21.4	21.8	18.1	17.3	17.7	13.3	12.7	13.0	10.7	10.2	10.5
11	21.8	21.4	21.6	17.7	17.1	17.4	12.9	12.6	12.8	10.7	10.3	10.5
12	21.9	21.4	21.6	17.4	16.8	17.1	12.8	12.4	12.7	10.8	10.3	10.5
13	21.8	21.4	21.7	17.0	16.6	16.8	12.6	12.1	12.4	10.9	10.4	10.7
14	21.5	20.9	21.2	16.9	16.5	16.7	12.3	11.8	12.1	10.9	10.4	10.7
15	21.2	20.8	21.0	16.8	16.4	16.6	12.2	11.7	11.9	10.9	10.5	10.7
16	21.1	20.4	20.8	16.7	16.3	16.4	11.8	11.4	11.6	10.9	10.5	10.7
17	20.8	20.4	20.7	16.6	16.1	16.2	11.8	11.3	11.5	10.9	10.5	10.7
18	20.8	20.2	20.6	16.4	15.9	16.1	11.7	11.3	11.5	11.0	10.5	10.8
19	20.8	20.0	20.3	16.3	15.7	16.0	11.8	11.4	11.5	11.0	10.6	10.8
20	20.5	20.0	20.3	15.9	15.4	15.7	11.7	11.3	11.6	11.0	10.7	10.9
21	20.4	19.9	20.1	15.8	15.2	15.5	11.7	11.4	11.6	11.2	10.8	11.0
22	20.5	20.0	20.2	15.7	15.1	15.4	11.4	11.1	11.3	11.5	11.0	11.3
23	20.5	20.1	20.3	15.4	14.9	15.2	11.1	10.9	11.0	11.5	11.1	11.3
24	20.4	19.9	20.2	15.4	14.9	15.2	11.0	10.7	10.9	11.6	11.1	11.4
25	20.4	19.9	20.2	15.4	14.8	15.2	11.1	10.7	10.9	11.6	11.2	11.4
26	20.1	19.7	20.0	15.4	15.1	15.2	10.9	10.8	10.9	11.6	11.2	11.4
27	20.2	19.7	20.0	15.3	14.9	15.1	10.9	10.7	10.8	11.8	11.2	11.5
28	20.0	19.6	19.9	15.3	15.0	15.1	10.8	10.5	10.7	11.7	11.2	11.5
29	19.9	19.6	19.8	15.3	14.9	15.1	10.7	10.3	10.5	11.7	10.9	11.3
30	19.7	19.3	19.6	15.3	14.8	15.1	10.7	10.2	10.5	11.8	11.2	11.4
31	19.7	19.3	19.6	---	---	---	10.6	10.2	10.4	11.6	11.2	11.4
MONTH	23.7	19.3	21.1	19.7	14.8	16.8	15.3	10.2	12.4	11.8	9.9	10.8
FEBRUARY			MARCH			APRIL			MAY			
1	11.9	11.2	11.5	13.5	13.1	13.3	---	---	---	18.3	18.2	18.2
2	11.8	11.4	11.7	13.7	13.1	13.3	---	---	---	18.4	18.2	18.4
3	11.9	11.4	11.7	13.8	13.2	13.5	---	---	---	18.5	18.4	18.5
4	11.9	11.5	11.7	13.5	13.2	13.4	---	---	---	18.7	18.5	18.6
5	12.0	11.5	11.7	13.8	13.3	13.6	---	---	---	18.8	18.6	18.7
6	11.9	11.6	11.8	14.2	13.6	13.9	---	---	---	18.9	18.7	18.8
7	12.0	11.7	11.8	14.0	13.7	13.8	---	---	---	19.1	18.8	18.9
8	12.1	11.6	11.9	14.3	13.8	14.2	---	---	---	19.2	18.9	19.0
9	12.1	11.6	11.9	14.6	14.2	14.4	---	---	---	19.2	19.0	19.1
10	12.2	11.8	12.0	14.7	14.2	14.5	---	---	---	19.4	19.2	19.2
11	12.2	11.7	11.9	---	---	---	---	---	---	19.5	19.2	19.3
12	11.8	11.3	11.5	---	---	---	---	---	---	19.6	19.3	19.5
13	11.9	11.3	11.6	---	---	---	---	---	---	19.7	19.5	19.6
14	11.9	11.6	11.8	---	---	---	---	---	---	19.9	19.6	19.8
15	12.1	11.6	11.8	---	---	---	---	---	---	20.1	19.8	19.9
16	12.1	11.7	11.9	---	---	---	---	---	---	20.1	19.9	20.0
17	12.2	11.7	12.0	---	---	---	---	---	---	20.3	19.9	20.1
18	12.3	11.8	12.1	---	---	---	---	---	---	20.4	20.1	20.2
19	12.4	11.8	12.2	---	---	---	---	---	---	20.6	20.2	20.4
20	12.6	12.1	12.3	---	---	---	---	---	---	21.4	20.4	20.7
21	12.7	12.3	12.5	---	---	---	---	---	---	21.0	20.9	20.9
22	12.6	12.2	12.3	---	---	---	---	---	---	21.1	20.9	21.1
23	12.5	12.2	12.4	---	---	---	---	---	---	21.2	21.0	21.1
24	12.8	12.2	12.6	---	---	---	---	---	---	21.2	21.1	21.1
25	12.8	12.4	12.7	---	---	---	---	---	---	21.3	21.1	21.2
26	12.9	12.4	12.7	---	---	---	---	---	---	21.3	21.1	21.2
27	13.1	12.6	12.9	---	---	---	---	---	---	21.4	21.2	21.3
28	13.4	12.9	13.2	---	---	---	---	---	---	21.4	21.3	21.3
29	---	---	---	---	---	---	18.1	17.8	18.0	21.4	21.3	21.4
30	---	---	---	---	---	---	18.2	18.0	18.1	21.6	21.4	21.4
31	---	---	---	---	---	---	---	---	---	21.7	21.5	21.6
MONTH	13.4	11.2	12.1	14.7	13.1	13.8	18.2	17.8	18.0	21.7	18.2	20.0

09427520 COLORADO RIVER BELOW PARKER DAM, AZ-CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	21.7	21.6	21.6	24.4	23.9	24.1	26.0	25.4	25.7	24.5	23.9	24.1
2	21.9	21.6	21.7	24.1	23.4	23.7	25.8	25.3	25.5	25.0	24.1	24.6
3	21.8	21.7	21.8	24.2	23.7	24.0	25.9	25.5	25.7	25.0	24.6	24.8
4	22.0	21.8	21.9	24.4	23.9	24.4	26.0	25.4	25.7	25.5	24.8	25.1
5	22.0	21.9	22.0	25.1	24.6	24.8	25.4	24.7	25.2	25.4	25.3	25.6
6	22.1	21.9	22.0	25.1	24.4	24.8	25.2	24.1	24.8	25.8	25.2	25.5
7	22.1	22.0	22.0	25.1	24.1	24.7	25.8	24.2	25.1	25.9	25.1	25.5
8	22.2	22.1	22.1	25.1	24.4	24.4	25.6	25.1	25.3	25.3	24.8	25.2
9	22.4	22.1	22.3	25.4	24.6	24.9	25.3	24.7	25.0	25.2	24.7	25.0
10	22.5	22.3	22.4	25.8	24.7	25.1	25.6	24.7	25.2	25.1	24.6	24.9
11	22.6	22.4	22.5	26.2	25.1	25.6	25.4	24.6	25.0	24.8	24.3	24.6
12	22.7	22.5	22.6	27.8	25.8	26.5	25.3	24.9	25.1	25.1	23.9	24.5
13	22.7	22.6	22.7	27.5	25.9	26.6	25.4	24.8	25.1	25.6	24.9	25.2
14	22.8	22.6	22.7	26.7	25.5	26.0	25.3	24.3	25.0	25.2	24.6	24.9
15	22.8	22.6	22.8	26.1	25.2	25.5	24.8	24.3	24.7	25.1	24.2	24.7
16	22.9	22.8	22.9	25.7	25.1	25.4	25.7	24.7	25.0	25.0	24.3	24.6
17	23.0	22.9	22.9	25.8	25.1	25.4	25.7	24.3	25.1	24.9	24.1	24.5
18	23.2	23.0	23.1	25.6	25.1	25.4	25.7	25.1	25.4	25.1	24.4	24.9
19	23.3	23.1	23.2	25.9	24.9	25.4	25.4	24.6	24.9	24.9	24.4	24.6
20	23.3	23.1	23.2	25.9	25.2	25.6	25.6	24.3	24.9	24.7	24.1	24.4
21	23.5	23.3	23.4	25.9	25.2	25.5	25.8	25.0	25.3	25.2	24.3	24.7
22	23.5	23.4	23.5	26.1	25.4	25.7	26.0	25.4	25.7	25.9	24.3	24.8
23	23.9	23.7	23.4	26.1	25.4	25.7	26.0	24.7	25.3	25.9	24.9	25.4
24	24.0	23.2	23.5	25.8	25.1	25.5	26.0	25.3	25.5	25.0	24.4	24.8
25	23.9	23.3	23.7	26.7	25.4	25.8	26.2	25.2	25.6	24.9	24.3	24.5
26	23.9	23.5	23.7	26.7	25.1	25.9	25.9	25.3	25.6	24.7	24.1	24.3
27	24.1	23.5	23.9	26.3	25.7	26.1	25.6	24.5	24.9	24.5	24.2	24.3
28	24.2	23.8	24.0	26.1	25.5	25.8	25.7	23.8	24.5	24.8	24.2	24.6
29	24.3	23.7	23.9	26.1	25.5	25.7	25.2	24.1	24.5	24.6	24.1	24.4
30	24.6	23.8	24.1	26.1	25.4	25.7	25.1	24.3	24.7	24.4	23.9	24.2
31	---	---	---	26.2	25.7	26.0	24.7	24.0	24.4	---	---	---
MONTH	24.6	21.6	22.9	27.8	23.4	25.4	26.2	23.8	25.1	25.9	23.9	24.8

SPECIFIC CONDUCTANCE US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	926	909	919	928	917	921	918	908	913	918	927	933
2	922	914	918	927	916	921	916	907	916	919	928	933
3	928	911	921	926	914	920	926	913	913	918	927	933
4	933	921	926	924	913	919	924	914	920	942	928	934
5	927	916	922	924	914	919	922	913	918	943	928	936
6	930	915	924	927	910	920	921	913	916	940	930	935
7	928	917	922	927	917	923	922	913	918	939	928	934
8	927	916	922	924	914	921	923	915	918	937	926	933
9	925	915	921	926	913	922	922	916	918	938	926	932
10	931	913	923	929	915	922	927	917	921	937	925	931
11	929	919	924	928	919	923	925	917	920	937	927	931
12	925	915	921	930	919	924	926	917	921	936	926	931
13	926	918	922	930	919	925	927	918	921	934	923	929
14	927	915	923	931	919	926	927	918	923	934	924	929
15	927	918	922	930	919	924	932	918	925	936	925	930
16	929	916	923	930	919	926	932	925	929	934	924	929
17	927	917	922	931	920	924	932	921	928	933	923	928
18	928	915	920	929	919	925	932	923	924	935	922	928
19	934	921	929	930	921	925	933	923	928	935	920	927
20	936	924	930	929	921	925	933	923	928	930	920	924
21	934	922	929	933	919	924	931	923	926	930	921	926
22	931	922	926	930	917	924	936	924	928	928	917	923
23	929	919	925	932	917	923	937	928	932	928	917	923
24	931	919	923	930	916	921	936	926	930	929	917	922
25	927	918	923	931	916	921	934	925	930	927	917	921
26	928	919	924	926	916	919	934	924	930	929	905	918
27	923	918	924	924	911	918	934	925	929	927	904	920
28	921	919	925	921	910	916	935	924	930	929	916	921
29	929	919	924	925	929	915	939	926	933	932	916	925
30	927	919	923	920	919	915	938	926	932	932	915	923
31	929	918	923	---	---	---	936	926	931	927	915	923
MONTH	936	909	923	933	909	922	939	907	924	943	904	928

## COLORADO RIVER MAIN STEM

## 09427520 COLORADO RIVER BELOW PARKER DAM, AZ-CA--Continued

SPECIFIC CONDUCTANCE US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	928	917	922	936	920	927	---	---	---	---	---	---
2	928	916	923	936	921	928	---	---	---	---	---	---
3	927	918	923	936	918	927	---	---	---	---	---	---
4	929	920	923	932	920	927	---	---	---	---	---	---
5	930	919	924	933	920	927	---	---	---	---	---	---
6	932	920	926	934	919	926	---	---	---	---	---	---
7	932	922	927	933	925	929	---	---	---	---	---	---
8	936	922	929	933	919	926	---	---	---	---	---	---
9	934	923	927	934	922	928	---	---	---	---	---	---
10	935	920	927	935	921	928	---	---	---	---	---	---
11	934	921	928	---	---	---	---	---	---	---	---	---
12	940	923	934	---	---	---	---	---	---	---	---	---
13	939	923	932	---	---	---	---	---	---	---	---	---
14	936	925	930	---	---	---	---	---	---	---	---	---
15	936	923	930	---	---	---	---	---	---	---	---	---
16	939	925	933	---	---	---	---	---	---	---	---	---
17	939	929	933	---	---	---	---	---	---	---	---	---
18	939	923	930	---	---	---	---	---	---	---	---	---
19	938	923	929	---	---	---	---	---	---	---	---	---
20	936	922	931	---	---	---	---	---	---	---	---	---
21	937	924	928	---	---	---	---	---	---	---	---	---
22	936	919	930	---	---	---	---	---	---	---	---	---
23	937	922	929	---	---	---	---	---	---	---	---	---
24	937	923	929	---	---	---	---	---	---	---	---	---
25	935	923	928	---	---	---	---	---	---	---	---	---
26	936	921	930	---	---	---	---	---	---	---	---	---
27	938	921	929	---	---	---	---	---	---	---	---	---
28	936	921	928	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	940	916	928	936	918	927	---	---	---	---	---	---
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	912	900	907	901	890	897	922	914	919
2	---	---	---	911	903	908	904	896	899	928	915	921
3	---	---	---	910	898	907	906	897	901	929	917	923
4	---	---	---	915	902	908	905	896	901	925	917	921
5	---	---	---	914	902	908	905	894	901	924	915	920
6	---	---	---	915	906	910	905	896	900	925	915	919
7	---	---	---	911	904	907	907	897	902	922	912	918
8	---	---	---	907	901	904	907	896	901	923	914	919
9	---	---	---	907	896	901	907	896	901	927	917	921
10	---	---	---	906	891	899	904	893	898	929	921	924
11	---	---	---	897	886	892	906	895	900	926	920	923
12	---	---	---	896	887	891	903	894	899	925	916	920
13	---	---	---	896	887	891	905	897	901	921	912	916
14	---	---	---	891	884	888	907	895	901	921	910	916
15	---	---	---	891	883	887	912	903	908	920	913	916
16	---	---	---	893	882	889	913	905	909	920	908	914
17	---	---	---	893	880	886	913	905	909	919	910	914
18	---	---	---	895	883	889	911	900	907	919	913	915
19	---	---	---	898	888	893	915	904	909	918	912	915
20	---	---	---	897	887	892	915	903	910	922	916	918
21	---	---	---	898	884	892	914	903	909	924	918	920
22	---	---	---	898	885	893	911	900	906	929	920	924
23	---	---	---	897	888	893	912	904	907	927	919	923
24	913	902	909	901	887	895	912	902	909	928	920	923
25	912	903	907	901	887	894	913	901	908	927	914	920
26	912	904	908	905	893	899	913	902	908	923	912	918
27	913	901	907	901	896	898	912	903	908	918	909	914
28	910	902	905	900	894	897	913	902	908	919	911	915
29	911	899	905	900	890	895	912	905	908	921	904	914
30	914	900	906	901	891	895	917	909	913	921	910	915
31	---	---	---	902	891	897	923	915	919	---	---	---
MONTH	914	880	907	915	880	897	923	890	905	929	904	919

**DIVERSIONS AND RETURN FLOWS BETWEEN PARKER DAM AND PALO VERDE DAM**

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**09428600 COLORADO RIVER INDIAN RESERVATION MAIN CANAL NEAR PARKER, AZ**

**LOCATION.**--Two gages, lat 34°10'04", long 114°16'33", in SE 1/4 NW 1/4 sec. 31, T. 10 N., R. 19 W., Gila and Salt River meridian, La Paz County, Hydrologic Unit 15030104. Forebay gage, on left wall of canal intake, 90 ft upstream from diversion gates at Arizona end of Headgate Rock Dam. Tailrace gage, on right bank of canal 250 ft downstream from gates. Both gages are on Colorado River Indian Reservation 1.7 mi northeast of Parker and 14 mi downstream from Parker Dam.

**PERIOD OF RECORD.**--January 1915 to current year (prior to January 1937, fiscal year diversions only; January 1937 to September 1954, monthly diversions only).

**REVISED RECORDS.**--WSP 1513: 1915-36.

**GAGE.**--Water-stage recorders above and below intake gates to record head, and recorder to show gate openings (Oct. 1, 1972, Nov. 30, 1992), with supplementary tape gages read daily and at time of each gate change (prior to Oct. 1, 1972, tape gages only). Datum of gages is 350.00 ft, datum in use locally, or 350.51 ft above sea level. Normal operating level of forebay is 364.3 ft; prior to July 9, 1962, normal operating level of forebay was 362.9 ft, datum in use locally. Prior to October 1954, discharge computed by various methods as described in WSP 1313.

**REMARKS.**--No estimated daily discharges. Records good. Daily diversions computed on basis of head on intake gates and gate openings. Records show water diverted to project and surface return flows to Colorado River through two wasteways and two drains; three of these are equipped with water-stage recorders.

**COOPERATION.**--Log of canal intake gate opening (supplementary record) furnished by Bureau of Indian Affairs.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum daily discharge, 1,950 ft<sup>3</sup>/s July 24, 1992; no flow at times in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	881	434	465	698	595	803	935	1060	1050	1260	1050	970
2	904	357	477	284	639	845	869	971	906	1360	1040	995
3	770	420	426	.00	634	907	721	1000	924	1370	908	1030
4	654	486	388	.00	580	964	586	1060	1050	1360	993	1040
5	519	406	293	.00	450	1040	572	1090	1090	1320	1030	976
6	620	401	228	.00	337	927	672	1090	1080	1320	1030	955
7	687	410	278	.00	260	809	865	1030	1090	1340	1060	983
8	774	384	278	.00	262	891	921	1030	1130	1230	1160	1050
9	785	329	316	.00	289	976	994	986	1140	1020	1240	1090
10	754	332	350	.00	380	996	917	1140	1230	851	1270	1030
11	767	362	511	.00	400	1000	801	1130	1180	770	1260	997
12	729	335	522	.00	395	999	677	1090	1050	793	1240	961
13	707	283	520	.00	413	973	566	1180	1060	741	1210	1010
14	712	352	517	.00	426	931	574	1230	1140	679	1200	1040
15	691	474	500	.00	526	931	656	1260	1260	692	1180	1020
16	707	487	481	.00	632	1020	712	1110	1290	773	1190	941
17	692	555	582	417	672	1070	742	1080	1350	839	1150	706
18	660	523	622	344	644	1100	700	1120	1350	831	1130	667
19	586	445	527	413	754	1090	719	1200	1320	909	1150	678
20	632	513	523	611	831	994	836	1220	1210	1040	1140	660
21	674	525	579	713	794	855	989	1230	1110	1070	1120	652
22	656	486	687	804	784	789	1180	1200	1130	1120	1110	622
23	742	526	693	926	848	945	1190	1070	1130	1160	1100	410
24	789	496	620	862	852	1040	1140	1040	1190	1240	1100	288
25	745	453	457	983	866	1050	1030	1120	1210	1220	1090	337
26	701	345	500	981	907	1020	968	1220	1240	1190	1110	351
27	669	433	565	879	888	974	923	1260	1220	1200	1080	355
28	638	437	690	807	813	931	980	1170	1200	1180	1040	530
29	636	351	749	656	---	916	990	1030	1200	1140	946	594
30	600	391	755	602	---	902	1040	1030	1220	1120	891	659
31	546	---	755	517	---	925	---	1040	---	1070	919	---
TOTAL	21627	12731	15854	11497.00	16876	29615	25465	34487	34750	33208	34137	23597
MEAN	698	424	511	371	503	955	849	1112	1158	1071	1101	787
MAX	904	555	755	983	907	1100	1190	1260	1350	1370	1270	1090
MIN	519	283	228	.00	260	789	566	971	906	679	891	288
AC-FT	42900	25250	31450	22800	33470	58740	50510	68400	68930	65870	67710	46800
(*)	21130	18510	17800	16320	16690	21920	22820	26220	24590	25670	23310	21990
CAL YR 1998	TOTAL	292303.00	MEAN	801	MAX	1520	MIN	.00	AC-FT	579800	(*)	240260
WTR YR 1999	TOTAL	293844.00	MEAN	805	MAX	1370	MIN	.00	AC-FT	582800	(*)	257000

(\*) Return surface flow, in acre-feet, to the Colorado River.

## DIVERSIONS AND RETURN FLOWS BETWEEN PARKER DAM AND PALO VERDE DAM

## 08429000 PALO VERDE CANAL NEAR BLYTHE, CA

**LOCATION.**--Lat 33°43'55", long 114°30'40", in NW1/4NE1/4 sec.19, T.5 S., R.24 E., San Bernardino meridian, Riverside County, Hydrologic Unit 15030104, at canal intake structure on west side of Palo Verde diversion dam, 10 mi northeast of Blythe and 44 mi downstream from Headgate Rock Dam.

**PERIOD OF RECORD.**--January 1922 to December 1923, January 1925 to current year (prior to October 1950, monthly discharge only).

**REVISED RECORD.**--WSP 1213; 1946-48.

**GAGE.**--Water-stage recorders above and below intakes to record head and, since May 18, 1984, recorder to show gate openings. Datum of gage is: Forebay gage, sea level; tailrace gage, 274.13 ft, sea level. Aug. 7, 1950, to Nov. 30, 1952, water-stage recorder on tailrace and auxiliary recorder 0.5 mi downstream and Dec. 1, 1952, to Oct. 28, 1957, recording gage above and below former intake structure 0.2 mi upstream, at different datums.

**REMARKS.**--Records good. Daily diversions computed on basis of head on intake gates and gate openings. Records published herein represent flow diverted from Colorado River for irrigation. Return flows to Colorado River are measured by 10 wasteways and drains extending throughout the project; 5 of these are equipped with water stage recorder and Parshall flume, 3 are equipped with Sparling flowmeters. Return flows have not been subtracted; combined monthly return flows are given in table below.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum daily discharge, 2,360 ft<sup>3</sup>/s July 30, 1981; no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1300	788	612	22	858	910	1500	1500	1700	2180	1490	1400
2	1320	849	589	.00	977	880	1150	1250	1860	2040	1710	1440
3	1280	804	622	.00	930	1020	905	1370	1690	1980	2000	1560
4	1120	889	706	.00	925	1260	632	1350	1670	1870	2020	1540
5	1340	916	686	.00	936	1200	859	1580	1670	1910	2070	1340
6	1310	1030	515	.00	852	1150	1080	1620	1600	2010	2180	1540
7	1310	1070	512	.00	651	930	1210	1730	1600	2090	1930	1640
8	1430	868	546	.00	774	1060	1280	1720	1620	1950	1810	1680
9	1300	893	623	.00	758	1150	1440	1490	1700	1740	1850	1690
10	1170	963	719	e10	933	1240	1560	1770	1800	1470	1850	1710
11	1010	923	670	323	1050	1140	1300	1790	1740	1250	1870	1500
12	1130	914	643	302	1120	1110	1070	1790	1710	1560	1950	1290
13	1250	838	516	380	1070	1150	676	1850	1650	1510	1960	1500
14	1190	771	778	631	918	1030	764	1840	1610	1520	1930	1420
15	1200	649	853	810	909	1010	783	1800	1720	1510	1780	1500
16	1250	800	797	937	1180	1030	1110	1490	1830	1460	1800	1500
17	1070	787	848	893	1450	1320	1000	1610	1820	1550	1810	1540
18	882	842	847	1180	1490	1460	1080	1750	1760	1650	1850	1520
19	1160	960	973	1340	1300	1570	1400	1920	1750	1830	1960	1270
20	1120	957	922	1320	1200	1460	1580	1830	1720	1940	1850	1400
21	1160	877	1030	1420	1070	1280	1670	1830	1810	1920	1670	1300
22	1320	694	1090	1370	1160	1280	1710	1620	1990	1840	1440	1330
23	1130	922	903	1190	1080	1180	1650	1430	1860	1970	1500	1120
24	1000	864	593	1040	1000	1410	1470	1670	1900	1930	1760	1270
25	866	804	436	1070	1040	1420	1300	1770	1850	1540	1870	1180
26	948	603	721	1040	1160	1340	1360	1730	1700	1800	1780	998
27	1090	648	748	953	1020	1260	1460	1710	1670	1830	1800	1140
28	1080	595	1170	820	880	1210	1670	1650	1750	1900	1660	1210
29	1160	555	1380	768	---	1380	1820	1670	1730	1790	1360	1270
30	1120	647	1310	725	---	1470	1690	1600	1850	1600	1630	1300
31	917	---	788	601	---	1490	---	1530	---	1720	1550	---
TOTAL	35933	24720	24146	19145.00	28691	37800	38179	51260	52330	54910	55690	42098
MEAN	1159	824	779	618	1025	1219	1273	1654	1744	1771	1796	1403
MAX	1430	1070	1380	1420	1490	1570	1820	1920	1990	2180	2180	1710
MIN	866	555	436	.00	651	880	632	1250	1600	1250	1360	998
AC-FT	71270	49030	47890	37970	56910	74980	75730	101700	103800	108900	110500	93500
(*)	40960	39770	38720	29150	31170	36760	36100	39990	40930	42360	44850	42700
CAL YR 1998	TOTAL	463146.00	MEAN	1269	MAX	2160	MIN	.00	AC-FT	918700	(*)	491830
WTR YR 1999	TOTAL	464902.00	MEAN	1274	MAX	2180	MIN	.00	AC-FT	922100	(*)	453500

e Estimated

(\*) Return surface flows, in acre-feet, to Colorado River.

COLORADO RIVER MAIN STEM

129

09429100 COLORADO RIVER BELOW PALO VERDE DAM, AZ-CA

**LOCATION.**--Lat 33°43'10", long 114°29'50", in NE1/4 sec.2, T.4 N., R.22 W., Gila and Salt River meridian, in Riverside County, California. Hydrologic Unit 15030104 on right bank 1.2 mi downstream from Palo Verde Diversion Dam, 9.5 mi northeast of Blythe, Ca and 11.0 mi upstream from Ehrenberg, Az.

**DRAINAGE AREA.**--186,200 mi<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, which is noncontributing.

**PERIOD OF RECORD.**--March 1956 to March 1969, October 1988 to current year. If records for the two Colorado River Indian Reservation drains entering below Palo Verde Dam are subtracted from records for this station, records equivalent to those published 1969-1988 as "Colorado River at Palo Verde Dam" can be obtained.

**GAGE.**--Water-stage recorder. Datum of gage is 260.00 ft above sea level. March 1956 to March 1969, at site 120 ft upstream at same datum.

**REMARKS.**--Records fair. Many diversions above station for irrigation, municipal, and industrial uses. Flow regulated by Lake Mead, Lake Mohave, and Lake Havasu.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 24,300 ft<sup>3</sup>/s Mar. 21, 1958; maximum gage height, 17.94 ft May 4, 1958; minimum daily discharge, 875 ft<sup>3</sup>/s Jan. 9, 1995

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Maximum daily discharge, 42,300 ft<sup>3</sup>/s June 30, 1983.

**EXTREMES FOR CURRENT YEAR.**--Maximum discharge, 16,300 ft<sup>3</sup>/s Jan. 1, gage height, 10.27 ft; minimum daily, 3,640 ft<sup>3</sup>/s Jan. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10200	9670	12200	12500	6440	8680	8140	11100	10000	10400	10100	9040
2	8890	10100	12200	10800	6400	8540	7930	11500	8680	8710	9920	9640
3	8900	9610	12200	10500	6040	8750	8230	11600	9250	10800	7910	7560
4	9940	9460	12100	12000	6240	7230	8720	9020	6640	10200	9310	8520
5	9610	9050	12200	11800	4690	7160	9080	9050	12000	10700	10000	9880
6	9510	7860	12400	12600	6180	8290	8290	8940	10600	10900	7490	9580
7	9780	9110	13400	11800	5510	9040	8180	e10500	12200	10700	9500	9740
8	8550	9720	15500	14300	5400	9150	7300	e10000	11800	10100	9980	10100
9	7870	10100	15100	14600	4710	8170	6700	e10500	11800	9810	9480	10900
10	9170	9630	13900	13600	3990	8090	9470	e11400	9190	11100	9350	7910
11	9530	9410	14700	13600	5350	8000	11000	e11800	7400	10700	9780	9780
12	9550	8820	15300	13400	6270	7230	10400	e11900	10300	10600	8270	11200
13	9290	7800	15600	13400	6470	7900	10800	10800	11200	10400	7100	9620
14	8840	9380	15500	12200	7380	8520	10400	12100	11600	9060	9580	11500
15	7700	9650	15400	11200	9370	8980	10400	10100	11100	8280	8580	11100
16	7740	9840	15400	7780	8760	8820	8370	10200	8620	7490	8440	11000
17	9180	9800	12500	6870	6070	7950	10100	10800	10500	9830	7590	10200
18	9810	9710	14700	5630	8090	7800	11000	10100	7420	9630	7500	11300
19	9760	9470	15100	5560	7270	7330	12000	11100	10100	9680	7880	12200
20	8800	8770	15300	4220	8890	9380	11900	9870	10200	9130	6830	11800
21	9160	10200	14600	3640	8980	10900	11500	9700	11100	10200	8340	11900
22	8320	9860	14100	3840	8130	11100	11000	10400	11500	9150	8520	12200
23	7690	9990	14100	4700	9220	10300	9890	10200	10700	9290	8610	12200
24	9450	11300	14400	5750	9120	9520	11500	9760	9750	10700	7170	10400
25	9540	11800	15100	5740	7400	9000	12800	9190	8650	11000	7280	13000
26	9840	11200	15300	5020	7840	7450	12630	8970	10500	10900	6270	13200
27	9560	11600	15200	5400	8580	9250	12000	9730	10500	12200	7070	13600
28	9340	11700	14900	5330	9710	9740	11200	9210	10500	10800	7670	12200
29	9050	11700	13600	5790	---	9260	10100	9280	10800	10600	8120	11900
30	7620	12300	13400	5510	---	10300	10500	10100	9990	6250	8310	11900
31	9440	---	12200	6090	---	9780	---	10300	---	8610	8220	---
TOTAL	281630	298610	437600	275170	198500	271610	301650	319220	306090	307820	260270	325070
MEAN	9085	9954	14120	8876	7089	8762	10062	10300	10200	9930	8196	10840
MAX	10200	12300	15600	14600	9710	11100	12800	12100	12200	12200	10100	13600
MIN	7620	7800	12100	3640	3990	7160	6700	8940	6540	6250	6270	7560
AC-FT	558600	592300	868000	545800	393700	538700	598100	633200	607100	610600	516200	644800
CAL YR 1998	TOTAL	4319310	MEAN	11830	MAX	16800	MIN	5650	AC-FT	8567000		
WTR YR 1999	TOTAL	3583240	MEAN	9817	MAX	15600	MIN	3640	AC-FT	7107000		

e Estimated

## COLORADO RIVER MAIN STEM

## 00429480 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.8 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<sup>2</sup>, approximately, including 3,969 mi<sup>2</sup> 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 October 1942 to September 1979). Prior to October 1942 published as "near Picacho, Ca." October 1942 to September 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 Mitrity Lake (sta 09522400). Records for 1903-34 and for October 1942 to September 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 October 1960 to September 1979 are based on combined monthly total flow of same stations on which daily flows are currently based. Records for July 1934 to September 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 Mitrity 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 Mitrity Lake furnished by Imperial Irrigation District and contents of Senator Wash Reservoir furnished by Bureau of Reclamation.

**EXTREMES FOR PERIOD OF 1934-99.**--Maximum discharge, 40,800 ft<sup>3</sup>/s Sept. 5, 1939; minimum, 538 ft<sup>3</sup>/s Aug. 3, 1934; minimum daily since regulation of Hoover Dam began, 1,450 ft<sup>3</sup>/s Feb. 17, 1935.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12300	9480	12600	16000	6190	9520	10800	10600	11000	11700	7590	8220
2	12300	10400	12600	14900	6640	10400	9920	10300	10700	11300	9090	8400
3	11300	10800	12900	14300	6760	10000	9250	11600	10700	10400	10200	9560
4	9880	11000	13300	13100	6780	9970	9190	12100	9780	9700	10000	9230
5	10200	10700	13100	11800	6740	9750	9210	11800	8620	10800	9840	8390
6	10700	10600	13200	12800	6330	9020	9570	11300	8450	11600	9740	9060
7	10700	9600	13000	12500	5800	8530	9770	10700	11300	11300	9690	9660
8	10500	9430	13200	12600	6080	9550	9330	10200	12300	11600	8820	10300
9	10600	10200	14100	12500	5780	9960	9320	9960	11900	11600	9820	9920
10	9220	10800	15000	13500	5850	10300	9160	11200	12100	10800	10000	10400
11	9360	10800	15700	13700	5700	9920	8290	11700	10900	10900	10100	10400
12	10200	10700	15300	13700	5460	9410	10300	12100	10100	10900	10000	9030
13	10800	10300	15500	14000	6100	8570	10700	12000	9740	11200	9560	10300
14	10500	9360	16200	13800	5980	8950	11200	11100	10300	11000	8210	11100
15	10400	9100	16600	13800	7790	9450	11600	10500	10600	10500	7550	10600
16	9680	9950	16900	12900	8120	9850	11000	11500	11500	9140	8800	11300
17	8390	10400	16800	11400	9290	9950	10600	11100	11800	8560	8960	11500
18	9150	11100	16500	8370	9490	10300	9840	11500	11200	8100	8890	11000
19	10200	10900	15700	7320	8280	10200	11600	11700	9970	9660	8640	10800
20	10600	10700	15300	7160	7980	9640	12300	11500	8890	9970	8300	11700
21	10500	10500	15900	6920	8200	9140	12200	11300	11200	10200	7160	12300
22	9900	10100	16200	5670	9070	10500	12600	10100	11200	10900	7130	12200
23	9790	11100	16100	5400	9530	10800	12400	9640	11400	10700	8230	12300
24	9040	10800	15800	5140	9760	11100	11600	10500	11300	10300	8800	12300
25	9210	11400	15200	5920	10000	11000	10900	10800	11200	9810	8790	12200
26	10200	11700	15700	6250	9510	10600	12100	10400	10300	11400	8980	11900
27	10300	11900	15800	6040	9100	9710	12100	10900	9580	11100	8060	13100
28	10700	12000	16200	5910	8550	9070	12400	10500	10800	10800	7150	14700
29	10500	12000	16800	5760	---	9910	12100	9820	11200	11000	6600	14200
30	9980	11900	16800	5620	---	10500	11900	9100	11300	10300	7900	13400
31	9240	---	16400	5810	---	10900	---	10400	---	9400	8220	---
TOTAL	316340	319720	470400	314590	210860	306470	323250	337920	321330	326640	270820	329470
MEAN	10200	10660	15170	10150	7531	9886	10780	10900	10710	10540	8736	10980
MAX	12300	12000	16900	16000	10000	11100	12600	12100	12300	11700	10200	14700
MIN	8390	9100	12600	5140	5460	8530	8290	9100	8450	8100	6600	8220
AC-FT	627500	634200	933000	624000	418200	607900	641200	670300	637400	647900	537200	653500
(*)	8160	8686	6975	8821	8416	7716	5950	6472	7737	8825	7452	8503
(**)	922	793	871	984	889	984	952	922	952	922	922	893
CAL YR 1998	TOTAL 4559990	MEAN 12490	MAX 18100	MIN 6010	AC-FT 9045000	(**) 11190						
WTR YR 1999	TOTAL 3847810	MEAN 10540	MAX 16900	MIN 5140	AC-FT 7632000	(**) 11010						

(\*) Monthend contents, in acre-feet, for Senator Wash Reservoir.  
(\*\*) Diversion, in acre-feet, to Mitrity Lake (09522400).



## WATER-QUALITY RECORDS

REMARKS --No record for specific conductance from Oct. 1 to Dec. 4 due to equipment failure. No record for temperature from Oct. 1 to Jan. 8 and from Aug. 6 to Sept. 30 due to equipment failure. More than 10% missing record.

[illegible]

[illegible][illegible][illegible]

09429490 COLORADO RIVER ABOVE IMPERIAL DAM. AZ-CA--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
	101060	01065	01145	01075	01080	01085	01090	22703	00681	00689	
DEC 15...	5.4	2.1	1	<1.0	1060	<10	1.1	4.2	2.6	.70	6
16...	--	--	--	--	--	--	--	--	--	--	4
MAR 24...	6.0	2.0	2	<1.0	1040	<10	6.9	4.0	2.6	.20	51
24...	--	--	--	--	--	--	--	--	--	--	54
APR 23...	--	--	1	--	1010	<10	--	--	2.5	.40	32
28...	--	--	--	--	--	--	--	--	--	--	34
MAY 26...	--	--	2	--	1060	<10	--	--	2.5	.30	55
26...	--	--	3	--	1070	<10	--	--	2.5	.30	--
JUN 30...	5.8	2.2	2	<1.0	1020	<10	1.5	3.8	2.8	.20	49
30...	--	--	--	--	--	--	--	--	--	--	49
AUG 25...	6.0	3.0	1	<1.0	1060	<10	6.7	3.4	2.7	.30	66
25...	--	--	--	--	--	--	--	--	--	--	69
DATE	SEDI- MENT, DIS- SUS- PENDED (MG/L) (30154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T DAY) (30155)	O-18 / O-16 STABLE RATIO PER MIL (30035)	H-2 / H-1 STABLE RATIO PER MIL (32032)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	BEN- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)
DEC 16...	158	15900	-10.54	-102.8	<.0020	<.002	E.003	<.0020	<.0010	<.0020	<.0020
16...	379	16900	--	--	--	--	--	--	--	--	--
MAR 24...	37	1130	-12.62	-102.6	<.0020	<.002	<.001	<.0020	<.0010	<.0020	<.0020
24...	31	946	--	--	--	--	--	--	--	--	--
APR 28...	62	1930	--	--	<.0020	<.002	<.001	<.0020	<.0010	<.0020	<.0020
28...	55	1750	--	--	--	--	--	--	--	--	--
MAY 26...	26	751	-12.57	-101.0	<.0020	<.002	<.001	<.0020	<.0010	<.0020	<.0020
26...	28	808	--	--	<.0020	<.002	E.003	<.0020	<.0010	<.0020	<.0020
JUN 30...	19	585	-12.57	-102.1	<.0020	<.002	.005	<.0020	<.0010	<.0020	<.0020
30...	51	1570	--	--	--	--	--	--	--	--	--
AUG 25...	13	318	-12.49	-101.4	<.0020	<.002	.006	<.0020	<.0010	<.0020	<.0020
25...	9	220	--	--	--	--	--	--	--	--	--
DATE	CAP- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82630)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CVANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P,P'- DDE DISSOLV (UG/L) (34653)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)
DEC 16...	<.0030	<.0030	<.0040	<.0040	<.0020	<.0060	<.002	a115	<.001	<.0030	<.0170
16...	--	--	--	--	--	--	--	--	--	--	--
MAR 24...	<.0030	E.0282	<.0040	<.0040	<.0020	<.0060	E.003	a90.8	<.001	<.0030	<.0170
24...	--	--	--	--	--	--	--	--	--	--	--
APR 28...	<.0030	<.0030	<.0040	<.0040	<.0020	<.006					

## COLORADO RIVER MAIN STEM

00429490 COLORADO RIVER ABOVE IMPERIAL DAM, AZ-CA--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	PONOPOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)
DEC											
16...	<.0050	<.0040	<.0030	<.0030	<.0020	a75.3	<.004	<.0020	<.005	<.0060	<.004
16...	--	--	--	--	--	--	--	--	--	--	--
MAR											
24...	.0082	<.0040	<.0030	<.0030	<.0020	a87.0	<.004	<.0020	E.005	<.0060	<.004
24...	--	--	--	--	--	--	--	--	--	--	--
APR											
28...	<.0020	<.0040	<.0030	<.0030	<.0020	a71.1	<.004	<.0020	<.005	<.0060	<.004
28...	--	--	--	--	--	--	--	--	--	--	--
MAY											
25...	.0080	<.0040	<.0030	<.0030	<.0020	a109	<.004	<.0020	<.005	<.0060	<.004
26...	.0047	<.0040	<.0030	<.0030	<.0020	a103	<.004	<.0020	<.005	<.0060	<.004
JUN											
30...	<.0020	<.0040	<.0030	<.0030	<.0020	a89.8	<.004	<.0020	<.005	<.0060	<.004
30...	--	--	--	--	--	--	--	--	--	--	--
AUG											
25...	<.0020	<.0040	<.0030	<.0030	<.0020	a101	<.004	<.0020	<.005	<.0060	<.035
25...	--	--	--	--	--	--	--	--	--	--	--
DATE	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	PEND1- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)
DEC											
16...	<.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
16...	--	--	--	--	--	--	--	--	--	--	--
MAR											
24...	E.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
24...	--	--	--	--	--	--	--	--	--	--	--
APR											
28...	<.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
28...	--	--	--	--	--	--	--	--	--	--	--
MAY											
25...	<.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
26...	<.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
JUN											
30...	<.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	<.0180	<.0030	<.0070
30...	--	--	--	--	--	--	--	--	--	--	--
AUG											
25...	<.002	<.0040	<.0030	<.004	<.0040	<.0040	<.0050	<.0020	E.0080	<.0030	<.0070
25...	--	--	--	--	--	--	--	--	--	--	--
DATE	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TERBUTH YLAZINE SURROGT WAT FLT 0.7 U GF, REC PERCENT (91064)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	
DEC											
16...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	a96.5	<.0020	<.0010	<.0020	
16...	--	--	--	--	--	--	--	--	--	--	
MAR											
24...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	a98.4	<.0020	<.0010	<.0020	
24...	--	--	--	--	--	--	--	--	--	--	
APR											
28...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	a82.6	<.0020	<.0010	<.0020	
28...	--	--	--	--	--	--	--	--	--	--	
MAY											
26...	<.0040	<.500	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020	
26...	<.0040	<.500	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020	
JUN											
30...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020	
30...	--	--	--	--	--	--	--	--	--	--	
AUG											
25...	<.0040	<.0130	.0065	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020	
25...	--	--	--	--	--	--	--	--	--	--	

&lt; Actual value is known to be less than the value shown.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

a Listed values are recovery percentages for the indicated compounds. These compounds are added to the sample to determine the relative recovery of other organic compounds that are detected using the same analytical method.

COLORADO RIVER MAIN STEM

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09429480 COLORADO RIVER ABOVE IMPERIAL DAM, AZ-CA-Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Water-quality measurements in the following table were made as part of the National Stream-Quality Accounting Network. The following analyses are quality-assurance samples processed during the 1999 sampling period and are defined in the introductory text section titled "Water-Quality Control Data".

DATE	TIME	QUALITY ASSURANCE SAMPLE (TYPE)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM DIS-SOLVED (MG/L AS MG) (00925)	SODIUM DIS-SOLVED (MG/L AS NA) (00930)	SILICA DIS-SOLVED (MG/L AS SiO2) (00955)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOSPHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)
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MAR 24...	1008	FIELD BLANK	<.002	<.001	<.025	<.020	<.001	<.005	<.002	.001	.00
JUN 30...	0938	FIELD BLANK	<.002	<.001	<.025	<.020	<.001	<.005	.006	.001	.00
AUG 25...	0933	FIELD SPIKE	--	--	--	--	--	--	--	--	--

DATE	ALUMINUM, DIS-SOLVED (UG/L AS AL) (01106)	ANTIMONY, DIS-SOLVED (UG/L AS SB) (01095)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYLLIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)
------	---	---	---	--	---------------------------------------	--	---	---	---	---------------------------------------	---------------------------------------	--

MAR 24...	<.30	<.20	<.20	<.20	<.20	<.30	<.20	<.20	<.20	<.30	<.30	<.10
JUN 30...	<.30	<.20	<.20	<.20	<.20	<.30	<.20	<.20	<.20	<.30	<.30	<.10
AUG 25...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	MOLYBDENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRONTIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	URANIUM, NATURAL, DIS-SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC, DIS-SOLVED (MG/L AS C) (00631)	CARBON, ORGANIC, SUSPENDED, TOTAL (MG/L AS C) (00689)	ACETONE, CHLOR, WATER, REC (UG/L) (49260)	ALANINE, CHLOR, WATER, REC (UG/L) (46342)	ATRAZINE, CHLOR, WATER, REC (UG/L) (39632)	DEETHYL ATRAZINE, CHLOR, WATER, REC (UG/L) (04040)
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MAR 24...	<.20	<.50	<.20	<.10	<.50	<.20	<.10	<.20	--	--	--	--
JUN 30...	<.20	<.50	<.20	<.10	<.50	<.20	<.10	<.20	--	--	--	--
AUG 25...	--	--	--	--	--	--	--	--	.136	.137	.101	E.0590

DATE	METHYL AZINE, PHOS, WAT FLT 0.7 U GF, REC (UG/L) (82686)	BENFLURALIN, WAT FLT 0.7 U GF, REC (UG/L) (82673)	BUTYLATE, WATER, DISS, 0.7 U GF, REC (UG/L) (04028)	CARBARYL, WATER, FLTRD, 0.7 U GF, REC (UG/L) (82680)	CARBOPURAN, WATER, FLTRD, 0.7 U GF, REC (UG/L) (82674)	CHLORPYRIFOS, WATER, DISS, 0.7 U GF, REC (UG/L) (38933)	CYANAZINE, WATER, DISS, 0.7 U GF, REC (UG/L) (04041)	DOPA, WATER, FLTRD, 0.7 U GF, REC (UG/L) (82682)	P,P'-DDE, WATER, DISSOLV, 0.7 U GF, REC (UG/L) (34653)	DI-ALANINE, WATER, FLTRD, 0.7 U GF, REC (UG/L) (39572)	DIAZINON, WAT FLT 0.7 U GF, REC (UG/L) (91063)	DIAZINON, WAT FLT 0.7 U GF, REC (UG/L) (39381)
------	--	---	---	--	--	---	--	--	--	--	--	--

MAR 24...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 30...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 25...	E.202	.0925	.114	E.128	E.137	.100	.133	.114	.0724	.109	a.117	.118

DATE	2,6-DIBETHYL ANILINE, WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISULFOTON, WATER, FLTRD, 0.7 U GF, REC (UG/L) (82677)	EPTC, WATER, FLTRD, 0.7 U GF, REC (UG/L) (82668)	ETHALFLURALIN, WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHOPROP, WATER, FLTRD, 0.7 U GF, REC (UG/L) (82672)	PONOFOS, WATER, DISS, 0.7 U GF, REC (UG/L) (04095)	ALPHA BHC, WATER, DISS, 0.7 U GF, REC (UG/L) (34253)	HCH ALPHA, WAT FLT 0.7 U GF, REC (UG/L) (91055)	LINDANE, WATER, FLTRD, 0.7 U GF, REC (UG/L) (39341)	LINURON, WATER, FLTRD, 0.7 U GF, REC (UG/L) (82666)	MALATHION, WAT FLT 0.7 U GF, REC (UG/L) (39532)
------	--	--	--	---	--	--	--	---	---	---	---

MAR 24...	--	--	--	--	--	--	--	--	--	--	--
JUN 30...	--	--	--	--	--	--	--	--	--	--	--
AUG 25...	.0921	.0462	.113	.0678	.120	.113	.102	a.103	.106	.139	.119

## COLORADO RIVER MAIN STEM

09429490 COLORADO RIVER ABOVE IMPERIAL DAM, AZ-CA-Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	METHYL- PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METRI- BUZIN WATER DISSOLV (UG/L) (82630)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (9542)	FEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04017)
MAR 24...	--	--	--	--	--	--	--	--	--	--	--
JUN 30...	--	--	--	--	--	--	--	--	--	--	--
AUG 25...	.115	.133	.132	.111	E.149	.115	.109	.103	E.0753	.0543	.108
DATE	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (92670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
MAR 24...	--	--	--	--	--	--	--	--	--	--	--
JUN 30...	--	--	--	--	--	--	--	--	--	--	--
AUG 25...	.116	E.138	E.138	E.136	.103	E.142	E.148	.0809	.119	.116	.101

&lt; Actual value is known to be less than the value shown.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

a Listed values are recovery percentages for the indicated compounds. These compounds are added to the sample to determine the relative recovery of other organic compounds that are detected using the same analytical method.

COLORADO RIVER MAIN STEM

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09429490 COLORADO RIVER ABOVE IMPERIAL DAM, AZ-CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	---	---	---	---	---	---	---	---	
2	---	---	---	---	---	---	---	---	---	---	---	
3	---	---	---	---	---	---	---	---	---	---	---	
4	---	---	---	---	---	---	---	---	---	---	---	
5	---	---	---	---	---	---	---	---	---	---	---	
6	---	---	---	---	---	---	---	---	---	---	---	
7	---	---	---	---	---	---	---	---	---	---	---	
8	---	---	---	---	---	---	---	---	---	---	---	
9	---	---	---	---	---	---	---	---	11.2	10.8	10.9	
10	---	---	---	---	---	---	---	---	10.9	10.5	10.7	
11	---	---	---	---	---	---	---	---	11.2	10.6	10.8	
12	---	---	---	---	---	---	---	---	11.5	11.0	11.2	
13	---	---	---	---	---	---	---	---	11.8	11.3	11.5	
14	---	---	---	---	---	---	---	---	11.9	11.4	11.6	
15	---	---	---	---	---	---	---	---	11.7	11.3	11.5	
16	---	---	---	---	---	---	---	---	12.0	11.5	11.7	
17	---	---	---	---	---	---	---	---	12.2	11.5	11.8	
18	---	---	---	---	---	---	---	---	13.0	11.9	12.3	
19	---	---	---	---	---	---	---	---	13.5	12.5	13.0	
20	---	---	---	---	---	---	---	---	14.2	13.0	13.6	
21	---	---	---	---	---	---	---	---	14.5	13.7	14.1	
22	---	---	---	---	---	---	---	---	14.2	13.5	13.8	
23	---	---	---	---	---	---	---	---	13.9	13.3	13.6	
24	---	---	---	---	---	---	---	---	13.7	13.3	13.5	
25	---	---	---	---	---	---	---	---	13.6	13.0	13.3	
26	---	---	---	---	---	---	---	---	13.0	12.0	12.5	
27	---	---	---	---	---	---	---	---	13.0	12.2	12.7	
28	---	---	---	---	---	---	---	---	12.6	11.9	12.1	
29	---	---	---	---	---	---	---	---	13.2	11.4	11.9	
30	---	---	---	---	---	---	---	---	12.5	11.5	12.0	
31	---	---	---	---	---	---	---	---	12.7	11.7	12.2	
MONTH	---	---	---	---	---	---	---	---	14.5	10.5	12.3	
FEBRUARY			MARCH			APRIL			MAY			
1	13.1	12.2	12.6	16.0	15.3	15.7	17.5	15.8	16.5	18.6	17.1	17.8
2	13.3	12.5	12.9	16.5	15.6	16.0	16.3	15.4	15.9	19.7	18.3	18.8
3	13.5	12.4	12.9	16.8	16.2	16.5	16.5	15.6	16.2	19.7	18.9	19.4
4	13.0	12.5	12.8	17.1	16.4	16.7	16.1	14.9	15.3	19.7	18.3	18.9
5	13.1	12.1	12.5	16.9	16.2	16.6	16.1	15.1	15.6	20.4	19.0	19.6
6	13.5	12.5	12.9	17.5	16.6	17.0	17.1	15.8	16.5	21.6	20.0	20.7
7	14.2	13.0	13.6	16.7	15.7	16.3	17.3	15.8	17.0	22.2	21.3	21.8
8	15.0	13.8	14.4	15.9	15.3	15.6	17.6	15.6	17.1	22.8	22.0	22.4
9	15.8	14.4	15.0	15.8	15.3	15.5	17.4	16.4	16.9	22.5	21.9	22.2
10	15.8	14.2	14.9	16.2	15.2	15.7	17.8	16.5	17.1	22.2	21.4	21.7
11	14.2	12.4	13.1	16.3	15.4	15.8	18.3	16.6	17.4	22.6	21.7	22.1
12	12.4	11.7	11.9	16.0	15.2	15.5	17.9	17.3	17.6	23.2	22.3	22.6
13	12.2	11.4	11.8	16.3	15.3	15.7	18.2	16.6	17.5	22.9	22.4	22.7
14	12.8	11.6	12.2	16.7	15.7	16.2	19.1	17.9	18.5	23.1	22.4	22.7
15	13.8	12.5	13.1	16.7	15.8	16.2	19.4	18.7	19.0	22.8	22.2	22.5
16	14.3	13.2	13.7	16.8	15.9	16.4	19.6	18.9	19.1	22.5	21.7	22.1
17	14.3	13.5	13.9	16.8	16.2	16.5	20.0	18.6	19.2	23.3	22.4	22.7
18	14.8	13.9	14.4	17.1	16.4	15.7	20.6	19.6	20.1	23.7	23.0	23.3
19	15.7	14.2	14.8	17.8	16.7	17.2	20.9	20.0	20.4	24.0	23.1	23.5
20	15.6	14.8	15.2	18.6	17.4	17.9	21.1	20.5	20.7	24.1	23.3	23.7
21	15.5	14.7	15.1	18.6	17.7	18.1	20.9	20.3	20.6	23.8	23.2	23.5
22	14.7	14.0	14.4	18.2	17.5	17.9	21.1	20.2	20.8	23.6	23.1	23.4
23	14.5	13.7	14.1	18.0	17.4	17.7	20.5	19.7	20.1	23.7	23.1	23.3
24	14.9	14.1	14.3	18.0	17.2	17.6	20.2	19.5	19.8	23.9	23.2	23.5
25	15.1	14.1	14.6	18.2	17.7	18.0	20.3	19.6	20.0	24.8	23.8	24.2
26	15.5	14.6	15.0	18.3	17.8	18.0	20.9	19.9	20.4	25.4	24.5	24.9
27	16.0	14.9	15.4	18.5	17.7	18.2	21.4	20.6	21.0	26.2	25.2	25.6
28	15.9	15.1	15.5	19.0	18.3	18.5	21.4	19.9	20.9	26.5	25.5	26.0
29	---	---	---	19.3	18.4	18.7	19.9	18.7	19.4	26.5	25.4	25.9
30	---	---	---	19.5	18.8	19.1	18.7	17.4	18.0	25.5	24.5	25.0
31	---	---	---	18.9	17.5	18.3	---	---	---	25.0	24.0	24.5
MONTH	16.0	11.4	13.8	19.5	15.2	17.0	21.4	14.9	18.5	26.5	17.1	21.6

## COLORADO RIVER MAIN STEM

## 09429490 COLORADO RIVER ABOVE IMPERIAL DAM, AZ-CA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	24.8	23.1	23.9	28.4	27.6	27.9	29.2	28.1	28.7	---	---	---
2	23.7	23.1	23.3	28.0	27.4	27.7	29.3	28.4	28.9	---	---	---
3	23.4	22.5	22.9	27.8	27.0	27.4	29.2	28.1	28.7	---	---	---
4	22.6	21.3	21.8	27.7	26.9	27.4	29.1	28.4	28.8	---	---	---
5	22.3	21.0	21.6	27.6	26.8	27.2	29.6	28.5	28.9	---	---	---
6	23.4	22.0	22.7	28.2	27.4	27.8	---	---	---	---	---	---
7	24.0	22.8	23.2	27.9	27.5	27.7	---	---	---	---	---	---
8	24.2	23.5	23.8	28.2	27.6	27.9	---	---	---	---	---	---
9	24.2	23.2	23.8	28.7	27.4	27.9	---	---	---	---	---	---
10	24.4	23.6	24.0	29.2	28.0	28.6	---	---	---	---	---	---
11	25.0	23.7	24.2	29.8	28.7	29.1	---	---	---	---	---	---
12	25.8	24.6	25.2	29.3	28.6	29.1	---	---	---	---	---	---
13	26.3	25.5	25.9	29.5	28.4	28.9	---	---	---	---	---	---
14	26.5	25.5	26.1	29.4	28.6	29.0	---	---	---	---	---	---
15	26.4	25.7	26.0	29.6	28.6	29.2	---	---	---	---	---	---
16	26.1	25.3	25.8	30.0	29.1	29.5	---	---	---	---	---	---
17	26.3	25.5	25.9	30.0	29.2	29.6	---	---	---	---	---	---
18	26.7	25.9	26.4	29.7	28.8	29.3	---	---	---	---	---	---
19	27.3	25.9	26.5	29.1	28.3	28.7	---	---	---	---	---	---
20	27.8	27.0	27.4	29.2	28.3	28.7	---	---	---	---	---	---
21	27.1	26.1	26.8	28.9	28.1	28.5	---	---	---	---	---	---
22	26.6	25.8	26.2	29.2	28.2	28.7	---	---	---	---	---	---
23	26.4	25.7	26.1	29.1	28.1	28.6	---	---	---	---	---	---
24	26.8	26.0	26.4	29.8	28.3	29.0	---	---	---	---	---	---
25	27.1	26.3	26.7	29.3	28.6	29.0	---	---	---	---	---	---
26	27.5	26.4	26.9	29.8	28.6	29.2	---	---	---	---	---	---
27	27.5	26.7	27.0	29.3	28.1	28.8	---	---	---	---	---	---
28	27.2	26.7	27.0	28.1	27.7	27.9	---	---	---	---	---	---
29	27.8	26.8	27.3	27.9	26.9	27.4	---	---	---	---	---	---
30	28.1	27.1	27.6	28.6	27.5	28.0	---	---	---	---	---	---
31	---	---	---	29.2	28.1	28.6	---	---	---	---	---	---
MONTH	28.1	21.0	25.3	30.0	26.8	28.5	29.6	28.1	28.8	---	---	---

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	---	---	---	---	---	---	1030	993	---
2	---	---	---	---	---	---	---	---	---	1010	960	---
3	---	---	---	---	---	---	---	---	---	1060	981	---
4	---	---	---	---	---	---	---	---	---	1050	1030	---
5	---	---	---	---	---	---	1080	1060	---	1030	978	---
6	---	---	---	---	---	---	1070	1060	---	988	953	---
7	---	---	---	---	---	---	1070	1060	---	1090	1030	---
8	---	---	---	---	---	---	1080	1060	---	1070	1000	---
9	---	---	---	---	---	---	1050	1020	---	1080	966	1020
10	---	---	---	---	---	---	1050	1030	---	1020	966	996
11	---	---	---	---	---	---	1070	1050	---	1040	993	1020
12	---	---	---	---	---	---	1060	1040	---	1040	1000	1020
13	---	---	---	---	---	---	1040	1030	---	1020	1000	1010
14	---	---	---	---	---	---	1030	1020	---	1020	1000	1010
15	---	---	---	---	---	---	1050	1030	---	1030	1000	1010
16	---	---	---	---	---	---	1020	989	---	1130	1020	1080
17	---	---	---	---	---	---	1030	1020	---	1150	1010	1080
18	---	---	---	---	---	---	1100	1020	---	1170	1140	1160
19	---	---	---	---	---	---	1050	994	---	1180	1130	1160
20	---	---	---	---	---	---	1010	974	---	1200	1150	1170
21	---	---	---	---	---	---	1020	996	---	1180	1130	1150
22	---	---	---	---	---	---	1030	958	---	1260	1140	1190
23	---	---	---	---	---	---	1050	1030	---	1290	1240	1260
24	---	---	---	---	---	---	1040	1030	---	1300	1270	1280
25	---	---	---	---	---	---	1030	1020	---	1270	1230	1240
26	---	---	---	---	---	---	1020	1000	---	1230	1140	1170
27	---	---	---	---	---	---	1000	974	---	1190	1140	1170
28	---	---	---	---	---	---	1010	980	---	1260	1180	1210
29	---	---	---	---	---	---	1000	979	---	1260	1180	1210
30	---	---	---	---	---	---	1010	993	---	1220	1180	1190
31	---	---	---	---	---	---	1040	984	---	1220	1160	1180
MONTH	---	---	---	---	---	---	1100	958	---	1300	953	---



**COLORADO RIVER MAIN STEM**

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**09429490 COLORADO RIVER ABOVE IMPERIAL DAM, AZ-CA--Continued**

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	1230	1180	1200	1130	1040	1090	1080	983	1030	1170	1040	1110
2	1210	1160	1190	1100	1040	1070	1100	1000	1050	1070	1020	1050
3	1200	1140	1170	1140	1050	1090	1100	1030	1070	1110	1020	1060
4	1200	1130	1170	1130	1040	1070	1100	1030	1060	1100	1010	1050
5	1210	1160	1190	1120	1040	1060	1120	1010	1060	1110	1040	1070
6	1210	1150	1180	1180	1080	1140	1090	996	1040	1180	1080	1130
7	1250	1200	1230	1160	1060	1110	1060	986	1020	1170	1070	1120
8	1240	1170	1200	1150	1050	1100	1110	1020	1060	1180	1070	1120
9	1240	1180	1210	1150	998	1070	1100	1040	1080	1110	992	1060
10	1270	1220	1240	1080	998	1040	1130	1060	1100	1050	992	1020
11	1300	1250	1270	1100	1020	1050	1150	1040	1100	1090	1000	1040
12	1350	1260	1290	1080	982	1030	1070	1030	1050	1110	998	1060
13	1350	1240	1270	1080	982	1040	1070	1030	1050	1100	990	1040
14	1260	1170	1200	1080	1010	1050	1140	1020	1080	1120	990	1050
15	1220	1170	1190	1100	1010	1050	1120	1000	1060	1110	988	1050
16	1210	1140	1180	1090	994	1040	1110	1000	1070	1050	985	1010
17	1140	1090	1120	1080	998	1030	1160	1040	1110	1130	994	1050
18	1200	1100	1170	1080	991	1030	1130	1050	1130	1090	1000	1050
19	1240	1160	1210	1140	1030	1100	1140	1050	1080	1070	991	1030
20	1220	1120	1170	1180	1090	1140	1130	1010	1070	1100	996	1050
21	1190	1100	1140	1160	1030	1100	1100	1010	1060	1070	994	1030
22	1150	1090	1120	1120	1010	1070	1110	996	1050	1140	1020	1080
23	1170	1100	1130	1080	1010	1040	1110	1020	1060	1100	1000	1050
24	1180	1080	1140	1100	1020	1050	1150	1010	1080	1080	983	1030
25	1160	1080	1110	1150	1020	1080	1090	991	1040	1100	994	1040
26	1180	1080	1130	1160	1030	1100	1050	973	1010	1130	1020	1060
27	1200	1100	1150	1170	1060	1120	1060	979	1020	1180	1050	1110
28	1140	1080	1110	1190	1070	1130	1080	1000	1040	1170	1040	1110
29	---	---	---	1140	1030	1080	1150	1010	1060	1140	1030	1070
30	---	---	---	1140	1030	1080	1120	1030	1070	1150	1040	1080
31	---	---	---	1130	1010	1070	---	---	---	1140	1020	1070
MONTH	1350	1080	1180	1180	982	1080	1160	973	1060	1180	983	1040
	JUNE			JULY			AUGUST			SEPTEMBER		
1	1120	999	1060	1110	1020	1060	1210	1110	1160	1110	1030	1070
2	1120	1000	1060	1160	1020	1080	1130	1010	1080	1140	1060	1100
3	1140	1040	1080	1140	1030	1090	1090	1020	1060	1080	1010	1060
4	1160	1040	1100	1170	1030	1100	1090	1020	1070	1140	969	1090
5	1110	1050	1080	1090	1020	1050	1170	1060	1120	1120	1060	1100
6	1130	1060	1140	1110	1020	1060	1120	1030	1080	1100	1020	1070
7	1060	979	1010	1100	1000	1040	1110	1030	1080	1090	1010	1050
8	1130	999	1060	1090	1020	1050	1130	1050	1100	1080	1030	1050
9	1030	991	1010	1110	1010	1050	1080	1030	1050	1090	1020	1050
10	1080	977	1030	1140	1020	1100	1100	1030	1060	1080	1010	1040
11	1050	997	1030	1090	1010	1060	1090	1040	1060	1080	997	1030
12	1110	1030	1090	1090	1010	1050	1100	1030	1050	1100	1030	1070
13	1130	990	1060	1100	1020	1060	1080	1030	1050	1070	989	1030
14	1100	984	1030	1090	1010	1050	1150	1030	1100	1050	990	1030
15	1080	984	1030	1110	1030	1070	1170	1040	1120	1070	983	1030
16	1070	1000	1030	1160	1060	1110	1080	1040	1060	1060	981	1020
17	1100	1010	1050	1180	1080	1140	1100	1040	1080	1060	988	1020
18	1110	997	1050	1190	1080	1130	1100	1060	1080	1070	990	1040
19	1110	1000	1070	1090	1030	1060	1120	1070	1090	1030	985	1010
20	1170	1020	1100	1120	1030	1070	1130	1070	1100	1020	958	989
21	1090	1000	1040	1080	1020	1050	1140	1060	1110	1040	965	999
22	1120	1000	1050	1120	1020	1070	1170	1050	1120	1050	971	1010
23	1100	994	1040	1090	1020	1060	1110	1040	1080	1040	969	1000
24	1070	1000	1040	1120	1040	1090	1100	1030	1060	1040	968	1000
25	1110	1000	1050	1080	1000	1050	1110	1030	1080	1060	974	1040
26	1140	1020	1090	1090	1010	1050	1150	1060	1120	1040	962	1000
27	1110	997	1050	1080	1000	1040	1150	1100	1120	1040	973	1010
28	1100	993	1030	1090	983	1040	1190	1100	1150	1040	983	1010
29	1090	992	1030	1030	982	1010	1150	1070	1130	1040	1000	1010
30	1090	1120	1050	1100	1010	1060	1120	1040	1080	1040	1020	1020
31	---	---	---	1110	1010	1060	1110	1030	1080	---	---	---
MONTH	1190	977	1050	1190	982	1070	1210	1010	1090	1140	958	1040

## COLORADO RIVER MAIN STEM

## 09429500 COLORADO RIVER BELOW IMPERIAL DAM, AZ-CA

**LOCATION.**--Forebay gage: Lat 32°52'59", long 114°27'57", in NW1/4SW1/4 sec.9, T.15 S., R.24 E., San Bernardino meridian, in Imperial County, California, Hydrologic Unit 15030107, near All-American Canal headworks at east (revised) end of Imperial Dam, 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<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, which is noncontributing.

**PERIOD OF RECORD.**--October 1960 to current year. Prior to October 1971 published as "at Imperial Dam." Records of flow reaching Imperial Dam, formerly published with this station, are now published separately as sta 09429490, "Colorado River above Imperial Dam."

**GAGE.**--Water-stage recorder in forebay, 12 calibrated gates on California sluiceway, 8 calibrated gates on Gila sluiceway, and calibrated manometer on each discharge pipe from desilting basin. Datum of forebay gage is 162.00 ft, U.S. Bureau of Reclamation datum. Prior to Aug. 21, 1991, forebay gage located at west end of Imperial Dam at same datum.

**REMARKS.**--No estimated daily discharges. Records good. Records of daily discharge show flow of Colorado River passing Imperial Dam, and include water released to river through California and Gila sluiceways, sludge from desilting basins returned to river, and leakage through dam. For records of flow reaching Imperial Dam see sta 09429490. Flow of Colorado Rivers regulated by many reservoirs, principally Lake Mead, since 1935. Many diversions from Colorado River and tributaries above station. Diversion to Mitry Lake and monthend contents of Senator Wash Reservoir also are published with sta 09429490.

**COOPERATION.**--Records of gate openings and sludge return flow from desilting basins furnished by Imperial Irrigation District.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum daily discharge, 30,200 ft<sup>3</sup>/s Aug. 18, 19, 1983; minimum daily, 27 ft<sup>3</sup>/s Dec. 15-18, 1969.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	390	1070	2310	5190	505	1070	390	701	410	410	410	400
2	390	1120	2310	2850	634	991	1120	1070	410	410	467	400
3	390	1480	2310	2610	642	550	467	1270	410	719	748	400
4	390	1450	2310	527	643	426	390	1150	410	675	410	400
5	391	1370	2310	410	1720	410	775	410	410	410	410	400
6	390	1450	2310	410	2380	410	1200	410	790	410	410	400
7	528	777	2310	410	2050	656	1160	410	2670	410	410	400
8	529	392	2310	410	2170	390	390	410	3490	410	410	400
9	532	392	2310	692	1570	453	390	410	3620	468	400	400
10	390	580	2380	1840	844	390	390	590	3500	410	400	400
11	392	580	3030	1010	290	390	390	537	2090	410	400	400
12	531	390	2740	1190	290	390	410	534	1780	410	400	400
13	531	390	3680	927	290	390	663	410	1780	410	400	400
14	390	390	2970	962	671	1410	449	410	1330	410	400	400
15	533	390	3440	1360	836	933	525	691	581	410	710	400
16	530	390	3720	596	290	714	702	814	410	410	673	400
17	390	578	3680	520	496	581	701	558	410	410	400	400
18	390	579	3650	410	291	390	700	410	410	410	582	400
19	531	578	3070	528	290	390	698	410	410	640	400	400
20	530	390	2990	412	290	390	696	410	410	442	400	400
21	390	390	2550	290	938	390	699	410	410	410	400	400
22	390	391	2550	290	305	390	699	410	410	410	624	400
23	390	579	2770	290	290	390	699	735	410	410	587	400
24	390	390	4180	347	290	390	698	627	410	410	633	400
25	390	788	5120	378	410	390	700	875	410	410	734	400
26	390	2290	3660	408	444	390	699	492	410	410	665	400
27	390	1990	3820	338	410	390	702	410	611	410	400	986
28	531	2220	3260	290	804	404	912	410	410	469	400	1390
29	531	2250	3790	363	---	390	774	410	410	1100	643	572
30	751	1960	4090	405	---	390	697	410	410	728	534	400
31	827	---	4630	1610	---	390	---	410	---	410	400	---
TOTAL	14438	27984	96460	28273	21083	16028	19885	17514	30032	14671	15260	13748
MEAN	466	933	3112	912	753	517	663	568	1001	473	492	458
MAX	827	2290	5120	5190	2380	1410	1200	1270	3620	1100	748	1390
MIN	390	390	2310	290	290	390	390	410	410	410	400	400
AC-FT	28640	55510	191300	56080	41820	31790	39440	34940	59570	29100	30270	27270
CAL YR	1998	TOTAL	772048	MEAN	2115	MAX	7560	MIN	390	AC-FT	1531000	
WTR YR	1999	TOTAL	315476	MEAN	864	MAX	5190	MIN	290	AC-FT	625700	

COLORADO RIVER MAIN STEM

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09429800 COLORADO RIVER BELOW LAGUNA DAM, AZ-CA

LOCATION.--Lat 32°48'44", long 114°30'51", in SE1/4NE1/4 sec.35, T.15 S., R.24 E., San Bernardino meridian, in Imperial County, California, Hydrologic Unit 15030107, on right bank 1.4 mi downstream from Laguna Dam, 2.8 mi northeast of Bards, Cal., and 10 mi northeast of Yuma, Az.

DRAINAGE AREA.--188,600 mi<sup>2</sup>, approximately, including 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming, which is noncontributing.

PERIOD OF RECORD.--December 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 120.81 ft above sea level (Bureau of Reclamation bench mark).

REMARKS.--Records fair. Natural flow of Colorado River at this point is affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals, diversions for irrigation, municipal, and industrial uses, and return flows from irrigated areas. Flow past station consists mainly of water released through Imperial Dam, sludge from the desilting basins at Imperial Dam, seepage through Imperial Dam, and seepage from the All-American Canal and the Gila Gravity Main Canal.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 30,900 ft<sup>3</sup>/s Aug. 19, 1983; minimum daily, 71 ft<sup>3</sup>/s May 29, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 5,810 ft<sup>3</sup>/s Dec. 5; minimum daily, 356 ft<sup>3</sup>/s Oct. 5

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	542	1100	2520	5150	708	1050	452	657	153	413	572	483
2	479	1280	2520	3220	684	1300	799	716	455	410	496	477
3	594	1730	2500	2920	736	628	652	833	450	443	624	471
4	415	1600	2480	914	647	498	488	1270	449	482	715	466
5	356	1520	2480	358	1680	454	611	573	446	521	769	465
6	529	1550	2480	407	2400	448	1050	631	533	523	416	458
7	789	1250	2470	404	2120	591	1260	484	1990	709	366	449
8	725	783	2490	399	2310	503	604	450	1210	373	396	461
9	667	556	2470	504	1610	484	484	161	1447	377	411	467
10	573	660	2480	1430	1110	486	649	486	1550	406	425	472
11	549	713	3140	1510	458	452	647	533	2230	412	429	478
12	607	688	3180	1170	418	447	490	457	1810	426	430	474
13	628	620	3900	848	413	447	450	468	1750	439	433	474
14	615	595	3500	930	623	397	417	451	1441	441	439	473
15	611	584	3740	1140	517	908	531	471	1115	443	472	470
16	664	577	4150	820	407	729	681	703	518	442	720	466
17	613	621	4240	515	455	633	602	525	444	441	485	470
18	574	677	4160	424	608	467	581	512	471	441	505	463
19	613	691	3420	390	637	444	570	484	141	455	475	467
20	671	654	3680	383	424	704	565	474	112	510	469	471
21	660	586	3210	390	436	594	563	472	445	466	468	484
22	586	561	3190	375	510	474	564	462	438	464	503	489
23	572	604	3420	361	428	415	575	511	134	463	569	499
24	579	625	4520	360	419	377	625	596	421	462	630	500
25	584	716	5810	378	417	402	633	677	417	461	788	499
26	590	2370	4590	433	427	414	630	542	413	579	513	497
27	593	2390	4100	441	445	419	633	498	414	619	470	666
28	660	2290	3990	426	652	424	706	481	418	493	459	1750
29	708	2420	4130	421	---	414	736	476	423	628	552	595
30	747	2440	4340	443	---	440	698	469	413	785	574	552
31	1140	---	4450	1150	---	450	---	451	---	591	548	---
TOTAL	19233	33551	107750	29014	22734	17493	18946	17304	26443	15118	16121	15906
MEAN	620	1118	3476	936	812	564	632	558	851	488	520	530
MAX	1140	2440	5810	5150	2400	1300	1260	1270	3447	785	788	1750
MIN	356	561	2470	358	407	377	417	457	113	373	356	449
AC-FT	38150	66550	213700	57550	45090	34700	37580	34320	55400	29930	31980	31550
CAL YR 1998	TOTAL	825378	MEAN	2266	MAX	8160	MIN	356	AC-FT	1540000		
WTR YR 1999	TOTAL	342613	MEAN	939	MAX	5810	MIN	356	AC-FT	679600		

## GILA RIVER BASIN

## 09430500 GILA RIVER NEAR GILA, NM

LOCATION.--Lat 33°03'40", long 108°32'12", in NE1/4NW1/4 sec.30, T.14 S., R.16 W., Grant County, Hydrologic Unit 15040001, on left bank at Hooker damsite, 1.6 mi upstream from Mogollon Creek, 7 mi northeast of Gila, and at mile 572.5.

DRAINAGE AREA.--1.864 mi<sup>2</sup>.

PERIOD OF RECORD.--April to December 1914, December 1927 to current year. Monthly discharge only December 1927 to September 1930, published in WSP 1313.

REVISED RECORDS.--WSP 1283: Drainage area. WSP 1313: 1944 (M), 1949 (M). WDR NM-78-1: 1977.

GAGE.--Water-stage recorder. Datum of gage is 4,854.8 ft above sea level, (river-profile survey). Prior to Dec. 31, 1928, at site 5 mi upstream at different datum. Dec. 31, 1928, to Jan. 7, 1942, at site 200 ft upstream at datum 1.00 ft higher. Prior to Feb. 28, 1994 at datum 1.00 ft higher.

REMARKS.--Records good. Diversions for irrigation of about 500 acres upstream from station. Several observations of water temperature were made during the year. National Weather Service satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Other major floods occurred in November 1905, December 1906, and January 1916.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	121	112	82	74	57	58	58	34	23	149	92
2	43	117	111	81	73	65	64	58	33	21	255	101
3	43	111	137	81	73	64	69	57	32	21	293	181
4	42	104	170	79	72	64	71	55	30	22	545	122
5	43	100	184	76	73	63	70	54	30	33	1320	97
6	43	94	173	76	75	64	67	53	29	35	2170	102
7	46	88	160	76	76	66	65	52	27	30	1070	102
8	46	86	144	77	74	69	60	51	27	27	659	91
9	47	90	128	77	72	67	59	49	26	31	528	86
10	46	100	120	76	71	65	59	47	24	35	610	105
11	45	96	117	76	71	64	60	46	23	36	782	97
12	46	91	112	76	70	63	61	44	23	37	508	90
13	46	96	107	76	69	63	61	44	27	36	358	86
14	46	103	104	76	68	62	63	44	29	44	273	182
15	46	96	102	75	69	61	65	43	27	43	260	188
16	46	94	99	74	70	61	62	42	27	40	226	191
17	46	92	98	74	a72	62	61	40	31	39	201	204
18	47	89	97	75	69	65	61	39	43	46	173	408
19	49	86	97	75	69	63	59	38	51	51	149	380
20	49	84	97	75	67	62	56	39	53	56	133	283
21	54	83	93	75	64	61	55	38	67	92	115	230
22	55	82	91	76	64	59	56	37	52	178	103	207
23	57	81	88	78	66	61	56	36	48	197	96	178
24	57	80	88	74	65	61	56	37	44	211	103	163
25	57	79	83	75	65	60	57	36	37	184	103	148
26	67	77	a79	75	66	61	58	37	32	170	97	135
27	130	77	82	74	67	62	57	36	29	153	97	123
28	290	76	83	74	68	59	58	37	26	144	119	112
29	195	96	83	74	---	58	60	41	23	121	125	103
30	147	120	82	74	---	59	58	38	23	107	106	97
31	129	---	82	74	---	58	---	36	---	97	93	---
TOTAL	2146	2789	3401	2356	1952	1944	1822	1362	1007	2360	11819	4684
MEAN	69.2	93.0	110	76.0	69.7	62.7	60.7	43.9	33.6	76.1	381	156
MAX	290	121	184	82	76	69	71	58	67	211	2170	408
MIN	42	76	79	74	64	58	55	36	23	21	93	86
AC-FT	4260	5530	6750	4670	3870	3860	3610	2700	2000	4680	23440	9290

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1999, BY WATER YEAR (WY)

	MEAN	119	99.7	169	175	238	321	222	142	60.3	65.3	145	153
MAX	994	726	1632	1810	1204	1049	903	716	249	225	901	960	
(WY)	1973	1995	1979	1993	1993	1985	1973	1973	1992	1986	1988	1988	
MIN	29.1	47.8	50.1	50.0	50.9	53.9	49.2	33.1	23.5	22.3	37.5	24.0	
(WY)	1957	1951	1954	1954	1954	1971	1971	1996	1974	1971	1956	1956	

## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1928 - 1999

ANNUAL TOTAL	70577	37642	
ANNUAL MEAN	193	103	159
HIGHEST ANNUAL MEAN			477
LOWEST ANNUAL MEAN			47.8
HIGHEST DAILY MEAN	1830	Mar 27	2170
LOWEST DAILY MEAN	31	Jun 30	21
ANNUAL SEVEN-DAY MINIMUM	36	Jun 26	23
INSTANTANEOUS PEAK FLOW			2780
INSTANTANEOUS PEAK STAGE			5.05
INSTANTANEOUS LOW FLOW			19
ANNUAL RUNOFF (AC-FT)	140000	74660	115400
10 PERCENT EXCEEDS	415	171	317
50 PERCENT EXCEEDS	112	70	75
90 PERCENT EXCEEDS	47	36	40

a Estimated

a From rating curve extended above 7,000 ft<sup>3</sup>/s, on basis of slope-area measurement at gage height 12.5 ft, maximum gage height, 17.2 ft, from floodmarks, Sept. 29, 1941.

b From floodmarks.

## 09431500 GILA RIVER NEAR REDROCK, NM

LOCATION --Lat 32°43'37", long 108°40'30", in W¼ sec.23, T.18 S., R.18 W., Grant County, Hydrologic Unit 15040002, on left bank 0.2 mi downstream from Copper Canyon, 0.2 mi upstream from lower end of box canyon, 4.7 mi northeast of Redrock, 14 mi downstream from Mangas Creek, and at mile 539.2.

DRAINAGE AREA --2,829 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD --September 1904 to February 1905 (gage heights only), May 1905 to December 1906, January to December 1907 and July to October 1908 (gage heights only), November 1908 to December 1910, January 1911 to January 1912 and May to June 1912 (gage heights only), August 1912 to September 1955, October 1962 to current year. Monthly or annual discharge only some periods, published in WSP 1313. Published as "near Cliff" 1904-7.

REVISED RECORDS --WSP 1213: 1906, 1911-15, 1931, 1936-37, 1939, 1941, 1944, 1945(P), 1946(M), 1947 WSP 1283: Drainage area. WSP 1926 1955 WDR NM-78-1: 1977.

GAGE --Water-stage recorder. Elevation of gage is 4,090 ft above sea level, from plane table survey. Prior to Dec. 31, 1907, nonrecording gage at site 13.5 mi upstream at different datum. May 14, 1908, to July 16, 1909, nonrecording gage at site 0.2 mi downstream at different datum. June 13, 1980 to Feb. 23, 1983 at site 1.300 ft downstream at same datum.

REMARKS --Records good. Diversions for irrigation of about 5,000 acres upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	169	115	109	100	96	68	65	45	14	351	244
2	45	156	110	102	96	92	79	73	43	14	244	141
3	41	148	126	107	98	84	91	73	39	17	243	258
4	40	137	164	107	85	77	97	53	43	22	445	233
5	38	130	200	89	82	79	99	49	33	22	1740	178
6	37	126	214	81	88	80	99	46	16	26	2720	154
7	37	116	203	79	92	86	94	47	16	45	1490	141
8	41	112	188	81	94	96	84	46	22	31	957	123
9	42	112	174	80	86	87	81	30	31	29	721	108
10	43	122	156	81	89	86	71	23	31	27	760	114
11	42	128	134	90	92	90	62	27	33	31	1010	116
12	39	125	113	94	96	87	67	48	34	30	840	104
13	39	121	107	93	95	82	55	49	35	27	675	107
14	38	123	100	91	93	85	50	49	49	32	548	127
15	38	125	113	86	97	61	53	46	26	35	538	196
16	41	120	110	90	94	79	55	47	25	42	421	189
17	45	115	111	89	84	80	54	47	23	112	376	160
18	46	113	113	87	79	83	57	48	46	42	268	400
19	47	109	120	81	81	85	67	42	71	45	216	598
20	43	105	124	83	83	81	51	39	75	156	314	509
21	51	84	123	87	81	81	36	41	76	607	205	401
22	56	94	120	95	83	82	53	41	65	407	158	337
23	58	104	113	92	77	75	47	39	51	225	140	290
24	58	96	111	99	73	70	46	45	27	309	109	257
25	61	100	109	99	52	59	48	47	30	222	118	205
26	72	90	109	94	66	71	52	43	24	207	119	160
27	134	94	99	93	87	76	51	38	19	280	120	146
28	193	83	82	94	89	80	59	38	17	423	182	163
29	279	97	98	95	---	50	73	38	16	211	159	144
30	219	107	108	73	---	52	75	35	16	112	142	130
31	192	---	106	80	---	63	---	38	---	161	112	---
TOTAL	2134	3462	3978	2801	2399	2445	1974	1350	1077	3363	16441	6633
MEAN	68.8	115	128	90.4	85.7	78.9	65.3	44.8	35.9	128	630	221
MAX	279	169	214	109	100	96	99	73	76	607	2720	598
MIN	26	83	82	73	52	50	36	23	16	14	109	104
AC-FT	4230	6870	7890	5560	4760	4850	3920	2760	2140	7370	32610	13160

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1999, BY WATER YEAR (WY)

	MEAN	203	154	339	322	418	502	315	196	62.4	78.5	219	242
MAX	1768	912	2200	2987	1692	1438	1155	1068	278	287	1182	1315	
(WY)	1973	1995	1979	1993	1993	1978	1973	1992	1992	1986	1986	1975	
MIN	27.6	55.1	60.0	64.9	53.9	40.0	41.2	25.1	12.0	15.6	40.9	22.2	
(WY)	1974	1974	1981	1971	1971	1971	1971	1996	1974	1978	1994	1978	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1963 - 1999
ANNUAL TOTAL	95070	48703	
ANNUAL MEAN	260	133	254
HIGHEST ANNUAL MEAN			564
LOWEST ANNUAL MEAN			57.2
HIGHEST DAILY MEAN	1840	Mar 27	2720
LOWEST DAILY MEAN	36	Oct 18	14
ANNUAL SEVEN-DAY MINIMUM	37	Oct 13	16
INSTANTANEOUS PEAK FLOW			4070
INSTANTANEOUS PEAK STAGE			3.37
INSTANTANEOUS LOW FLOW			8.5
ANNUAL RUNOFF (AC-FT)	188500	96500	193700
10 PERCENT EXCEEDS	604	228	550
50 PERCENT EXCEEDS	146	97	101
90 PERCENT EXCEEDS	55	35	35

e Estimated

a From rating curve extended above 9,500 ft<sup>3</sup>/s, on basis of slope-area measurement of peak flow.

b In gage well and 34.10 from floodmarks.

## GILA RIVER BASIN

09431500 GILA RIVER NEAR REDROCK, NM--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD--Water years 1967 to current year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

		DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US 'CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED CENT (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS TOTAL (MG L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG L) (00904)	
MAR	02...	1445	92	390	8.8	25.0	14.0	658	9.6	108	130	--
JUN	09...	1055	31	425	8.4	26.5	19.5	661	11.3	143	--	--
	29...	1030	16	443	8.4	34.0	25.0	661	7.2	101	150	2
AUG	09...	1740	667	271	8.1	37.0	27.5	660	7.2	106	84	--
DATE		CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR- BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA- LITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	
MAR	02...	37	10	21	.8	2.1	162	--	135	175	8.1	
JUN	09...	--	--	--	--	--	154	8	140	--	--	
	29...	44	9.7	35	1	2.8	167	7	149	164	44	
AUG	09...	25	5.1	20	.9	2.5	113	0	93	107	19	
DATE		CHLG- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	
MAR	02...	6.7	.4	37	205	--	<.010	.81	<.010	.23	<.20	
JUN	09...	--	--	--	--	.280	.02	.30	.02	<.20	<.20	
	29...	14	1.9	35	279	.620	.02	.64	.06	.52	<.20	
AUG	09...	7.5	1.5	40	177	--	<.01	.29	<.01	1.4	.31	
DATE		PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHOS- DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LITUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	
MAR	02...	<.02	.15	.04	2	<1	2	10	<1	20.4	<1	
JUN	09...	.04	.04	<.01	--	--	--	--	--	--	--	
	29...	.20	.05	.03	1	<1	2	24	<1	49.3	<1	
AUG	09...	.83	.06	.08	13	<1	1	17	<1	31.6	<1	
DATE		CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01045)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL (UG L AS SE) (01147)	
MAR	02...	11	<1	<1	<10	<1	15	<.1	<1	1	<1	
JUN	09...	--	--	--	--	--	--	--	--	--	--	
	29...	<1.0	<1	2	<10	<1	15	<.01	4	<1	<1	
AUG	09...	--	<1	3	E6	<1	3	<.1	2	1	<1	

## GILA RIVER BASIN

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## 09431500 GILA RIVER NEAR REDROCK, NM—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	NITRO- GEN, NO2+NO3 TOT. IN BOT. MAT (MG/KG AS N) (00633)	NITRO- GEN, NH4 TOTAL IN BOT. MAT. (MG/KG AS N) (00611)	PHOS- PHORUS TOTAL IN BOT. MAT. (MG/KG AS P) (00668)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (MG/L) (T/DAY) (80154)	SED. SUSP. SIEVE DIAM. & FINER THAN .062 MM (80155)	
MAR 02...	<1	<1	3	--	--	--	2	15	3.7	98
JUN 09...	--	--	--	130	67	850	--	10	.84	87
29...	<1	<1	1	--	--	--	2	124	5.4	95
AUG 09...	<1	<1	3	--	--	--	1	1050	1890	77

&lt; Actual value is known to be less than the value shown..

**GILA RIVER BASIN**

## 09432000 GILA RIVER BELOW BLUE CREEK, NEAR VIRDEN, NM

**LOCATION.** --Lat 32°38'53", long 108°50'43", in SE 1/4 SW 1/4 sec. 18, T. 19 S., R. 19 W., Grant County, Hydrologic Unit 15040002, on left bank at head of canyon, 1.4 mi downstream from Blue Creek, 10 mi east of Virden, and 18 mi upstream from New Mexico-Arizona State line.

**DRAINAGE AREA.**--3,203 mi<sup>2</sup>, excluding Animas River basin.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May to November 1914, March to September 1915, July 1927 to current year. July 1927 to May 1931 monthly discharge only, published in WSP 1313, computed as sum of flow at Virden Bridge, 9 mi downstream, and in Sunset Canal. Published as "Gila River near Duncan, Ariz." 1914-15 and as "Gila River at Fuller's Ranch, near Duncan, Ariz." 1931-38.

REVISED RECORDS.--WSP 1283: Drainage area. WSP 1313: 1929, 1931-32(M).

**GAGE.**--Water-stage recorder. Elevation of gage is 3,875 ft above sea level, from river-profile map May 11, 1914, to Sept. 30, 1915, at site 6 mi downstream, 1,000 ft upstream from intake of Sunset Canal. June 1 to July 7, 1931, nonrecording gage at present site and datum. Since April 18, 1980, supplementary gage on left bank 800 ft downstream at same datum. Since June 1980, crest-stage gages at supplementary gage site. Since Nov. 1990, water-stage recorder at supplementary gage.

REMARKS:--Records good except for estimated daily discharges, which are fair. Station is above all Duncan Valley diversions. Diversions for irrigation of about 6,200 acres above station.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 58,700  $\text{m}^3/\text{s}$  Dec. 19, 1978, gage height, 29.00 ft, from rating curve extended above 38,000  $\text{m}^3/\text{s}$  on basis of slope-area measurement of peak flow; minimum, 1  $\text{m}^3/\text{s}$  July 14, 1934.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 1,900 ft<sup>3</sup>/s and maximum (°):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 23.....	2300	3.400	7.63
Aug. 6.....	0345	*3.680	*7.75

Minimum daily discharge, 17 ft<sup>3</sup>/s June 30, July 1, 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	140	118	105	100	88	68	e78	32	17	346	175
2	58	135	119	104	102	88	83	e74	33	17	279	171
3	57	132	120	104	100	86	89	e77	34	18	273	229
4	51	128	128	105	98	82	92	e71	35	20	368	212
5	43	126	140	100	96	81	94	e61	33	23	1300	186
6	39	123	147	95	93	85	93	e55	30	23	2670	170
7	38	120	148	93	95	85	91	e53	26	24	1500	159
8	43	117	144	92	95	88	90	e51	24	28	973	150
9	50	117	139	92	97	88	88	e48	23	27	729	138
10	52	119	134	93	95	86	85	e44	22	30	650	131
11	64	122	129	95	96	87	79	e41	22	31	837	131
12	64	123	119	97	97	87	74	e39	22	33	687	127
13	64	121	115	98	98	85	72	e40	30	32	496	126
14	63	120	112	98	97	86	64	e41	36	34	409	127
15	56	122	113	98	96	81	61	e40	28	36	441	152
16	53	120	114	97	96	75	69	e40	25	36	326	166
17	60	118	113	99	95	82	69	e40	22	119	281	217
18	47	117	115	98	91	88	70	e40	24	76	230	264
19	57	116	115	97	88	87	73	e39	49	62	195	376
20	56	115	116	97	89	87	73	e37	45	101	231	340
21	72	108	116	97	88	89	64	e36	51	383	209	294
22	81	105	115	101	88	89	57	35	49	395	180	250
23	85	114	114	103	87	89	51	35	46	485	161	223
24	86	112	113	105	84	86	61	35	40	398	143	203
25	89	112	112	106	79	83	60	35	30	279	132	179
26	94	110	111	104	76	84	59	35	26	256	127	156
27	105	110	109	103	83	86	60	34	23	271	176	144
28	122	108	100	102	86	87	e61	34	20	246	205	140
29	171	110	100	100	---	85	e63	34	18	321	182	134
30	158	113	105	95	---	74	e75	33	17	197	171	127
31	146	---	106	95	---	69	---	33	---	166	162	---
TOTAL	2321	3553	3699	3068	2589	2623	2198	1388	915	4187	15069	5597
MEAN	74.9	118	119	99.0	92.5	84.6	73.3	44.8	30.5	135	486	187
MAX	171	140	148	106	102	89	94	78	51	485	2670	376
MIN	38	105	100	92	76	69	57	33	17	17	127	126
AC-FT	4600	7050	7340	6090	5140	5200	4360	2750	1810	8300	29890	11000
CFSM	.02	.04	.04	.03	.03	.03	.02	.01	.01	.04	.15	.06
IN.	.03	.04	.04	.04	.03	.03	.03	.02	.01	.05	.18	.07

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1999, BY WATER YEAR (WY)

MEAN	160	130	252	314	362	434	274	152	51.7	76.5	206	206
MAX	1667	1040	2485	4158	1752	1464	1138	977	298	366	1164	1507
(WY)	1973	1995	1979	1993	1993	1973	1973	1992	1992	1986	1988	1975
MIN	5.39	34.9	47.6	64.0	61.1	45.1	27.7	13.5	4.43	4.85	9.35	4.89
(WY)	1957	1957	1957	1981	1971	1971	1955	1956	1956	1951	1951	1953

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1932 - 1999
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ANNUAL TOTAL	101049		47207				
ANNUAL MEAN	277		129			213	
HIGHEST ANNUAL MEAN						746	1993
LOWEST ANNUAL MEAN						43.1	1956
HIGHEST DAILY MEAN	1970	Mar 28	2670	Aug 6	33100		Dec 19 1978
LOWEST DAILY MEAN	38	Oct 7	17	Jun 30			Jul 11 1956
ANNUAL SEVEN-DAY MINIMUM	46	Jun 30	18	Jun 28			Sep 26 1956
ANNUAL RUNOFF (AC-FT)	200400		93640			154100	
ANNUAL RUNOFF (CFSM)		.086		.040			.066
ANNUAL RUNOFF (INCHES)		1.17		.55			.90
10 PERCENT EXCEEDS	659		214			460	
50 PERCENT EXCEEDS	140		95			93	
90 PERCENT EXCEEDS	63		34			23	

e Estimated



## GILA RIVER BASIN

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## 09432000 GILA RIVER BELOW BLUE CREEK NEAR VIRDEN, NM--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD --October 1997 to current year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

		DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00342)	
MAR 29...	1140	84	989	8.6	27.0	16.0	.41	671	7.9	91	<5	
APR 15...	1030	59	404	8.6	27.0	16.0	.42	672	7.6	88	<5	
MAY 25...	1000	36	--	8.4	27.0	20.0	.31	667	9.8	--	6	
JUN 16...	1100	26	--	8.2	30.0	24.5	.43	668	8.2	--	8	
AUG 25...	1030	129	400	8.2	31.0	23.0	60	665	7.1	95	<5	
DATE		COLI-FORM, FECAL, 0.7 UM-MF (COLS / 100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM TOTAL RECOV-ERABLE (MG/L AS CA) (00916)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS MG) (00927)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD HCO3 (00453)
MAR 29...	47	K19	140	41	41	8.1	8.0	32	1	1.8	--	
APR 15...	K18	K8	140	39	40	8.6	8.6	31	1	2.1	--	
MAY 25...	K14	K5	130	39	39	8.3	8.3	35	1	2.2	--	
JUN 16...	--	--	130	41	40	8.9	8.5	35	1	3.7	--	
AUG 25...	380	K20	130	42	40	8.6	7.8	30	1	2.6	176	
DATE		CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00613)
MAR 29...	--	157	34	12	1.8	255	223	.35	6	.240	.010	
APR 15...	--	155	36	12	1.8	258	225	.35	4	.030	.010	
MAY 25...	--	150	38	13	1.8	250	226	.34	4	<.020	.030	
JUN 16...	--	154	36	12	1.7	270	232	.37	12	.020	.020	
AUG 25...	0	144	32	11	1.8	253	212	.34	110	.450	<.010	
DATE		NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)
MAR 29...	E.19	<.20	E.22	.01	E1.0	.060	<1	<1.0	2	2	19	
APR 15...	E.19	<.20	E.23	.01	E1.0	.040	<1	<1.0	1	1	17	
MAY 25...	.17	.20	E.22	.04	E1.0	.020	<1	<1.0	2	1	18	
JUN 16...	E.18	<.20	E.22	.03	E1.0	.040	<1	<1.0	2	2	23	
AUG 25...	E.30	.31	.76	E.01	3.4	.180	<1	<1.0	2	2	46	

## GILA RIVER BASIN

09432000 GILA RIVER BELOW BLUE CREEK NEAR VIRDEN, NM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
MAR 29...	18	<.5	<.50	60	59	<1	<.50	<1	<1.0	1	<1.0
APR 15...	17	<.5	<.50	59	58	<1	<.50	<1	<1.0	3	<1.0
MAY 25...	17	<.5	<.50	64	64	<1	<.50	<1	<1.0	<1	<1.0
JUN 16...	19	<.5	<.50	53	65	<1	<.50	<1	<1.0	2	<1.0
AUG 25...	24	<.5	<.50	57	55	<1	<.50	2	<1.0	15	1.3

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)
MAR 29...	100	1.6	<1	<1.0	11	1.9	<.10	<.1	3	<1.0
APR 15...	30	2.1	<1	<1.0	6	2.3	<.10	<.1	<1	<1.0
MAY 25...	80	2.3	<1	<1.0	17	3.5	<.10	<.1	<1	<1.0
JUN 16...	260	1.5	<1	<1.0	27	10	<.10	<.1	2	<1.0
AUG 25...	1700	3.2	3	<1.0	100	3.8	<.10	<.1	4	<1.0

DATE	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	THAL- LIUM, TOTAL RECOV- ERABLE (UG/L AS TL) (01059)	THAL- LIUM, DIS- SOLVED (UG/L AS TL) (01057)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
MAR 29...	<1	<1	<1	<1.0	<2	<2.0	2.0	<1.0	11	2.5
APR 15...	<1	<1	<1	<1.0	<2	<2.0	1.2	<1.0	3	.48
MAY 25...	<1	<1	<1	<1.0	<2	<2.0	<1.0	<1.0	--	--
JUN 16...	<1	<1	<1	<1.0	<2	<2.0	3.2	<1.0	--	--
AUG 25...	<1	<1	<1	<1.0	<2	<2.0	10	4.2	1270	440

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

**LOCATION** --Lat 32°57'57", long 109°18'35", in NE 1/4 SE 1/4 sec. 25, T. 5 S., R. 29 E., Greenlee County, Hydrologic Unit 15040002, on right bank 60 ft upstream from bridge on county road, 6 mi upstream from San Francisco River, and 6 mi south of Clifton.

PERIOD OF RECORD:--November 1910 to July 1918 (published as "at Guthrie"), October 1927 to September 1989, October 1989 to current year, operated as a crest-stage partial-record station, October 1995 to September 1996. Monthly discharge only for some periods, published in WSP 1313.

**GAGE.**--Water-stage recorder. Datum of gage is 3,336.38 ft above sea level. Nov. 6, 1910, to July 11, 1918, nonrecording gage or water-stage recorder at two sites about 6 mi upstream at Guthrie at different datums. March 1928 to June 1948 water-stage recorder at present site at datum 0.91 ft lower. June 1948 to Oct. 17, 1967, water-stage recorder at site 0.2 mi upstream at datum 3.12 ft higher. Oct. 18, 1967, to June 23, 1974, Apr. 10, 1978, to Feb. 6, 1979, at site 500 ft downstream at datum 0.44 ft higher. June 24, 1974 to Apr. 9, 1978, at present site and datum.

**EXTREMES FOR PERIOD OF RECORD.** --Maximum discharge, 57,000 ft<sup>3</sup>/s Dec. 19, 1978, gage height, 23.80 ft, from rating curve extended above 28,000 ft<sup>3</sup>/s, minimum daily, 3.7 ft<sup>3</sup>/s July 27, 1987

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 22 .....	1440	3,110	5.90
Aug 5 .....	2045	3,370	6.33

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1999, BY WATER YEAR (WY)

SUMMARY STATISTICS		FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1911 - 1999	
ANNUAL TOTAL	95308			48065			
ANNUAL MEAN	261			132		206	
HIGHEST ANNUAL MEAN						930	1915
LOWEST ANNUAL MEAN						42.5	1951
HIGHEST DAILY MEAN	1820	Mar 28		2443	Aug 6	27100	Dec 20 1979
LOWEST DAILY MEAN	35	Jul 21		24	Jun 3	8.7	Jul 27 1987
ANNUAL SEVEN-DAY MINIMUM	37	Jul 28		25	May 30	7.0	Sep 29 1957
ANNUAL RUNOFF (AC-FT)	189000			95340		149200	
10 PERCENT EXCEEDS	636			229		440	
50 PERCENT EXCEEDS	157			56		78	
90 PERCENT EXCEEDS	43			32		18	

e Estimated

## GILA RIVER BASIN

## 09442680 SAN FRANCISCO RIVER NEAR RESERVE, NM

LOCATION.--Lat 33°44'12", long 108°46'14", in NE1/4NW1/4SE1/4 sec.35, T.8 S., R.19 W., Catron County, Hydrologic Unit 15040004, on left bank 1,300 ft downstream from Rainbow Bridge Canyon, 1.7 mi northwest of Reserve, and at mile 563.1.

DRAINAGE AREA.--350 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--March 1959 to current year.

REVISED RECORDS.--WDR NM-78-1: 1977. WDR NM-84-1: 1973, 1979-80.

GAGE.--Water-stage recorder. Elevation of gage is 5,820 ft above sea level, from topographic map. Prior to Dec. 15, 1972 at site 1,800 ft upstream at different datum.

REMARKS.--Records good. Possible minor regulation by Luna Lake, 27 mi upstream. Diversions for irrigation of about 280 acres upstream from station. Several observations of water temperature were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, about 15 ft, as determined in 1962 from old floodmarks. Major floods of Nov. 26, 1905 and Dec. 3, 1906, exceeded 20,000 ft<sup>3</sup>/s at Alma (downstream). See WSP 1313.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	8.3	10	8.2	7.4	6.5	3.9	5.8	9.2	3.0	17	18
2	2.7	8.1	10	8.2	7.0	4.1	9.3	5.9	9.4	3.0	182	16
3	2.3	8.1	10	7.2	6.1	3.9	15	5.6	10	2.8	680	16
4	2.6	8.1	8.8	7.6	3.5	3.9	9.0	5.8	10	1.4	422	14
5	4.3	7.0	8.8	6.3	4.9	4.3	8.0	6.5	8.5	1.9	327	11
6	4.1	7.7	8.9	6.6	6.2	4.5	8.5	6.0	9.6	20	334	11
7	4.0	7.1	8.5	8.2	6.0	4.6	9.0	5.9	11	5.1	212	11
8	4.4	7.2	8.1	7.2	6.2	6.1	8.8	6.2	10	1.9	75	9.7
9	4.6	8.1	6.4	6.6	5.9	5.6	8.4	6.0	9.0	2.0	36	8.8
10	4.2	8.2	8.4	7.0	3.4	5.6	11	5.9	7.6	2.5	60	9.3
11	3.9	8.4	8.3	7.5	3.7	5.5	11	5.4	6.5	2.8	79	8.4
12	4.2	8.3	6.5	7.5	3.8	6.1	9.9	5.4	5.8	2.7	47	8.4
13	3.9	7.9	8.3	6.9	4.3	5.6	9.7	5.6	3.8	3.0	26	9.6
14	4.5	7.2	7.5	7.1	6.4	5.6	9.9	3.4	4.9	3.4	16	10
15	3.1	7.6	8.0	6.9	6.4	5.6	9.3	3.3	3.5	47	17	42
16	1.6	7.8	7.8	7.1	5.9	4.8	8.6	3.1	8.6	4.2	28	86
17	1.8	7.2	7.9	7.1	5.9	3.9	8.0	2.6	9.9	3.0	31	374
18	4.1	8.2	8.3	7.0	6.9	5.1	7.4	3.5	12	13	21	282
19	4.7	8.5	8.1	7.1	6.5	6.7	7.2	3.9	13	48	15	192
20	2.9	7.2	7.8	7.1	6.3	5.7	7.0	2.5	9.1	22	21	105
21	3.5	6.6	7.6	7.0	6.1	5.0	6.4	1.9	9.4	15	20	67
22	6.5	7.1	6.9	6.9	5.7	4.1	6.0	2.9	8.9	10	15	51
23	7.2	7.3	6.8	8.0	5.2	3.5	5.9	3.0	7.6	8.4	15	275
24	5.9	7.0	8.1	6.8	6.1	4.2	6.4	2.7	5.9	6.8	18	250
25	6.4	7.4	7.8	7.6	6.0	4.4	6.8	2.8	4.8	5.9	15	150
26	16	6.9	7.4	7.7	4.8	4.6	6.5	3.1	4.4	5.8	57	100
27	14	7.2	8.1	7.3	4.7	4.9	6.9	3.1	4.8	6.7	46	71
28	11	7.3	7.9	7.0	6.7	4.5	6.4	3.5	4.4	5.8	48	52
29	8.8	17	7.9	6.8	---	4.2	5.8	6.3	3.4	4.9	44	41
30	9.2	11	7.9	6.2	---	3.0	5.5	6.9	3.8	23	34	35
31	11	---	7.7	5.6	---	2.3	---	8.1	---	17	25	---
TOTAL	170.4	241.0	250.5	221.3	158.0	148.4	241.5	142.6	228.8	302.0	2983	2334.2
MEAN	5.50	8.03	8.08	7.14	5.64	4.79	8.05	4.60	7.63	9.74	96.2	77.8
MAX	16	17	10	8.2	7.4	6.7	15	8.1	13	48	680	374
MIN	1.6	6.6	6.4	5.6	3.4	2.3	3.9	1.9	3.4	1.4	15	8.4
AC-FT	338	478	497	439	313	294	479	283	454	599	5920	4630

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1999, BY WATER YEAR (WY)

	MEAN	28.7	18.9	20.7	21.3	39.4	77.9	52.5	19.5	6.57	8.51	17.7	19.9
MAX	430	211	159	159	231	336	398	162	39.7	28.3	96.2	172	
(WY)	1984	1979	1979	1993	1993	1985	1973	1973	1992	1967	1999	1983	
MIN	3.27	5.18	5.11	5.68	5.14	4.04	3.38	2.70	1.39	1.34	4.55	3.09	
(WY)	1983	1976	1978	1970	1964	1959	1967	1959	1990	1995	1961	1959	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1959 - 1999	
ANNUAL TOTAL	6068.54		7421.7		27.9	
ANNUAL MEAN	16.6		20.3		101	
HIGHEST ANNUAL MEAN					5.94	
LOWEST ANNUAL MEAN					1973	
HIGHEST DAILY MEAN	264	Mar 27	680	Aug 3	5000	Oct 20 1972
LOWEST DAILY MEAN	.92	Jul 18	1.4	Jul 4	.24	Jul 18 1997
ANNUAL SEVEN-DAY MINIMUM	1.4	Sep 23	2.6	Jul 8	.44	Jul 14 1997
INSTANTANEOUS PEAK FLOW			1950	Aug 3	a9830	Oct 1 1983
INSTANTANEOUS PEAK STAGE			4.28	Aug 3	b11.71	Oct 1 1983
INSTANTANEOUS LOW FLOW			1.4	Jul 4	.69	Jul 24 1995
ANNUAL RUNOFF (AC-FT)	12040		14720		20220	
10 PERCENT EXCEEDS	28		27		55	
50 PERCENT EXCEEDS	8.1		7.1		8.5	
90 PERCENT EXCEEDS	3.2		3.4		3.5	

a From rating curve extended above 1,400 ft<sup>3</sup>/s, on basis of slope-area measurement of peak flow.

b Recorded, 11.30 ft, from floodmarks.

## GILA RIVER BASIN

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## 09444000 SAN FRANCISCO RIVER NEAR GLENWOOD, NM

LOCATION.--Lat 33°14'48", long 108°52'47", in NE1/4NW1/4 sec.23, T.12 S., R.20 W., Catron County, Hydrologic Unit 15040004, on left bank 0.2 mi upstream from hot springs 5 mi south of Glenwood, 6 mi downstream from Whitewater Creek, and at mile 511.5.

DRAINAGE AREA --1,653 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1927 to current year. Monthly discharge only for some periods, published in WSP 1313.

REVISED RECORDS.--WSP 1213: 1931, 1934, 1936-37, 1940-42, 1943-44(M), 1945-47. WSP 1283: Drainage area. WDR NM-78-1: 1977. WDR NM-79-1: 1973, 1975-77 (P).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 4,560 ft above sea level, from topographic map. Prior to Feb. 15, 1934, at site 4.5 mi upstream at datum 98.82 ft higher.

REMARKS --Records good. Diversions for irrigation of about 2,000 acres upstream from station.

EXTREMES OUTSIDE PERIOD OF RECORD --Major floods probably occurred Jan. 19 and Oct. 14, 1916 when discharges of 60,000 ft<sup>3</sup>/s or greater were computed for station at Clifton, AZ. On Nov. 26, 1905, a peak of 25,000 ft<sup>3</sup>/s was measured (by float-area method) at station at Alma (about 12 mi upstream, drainage area, 1,560 mi<sup>2</sup>); a similar measurement of 21,000 ft<sup>3</sup>/s was made at the Alma station for peak of Dec. 3, 1906.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	35	36	35	36	25	8.8	17	17	13	48	86
2	27	30	46	37	36	19	14	18	16	14	268	51
3	21	26	44	36	37	18	16	17	15	15	496	63
4	22	25	40	37	37	15	18	20	14	16	685	51
5	24	26	39	36	36	15	20	19	13	15	1030	41
6	23	25	38	32	38	12	24	18	14	16	955	72
7	22	25	38	31	40	11	25	18	13	15	421	54
8	22	24	38	33	40	11	25	17	15	15	239	34
9	19	25	37	34	41	11	22	17	14	20	105	28
10	20	25	37	38	40	11	24	18	13	46	741	80
11	20	25	35	33	38	12	27	18	14	24	299	48
12	21	26	35	33	34	14	21	16	12	19	152	31
13	20	23	36	33	27	13	18	16	13	16	85	310
14	19	21	36	33	26	14	21	18	12	18	48	694
15	20	21	36	34	27	10	18	19	11	22	37	382
16	20	21	34	34	28	9.5	19	20	16	24	208	338
17	22	23	31	34	26	9.2	13	17	14	15	148	879
18	21	23	32	34	22	10	17	18	15	15	73	1190
19	19	24	32	33	21	11	16	19	13	113	44	732
20	22	24	33	34	21	9.4	16	18	13	262	65	616
21	21	24	34	34	22	9.7	16	19	24	136	77	340
22	21	25	38	34	20	9.2	15	17	15	63	26	222
23	21	27	36	34	20	9.6	14	15	15	86	21	185
24	18	29	37	34	21	9.0	17	15	14	52	21	277
25	19	28	36	34	23	12	18	15	13	26	16	302
26	38	28	37	33	23	9.6	19	17	15	20	25	224
27	25	29	37	33	22	11	16	17	15	41	21	167
28	60	30	37	34	21	13	17	18	13	22	118	127
29	36	33	37	34	---	11	18	18	12	13	93	100
30	29	40	37	34	---	10	15	18	13	14	62	88
31	35	---	37	35	---	9.2	---	19	---	24	46	---
TOTAL	804	790	1138	1057	823	373.4	552.6	548	426	1281	6679	7812
MEAN	25.9	26.3	36.7	34.1	29.4	12.0	18.4	17.6	14.2	41.3	215	260
MAX	75	40	46	38	41	25	27	20	24	262	1030	1190
MIN	18	21	31	31	20	9.0	8.8	15	11	13	16	28
AC-FT	1590	1570	2260	2100	1630	741	1100	1080	845	2540	13250	15500

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1999, BY WATER YEAR (WY)

	33.7	49.3	86.7	100	128	197	144	76.8	28.8	37.7	77.9	61.1
MEAN												
MAX	2026	520	1068	1568	1034	1036	1049	593	146	109	392	368
(WY)	1964	1979	1979	1993	1993	1985	1973	1973	1992	1930	1957	1988
MIN	9.77	10.8	12.9	13.5	14.9	11.3	10.2	8.65	5.70	13.2	13.7	7.66
(WY)	1966	1957	1954	1956	1956	1959	1957	1956	1956	1963	1960	1956

## SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1928 - 1999

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1928 - 1999
ANNUAL TOTAL	32822	22282.2	
ANNUAL MEAN	89.9	61.0	89.2
HIGHEST ANNUAL MEAN			351
LOWEST ANNUAL MEAN			13.9
HIGHEST DAILY MEAN	1240	1190	27500
LOWEST DAILY MEAN	18	8.8	2.5
ANNUAL SEVEN-DAY MINIMUM	20	9.7	3.9
INSTANTANEOUS PEAK FLOW		4920	337100
INSTANTANEOUS PEAK STAGE		7.46	513.15
INSTANTANEOUS LOW FLOW		8.8	1.5
ANNUAL RUNOFF (AC-FT)	65100	44200	64600
10 PERCENT EXCEEDS	211	87	174
50 PERCENT EXCEEDS	41	24	32
90 PERCENT EXCEEDS	21	13	15

a From rating curve extended above 4,200 ft<sup>3</sup>/s, on basis of slope-area measurements at gage heights, 10.74 ft, 13.60 ft, and 20.80 ft.

b 20.80 ft from outside floodmarks.

## GILA RIVER BASIN

## 09444200 BLUE RIVER NEAR CLIFTON, AZ

**LOCATION.**--Lat 33°17'27", long 109°11'44", in sec.6, T.2 S., R.31 E. (unsurveyed), Greenlee County, Hydrologic Unit 15040004, in Apache National Forest, on right bank 0.1 mi downstream from county road crossing, 0.9 mi upstream from Clear Creek, 8 mi upstream from mouth, and 17 mi northeast of Clifton.

**DRAINAGE AREA.**--506 mi<sup>2</sup>.

**PERIOD OF RECORD.**--November 1967 to September 1991, October 1992 to September 1995 (annual maximum only), October 1995 to current year.

**GAGE.**--Water-stage recorder. Elevation of gage is 4,180 ft above sea level, from topographic map.

**REMARKS.**--No estimated daily discharges. Records good.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 30,000 ft<sup>3</sup>/s Oct. 20, 1972, gage height, 22.56 ft, from rating curve extended above 960 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 1.4 ft<sup>3</sup>/s Oct. 18-20, 1978

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 800 ft<sup>3</sup>/s and maximum (""):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 18.....	0700	1,210	7.59	Aug. 10.....	0400	2,200	9.33
Aug. 5.....	0400	2,450	9.54	Sept. 17.....	1715	2,740	10.00

Minimum daily discharge, 3.3 ft<sup>3</sup>/s July 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	38	50	18	15	12	8.5	20	5.4	3.3	82	85
2	4.6	30	64	18	15	12	55	20	5.4	3.4	136	85
3	4.6	28	85	17	14	12	27	19	5.3	3.5	437	69
4	4.4	26	56	17	14	12	22	18	5.2	3.5	434	59
5	4.3	25	47	18	14	12	20	17	5.3	3.6	1410	54
6	4.4	25	42	17	14	12	19	16	5.4	3.9	856	50
7	4.5	24	39	17	14	12	20	15	5.3	4.0	453	46
8	4.6	24	35	17	14	12	21	15	5.2	8.6	265	44
9	4.5	27	32	17	14	11	22	14	5.1	13	189	43
10	4.4	33	33	17	13	11	22	13	5.1	9.0	812	50
11	4.3	29	34	17	13	11	22	12	5.0	36	454	43
12	4.2	28	33	16	14	11	23	12	5.0	5.3	251	44
13	4.2	27	35	16	14	11	23	12	5.2	4.1	176	50
14	4.2	26	34	16	13	11	24	11	5.3	11	138	162
15	4.3	25	34	16	13	11	24	11	5.4	21	165	249
16	4.5	25	34	16	13	11	24	9.8	5.3	16	213	182
17	4.5	25	33	16	13	11	24	9.3	5.3	22	179	482
18	4.4	25	34	16	13	11	24	8.9	5.9	304	135	387
19	4.4	25	33	16	13	11	25	8.2	6.9	152	122	247
20	5.2	25	33	16	12	11	25	7.9	21	206	135	181
21	7.8	25	33	15	12	11	25	7.7	14	124	111	130
22	14	25	32	16	12	11	25	7.2	5.1	100	97	99
23	17	25	35	15	12	11	25	6.7	4.0	106	126	90
24	8.5	24	38	15	12	10	26	6.4	3.8	71	106	79
25	7.4	24	25	15	12	10	26	5.9	3.7	49	98	70
26	97	24	23	15	12	9.7	26	6.0	3.6	54	134	60
27	99	25	22	14	12	9.6	25	5.9	3.6	116	96	54
28	62	25	21	15	12	9.3	24	5.7	3.5	100	144	48
29	42	121	20	15	---	9.0	23	5.5	3.5	51	104	44
30	36	76	20	15	---	8.7	21	5.5	3.4	43	85	42
31	38	---	19	15	---	8.3	---	5.5	---	34	73	---
TOTAL	517.8	934	1108	499	368	335.6	720.5	337.1	171.2	1681.7	8216	3328
MEAN	16.7	31.1	35.7	16.1	13.1	10.8	24.0	10.9	5.71	54.2	265	111
MAX	99	121	85	18	15	12	55	20	21	304	1410	482
MIN	4.2	24	19	14	12	8.3	8.5	5.5	3.4	3.3	73	42
AC-FT	1030	1850	2200	990	730	666	1430	669	340	3340	16300	6600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1999, BY WATER YEAR (WY)

	MEAN	88.8	46.8	80.5	79.9	125	166	124	60.6	16.4	29.2	50.4	48.8
MAX	1027	443	616	569	707	584	488	338	136	136	265	366	
(WY)	1973	1979	1979	1979	1980	1983	1983	1973	1994	1999	1999	1975	
MIN	2.58	3.94	3.69	5.35	8.04	8.94	6.59	4.09	2.94	3.97	8.73	7.44	
(WY)	1983	1974	1977	1977	1971	1971	1971	1996	1974	1997	1975	1979	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1968 - 1999
ANNUAL TOTAL	23082.6	18216.9	
ANNUAL MEAN	63.2	49.9	71.5
HIGHEST ANNUAL MEAN			243
LOWEST ANNUAL MEAN			10.1
HIGHEST DAILY MEAN	464	1410	12400
LOWEST DAILY MEAN	3.5	3.3	.00
ANNUAL SEVEN-DAY MINIMUM	3.7	3.4	.00
ANNUAL RUNOFF (AC-FT)	45780	36130	51780
10 PERCENT EXCEEDS	158	113	170
50 PERCENT EXCEEDS	33	17	22
90 PERCENT EXCEEDS	4.5	5.0	5.3

## 06444600 SAN FRANCISCO RIVER AT CLIFTON, AZ

**LOCATION.**--Lat 33°02'58", long 109°17'43", in SW1/4SE1/4 sec.30, T.4 S., R.30 E., Greenlee County, Hydrologic Unit 15040004, on downstream side of right pier at Railroad Boulevard Bridge (U.S. Highway 191), at Clifton, 9.9 mi upstream from mouth.

**DRAINAGE AREA.**--2,766 mi<sup>2</sup>, of which 2 mi<sup>2</sup> is noncontributing.

**PERIOD OF RECORD.**--October 1910 to March 1911, July 1911 to June 1912, September 1912, November 1912 to March 1913, May 1913 to July 1918, July 1927 to current year. Monthly discharge only for some periods, published in WSP 1313. Published as "San Francisco River at dam above Clifton" in 1911 and under both names in 1912.

**REVISED RECORDS.**--WSP 1049: 1911, 1913-15, 1917. WSP 1283: Drainage area. WSP 1313: 1927-30(M), 1932(M), 1934(M). WRD Anz. 1972: 1917(M).

**GAGE.**--Water-stage recorder. Datum of gage is 3,436.18 ft above sea level. See WSP 1713 or 1733 for history of changes prior to Apr. 7, 1959. Apr. 7, 1959, to Mar. 23, 1961, at site 1,140 ft downstream at datum 5.37 ft lower. July 18, 1980 to July 28, 1983, supplementary water-stage recorder 0.4 mi upstream on right bank at same datum and June 15, 1981 to Sept. 30, 1983, crest-stage gages at site. Aug. 4, 1983 to Mar. 1, 1985, supplementary water-stage recorder on right bank at main gage site at same datum, Oct. 1, 1992 at main gage site, at datum 10.00 ft higher.

**REMARKS.**--No estimated daily discharges. Records good. Diversions for mining, municipal use, and for irrigation of about 2,700 acres above station.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 90,900 ft<sup>3</sup>/s Oct. 2, 1983, gage height, 19.72 ft, from high-water mark, from rating curve extended above 30,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 17.0 ft; minimum daily, 6.1 ft<sup>3</sup>/s June 21, 1971

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (\*).

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 5.....	0915	7,390	16.67
Aug. 10.....	1145	2,450	14.18

Minimum daily discharge, 18 ft<sup>3</sup>/s June 11-14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	95	114	84	68	63	53	57	28	24	163	201
2	41	89	104	83	67	61	86	58	27	22	317	206
3	45	80	150	84	68	60	145	57	29	23	1030	193
4	42	73	132	83	69	65	96	52	27	22	1360	173
5	41	70	113	84	70	65	86	52	27	29	1920	161
6	42	67	103	83	71	64	77	55	22	29	3490	140
7	43	65	102	81	70	62	73	51	20	25	1560	147
8	41	64	100	77	71	64	73	45	20	43	841	132
9	33	66	94	75	70	65	75	41	22	47	690	114
10	36	74	91	73	64	62	76	46	22	60	1330	115
11	36	76	91	73	71	62	75	46	18	128	1320	132
12	37	73	92	70	71	62	74	41	18	88	747	113
13	38	72	91	67	71	64	71	39	18	54	560	112
14	37	69	90	75	69	59	69	43	18	51	437	349
15	30	66	85	73	65	63	58	41	21	65	400	488
16	30	65	87	74	64	64	63	42	23	78	451	536
17	36	65	87	73	60	62	64	42	35	141	479	599
18	37	65	86	72	63	64	62	40	44	481	366	1030
19	41	65	86	70	63	67	66	34	43	491	284	673
20	42	64	85	65	63	64	66	34	43	361	319	582
21	43	66	84	70	61	61	66	37	72	396	303	444
22	58	66	85	71	52	59	66	37	71	386	253	346
23	65	67	87	70	60	53	66	36	49	258	238	303
24	63	67	87	70	61	53	65	35	40	211	214	276
25	56	66	87	68	63	52	61	30	37	147	189	292
26	76	66	85	67	64	54	66	31	33	137	225	277
27	195	59	85	65	63	59	74	30	32	212	217	240
28	162	68	85	65	63	57	60	35	32	349	230	212
29	128	121	83	67	---	53	58	34	31	259	259	186
30	102	159	83	67	---	54	57	34	25	136	218	169
31	95	---	83	67	---	50	---	34	---	127	212	---
TOTAL	1805	2228	2917	2266	1845	1867	2147	1289	947	4870	22622	8941
MEAN	58.2	74.3	94.1	73.1	65.9	60.2	71.6	41.6	31.6	157	730	298
MAX	195	159	150	84	71	67	145	58	72	481	1920	1030
MIN	30	59	83	65	60	50	53	30	18	22	163	112
AC-FT	3580	4420	5790	4490	3660	3700	4260	2560	1880	9660	44870	17730
CFSM	.02	.03	.03	.03	.02	.02	.03	.02	.01	.06	.26	.11
IN.	.02	.03	.04	.03	.02	.03	.03	.02	.01	.07	.30	.12

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 1999, BY WATER YEAR (WY)

	MEAN	219	124	256	303	362	454	331	165	57.2	102	203	155
MAX	4285	1450	2445	4204	2429	2136	2252	1244	310	557	1350	816	
(WY)	1984	1979	1979	1993	1993	1915	1915	1973	1992	1915	1967	1975	
MIN	23.3	28.2	33.5	37.0	38.8	43.9	36.3	23.7	11.0	28.5	40.6	21.5	
(WY)	1954	1957	1954	1954	1954	1951	1955	1956	1956	1947	1960	1956	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1914 - 1999
ANNUAL TOTAL	75687	53744	
ANNUAL MEAN	207	147	225
HIGHEST ANNUAL MEAN			937
LOWEST ANNUAL MEAN			42.0
HIGHEST DAILY MEAN	1550	Mar 28	3920
LOWEST DAILY MEAN	30	Oct 15	18
ANNUAL SEVEN-DAY MINIMUM	35	Oct 10	19
ANNUAL RUNOFF (AC-FT)	150100		106630
ANNUAL RUNOFF (CFSM)	.075		.053
ANNUAL RUNOFF (INCHES)	1.02		.72
10 PERCENT EXCEEDS	457		287
50 PERCENT EXCEEDS	113		67
90 PERCENT EXCEEDS	45		34

## 09445000 WILLOW CREEK DIVERSION FROM BLACK RIVER, NEAR MORENCI, AZ

**LOCATION.**--Lat 33°24'46", long 109°43'08", in SW1/4 sec.23, T.1 N., R.25 E. (unsurveyed), Graham County, Hydrologic Unit 15040005, in San Carlos Indian Reservation, on left bank just downstream from end of diversion pipeline, 3.6 mi northeast of Point of Pines, 5.0 mi southeast of pumping plant on Black River, and 29 mi northwest of Morenci.

**PERIOD OF RECORD.**--April 1945 to current year.

**GAGE.**--Water-stage recorder and steel-edged rectangular weir. Datum of gage is 5,957.18 ft above sea level. Prior to June 28, 1946, at end of pipeline at that time, 3.5 mi upstream at datum about 50 ft higher.

**REMARKS.**--No estimated daily discharges. Records good. The entire flow consists of Black River (head of Salt River) water which is pumped into headwater of Willow Creek (tributary of Eagle Creek) for industrial and municipal supply in vicinity of Morenci.

**AVERAGE DISCHARGE.**--54 years, 11.6 ft<sup>3</sup>/s, 8,400 acre-ft/yr.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum daily discharge, 28 ft<sup>3</sup>/s May 18, 19, 21-26, 1970; no flow at times in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	11	9.8	13	2.4	15	11	22	5.7	2.3	12	5.3
2	5.5	11	12	13	.10	12	.05	22	6.0	.08	12	5.3
3	5.5	11	12	13	.05	12	.07	22	6.0	.01	11	5.3
4	5.5	12	12	11	.01	15	5.7	22	6.0	.02	11	4.3
5	5.6	12	12	13	.01	17	21	22	6.0	.01	11	5.0
6	5.7	12	12	7.1	.00	17	22	22	6.0	2.8	11	5.0
7	4.6	12	18	6.6	.03	18	15	19	6.0	4.8	11	4.9
8	5.6	12	19	6.6	.01	18	21	18	6.0	6.1	11	3.0
9	5.7	12	12	6.6	.03	18	22	18	6.0	6.0	11	5.3
10	5.7	12	12	6.6	4.9	18	22	18	6.0	6.1	10	5.3
11	5.7	12	12	6.6	12	18	22	18	6.0	6.2	11	5.5
12	5.7	12	12	6.6	12	18	22	18	2.2	6.2	11	5.5
13	5.7	12	12	6.6	12	18	22	18	.13	10	8.7	5.6
14	5.6	12	12	6.6	12	18	22	18	.03	12	5.3	9.2
15	5.6	12	13	6.6	12	18	22	18	.00	12	5.0	11
16	5.7	12	13	6.6	12	18	22	18	2.3	12	5.1	10
17	5.5	12	13	6.6	12	17	21	18	5.5	12	5.0	10
18	5.5	12	13	6.6	12	17	22	14	.13	12	5.2	11
19	5.5	12	13	6.6	12	17	22	12	.05	12	4.7	11
20	5.5	12	13	6.4	12	17	22	12	.03	13	5.2	11
21	5.5	12	13	6.4	12	17	22	12	3.9	12	5.1	11
22	3.0	12	13	6.3	12	17	22	12	6.2	12	5.1	11
23	3.8	12	12	6.4	12	17	20	12	6.2	13	5.1	11
24	5.3	12	12	6.4	16	17	21	12	3.3	13	5.4	11
25	5.5	12	13	6.4	17	18	22	12	6.1	13	5.5	11
26	8.5	12	13	6.4	17	18	22	12	6.2	12	5.4	11
27	11	12	13	6.4	18	18	22	12	6.2	12	5.4	11
28	11	8.3	13	6.4	18	18	22	7.8	6.2	13	5.2	11
29	11	6.2	13	6.4	---	20	22	5.8	2.3	13	5.4	11
30	11	6.2	13	6.4	---	22	22	5.8	1.5	12	5.4	12
31	11	---	13	6.4	---	22	---	5.8	---	12	5.4	---
TOTAL	197.5	341.7	397.8	232.6	249.54	540	575.82	478.2	124.17	272.62	235.6	249.5
MEAN	6.37	11.4	12.8	7.50	8.91	17.4	19.2	15.4	4.14	8.79	7.60	8.32
MAX	11	12	19	13	18	22	22	22	6.2	13	12	12
MIN	3.0	6.2	9.8	6.3	.00	12	.05	5.8	.00	.01	4.7	3.0
AC-FT	392	678	789	461	495	1070	1140	949	246	541	467	495
CAL YR	1998	TOTAL	4774.60	MEAN	13.1	MAX	19	MIN	.00	AC-FT	9470	
WTR YR	1999	TOTAL	3895.05	MEAN	10.7	MAX	22	MIN	.00	AC-FT	7730	



## 09447000 EAGLE CREEK ABOVE PUMPING PLANT, NEAR MORENCI, AZ

**LOCATION.**--Lat 33°03'52", long 109°26'30", in SW1/4SE1/4 sec.23, T.4 S., R.28 E., Greenlee County, Hydrologic Unit 15040005, on right bank 2 mi upstream from Phelps Dodge Corp. pumping plant, 5 mi west of Morenci, and 12 mi upstream from mouth.

**DRAINAGE AREA.**--622 mi<sup>2</sup>.

**PERIOD OF RECORD.**--April 1944 to current year.

**REVISED RECORDS.**--WSP 1850-C: 1966. WDR AZ-88-1: Drainage area.

**GAGE.**--Water-stage recorder. Datum of gage is 3,873.5 ft above sea level. Oct. 25, 1984 to Mar. 6, 1986, at site 1 mi upstream at datum 24.1 ft higher. Prior to Oct. 25, 1984, at various sites within 1 mi upstream from present site at different datums. Aug. 23, 1950 to Aug. 1, 1981, and since Mar. 6, 1984, supplementary gages at various sites within 1 mi upstream from present site at different datums. Feb. 7, 1993 to July 2, 1993 on right bank at different datum.

**REMARKS.**--Records good. Diversions above station for irrigation of about 500 acres, mostly above Willow Creek. Water from Black River was pumped into Eagle Creek basin, 52 mi upstream from this station, for the entire year and water was pumped from wells into Eagle Creek near Double Circle Ranch below Willow Creek for 7 months. The monthly quantities pumped are shown in table below. Diversion by pumping for industrial and municipal use in and near Morenci and Clifton are made from Eagle Creek, 3 mi downstream from this station and from San Francisco River near Clifton. Monthly quantities diverted are shown in the table below; 98 percent of the pumpage was from Eagle Creek.

**AVERAGE DISCHARGE** (unadjusted).--55 years, 69.3 ft<sup>3</sup>/s, 50,210 acre-ft/yr; median of yearly mean discharges, 38 ft<sup>3</sup>/s, 27,500 acre-ft/yr.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 36,800 ft<sup>3</sup>/s Jan. 18, 1993, on basis of slope-area measurement; minimum, 2.9 ft<sup>3</sup>/s June 25, 1982.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 800 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 4.....	0730	*1,370	*5.66

Minimum daily discharge, 16 ft<sup>3</sup>/s Sept. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	35	e42	31	36	40	41	41	40	25	42	32
2	25	28	41	30	37	41	50	39	36	21	35	32
3	25	25	42	30	39	41	49	41	37	25	52	29
4	25	23	41	30	38	41	43	40	40	27	247	26
5	25	23	41	30	38	42	42	39	39	24	159	21
6	24	26	41	29	37	42	37	37	40	30	180	19
7	26	26	40	31	37	41	38	36	40	35	102	17
8	26	25	40	29	36	42	39	40	40	34	73	16
9	25	28	41	27	37	42	32	41	39	32	59	17
10	24	33	41	27	37	41	35	40	40	35	120	19
11	25	32	41	28	37	41	36	38	41	41	118	17
12	24	32	40	29	37	41	32	40	42	41	80	21
13	25	31	39	29	39	42	34	39	41	41	65	18
14	25	30	39	29	41	42	33	40	41	41	56	36
15	28	30	38	28	39	41	30	41	41	42	e47	35
16	26	30	36	29	37	41	30	41	41	41	e42	39
17	26	30	33	29	37	41	29	40	40	42	e42	40
18	27	30	33	29	37	42	27	40	42	63	e41	45
19	27	30	33	30	37	41	26	36	41	72	e38	41
20	30	30	31	32	37	41	34	31	42	54	e41	39
21	34	30	30	34	37	41	34	34	43	67	e37	36
22	36	30	30	36	35	40	31	34	41	77	e29	34
23	37	30	30	36	35	40	29	33	37	60	e23	34
24	37	30	30	36	36	40	23	30	31	65	e18	33
25	32	30	28	36	35	41	27	31	33	55	e18	33
26	37	30	28	36	38	40	30	31	33	50	31	31
27	40	30	30	36	39	40	32	32	34	50	44	30
28	37	31	30	36	40	39	35	36	34	59	43	29
29	37	43	30	37	---	40	40	37	30	53	40	27
30	38	44	31	36	---	40	41	39	31	44	38	26
31	39	---	30	36	---	41	---	40	---	43	33	---
TOTAL	919	905	1100	981	1045	1268	1039	1157	1150	1389	1993	872
MEAN	29.6	30.2	35.5	31.6	37.3	40.9	34.6	37.3	38.3	44.8	64.3	29.1
MAX	40	44	42	37	41	42	50	41	43	77	247	45
MIN	24	23	28	27	35	39	23	30	30	21	18	16
AC-FT	1820	1800	2180	1950	2070	2520	2060	2290	2280	2760	3750	1730
CFSM	.05	.05	.06	.05	.06	.07	.06	.06	.06	.07	.10	.05
IN.	.05	.05	.07	.06	.06	.08	.06	.07	.07	.08	.12	.05
(*)	1235	635	667	825	919	793	403	773	1620	1230	374	333
(**)	1554	1518	1840	1690	1642	1895	1486	1550	1607	1568	779	657

CAL YR 1998	TOTAL 21824	MEAN 59.8	MAX 248	MIN 23	AC-FT 43290	CFSM .10	IN. 1.31	(*) 9503	(**) 20209
WTR YR 1999	TOTAL 13818	MEAN 37.9	MAX 247	MIN 16	AC-FT 27410	CFSM .06	IN. .83	(*) 9807	(**) 17786

e Estimated

(\*) Pumpage, in acre-feet, into Eagle Creek from Eagle Creek wells.

(\*\*) Pumpage, in acre-feet, into Clifton and Morenci from San Francisco and Eagle Creek.

## 09447800 BONITA CREEK NEAR MORENCI, AZ

LOCATION.--Lat 32°57'20", long 109°31'50", in SE1/4NW1/4 sec.38, T.5 S., R.27 E., Graham County, Hydrologic Unit 15040005, on left bank 2.0 mi upstream from intake of City of Safford water supply, 6.3 mi upstream from mouth, and 12.8 mi southwest of Morenci.

DRAINAGE AREA.--302 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1981 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,500 ft above sea level, from topographic map. Two crest-stage gages 440 ft upstream on right and left banks.

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,500 ft<sup>3</sup>/s Jan. 18, 1993, gage height, 18.5 ft, from slope-area measurement of peak flow; minimum daily, 0.66 ft<sup>3</sup>/s Aug. 31, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 20, 1972, 10,000 ft<sup>3</sup>/s, from slope-area measurement made by City of Safford at site about 2 mi downstream. Flood of June 27, 1981, 1,340 ft<sup>3</sup>/s, from slope-area measurement at present site, gage height, 5.6 ft, from floodmark.

EXTREMES FOR CURRENT PERIOD.--Peak discharges greater than base discharge of 300 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 22.....	unknown	2,390	9.20
July 26.....	unknown	*3,610	*10.28

Minimum daily discharge, 2.7 ft<sup>3</sup>/s June 11-13, 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	6.1	7.4	6.4	5.6	4.4	4.9	4.7	3.0	7.1	10	23
2	3.6	6.1	7.8	6.6	5.7	4.5	5.8	4.6	2.9	7.1	10	13
3	3.6	6.1	7.8	6.7	5.7	4.5	5.5	4.6	2.9	7.4	12	9.8
4	3.6	6.0	7.8	6.8	5.7	4.7	5.5	4.7	3.0	7.4	10	8.6
5	4.0	5.9	7.7	6.7	5.4	4.6	5.4	4.5	3.1	7.4	14	7.9
6	4.3	6.0	7.4	6.6	5.3	4.7	5.2	4.4	2.9	7.4	12	6.9
7	4.3	6.0	7.4	6.5	5.3	4.8	4.9	4.0	2.9	7.3	8.9	6.0
8	3.9	6.2	7.6	6.5	5.2	4.9	5.0	3.9	2.9	7.4	8.1	5.8
9	3.7	7.1	7.6	6.4	4.9	4.9	5.1	3.7	2.9	19	8.5	5.5
10	3.8	7.2	7.6	6.5	4.9	4.8	5.2	3.8	2.9	35	8.5	6.5
11	3.8	7.2	7.6	6.3	5.4	4.7	4.9	3.8	2.7	29	8.5	5.9
12	3.9	7.0	7.7	6.1	5.5	4.9	4.7	3.7	2.7	13	8.5	5.7
13	4.0	7.0	7.4	6.2	5.5	4.8	4.8	3.6	2.7	11	7.0	5.6
14	4.0	6.9	7.3	6.2	5.3	4.8	4.7	3.4	2.8	39	6.7	5.8
15	4.2	6.9	7.2	6.2	5.2	4.8	4.4	3.3	2.7	40	7.4	19
16	4.7	6.9	7.1	6.2	5.1	4.9	4.5	3.5	2.8	22	7.1	40
17	4.9	6.9	7.1	6.2	5.1	5.0	4.6	3.6	2.8	17	6.8	15
18	5.0	7.0	7.1	6.3	5.0	4.9	4.5	3.5	5.3	35	6.9	12
19	4.6	7.0	7.1	6.5	5.0	5.0	4.3	3.4	7.0	16	7.1	11
20	4.8	7.0	7.0	6.4	4.8	4.6	4.1	3.5	8.5	13	7.1	11
21	5.5	7.2	6.7	6.4	4.7	4.6	4.3	3.5	10	e107	7.1	9.4
22	5.6	7.3	6.8	6.4	4.6	4.5	4.1	3.4	10	e236	7.1	9.1
23	5.7	7.3	6.9	6.6	4.9	4.5	3.8	3.3	9.7	e65	7.3	9.4
24	5.6	7.3	7.0	6.4	4.8	4.5	4.0	3.3	9.3	e73	6.3	9.1
25	5.7	7.2	6.9	5.9	4.7	4.5	4.3	3.3	8.8	23	5.3	8.9
26	5.9	7.2	7.1	5.7	4.8	4.8	4.2	3.3	8.5	e298	5.3	8.4
27	5.9	7.2	6.9	6.2	4.8	4.7	3.9	3.2	8.2	e123	5.7	8.1
28	5.9	7.0	6.6	6.1	4.7	4.4	3.9	3.1	7.8	62	5.9	8.1
29	5.0	7.8	6.4	5.8	---	4.4	4.2	3.1	7.6	19	5.4	8.2
30	5.9	7.5	6.4	5.8	---	4.3	4.5	3.0	7.3	14	5.0	8.3
31	6.0	---	6.4	5.7	---	4.2	---	2.9	---	12	4.9	---
TOTAL	145.8	205.5	222.8	195.3	143.6	144.6	139.2	113.6	156.6	1379.5	240.6	311.0
MEAN	4.70	6.85	7.19	6.30	5.13	4.66	4.64	3.66	5.22	44.5	7.76	10.4
MAX	6.0	7.8	7.8	6.8	5.7	5.0	5.8	4.7	10	298	14	40
MIN	3.4	5.9	6.4	5.7	4.6	4.2	3.8	2.9	2.7	7.1	4.9	5.5
AC-FT	289	408	442	387	285	287	276	225	311	2740	477	617
CFSM	.02	.02	.02	.02	.02	.02	.02	.01	.02	.15	.03	.03
IN.	.02	.03	.03	.02	.02	.02	.02	.01	.02	.17	.03	.04

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1999, BY WATER YEAR (WY)

MEAN	14.3	6.22	10.4	60.1	30.8	15.4	5.39	4.09	3.33	7.86	8.08	8.45
MAX	176	21.7	29.6	769	165	53.6	10.7	6.33	5.86	44.5	14.1	28.6
(WY)	1984	1995	1983	1993	1993	1995	1998	1993	1995	1999	1987	1996
MIN	1.52	1.86	4.96	5.25	4.15	3.46	2.00	2.10	1.32	2.25	4.32	2.47
(WY)	1992	1992	1989	1987	1984	1988	1991	1991	1982	1989	1992	1987

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1982 - 1999

ANNUAL TOTAL	3494.8	3398.1	
ANNUAL MEAN	9.57	9.31	
HIGHEST ANNUAL MEAN			14.5
LOWEST ANNUAL MEAN			83.7
HIGHEST DAILY MEAN	146	298	4.14
LOWEST DAILY MEAN	2.6	2.7	10200
ANNUAL SEVEN-DAY MINIMUM	2.7	2.7	.66
ANNUAL RUNOFF (AC-FT)	5930	6740	.76
ANNUAL RUNOFF (CFSM)	.032	.031	10500
ANNUAL RUNOFF (INCHES)	.43	.42	.048
10 PERCENT EXCEEDS	18	10	.65
50 PERCENT EXCEEDS	6.2	5.9	10
90 PERCENT EXCEEDS	3.5	3.6	4.8
			2.5

e Estimated

## 09448500 GILA RIVER AT HEAD OF SAFFORD VALLEY, NEAR SOLOMON, AZ

**LOCATION.**--Lat 32°52'06", long 109°30'38", in SE1/4NE1/4 sec.31, T.6 S., R.28 E., Graham County, Hydrologic Unit 15040005, on left bank 0.6 mi downstream from intake of Brown Canal, 8 mi northeast of Solomon, and 17 mi downstream from San Francisco River. Records include flow of Brown Canal, which is measured 2,000 ft downstream from intake.

**DRAINAGE AREA.**--7,896 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

**PERIOD OF RECORD.**--April 1914 to current year. Monthly discharge only for some periods, published in WSP 1313. Prior to October 1932 and October 1940 to September 1949 published as "near Solomonville" and October 1932 to October 1933 and May 1935 to September 1940 as "below Bonita Creek near Solomonville."

**REVISED RECORDS.**--WSP 1059: 1914, 1916-17, 1923(M), 1924-25, 1927, 1929-31(M), WSP 1179: 1915, 1918-19(M), WSP 1313: 1934, WSP 1733: 1923.

**GAGE.**--Water-stage recorder. Datum of gage is 3,059.92 ft above sea level. Prior to July 8, 1980, at datum 4.96 ft higher. See WSP 1733 for history of changes prior to Jan. 1, 1941. Supplementary water-stage recorder and Parshall flume on Brown Canal.

**REMARKS.**--Records good. Records show water reaching head of Safford Valley and include water diverted to Brown Canal. Diversions above station for mining, municipal use, and for irrigation of about 17,500 acres, much of it by pumping from ground water.

**COOPERATION.**--Record for Brown Canal furnished by Gila Water Commissioner.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 132,000 ft<sup>3</sup>/s Oct. 2, 1983, gage height, 20.8 ft, from rating curve extended above 52,000 ft<sup>3</sup>/s on basis of slope-area measurements at 14.40 ft and 20.8 ft; minimum, 11 ft<sup>3</sup>/s June 25, 1956.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug 5 .....	1600	*8,240	*11.46

Minimum daily discharge, 51 ft<sup>3</sup>/s July 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	208	249	208	186	146	123	110	67	53	166	326
2	86	207	235	214	171	144	146	109	67	52	548	308
3	91	198	259	222	185	146	193	108	67	51	1060	311
4	94	189	272	215	186	151	190	105	69	59	2510	285
5	92	186	263	215	192	155	177	100	70	57	4770	288
6	92	180	274	218	207	149	169	98	73	100	6700	269
7	94	178	277	209	197	145	159	97	71	71	4520	247
8	95	170	279	201	193	148	163	94	69	62	2360	239
9	92	169	280	191	191	149	158	91	69	81	1490	220
10	85	180	284	191	186	151	152	85	71	108	1540	298
11	84	188	270	188	199	152	147	90	73	165	2560	211
12	83	190	263	186	205	148	152	89	71	162	1890	201
13	81	186	251	185	208	146	146	85	76	119	1350	197
14	79	183	249	187	214	145	141	84	199	133	979	229
15	75	176	234	190	205	140	135	85	148	140	787	513
16	87	175	231	190	199	140	129	83	98	149	822	529
17	90	178	247	187	186	138	122	84	73	170	781	519
18	91	178	270	184	187	136	120	83	96	243	681	987
19	895	177	233	182	184	138	119	80	99	749	576	922
20	94	176	217	179	176	140	120	75	115	421	554	782
21	94	179	220	174	169	137	116	72	91	448	526	657
22	104	179	224	173	163	136	114	72	113	1200	474	529
23	116	176	223	180	160	135	113	69	98	738	413	461
24	120	175	218	173	160	132	111	64	82	824	391	419
25	120	181	216	170	160	135	113	60	75	490	349	412
26	125	180	216	173	164	132	116	59	74	453	328	390
27	164	175	216	173	156	135	116	61	69	721	341	354
28	132	173	213	177	150	135	111	61	64	725	348	320
29	178	188	207	187	---	129	106	66	62	636	397	290
30	172	266	201	191	---	125	107	67	56	549	351	266
31	205	---	204	192	---	125	---	67	---	417	312	---
TOTAL	3344	5544	7495	5905	5141	4363	4094	2556	2524	10347	41074	11889
MEAN	108	185	242	190	184	141	136	82.5	84.1	334	1325	396
MAX	205	266	284	222	214	155	193	110	199	1200	6700	987
MIN	75	169	201	170	150	125	105	59	56	51	312	197
MED	92	180	235	187	186	140	126	84	73	165	681	316
AC-FT	5630	11000	14370	11710	10200	8650	8120	5070	5010	20520	81470	23580
CFSM	.01	.02	.03	.02	.02	.02	.02	.01	.01	.04	.17	.05

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1999 BY WATER YEAR (WY)

	MEAN	375	259	529	722	768	878	590	309	110	210	513	393
MAX	7447	2230	5798	13990	5509	3629	2775	2038	716	736	2499	2081	
(WY)	1934	1979	1979	1993	1993	1991	1973	1973	1992	1921	1923	1975	
MIN	39.9	48.6	60.1	92.8	102	82.3	63.8	37.8	19.7	44.4	66.0	35.9	
(WY)	1957	1957	1957	1954	1954	1971	1971	1956	1956	1947	1960	1956	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1921 - 1999
ANNUAL TOTAL	172682	104276	
ANNUAL MEAN	473	286	471
HIGHEST ANNUAL MEAN			2229
LOWEST ANNUAL MEAN			101
HIGHEST DAILY MEAN	3580	6700	90000
LOWEST DAILY MEAN	75	51	13
ANNUAL SEVEN-DAY MINIMUM	83	56	15
ANNUAL RUNOFF (AC-FT)	142500	206800	341600
ANNUAL RUNOFF (CFSM)	.060	.036	.060
10 PERCENT EXCEEDS	1050	499	1000
50 PERCENT EXCEEDS	251	175	179
90 PERCENT EXCEEDS	103	75	65

e Estimated

## GILA RIVER BASIN

09448500 GILA RIVER AT HEAD OF SAFFORD VALLEY NEAR SOLOMON, AZ--Continued

## WATER-QUALITY RECORDS

**PERIOD OF RECORD.**--January 1976 to October 1981, October 1988 to current year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

## 09448600 GILA RIVER AT HEAD OF SAFFORD VALLEY NEAR SOLOMON, AZ--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM WATER UNPLTRD TOTAL (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)
MAR											
29...	3	42	41	<.5	<.50	120	120	<1	<.50	<1	<1.0
APR											
15...	4	41	40	<.5	<.50	110	120	<1	<.50	<1	<1.0
MAY											
25...	4	49	45	<.5	<.50	140	140	<1	<.50	<1	<1.0
JUN											
16...	4	230	71	1.6	<.50	150	140	<1	<.50	14	<1.0
AUG											
26...	4	140	45	.8	<.50	110	84	<1	<.50	10	<1.0
26...	--	--	--	--	--	--	--	--	--	--	--
DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)
MAR											
29...	2	<1.0	50	<1.0	<1	<1.0	7	2.6	<.10	<.1	<1
APR											
15...	4	<1.0	80	1.2	<1	<1.0	14	4.6	<.10	<.1	<1
MAY											
25...	4	<1.0	150	1.7	<1	<1.0	20	5.9	<.10	<.1	<1
JUN											
16...	54	2.7	1700	1.1	26	<1.0	750	.80	<.10	<.1	26
AUG											
26...	37	1.4	9400	1.1	9	<1.0	380	.90	<.10	<.1	18
26...	--	--	--	--	--	--	--	--	--	--	--
DATE	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	THAL- LIUM, TOTAL RECOV- ERABLE (UG/L AS TL) (01059)	THAL- LIUM, DIS- SOLVED (UG/L AS TL) (01057)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)
MAR											
29...	<1.0	<1	<1	<1	<1.0	<2	<2.0	2.4	<1.0	11	3.8
APR											
15...	<1.0	<1	<1	<1	<1.0	<2	<2.0	1.3	<1.0	3	2.8
MAY											
25...	<1.0	<1	<1	<1	<1.0	<2	<2.0	1.3	<1.0	--	--
JUN											
16...	1.5	<1	<1	<1	<1.0	<2	<2.0	82	<1.0	--	--
AUG											
26...	<1.0	<1	<1	<1	<1.0	<2	<2.0	38	<1.0	586	495
26...	--	--	--	--	--	--	--	--	--	576	487

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

## 09480150 FRYE CREEK NEAR THATCHER, AZ

**LOCATION.**--Lat 32°44'38", long 109°50'15", in NE1/4 sec.13, T.8 S., R.24 E. (unsurveyed), Graham County, Hydrologic Unit 15040005, in Coronado National Forest, on left bank 8.5 mi southwest of Thatcher.

**DRAINAGE AREA.**--4.02 mi<sup>2</sup>. (Area at site used 1966-76, 3.91 mi<sup>2</sup>.)

**PERIOD OF RECORD.**--December 1966 to September 1976, December 1988 to current year.

**REVISED RECORDS.**--WRD Ariz. 1968: Drainage area.

**GAGE.**--Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 5,580 ft above sea level, from topographic map. Prior to December 1988, at site 0.25 mi upstream at different datum.

**REMARKS.**--Records good except for estimated daily discharges, which are fair. No regulation or diversion above station. City of Safford diverts water from Frye Mesa Reservoir 1 mi downstream for municipal supply.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 577 ft<sup>3</sup>/s, Jan. 5, 1995, gage height, 2.90 ft, from floodmark and from rating curve extended above 45 ft<sup>3</sup>/s; no flow at times in most years.

**EXTREMES FOR CURRENT RECORD.**--Peak discharge greater than base discharge of 8.0 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 10.....	1900	*71.0	*1.64	July 18.....	1730	16	1.13
July 14.....	0300	45	1.46	Aug. 31.....	1415	8.3	1.01

Minimum daily discharge, .03 ft<sup>3</sup>/s July 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.17	.36	1.1	.39	.34	.20	.11	1.2	.49	.04	3.5	3.1
2	.14	.34	1.1	.37	.34	.18	.14	1.1	.45	.05	3.1	3.7
3	.14	.33	1.1	.37	.29	.16	.12	1.1	.41	.11	2.9	1.5
4	.14	.32	1.1	.36	.29	.16	.11	1.0	.37	.05	2.7	1.4
5	.15	.31	.98	.36	.27	.16	.14	1.0	.33	.04	3.8	1.3
6	.14	.30	.89	.36	.27	.15	.21	.99	.30	.04	3.6	1.2
7	.13	.30	.84	.35	.28	.15	.39	.99	.27	.04	3.0	1.2
8	.13	.29	.79	.34	.29	.15	.68	1.0	.26	.03	2.6	1.1
9	.13	.32	.73	.33	.28	.14	.82	1.2	.22	.04	2.4	.98
10	.13	.32	.68	.33	.28	.14	.86	1.3	.21	10	2.4	.95
11	.12	.34	.61	.33	.28	.14	.93	1.2	.16	11	2.6	.94
12	.10	.38	.62	.32	.28	.14	1.1	1.3	.15	4.5	2.1	.88
13	.10	.42	.61	.31	.28	.14	1.1	1.4	.16	3.7	1.9	.82
14	.09	.43	.63	.30	.27	.15	1.1	1.5	.16	24	1.8	.78
15	.09	.46	.63	.29	.27	.15	1.2	1.5	.13	38	1.8	.95
16	.09	.42	.64	.29	.26	.15	1.3	1.5	.12	23	1.7	1.1
17	.08	.42	.64	.29	.25	.13	1.3	1.5	.11	15	1.5	1.5
18	.08	.42	.53	.29	.25	.12	1.3	1.4	.11	11	1.3	1.3
19	.07	.42	.54	.28	.24	.11	1.4	1.3	.10	9.1	1.4	1.1
20	.07	.43	.55	.27	.24	.11	1.5	1.3	.10	6.7	1.5	1.2
21	.08	.44	.53	.29	.23	.11	1.6	1.2	.08	5.4	1.3	1.1
22	.09	.43	.50	.31	.22	.10	1.7	1.1	.07	5.0	1.1	1.1
23	.08	.44	.48	.32	.22	.10	1.7	1.0	.07	5.6	1.0	1.5
24	.08	.45	.52	.33	.22	.11	1.5	.94	.07	4.7	.97	1.5
25	.09	.45	.47	e.39	.21	.11	1.3	.87	.06	4.1	.92	1.3
26	.12	.45	.45	e.40	.21	.11	1.1	.80	.06	3.7	.87	1.1
27	.12	.45	.44	e.41	.20	.11	1.1	.73	.06	4.4	.69	1.0
28	.20	.58	.42	e.42	.20	.11	1.2	.66	.05	6.0	.82	.97
29	.30	1.1	.41	e.44	---	.11	1.4	.61	.05	6.5	.75	.91
30	.33	1.2	.40	.39	---	.10	1.3	.57	.04	5.2	.70	.93
31	.34	---	.39	.35	---	.10	---	.53	---	4.1	2.6	---
TOTAL	4.12	13.32	20.32	10.58	7.26	4.10	29.71	33.79	5.21	211.14	59.32	36.41
MEAN	.13	.44	.66	.34	.26	.13	.99	1.09	.17	6.81	1.91	1.21
MAX	.34	1.2	1.1	.44	.34	.20	1.7	1.5	.49	38	3.8	3.1
MIN	.07	.29	.39	.27	.20	.10	.11	.53	.04	.03	.69	.78
AC-FT	8.2	26	40	21	14	8.1	59	67	10	419	118	72
CFSM	.03	.11	.16	.08	.06	.03	.25	.27	.04	1.69	.48	.30
IN.	.04	.12	.19	.10	.07	.04	.27	.31	.05	1.95	.55	.34

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1999, BY WATER YEAR (WY)

MEAN	.39	1.48	1.10	2.42	2.25	2.80	2.80	5.57	2.78	1.77	.96	1.46
MAX	1.25	9.26	4.43	13.7	11.3	10.9	9.37	17.0	7.37	6.81	1.91	6.85
(WY)	1991	1995	1995	1995	1995	1995	1992	1992	1991	1999	1999	1990
MIN	.13	.11	.17	.13	.23	.13	.26	.085	.000	.000	.26	.21
(WY)	1992	1990	1996	1996	1996	1999	1996	1996	1996	1996	1995	1997

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1990 - 1999

ANNUAL TOTAL	738.68	435.28	
ANNUAL MEAN	2.02	1.19	2.15
HIGHEST ANNUAL MEAN			5.02
LOWEST ANNUAL MEAN			.24
HIGHEST DAILY MEAN	20	38	150
LOWEST DAILY MEAN	.07	.03	.00
ANNUAL SEVEN-DAY MINIMUM	.08	.05	.00
ANNUAL RUNOFF (AC-FT)	1470	863	1560
ANNUAL RUNOFF (CFSM)	.50	.30	.53
ANNUAL RUNOFF (INCHES)	6.84	4.03	7.26
10 PERCENT EXCEEDS	6.3	2.0	4.9
50 PERCENT EXCEEDS	.69	.42	.60
90 PERCENT EXCEEDS	.28	.10	.12

e Estimated

## GILA RIVER BASIN

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## 09466500 GILA RIVER AT CALVA, AZ

LOCATION --Lat 33°11'08", long 110°13'10", in SW 1/4 sec. 8, T.3 S., R.21 E. (unsurveyed), Graham County, Hydrologic Unit 15040005, in San Carlos Indian Reservation, or Southern Pacific Railroad bridge at head of San Carlos Reservoir, 2.0 mi west of Calva.

DRAINAGE AREA --11,470 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD --October 1929 to current year.

GAGE --Water-stage recorder. Datum of gage is 2,517.29 ft above sea level. Prior to Oct. 1, 1954, and Aug. 25, 1958, to Dec. 31, 1962, at datum 2.52 ft lower. Oct. 1, 1954, to Aug. 24, 1958, at datum 5.52 ft lower. Dec. 31, 1962, to Oct. 20, 1972, at site 530 ft downstream at datum 3.65 ft lower. Oct. 20, 1972, to Sept. 30, 1974, supplementary gage at bridge on U.S. Highway 70, 6.2 mi upstream at datum 2,560.19 ft, NGVD.

REMARKS --Records good except for estimated daily discharges, which are poor. Diversion above station for irrigation of about 69,000 acres, metallurgical treatment of ores and municipal uses.

EXTREMES FOR PERIOD OF RECORD --Maximum discharge, 150,000 ft<sup>3</sup>/s Oct. 3, 1983, gage height, 23.1 ft, from rating curve extended above 87,000 ft<sup>3</sup>/s on basis of area-velocity and flow-over-road computations of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD --Maximum discharge since at least 1914, probably in excess of 100,000 ft<sup>3</sup>/s Jan. 20, 1916, determined on basis of peak discharge at stations near Solomon and at Kelvin.

EXTREMES FOR CURRENT YEAR --Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 7 or 8...	unknown	*8,140	*9.65

Minimum daily discharge, 0.12 ft<sup>3</sup>/s June 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	112	157	167	154	56	41	33	10	3.7	e149	153
2	17	123	185	183	135	52	51	32	11	.48	e121	117
3	21	125	189	189	119	52	52	31	10	.24	e147	e90
4	20	126	191	192	105	52	52	29	8.3	.65	e431	101
5	22	127	204	195	102	52	50	26	8.4	12	e684	88
6	21	128	204	199	98	51	51	27	9.9	23	e1530	83
7	21	120	208	200	96	52	45	29	10	13	e6180	86
8	21	115	213	203	93	52	41	29	11	14	e6130	87
9	24	122	226	196	87	51	47	28	9.9	12	e2250	76
10	22	129	226	191	83	51	44	24	8.2	14	e760	81
11	16	132	232	185	79	51	43	23	7.3	51	e1040	71
12	18	133	232	180	76	49	44	27	6.8	50	e1800	69
13	17	145	232	175	74	50	42	27	4.9	49	e1430	68
14	18	144	232	172	74	48	44	24	4.3	45	e987	65
15	20	142	223	172	74	47	42	26	3.8	51	e729	74
16	17	141	214	172	72	45	40	22	3.9	79	e578	205
17	15	136	207	169	72	45	40	21	.12	70	528	322
18	16	138	208	169	72	48	41	22	.40	51	459	364
19	18	138	204	170	69	44	40	21	.47	39	405	556
20	21	143	198	177	67	47	35	17	.31	144	341	741
21	24	141	191	180	63	46	35	16	112	194	305	751
22	26	142	187	167	67	44	35	16	48	129	e297	e700
23	30	141	187	162	63	46	35	16	36	180	e260	e558
24	31	138	187	164	59	47	34	15	31	476	214	e646
25	17	135	190	159	58	48	34	15	25	374	206	e593
26	40	131	192	162	56	45	38	15	20	368	183	e593
27	42	132	190	156	55	44	34	15	11	e311	161	e510
28	51	134	185	161	56	44	31	13	8.7	e297	143	e377
29	80	142	178	168	---	44	23	14	9.0	e259	164	e338
30	100	143	172	162	---	44	29	12	4.1	e251	175	e314
31	103	---	165	157	---	43	---	11	---	e201	165	---
TOTAL	342	4008	6211	5464	2278	1492	1213	678	432.80	3768.08	29152	8877
MEAN	30.4	134	200	176	81.4	48.1	40.4	21.9	14.4	122	940	296
MAX	103	145	232	203	154	56	52	33	112	476	6380	751
MIN	13	112	157	156	55	43	23	11	.12	.24	121	65
AC-FT	1870	7950	12320	10840	4520	2960	2410	1340	858	7470	57820	17610
CFSM	.00	.01	.02	.02	.01	.00	.00	.00	.00	.01	.08	.03
IN.	.00	.01	.02	.02	.01	.00	.00	.00	.00	.01	.09	.03

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1999, BY WATER YEAR (WY)

	MEAN	205	459	775	745	749	415	228	54.1	82.1	310	250
MAX	8436	2273	5652	16310	6225	3757	2623	3079	1272	838	1661	1681
(WY)	1934	1995	1979	1993	1993	1991	1992	1992	1992	1955	1957	1975
MIN	.000	.000	.000	21.6	28.5	10.3	1.35	1.25	.000	.000	.000	.000
(WY)	1954	1954	1954	1956	1957	1957	1957	1956	1946	1989	1989	1956

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1930 - 1999
ANNUAL TOTAL	139350	64515.88	
ANNUAL MEAN	382	177	383
HIGHEST ANNUAL MEAN			2451
LOWEST ANNUAL MEAN			28.7
HIGHEST DAILY MEAN	2910	Mar 29	90000
LOWEST DAILY MEAN	13	Sep 29	.00
ANNUAL SEVEN-DAY MINIMUM	14	Sep 25	.00
ANNUAL RUNOFF (AC-FT)	276400	128090	277700
ANNUAL RUNOFF (CFSM)	.033	.015	.033
ANNUAL RUNOFF (INCHES)	.45	.21	.45
10 PERCENT EXCEEDS	982	300	810
50 PERCENT EXCEEDS	191	72	71
90 PERCENT EXCEEDS	25	14	2.8

e Estimated

**GILA RIVER BASIN**  
**09466500 GILA RIVER AT CALVA, AZ--Continued**

**WATER-QUALITY RECORDS**

PERIOD OF RECORD--August 1998 to September 1999.

**WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999**

		DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM HG) (00025)	OXYGEN, DIS- SOLVED OF (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)
AUG 27...	0845	143	2250	8.2	25.0	26.5	380	700	6.7	91	23
DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)	HARD- NESS TOTAL MG/L AS CACO3 (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	CALCIUM TOTAL RECOV- ERABLE (MG/L) AS CA) (00916)	CALCIUM DIS- SOLVED (MG/L) AS CA) (00915)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L) AS MG) (00927)	MAGNE- SIUM, DIS- SOLVED (MG/L) AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L) AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L) AS K) (00935)
AUG 27...	250	210	280	7	90	79	25	20	360	9	7.9
DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L) AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L) AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L) AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	NITRO- GEN, NO2+NO3 TOTAL (MG/L) AS N) (00630)
AUG 27...	332	0	272	210	430	1.6	1350	1270	1.84	410	1.50
DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L) AS N) (00610)	NITRO- GEN, MONIA + TOTAL (MG/L) AS N) (00625)	NITRO- GEN, TOTAL (MG/L) AS N) (00600)	NITRO- GEN, TOTAL (MG/L) AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L) AS P) (00665)	ANTI- MONY, DIS- SOLVED (UG/L) AS SB) (01097)	ANTI- MONY, DIS- SOLVED (UG/L) AS SB) (01095)	ARSENIC TOTAL (UG/L) AS AS) (01002)	ARSENIC DIS- SOLVED (UG/L) AS AS) (01000)	BARIUM, TOTAL RECOV- ERABLE (UG/L) AS BA) (01007)	BARIUM, DIS- SOLVED (UG/L) AS BA) (01005)
AUG 27...	<.010	.91	2.4	11	.450	<1	<1.0	8	6	200	84
DATE	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L) AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L) AS BE) (01010)	BORON, TOTAL RECOV- ERABLE (UG/L) AS B) (01022)	BORON, DIS- SOLVED (UG/L) AS B) (01020)	CADMIUM WATER UNFLTRD TOTAL (UG/L) AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L) AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L) AS CR) (01034)	CHRO- MIUM, DIS- SOLVED (UG/L) AS CR) (01030)	COPPER, TOTAL RECOV- ERABLE (UG/L) AS CU) (01042)	COPPER, DIS- SOLVED (UG/L) AS CU) (01040)	
AUG 27...	.5	<.50	420	410	<1	<.50	7	<1.0	30	3.1	
DATE	IRON, TOTAL RECOV- ERABLE (UG/L) AS FE) (01045)	IRON, DIS- SOLVED (UG/L) AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L) AS PB) (01051)	LEAD, DIS- SOLVED (UG/L) AS PB) (01049)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L) AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L) AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L) AS HG) (71900)	MERCURY DIS- SOLVED (UG/L) AS HG) (71890)	NICKEL, TOTAL RECOV- ERABLE (UG/L) AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L) AS NI) (01065)	
AUG 27...	6800	3.1	8	<1.0	440	1.6	<.10	<.1	15	2.2	
DATE	SELE- NIUM, DIS- SOLVED (UG/L) AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L) AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L) AS AG) (01077)	SILVER, DIS- SOLVED (UG/L) AS AG) (01075)	THAL- LIUM, DIS- SOLVED (UG/L) AS TL) (01059)	THAL- LIUM, DIS- SOLVED (UG/L) AS TL) (01057)	ZINC, TOTAL RECOV- ERABLE (UG/L) AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L) AS ZN) (01090)	SEDI- MENT, DIS- SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- SUS- PENDE (T/DAY) (80155)	
AUG 27...	2	2	<1	<1.0	<2	<2.0	80	9.1	392	151	

< Actual value is known to be less than the value shown.



## 09468500 SAN CARLOS RIVER NEAR PERIDOT, AZ

LOCATION--Lat 33°17'47", long 110°27'03", in SE 1/4 sec.36, T.1 S., R.18 E. (unsurveyed), Gila County, Hydrologic Unit 15040007, in San Carlos Indian Reservation, on U S Highway 70 bridge, 0.9 mi south of Peridot.

DRAINAGE AREA--1,026 mi<sup>2</sup>.

PERIOD OF RECORD--August 1910 to January 1911 (gage heights only), April 1914 to July 1915, August to September 1915 (monthly discharge only), October 1929 to current year. Prior to October 1929 published as "at San Carlos."

REVISED RECORDS--WSP 1283: Drainage area.

GAGE--Water-stage recorder. Datum of gage is 2,542.29 ft above sea level (Arizona Highway Department bench mark). See WSP 1713 or 1733 for history of changes prior to Feb. 1, 1942. Feb. 1, 1942, to Aug. 13, 1970, at sites 1.9 mi upstream at different datums. Aug. 14, 1970, to Sept. 30, 1980, at site 1.8 mi upstream at datum 2,578.90 ft, above sea level. Supplementary water-stage recorder Dec. 21, 1967, to July 2, 1968, at site 2.2 mi downstream at datum in use prior to Feb. 1, 1942, Jan. 31, 1979, to Sept. 30, 1980, at present site and datum.

REMARKS--Records fair except for estimated daily discharges, which are poor. Diversions above station for irrigation of about 600 acres. Small inflow from sewage treatment system about 3.6 mi upstream. Flow regulated to some extent since June 15, 1979, by Talkalari Reservoir; capacity, about 6,000 acre-ft.

EXTREMES FOR PERIOD OF RECORD--Maximum discharge, 54,800 ft<sup>3</sup>/s Jan. 8, 1993, gage height, 12.12 ft, from rating curve extended above 23,000 ft<sup>3</sup>/s on basis of rate of change in storage in San Carlos Reservoir; maximum gage height 14.8 ft, Dec. 22, 1965, site and datum then in use; no flow at times in most years

EXTREMES FOR CURRENT YEAR--Peak discharges greater than base discharge of 2,200 ft<sup>3</sup>/s and maximum (1):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 28.....	0100	12,300	8.57

Minimum daily discharge, 1.2 ft<sup>3</sup>/s July 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	8.5	14	19	13	14	9.0	7.5	5.7	1.4	19	54
2	5.9	9.6	15	19	14	14	17	7.9	5.5	1.2	16	21
3	5.9	10	17	19	13	14	21	8.2	5.3	1.6	12	28
4	5.1	9.7	16	19	13	14	18	8.0	5.1	2.2	10	31
5	5.0	8.9	15	19	13	13	17	7.5	5.0	2.8	12	23
6	5.8	8.2	16	18	13	13	15	7.4	5.0	3.7	27	18
7	5.2	7.7	15	18	13	13	13	7.7	5.2	7.3	13	15
8	5.2	7.6	15	18	12	13	12	7.7	5.1	9.0	10	14
9	5.0	7.5	14	17	12	13	11	7.1	4.6	12	8.7	12
10	5.3	7.7	14	16	12	13	11	6.7	4.2	15	5.2	12
11	5.5	8.2	14	16	12	12	13	6.9	3.9	20	5.2	11
12	5.3	8.7	14	16	12	12	12	7.0	3.9	21	5.4	11
13	5.4	8.6	14	16	13	14	11	6.8	3.7	28	6.5	11
14	5.0	8.5	14	15	12	14	11	6.6	4.3	43	6.3	8.8
15	5.1	8.4	14	15	13	12	10	6.5	3.8	166	6.1	e1.0
16	4.9	8.4	14	15	13	11	10	6.7	3.5	58	5.5	e20
17	4.8	8.5	14	15	14	11	9.6	6.7	3.4	53	5.2	e50
18	5.1	8.7	15	14	14	11	9.1	6.6	4.2	45	4.9	e15
19	4.7	8.7	16	14	15	11	9.1	6.3	5.2	38	4.6	e15
20	5.8	8.7	17	13	15	11	8.7	6.3	5.1	41	5.0	e15
21	5.7	8.7	17	12	16	11	8.7	6.2	4.8	43	6.3	13
22	5.1	8.7	16	12	16	9.8	8.5	5.9	4.6	45	5.1	14
23	6.2	8.7	17	12	16	9.8	8.2	5.5	4.2	40	5.3	12
24	6.0	8.7	16	13	16	9.7	8.2	5.3	3.9	115	4.5	12
25	6.7	8.7	16	13	17	9.3	8.6	5.1	3.3	116	3.6	13
26	14	8.8	16	13	17	9.4	8.7	5.1	2.8	188	3.2	13
27	14	9.2	17	14	16	9.5	9.6	5.1	2.5	96	2.6	12
28	11	9.3	17	14	14	9.2	9.2	5.3	2.3	1050	1.8	11
29	9.0	12	18	14	---	9.0	9.2	5.3	2.3	37	1.8	9.5
30	8.2	14	19	13	---	8.9	7.3	7.0	1.9	33	3.0	9.4
31	8.4	---	19	13	---	8.3	---	6.5	---	28	98	---
TOTAL	203.0	267.6	485	474	388	356.9	330.2	206.9	124.1	2364.2	514.2	513.7
MEAN	6.55	8.92	15.5	15.3	13.9	11.5	11.0	6.67	4.14	76.3	17.2	17.1
MAX	14	14	19	19	17	14	21	8.2	5.7	1050	176	54
MIN	4.7	7.5	14	12	12	8.3	7.3	5.1	1.9	1.2	2.6	8.8
AC-FT	403	531	962	940	770	708	655	410	246	4690	1060	1020
CFSM	.01	.01	.02	.01	.01	.01	.01	.01	.00	.07	.02	.02
IN.	.01	.01	.02	.01	.01	.01	.01	.01	.00	.09	.02	.02

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1999, BY WATER YEAR (WY)

	MEAN	29.0	18.8	107	146	169	146	24.6	8.01	3.67	18.9	52.9	24.2
MAX	519	178	1581	3208	1500	1252	170	41.9	19.3	34.6	320	168	168
(WY)	1973	1979	1966	1993	1980	1941	1941	1980	1993	1930	1990	1983	1983
MIN	.20	2.68	5.07	5.80	7.03	4.83	2.17	.029	.000	.000	.61	.000	.000
(WY)	1957	1957	1951	1958	1953	1959	1959	1959	1943	1947	1962	1956	1956

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1930 - 1999
ANNUAL TOTAL	19238.5	5247.8	62.0
ANNUAL MEAN	52.9	17.1	425
HIGHEST ANNUAL MEAN			8.16
LOWEST ANNUAL MEAN			1.993
HIGHEST DAILY MEAN	1463 Feb 10	1150 Jul 28	20000 Jan 2 1993
LOWEST DAILY MEAN	2.1 Jul 30	1.2 Jul 2	.00 Jun 17 1910
ANNUAL SEVEN-DAY MINIMUM	3.0 Jun 28	1.8 Jun 28	.00 Jun 24 1930
ANNUAL RUNOFF (AC-FT)	19280	12390	44940
ANNUAL RUNOFF (CFSM)	.752	.017	.010
ANNUAL RUNOFF (INCHES)	.70	.23	.82
10 PERCENT EXCEEDS	110	19	58
50 PERCENT EXCEEDS	14	11	10
90 PERCENT EXCEEDS	5.1	5.0	1.0

e Estimated

## 09469000 SAN CARLOS RESERVOIR AT COOLIDGE DAM, AZ

**LOCATION.**--Lat 33°10'32", long 110°31'38", in NW 1/4 sec. 17, T.3 S., R.18 E. (unsurveyed), Gila County, Hydrologic Unit 15040005, in San Carlos Indian Reservation, at right intake tower of Coolidge Dam on Gila River.

**DRAINAGE AREA.**--12,886 mi<sup>2</sup>.

**REVISED RECORDS.**--WSP 1049: 1929, 1934, 1937-38. WSP 1283: Drainage area.

**PERIOD OF RECORD.**--November 1928 to current year.

**GAGE.**--Water-stage recorder. Datum of gage is 2,539.54 ft above sea level. Prior to Jan. 15, 1937, series of stakes with tops at known elevations for reference points on right bank about 1,000 ft upstream from dam. Jan. 15, 1937, to Dec. 31, 1947, water-stage recorder at present site at datum 0.72 ft lower.

**REMARKS.**--Records good except for estimated daily discharges, which are fair. Reservoir is formed by concrete multiple-dome dam. Dam completed Oct. 25, 1928; storage began Nov. 15, 1928. Usable capacity (from capacity table computed by San Carlos Irrigation District, based on an estimate of sediment deposited since 1966; used since Jan. 1, 1991) 866,600 acre-ft between elevations 2,382.63 ft, sill of lowest outlet gate, and 2,510.4 ft (revised), crest of spillway. No dead storage. Figures given herein represent usable contents. Reservoir is used to store water for irrigation of San Carlos project and for power development, dependent on irrigation demands. Spill over Coolidge Dam because of capacity storage has occurred April 22 to May 5, 1979, Feb. 24 to Mar. 13, 1980, Oct. 4-23, 28-31, Dec. 3-13, 1983, Jan. 2 to June 5, 1985, Jan. 11 to Mar. 18, 1993.

**COOPERATION.**--Wire-weight gage readings furnished by U.S. Bureau of Indian Affairs.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum contents, 1,090,000 acre-ft Feb. 26 to Mar. 6, 1980; maximum elevation observed, 2,521.36 ft Jan. 20, 1993; no usable contents at times.

**EXTREMES FOR CURRENT YEAR.**--Maximum contents, 85,020 acre-ft Oct. 1, elevation, 2,431.77 ft, minimum, 39,400 acre-ft July 13, elevation, 2,418.95 ft.

Capacity table used Oct. 1, 1998 to Dec. 31, 1999 (elevation, in feet, and usable contents, in acre-feet)

2,415	28,800	2,440	125,500
2,420	42,570	2,445	154,700
2,425	59,080	2,450	186,300
2,430	77,770	2,455	221,100
2,435	99,580		

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35020	77810	83090	77490	84520	80290	63440	56440	41620	39760	43160	65300
2	84480	77930	82880	77690	84640	80050	63660	56330	41500	39760	e43130	65120
3	83550	78210	82630	78010	84640	79610	63730	55780	41470	39760	e43060	65080
4	83170	78440	82340	78210	84520	79000	63810	55400	41320	39700	e43130	64940
5	32580	78640	81810	78600	84730	78480	63880	55080	41260	39670	e43320	64680
6	32140	79080	81560	79000	84690	78010	64100	54750	41260	39550	44410	64500
7	31480	79200	81310	79360	84640	77300	63990	54380	41200	39670	47200	64390
8	31070	79810	81160	79890	84520	77020	64210	53940	41070	39610	53940	64170
9	30540	79690	80780	80130	84480	76430	64100	53430	41010	39610	e58170	63880
10	79890	79850	80420	80660	84220	75800	64170	52920	40980	39610	e60540	63770
11	73280	80090	80290	81150	84050	75020	64020	52450	40920	39640	62110	63590
12	78800	80500	80010	81150	83800	74430	63620	52080	40890	39520	63410	63560
13	78210	80780	79770	81480	83680	73860	63550	51250	40860	39400	65380	63340
14	77570	81110	79610	81600	83630	73160	63370	50950	40830	40000	66520	63120
15	76960	81350	79320	81680	83420	72510	63190	50520	40770	40110	67110	63370
16	76710	81720	79200	81810	83260	71900	63010	49360	40740	40170	67450	63440
17	76670	81970	79000	82010	83130	71330	62680	49470	40680	40170	67820	63410
18	76670	82180	78880	82180	83170	70750	62540	48820	40680	40290	67780	63770
19	76630	82510	78600	82300	82920	70110	62110	48070	40620	40390	67260	64170
20	76630	82680	78600	82630	82880	69540	61710	47360	40560	40290	67260	64940
21	75630	83960	78360	82720	82720	69020	61430	46500	40470	40380	67190	65820
22	76710	83360	78400	82800	82340	68460	60960	45950	40470	40590	67110	66590
23	76740	83420	78210	82920	81930	67630	60430	45190	40380	e40740	66890	67300
24	76740	83840	78010	83170	81560	67080	60040	44530	40290	40740	66520	67750
25	77140	84050	78000	83470	81400	66450	59650	43900	40230	41040	66260	68230
26	77260	84220	77730	83550	81150	65750	59230	43280	40170	41530	65970	68720
27	77260	84050	77380	83760	80860	65340	58840	42450	40110	41890	65710	69060
28	77260	83930	77180	83930	80700	64860	58350	41960	40020	42690	65710	69320
29	77300	83760	77020	84100	---	64460	57610	41860	39940	43160	65560	69540
30	77490	83380	77020	84220	---	63990	57090	41710	39880	43190	65270	69770
31	77690	---	77340	84430	---	63480	---	41650	---	e43190	65380	---
MAX	85020	84220	83090	84430	84730	80290	64210	56640	41620	43190	67820	69770
MIN	56630	77810	77020	77490	80700	63480	57090	41650	39880	39400	43060	63120
(*)	2429.98	2431.38	2429.89	2431.63	2430.73	2426.23	2424.43	2419.70	2419.11	2420.20	2426.75	2427.93
(**)	-8100	+5690	-6040	+7090	-3730	-17220	-6390	-15440	-1770	-3310	+22190	+4390
CAL YR	1998	MAX	271300	MIN	76630	(**)	-15630					
WTR YR	1999	MAX	85020	MIN	39400	(**)	-16020					

e Estimated

(\*) Elevation, in feet, at end of month.

(\*\*) Change in contents, in acre-feet.

## 09469500 GILA RIVER BELOW COOLIDGE DAM, AZ

**LOCATION** --Lat 33°10'10", long 110°31'50", in SW1/4 sec 17, T.3 S., R.18 E. (unsurveyed), Pinal County, Hydrologic Unit 15050100, on left bank 2,200 ft downstream from Coolidge Dam.

**DRAINAGE AREA** --12,886 mi<sup>2</sup>.

**PERIOD OF RECORD** --July to October 1899, April 1900 to March 1902, July to September 1902, December 1902 to December 1904, January to May 1906 (gage heights only), June to November 1906; August 1910 to February 1911 (gage heights only); April 1914 to current year. Published as "at San Carlos" 1899-1911, as "near San Carlos" 1914-26, and as "at Coolidge Dam" 1927-38.

**REVISED RECORDS** --WSP 629: 1915-16. WSP 1049: 1899-1904. WSP 1149: 19M), 1921, 1922(M), 1923, 1924(M). WSP 1283: Drainage area.

**GAGE** --Water-stage recorder and Parshall flume. Datum of gage is 2,309.33 ft above sea level. Prior to Feb. 5, 1911, nonrecording gage at various sites and datums upstream from mouth of San Carlos River. Apr. 29, 1914, to Mar. 8, 1937, water-stage recorder at various sites within 1 mi upstream from present site at different datums. Mar. 27, 1979 to Oct. 10, 1980, and since Oct. 4, 1983, supplementary water-stage recorder at site on left bank 1,000 ft upstream at datum 2,309.5 ft above sea level, used above discharges at approximately 2,000 ft<sup>3</sup>/s, maximum capacity of parshall flume.

**REMARKS** --No estimated daily discharges. Records good except for those below 20 ft<sup>3</sup>/s, which are fair. Flow regulated by San Carlos Reservoir since Nov. 15, 1928. (See sta 09469000.) Record includes flow of Warm Springs, which enters between the dam and gage. Large diversions above San Carlos Reservoir for irrigation, metallurgical treatment of ore, and municipal supply; about 69,000 acres of land was irrigated, a considerable portion by pumping from ground water.

**AVERAGE DISCHARGE** (adjusted for storage in San Carlos Reservoir)--87 years (water years 1901, 1904, 1915-99) 409 ft<sup>3</sup>/s, 296,300 acre-ft/yr; median of yearly mean discharges, 240 ft<sup>3</sup>/s, 174,000 acre-ft/yr.

**EXTREMES FOR PERIOD OF RECORD** --1914-28: Maximum discharge, 130,000 ft<sup>3</sup>/s Jan. 20, 1916, estimated on basis of peak discharge near Solomon and at Kelvin; no flow at times.

1928-99: Maximum discharge, 32,800 ft<sup>3</sup>/s Jan. 20, 21, 1993 from calculated discharge over Coolidge Dam; no flow at times prior to 1938; minimum daily since 1938, 0.28 ft<sup>3</sup>/s June 20-July 13, July 16-22, 1999.

**EXTREMES FOR CURRENT YEAR** --Maximum daily discharge, 453 ft<sup>3</sup>/s Aug. 15-18; minimum daily, 0.28 ft<sup>3</sup>/s June 20-July 13, July 16-22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	287	1.7	314	70	82	223	243	230	1.6	.28	206	222
2	285	1.7	334	70	115	236	169	220	2.0	.28	93	203
3	285	1.7	363	71	133	246	80	220	2.3	.28	18	158
4	285	1.7	374	71	132	322	60	220	2.4	.28	116	193
5	285	1.7	374	42	132	369	24	220	2.6	.28	199	176
6	285	1.7	374	27	132	368	2.5	220	2.4	.28	306	137
7	285	1.7	374	27	147	372	2.7	220	2.2	.28	397	130
8	285	1.7	374	27	149	372	3.0	220	1.7	.28	400	130
9	285	1.7	365	27	145	392	40	220	1.3	.28	404	100
10	285	1.7	354	27	144	399	90	235	1.1	.28	429	100
11	285	1.7	333	27	144	394	97	243	.94	.28	448	93
12	285	1.7	322	57	145	394	128	246	.81	.28	449	87
13	285	1.7	322	71	146	394	150	248	.65	.28	450	82
14	285	1.7	322	89	147	396	149	248	.42	1.1	451	79
15	285	1.7	306	99	148	396	148	265	.42	.30	453	78
16	89	1.7	296	99	148	394	148	275	.42	.28	453	78
17	2.0	1.6	296	99	149	389	148	275	.42	.28	453	110
18	2.0	1.3	296	100	150	385	148	325	.42	.28	453	130
19	2.0	1.3	296	100	151	385	168	346	.37	.28	432	131
20	2.1	1.3	296	99	151	376	189	345	.28	.28	376	132
21	2.2	1.3	295	100	156	371	194	344	.28	.28	325	133
22	1.7	1.2	268	100	156	369	213	347	.28	.28	312	132
23	1.7	1.3	258	89	232	394	349	343	.28	.38	311	133
24	1.7	1.3	258	80	216	394	260	343	.28	142	311	134
25	1.7	1.3	288	92	215	391	262	346	.28	152	311	134
26	1.7	1.3	348	82	217	391	263	346	.28	152	304	116
27	1.7	257	375	82	217	349	264	356	.28	176	222	108
28	1.7	319	366	82	221	327	265	198	.28	206	178	108
29	1.7	304	269	81	---	299	265	54	.28	167	260	108
30	1.7	317	71	82	---	275	257	33	.28	216	232	108
31	1.7	---	70	82	---	256	---	14	---	205	224	---
TOTAL	1393.3	1247.5	9552	2246	4492	11008	4681.2	7776	27.55	1461.00	9976	3763
MEAN	143	41.6	308	72.5	162	155	156	251	.92	47.1	322	125
MAX	287	319	375	100	221	399	265	356	2.6	216	453	222
MIN	1.7	1.3	70	27	82	223	2.5	14	.28	.28	18	78
AC-FT	9710	2470	18950	4450	8910	21830	9290	15420	55	2900	19790	7460
CAI YR	1998	TOTAL	149934.6	MEAN	411	MAX	952	MIN	1.3	AC-FT	297400	
WTR YR	1999	TOTAL	60623.55	MEAN	166	MAX	453	MIN	.28	AC-FT	120200	

## 09470500 SAN PEDRO RIVER AT PALOMINAS, AZ

**LOCATION.**--Lat 31°22'48", long 110°06'38", in SW1/4, SE1/4, sec.33, T.23 S., R.22 E., Cochise County, Hydrologic Unit 15050202, near left bank on downstream side of pier of bridge on State Highway 92, 0.7 mi east of Palominas, 2.5 mi upstream from Green Brush Draw, 4.5 mi downstream from international boundary, and 12 mi southwest of Bisbee.

**DRAINAGE AREA.**--737 mi<sup>2</sup>, of which 649 mi<sup>2</sup> is in Mexico.

**PERIOD OF RECORD.**--May 1930 to October 1933, May 1935 to July 1941, July 1950 to September 30, 1981 (discontinued as a continuous-record station; converted to a crest-stage partial-record station), October 1995 to current year.

**GAGE.**--Water-stage recorder. Datum of gage is 4,187.62 ft above sea level (State Highway Department bench mark). See WSP 1733 for history of changes prior to Nov. 24, 1955.

**REMARKS.**--No estimated daily discharges. Records good. Small diversions for irrigation of a few hundred acres above station, mostly in Mexico. Records show approximate flow of river at international boundary.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 22,000 ft<sup>3</sup>/s Aug. 14, 1940, gage height, 16.16 ft, present datum, from rating curve extended above 5,600 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times most years.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Greatest flood since at least 1906 occurred Sept. 28, 1926, gage height, about 23.9 ft, present datum, from floodmarks; discharge not determined.

**EXTREMES FOR CURRENT YEAR.**--Maximum discharge (\*) and peak discharges above base of 2,400 ft<sup>3</sup>/s:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 19 .....	2230	*3,220	*9.62

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.02	.28	.24	.66	1.3	.38	.21	.00	.03	12	11
2	.05	.02	.30	.24	.70	1.3	.58	.17	.00	.03	54	9.0
3	.04	.02	.30	.24	.77	1.3	.70	.17	.00	.02	178	4.7
4	.04	.02	.30	.24	.80	1.3	.86	.16	.00	12	89	1.2
5	.03	.02	.30	.24	.82	1.1	.96	.15	.00	.21	434	.51
6	.03	.01	.29	.24	.85	.83	.89	.14	.00	199	233	.22
7	.02	.01	.30	.24	.95	.83	.71	.12	.00	279	49	.10
8	.00	.01	.30	.26	.95	.84	.60	.11	.00	269	23	.04
9	.00	.02	.30	.27	.84	.88	.55	.09	.00	274	68	.02
10	.00	.03	.31	.30	.93	.84	.48	.07	.00	463	322	.01
11	.00	.03	.27	.30	.87	.82	.43	.07	.00	110	49	.00
12	.30	.03	.27	.30	.90	.80	.31	.05	.00	41	16	.00
13	.00	.04	.27	.31	.95	.82	.27	.03	.00	74	11	.00
14	.00	.09	.27	.31	.99	.84	.28	.00	.00	122	164	.00
15	.00	.17	.27	.31	.96	.82	.28	.00	.00	125	19	.00
16	.00	.17	.25	.32	.92	.85	.26	.00	.00	363	11	.11
17	.00	.17	.28	.32	.95	.91	.24	.00	.00	188	8.5	.39
18	.00	.17	.27	.33	.97	.91	.23	.00	.00	120	6.9	.00
19	.30	.19	.28	.33	1.1	.87	.22	.00	.00	92	24	376
20	.00	.22	.28	.33	1.0	.78	.23	.00	.00	77	3.5	125
21	.00	.22	.27	.33	.98	.71	.23	.00	.00	66	2.0	2.0
22	.00	.24	.27	.34	1.1	.63	.23	.00	.00	43	1.9	1.6
23	.00	.25	.27	.35	1.1	.58	.24	.00	.00	46	1.9	1.4
24	.00	.26	.27	.36	1.1	.54	.25	.00	.00	66	1.9	1.2
25	.00	.27	.27	.36	1.1	.52	.25	.00	.00	49	1.8	.75
26	.01	.24	.27	.37	1.2	.56	.21	.00	.00	55	1.7	.39
27	.02	.24	.27	.37	1.2	.61	.21	.00	.00	92	2.3	.16
28	.01	.27	.25	.37	1.2	.62	.20	.00	6.6	232	4.5	.04
29	.00	.35	.24	.37	---	.60	.22	.00	44	194	56	.00
30	.00	.30	.24	.47	---	.53	.24	.00	.08	66	86	.00
31	.01	---	.24	.61	---	.43	---	.00	---	22	32	---
TOTAL	0.32	4.10	8.55	9.97	26.86	25.27	11.74	1.54	50.68	3739.29	1966.9	535.84
MEAN	.010	.14	.28	.32	.96	.82	.39	.050	1.69	121	63.4	17.9
MAX	.06	.35	.31	.61	1.2	1.3	.96	.21	44	463	434	376
MIN.	.00	.01	.24	.24	.66	.43	.20	.00	.00	.02	1.7	.00
AC-FT	.6	8.1	17	20	53	50	23	3.1	101	7420	3900	1060

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1999, BY WATER YEAR (WY)

	MEAN	27.4	3.52	21.6	21.0	9.00	7.64	1.97	.65	2.66	90.1	126	25.6
MAX	770	43.1	414	452	73.5	75.8	14.6	4.63	23.4	280	591	275	
(WY)	1978	1979	1979	1979	1979	1978	1979	1979	1958	1959	1954	1958	
MIN	.000	.000	.097	.035	.071	.22	.000	.000	.000	.26	2.68	.19	
(WY)	1966	1966	1954	1954	1954	1972	1969	1965	1962	1997	1962	1973	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1950 - 1999

ANNUAL TOTAL	2422.09	6381.06	
ANNUAL MEAN	6.64	17.5	28.8
HIGHEST ANNUAL MEAN			93.3
LOWEST ANNUAL MEAN			4.16
HIGHEST DAILY MEAN	247	463	10300
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	4800	12660	20870
10 PERCENT EXCEEDS	12	47	30
50 PERCENT EXCEEDS	.53	.28	1.3
90 PERCENT EXCEEDS	.00	.00	.00

## 09470800 GARDEN CANYON NEAR FORT HUACHUCA, AZ

LOCATION.--Lat 31°28'22", long 110°20'50", in NW 1/4 SE 1/4 sec 31, T.22 S., R.20 E. (unsurveyed), on right bank in Fort Huachuca (U.S. Army) Military Reservation, 2.4 mi southeast of Huachuca Peak, 5.5 mi south of Fort Huachuca, and 6.4 mi northwest of Miller Peak.

DRAINAGE AREA.--8.38 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1959 to June 1965, December 1993 to current year.

GAGE.--Water-stage recorder and concrete control with 90° V-notch weir. Elevation of gage is 5,400 ft above sea level from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81 ft<sup>3</sup>/s Sept. 5, 1960, gage height 3.08 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 20 ft<sup>3</sup>/s and maximum ("):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 26.....	1600	58	2.91
Aug 31.....	1645	22	2.42

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e .62	.16	.22	.41	.08	.14	.02	.01	.00	.00	2.5	5.8
2	e .57	.16	.24	.40	.08	.13	.09	.01	.00	.00	2.0	4.4
3	e .55	.14	.25	.38	.09	.13	.05	.00	.00	.00	1.7	4.0
4	e .56	.12	.26	.36	.08	.12	.03	.00	.00	.00	1.4	3.7
5	e .56	.12	.27	.34	.09	.16	.09	.00	.00	.00	1.4	3.4
6	e .57	.09	.30	.32	.09	.16	.08	.00	.00	.00	1.3	3.1
7	.50	.07	.32	.29	.10	.12	.08	.00	.00	.00	1.1	2.7
8	.43	.07	.34	.26	.09	.14	.03	.00	.00	.00	2.1	2.4
9	.34	.14	.36	.25	.09	.12	.08	.00	.00	.00	6.7	2.2
10	.30	.14	.41	.24	.10	.10	.08	.00	.00	.00	11	2.1
11	.29	.14	.43	.21	.12	.08	.07	.00	.00	.00	16	2.1
12	.25	.12	.46	.20	.13	.09	.07	.00	.00	.00	13	2.0
13	.24	.14	.48	.18	.13	.12	.17	.00	.00	.00	11	1.9
14	.19	.12	.49	.17	.14	.10	.07	.00	.00	.00	6.6	1.9
15	.16	.10	.51	.16	.13	.06	.05	.00	.00	.00	6.9	1.8
16	.20	.07	.50	.14	.14	.11	.06	.00	.00	.00	5.9	1.7
17	.22	.07	.52	.13	.13	.15	.05	.00	.00	.00	5.3	2.0
18	.22	.07	.54	.12	.14	.15	.05	.00	.00	.00	4.6	1.8
19	.19	.08	.55	.11	.13	.13	.04	.00	.00	.00	4.0	1.6
20	.16	.09	.55	.09	.14	e .11	.04	.00	.00	.00	3.7	1.5
21	.16	.10	.58	.09	.14	e .09	.03	.00	.00	.00	3.3	1.5
22	.19	.11	.61	.07	.13	e .05	.03	.00	.00	.00	3.0	1.4
23	.26	.11	.62	.07	.14	e .04	.03	.00	.00	.19	2.8	1.3
24	.27	.11	.64	.06	.16	e .02	.03	.00	.00	.35	2.6	1.3
25	.21	.12	.61	.05	.17	.02	.04	.00	.00	.50	2.4	1.2
26	.19	.13	.58	.05	.17	.02	.02	.00	.00	9.4	2.3	1.2
27	.17	.13	.55	.05	.17	.03	.01	.00	.00	11	2.2	1.1
28	.16	.16	.52	.05	.16	.02	.00	.00	.00	8.2	2.5	1.1
29	.13	.20	.50	.07	---	.02	.01	.00	.00	6.5	2.2	1.1
30	.12	.20	.47	.08	---	.00	.01	.00	.00	4.6	2.1	1.0
31	.14	---	.43	.08	---	.00	---	.00	---	3.4	6.5	---
TOTAL	9.17	3.58	14.11	5.49	3.46	2.73	1.52	0.02	0.00	44.14	142.1	64.3
MEAN	.30	.12	.46	.18	.12	.088	.051	.001	.000	1.42	4.58	2.14
MAX	.62	.20	.64	.41	.17	.16	.09	.01	.00	11	16	5.8
MIN	.12	.07	.22	.05	.08	.00	.00	.00	.00	.00	1.1	1.0
AC-FT	.18	7.1	.28	.11	6.9	5.4	3.0	.04	.00	.88	282	128
CFSM	.04	.01	.05	.02	.01	.01	.01	.00	.00	.17	.55	.26

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1999, BY WATER YEAR (WY)

MEAN	.55	.71	1.20	2.34	2.30	1.77	1.21	.50	.20	.62	2.54	2.47
MAX	2.20	2.60	7.03	11.5	12.1	6.15	5.18	1.94	.74	2.23	11.4	14.5
(WY)	1965	1995	1995	1960	1995	1998	1998	1995	1998	1998	1963	1963
MIN	.000	.000	.10	.12	.12	.088	.051	.001	.000	.000	.001	.038
(WY)	1998	1998	1997	1997	1999	1999	1999	1999	1961	1994	1997	1997

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1960 - 1999

ANNUAL TOTAL	714.90	290.62	
ANNUAL MEAN	1.96	.90	1.46
HIGHEST ANNUAL MEAN			5.60
LOWEST ANNUAL MEAN			.099
HIGHEST DAILY MEAN	9.4 Apr 6	16 Aug 11	48 Feb 16 1995
LOWEST DAILY MEAN	.02 Jul 2	.00 Mar 30	.00 May 29 1961
ANNUAL SEVEN-DAY MINIMUM	.07 Jun 28	.00 May 3	.00 May 29 1961
ANNUAL RUNOFF (AC-FT)	1420	576	1050
ANNUAL RUNOFF (CFSM)	.23	.095	.17
10 PERCENT EXCEEDS	5.9	2.2	3.6
50 PERCENT EXCEEDS	1.1	.13	.30
90 PERCENT EXCEEDS	.16	.00	.00

e Estimated

## 09471000 SAN PEDRO RIVER AT CHARLESTON, AZ

**LOCATION.**--Lat 31°37'33", long 110°10'26", in NE1/4NE1/4 sec.11, T.21 S., R.21 E., Cochise County, Hydrologic Unit 15050202, in Spanish land grant of San Juan de las Boquillas y Nogales, at downstream side of pier near center of highway bridge, 0.3 mi south of Charleston, 1.5 mi upstream from Charleston damsite, and 9 mi upstream from Babocomari River.

**DRAINAGE AREA.**--1,234 mi<sup>2</sup>, of which 696 mi<sup>2</sup> is in Mexico.

## WATER-DISCHARGE RECORDS

**ERIOD OF RECORD.**--January and February 1904 (gage heights only); March 1904 to August 1908; November 1910 to December 1911 (gage heights only); September 1912 to current year. Monthly discharge only October 1926 to May 1928 and December 1933 to April 1935, published in WSP 1313. Published as "near Lewis Springs" 1910-11, and as "near Fairbank" 1911-26.

**REVISED RECORDS.**--WSP 1119: 1939(M), WSP 1213: 1914, 1916(M), 1918(M), 1919, 1920(M), 1922-23(M), WDR AZ-90-1: Drainage area.

**GAGE.**--Water-stage recorder. Datum of gage is 3,954.01 ft above sea level. Prior to Dec. 1, 1942, nonrecording gage or water-stage recorder at various sites within 6.5 mi downstream at different datums.

**REMARKS.**--No estimated daily discharges. Records good. Diversions above station, mostly by pumping from ground water, for irrigation of 3,200 acres in 1978, excluding an unknown amount in Mexico. Record shows flow available at Charleston damsite.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, about 98,000 ft<sup>3</sup>/s Sept. 28, 1926, gage height, 21.9 ft, site and datum then in use, by slope-area measurement of peak flow; minimum daily discharge since 1928, 0.05 ft<sup>3</sup>/s June 14-16, 1994, gage height, 2.02 ft.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum ("):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 5.....	0500	*2,120	*6.27

Minimum daily discharge, 1.6 ft<sup>3</sup>/s June 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	4.4	6.2	5.6	6.4	8.6	7.7	7.1	2.5	3.4	45	130
2	3.2	4.3	5.9	5.8	6.5	8.6	8.0	6.9	2.6	4.0	46	52
3	3.2	4.4	5.6	5.7	6.5	8.3	8.0	6.5	2.6	77	140	38
4	3.2	4.3	5.5	5.7	6.5	8.5	8.2	6.2	2.5	6.8	59	23
5	3.2	4.4	5.3	5.6	6.7	8.4	8.3	6.0	2.6	5.9	738	17
6	3.4	4.5	5.2	5.5	6.7	8.3	8.5	5.7	2.6	5.5	324	14
7	3.5	4.7	5.5	5.6	6.7	8.4	8.3	5.4	2.4	3.0	86	12
8	3.4	4.6	5.5	5.6	6.8	8.2	8.2	5.2	2.2	256	124	11
9	3.3	4.6	5.4	5.6	6.9	8.2	8.0	4.8	2.1	381	108	11
10	3.2	4.6	5.5	5.5	7.1	8.1	7.9	4.3	2.0	158	252	10
11	3.0	4.3	5.5	5.4	7.2	8.1	8.3	4.3	1.8	329	144	9.7
12	3.1	4.2	5.5	5.4	7.4	8.2	8.0	4.3	1.8	50	51	9.8
13	3.1	4.1	5.4	5.4	7.6	8.0	7.8	3.9	1.8	38	29	8.9
14	3.0	4.1	5.5	5.5	7.7	8.0	7.8	3.7	1.9	95	107	8.6
15	3.1	4.1	5.6	5.4	7.8	8.2	7.6	3.6	1.9	217	137	12
16	3.1	3.9	5.5	5.3	8.1	8.2	7.7	3.4	1.8	365	47	17
17	3.1	4.1	5.5	5.5	8.3	8.4	7.6	3.2	3.1	341	35	9.7
18	2.9	4.3	5.5	5.7	8.4	8.2	7.4	3.1	6.6	399	25	13
19	2.6	4.4	5.4	5.3	8.4	8.2	7.2	2.9	2.8	180	73	14
20	2.7	4.5	5.3	5.2	8.9	8.1	7.0	2.9	1.9	171	45	194
21	2.8	4.6	5.3	5.2	8.9	7.8	6.9	2.7	1.9	163	19	27
22	2.9	4.8	5.4	6.4	9.0	7.8	6.7	2.6	1.8	58	15	14
23	3.1	5.1	5.5	6.7	9.1	7.5	7.0	2.7	1.9	113	14	11
24	3.0	5.3	5.5	6.6	9.1	7.4	7.1	2.8	1.7	102	13	9.5
25	3.0	5.6	5.5	6.7	9.1	7.4	7.2	2.9	1.6	100	12	8.6
26	3.2	5.6	5.5	6.7	9.0	7.5	7.5	2.8	2.0	208	11	8.0
27	3.2	5.5	5.4	6.5	9.0	7.9	7.4	2.7	2.3	193	57	7.5
28	3.3	5.7	5.4	6.2	8.6	7.8	7.2	2.4	2.1	433	110	7.0
29	3.6	6.2	5.5	6.3	---	7.8	7.1	2.2	18	263	61	6.8
30	4.0	6.2	5.9	6.3	---	7.6	7.0	2.3	14	133	187	6.6
31	4.2	---	5.8	6.3	---	7.5	---	2.4	---	71	222	---
TOTAL	98.8	141.4	171.0	180.2	218.4	249.2	228.6	121.9	96.8	5239.6	3336	720.7
MEAN	3.19	4.71	5.52	5.81	7.80	8.04	7.62	3.93	3.23	169	108	24.0
MAX	4.2	6.2	6.2	6.7	9.1	8.6	8.5	7.1	18	433	738	194
MIN	2.6	3.9	5.2	5.2	6.4	7.4	6.7	2.2	1.6	3.4	11	6.6
MED	3.2	4.5	5.5	5.6	7.8	8.1	7.6	3.4	2.1	158	59	11
AC-FT	196	280	339	357	433	494	453	242	192	10390	6620	1430
CFSM	.00	.00	.00	.00	.01	.01	.01	.00	.00	.14	.09	.02

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 1999, BY WATER YEAR (WY)

	MEAN	17.3	47.3	40.6	28.2	24.2	13.4	8.44	11.8	142	211	82.4
MAX	1087	128	1230	507	217	160	66.5	37.2	167	876	968	1887
(WY)	1978	1920	1915	1979	1915	1915	1905	1917	1925	1921	1954	1926
MIN	2.87	4.71	5.52	5.81	7.18	8.04	3.03	2.42	1.19	.55	9.97	4.15
(WY)	1996	1999	1999	1999	1923	1999	1913	1918	1990	1997	1962	1980

## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1904 - 1999

ANNUAL TOTAL	5115.6	10802.6	55.1
ANNUAL MEAN	14.0	29.6	206
HIGHEST ANNUAL MEAN			1915
LOWEST ANNUAL MEAN			11.0
HIGHEST DAILY MEAN	207	738	28800
LOWEST DAILY MEAN	1.4	1.6	.05
ANNUAL SEVEN-DAY MINIMUM	1.6	1.8	.06
ANNUAL RUNOFF (AC-FT)	10150	21430	39950
ANNUAL RUNOFF (CFSM)	.011	.024	.045
10 PERCENT EXCEEDS	24	81	70
50 PERCENT EXCEEDS	5.8	6.5	13
90 PERCENT EXCEEDS	3.0	2.8	3.6

08471000 SAN PEDRO RIVER AT CHARLESTON, AZ--Continued  
(National Water-Quality Assessment Station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 1963 to September 1975, December 1986 to September 1993, February 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1984 to September 1975, October 1996 to current year.

WATER TEMPERATURES: July 1963 to September 1975, October 1996 to current year.

SUSPENDED-SEDIMENT DISCHARGE: July 1963 to September 1975.

INSTRUMENTATION.--Specific conductance and water temperature recorder October 1996 to current year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

		DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD STANDARD (UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRES-SURE OF (MM HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION) (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION) (MG/L) (00301)	HARDNESS TOTAL (MG/L AS CaCO3) (00900)	HARDNESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L) (00904)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	
OCT 27...	1325	3.1	467	8.3	22.5	18.5	659	7.5	93	160	--	44	
NOV 19...	1300	4.4	469	8.3	20.0	13.4	660	8.1	90	160	--	45	
DEC 16...	1320	5.4	463	8.6	21.5	13.2	661	9.7	107	170	--	46	
JAN 21...	1400	5.3	456	8.5	19.0	13.4	654	9.6	107	160	--	44	
FEB 11...	1320	7.4	448	8.6	11.5	11.4	665	9.8	103	170	--	46	
MAR 11...	1300	8.1	485	8.7	22.5	16.8	654	8.8	106	170	--	47	
APR 27...	1340	7.4	458	8.6	28.0	23.8	660	8.9	123	160	--	43	
MAY 27...	1010	3.0	451	8.3	29.0	19.7	658	8.4	106	150	--	39	
JUN 30...	1240	9.3	410	7.8	36.5	27.9	657	3.3	57	140	5	43	
JUL 14...	1240	58	321	8.1	30.5	26.7	659	5.5	80	120	--	39	
AUG 25...	1320	12	490	8.3	32.0	27.8	660	6.1	90	170	--	52	
SEP 14...	1300	8.7	545	8.3	31.0	26.5	659	7.1	103	200	--	58	
DATE		MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORPTION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT 27...	12	36	1	2.2	251	8	220	19	7.3	.75	23	289	
NOV 19...	12	35	1	2.0	262	5	223	20	7.5	.63	24	299	
DEC 16...	12	35	1	1.9	255	6	219	20	7.5	.71	23	285	
JAN 21...	12	36	1	2.0	248	10	219	21	7.0	.71	20	286	
FEB 11...	13	36	1	1.8	255	7	221	21	7.1	.71	21	287	
MAR 11...	12	35	1	2.1	262	5	223	25	8.5	.71	21	301	
APR 27...	12	37	1	2.0	232	14	214	22	7.2	.74	24	286	
MAY 27...	12	37	1	1.8	246	5	210	19	7.5	.71	23	289	
JUN 30...	6.9	26	1	6.7	159	0	130	60	5.0	.38	18	308	
JUL 14...	4.8	16	.7	4.4	161	0	132	19	4.5	.32	15	201	
AUG 25...	11	31	1	3.5	248	11	221	23	8.6	.48	22	295	
SEP 14...	13	40	1	3.3	296	0	243	30	9.3	.56	25	311	

09471000 SAN PEDRO RIVER AT CHARLESTON, AZ--Continued  
(National Water-Quality Assessment Station)

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)
OCT 27...	276	.39	--	--	<.010	<.050	.020	.11	--	.13	<.10	--
NOV 19...	280	.41	--	--	<.010	<.050	.026	.12	--	.14	<.10	--
DEC 16...	279	.39	--	--	.019	<.050	.020	--	--	<.10	<.10	--
JAN 21...	274	.39	--	--	<.010	<.050	.041	--	--	E.10	E.10	--
FEB 11...	280	.39	--	--	<.010	<.050	<.020	--	--	.13	E.10	--
MAR 11...	286	.41	--	--	<.010	<.050	.041	.10	--	.14	E.10	--
APR 27...	276	.39	--	--	<.010	<.050	.026	.13	.10	.16	.13	--
MAY 27...	267	.39	--	--	<.010	<.050	<.020	--	--	.17	E.10	--
JUN 30...	244	.42	--	--	.017	<.050	.039	3.2	.78	3.2	.82	--
JUL 14...	184	.27	.233	1.0	.013	.246	.046	1.5	.40	1.6	.44	1.8
AUG 25...	284	.40	--	--	<.010	.103	<.020	--	--	.22	.19	.32
SEP 14...	327	.42	--	--	<.010	<.050	<.020	--	--	.22	.14	--
DATE	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	
OCT 27...	--	.030	.011	.016	.05	E5.5	44	1.4	.40	15	.13	
NOV 19...	--	.031	.021	.017	.05	E6.5	62	1.9	.80	17	.20	
DEC 16...	--	.016	.016	.015	.05	<10	42	1.1	.50	5	.07	
JAN 21...	--	.025	.012	.011	.03	E8.0	46	2.1	.50	3	.04	
FEB 11...	--	.029	.009	.011	.03	E5.7	54	.90	.40	18	.36	
MAR 11...	--	.032	.012	.025	.08	<10	26	1.2	.50	24	.52	
APR 27...	--	.030	.017	.021	.06	E7.9	29	1.4	.30	13	.26	
MAY 27...	--	.027	.012	.022	.07	<10	29	1.3	.50	14	.11	
JUN 30...	--	1.25	.131	.104	.32	360	27	16	10	534	13	
JUL 14...	.69	.671	.112	.089	.27	<10	E2.3	4.9	8.1	672	105	
AUG 25...	.30	.092	.046	.038	.12	<10	46	2.7	1.1	41	1.3	
SEP 14...	--	.054	.039	.034	.10	<10	74	2.0	.50	12	.28	

< Actual value is known to be less than the value shown.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").



## GILA RIVER BASIN

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## 09471550 SAN PEDRO RIVER NEAR TOMBSTONE, AZ

**LOCATION.**--Lat 31°45'03", long 110°12'02", in SE1/4 sec.28, T.19 S., R.21 E. (unsurveyed), Cochise County, Hydrologic Unit 15050202, in Spanish land grant of San Juan de las Boquillas y Nogales, on right bank 0.5 mi downstream from Willow Wash, 2.6 mi north of Fairbank, and 8 mi northwest of Tombstone.

**DRAINAGE AREA.**--1,740 mi<sup>2</sup> approximately, of which 696 mi<sup>2</sup> is in Mexico.

**PERIOD OF RECORD.**--April 1967 to September 1986, October 1996 to current year.

**GAGE.**--Water-stage recorder. Elevation of gage is 3,780 ft above sea level, from topographic map.

**REMARKS.**--Records good except for estimated daily discharges, which are poor. Diversions above station, mostly by pumping from ground water, for irrigation of 3,200 acres in 1978, excluding an unknown amount in Mexico.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 24,200 ft<sup>3</sup>/s Oct. 9, 1977, gage height, 11.40 ft, from rating curve extended above 4,900 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 8.89 ft and 11.40 ft, no flow at times during most summers.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*).

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 23.....	1814	4,110	8.12

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	1.2	4.0	5.7	5.6	2.4	.00	.00	26	266
2	.00	.00	.00	1.3	4.2	5.7	6.4	2.4	.00	.00	19	134
3	.00	.00	.00	1.7	4.8	5.5	6.3	2.0	.00	6.3	107	32
4	.00	.00	.00	1.7	4.2	5.4	6.7	1.6	.00	22	43	23
5	.00	.00	.00	1.9	4.2	5.5	6.9	1.2	.00	1.7	1160	17
6	.00	.00	.00	1.9	4.3	5.5	6.8	.79	.00	1.2	699	14
7	.00	.00	e1.3	1.6	4.3	5.5	6.3	.38	.00	269	163	13
8	.00	.00	e5.3	1.6	4.3	5.5	6.1	.00	.00	347	197	11
9	.00	.00	e4.2	1.8	4.3	5.6	6.2	.00	.00	459	303	10
10	.00	.00	e3.8	2.0	4.5	5.7	6.0	.00	.00	202	653	9.8
11	.00	.00	e4.8	1.6	4.9	5.8	6.3	.00	.00	486	258	8.9
12	.00	.00	e3.6	1.7	4.5	5.9	6.1	.00	.00	146	71	8.8
13	.00	.00	e2.1	1.9	4.5	5.9	6.9	.00	.00	114	28	17
14	.00	.00	e3.2	1.9	4.6	6.1	6.0	.00	.00	357	84	8.2
15	.00	.00	e2.2	2.1	4.7	6.3	5.7	.00	.00	414	132	6.9
16	.00	.00	e1.8	2.1	4.7	6.4	5.4	.00	.00	442	121	20
17	.00	.00	e1.9	2.1	4.9	6.7	5.3	.00	.00	e528	26	10
18	.00	.00	e1.8	2.3	5.0	6.8	5.1	.00	.00	589	20	68
19	.00	.00	e1.7	2.3	5.1	7.0	4.9	.00	.00	e289	68	20
20	.00	.00	e1.5	2.3	5.1	7.0	4.6	.00	.00	e298	69	235
21	.00	.00	e1.4	2.7	5.2	7.0	4.5	.00	.00	e308	17	22
22	.00	.00	e1.7	2.5	5.3	7.0	4.1	.00	.00	e351	13	7.9
23	.00	.00	e1.7	2.8	5.2	7.0	3.5	.00	.00	e483	12	6.6
24	.00	.00	e1.4	2.9	5.3	6.8	3.4	.00	.00	24	11	5.3
25	.00	.00	2.0	2.8	5.5	6.8	3.7	.00	.00	93	9.5	4.7
26	.00	.00	2.1	3.2	5.6	6.7	3.8	.00	.00	163	8.8	4.5
27	.00	.00	1.3	3.3	5.6	6.2	3.5	.00	.00	280	40	4.0
28	.00	.00	1.6	3.6	5.6	6.1	2.9	.00	.00	673	379	3.6
29	.00	.00	1.5	3.8	---	6.1	2.1	.00	.00	250	59	3.4
30	.00	.00	1.5	4.0	---	6.2	2.2	.00	.00	104	285	3.3
31	.00	---	1.4	4.0	---	5.8	---	.00	---	44	541	---
TOTAL	0.00	0.00	58.00	72.8	134.4	191.2	152.3	10.77	0.00	7754.20	5622.3	997.9
MEAN	.0000	.0000	1.87	2.35	4.80	6.17	5.08	.35	.0000	250	181	33.3
MAX	.00	.00	5.3	4.0	5.6	7.0	6.9	2.4	.00	673	1160	266
MIN	.00	.00	.00	1.2	4.0	5.4	2.1	.00	.00	.00	8.8	3.3
AC-FT	.00	.00	115	144	267	379	302	21	.00	15380	11150	1980

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1999, BY WATER YEAR (WY)

	MEAN	84.4	13.8	56.2	49.7	40.0	33.6	13.9	7.07	3.25	107	146	54.0
	MAX	998	61.3	375	450	214	179	43.7	20.8	22.4	369	820	177
	(WY)	1978	1979	1979	1979	1983	1983	1985	1985	1979	1974	1984	1982
	MIN	.0000	.0000	1.87	2.35	4.80	6.17	4.16	.35	.0000	.0000	6.86	.085
	(WY)	1974	1999	1999	1999	1999	1999	1982	1999	1974	1997	1997	1973

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1967 - 1999
ANNUAL TOTAL	5227.59	14433.87	
ANNUAL MEAN	14.5	41.1	51.2
HIGHEST ANNUAL MEAN			157 1984
LOWEST ANNUAL MEAN			10.1 1997
HIGHEST DAILY MEAN	417 Jul 7	1160 Aug 5	17100 Oct 9 1977
LOWEST DAILY MEAN	.00 May 31	.00 Oct 1	.00 Jun 22 1967
ANNUAL SEVEN-DAY MINIMUM	.00 May 31	.00 Oct 1	.00 Jun 22 1967
ANNUAL RUNOFF (AC-FT)	10370	29740	37100
10 PERCENT EXCEEDS	24	110	76
50 PERCENT EXCEEDS	5.7	3.3	11
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

## 09472060 SAN PEDRO RIVER AT REDINGTON BRIDGE NEAR REDINGTON, AZ

LOCATION.--Lat 32°26'48", long 110°29'16", in SW1/4NE1/4SE1/4 sec.34, T.11 S., R.18 E., Pima County, Hydrologic Unit 15050203, on left bank of bridge 1.5 mi downstream from the Cochise/Pima County line, 0.5 mi east of Redington and 6.4 mi downstream from former gage, sta 09472000.

DRAINAGE AREA.--3,096 mi<sup>2</sup>, of which 696 mi<sup>2</sup> is in Mexico.

PERIOD OF RECORD.--July 1998 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,820 ft above sea level.

REMARKS.--Records fair except for discharges below 100 ft<sup>3</sup>/s and estimated daily discharges, which are poor. Diversions above station for irrigation of about 10,800 acres in 1978, excluding an unknown amount in Mexico.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,840 ft<sup>3</sup>/s, July 15, 1999, gage height, 13.37 ft. No flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 15 .....	1015	*3,840	*13.37	Aug. 31 .....	2000	1,910	11.60
Aug. 5 .....	2245	1,740	11.41	Sept. 1 .....	0930	1,810	11.49

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e1.7	833
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.04	229
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e2.9	156
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e30	11
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e270	e.12
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	895	e.02
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	368	e.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	21	150	e.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	42	311	e.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	111	575	e.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	44	374	e.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	155	160	e.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	8.2	e1.7	e.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.6	e.06	2.4
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	1020	e90	e.19
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	156	184	e.01
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	82	96	e.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	144	e17	e.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	219	e4.5	12
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	20	e35	12
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	7.9	67	102
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	52	3.4	55
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	249	.11	54
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	241	.13	e16
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.8	.24	e.01
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	153	.18	e.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	88	e12	e.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	768	242	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	241	657	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	117	250	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	46	479	.00
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3990.50	5277.96	1482.75
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	129	170	49.4
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	1020	895	833
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00
MED	.00	.00	.00	.00	.00	.00	.00	.00	.00	46	67	.01
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	7920	10470	2340
CFSM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.05	.02

WTR YR 1999 TOTAL 10751.21 MEAN 29.5 MAX 1020 MIN .00 MED .00 AC-FT 21330 CFSM .01

e Estimated

## 09473000 ARAVAIPA CREEK NEAR MAMMOTH, AZ

LOCATION --Lat 32°50'37", long 110°37'09", in NW1/4NW1/4 sec 9, T 7 S., R. 17 E., Pinal County, Hydrologic Unit 15050203, on right bank 6 mi upstream from mouth and 9 mi north of Mammoth

DRAINAGE AREA --537 mi<sup>2</sup>.

PERIOD OF RECORD --May 1931 to December 1942 (published as "near Feldman"), May 1966 to current year. Monthly discharge only July 1941 to September 1941, published in WSP 1313.

REVISED RECORDS --WDR AZ-68-1: 1967. WDR AZ-82-1: 1968, 1969, 1973, 1979 (M). WDR AZ-90-1: Drainage area.

GAGE --Water-stage recorder and, since March 1980, crest-stage gage. Elevation of gage is 2,345 ft above sea level, from topographic map. Oct. 1, 1981 to Oct. 1, 1983 gage at site 300 ft upstream at datum 4.19 ft higher. Prior to Oct. 1, 1981, at datum 1.00 ft higher. May 1931 to December 1942 at site 0.3 mi downstream at different datum.

REMARKS --Records good except for estimated daily discharges, which are poor. Diversions for irrigation of several hundred acres above station

EXTREMES FOR PERIOD OF RECORD --Maximum discharge since at least 1919, 70,800 ft<sup>3</sup>/s Oct. 1, 1983, from slope-area measurement of peak flow, gage height, 16.76 ft, from profile past gage; minimum, 0.3 ft<sup>3</sup>/s Aug. 30, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD --A discharge of 20,000 ft<sup>3</sup>/s occurred Aug. 2, 1919, at site of former gaging station 6 mi downstream, operated April 1919 to September 1921; gage height, 6.3 ft, from floodmark, site and datum then in use, from rating curve extended above 5,100 ft<sup>3</sup>/s on basis of velocity-area study

EXTREMES FOR CURRENT YEAR --Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*), from rating curve extended above 130 ft<sup>3</sup>/s on the basis of slope area measurement at gage height 16.76 ft:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 28	0730	4,150	6.32

Minimum daily discharge, 7.2 ft<sup>3</sup>/s, July 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	19	31	35	25	27	27	17	11	7.2	e30	116
2	19	19	41	35	25	27	52	17	11	7.6	e25	27
3	17	19	45	36	25	29	35	17	10	8.6	20	21
4	17	19	33	36	24	27	28	17	9.0	10	17	19
5	17	21	28	35	23	25	31	16	10	8.2	17	18
6	16	20	30	34	23	28	27	15	9.8	8.0	15	17
7	15	18	32	34	22	26	25	14	9.5	20	15	16
8	14	17	26	34	20	28	33	14	9.4	17	15	15
9	14	16	28	31	21	24	21	14	9.5	13	15	e14
10	15	19	29	32	22	25	21	14	8.5	14	50	e14
11	16	21	27	32	22	25	21	14	8.8	18	29	e14
12	16	23	26	32	21	25	19	14	9.3	21	25	e14
13	16	22	24	32	21	23	19	14	9.3	18	24	e14
14	16	21	25	31	21	23	19	13	9.6	22	22	e15
15	17	18	29	31	21	24	17	13	9.8	157	26	e13
16	17	19	32	31	21	25	15	13	9.9	54	32	11
17	18	21	32	29	22	26	15	13	10	31	27	13
18	18	21	38	28	22	25	14	12	10	30	27	16
19	17	23	38	28	21	23	14	12	11	48	27	16
20	17	23	38	28	20	22	15	11	10	29	27	22
21	19	23	38	28	21	23	17	13	11	27	35	17
22	21	22	41	28	22	23	17	11	10	99	22	17
23	21	19	43	28	24	21	17	11	10	69	22	22
24	e21	19	43	28	25	24	18	11	9.2	e55	30	13
25	e21	19	43	28	25	21	17	11	8.8	e40	28	13
26	e21	25	45	28	27	25	16	9.9	8.4	31	25	17
27	e21	26	47	28	26	27	16	10	8.7	31	29	16
28	e21	27	45	27	27	27	17	10	8.6	840	430	15
29	20	48	31	27	---	25	18	11	8.1	e120	129	14
30	20	39	30	26	---	24	18	11	7.9	e60	119	14
31	18	---	31	26	---	22	---	11	---	e40	39	---
TOTAL	553	665	1069	948	641	783	638	402.9	285.6	1953.6	1383	594
MEAN	17.8	22.2	34.5	30.6	22.9	25.3	21.3	13.0	9.52	63.0	44.6	19.8
MAX	21	48	47	36	27	29	58	17	11	840	430	116
MIN	14	16	24	26	20	22	14	9.9	7.9	7.2	15	11
AC-FT	1100	1320	2120	1880	1270	1550	1270	799	566	3870	2740	1130
CFSM	.03	.04	.06	.05	.04	.05	.04	.02	.02	.12	.08	.04
IN.	.04	.05	.07	.07	.04	.05	.04	.03	.02	.14	.10	.04

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1999, BY WATER YEAR (WY)

	MEAN	47.6	24.0	49.3	55.4	67.8	61.0	21.7	15.3	12.3	25.0	32.6	24.7
MAX	1098	91.1	474	682	215	349	53.1	44.8	40.1	115	133	55.8	
(WY)	1984	1979	1979	1993	1983	1991	1993	1979	1940	1942	1935	1984	
MIN	6.19	8.70	9.69	10.1	11.1	9.49	7.17	4.33	1.90	4.71	7.81	5.35	
(WY)	1933	1940	1971	1940	1977	1975	1975	1972	1939	1997	1975	1973	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1932 - 1999
ANNUAL TOTAL	13772.6	8916.1	35.5
ANNUAL MEAN	37.8	24.2	140
HIGHEST ANNUAL MEAN			9.62
LOWEST ANNUAL MEAN			1976
HIGHEST DAILY MEAN	876 Feb 8	847 Jul 28	16000 Oct 1 1983
LOWEST DAILY MEAN	1.4 Jan 4	1.6 Jul 1	.40 Aug 29 1940
ANNUAL SEVEN-DAY MINIMUM	1.5 Jan 3	8.1 Jun 27	.63 Aug 25 1940
ANNUAL RUNOFF (AC-FT)	27320	19670	25710
ANNUAL RUNOFF (CFSM)	.070	.051	.066
ANNUAL RUNOFF (INCHES)	.95	.69	.90
10 PERCENT EXCEEDS	62	36	47
50 PERCENT EXCEEDS	21	21	17
90 PERCENT EXCEEDS	10	11	6.0

e Estimated

## 09474000 GILA RIVER AT KELVIN, AZ

**LOCATION.**--Lat 33°06'10", long 110°58'33", in NE1/4NW1/4 sec.12, T.4 S., R.13 E., Pinal County, Hydrologic Unit 15050100, on left bank at Kelvin, 500 ft downstream from Mineral Creek, 18 mi downstream from San Pedro River, and 19 mi upstream from Ashurst-Hayden Dam.

**DRAINAGE AREA.**--18,011 mi<sup>2</sup>, of which 5,125 mi<sup>2</sup> is below Coolidge Dam.

**PERIOD OF RECORD.**--January 1911 to current year.

**REVISED RECORDS.**--WSP 328: 1911. WSP 609: 1916(M). WSP 629: 1914-17. WSP 1119: 1913, 1915, 1917(M), 1921(M), 1922-23, 1927(M). WSP 1283: Drainage area.

**GAGE.**--Water-stage recorder. Datum of gage is 1.745.02 ft above sea level. Prior to June 15, 1914, and Dec. 1, 1914, to Aug. 31, 1915, nonrecording gages at several sites within 2 mi of present site at different datums. Sept. 1, 1915, to Sept. 30, 1963, water-stage recorder at site 900 ft downstream at datum 1.80 ft lower. Jan. 16, 1985, to June 1990, supplementary water-stage recorder at same site and datum.

**AVERAGE DISCHARGE** (adjusted for storage in San Carlos Reservoir).--88 years, 534 ft<sup>3</sup>/s, 389,800 acre-ft/yr; median of yearly mean discharges, 340 ft<sup>3</sup>/s, 246,000 acre-ft/yr.

**REMARKS.**--Records good except for estimated daily discharges, which are poor. Large diversions above station for irrigation, of which about 90 percent is above Coolidge Dam. About 82,000 acres irrigated, a considerable portion by pumping from ground water. Flow regulated by San Carlos Reservoir 49 mi upstream since Nov. 15, 1928. (See sta 09469000.) San Pedro River contributes major portion of unregulated inflow.

**EXTREMES FOR PERIOD OF RECORD.**--1911-28: Maximum discharge, about 132,000 ft<sup>3</sup>/s Jan. 20, 1916, gage height, 19.5 ft, site and datum then in use, from rating curve extended above slope-area measurement at gage height, 16.2 ft for flood of Sept. 28, 1926; no flow Feb. 25, 1913.

1929-99: Maximum discharge, 100,000 ft<sup>3</sup>/s Oct. 2, 1983, gage height, 33.0 ft from floodmark, from rating curve extended above 12,000 ft<sup>3</sup>/s on basis of peak discharge computed by step-backwater method at Hayden Railroad Bridge, 17.8 mi upstream, and by flood-routing; minimum daily, 0.1 ft<sup>3</sup>/s June 25, 1961.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 28.....	2330	*1,710	*6.64

Minimum daily discharge, .48 ft<sup>3</sup>/s, July 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	260	29	296	e130	110	257	287	259	52	.48	227	448
2	254	30	301	e130	110	257	300	239	41	.53	219	741
3	255	29	331	e130	122	266	248	226	28	.59	154	363
4	251	29	357	e130	147	276	162	224	22	.85	54	e270
5	251	29	368	e125	153	344	138	219	19	.99	61	e239
6	262	28	375	e115	154	401	151	215	17	.85	190	e210
7	272	28	379	e85	155	413	121	210	15	1.3	688	e179
8	279	28	382	75	167	425	89	208	13	1.3	517	118
9	276	28	383	70	174	416	69	204	11	.61	385	75
10	281	28	377	67	170	436	56	200	9.4	.90	440	61
11	285	28	370	65	172	440	65	215	8.2	59	741	50
12	284	29	348	63	174	432	104	228	7.2	7.9	684	42
13	282	28	340	62	175	430	117	230	6.4	31	530	47
14	270	28	341	89	177	428	146	231	5.3	46	461	49
15	265	28	340	101	179	422	149	230	4.5	291	483	44
16	265	28	325	118	182	419	144	246	3.8	513	478	45
17	186	28	317	121	184	417	143	256	3.3	143	531	47
18	99	28	317	122	183	412	142	262	3.1	48	536	46
19	67	28	317	123	182	403	138	306	2.8	75	498	63
20	53	28	317	122	181	400	149	333	2.5	117	485	52
21	46	28	317	122	201	390	172	338	2.2	57	454	58
22	41	28	317	122	225	384	180	338	1.8	27	362	86
23	37	28	294	123	224	381	202	340	1.6	61	356	133
24	34	28	285	120	234	396	239	343	1.3	125	363	99
25	33	28	283	111	248	401	257	343	1.1	217	339	93
26	32	28	309	110	251	402	260	342	.97	253	355	101
27	33	28	361	110	255	404	262	342	.91	212	353	94
28	33	96	387	109	256	362	262	349	.75	558	488	75
29	32	257	393	110	---	342	266	231	.64	1030	597	65
30	31	278	e250	110	---	315	269	113	.57	587	584	31
31	30	---	e180	110	---	293	---	69	---	253	515	---
TOTAL	5079	1394	10257	3300	5145	11764	5287	7889	286.34	4709.30	13128	4024
MEAN	164	46.5	331	106	184	379	176	254	9.54	152	423	134
MAX	285	278	393	130	256	440	300	349	52	1030	741	741
MIN	30	28	180	62	110	257	56	69	.57	.48	54	31
AC-FT	10070	2760	20340	6550	10210	23330	10490	15650	568	9340	26040	7980
CAL YR 1998	TOTAL	173877	MEAN	476	MAX	1160	MIN	28	AC-FT	344900		
WTR YR 1999	TOTAL	72262.64	MEAN	198	MAX	1030	MIN	.48	AC-FT	143300		

e Estimated

## DIVERSION FROM GILA RIVER

## 09475500 FLORENCE-CASA GRANDE CANAL, NEAR FLORENCE, AZ

**LOCATION.**--Lat 33°05'15", long 111°17'10", in NE1/4NE1/4 sec 14, T.4 S., R.10 E., Pinal County, Hydrologic Unit 15050100, on left bank at China Wash, 2.6 mi downstream from head at Ashurst-Hayden Dam and 7.5 mi northeast of Florence.

**PERIOD OF RECORD.**--January 1928 to current year (monthly diversions only). Published as a supplement to records for Gila River at Ashurst-Hayden Dam, 1928-80.

**GAGE.**--Water-stage recorder and Parshall flume. Prior to Jan. 12, 1937, water-stage recorder 900 ft downstream from Ashurst-Hayden Dam.

**REMARKS.**--Records show monthly diversion from the Gila River at Ashurst-Hayden Dam for irrigation of land under the 100,000 acre San Carlos Project. Diversion records are those at the canal gaging station at the flume 2.6 mi downstream from dam; values are adjusted for sluicing through the dam or from the canal and pumping of water into the canal between the dam and the flume, but are not adjusted for natural losses. Adjusted values show water available at Ashurst-Hayden Dam, except for spill over the dam or water sluiced through the dam during times of flood runoff.

**COOPERATION.**--Pumping records furnished by Bureau of Indian Affairs.

## MONTHLY DIVERSIONS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Month	Discharge, in cubic feet per second			Diversions in acre-feet	Water sluiced above flume, in acre-feet
	Maximum	Minimum	Mean		
October .....	249	0	130	7,970	0
November .....	212	0	9.73	579	0
December .....	382	254	319	19,620	0
CAL YR 1998	1,040	0	441	319,300	369
January .....	160	65	106	6,510	0
February .....	213	111	168	9,310	0
March .....	372	213	329	20,240	0
April .....	278	78	175	10,390	0
May .....	287	66	219	13,450	0
June .....	45	11	15.4	918	0
July .....	622	9.5	122	7,490	0
August .....	635	59	361	22,220	0
September .....	495	78	183	10,920	0
WTR YR 1999	635	0	179	129,600	0

## GILA RIVER BASIN

## 09479360 GILA RIVER NEAR MARICOPA, AZ

LOCATION.--Lat 33°10'07", long 112°00'24", in NW1/4NE1/4SW1/4, sec.13, T.3 S., R.3 E., Pinal County, Hydrologic Unit 15050100, in Gila River Indian Reservation, on the downstream side of the highway bridge 8 mi north of Maricopa, AZ.

DRAINAGE AREA.--19,915 mi<sup>2</sup>.

PERIOD OF RECORD.--Established as a continuous-record station May 1995, to current year.

GAGE.--Water-stage recorder. Elevation of gage 1,113.87 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Many diversions above station for irrigation. Most low flow is wastewater from irrigated lands from Chandler, AZ treatment plant. Flow regulated by storage in San Carlos Reservoir. This station replaces Gila River near Laveen (09479501), which was discontinued in the 1995 water year. Flood Jan. 20, 1993, discharge 49,350 ft<sup>3</sup>/s, measured from bridge, no gage height recorded. Flood Jan. 22, 1993, discharge 46,300 ft<sup>3</sup>/s, measured from bridge, approximate gage height, 6.80 ft.

EXTREMES FOR CURRENT YEAR.--No flow for entire year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1999, BY WATER YEAR (WY)

	1995	1996	1996	1996	1996	1996	1996	1996	1996	1996	1997	1996
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.017	.31
MAX	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.065	1.56
(WY)	1996	1996	1996	1996	1996	1996	1996	1996	1995	1995	1997	1996
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1996	1996	1996	1996	1996	1996	1996	1996	1995	1995	1996	1995

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1995 - 1999

ANNUAL MEAN										.033		
HIGHEST ANNUAL MEAN										.13		1996
LOWEST ANNUAL MEAN										.000		1998
HIGHEST DAILY MEAN										38	Sep 2	1996
LOWEST DAILY MEAN				.00	Jan 1			.00	Oct 1			
ANNUAL SEVEN-DAY MINIMUM				.00	Jan 1			.00	Oct 1			
ANNUAL RUNOFF (AC-FT)										24	May 19	1995
10 PERCENT EXCEEDS				.00				.00				
50 PERCENT EXCEEDS				.00				.00				
90 PERCENT EXCEEDS				.00				.00				

## 09480000 SANTA CRUZ RIVER NEAR LOCHIEL, AZ

**LOCATION.**--Lat 31°21'19", long 110°35'20", in SW 1/4 sec. 11, T.24 S., R.17 E. (unsurveyed), Santa Cruz County, Hydrologic Unit 15050301, on southern border of Spanish land grant of San Rafael, near left bank on downstream side of pier of bridge on county road, 1.7 mi upstream from international boundary, and 2.5 mi northeast of Lochiel.

**DRAINAGE AREA.**--82.2 mi<sup>2</sup>.

**PERIOD OF RECORD.**--January 1949 to current year.

**REVISED RECORDS.**--WSP 1733: 1951. WDR AZ 94-1: 1993.

**GAGE.**--Water-stage recorder. Elevation of gage is 4,620 ft above sea level, from topographic map.

**REMARKS.**--Records good except for estimated daily discharges, which are poor. Small diversions for irrigation of 200 acres above station, mostly by pumping from ground water

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 12,000 ft<sup>3</sup>/s Oct. 9, 1977 and Aug. 15, 1984, gage height, 10.21 ft and 10.2 ft respectively, from rating curve extended above 1,600 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 10.21 ft, no flow at times in most years

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*)

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 9	1445	2,050	5.00	July 28	1700	4,870	7.69
July 19	1500	930	3.75	Aug 8	2315	3,340	6.32

No flow for many days.

DISCHARGE CUBIC FEET PER SECOND WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.23	.33	.50	.41	.33	.35	.33	.10	.01	.00	e7.3
2	.13	.23	.34	.50	.41	.33	.35	.33	.10	.00	.13	e7.1
3	.14	.23	.33	.50	.41	.32	.35	.34	.09	.01	.11	e7.0
4	.15	.23	.34	.50	.41	.33	.39	.30	.08	.06	.95	e7.0
5	.15	.23	.37	.48	.41	.33	.38	.31	.09	.17	.00	e7.0
6	.14	.22	.37	.45	.42	.31	.34	.31	.10	.15	.00	e7.0
7	.15	.21	.37	.45	.45	.32	.32	.30	.08	.19	.00	e7.0
8	.14	.21	.37	.45	.45	.33	.34	.28	.07	.20	.329	e7.0
9	.15	.25	.41	.45	.45	.35	.34	.26	.07	.105	e79	e6.9
10	.15	.25	.45	.45	.43	.34	.36	.27	.07	.51	e40	e9.6
11	.15	.26	.43	.45	.39	.34	.32	.24	.07	.11	e25	.13
12	.17	.25	.44	.44	.37	.36	.31	.24	.07	.15	e17	4.8
13	.15	.26	.45	.43	.36	.34	.31	.22	.06	.15	e13	7.0
14	.15	.26	.46	.45	.35	.34	.33	.20	.04	.32	e9.0	9.5
15	.15	.27	.50	.40	.34	.34	.33	.19	.04	.11	e7.8	5.8
16	.17	.23	.50	.37	.35	.36	.31	.19	.04	.09	e7.8	3.9
17	.18	.28	.53	.37	.35	.38	.29	.18	.05	8.8	e7.6	3.4
18	.18	.29	.52	.38	.35	.36	.29	.16	.10	.27	e7.6	3.4
19	.18	.30	.56	.38	.34	.35	.29	.16	.08	95	e7.4	6.4
20	.17	.27	.56	.37	.35	.32	.29	.16	.07	.67	e7.4	9.6
21	.19	.27	.56	.37	.37	.31	.29	.16	.05	.25	e7.2	2.8
22	.20	.27	.56	.36	.35	.31	.25	.14	.01	.70	e7.0	5.1
23	.21	.28	.56	.36	.33	.30	.27	.14	.03	8.1	e7.0	11
24	.21	.29	.56	.36	.33	.30	.25	.13	.02	.51	e7.0	4.6
25	.22	.29	.56	.36	.33	.31	.29	.12	.03	.48	e7.0	3.5
26	.24	.29	.55	.40	.33	.35	.31	.10	.00	.44	e8.2	3.2
27	.21	.29	.50	.41	.33	.34	.30	.13	.04	.55	e7.6	3.1
28	.21	.31	.50	.41	.33	.33	.28	.10	.05	.79	e7.3	2.7
29	.21	.31	.53	.41	---	.35	.28	.10	.05	.11	e7.2	2.5
30	.23	.33	.51	.41	---	.32	.31	.10	.05	.03	e7.4	2.5
31	.23	---	.50	.41	---	.31	---	.10	---	.00	e7.5	---
TOTAL	5.47	7.94	14.54	13.03	10.51	10.29	9.68	6.32	1.85	1109.31	563.15	181.7
MEAN	.18	.26	.47	.42	.38	.33	.32	.20	.062	35.8	21.4	6.06
MAX	.24	.33	.56	.50	.45	.38	.35	.34	.19	.79	.329	.13
MIN	.12	.21	.33	.36	.33	.30	.26	.10	.02	.00	.00	2.5
MED	.17	.27	.50	.41	.36	.33	.31	.29	.07	.32	7.5	6.7
AC-FT	.11	.16	.29	.26	.21	.20	.19	.13	7.7	2200	1320	360
CFSM	.01	.00	.01	.01	.00	.00	.00	.00	.00	.44	.26	.07

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1999, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1949	4.31	6.73	1949	1.74	1949
1950	4.31	6.73	1950	1.74	1950
1951	4.31	6.73	1951	1.74	1951
1952	4.31	6.73	1952	1.74	1952
1953	4.31	6.73	1953	1.74	1953
1954	4.31	6.73	1954	1.74	1954
1955	4.31	6.73	1955	1.74	1955
1956	4.31	6.73	1956	1.74	1956
1957	4.31	6.73	1957	1.74	1957
1958	4.31	6.73	1958	1.74	1958
1959	4.31	6.73	1959	1.74	1959
1960	4.31	6.73	1960	1.74	1960
1961	4.31	6.73	1961	1.74	1961
1962	4.31	6.73	1962	1.74	1962
1963	4.31	6.73	1963	1.74	1963
1964	4.31	6.73	1964	1.74	1964
1965	4.31	6.73	1965	1.74	1965
1966	4.31	6.73	1966	1.74	1966
1967	4.31	6.73	1967	1.74	1967
1968	4.31	6.73	1968	1.74	1968
1969	4.31	6.73	1969	1.74	1969
1970	4.31	6.73	1970	1.74	1970
1971	4.31	6.73	1971	1.74	1971
1972	4.31	6.73	1972	1.74	1972
1973	4.31	6.73	1973	1.74	1973
1974	4.31	6.73	1974	1.74	1974
1975	4.31	6.73	1975	1.74	1975
1976	4.31	6.73	1976	1.74	1976
1977	4.31	6.73	1977	1.74	1977
1978	4.31	6.73	1978	1.74	1978
1979	4.31	6.73	1979	1.74	1979
1980	4.31	6.73	1980	1.74	1980
1981	4.31	6.73	1981	1.74	1981
1982	4.31	6.73	1982	1.74	1982
1983	4.31	6.73	1983	1.74	1983
1984	4.31	6.73	1984	1.74	1984
1985	4.31	6.73	1985	1.74	1985
1986	4.31	6.73	1986	1.74	1986
1987	4.31	6.73	1987	1.74	1987
1988	4.31	6.73	1988	1.74	1988
1989	4.31	6.73	1989	1.74	1989
1990	4.31	6.73	1990	1.74	1990
1991	4.31	6.73	1991	1.74	1991
1992	4.31	6.73	1992	1.74	1992
1993	4.31	6.73	1993	1.74	1993
1994	4.31	6.73	1994	1.74	1994
1995	4.31	6.73	1995	1.74	1995
1996	4.31	6.73	1996	1.74	1996
1997	4.31	6.73	1997	1.74	1997
1998	4.31	6.73	1998	1.74	1998
1999	4.31	6.73	1999	1.74	1999

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1949 - 1999
ANNUAL TOTAL	773.02	2133.29	
ANNUAL MEAN	2.12	5.47	3.79
HIGHEST ANNUAL MEAN			1984
LOWEST ANNUAL MEAN			1952
HIGHEST DAILY MEAN	141	719	1770
LOWEST DAILY MEAN	30	30	30
ANNUAL SEVEN-DAY MINIMUM	1530	4010	2750
ANNUAL RUNOFF AC-FT			
ANNUAL RUNOFF CFSM	.026	.068	.046
10 PERCENT EXCEEDS	.62	.72	.11
50 PERCENT EXCEEDS	.30	.33	.50
90 PERCENT EXCEEDS	.03	.09	.00

e Estimated

## 09480600 SANTA CRUZ RIVER NEAR NOGALES, AZ

**LOCATION.**--Lat 31°20'40", long 110°51'03", in NW¼ sec.18, T.24 S., R.15 E. (unsurveyed), Santa Cruz County, Hydrologic Unit 15050301, in Spanish land grant of Maria Santisima del Carmen, on left bank 0.8 mi downstream from international boundary and 5.5 mi east of Nogales.

**DRAINAGE AREA.**--533 mi<sup>2</sup>, of which 348 mi<sup>2</sup> is in Mexico.

**PERIOD OF RECORD.**--March to November 1907 and April 1909 to December 1912 (discharge measurements and fragmentary gage-height record), January 1913 to June 1922 (October 1915 to September 1916 monthly discharge only), May 1930 to December 1933, July 1935 to current year. Water-year estimates for 1913, 1915-16, 1920-22, 1930, 1934-35, published in WSP 1733.

**REVISED RECORDS.**--WSP 959: 1935(M), WSP 1213: 1915-16, 1930-32(M), 1934(M), 1936-37(M), WSP 1283: Drainage area.

**GAGE.**--Water-stage recorder. Datum of gage is 3,702.54 ft above sea level (levels by International Boundary and Water Commission). Prior to June 30, 1922, nonrecording gage or water-stage recorder at various sites 5 to 6 mi downstream at different datums.

**REMARKS.**--No estimated daily discharges. Records fair. Diversions above station of about 4,300 acre-ft/yr for irrigation of about 2,150 acres in Mexico in 1977. Diversion 19 mi upstream for municipal supply of city of Nogales, Sonora, began in 1949; diversion in 1968 totaled 3,500 acre-ft/yr.

**EXTREMES FOR PERIOD 1930-99.**--Maximum discharge, 31,000 ft<sup>3</sup>/s Oct. 9, 1977, gage height, 15.5 ft, from rating curve extended above 1,660 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times in most years.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (")::

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 28.....	1530	*1.810	*5.12

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.02	.00	.00	.12	.00	273
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	108
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.4	53
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	51	29
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.35	17
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	28	12
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.23	6.7
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	3.9
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	284	4.9
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	441	5.2
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	128	3.3
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	32	5.8
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.4	32
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8.7	31
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	7.1	13
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.88	6.2
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	6.7	3.4
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.16	1.6
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09	.00	130
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.32	.00	17
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	13
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.30	.00	10
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.0	.00	45
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.48	.00	46
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	25
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	28	.00	21
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	39	1.8	17
28	.00	.00	.00	.00	.00	.00	.00	.00	13	129	485	13
29	.00	.00	.00	.00	---	.00	.00	.00	.00	285	423	12
30	.00	.00	.00	.00	---	.00	.00	.00	.00	16	538	11
31	.00	---	.00	.00	---	.00	---	.00	---	.07	266	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	13.00	502.52	2770.73	969.0
MEAN	.000	.000	.000	.000	.000	.000	.001	.000	.43	16.2	89.4	32.3
MAX	.00	.00	.00	.00	.00	.00	.02	.00	13	285	598	273
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.6
AC-FT	.00	.00	.00	.00	.00	.00	.04	.00	26	997	5500	1920
CFSM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.17	.06
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.19	.07

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 1999, BY WATER YEAR (WY)

	MEAN	23.7	8.56	34.6	41.3	33.7	24.4	7.72	1.85	1.34	40.9	87.3	26.3
MAX	904	120	542	492	370	318	58.1	16.8	24.4	254	745	158	
(WY)	1978	1979	1979	1979	1985	1983	1992	1983	1984	1950	1955	1983	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.15	.000	
(WY)	1914	1919	1919	1974	1974	1914	1914	1914	1914	1918	1991	1918	

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1914 - 1999
ANNUAL TOTAL	4035.64	4255.27	
ANNUAL MEAN	11.1	11.7	27.0
HIGHEST ANNUAL MEAN			123
LOWEST ANNUAL MEAN			1.34
HIGHEST DAILY MEAN	263	598	13200
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	8000	8440	19590
ANNUAL RUNOFF (CFSM)	.021	.022	.051
ANNUAL RUNOFF (INCHES)	.28	.30	.69
10 PERCENT EXCEEDS	31	10	44
50 PERCENT EXCEEDS	.00	.00	2.8
90 PERCENT EXCEEDS	.00	.00	.00



## GILA RIVER BASIN

179

## 09481740 SANTA CRUZ RIVER AT TUBAC, AZ

LOCATION.--Lat 31°36'46", long 111°02'27", in SE 1/4 SW 1/4, sec 8 T.21 S., R.13 E., Tubac quadrangle, Hydrologic Unit 15050301 in Spanish land grant of San Ignacio de la Canea, on right bank at the Bridge Street bridge, 1/4 mi east of Tubac, 3.1 mi downstream from Tumacacori, and 19 mi south of Continental.

DRAINAGE AREA.--1,209 mi<sup>2</sup> of which 395 mi<sup>2</sup> is in Mexico.

PERIOD OF RECORD.--October 1995 to current year.

REVISED RECORDS.--WRD AZ: 1997.

GAGE.--Water-stage recorder, water quality probe, and Sutron rain gage. Elevation of gage is 3,180 ft above sea level, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. Base flow is regulated by sewage-treatment plant at Rio Rico. No natural flow for most of each year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,130 ft<sup>3</sup>/s, July 22, 1998, gage height 22.91 ft; minimum daily, 0.15 ft<sup>3</sup>/s, June 26, 1997.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum ("):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 26 .....	2215	*1,730	*22.29

Minimum daily discharge, 0.66 ft<sup>3</sup>/s June 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e19	e19	18	24	23	21	15	11	4.2	6.9	3.1	513
2	e19	e19	19	24	23	20	51	10	4.3	33	2.4	47
3	e18	e19	20	24	23	21	17	9.8	3.8	6.9	2.2	15
4	e18	e19	20	24	23	21	16	10	3.6	6.6	1.8	14
5	e18	20	21	25	23	21	17	9.8	3.8	11	3.2	13
6	e18	19	22	25	24	20	14	9.2	3.5	62	2.2	13
7	e18	20	20	24	25	21	13	9.4	3.3	88	2.9	14
8	e18	18	18	24	24	22	13	9.0	3.5	15	2.3	14
9	e18	19	19	24	25	23	14	8.3	3.3	5.6	18	150
10	e18	18	18	23	24	22	15	8.3	2.9	5.2	266	113
11	e18	18	18	24	24	22	16	8.5	2.5	11	28	29
12	e18	20	18	24	25	21	15	8.4	2.2	4.8	2.8	20
13	e17	19	19	23	24	20	15	7.4	2.0	4.5	1.9	46
14	e17	19	18	23	25	20	14	7.1	1.6	47	5.8	45
15	e17	19	19	25	25	19	14	6.9	1.7	51	2.7	49
16	e17	20	19	25	25	20	13	6.3	1.7	12	3.2	68
17	e17	20	19	25	24	21	12	6.8	1.9	27	2.7	52
18	e17	20	26	25	23	20	13	7.3	1.7	52	2.9	34
19	e17	19	22	24	23	20	11	7.2	1.6	25	3.1	116
20	e18	19	23	24	24	19	11	6.8	1.3	106	6.7	294
21	e18	19	24	23	23	18	11	6.7	1.0	60	9.7	46
22	e18	19	25	23	21	18	11	7.4	1.1	138	8.9	42
23	e18	18	26	24	23	20	11	7.2	1.1	74	9.6	49
24	e18	19	25	24	23	19	11	6.8	1.0	67	10	50
25	e19	18	25	21	22	18	11	7.2	1.88	79	14	47
26	e19	18	24	22	22	19	9.9	6.3	1.76	226	10	46
27	e19	17	24	22	22	18	10	6.1	1.77	58	9.8	39
28	e19	17	23	23	22	17	9.8	5.9	1.66	114	235	36
29	e18	26	22	24	---	17	10	5.0	43	74	539	32
30	e18	18	22	24	---	17	11	4.3	8.8	11	571	27
31	e18	---	23	24	---	15	---	3.7	---	3.6	43	---
TOTAL	557	572	659	737	657	610	424.7	234.0	113.47	1495.1	1824.9	2073
MEAN	18.0	19.1	21.3	23.8	23.5	19.7	14.2	7.55	3.78	48.2	58.9	69.1
MAX	19	26	26	25	25	23	51	11	43	226	571	513
MIN	17	17	18	21	21	15	9.8	3.7	1.66	3.6	1.8	13
AC-FT	1100	1130	1310	1460	1300	1210	842	464	225	2970	3620	4110

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

	1996	1997	1998	1999
MEAN	13.4	17.0	21.6	25.1
MAX	18.0	25.5	24.3	28.3
(WY)	1999	1996	1998	1999
MIN	8.99	8.57	17.1	23.8
(WY)	1997	1998	1997	1999

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1996 - 1999
ANNUAL TOTAL	12586.7	9957.17	
ANNUAL MEAN	34.5	27.3	23.5
HIGHEST ANNUAL MEAN			33.6
LOWEST ANNUAL MEAN			15.6
HIGHEST DAILY MEAN	766	571	766
LOWEST DAILY MEAN	6.8	66	15
ANNUAL SEVEN-DAY MINIMUM	8.3	1.90	23
ANNUAL RUNOFF (AC-FT)	24970	19750	17000
10 PERCENT EXCEEDS	60	44	37
50 PERCENT EXCEEDS	22	19	17
90 PERCENT EXCEEDS	14	3.4	3.6

e Estimated

## 09482000 SANTA CRUZ RIVER AT CONTINENTAL, AZ

LOCATION.--Lat 31°52'17", long 110°58'46", in SE1/4SE1/4 sec.11, T.18 S., R.13 E. (unsurveyed), Pima County, Hydrologic Unit 15050301, in Spanish land grant of San Ignacio de la Canoa, on right bank 0.8 mi northeast of Green Valley Post Office, and 1.5 mi north of Continental. Prior to Feb. 13, 1981, at site 1.5 mi upstream.

DRAINAGE AREA.--1,682 mi<sup>2</sup>, revised, of which 396 mi<sup>2</sup> is in Mexico.

PERIOD OF RECORD.--May 1940 to December 1946, October 1951 to September 1984, October 1991 to current year (monthly discharge only for 1985-86), (crest-stage partial record station for 1987-1990). Low-flow records not equivalent prior to Feb. 13, 1981, due to undetermined amount of underflow between sites.

REVISED RECORDS.--WSP 1283: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 2,806.61 ft above sea level. Prior to Feb. 13, 1981, at site 1.5 mi upstream. July 21, 1940 to Sept. 8, 1965 at datum 17.28 ft higher; Sept. 8, 1965 to present at datum 13.21 ft higher. Old site used as supplementary gage until Oct. 29, 1985.

REMARKS.--No estimated daily discharges. Records good. Irrigation above station of about 12,500 acres including about 2,300 acres in Mexico, mostly by pumping from ground water.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,000 ft<sup>3</sup>/s Oct. 2, 1983, gage height, 16.34 ft from rating curve extended above 530 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 7.75 ft and slope-area measurement of peak flow, maximum gage height 16.70 ft Oct. 9, 1977, site and datum then in use; no flow for most of each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 23 .....	0045	*896	*4.81

No flow for most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	157
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.7
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.6
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.4
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	3.1	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	56	5.1	.00
8	.00	.30	.00	.00	.00	.00	.00	.00	.00	11	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.5	.00	2.4
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	58	80	44
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.7	71	1.4
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.85	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	22	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	58	36	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	10	61	29
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.5	7.4	12
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	40	.00	1.2
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.8	2.8	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	.95
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.5	3.3	57
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	7.6	.00	3.1
22	2.9	.00	.00	.00	.00	.00	.00	.00	.00	23	.00	2.2
23	.00	.30	.00	.00	.00	.00	.00	.00	.00	89	.00	1.5
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.8	.00	.66
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.9	.00	.00
26	.00	.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	40	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	30	8.9	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	33	116	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	71	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	45	---
TOTAL	2.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	526.30	535.45	321.11
MEAN	.094	.000	.000	.000	.000	.000	.000	.000	.000	17.0	17.3	10.7
MAX	2.9	.00	.00	.00	.00	.00	.00	.00	.00	89	116	157
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	5.8	.00	.00	.00	.00	.00	.00	.00	.00	1040	1060	637

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1999, BY WATER YEAR (WY)

	MEAN	50.5	31.3	37.4	48.7	13.0	11.0	.76	.029	.32	31.0	83.3	19.6
MAX	1525	133	658	1386	207	181	31.5	1.32	6.18	227	753	285	
(WY)	1984	1979	1968	1993	1966	1983	1992	1992	1978	1954	1955	1964	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
(WY)	1943	1941	1942	1942	1942	1941	1941	1941	1941	1993	1956	1953	

## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1941 - 1999

ANNUAL TOTAL	1643.84	1385.76	25.2
ANNUAL MEAN	4.50	3.80	206
HIGHEST ANNUAL MEAN			.26
LOWEST ANNUAL MEAN			1984
HIGHEST DAILY MEAN	294	157	17800
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	3260	2750	18250
10 PERCENT EXCEEDS	2.8	4.0	2.0
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

## 09482500 SANTA CRUZ RIVER AT TUCSON, AZ

**LOCATION**--Lat 32°13'19", long 110°58'52", in SE1/4SE1/4 sec.11, T.14 S., R.13 E., Pima County, Hydrologic Unit 15050301, on right bank, 300 ft downstream from Congress Street Bridge, in Tucson.

**DRAINAGE AREA**--2,222 mi<sup>2</sup>, of which 395 mi<sup>2</sup> is in Mexico, adjusted for 15.2 mi<sup>2</sup> of Tucson Arroyo drainage area contributing to this station effective July 1956.

**PERIOD OF RECORD**--October 1905 to September 1981 (monthly discharge only, January 1907 to September 1912, January to September 1914), June 1986 to September 1995 (discharge above 500 ft<sup>3</sup>/s only), October 1995 to current year

**REVISED RECORDS**--WSP 859: 1915(M). WSP 1283: Drainage area. WSP 1313: 1939(M). WDR AZ-86-1: 1966-87(M).

**GAGE**--Water-stage recorder and crest-stage gage. Datum of gage is 2,320.68 ft above sea level. Prior to Nov. 27, 1929, nonrecording gages or reference points for measuring to water surface at various places on Congress Street bridge at various datums. Nov. 27, 1929 to Sept. 30, 1981, water-stage recorder at Congress Street bridge: at datum 6.22 ft higher Nov. 27, 1929 to June 18, 1958; at datum 2.22 ft higher June 18, 1958 to May 21, 1963; at datum 3.48 ft lower May 21, 1963 to Oct. 27, 1970; at datum 2.86 ft lower Oct. 1, 1971 to Sept. 30, 1981. No gage Oct. 27, 1970 to Oct. 1, 1971, and Oct. 10, 1977, to Feb. 14, 1978.

**REMARKS**--No estimated daily discharges. Records fair. Irrigation above station of about 26,000 acres, including about 2,300 acres in Mexico, mostly by pumping from ground water. Ground water is also pumped above the station for municipal supply and mining. From October 1969 to September 1981, all flow past station was published, including waste water when known. Gage not recording below 300 ft<sup>3</sup>/s.

**EXTREMES FOR PERIOD OF RECORD**--Maximum discharge, 37,400 ft<sup>3</sup>/s Jan. 19, 1993, gage height, 11.67 ft; no flow for most of each year.

**EXTREMES OUTSIDE PERIOD OF RECORD**--Maximum discharge since at least 1892, 52,700 ft<sup>3</sup>/s, from slope-area measurement of peak flow, Oct. 2, 1983; gage height, 22.2 ft, from floodmark, at site and datum used in 1981.

Maximum discharge during the 1985 water year was 10,000 ft<sup>3</sup>/s Dec. 28, 1984; gage height, 12.5 ft, at site and datum used in 1981.

**EXTREMES FOR CURRENT YEAR**--Peak discharges greater than base discharge of 1,700 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 7	0530	3,820	5.12	July 26	1630	2,170	4.12
July 14	2115	5,810	5.90	Aug. 31	2200	3,820	5.12

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	64	.00	.00	.00	.00	246
2	.00	.00	.15	.00	.00	.00	35	.00	.00	.00	.00	42
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.59	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.02	.00	.00	.00	.00	3.9	41	.00
6	.00	.00	2.0	.00	.00	.00	.00	.00	.00	135	90	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	431	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	103	.00	.00
9	.00	.00	.00	.00	.15	.00	.00	.00	.00	.42	2.7	.00
10	.00	.00	.00	.00	1.6	.00	.00	.00	.00	2.8	.90	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	41	54	.00
12	.00	.00	.00	.00	9.6	.00	.00	.00	.00	.17	2.0	.00
13	.00	.00	.00	.00	.82	4.0	.00	.00	.00	.39	.00	.00
14	.00	.00	.00	.00	.00	.09	.00	.00	.00	457	5.6	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	287	34	7.1
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	7.0	95	58
17	.00	.00	.00	.00	.00	.00	.49	.00	.00	141	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	56	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.6
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.7	.30
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	14	16
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	150	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	221	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.4	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	135	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	166	100	.00
28	.00	.71	.00	.00	.00	.05	.56	.00	.00	101	349	.00
29	.00	1.7	.00	.00	---	.12	7.3	.00	.00	.94	32	.00
30	.00	.00	.00	.00	---	.31	.00	.00	.00	.00	104	.00
31	.00	---	.00	.00	---	.27	---	.00	---	.00	421	---
TOTAL	0.00	4.41	2.15	0.00	12.19	4.84	108.94	0.00	0.00	2511.02	1351.90	376.00
MEAN	.000	.15	.069	.000	.44	.16	3.63	.000	.000	84.2	43.6	12.5
MAX	.00	3.7	2.0	.00	9.6	4.0	64	.00	.00	431	421	246
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	9.7	4.3	.00	24	9.6	216	.00	.00	5180	2680	746

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1999, BY WATER YEAR (WY)

	MEAN	12.4	6.07	33.6	23.3	10.9	4.30	.61	.085	1.30	50.8	90.4	32.1
	MAX	656	214	895	518	202	102	32.9	2.32	24.7	430	682	312
	(WY)	1978	1906	1915	1979	1915	1978	1997	1931	1954	1950	1955	1926
	MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	(WY)	1906	1907	1916	1917	1917	1916	1906	1906	1906	1906	1906	1906

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1906 - 1999
ANNUAL TOTAL	2395.31	4471.45	22.2
ANNUAL MEAN	8.21	12.3	113
HIGHEST ANNUAL MEAN			1.29
HIGHEST ANNUAL MEAN	554	491	24700
HIGHEST DAILY MEAN	.00	.00	.00
HIGHEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	5940	8870	16110
ANNUAL RUNOFF (AC-FT)	2.5	6.0	6.0
10 PERCENT EXCEEDS	.00	.00	.00
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

## GILA RIVER BASIN

## 00484000 SABINO CREEK NEAR TUCSON, AZ

LOCATION.--Lat 32°19'00", long 110°48'35", in SE 1/4 NE 1/4 sec. 9, T. 13 S., R. 15 E., Pima County, Hydrologic Unit 15050302, on left bank, 30 ft upstream from Lower Sabino Dam, 0.5 mi north of Coronado National Forest boundary and 12 mi northeast of Tucson City Hall.

DRAINAGE AREA.--35.5 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1904 to June 1912 (monthly discharge only); June 1932 to September 1974 (continuous record station); October 1974 to September 1989 (crest-stage partial-record station); October 1989 to current year.

REVISED RECORDS.--WSP 1213: 1938, 1946. WSP 1283: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,720 ft above sea level, from topographic map. July 1904 to June 1912, water-stage recorder and sharp-crested weir at site 0.7 mi upstream at different datum. June 1932 to September 1974 (water-stage recorder) and October 1974 to August 1981 (crest-stage gage) at site 1,000 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records fair. No diversion above station except for domestic supply.

AVERAGE DISCHARGE.--59 years (water years 1905-11, 1933-74, 1990-99). 14.8 ft<sup>3</sup>/s, 10,720 acre-ft/yr; median of yearly mean discharges 8.9 ft<sup>3</sup>/s, 6,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,400 ft<sup>3</sup>/s July 15, 1999, gage height 8.25 ft from high-water marks, from rating curve extended above 3,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 9.65 ft; no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 13.....	2400	849	2.58	July 27.....	1900	638	2.32
July 15.....	0715	15,400	8.25	Aug. 31.....	2345	275	1.77
July 17.....	1515	217	1.66				

a From high-water marks.  
No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.47	.00	3.1	.71	.24	.11	.09	.90	.00	.00	8.5	88
2	.45	.00	2.1	.60	.26	.12	.40	.85	.00	.00	5.1	31
3	.40	.00	1.8	.43	.24	.18	1.4	.78	.00	.00	3.6	20
4	.36	.00	1.6	.31	.23	.21	.93	.74	.00	.00	3.0	15
5	.40	.00	1.6	.31	.22	.24	1.1	.69	.00	.00	2.9	14
6	.27	.00	1.5	.33	.21	.21	3.9	.61	.00	.00	3.0	12
7	.18	.00	1.7	.35	.19	.07	33	.56	.00	.00	2.7	10
8	.13	.00	1.4	.35	.20	.05	32	.47	.00	.00	2.3	10
9	.07	.02	1.9	.39	.20	.05	25	.38	.00	.00	1.9	8.6
10	.05	.02	2.9	.36	.19	.08	18	.33	.00	.00	1.6	7.7
11	.04	.03	2.9	.32	.16	.08	18	.31	.00	.00	1.2	2.7
12	.03	.04	2.1	.30	.20	.17	22	.29	.00	.95	.93	1.7
13	.03	.06	1.0	.43	.21	.21	21	.23	.00	7.4	.88	1.4
14	.02	.04	1.1	.38	.15	.37	10	.18	.00	248	1.4	1.3
15	.01	.03	1.1	.33	.20	.36	21	.10	.00	1420	1.8	1.3
16	.00	.04	1.7	.23	.12	.24	14	.07	.00	134	1.4	1.7
17	.00	.04	1.9	.25	.14	.28	7.6	.03	.00	78	1.1	1.7
18	.00	.04	1.5	.26	.15	.25	5.3	.02	.00	62	1.2	1.9
19	.00	.04	1.1	.24	.16	.18	4.8	.00	.00	61	1.4	5.9
20	.00	.06	.89	.23	.16	.06	3.6	.00	.00	30	1.3	5.6
21	.00	.09	.92	.16	.13	.04	3.3	.00	.00	50	1.0	3.5
22	.00	.08	1.1	.22	.21	.01	2.7	.00	.00	54	.99	2.8
23	.06	.07	1.1	.27	.12	.02	2.3	.00	.00	56	.94	4.8
24	.07	.06	.98	.29	.15	.01	1.8	.00	.00	68	.91	8.0
25	.01	.06	.94	.31	.19	.00	1.5	.00	.00	63	.87	6.7
26	.01	.11	.87	.25	.20	.01	1.4	.00	.00	32	.73	4.3
27	.01	.18	.88	.26	.28	.05	1.2	.00	.00	93	1.8	3.1
28	.00	.35	.81	.27	.24	.04	1.1	.00	.00	94	.56	2.0
29	.00	39	.76	.29	---	.00	.99	.00	.00	45	52	1.4
30	.00	12	.82	.28	---	.00	.93	.00	.00	26	27	1.2
31	.00	---	.70	.24	---	.00	---	.00	---	16	20	---
TOTAL	3.09	52.46	44.77	9.95	5.35	3.70	260.34	7.54	0.00	2638.35	209.45	279.3
MEAN	.10	1.75	1.44	.32	.19	.12	8.68	.24	.000	85.1	6.76	9.31
MAX	.47	.39	3.1	.71	.28	.37	33	.90	.00	1420	56	88
MIN	.00	.00	.70	.16	.12	.00	.09	.00	.00	.00	.73	1.2
AC-FT	6.1	104	89	20	11	7.3	516	15	.00	5230	415	554
CFSM	.00	.05	.04	.01	.01	.00	.24	.01	.00	2.40	.19	.26
IN.	.00	.05	.05	.01	.01	.00	.27	.01	.00	2.76	.22	.29

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1999, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	1.73	10.6	25.5	61.5	58.6	68.9	28.0	3.37	.67	15.9	22.9	11.1
MAX	14.2	39.7	114	441	211	311	97.1	11.3	6.37	85.1	84.4	60.8
(WY)	1988	1995	1993	1993	1995	1991	1991	1991	1992	1999	1995	1995
MIN	.000	.000	.000	.000	.19	.12	.72	.000	.000	.000	1.13	.009
(WY)	1992	1990	1990	1989	1999	1999	1989	1989	1989	1988	1991	1989

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1988 - 1999
ANNUAL TOTAL	10579.54	3514.30	
ANNUAL MEAN	29.0	9.63	27.3
HIGHEST ANNUAL MEAN			64.6
LOWEST ANNUAL MEAN			6.62
HIGHEST DAILY MEAN	278	1420	3180
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	20980	6970	19760
ANNUAL RUNOFF (CFSM)	.82	.27	.77
ANNUAL RUNOFF (INCHES)	11.09	3.68	10.44
10 PERCENT EXCEEDS	119	14	62
50 PERCENT EXCEEDS	3.3	.28	1.3
90 PERCENT EXCEEDS	.00	.00	.00

**LOCATION (Revised).**--Lat 32°15'55", long 110°50'26", in NE 1/4 NE 1/4 NE 1/4 sec. 31, T. 13 S., R. 15 E., Pima County, Hydrologic Unit 15050302, at Sabino Canyon Road, 0.8 mi downstream from Sabino Creek.

PERIOD OF RECORD:--June 1940 to October 1945; water years 1966-81, 1988-90 (annual maximums only); October 1990 to current year. Prior to 1945, published as "Rillito Creek near Wrightstown."

**GAGE.**—Water-stage recorder. Elevation of gage is 2,470 ft above sea level, from topographic map. Prior to October 1945, at same location at different datum. October 1965 to September 1981, nonrecording gage at same site at different datum. October 1987 to September 1990, nonrecording gage at same site and datum.

REMARKS.--Records good except for estimated daily discharges, which are poor

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 24,500 ft<sup>3</sup>/s, Jan. 8, 1993, gage height, 11.85 ft; no flow most of each year.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum ("):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 15 .....	0830	*12.800	*10.19
July 27 .....	1715	1.390	7.74

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

[illegible]

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1999, BY WATER YEAR (WY)

MEAN	.094	3.40	40.6	124	71.3	72.6	20.5	1.01	.000	9.92	2.28	.99
MAX	1.08	36.0	248	1295	329	277	125	3.90	.000	119	13.3	9.17
(WY)	1946	1995	1941	1993	1998	1991	1998	1941	1941	1999	1993	1998
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1941	1943	1943	1943	1943	1996	1943	1944	1941	1942	1991	1943

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1941 - 1999
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ANNUAL TOTAL	19399.62		3704.28				
ANNUAL MEAN	50.4		10.1			30.4	
HIGHEST ANNUAL MEAN						147	1993
LOWEST ANNUAL MEAN						.13	1997
HIGHEST DAILY MEAN	2020	Feb 18	2680	Jul 15		9340	Jan 8 1993
LOWEST DAILY MEAN	.00	Jan 1	.00	Oct 1		.00	Oct 1 1940
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00	Oct 1		.00	Oct 1 1940
ANNUAL RUNOFF (AC-FT)	36500		7350			22050	
ANNUAL RUNOFF (CFSM)	.23		.046			.14	
ANNUAL RUNOFF (INCHES)	3.13		.63			1.89	
10 PERCENT EXCEEDS	133		.00			27	
50 PERCENT EXCEEDS	.00		.00			.00	
90 PERCENT EXCEEDS	.00		.00			.00	

e Estimated

09484600 PANTANO WASH NEAR VAIL, AZ

**LOCATION.**--Lat 32°02'09", long 110°40'37", in SW1/4SE1/4 sec.14, T.16 S., R.16 E., Pima County, Hydrologic Unit 15050302, on right bank 60 ft upstream from dam, 2.2 mi southeast of Vail, and 20 mi southeast of Tucson City Hall.

**DRAINAGE AREA.**-457 mi<sup>2</sup>.

**PERIOD OF RECORD.**--January 1959 to September 1974, water years 1975-89 (annual maximums only), October 1989 to current year.

**GAGE.**--Water-stage recorder and concrete weir. Elevation of gage is 3,205 ft above sea level, from topographic map. January 1959 to September 1974 (water-stage recorder) and October 1974 to September 1989 (crest-stage gage) at same site and datum.

REMARKS.—Records fair except for estimated daily discharges, which are poor. No known diversion above station. Records published herein represent flow by gage. Infiltration flow is not included. Base runoff past gage station consists of downvalley underflow that is brought to the surface by the concrete dam 60 ft downstream which extends to bedrock.

**EXTREMES FOR PERIOD OF RECORD:**--Maximum discharge, 12,000  $\text{ft}^3/\text{s}$  Oct. 1 or 2, 1983, gage height, 15.25 ft, from inside high-water mark, from rating curve extended above 2,000  $\text{ft}^3/\text{s}$  on basis of slope-area measurements at gage heights 10.9 and 24 ft; no flow June 26 to July 13, Aug. 7, 1971, result of work on infiltration gallery, June 27 to July 13, 1973, result of ponding during construction work on dam, and May 28 to June 12, June 12, 13, 17, 18, 1974.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Maximum discharge since at least 1930, about 38,000 ft<sup>3</sup>/s, Aug. 11, 1958, gage height, about 24 ft, from floodmark, from slope-area measurement.

**EXTREMES FOR CURRENT YEAR.--**Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (\*)

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 14.....	2230	*4.570	*10.93

Minimum daily discharge, 0.25 ft<sup>3</sup>/s. June 7, 9, July 20-22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.48	.52	.82	e1.1	e.76	.44	.70	.56	.31	.35	e1.3	e2.2
2	.48	.51	.82	e1.1	e.82	.42	.87	.54	.32	.37	e1.1	e1.7
3	.54	.45	.86	e1.0	.72	.44	.75	.50	.31	.38	e1.0	e1.6
4	.55	.47	.92	e1.0	e.72	.46	.78	.46	.33	.41	e.97	1.6
5	.57	.49	.91	e.98	e.67	.44	.76	.49	.34	.47	e.92	1.6
6	.55	.52	1.0	e.95	e.62	.47	.68	.46	.29	.61	e11	1.6
7	.52	.57	1.1	.80	e.56	.40	.58	.49	.25		e12	1.6
8	.51	.60	1.1	.79	e.51	.40	.58	.51	.26	.36	e.97	1.6
9	.45	.73	1.3	.76	e.46	.41	.59	.49	.25	.32	e.80	1.6
10	.43	.70	1.3	.72	e.50	.45	.56	.54	.26	.38	e19	1.6
11	.43	.70	1.3	.77	e.72	.43	.57	.55	.26	.43	e5.1	1.5
12	.42	.72	1.4	.75	e.66	.40	.56	.46	.27	.26	e1.6	1.5
13	.41	.68	1.4	.74	e.62	.40	.60	.45	.31	2.0	e1.4	1.5
14	.41	.66	1.5	.72	e.58	.40	.54	.42	.31	.376	e1.4	1.5
15	.41	.67	1.4	.72	e.54	.38	.54	.42	.31	e551	e1.3	36
16	.46	.71	1.3	e.72	e.50	.41	.55	.42	.28	.48	e9.0	e2.5
17	.46	.72	1.4	e.72	e.47	.47	.53	.42	.30	21	e9.1	e1.6
18	.43	.72	1.5	e.72	e.48	.43	.50	.40	.30	.47	e2.8	e1.4
19	.43	.77	1.4	e.71	e.49	.35	.52	.40	.29	.29	e1.5	e1.4
20	.44	.80	1.4	e.71	e.50	.35	.51	.36	.29	.25	e1.2	e1.5
21	.50	.82	e1.5	e.71	e.51	.36	.47	.32	.28	.25	e1.2	e1.4
22	.46	.91	e1.4	.62	e.50	.39	.48	.32	.29	.25	e1.2	e55
23	.46	.83	e1.4	.61	e.52	.38	.50	.32	.29	.38	e1.2	26
24	.44	.79	e1.3	.62	.47	.35	.50	.33	.29	9.7	1.3	e5.4
25	.44	.77	e1.3	.56	e.47	.36	.52	.32	.28	1.8	1.3	e1.6
26	.44	.78	e1.2	.50	.47	.40	.53	.32	.27	.26	1.2	e1.1
27	.45	.79	e1.2	.47	.48	.45	.49	.31	.28	.14	1.8	e.97
28	.45	.87	e1.2	.54	.49	.49	.43	.29	.30	.42	e7.4	e.91
29	.45	.94	e1.2	.54	---	.44	.49	.28	.31	e40	e3.9	.86
30	.47	.82	e1.2	.58	---	.41	.53	.30	.33	e5.5	.44	.88
31	.50	---	e1.2	e.72	---	.40	---	.30	---	e2.1	e14	---
TOTAL	14.44	21.03	38.23	22.85	15.91	12.78	17.21	12.75	8.76	1275.27	161.96	171.22
MEAN	.47	.70	1.23	.74	.57	.41	.57	.41	.29	41.1	5.22	5.71
MAX	.57	.94	1.5	1.1	.82	.49	.87	.56	.34	551	.44	.65
MIN	.41	.45	.82	.47	.46	.35	.43	.28	.25	.25	.80	.86
AC-FT	.29	.42	.76	.45	.32	.25	.34	.25	.17	2530	.321	.340
CFSM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09	.01	.01
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10	.01	.01

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1999, BY WATER YEAR (WY)

MEAN	1.73	1.19	5.95	7.51	7.19	3.89	2.39	1.21	1.12	14.0	19.2	10.8
MAX	6.67	2.97	50.3	111	75.1	21.2	12.0	1.95	3.63	49.6	92.6	105
(WY)	1968	1968	1966	1993	1998	1998	1998	1965	1990	1967	1971	1964
MIN	.10	.10	.10	.10	.10	.12	.32	.19	.070	.22	.52	.16
(WY)	1974	1974	1974	1974	1974	1974	1974	1974	1974	1997	1973	1973

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1960 - 1999
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ANNUAL TOTAL	5632.84		1772.41			
ANNUAL MEAN	15.4		4.86		6.37	
HIGHEST ANNUAL MEAN					15.7	1998
LOWEST ANNUAL MEAN					1.44	1997
HIGHEST DAILY MEAN	260	Jul 7	551	Jul 15	2230	Sep 10 1964
LOWEST DAILY MEAN		Mar 28		Jun 7		Jun 26 1971
ANNUAL SEVEN-DAY MINIMUM		Mar 23		Jun 6		Jun 26 1971
ANNUAL RUNOFF (AC-FT)	11170		3520		4610	
ANNUAL RUNOFF (CFSM)						
ANNUAL RUNOFF (INCHES)						
10 PERCENT EXCEEDS	55		1.6		4.6	
50 PERCENT EXCEEDS	1.2		.57		1.2	
90 PERCENT EXCEEDS	.47		.32		.40	

e Estimated

**LOCATION.**--Lat 32°07'46", long 110°37'32", in NW1/4NE1/4 sec.17, T.15 S., R.17 E., Pima County, Hydrologic Unit 15050302, on left bank 0.2 mi north of Sentinel Butte, 9 mi upstream from mouth, and 22 mi southeast of Tucson City Hall.

**PERIOD OF RECORD.**--October 1952 to September 1974, October 1974 to September 1989 (crest-stage partial-record station).-October-1989 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 3.120 ft above sea level, from topographic map. October 1952 to September 1974 (water-stage recorder) and October 1974 to September 1989 (crest-stage gage) at same site and datum.

REMARKS.--Records good.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 9,660 ft<sup>3</sup>/s Aug. 19, 1971, gage height, 10.5 ft, from inside high-water mark, from rating curve extended above 1,800 ft<sup>3</sup>/s on basis of slope-area measurement at gage heights 6.50 ft and 9.90 ft, no flow for many days in each year

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 300 ft<sup>3</sup>/s and maximum (°):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 15 .....	0815	*a1,040	*5.28

a From highwater mark.  
No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

[illegible]

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1999, BY WATER YEAR (WY)

MEAN	1.36	.94	9.47	17.6	15.9	13.6	3.94	.19	.060	1.23	10.1	2.99
MAX	23.3	18.0	130	247	85.8	74.4	42.0	1.95	1.48	12.6	64.0	19.1
(WY)	1995	1995	1966	1993	1998	1973	1998	1973	1971	1955	1955	1970
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.030	.000	.000
(WY)	1953	1953	1953	1953	1953	1955	1955	1953	1953	1940	1955	1953

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1953 - 1999
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ANNUAL TOTAL	5878.60		567.62			
ANNUAL MEAN	16.1		1.56		6.57	
HIGHEST ANNUAL MEAN					21.4	1993
LOWEST ANNUAL MEAN					.072	1956
HIGHEST DAILY MEAN	356	Feb 9	194	Jul 15	1400	Jan 8 1993
LOWEST DAILY MEAN	.00	Jul 1	.00	Nov 16	.00	Oct 1 1952
ANNUAL SEVEN-DAY MINIMUM	.00	Nov 16	.00	Nov 16	.00	Oct 1 1952
ANNUAL RUNOFF (AC-FT)	11660		1130		4750	
ANNUAL RUNOFF (CFSM)	.36		.035		.15	
ANNUAL RUNOFF (INCHES)	4.88		.47		1.99	
10 PERCENT EXCEEDS	59		2.1		11	
50 PERCENT EXCEEDS	.24		.00		.00	
90 PERCENT EXCEEDS	.00		.00		.00	

e Estimated

## GILA RIVER BASIN

## 09485480 PANTANO WASH AT BROADWAY BOULEVARD, AT TUCSON, AZ

LOCATION.--Lat 32°13'14", long 110°49'44", in NW 1/4 NE 1/4 sec. 17, T. 14 S., R. 15 E., Pima County, Hydrologic Unit 15050302, near right bank on downstream side of eastbound bridge on Broadway Blvd., 4.6 mi upstream from mouth, and 8.3 mi east of intersection with Stone Avenue in Tucson.

DRAINAGE AREA.--599 mi<sup>2</sup>.

PERIOD OF RECORD.--Water years 1979-81, 1984, 1988-90 (annual maximums only), October 1990 to current year.

REVISED RECORDS.--WDR AZ-88-1: 1984(M).

GAGE.--Water-stage recorder. Datum of gage is 2,568.83 ft above sea level.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,000 ft<sup>3</sup>/s Oct. 1, 1983, gage height, 8.60 ft; no flow for many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 12, 1958 reached a discharge of 20,000 ft<sup>3</sup>/s at Tanque Verde Road, 2.3 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 15 .....	0200	5,760	5.00	Aug. 31 .....	2230	*8,490	*5.48

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.14	.00	.00	.00	.00	e100
2	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	e.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09	14	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.70	e8.4	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	73	e.06	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	15	.00	.00
9	.00	2.8	.00	.00	.00	.00	.00	.00	.00	13	.00	e8.4
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	89	e20	e.83
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	e6.1	e1.6	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.39	e.05	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	257	12	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	e440	e3.6	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.05	e.00	6.7
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e9.0
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e56
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	e13	e8.4	e9.4
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	e1.4	e.00	e3.3
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.52
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	20	e69	.00
28	.00	.20	.00	.00	.00	.00	.00	.00	.00	e13	107	.00
29	.00	.53	.00	.00	---	.00	.00	.00	.00	.00	e18	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	e6.0	e.23
31	.00	---	.00	.00	---	.00	---	.00	---	.00	e810	---
TOTAL	0.00	3.53	0.00	0.00	0.00	0.00	0.15	0.00	0.00	941.73	1078.11	194.38
MEAN	.000	.12	.000	.000	.000	.000	.005	.000	.000	30.4	34.8	6.48
MAX	.00	2.8	.00	.00	.00	.00	.14	.00	.00	440	810	100
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MED	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	7.0	.00	.00	.00	.00	.3	.00	.00	1870	2140	386
CFSM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.06	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 1999, BY WATER YEAR (WY)

	MEAN	MAX	MIN	(WY)
1999	.000	.12	.000	1999
1998	.000	.12	.000	1998
1997	.000	.12	.000	1997
1996	.000	.12	.000	1996
1995	.000	.12	.000	1995
1994	.000	.12	.000	1994
1993	.000	.12	.000	1993
1992	.000	.12	.000	1992
1991	.000	.12	.000	1991
1990	.000	.12	.000	1990
1989	.000	.12	.000	1989
1988	.000	.12	.000	1988
1987	.000	.12	.000	1987
1986	.000	.12	.000	1986
1985	.000	.12	.000	1985
1984	.000	.12	.000	1984
1983	.000	.12	.000	1983
1982	.000	.12	.000	1982
1981	.000	.12	.000	1981
1980	.000	.12	.000	1980
1979	.000	.12	.000	1979

SUMMARY STATISTICS

FOR 1999 WATER YEAR

WATER YEARS 1998 - 1999

ANNUAL TOTAL	2217.90	
ANNUAL MEAN	6.08	
HIGHEST ANNUAL MEAN	6.08	1999
LOWEST ANNUAL MEAN	6.08	1999
HIGHEST DAILY MEAN	810	Aug 31
LOWEST DAILY MEAN	.00	Oct 1
ANNUAL SEVEN-DAY MINIMUM	.00	Oct 1
ANNUAL RUNOFF (AC-FT)	4400	
ANNUAL RUNOFF (CFSM)	.010	
10 PERCENT EXCEEDS	.29	
50 PERCENT EXCEEDS	.00	
90 PERCENT EXCEEDS	.00	

e Estimated



## 09485700 RILLITO CREEK AT DODGE BOULEVARD, AT TUCSON, AZ

LOCATION.--Lat 32°16'17", long 110°54'50", in NE1/4NW1/4SE1/4 sec.28, T.13 S., R.14 E., Pima County, Hydrologic Unit 15050302, on right bank, at downstream side of bridge on Dodge Boulevard, 0.4 mi north of intersection of Ft. Lowell Road and Dodge Boulevard in Tucson.

DRAINAGE AREA.--871 mi<sup>2</sup>

PERIOD OF RECORD.--Water years 1988-90 (annual maximums only), October 1990 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,380 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,100 ft<sup>3</sup>/s Jan. 8, 1993, gage height, 14.84 ft; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (""):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 7 .....	1700	1,680	6.22	Aug. 23 .....	2030	640	5.02
July 15 .....	0930	*8,960	*8.89	Aug. 28 .....	0045	1,480	5.66
July 27 .....	1830	2,720	6.30	Aug. 31 .....	2200	4,970	7.12

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	15	.00	.00	.00	.00	183
2	.00	.00	.00	.00	.00	.00	2.0	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.1	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	104	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	36	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	402	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	2200	.00	4.3
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	119	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	24	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	21	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.6	9.3	45
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.43	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	51	1.7
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.84	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.9	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	268	3.3	.00
28	.00	26	.00	.00	.00	.00	.00	.00	.00	169	191	.00
29	.00	29	.00	.00	.00	.00	.00	.00	.00	10	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	550	.00
TOTAL	0.43	74.00	0.00	0.00	0.00	0.00	17.00	0.00	0.00	3382.61	805.44	234.00
MEAN	.014	2.47	.000	.000	.000	.000	.57	.000	.000	109	25.0	7.80
MAX	.43	29	.00	.00	.00	.00	15	.00	.00	2200	550	183
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.9	147	.00	.00	.00	.00	34	.00	.00	6710	1600	464
CFSM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.13	.03	.01
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.03	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1999, BY WATER YEAR (WY)

	MEAN	0.30	5.70	50.3	193	81.8	63.1	16.6	.000	.000	14.5	8.59	9.61
MAX	.26	48.7	278	1443	214	263	78.8	.000	.000	109	25.0	64.5	
(WY)	1997	1995	1993	1993	1996	1991	1998	1991	1991	1999	1999	1996	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1991	1991	1994	1994	1994	1996	1993	1991	1991	1991	1991	1991	1991

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1991 - 1999

ANNUAL TOTAL	13125.64	4513.48	
ANNUAL MEAN	36.0	12.4	41.5
HIGHEST ANNUAL MEAN			164
LOWEST ANNUAL MEAN			.12
HIGHEST DAILY MEAN	1760	Feb 18	11300
LOWEST DAILY MEAN	.00	Jan 1	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00
ANNUAL RUNOFF (AC-FT)	25330		30070
ANNUAL RUNOFF (CFSM)	.041		.048
ANNUAL RUNOFF (INCHES)	.56		.65
10 PERCENT EXCEEDS	105		15
50 PERCENT EXCEEDS	.00		.00
90 PERCENT EXCEEDS	.00		.00

## 09488065 RILLITO CREEK AT LA CHOLLA BOULEVARD, NEAR TUCSON, AZ

LOCATION.--Lat 32°18'12", long 111°00'41", in SW1/4SW1/4NW1/4 sec.15, T.13 S., R.13 E., Pima County, Hydrologic Unit 15050301, on right bank, 200 ft upstream from bridge on La Cholla Boulevard, 1.8 mi downstream from former gage, Rillito Creek near Tucson, 3.0 mi upstream from mouth, and 5.8 mi north of Tucson city hall.

DRAINAGE AREA.--922 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1990 to September 1995 (published mean daily discharges over 200 ft<sup>3</sup>/s), October 1995 to current year.

GAGE.--Water-stage recorder and crest-stage gages. Elevation of gage is 2,260 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Only discharges above 230 ft<sup>3</sup>/s are recorded. Several small diversions above station for irrigation and for municipal and domestic supply, mostly by pumping from ground water.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,400 ft<sup>3</sup>/s Jan. 8, 1993, gage-height 11.39 ft; no flow for most of each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 7.....	1815	3,830	4.91	July 27.....	1945	3,690	4.86
July 10.....	2315	1,490	4.09	Aug. 28.....	0215	1,120	3.92
July 15.....	1230	*9,460	*6.56	Aug. 31.....	2145	5,670	5.53
July 17.....	1515	790	3.73				

No flow for most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	e.40	.00	.00	.00	.00	117
2	.00	.00	.00	.00	.00	.00	e.30	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	e485	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	e7.4	.00	.00
9	.00	e.40	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	e129	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	e61	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	1.1	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	e579	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	e2600	.00	.58
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	e21	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	e54	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	e3.8	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.11	.00	7.3
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.72	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.10
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	3.8	.15
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	7.9	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
26	.00	.00	.00	.00	.00	e.08	.00	.00	.00	e.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	e272	.00	.00
28	.00	e.40	.00	.00	.00	.00	.00	.00	.00	e120	103	.00
29	.00	e.46	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	503	---
TOTAL	0.00	1.26	0.00	0.00	0.00	0.08	0.70	0.00	0.00	4332.31	619.52	125.13
MEAN	.000	.042	.000	.000	.000	.003	.023	.000	.000	140	20.0	4.17
MAX	.00	.46	.00	.00	.00	.08	.40	.00	.00	2600	503	117
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

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

	1996	1997	1998	1999
MEAN	.000	.010	.000	.000
MAX	.000	.042	.000	.000
(WY)	1996	1999	1996	1999
MIN	.000	.000	.000	.000
(WY)	1996	1996	1996	1997

## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1996 - 1999

ANNUAL TOTAL	5885.26	5079.00	
ANNUAL MEAN	16.1	13.9	8.59
HIGHEST ANNUAL MEAN			16.1
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	1550	Feb 15	2600
LOWEST DAILY MEAN	.00	Jan 1	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00
10 PERCENT EXCEEDS	8.2	.00	.00
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

## 09486360 CANADA DEL ORO BELOW INA ROAD, NEAR TUCSON, AZ

LOCATION.--Lat 32°20'10", long 111°02'29", in NW1/4NE1/4NW1/4 sec.5, T 13 S., R.13 E., Pima County, Hydrologic Unit 15050301, on left bank, 1/8 mi downstream from Ina Road, 1/4 mi upstream from Thomydale Rd., 1.5 mi upstream from mouth, and 7.3 mi north of Tucson.

DRAINAGE AREA.--255 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1990 to September 1995 (discharge above 200 ft<sup>3</sup>/s only), October 1995 to current year.

GAGE.--Water-stage recorder and crest-stage gages. Elevation of gage is 2,240 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. Lago del Oro--capacity 9,400 acre-ft--19.6 mi upstream, has contained no storage since May 4, 1971, as gates were opened by court order; however, peak flows are regulated while passing through the lake.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 7.....	1830	1,030	10.25	Aug 28 .....	0615	*1,210	*10.35
July 15.....	1030	1,080	10.28				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.90	.90	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	1.1	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	26	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.80	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.7	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	32	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.4	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	24	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	1.10	0.00	0.00	0.00	0.00	0.00	0.00	83.80	24.70	0.00
MEAN	.000	.000	.035	.000	.000	.000	.000	.000	.000	2.70	.80	.000
MAX	.00	.00	1.1	.00	.00	.00	.00	.00	.00	32	24	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

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

	1996	1997	1998	1999
MEAN	.54	.054	.009	.28
MAX	1.58	.22	.035	1.13
(WY)	1997	1997	1999	1997
MIN	.000	.000	.000	.000
(WY)	1996	1996	1996	1996

## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1996 - 1999

ANNUAL TOTAL	458.00	104.60	
ANNUAL MEAN	1.25	.30	.80
HIGHEST ANNUAL MEAN			1.30
LOWEST ANNUAL MEAN			.30
HIGHEST DAILY MEAN	171	Jul 12	177
LOWEST DAILY MEAN	.00	Jan 1	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00
10 PERCENT EXCEEDS	.00		.00
50 PERCENT EXCEEDS	.00		.00
90 PERCENT EXCEEDS	.00		.00

## 09488500 SANTA CRUZ RIVER AT CORTARO, AZ

LOCATION.--Lat 32°21'04", long 111°06'38", in NW 1/4 NW 1/4 sec. 35, T. 12 S., R. 12 E., Pima County, Hydrologic Unit 15050302, at center column of bridge pier on left bank, 0.5 mi southwest of Cortaro, 1.0 mi downstream from Ina Road treatment plant, 2.6 mi downstream from Canada del Oro, and 3.7 mi downstream from Rillito Creek.

DRAINAGE AREA.--3,503 mi<sup>2</sup>, of which 395 mi<sup>2</sup> is in Mexico.

PERIOD OF RECORD.--October 1939 to June 1947 (published as "at Rillito"), July 1950 to September 1984, March to June 1990, July to September 1990 (fragmentary record), October 1990 to current year.

REVISED RECORDS.--WSP 1283: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,100.00 ft, above sea level. Prior to June 30, 1947, at site 5.5 mi downstream at different datum. July 8, 1950 to Jan. 20, 1966 at present site at datum 19.11 ft lower. Jan. 20, 1966, to Sept. 30, 1984 at present site and datum 23.11 ft lower. Aug. 1 to Oct. 19, 1990, at site on right bank 800 ft downstream from bridge at datum 30.20 ft lower. Apr. 10 to May 17, 1991, at site on bridge, 200 ft toward right bank, at different datum. Supplementary water-stage recorder on downstream site on left bridge pier at datum 19.11 ft lower Aug. 29, 1969 to Sept. 30, 1984. Temporary water-stage recorder on right bank Oct. 27, 1983 to Sept. 30, 1984 at datum 20.80 ft lower. Prior to May 8 at site 300 ft upstream at different datum.

REMARKS.--Records fair. Many diversions above station, mostly by pumping from ground water, for irrigation of about 34,000 acres. Waste water from irrigation and from sewage-disposal plants is included in flow past station in water years 1951, 1952, 1970-82, 1990-97.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,000 ft<sup>3</sup>/s Oct. 2, 1983, gage height 16.57 ft from floodmark, computed by flood-routing method from Santa Cruz River at Tucson and Rillito Creek at Tucson; no natural flow for most of each year. (See REMARKS)

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,700 ft<sup>3</sup>/s and maximum ("):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 7 .....	2115 ~	2,870	7.53	Sept. 1 .....	0100	5,290	8.47
July 15 .....	1145	*13,700	*10.63				

No natural flow for most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	62	71	63	81	78	78	56	74	46	40	971
2	55	65	71	68	89	71	192	63	77	45	43	95
3	60	62	66	62	91	73	57	61	76	e52	38	60
4	63	67	74	71	82	74	62	60	65	e52	40	51
5	63	60	70	69	118	73	70	55	59	e51	45	48
6	59	62	74	74	92	81	64	54	58	e45	124	52
7	61	55	71	75	85	80	51	59	53	e574	50	56
8	62	57	70	73	85	76	48	61	e45	321	48	54
9	60	71	69	78	80	68	46	57	e51	62	48	56
10	63	69	69	82	77	74	51	61	e58	40	54	64
11	59	71	65	83	76	71	49	60	e61	130	60	64
12	63	65	67	81	76	68	50	68	e42	52	67	64
13	63	67	70	79	82	74	43	65	e53	40	60	65
14	60	70	75	79	83	70	44	66	e52	201	68	61
15	61	71	69	82	76	68	48	70	64	3700	112	85
16	60	70	64	86	76	62	41	67	55	188	104	104
17	61	61	67	82	77	65	46	72	57	53	72	69
18	58	67	63	83	78	63	48	69	67	146	73	68
19	59	58	70	82	77	58	52	67	e53	39	75	98
20	56	57	68	84	77	53	56	69	e67	52	81	78
21	57	63	65	84	74	54	49	78	e57	80	101	72
22	64	62	61	81	78	50	46	73	e64	86	77	71
23	60	64	62	85	77	48	50	73	e53	100	79	70
24	59	65	67	83	77	57	48	74	e53	146	93	65
25	62	66	62	84	77	51	51	69	e49	102	80	61
26	70	65	60	80	75	56	46	71	e55	102	79	59
27	65	62	66	81	78	62	47	71	e47	192	87	61
28	70	74	64	80	78	64	45	71	64	257	581	60
29	71	102	65	81	---	62	45	67	50	46	93	54
30	67	75	71	85	---	54	51	63	48	42	112	53
31	63	---	65	78	---	53	---	70	---	44	173	---
TOTAL	1909	1985	2091	2438	2272	2011	1674	2040	1757	7086	2857	2889
MEAN	61.6	66.2	67.5	78.6	81.1	64.9	55.8	65.8	58.6	229	92.2	96.3
MAX	71	102	75	86	118	81	192	78	77	3700	581	971
MIN	55	55	60	62	74	48	41	54	42	39	38	48
AC-FT	3790	3940	4150	4840	4510	3990	3320	4050	3490	14060	5670	5730
CFSM	.02	.02	.02	.02	.02	.02	.02	.02	.02	.07	.03	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1999, BY WATER YEAR (WY)

	MEAN	41.2	25.3	83.5	102	47.5	39.2	18.2	16.9	17.8	75.8	117	58.8
MAX	744	168	1044	2485	252	496	104	65.8	61.4	393	868	358	
(WY)	1978	1979	1979	1993	1995	1978	1998	1999	1994	1954	1955	1964	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.69	1.97	.000	
(WY)	1940	1943	1943	1943	1943	1940	1940	1940	1941	1960	1962	1953	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1940 - 1999

ANNUAL TOTAL	30756		31009									
ANNUAL MEAN	84.3		85.0							54.5		
HIGHEST ANNUAL MEAN										262		1993
LOWEST ANNUAL MEAN										2.59		1956
HIGHEST DAILY MEAN	1750	Feb 18				3700	Jul 15			40000	Oct 2	1983
LOWEST DAILY MEAN	20	Mar 27				38	Aug 3			.00	Oct 1	1939
ANNUAL SEVEN-DAY MINIMUM	37	Mar 23				42	Jul 30			.00	Oct 1	1939
ANNUAL RUNOFF (AC-FT)	61000					61510				39490		
ANNUAL RUNOFF (CFSM)		.024					.024			.016		
10 PERCENT EXCEEDS	105					85				68		
50 PERCENT EXCEEDS	62					65				4.2		
90 PERCENT EXCEEDS	42					49				.00		

e Estimated

## 09486620 SANTA CRUZ RIVER AT TRICO ROAD, NEAR MARANA, AZ

LOCATION.--Lat 32°28'17", long 111°18'25", in NE1/4SE1/4, sec.15, T.11 S., R.10 E., in Pima County, Hydrologic Unit 15050303, on right bank 750 ft upstream from Trico Road bridge, 5 mi west of Marana, and 24 mi northwest of Tucson.

DRAINAGE AREA.--3,641 m<sup>2</sup>

PERIOD OF RECORD.--April 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,910 ft above sea level, from topographic map.

REMARKS.--Records poor. Most of base flow is effluent from municipal sewage treatment plant at Ina Road, 17.6 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum mean daily discharge, 15,000 ft<sup>3</sup>/s Jan. 19, 1993; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,700 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 15 .....	1645	10,600	12.00
Sept. 1 .....	0530	4,490	7.66

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	31	41	29	25	34	17	12	11	e.00	e.00	822
2	19	38	36	24	29	29	69	15	9.5	e.00	e.00	27
3	19	32	31	29	31	28	35	17	9.8	e.00	e.00	13
4	21	37	30	32	30	30	30	16	12	e.00	e.00	13
5	23	33	23	31	29	29	33	16	12	e.00	e.00	13
6	20	28	29	33	39	28	34	14	11	e.00	e6.0	13
7	22	28	34	35	33	34	22	13	11	13.1	e4.5	13
8	21	28	38	34	33	34	19	14	11	33.6	e.00	14
9	18	37	36	34	31	30	12	11	11	52	e.00	14
10	21	42	36	36	28	32	13	11	9.0	e.00	e.00	14
11	25	42	32	39	27	31	17	12	10	24	e.00	14
12	25	40	28	37	28	30	16	12	6.9	32	e.00	14
13	26	33	31	35	26	29	12	15	9.1	e.00	e.00	15
14	26	35	34	36	31	31	10	14	8.0	e.00	e.00	15
15	27	37	30	37	32	30	10	13	7.3	275.3	e21	17
16	27	44	21	36	29	26	9.3	12	5.5	133	24	30
17	25	39	26	36	29	22	9.6	12	3.8	e.00	24	24
18	26	36	23	34	29	29	9.0	13	4.8	45	12	16
19	26	36	22	37	27	21	6.1	12	4.5	e.00	15	17
20	25	29	26	34	25	14	7.3	12	4.9	e.00	17	42
21	22	30	28	e43	23	15	7.5	12	3.3	13	33	18
22	25	34	25	e39	23	17	8.1	13	3.4	16	23	19
23	22	37	28	e38	25	16	8.5	15	3.5	e.00	22	20
24	20	35	32	e37	25	15	8.8	14	3.4	e.00	29	19
25	22	38	33	e36	25	16	11	12	2.2	18	24	19
26	26	35	23	e35	26	14	14	9.3	1.5	e.00	25	20
27	23	36	30	e35	29	17	11	5.4	e.00	33	28	20
28	26	36	31	e34	30	18	11	9.9	e.00	181	412	20
29	26	55	31	e34	---	18	9.2	9.7	e.00	11	91	19
30	25	59	29	24	---	20	9.2	9.7	e.00	e.00	26	19
31	27	---	30	23	---	13	---	8.7	---	e.00	29	---
TOTAL	726	1100	927	1056	797	750	488.6	385.7	189.40	4488.00	865.50	1352
MEAN	23.4	36.7	29.9	34.1	28.5	24.2	16.3	12.4	6.31	145	27.9	45.1
MAX	27	59	41	43	39	34	69	17	12	2750	412	822
MIN	18	28	23	23	23	13	6.1	6.4	.00	.00	.00	13
AC-FT	1440	2180	1840	2090	1580	1490	969	765	376	3990	1720	2680

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1999, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999		
MEAN	13.0	18.2	39.1	196	73.5	26.0	12.6	6.15	5.30	52.3	19.6	31.6
MAX	40.0	40.5	157	1509	294	82.1	41.1	17.0	12.0	318	39.3	207
(WY)	1990	1990	1995	1993	1998	1991	1992	1990	1994	1990	1990	1996
MIN	.000	1.76	8.72	9.60	.000	.000	.000	.000	.000	.000	2.00	.000
(WY)	1996	1996	1992	1992	1993	1993	1991	1991	1991	1991	1991	1995

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1990 - 1999

	1998 CALENDAR YEAR	1999 WATER YEAR	WATER YEARS 1990 - 1999
ANNUAL TOTAL	17503.61	13125.20	
ANNUAL MEAN	48.0	36.0	41.1
HIGHEST ANNUAL MEAN			135
LOWEST ANNUAL MEAN			9.71
HIGHEST DAILY MEAN	3970 Feb 18	2750 Jul 15	15000 Jan 19 1993
LOWEST DAILY MEAN	10 Mar 2	10 Jun 27	.00 Jul 28 1990
ANNUAL SEVEN-DAY MINIMUM	10 Mar 2	09 Jun 27	.00 Jul 28 1990
ANNUAL RUNOFF (AC-FT)	31720	26030	25790
10 PERCENT EXCEEDS	55	37	37
50 PERCENT EXCEEDS	19	23	8.0
90 PERCENT EXCEEDS	.00	3.4	.00

e Estimated

## 09486600 ARIVACA CREEK AT ARIVACA, AZ

LOCATION.--Lat 31°34'24", long 111°19'56", in SW1/4SW1/4SE1/4 T.21 S., R.10 E., Pima County, Hydrologic Unit 15050301, on the right bank, in the Arivaca quad.

DRAINAGE AREA.--56.8 mi<sup>2</sup>, from topographic map.

PERIOD OF RECORD.--June 1996 to current year.

GAGE.--Water-stage recorder and data collection platform. Datum of gage is 3,600 ft above sea level. U.S. Fish and Wildlife Service has taken miscellaneous measurements since 1991. U.S. Geological Survey operated a gage 4 mi downstream (09486600) from 1967 to 1972.

REMARKS.--No estimated daily discharges. Records fair. No known regulation except for a few small stock ponds.

EXTREMES FOR PERIOD OF RECORD.--At site 4 mi downstream (09486600), maximum discharge 3,550 ft<sup>3</sup>/s Dec. 20, 1967 (gage height, 7.18 ft from highwater mark in gage well), from rating curve extended above 260 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 13.32 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 24, 1965 reached a stage of 13.32 ft from a profile past gage (4 mi downstream) (discharge, 15,900 ft<sup>3</sup>/s, by slope-area measurement of peak flow); flood resulted from storm runoff and failure of two earth dams which were stoning an estimated 2,000 acre-ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum ("):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 1.....	1015	*57	*9.08

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.29	.56	.68	.66	.69	.45	.93	.35	.03	.00	.05	14
2	.31	.56	.70	.66	.68	.47	3.1	.33	.04	.00	.05	.58
3	.33	.53	.71	.64	.70	.48	.79	.28	.01	.00	.06	.14
4	.35	.54	.67	.63	.70	.49	1.0	.28	.01	.00	.27	.08
5	.35	.54	.76	.64	.70	.52	.87	.27	.02	.00	.10	.06
6	.34	.55	.99	.69	.71	.50	.56	.26	.03	.00	.06	.06
7	.37	.56	.83	.67	.72	.50	.46	.28	.02	.00	.06	.04
8	.37	.53	.77	.69	.70	.58	.41	.26	.01	.00	.04	.04
9	.37	.70	.74	.63	.66	.50	.40	.21	.00	.00	.03	.07
10	.36	.55	.74	.65	.58	.49	.40	.21	.00	.00	.07	.08
11	.38	.56	.73	.67	.55	.49	.38	.24	.00	.00	.04	.04
12	.39	.64	.73	.68	.57	.49	.34	.24	.00	.00	.02	.06
13	.37	.60	.71	.69	.60	.50	.36	.18	.00	.00	.01	.18
14	.37	.57	.69	.70	.61	.49	.38	.14	.00	.00	2.2	.12
15	.33	.58	.72	.68	.59	.49	.35	.14	.00	.01	.16	.09
16	.36	.57	.71	.69	.58	.53	.33	.13	.00	.03	.07	.11
17	.38	.63	.88	.71	.53	.54	.35	.14	.00	.02	.05	.10
18	.39	.60	.93	.72	.52	.54	.36	.13	.00	.03	.06	.10
19	.41	.60	.76	.70	.50	.55	.33	.09	.00	.02	.09	.14
20	.43	.61	.71	.70	.52	.51	.29	.08	.00	.39	.09	.14
21	.47	.60	.71	.71	.49	.50	.26	.08	.00	.11	.08	.13
22	.57	.61	.68	.66	.52	.50	.25	.05	.00	.04	.08	.13
23	.55	.61	.66	.68	.50	.46	.25	.06	.00	.11	.08	.13
24	.46	.59	.67	.68	.51	.46	.25	.07	.00	.10	.09	.14
25	.46	.60	.68	.60	.50	.48	.26	.08	.00	.08	.05	.11
26	.46	.62	.69	.66	.48	.55	.31	.08	.00	.10	.06	.10
27	.46	.62	.69	.68	.50	.51	.32	.07	.00	.14	.21	.09
28	.50	.93	.64	.70	.48	.49	.28	.07	.00	.16	.13	.06
29	.52	1.1	.74	.67	---	.44	.29	.03	.00	.09	.19	.09
30	.55	.73	.70	.68	---	.40	.32	.01	.00	.06	.16	.10
31	.54	---	.67	.70	---	.33	---	.01	---	.05	.26	---
TOTAL	12.79	18.59	22.69	20.92	16.39	15.23	15.18	4.85	0.17	1.54	5.02	17.39
MEAN	.41	.62	.73	.67	.59	.49	.51	.16	.006	.050	.16	.58
MAX	.57	1.1	.99	.72	.72	.58	3.1	.35	.04	.39	2.2	.14
MIN	.29	.53	.64	.60	.48	.33	.25	.01	.00	.00	.01	.04
AC-FT	25	37	45	41	33	30	30	9.6	.3	3.1	10	34

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

	1996	1997	1998	1999
MEAN	.32	.49	.64	.78
MAX	.47	.71	.79	1.07
(WY)	1997	1996	1996	1996
MIN	.003	.10	.36	.33
(WY)	1998	1998	1998	1999

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1996 - 1999
ANNUAL TOTAL	377.15	150.76	
ANNUAL MEAN	1.03	.41	.62
HIGHEST ANNUAL MEAN			.92
LOWEST ANNUAL MEAN			.39
HIGHEST DAILY MEAN	125 Jul 20	14 Sep 1	125 Jul 20 1998
LOWEST DAILY MEAN	.00 Jun 4	.00 Jun 9	.00 Jun 23 1996
ANNUAL SEVEN-DAY MINIMUM	.00 Jun 7	.00 Jun 9	.00 Jun 23 1996
ANNUAL RUNOFF (AC-FT)	748	299	447
10 PERCENT EXCEEDS	.76	.70	.97
50 PERCENT EXCEEDS	.42	.38	.36
90 PERCENT EXCEEDS	.01	.01	.00

## 09488800 ALTAR WASH NEAR THREE POINTS, AZ

LOCATION.--Lat 31°50'20", long 111°24'13", in SE1/4NE1/4 sec.27, T.18 S., R.9 E., Pima County, Hydrologic Unit 15060304, on right bank attached to downstream side of bridge on State Highway 286, 0.3 mi below mouth of Chilitipines Wash and 18 mi south of Three Points.

DRAINAGE AREA.--463 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1966 to September 1975, May 1992 to current year.

GAGE.--Water stage recorder and crest-stage gages. Datum of gage is 2,975.15 ft above sea level.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft<sup>3</sup>/s Sept. 4, 1970, gage height 13.85 ft at site 2 mi upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 11.....	0100	1,870	4.19	Sept. 1.....	0400	1,680	4.02
July 16.....	0415	4,410	5.98	Sept. 10.....	0100	3,370	5.33
July 23.....	0615	987	3.29	Sept. 16.....	0315	3,830	5.63
July 28.....	0100	16,540	7.11	Sept. 20.....	0030	913	3.20

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	137
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	e50	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	e300	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	e20	.00	2.5
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.8	.00	199
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	108	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	654	66	646
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	20	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	83	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.3	8.9
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	46	135
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	76	25	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	157	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	7.3	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	e.00	37	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	e.00	45	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	e.00	35	31	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	e.00	1010	42	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	e.00	561	57	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3158.80	275.60	1378.50
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.102	8.89	46.0
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	1010	66	646
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	6270	547	2730

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1999, BY WATER YEAR (WY)

MEAN	.95	.24	2.57	.000	.23	1.09	.000	.003	.22	18.4	23.1	24.5
MAX	5.74	3.22	38.6	.000	3.62	15.3	.003	.045	3.33	102	73.5	210
(WY)	1973	1997	1968	1967	1998	1973	1995	1967	1974	1999	1974	1970
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.58	.000
(WY)	1967	1967	1967	1967	1967	1967	1967	1968	1963	1993	1992	1963

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1967 - 1999

ANNUAL TOTAL	1629.32	4812.90	
ANNUAL MEAN	4.45	13.2	6.33
HIGHEST ANNUAL MEAN			20.0
LOWEST ANNUAL MEAN			.53
HIGHEST DAILY MEAN	182 Aug 11	1010 Jul 28	5460 Sep 4 1970
LOWEST DAILY MEAN	.00 Jan 1	.00 Oct 1	.00 Oct 1 1966
ANNUAL SEVEN-DAY MINIMUM	.00 Jan 1	.00 Oct 1	.00 Oct 1 1966
ANNUAL RUNOFF (AC-FT)	1230	9550	4580
10 PERCENT EXCEEDS	.00	.00	.00
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

## 09487000 BRAWLEY WASH NEAR THREE POINTS, AZ

LOCATION.--Lat 32°04'32", long 111°20'17", in SE1/4NE1/4SW1/4 sec. 32, T.15 S., R.10 E., Pima County, Hydrologic Unit 15050302, on right bank downstream side of State Highway 86 bridge, 1.6 mi west of Three Points, and 23 mi west of Tucson.

DRAINAGE AREA.--776 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1966 to September 1981 (crest-stage gage) at site 1,000 ft downstream, May 1992 to current year.

GAUGE.--Water-stage recorder and crest-stage gages. Elevation of gage is 2,540 ft above sea level, from topographic map. Prior to May 18, 1992 gage was located 1,000 ft downstream from current location.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 13,700 ft<sup>3</sup>/s Sept. 4, 1970, gage height 15.8 ft site and datum then in use; no flow most of each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 19,100 ft<sup>3</sup>/s Oct. 1, 1983, from contracted opening measurement of peak flow, gage height 12.07 ft from floodmarks.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 11 .....	0530	1,990	9.25	Aug. 28 .....	0245	926	8.03
July 14 .....	0345	706	8.26	Sept. 1 .....	0045	1,480	8.47
July 23 .....	2300	1,270	8.66	Sept. 9 .....	2215	2,150	8.87
July 28 .....	0400	4,910	10.59	Sept. 15 .....	2315	5,410	10.59
Aug. 4 .....	2230	575	7.90	Sept. 19 .....	2030	9,420	a*12.16

a From highwater mark.

No flow for most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e176
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e26	e.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e182	e.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	164	e.00	e.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	146	e.00	e.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	322	e.00	e196
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	144	e20	e225
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	363	e.00	e.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	133	e.00	e.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	73	e.00	e.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	177	e31	e.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	e80	e116	e290
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	e500	e59	e333
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	e30	e44	e.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	e110	e.00	e.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e6.4	e653
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e56	e713
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e10	e.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00	e43
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	e20	e.00	e.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	e13	e7.0	e.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	e153	e.00	e.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	e5.0	e.00	e.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	e6.0	e17	e.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	e714	e104	e.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	e203	e17	e.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	e50	e.00	e.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e126	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3406.00	821.40	2629.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	110	26.5	87.6
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	714	182	713
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	6760	1630	5210

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1999, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999
MEAN	1.52	.87	1.39	1.53	.002	.000	.017
MAX	10.6	4.83	9.73	10.6	.011	.000	.12
(WY)	1997	1997	1995	1995	1993	1993	1994
MIN	.000	.000	.000	.000	.000	.000	.000
(WY)	1993	1993	1993	1994	1993	1993	1994

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1993 - 1999
ANNUAL TOTAL	915.00	6856.40	
ANNUAL MEAN	2.51	18.8	5.88
HIGHEST ANNUAL MEAN			18.8
LOWEST ANNUAL MEAN			.028
HIGHEST DAILY MEAN	150 Aug 11	714 Jul 28	1513 Aug 27 1993
LOWEST DAILY MEAN	.00 Jan 1	.00 Oct 1	.00 Oct 1 1992
ANNUAL SEVEN-DAY MINIMUM	.00 Jan 1	.00 Oct 1	.00 Oct 1 1992
ANNUAL RUNOFF (AC-FT)	1810	13600	4963
10 PERCENT EXCEEDS	.00	17	.00
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated



**LOCATION** --Lat 33°13'56", long 112°10'08", in NE1/4NE1/4 sec.29, T.2 S., R.2 E., Pinal County, Hydrologic Unit 15050303, in Gila River Indian Reservation, on downstream side of highway bridge, 3.4 mi upstream from mouth, 4.3 mi south of Komatke, and 9 mi south of Laveen.

**PERIOD OF RECORD.**--January 1940 to September 1946, December 1947 to current year.

REVISÉD RECORDS.--WSP 1283: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,020.86 ft above sea level.

REMARKS.—No estimated daily discharges. Records good. Many diversions above station, mostly by pumping from ground water, for municipal uses and for irrigation of about 240,000 acres, not including San Carlos Project. Much of the low flow passing this station is drainage and wasteway return from irrigated lands upstream and pumpage from ground water.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 33,000 ft<sup>3</sup>/s Oct. 4, 1983, gage height, 19.74 ft, from flow-routing computation; no flow for most of time in recent years.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 380 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 14.....	1700	587	11.72
July 15.....	1145	*1,000	*12.60

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

[illegible]

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1999, BY WATER YEAR (WY)

MEAN	38.9	7.05	23.3	36.0	14.5	12.6	3.72	1.74	1.27	13.8	53.6	29.9
MAX	1312	200	435	1132	186	229	75.6	13.8	10.8	193	537	570
(WY)	1984	1958	1968	1993	1983	1941	1941	1941	1967	1990	1955	1946
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1959	1957	1959	1959	1961	1964	1963	1961	1961	1963	1973	1968

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1940 - 1999
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ANNUAL TOTAL	1284.88		1402.12				
ANNUAL MEAN	3.52		3.84			25.1	
HIGHEST ANNUAL MEAN						170	1984
LOWEST ANNUAL MEAN						4"	1977
HIGHEST DAILY MEAN	262	Feb 10	630	Jul 15	18000		Oct 4 1983
LOWEST DAILY MEAN	.00	Jan 1	.00	Oct 2	.00		Jul 17 1940
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00	Oct 2	.00		Jul 17 1940
ANNUAL RUNOFF (AC-FT)	2550		2780		14590		
ANNUAL RUNOFF (CFSM)	.000		.000		.002		
10 PERCENT EXCEEDS	3.3		.33		8.2		
50 PERCENT EXCEEDS	.00		.00		.07		
90 PERCENT EXCEEDS	.00		.00		.00		

## 09489500 BLACK RIVER BELOW PUMPING PLANT, NEAR POINT OF PINES, AZ

LOCATION.--Lat 33°28'36", long 109°45'48", in W sec.32, T.2 N., R.25 E. (unsurveyed), Graham County, Hydrologic Unit 15060101, in San Carlos Indian Reservation, on left bank 0.9 mi downstream from Phelps Dodge Corp. pumping plant, 1.3 mi downstream from Freezeout Creek, 8 mi northwest of Point of Pines, and 63 mi upstream from confluence with White River.

DRAINAGE AREA.--560 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1953 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,725 ft above sea level, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. Water is diverted at pumping plant 0.9 mi upstream and pumped into headwaters of Willow Creek (tributary of Eagle Creek) for mining, metallurgical treatment of ores, and domestic supply in vicinity of Morenci. (See sta 09445000.)

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,900 ft<sup>3</sup>/s Oct. 19, 1972, gage height, 18.0 ft, from floodmarks, from rating curve extended above 5,000 ft<sup>3</sup>/s; minimum daily, 2.6 ft<sup>3</sup>/s July 5, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 3	2145	1,900	5.84	Aug. 10	1400	2,950	6.91
Aug. 5	2300	1,320	5.18	Aug. 16	1330	757	4.46

Minimum daily discharge, 25 ft<sup>3</sup>/s Jan. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	38	57	35	e41	33	40	53	31	27	123	141
2	33	36	50	36	e44	36	75	52	30	28	210	132
3	33	35	63	e35	43	37	67	50	29	29	755	129
4	33	32	64	e33	42	33	49	44	28	34	887	130
5	33	32	63	e25	50	31	33	40	28	35	956	107
6	32	31	63	e34	54	31	36	39	28	33	1070	92
7	33	30	50	e38	50	30	59	39	28	35	638	82
8	33	30	40	e40	47	31	80	37	27	35	450	77
9	33	33	e35	e40	46	31	109	36	29	38	363	68
10	33	40	e40	e40	e42	30	116	34	28	40	1550	67
11	33	37	e50	37	e36	30	112	34	27	46	1540	76
12	33	33	e45	39	e35	30	120	33	31	42	872	74
13	33	35	e42	40	e32	30	134	31	33	34	583	63
14	33	35	38	38	e33	30	140	30	e30	30	429	50
15	33	36	39	38	e36	29	135	29	e28	30	361	77
16	34	36	38	37	e36	28	144	28	e29	29	547	227
17	35	35	39	39	e34	30	132	27	30	30	490	209
18	35	35	39	40	34	31	114	30	38	38	352	200
19	36	34	43	39	35	31	105	31	42	71	373	207
20	36	35	38	41	35	31	101	31	44	64	454	185
21	38	35	38	43	38	31	99	30	42	89	403	157
22	43	34	37	47	41	32	98	30	37	76	297	134
23	44	32	e40	41	43	32	96	29	31	100	283	124
24	44	32	e35	38	38	33	92	28	32	104	257	144
25	43	34	e35	44	35	33	88	27	30	103	218	157
26	70	34	e36	46	34	33	84	26	29	120	248	124
27	96	33	e36	43	33	33	79	27	27	123	243	109
28	70	38	37	40	e34	32	71	30	26	123	227	98
29	46	75	34	e36	---	30	63	32	28	113	263	88
30	38	79	35	e38	---	28	57	31	28	244	184	81
31	38	---	35	e38	---	27	---	31	---	144	152	---
TOTAL	1240	1114	1334	1198	1101	967	2732	1049	928	2087	15778	3609
MEAN	40.0	37.1	43.0	38.6	39.3	31.2	91.1	33.8	30.9	67.3	509	120
MAX	96	79	64	47	54	37	144	53	44	244	1550	227
MIN	32	30	34	25	32	27	33	26	26	27	123	50
AC-FT	2460	2210	2650	2380	2180	1920	5420	2080	1840	4140	31300	7160
CFPM	.07	.07	.08	.07	.07	.06	.16	.06	.06	.12	.91	.21
IN.	.08	.07	.09	.08	.07	.06	.18	.07	.06	.14	1.05	.24
(*)	46.4	48.5	55.8	46.1	48.2	48.6	110	49.2	35.0	76.1	517	128
(**)	2850	2890	3440	2840	2680	2990	6560	3030	2090	4680	31800	7660

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1999, BY WATER YEAR (WY)

	MEAN	109	89.4	121	148	242	563	734	293	63.0	43.8	109	89.2
MAX	1211	505	915	1571	1036	1863	2253	1933	244	122	509	385	
(WY)	1973	1995	1979	1993	1980	1985	1979	1973	1973	1965	1999	1963	
MIN	13.6	22.7	20.0	23.0	34.7	30.1	32.0	22.5	9.84	14.1	18.2	9.36	
(WY)	1954	1954	1954	1996	1974	1996	1996	1996	1974	1989	1962	1956	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR (*) 124 (**) 89583	FOR 1999 WATER YEAR (*) 51.1 (**) 37032	WATER YEARS 1954 - 1999
ANNUAL TOTAL	84808	33137	
ANNUAL MEAN	232	90.8	217
HIGHEST ANNUAL MEAN			617
LOWEST ANNUAL MEAN			38.0
HIGHEST DAILY MEAN	1780	1550	11000
LOWEST DAILY MEAN	27	25	2.6
ANNUAL SEVEN-DAY MINIMUM	29	28	5.4
ANNUAL RUNOFF (AC-FT)	168200	65730	156900
ANNUAL RUNOFF (CFPM)	.41	.16	.39
ANNUAL RUNOFF (INCHES)	5.63	2.20	5.26
10 PERCENT EXCEEDS	891	157	577
50 PERCENT EXCEEDS	53	38	60
90 PERCENT EXCEEDS	32	30	24

e Estimated

(\*) Mean, adjusted for Willow Creek diversion from Black River near Morenci.

(\*\*) AC-FT, adjusted for Willow Creek diversion from Black River near Morenci.



## 00492400 EAST FORK WHITE RIVER NEAR FORT APACHE, AZ

LOCATION.--Lat 33°49'20", long 109°48'50", in SE1/4 sec.16, T.5 N., R.24 E. (unsurveyed), Apache County, Hydrologic Unit 15060102, in Fort Apache Indian Reservation, on left bank 600 ft downstream from highway bridge, 0.1 mi upstream from Rock Creek, and 10 mi east of Fort Apache.

DRAINAGE AREA.--38.8 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1957 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 6,050 ft above sea level. Prior to Dec. 29, 1960, at site 600 ft upstream at datum 12.78 ft higher. Dec. 29, 1960, to Sept. 28, 1962, at site 600 ft upstream at datum 12.92 ft higher.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,700 ft<sup>3</sup>/s Oct. 1, 1983, gage height, 5.40 ft, from rating curve extended above 1,000 ft<sup>3</sup>/s; minimum daily, 4.0 ft<sup>3</sup>/s Nov. 29, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 26 .....	0745	1180	2.06
Aug. 10 .....	1900	151	1.93

Minimum daily discharge, 6.6 ft<sup>3</sup>/s Oct. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	19	17	10	e11	9.0	13	38	15	7.7	43	43
2	7.0	17	17	10	e12	9.0	6.7	33	15	7.5	43	31
3	7.0	16	17	e9.3	e11	9.0	11	32	14	8.6	58	29
4	7.0	15	17	e10	9.4	9.4	15	29	13	9.5	54	26
5	7.0	14	16	e10	9.0	9.5	15	28	13	11	72	23
6	7.0	14	15	e12	8.7	8.9	16	26	13	11	89	22
7	7.0	13	13	e11	8.4	9.6	20	28	12	12	73	20
8	6.9	13	e13	e10	8.3	9.2	22	31	11	10	62	19
9	6.8	14	e13	e8.4	8.1	9.0	22	35	11	10	54	18
10	6.7	12	e13	e13	8.1	9.0	21	37	11	14	127	20
11	6.7	13	e12	9.8	e7.4	9.3	24	37	11	14	142	17
12	6.7	13	e12	9.4	e12	9.8	27	36	10	11	113	16
13	6.7	12	e12	e9.7	e11	8.6	31	39	10	10	86	15
14	6.7	12	e12	e10	9.0	8.8	26	40	10	10	66	15
15	6.6	12	e12	e11	8.5	9.7	30	41	13	15	59	30
16	6.7	12	e12	9.7	8.6	9.5	32	39	13	16	56	38
17	6.9	12	12	9.5	8.3	10	31	35	13	19	48	29
18	6.9	12	13	9.2	8.2	9.5	34	32	13	21	42	26
19	6.9	12	12	9.1	8.4	9.6	41	31	13	21	39	23
20	7.2	11	12	9.0	8.4	10	51	30	12	17	43	22
21	9.2	10	12	9.1	8.5	11	56	28	11	21	38	20
22	11	12	e11	9.0	8.9	11	59	26	9.9	44	35	19
23	10	11	e11	11	8.5	12	60	24	9.3	61	32	19
24	8.4	11	e10	9.1	8.5	12	59	23	9.3	51	34	19
25	13	10	e12	8.7	9.0	12	50	22	9.2	50	45	17
26	124	11	e12	8.7	8.6	12	42	21	8.9	87	47	16
27	49	11	12	8.6	8.3	11	42	20	8.7	86	48	16
28	29	12	11	8.3	8.8	12	45	19	8.6	76	54	15
29	22	18	10	14	---	12	43	18	8.4	67	43	14
30	19	15	10	12	---	13	40	17	8.2	58	36	14
31	22	---	10	11	---	13	---	16	---	46	32	---
TOTAL	454.0	389	393	306.6	252.9	317.4	984.7	911	337.5	902.3	1813	651
MEAN	14.6	13.0	12.7	9.89	9.03	10.2	32.8	29.4	11.2	29.1	58.5	21.7
MAX	124	19	17	14	12	13	60	41	15	87	142	43
MIN	6.6	10	10	8.3	7.4	8.6	6.7	16	8.2	7.5	32	14
AC-FT	901	772	780	608	502	630	1950	1810	669	1790	3600	1290
CFSM	.38	.33	.33	.25	.23	.26	.85	.76	.29	.75	1.51	.56
IN.	.44	.37	.38	.29	.24	.30	.94	.87	.32	.87	1.74	.62

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1999, BY WATER YEAR (WY)

	MEAN	22.3	15.9	16.6	16.7	21.1	40.3	82.3	104	46.8	18.9	29.1	23.9
MAX	128	43.6	57.1	84.8	66.2	103	192	284	172	45.7	90.5	65.9	
(WY)	1984	1987	1979	1993	1980	1978	1993	1973	1973	1973	1992	1983	
MIN	8.70	7.66	7.81	7.09	7.74	9.93	14.6	8.37	4.97	7.70	10.9	6.91	
(WY)	1962	1990	1977	1994	1990	1959	1996	1996	1996	1971	1960	1989	

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1957 - 1999
ANNUAL TOTAL	16056.3	7712.4	
ANNUAL MEAN	44.0	21.1	36.6
HIGHEST ANNUAL MEAN			75.1
LOWEST ANNUAL MEAN			12.5
HIGHEST DAILY MEAN	246	142	1120
LOWEST DAILY MEAN	6.6	6.6	3.9
ANNUAL SEVEN-DAY MINIMUM	5.7	6.7	4.3
ANNUAL RUNOFF (AC-FT)	31850	15300	26520
ANNUAL RUNOFF (CFSM)	1.13	.54	.94
ANNUAL RUNOFF (INCHES)	15.39	7.39	12.82
10 PERCENT EXCEEDS	161	45	90
50 PERCENT EXCEEDS	15	13	19
90 PERCENT EXCEEDS	8.6	8.4	9.0

e Estimated

## 09484000 WHITE RIVER NEAR FORT APACHE, AZ

**LOCATION**--Lat 33°44'11", long 110°09'58", in SE1/4 sec.32, T.4 N., R.21 E. (unsurveyed), Gila County, Hydrologic Unit 15060102, in Fort Apache Indian Reservation, on right bank 2,200 ft downstream from highway bridge, 4.5 mi upstream from confluence with Black River, and 11 mi west of Fort Apache.

**DRAINAGE AREA**--632 mi<sup>2</sup>.

**PERIOD OF RECORD**--October 1917 to September 1918 (published as "at Wanslee's Ranch"), October 1957 to current year. Monthly discharge only for some periods, published in WSP 1313.

**REVISED RECORDS**--WRD Ariz. 1971; 1967(M).

**GAGE**--Water-stage recorder. Datum of gage is 4,365.99 ft above sea level. Oct. 12, 1917, to Aug. 31, 1918, nonrecording gage at site 2,100 ft upstream at different datum.

**REMARKS**--Records fair except for estimated daily discharges, which are poor. Small diversions above station for irrigation of about 1,460 acres. Negligible storage above station in several small recreational lakes.

**EXTREMES FOR PERIOD OF RECORD**--Maximum discharge, 14,600 ft<sup>3</sup>/s Dec. 18, 1978, gage height, 15.71 ft, from rating curve extended above 7,800 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow July 18-21, 1963.

**EXTREMES FOR CURRENT YEAR**--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 29 .....	0515	1,000	4.04
Aug. 3 .....	2215	*1,480	*4.98

Minimum daily discharge, 12 ft<sup>3</sup>/s, July 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	98	99	52	38	39	49	127	e39	15	259	335
2	18	88	99	52	40	40	71	129	e37	12	304	218
3	18	81	100	46	34	41	52	120	e36	14	580	210
4	18	73	94	41	39	40	48	113	e34	22	490	184
5	18	69	88	42	48	43	65	e106	e32	22	506	151
6	19	66	84	45	49	43	69	e101	e30	121	574	132
7	19	66	75	52	46	43	86	e96	e29	55	403	116
8	19	64	63	52	44	46	103	e93	e27	44	338	102
9	19	69	56	49	45	45	114	e95	e26	50	285	92
10	19	76	69	45	44	43	116	e90	e25	39	557	113
11	19	66	69	50	41	42	119	e86	e24	42	650	105
12	19	68	65	51	32	42	145	e88	e23	38	473	88
13	19	67	69	49	35	43	171	e90	e23	36	362	79
14	19	61	68	43	44	40	179	e93	e22	45	287	74
15	19	59	67	41	43	40	168	e91	e21	51	280	151
16	19	59	64	41	41	43	168	e90	e30	63	323	256
17	20	59	64	45	38	45	157	e85	e80	51	312	183
18	21	60	64	43	39	47	149	e78	e55	57	239	155
19	21	57	64	43	38	46	151	e71	e50	69	226	133
20	23	55	63	44	39	44	158	e67	e85	74	265	121
21	27	54	60	45	39	45	168	e64	e53	83	231	107
22	31	51	57	45	39	47	173	e59	e45	71	176	98
23	36	54	51	37	41	48	173	e55	e40	142	159	94
24	34	52	48	40	38	48	174	e53	e35	143	165	97
25	35	53	45	45	39	48	172	e54	e30	147	181	93
26	300	50	51	44	41	48	157	e51	e27	204	190	82
27	269	51	59	43	40	48	142	e48	e23	251	244	77
28	148	52	57	37	38	47	115	e47	e20	280	276	73
29	108	92	54	33	---	48	135	e46	e19	534	248	69
30	94	112	53	37	---	45	129	e43	e17	512	194	64
31	104	---	53	37	---	47	---	e41	---	300	153	---
TOTAL	1570	1982	2072	1369	1133	1377	3896	2470	1036	3597	9920	3852
MEAN	50.6	66.1	66.8	44.2	40.5	44.4	130	79.7	34.5	116	320	128
MAX	300	112	100	52	49	48	179	129	85	534	650	335
MIN	18	50	45	33	32	39	48	41	17	12	153	64
AC-FT	3110	3930	4110	2720	2250	2730	7730	4900	2050	7130	19680	7640
CFSM	.08	.10	.11	.07	.06	.07	.21	.13	.05	.18	.51	.20
IN.	.09	.12	.12	.08	.07	.08	.23	.15	.06	.21	.58	.23

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1999, BY WATER YEAR (WY)

	MEAN	105	85.2	119	131	178	372	595	458	158	72.0	123.1	103
MAX	774	218	715	1125	787	1159	1448	2073	602	187	388	293	
(WY)	1984	1987	1979	1993	1920	1985	1979	1973	1973	1973	1967	1988	
MIN	31.3	34.7	35.4	32.0	33.3	44.4	54.9	22.5	6.93	3.90	26.5	19.0	
(WY)	1962	1961	1978	1964	1964	1999	1996	1996	1996	1963	1962	1989	

## SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1957 - 1999

ANNUAL TOTAL	85639	34274	
ANNUAL MEAN	237	95.9	
HIGHEST ANNUAL MEAN			208
LOWEST ANNUAL MEAN			487
HIGHEST DAILY MEAN	1690	Apr 25	650
LOWEST DAILY MEAN	18	Oct 1	12
ANNUAL SEVEN-DAY MINIMUM	18	Oct 1	17
ANNUAL RUNOFF (AC-FT)	171800	67980	150910
ANNUAL RUNOFF (CFSM)	.35	.15	.33
ANNUAL RUNOFF (INCHES)	5.10	2.02	4.48
10 PERCENT EXCEEDS	786	196	539
50 PERCENT EXCEEDS	73	55	86
90 PERCENT EXCEEDS	29	27	35

e Estimated

## 09495000 FORESTDALE CREEK DIVERSION FROM SHOW LOW CREEK, NEAR SHOW LOW, AZ

LOCATION.--Lat 34°10'40", long 110°00'56", in SE1/4NW1/4 sec.16, T.9 N., R.22 E., Navajo County, Hydrologic Unit 15020005, in Sitgreaves National Forest, on right bank 170 ft downstream from terminal structure of Show Low Creek diversion works, 4,350 ft west of pumping plant on Show Low Lake, and 5 mi south of Show Low.

PERIOD OF RECORD.--May 1953 to current year.

GAGE.--Water-stage recorders and V-notch sharp-crested weir. Datum of gage is 6,621.57 ft above sea level (Bureau of Reclamation bench mark).

REMARKS.--No estimated daily discharges. Records good. Entire flow consists of water pumped from Show Low Lake in Little Colorado River basin, into Forestdale Creek in the Gila River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 28 ft<sup>3</sup>/s June 2, 3, 5, 1973, Mar. 17-25, 27-30, Apr. 2-15, Apr. 18 to May 5, 1975; minimum daily discharge, no flow for most of time.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	9.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	9.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	9.6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	9.6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	5.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	9.6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	9.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	9.4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	9.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	9.4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	9.4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	9.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	8.7	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.63	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	268.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	8.68	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
MAX	9.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	533	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1998 TOTAL 1748.83 MEAN 4.79 MAX 11 MIN .00 AC-FT 3470  
WTR YR 1999 TOTAL 268.93 MEAN .74 MAX 9.7 MIN .00 AC-FT 533

## 09496500 CARRIZO CREEK NEAR SHOW LOW, AZ

**LOCATION.**--Lat 33°59'09", long 110°16'49", in sec.24, T.7 N., R.19 E. (unsurveyed), Gila County, Hydrologic Unit 15060104, in Fort Apache Indian Reservation, on right bank 500 ft upstream from bridge on U.S. Highway 60, 1 mi downstream from Corduroy Creek, 23 mi southwest of Show Low, and 24 mi upstream from mouth.

**DRAINAGE AREA.**--439 mi<sup>2</sup>.

**PERIOD OF RECORD.**--June 1951 to June 1961, June 1967 to June 1976, October 1975 to June 1976 (monthly discharges only), April 1977 to current year.

**REVISED RECORDS.**--WRD Ariz. 1968: Drainage area.

**GAGE.**--Water-stage recorder. Datum of gage is 4,749.52 ft above sea level. Prior to June 1976 at site on bridge pier 400 ft downstream at same datum.

**REMARKS.**--Records good except for estimated daily discharges, which are poor. Diversions for irrigation above station of less than 300 acres. Records include trans basin diversion from Show Low Creek into headwaters of Carrizo Creek. (See sta 09495000.)

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 20,500 ft<sup>3</sup>/s Jan. 18, 1952, gage height, 12.08 ft, at site then in use, from rating curve extended above 2,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; maximum gage height, 15.1 ft Dec. 18, 1978, from high-water mark; minimum daily discharge, 0.2 ft<sup>3</sup>/s July 12, 1951 Sept. 21, 1959, at site then in use.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Maximum discharge since at least 1951, about 23,000 ft<sup>3</sup>/s Dec. 30, 1965, gage height, 13.0 ft, from floodmark at previous site from rating curve extended above 2,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 12.08 ft.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 11.....	1615	*1,180	*4.64

Minimum daily discharge, 0.92 ft<sup>3</sup>/s July 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.7	13	13	6.9	7.1	6.6	10	6.6	2.7	1.0	8.7	13
2	9.3	9.7	13	6.7	7.0	6.6	13	6.5	2.4	1.92	7.9	26
3	9.3	8.9	12	7.0	6.9	5.5	16	6.0	2.7	1.2	5.8	14
4	9.6	9.2	11	6.9	7.6	6.5	15	5.9	2.3	1.3	6.4	e8.7
5	10	8.1	11	7.0	11	6.5	13	5.7	2.6	1.3	6.6	e7.1
6	9.9	7.6	11	7.1	11	6.5	14	5.6	3.0	1.6	5.8	e3.3
7	9.0	7.6	11	7.5	9.0	6.5	16	5.6	2.4	1.7	8.1	e3.7
8	7.9	7.3	9.4	7.4	8.2	6.8	14	5.3	2.1	1.9	9.4	e2.8
9	10	32	9.5	7.3	7.9	6.5	12	5.1	1.8	2.2	6.8	e2.3
10	11	17	9.0	7.4	7.8	6.5	10	5.1	1.7	2.0	7.7	e3.0
11	12	11	8.2	7.4	7.4	6.4	9.3	5.1	1.7	15	39	e57
12	11	10	8.0	7.4	8.2	6.4	8.5	5.5	1.7	4.4	21	e9.5
13	11	8.7	7.9	7.3	7.2	6.5	9.1	5.2	1.6	6.8	11	e4.6
14	10	8.3	8.4	7.2	7.2	6.6	8.6	4.9	1.6	14	6.9	e10
15	10	7.9	7.9	7.2	7.2	6.2	8.2	4.4	1.7	16	5.7	e19
16	10	7.8	7.7	7.3	7.0	6.5	9.0	4.4	1.7	9.0	4.8	e10
17	11	7.6	7.7	7.4	7.1	8.1	8.8	4.4	2.3	5.6	3.7	e9.7
18	12	7.5	7.7	7.8	7.1	7.1	8.1	4.4	4.7	5.7	3.1	e8.8
19	12	7.4	7.6	7.8	6.9	6.8	7.5	4.2	2.7	6.4	4.6	e7.8
20	13	7.3	7.6	7.8	6.8	6.5	7.3	3.9	3.1	4.6	6.9	e6.2
21	20	7.6	7.6	7.7	6.7	6.3	6.9	3.9	2.5	5.2	13	e5.0
22	17	7.5	7.3	7.4	6.6	6.2	6.7	3.7	1.7	4.7	4.1	e6.2
23	16	7.7	7.4	7.2	6.6	6.1	6.5	3.4	1.5	4.8	3.0	e14
24	14	7.2	7.5	7.8	6.7	6.1	7.8	3.7	1.6	8.0	4.3	e6.2
25	22	6.9	7.2	7.6	6.6	6.2	7.6	3.8	1.3	6.3	5.0	e5.0
26	25	7.0	7.2	8.6	6.6	6.2	7.1	4.1	1.4	4.8	4.6	e3.7
27	19	7.3	7.3	7.8	6.7	6.3	6.6	3.9	1.2	45	5.2	e5.1
28	16	10	7.1	7.4	6.6	6.1	6.0	3.9	1.1	30	20	e3.9
29	15	23	7.1	7.3	---	6.0	6.1	3.0	.93	27	31	e2.2
30	27	13	7.1	7.2	---	6.0	5.9	2.8	.98	45	25	e2.4
31	28	---	7.3	7.2	---	5.8	---	2.9	---	17	16	---
TOTAL	425.7	301.1	268.7	229.0	208.7	199.9	289.6	142.9	60.71	300.42	315.1	280.2
MEAN	13.7	10.0	8.67	7.39	7.45	6.45	9.65	4.61	2.02	9.69	10.2	9.34
MAX	28	10	13	8.6	11	8.1	18	6.6	4.7	45	39	57
MIN	7.9	6.9	7.1	6.7	6.6	5.8	5.9	2.8	.93	.92	3.0	2.2
AC-FT	844	597	533	454	414	397	574	283	120	596	625	556
CFSM	.03	.02	.02	.02	.02	.01	.02	.01	.00	.02	.02	.02
IN.	.04	.03	.02	.02	.02	.02	.02	.01	.01	.03	.03	.02

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1999, BY WATER YEAR (WY)

	MEAN	28.1	21.5	71.0	94.2	121	145	48.4	19.2	11.8	12.6	17.8	10.1
MAX	197	147	762	1031	965	698	350	154	41.3	41.1	55.3	30.4	
(WY)	1973	1960	1979	1993	1980	1978	1973	1973	1973	1973	1951	1988	
MIN	1.63	2.53	3.86	5.40	6.27	6.06	5.29	2.36	.87	1.35	2.96	.91	
(WY)	1957	1957	1957	1971	1971	1971	1955	1972	1956	1971	1997	1956	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1951 - 1999
ANNUAL TOTAL	10624.3	3022.03	
ANNUAL MEAN	29.1	9.28	51.0
HIGHEST ANNUAL MEAN			201
LOWEST ANNUAL MEAN			5.82
HIGHEST DAILY MEAN	458	Mar 19	10900
LOWEST DAILY MEAN	3.5	Aug 28	.20
ANNUAL SEVEN-DAY MINIMUM	4.0	Aug 26	.29
ANNUAL RUNOFF (AC-FT)	21070	5990	36980
ANNUAL RUNOFF (CFSM)	.066	.019	.12
ANNUAL RUNOFF (INCHES)	.90	.26	1.58
10 PERCENT EXCEEDS	78	14	72
50 PERCENT EXCEEDS	11	7.2	11
90 PERCENT EXCEEDS	5.8	2.6	2.7

e Estimated

## 09497500 SALT RIVER NEAR CHRYSOTILE, AZ

**LOCATION.**--Lat 33°47'53", long 110°29'57", in sec.25, T.5 N., R.17 E. (unsurveyed), Gila County, Hydrologic Unit 15060103, in San Carlos Indian Reservation, on left bank 1,200 ft upstream from bridge on U.S. Highway 60, 5.7 mi northeast of Chrysotile, 8 mi upstream from Cibecue Creek, and 33 mi downstream from confluence of Black and White Rivers.

**DRAINAGE AREA.**--2,849 mi<sup>2</sup>.

**PERIOD OF RECORD.**--September 1924 to current year (monthly discharge only July to December 1964).

**REVISED RECORDS.**--WSP 859: 1926-27, 1929-30, 1934, 1938. WSP 899: 1927, 1932, 1937, 1938(M), WSP 1313: 1925-26(M), 1929-30(M), 1935-36(M), 1944(M), WSP 1343: Drainage area.

**GAGE.**--Water-stage recorder. Datum of gage is 3,354.57 ft above sea level.

**REMARKS.**--No estimated daily discharges. Records good. Several diversions for irrigation above station of about 3,100 acres, one diversion into the basin (see record of Forestdale Creek diversion from Show Low Creek, near Show Low), and one diversion out of the basin (see record of Willow Creek diversion from Black River, near Morenci).

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 76,600 ft<sup>3</sup>/s Jan. 8, 1993, gage height, 18.33 ft, from rating curve extended above 52,000 ft<sup>3</sup>/s; minimum, 49 ft<sup>3</sup>/s July 6, 7, 1955.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Flood peak of 74,000 ft<sup>3</sup>/s occurred prior to 1924 and is believed to be the peak of the flood of Jan. 19, 1916, gage height, 18 ft, from floodmarks, from rating curve extended above 52,000 ft<sup>3</sup>/s.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 3,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 4 .....	2230	*3,720	*5.13
Aug. 11 .....	0830	3,570	5.04

Minimum daily discharge, 95 ft<sup>3</sup>/s July 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	283	311	190	170	170	182	318	153	96	580	554
2	127	254	301	187	174	169	221	316	150	95	516	630
3	129	237	291	188	179	169	241	312	146	96	601	535
4	129	222	271	179	173	169	234	303	142	100	1430	499
5	129	210	273	171	190	174	235	288	135	114	1620	446
6	129	202	274	164	202	178	228	277	133	122	1740	404
7	132	196	268	168	200	178	224	264	133	249	1690	360
8	136	192	249	183	201	176	237	257	128	168	1170	324
9	136	212	226	191	195	179	290	252	120	166	914	300
10	135	253	202	185	195	172	324	249	115	225	893	294
11	138	215	210	179	190	169	346	249	112	165	2610	302
12	138	214	218	186	187	168	364	246	109	199	2200	320
13	139	214	210	193	172	168	398	241	106	195	1420	284
14	136	203	218	185	167	168	442	236	108	244	1040	266
15	135	193	215	179	175	167	445	232	108	275	833	355
16	135	194	212	178	176	168	437	230	113	232	785	479
17	135	193	207	177	175	184	435	228	136	190	903	518
18	138	191	205	181	174	180	427	221	216	182	893	616
19	143	191	205	179	174	180	404	213	181	196	729	482
20	148	187	206	181	175	180	391	204	194	213	694	480
21	178	186	205	183	175	175	395	196	222	259	846	436
22	197	184	205	182	175	176	402	196	162	331	743	403
23	183	180	198	182	175	177	401	189	154	466	620	375
24	183	180	191	177	177	176	401	182	144	576	544	381
25	190	178	180	185	178	177	398	176	128	579	593	350
26	400	177	166	190	179	178	386	172	126	423	573	358
27	538	176	170	183	175	179	364	168	123	646	554	342
28	406	180	189	187	172	178	348	169	121	657	780	308
29	331	209	201	178	---	175	339	167	112	889	634	285
30	293	296	194	172	---	175	325	159	103	760	636	271
31	365	---	194	173	---	174	---	154	---	649	545	---
TOTAL	5958	6202	6865	5616	5050	5406	10264	7064	4133	9757	30329	11957
MEAN	192	207	221	181	180	174	342	228	138	315	978	399
MAX	538	296	311	193	202	184	445	318	222	889	2610	630
MIN	127	176	166	164	167	167	182	154	103	95	516	266
AC-FT	11820	12300	13620	11140	10020	10720	20360	14010	8200	19350	60160	23720
CFSM	.07	.07	.08	.06	.06	.06	.12	.08	.05	.11	.34	.14
IN.	.08	.08	.09	.07	.07	.07	.13	.09	.05	.13	.40	.16

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1999, BY WATER YEAR (WY)

MEAN	336	274	496	645	900	1494	1720	919	314	223	405	340
MAX	3777	1300	3983	7939	6181	6029	4850	5070	1185	547	1249	1181
(WY)	1984	1979	1966	1993	1980	1978	1979	1973	1941	1941	1967	1946
MIN	79.1	112	113	130	145	174	170	106	73.8	91.0	135	68.5
(WY)	1957	1957	1957	1954	1964	1999	1996	1959	1959	1963	1962	1956

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1924 - 1999

ANNUAL TOTAL	266220	108601	
ANNUAL MEAN	729	298	671
HIGHEST ANNUAL MEAN			2091
LOWEST ANNUAL MEAN			184
HIGHEST DAILY MEAN	4330	Mar 27	2610
LOWEST DAILY MEAN	123	Sep 27	95
ANNUAL SEVEN-DAY MINIMUM	126	Sep 26	102
ANNUAL RUNOFF (AC-FT)	528000	215400	485800
ANNUAL RUNOFF (CFSM)	.26	.10	.24
ANNUAL RUNOFF (INCHES)	3.48	1.42	3.20
10 PERCENT EXCEEDS	2240	562	1580
50 PERCENT EXCEEDS	261	195	262
90 PERCENT EXCEEDS	142	136	132



## 06497800 CIBECUE CREEK NEAR CHRYSOTILE, AZ

LOCATION.--Lat 33°50'35", long 110°33'25", in E1/2 sec 8, T.5 N., R.17 E (unsurveyed), Gila County, Hydrologic Unit 15060103, in Fort Apache Indian Reservation, on right bank 0.5 mi upstream from mouth and 7 mi north of Chrysotile.

DRAINAGE AREA.--295 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1959 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,200 ft above sea level, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are poor. Small diversions for irrigation in the vicinity of the village of Cibecue.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,200 ft<sup>3</sup>/s Sept. 2, 1977, gage height, 17.3 ft, on basis of slope-area measurement of peak flow; minimum daily, 4.1 ft<sup>3</sup>/s Aug. 17-19, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*)

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 25 .....	1615	1,100	4.25	July 19 .....	0045	1,020	4.14
July 11 .....	1845	13,050	16.14	July 27 .....	2115	1,030	4.16

Minimum daily discharge, 8.9 ft<sup>3</sup>/s June 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	20	20	17	17	16	17	19	9.9	9.2	40	45
2	14	18	20	17	17	16	24	19	9.9	9.5	19	125
3	14	17	20	17	16	16	22	18	9.9	9.5	24	e69
4	14	17	20	16	16	16	22	17	9.9	9.7	24	e16
5	14	17	20	17	20	16	19	17	9.9	9.8	18	e13
6	14	17	20	17	19	16	20	16	9.9	19	20	e13
7	15	17	21	17	17	16	18	16	10	12	16	e13
8	15	17	20	17	16	16	18	16	9.9	35	15	e13
9	14	205	20	17	16	16	17	15	9.9	44	15	13
10	14	27	20	17	16	16	18	15	9.8	15	83	14
11	14	20	20	17	16	16	21	15	9.7	207	e176	26
12	14	19	20	16	16	16	23	14	9.7	61	e15	44
13	15	19	20	16	17	16	28	13	9.7	e11	e14	15
14	14	18	20	17	15	16	34	12	9.3	e27	e14	67
15	14	18	19	17	16	16	37	12	9.7	e103	e14	160
16	14	18	19	17	16	16	41	12	9.1	e27	e14	33
17	15	18	19	17	15	18	40	12	9.3	e10	e14	18
18	15	18	19	17	16	17	36	12	9.1	e53	e14	23
19	15	18	19	17	16	16	32	11	8.9	e152	e14	18
20	15	18	19	17	16	16	29	11	27	e32	e14	17
21	19	18	18	17	16	16	27	11	26	e79	e14	16
22	18	18	18	17	16	15	26	11	10	e9.3	e14	20
23	15	18	18	16	16	15	24	10	9.9	e65	e14	28
24	16	18	18	16	16	15	26	10	9.6	e74	e14	31
25	150	18	18	16	16	15	24	11	9.5	e52	e14	17
26	49	18	18	17	16	15	22	11	9.4	e52	e52	19
27	19	18	18	16	16	15	20	11	9.2	e102	e67	18
28	17	20	17	16	16	15	19	11	9.2	e78	92	17
29	17	49	17	16	---	15	19	10	9.2	21	113	17
30	18	21	17	16	---	15	19	9.9	9.2	19	20	17
31	49	---	17	17	---	14	---	9.9	---	18	27	---
TOTAL	675	772	589	517	458	488	742	407.8	322.4	1435.0	1018	955
MEAN	21.8	25.7	19.0	16.7	16.4	15.7	24.7	13.2	10.7	46.3	32.8	31.8
MAX	150	205	21	17	20	18	41	19	27	207	176	160
MIN	14	17	17	16	15	14	17	9.9	8.9	9.2	14	13
AC-FT	1340	1530	1170	1030	908	968	1470	809	639	2850	2020	1890
CFSM	.07	.09	.06	.06	.06	.05	.08	.04	.04	.15	.11	.11
IN.	.09	.10	.07	.07	.06	.06	.09	.05	.04	.18	.13	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1999, BY WATER YEAR (WY)

	MEAN	34.7	28.8	55.3	65.3	86.1	108	57.9	25.1	14.8	26.4	38.0	31.8
MAX	277	186	368	870	703	477	274	131	39.7	78.7	106	93.1	
(WY)	1973	1979	1966	1993	1993	1978	1973	1973	1979	1959	1963	1996	
MIN	11.0	9.14	10.6	11.3	11.0	12.3	10.7	5.64	4.98	6.55	12.8	9.71	
(WY)	1978	1978	1978	1964	1964	1971	1972	1972	1961	1963	1962	1959	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR			FOR 1999 WATER YEAR			WATER YEARS 1959 - 1999		
ANNUAL TOTAL	11868			8379.2			47.4		
ANNUAL MEAN	32.5			23.0			192		
HIGHEST ANNUAL MEAN							15.2		
LOWEST ANNUAL MEAN							1993		
HIGHEST DAILY MEAN	205	Nov 9		207	Jul 11		4930	Jan 8	1993
LOWEST DAILY MEAN	13	Jul 2		8.9	Jun 19		4.1	Aug 17	1968
ANNUAL SEVEN-DAY MINIMUM	13	Jun 29		9.3	Jun 25		4.6	Jun 17	1961
ANNUAL RUNOFF (AC-FT)	23540			16620			34330		
ANNUAL RUNOFF (CFSM)	.11			.078			.16		
ANNUAL RUNOFF (INCHES)	1.50			1.05			2.18		
10 PERCENT EXCEEDS	78			34			39		
50 PERCENT EXCEEDS	18			17			20		
90 PERCENT EXCEEDS	15			10			10		

e Estimated

## 09497980 CHERRY CREEK NEAR GLOBE, AZ

LOCATION.--Lat 33°49'40", long 110°51'20", in SW 1/4 sec.30, T.6 N., R.15 E. (unsurveyed), Gila County, Hydrologic Unit 15060103, in Tonto National Forest, on right bank 0.2 mi upstream from Devils Chasm, 13 mi upstream from mouth, and 30 mi north of Globe.

DRAINAGE AREA.--200 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1965 to current year (monthly discharge only February to September 1979).

GAGE.--Water-stage recorder. Elevation of gage is 3,200 ft above sea level, from topographic map. Prior to Jan. 17, 1979, at site 125 ft downstream at datum 2.95 ft lower.

REMARKS.--No estimated daily discharges. Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,700 ft<sup>3</sup>/s Jan. 17, 1979, gage height, unknown, from slope-area measurement of peak flow; minimum daily, 2.4 ft<sup>3</sup>/s Sept. 17, 22, 25, 29, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 750 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 15 .....	1400	*836	*5.06

Minimum daily discharge, 3.7 ft<sup>3</sup>/s July 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	5.8	9.4	7.0	6.8	6.4	7.5	7.7	4.3	3.7	12	15
2	4.5	5.6	11	7.0	6.6	6.4	14	7.6	4.4	3.8	10	22
3	4.5	5.6	12	7.0	6.6	6.4	11	7.2	4.4	4.1	8.3	14
4	4.5	5.5	10	7.0	7.0	6.4	13	7.0	4.3	4.0	8.0	11
5	4.4	5.4	9.2	7.0	9.7	6.4	13	6.9	4.4	5.2	8.0	8.8
6	4.5	5.4	8.8	7.0	7.9	6.4	20	6.6	4.4	10	20	7.7
7	4.5	5.4	8.5	7.0	7.2	6.4	37	6.5	4.3	6.3	20	7.1
8	4.5	5.5	8.1	7.0	7.2	6.6	61	6.1	4.2	29	13	6.6
9	4.4	20	7.9	7.0	7.0	6.5	50	5.8	4.2	11	9.5	6.4
10	4.4	8.1	7.5	7.0	6.9	6.4	39	5.6	4.1	6.9	17	6.6
11	4.5	6.7	7.4	6.9	6.8	6.4	34	5.6	4.1	21	34	6.5
12	4.5	6.5	7.4	6.8	6.8	6.4	38	5.5	4.1	42	21	6.3
13	4.4	6.2	7.4	6.8	6.8	6.4	43	5.4	4.1	12	13	6.2
14	4.3	6.2	7.4	6.8	6.8	6.4	41	5.3	4.0	7.9	10	6.2
15	4.3	6.0	7.3	6.8	6.8	6.4	35	5.1	4.1	217	9.4	46
16	4.5	6.0	7.2	6.8	6.7	6.4	28	5.1	4.2	103	8.5	71
17	4.5	6.0	7.3	6.8	6.6	7.0	21	5.1	4.3	34	7.8	35
18	4.5	6.0	7.4	6.8	6.6	6.8	17	5.1	5.8	20	7.0	59
19	4.5	6.0	7.3	6.8	6.6	6.4	14	4.9	4.4	16	6.8	23
20	4.5	6.0	7.2	6.8	6.6	6.3	12	4.8	4.3	10	6.9	17
21	5.4	6.0	7.2	6.7	6.4	6.2	11	4.8	4.3	7.6	6.3	13
22	5.2	6.0	7.1	6.6	6.4	6.2	10	4.7	4.1	6.6	5.8	11
23	4.9	6.0	7.0	6.6	6.4	6.2	9.2	4.6	3.9	82	5.7	10
24	4.9	6.0	7.0	6.6	6.4	6.2	8.9	4.6	3.9	39	5.6	204
25	11	6.0	7.0	6.6	6.4	6.2	8.7	4.6	3.9	15	7.6	46
26	8.2	6.0	7.0	7.0	6.4	6.2	8.5	4.6	3.9	11	17	24
27	6.1	6.0	7.0	6.8	6.4	6.2	8.2	4.6	3.9	10	13	16
28	5.8	9.2	7.0	6.8	6.4	6.2	7.7	4.6	3.8	56	17	13
29	5.8	33	7.0	6.8	---	6.1	7.5	4.5	3.8	38	34	11
30	5.8	13	7.0	6.8	---	6.0	7.6	4.4	3.8	24	13	9.9
31	5.8	---	7.0	6.8	---	5.9	---	4.4	---	16	8.8	---
TOTAL	158.2	231.1	243.0	212.2	191.2	196.8	635.8	169.3	125.7	872.1	384.0	739.3
MEAN	5.10	7.70	7.84	6.85	6.83	6.35	21.2	5.46	4.19	28.1	12.4	24.6
MAX	11	33	12	7.0	9.7	7.0	61	7.7	5.8	217	34	204
MIN	4.3	5.4	7.0	6.6	6.4	5.9	7.5	4.4	3.8	3.7	5.6	6.2
AC-FT	314	458	482	421	379	390	1260	336	249	1730	762	1470
CFSM	.03	.04	.04	.03	.03	.03	.11	.03	.02	.14	.06	.12
IN.	.03	.04	.05	.04	.04	.04	.12	.03	.02	.16	.07	.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1999, BY WATER YEAR (WY)

	MEAN	21.9	19.4	63.1	76.5	92.8	95.2	30.7	12.1	7.36	9.89	16.7	14.9
MAX	296	101	537	652	568	423	195	65.7	18.0	28.1	84.7	151	
(WY)	1973	1973	1966	1993	1980	1978	1973	1973	1973	1999	1988	1970	
MIN	4.57	4.52	4.80	6.69	6.02	6.10	5.29	4.92	4.19	4.84	4.99	3.64	
(WY)	1968	1978	1978	1976	1967	1972	1972	1971	1999	1997	1997	1978	

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1965 - 1999

ANNUAL TOTAL	11320.8	4158.7	
ANNUAL MEAN	31.0	11.4	
HIGHEST ANNUAL MEAN			36.0
LOWEST ANNUAL MEAN			130
HIGHEST DAILY MEAN	422	Mar 29	13000
LOWEST DAILY MEAN	4.3	Oct 14	2.4
ANNUAL SEVEN-DAY MINIMUM	4.4	Oct 9	2.8
ANNUAL RUNOFF (AC-FT)	22450	8250	26110
ANNUAL RUNOFF (CFSM)	.16	.057	.18
ANNUAL RUNOFF (INCHES)	2.11	.77	2.45
10 PERCENT EXCEEDS	100	20	61
50 PERCENT EXCEEDS	7.4	6.8	8.5
90 PERCENT EXCEEDS	4.9	4.4	5.2

## 09499400 PINAL CREEK AT INSPIRATION DAM, NEAR GLOBE, AZ

LOCATION.--Lat 33°34'23", long 110°54'02", in NE1/4NW1/4SE1/4 sec.26, T.3 N., R.14 E., Gila County, Hydrologic Unit 15060103, in Tonto National Forest, on right bank 7 ft upstream from Inspiration Dam, 3.8 mi upstream from mouth, and 14 mi northwest of Globe.

DRAINAGE AREA.--195 mi<sup>2</sup>, of which about 33 mi<sup>2</sup> is partly or entirely noncontributing due to mining operations (1988).

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1980 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,740 ft above sea level, from topographic map. Prior to Feb. 12, 1991 at datum 1.0 ft higher.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,700 ft<sup>3</sup>/s Jan. 11, 1993, gage height, 8.50 ft, on basis of slope-area measurement of peak flow, minimum daily, 0.64 ft<sup>3</sup>/s July 1, 1999.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*)

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 14 .....	2200	*1,390	*3.92	Aug. 29 .....	0045	975	3.50
July 18 .....	1915	908	3.43	Aug. 31 .....	1730	320	2.88
July 27 .....	2230	1,050	3.57	Sept. 15 .....	2130	295	2.86

Minimum daily discharge, 0.64 ft<sup>3</sup>/s July 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	3.9	3.3	3.3	3.1	3.5	3.9	3.3	1.8	.64	e3.5	3.2
2	4.7	3.9	3.8	3.3	3.1	3.5	4.2	3.2	1.6	.85	e3.0	3.0
3	4.7	3.9	3.7	3.3	3.1	3.5	3.6	3.2	1.4	1.1	e3.0	2.7
4	4.7	4.0	3.6	3.3	3.3	3.6	3.8	3.1	1.4	.97	e2.5	2.7
5	4.7	3.9	3.5	3.2	3.4	3.6	3.6	3.2	1.3	.91	2.5	3.0
6	4.6	3.8	3.6	3.2	3.4	3.6	3.5	3.0	1.3	1.1	2.4	2.8
7	4.6	3.8	3.5	3.3	3.4	3.6	3.5	3.1	1.3	1.2	2.4	2.7
8	4.5	3.8	3.3	3.3	3.4	3.6	3.7	2.8	1.2	1.1	2.4	2.7
9	4.5	3.9	3.3	3.2	3.4	3.6	3.6	2.9	1.2	1.1	2.8	2.7
10	4.5	3.8	3.5	3.2	3.4	3.6	3.4	2.8	1.1	1.1	3.0	2.7
11	4.5	3.8	3.4	3.2	3.4	3.6	3.5	2.7	1.1	1.2	2.6	2.6
12	4.4	3.8	3.5	3.3	3.4	3.5	3.5	2.6	1.1	1.0	2.4	2.6
13	4.4	3.8	3.4	3.3	3.4	3.5	3.4	2.5	1.1	1.0	2.4	2.6
14	4.3	3.8	3.3	3.2	3.4	3.5	3.6	2.4	1.1	1.0	2.4	2.6
15	4.3	3.8	3.3	3.3	3.4	3.5	3.4	2.5	1.1	1.2	2.9	2.0
16	4.1	3.8	3.3	3.2	3.5	3.5	3.4	2.5	1.0	3.0	2.8	4.4
17	4.1	3.7	3.3	3.2	3.5	3.6	3.4	2.3	1.0	2.8	2.2	2.8
18	4.0	3.6	3.3	3.2	3.5	3.7	3.5	2.2	1.1	4.5	2.3	2.5
19	4.0	3.6	3.3	3.1	3.5	3.6	3.4	2.2	1.0	4.6	3.0	2.6
20	4.0	3.6	3.2	3.0	3.5	3.6	3.4	2.1	1.0	2.9	2.7	2.6
21	4.0	3.7	3.2	3.1	3.6	3.6	3.3	2.1	1.0	2.7	2.2	2.6
22	4.0	3.7	3.3	3.1	3.5	3.6	3.3	1.9	1.0	2.9	2.2	2.7
23	4.1	3.6	3.2	3.3	3.6	3.6	3.2	1.9	1.1	4.3	2.1	2.8
24	4.1	3.5	3.2	3.3	3.6	3.5	3.3	1.9	1.0	2.8	2.0	2.6
25	4.3	3.4	3.2	3.2	3.6	3.5	3.3	1.8	1.0	2.8	2.0	2.6
26	4.1	3.3	3.3	3.1	3.6	3.5	3.2	1.7	1.0	2.8	2.0	2.5
27	4.1	3.5	3.3	3.1	3.6	3.5	3.2	1.8	1.0	4.4	2.1	2.5
28	4.1	3.8	3.4	3.1	3.6	3.5	3.1	1.7	1.0	1.3	3.4	2.7
29	4.1	3.8	3.4	3.1	---	3.6	3.3	1.5	1.0	e7.5	54	3.0
30	4.1	3.4	3.3	3.1	---	3.5	3.3	1.5	1.0	e4.5	3.1	2.5
31	4.0	---	3.3	3.1	---	3.5	---	1.5	---	e4.0	16	---
TOTAL	133.3	111.7	104.5	99.2	96.2	110.2	103.8	73.9	32.1	242.98	144.3	100.0
MEAN	4.30	3.72	3.37	3.20	3.44	3.55	3.46	2.38	1.07	8.48	4.65	3.33
MAX	4.7	4.0	3.8	3.3	3.6	3.7	4.2	3.3	1.8	7.8	54	20
MIN	4.0	3.3	3.2	3.0	3.1	3.5	3.1	1.5	.66	.64	2.0	2.5
AC-FT	264	222	207	197	191	219	206	147	.64	522	286	198
CFSM	.02	.02	.02	.02	.02	.02	.02	.01	.01	.04	.02	.02
IN.	.03	.02	.02	.02	.02	.02	.02	.01	.01	.05	.03	.02

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1999, BY WATER YEAR (WY)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	10.0	7.79	11.5	34.1	32.0	17.0	10.4	8.56	6.71	3.41	8.97	7.60								
MAX	38.8	12.7	58.4	440	406	67.3	30.1	19.6	16.2	17.1	28.4	16.4								
(WY)	1984	1983	1985	1993	1993	1993	1993	1993	1993	1981	1990	1983								
MIN	4.30	3.72	3.37	3.20	3.44	3.55	3.46	2.38	1.07	3.95	4.65	2.81								
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1998	1999	1989								

## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1980 - 1999

	1998	1999	1980-1999
ANNUAL TOTAL	1948.6	1372.26	11.5
ANNUAL MEAN	5.34	3.76	84.2
HIGHEST ANNUAL MEAN			3.76
LOWEST ANNUAL MEAN			1.07
HIGHEST DAILY MEAN	29 Aug 25	78 Jul 14	3301 Jan 11 1993
LOWEST DAILY MEAN	3.2 Jul 1	.64 Jul 1	.64 Jul 1 1999
ANNUAL SEVEN-DAY MINIMUM	3.2 Dec 19	.72 Jun 25	.72 Jun 25 1999
ANNUAL RUNOFF (AC-FT)	3870	2720	3750
ANNUAL RUNOFF (CFSM)	.027	.019	.063
ANNUAL RUNOFF (INCHES)	.17	.25	.94
10 PERCENT EXCEEDS	7.2	4.1	12
50 PERCENT EXCEEDS	4.6	3.3	7.5
90 PERCENT EXCEEDS	3.5	1.3	4.3

e Estimated

## GILA RIVER BASIN

09498400 PINAL CREEK AT INSPIRATION DAM, NEAR GLOBE, AZ--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1979 to current year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

			DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)			
DATE	TIME	SAMPLE TYPE											
OCT 20...	1110	ENVIRONMENTAL	4.1	2340	7.0	26.0	17.0	140	686	7.9			
FEB 19...	1015	ENVIRONMENTAL	3.6	2350	7.9	14.0	10.3	.19	688	10.6			
MAR 31...	1630	ENVIRONMENTAL	3.3	2400	7.6	21.5	21.6	.35	--	--			
MAY 28...	1220	ENVIRONMENTAL	1.9	2450	7.7	31.5	27.8	.34	687	6.8			
JUN 23...	1115	ENVIRONMENTAL	.93	2500	7.5	33.5	25.8	.91	688	7.3			
SEP 08...	1230	ENVIRONMENTAL	2.7	2340	7.9	31.0	23.7	1.1	688	7.6			
08...	1240	CONCURRENT REPLICATE	2.7	2340	7.9	37.0	23.7	1.2	688	7.6			
DATE		OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	HARD-NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	CALCIUM TOTAL RECOV-ERABLE (MG/L AS CA) (00916)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS MG) (00927)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)
OCT 20...	92	<5	K33	K14	1400	--	420	400	90	88	62		.7
FEB 19...	106	12	K14	K3	1300	1300	410	400	85	85	66		.8
MAR 31...	--	<5	70	73	1400	1300	420	410	91	90	62		.7
MAY 28...	97	7	460	53	1500	1400	430	440	91	90	64		.7
JUN 23...	101	<5	90	K35	1500	1400	450	440	96	96	69		.8
SEP 08...	100	10	70	K6	1300	1200	400	390	82	81	54		.6
08...	--	15	100	K7	1300	1200	400	390	81	82	55		.7
DATE		POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-PT) (70303)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	
OCT 20...	4.5	65	0	54	1400	54	1.8	2240	2030	3.05	260		
FEB 19...	3.6	70	0	58	1300	50	1.1	2220	1940	3.02	2		
MAR 31...	4.2	92	0	75	1400	50	1.2	2270	2060	3.09	5		
MAY 28...	3.7	112	0	92	1400	51	1.0	2370	2100	3.22	5		
JUN 23...	4.0	142	0	116	1400	53	1.0	2440	2130	3.32	7		
SEP 08...	4.1	121	0	99	1300	50	1.1	2200	1960	2.99	3		
08...	4.1	124	0	102	1300	49	1.2	2200	1960	2.99	4		

## 09498400 PINAL CREEK AT INSPIRATION DAM, NEAR GLOBE, AZ--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4; AS P) (71845) (00665)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ANTI- MONY, TOTAL (UG/L AS SB) (01097)	ANTI- MONY, DIS- SOLVED TOTAL (UG/L AS SB) (01095)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS- SOLVED TOTAL (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	
	OCT 20...	<.020	.020	.55	.57	.03	.250	<1	<1.0	6	<1	100
	FEB 19...	<.020	.020	E.18	<.20	.03	<.020	<1	<1.0	<1	<1	4
MAR 31...	<.020	<.010	E.19	<.20	E.02	<.020	<1	<1.0	<1	<1	5	
MAY 28...	<.020	<.010	E.19	<.20	E.02	.020	<1	<1.0	<1	<1	5	
JUN 23...	<.020	<.010	E.19	<.20	E.02	<.020	<1	<1.0	<1	<1	4	
SEP 08...	<.020	.020	E.18	<.20	.03	.020	<1	<1.0	<1	<1	20	
SEP 08...	<.020	.030	E.17	<.20	.04	.020	<1	<1.0	<1	1	20	
DATE	BARIIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED TOTAL (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, DIS- SOLVED TOTAL (UG/L AS CR) (01030)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED TOTAL (UG/L AS CU) (01040)	
	OCT 20...	8.0	1.9	<.50	60	--	2	<.50	<1	<1.0	200	<1.0
	FEB 19...	4.0	<.5	<.50	60	--	<1	<.50	<1	<1.0	<1	<1.0
MAR 31...	4.0	<.5	<.50	60	61	<1	<.50	<1	<1.0	3	<1.0	
MAY 28...	4.0	<.5	<.50	60	63	<1	<.50	<1	<1.0	<1	<1.0	
JUN 23...	3.0	<.5	.50	60	61	<1	<.50	<1	<1.0	2	1.6	
SEP 08...	18	<.5	<.50	60	58	<1	<.50	<1	<1.0	6	1.8	
SEP 08...	18	<.5	<.50	60	60	<1	<.50	<1	<1.0	6	1.5	
DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	
	OCT 20...	9500	2.9	12	<1.0	12000	1300	<.10	<.1	190	78	1
	FEB 19...	20	1.8	<1	<1.0	130	140	<.10	<.1	6	5.8	<1
MAR 31...	30	2.0	<1	<1.0	360	110	<.10	<.1	5	3.9	<1	
MAY 28...	10	6.0	<1	<1.0	150	110	<.10	<.1	6	5.7	<1	
JUN 23...	20	3.8	<1	<1.0	290	220	<.10	<.1	7	6.3	<1	
SEP 08...	170	2.4	<1	<1.0	19000	19000	<.10	<.1	92	90	<1	
SEP 08...	170	2.1	<1	<1.0	19000	19000	<.10	<.1	92	92	<1	
DATE	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	THAL- LIUM, DIS- SOLVED TOTAL (UG/L AS TL) (01059)	THAL- LIUM, DIS- SOLVED (UG/L AS TL) (01057)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SED. SUSP. STIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)		
	OCT 20...	<1	<1	<1.0	<2	<2.0	240	51	--	19	.21	
	FEB 19...	<1	<1	<1.0	<2	<2.0	5	5.1	--	<1	--	
MAR 31...	<1	<1	<1.0	<2	<2.0	5	1.5	--	4	.04		
MAY 28...	<1	<1	<1.0	<2	<2.0	3	3.0	100	1	.01		
JUN 23...	<1	<1	<1.0	<2	<2.0	4	4.4	--	1	.00		
SEP 08...	<1	<1	<1.0	<2	<2.0	9	10	--	15	.12		
SEP 08...	1	<1	<1.0	<2	<2.0	9	9.2	--	12	.09		

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").



09498500 SALT RIVER NEAR ROOSEVELT, AZ--Continued  
(National Water-Quality Assessment Station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD:--April 1958 to September 1965, January 1976 to current year.

PERIOD OF DAILY RECORDS:--

WATER TEMPERATURES: April 1958 to September 1965.

SPECIFIC CONDUCTANCE: December 1996 to January 1998.

WATER TEMPERATURE: April 1958 to September 1965, December 1996 to January 1998.

INSTRUMENTATION:--Specific conductance and water temperature recorder December 1996 to January 1998

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

		DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US CM) (00095)	PH WATER WHOLE FIELD STAND- ARD UNITS (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00075)	BARO- METRIC PRES- URE MM HG (00025)	OXYGEN, DIS- SOLVED (PER- CENT) OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)			
OCT	19...	1030	160	3990	8.3	26.0	16.0	10	680	8.8	102	20	
FEB	16...	1045	197	3300	8.4	16.5	9.2	4.6	702	10.4	99	<5	
MAR	29...	1515	186	3660	8.4	29.0	18.1	1.0	702	9.6	110	6	
MAY	26...	1200	189	3170	8.4	33.0	22.0	1.1	704	8.4	108	8	
JUN	24...	1000	151	3290	8.2	35.0	24.9	.85	701	6.1	82	<5	
SEP	22...	1200	491	1490	8.4	31.5	23.7	180	703	7.4	96	18	
DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS, 100 ML, (31625	E. COLI WATER WHOLE TOTAL UREASE (MG/L AS CACO3) (31633)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	CALCIUM TOTAL RECOV- ERABLE (MG/L AS CA) (00916)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG) (00921)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)		
	OCT	19...	K8	K7	340	170	82	80	34	34	750	18	14
	FEB	16...	<1	<1	300	100	79	77	27	26	540	14	11
MAR	29...	K4	K2	290	120	71	70	28	28	570	15	13	
MAY	26...	K3	K5	250	100	65	61	25	24	520	14	10	
JUN	24...	--	--	310	110	110	83	29	25	520	13	14	
SEP	22...	170	K50	190	40	65	47	17	14	220	7	5.7	
DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00953)	SOLIDS, RESIDUE AT 100 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)		
	OCT	19...	189	10	171	150	1200	.26	2490	2330	3.39	16	<.020
	FEB	16...	239	2	200	110	900	.23	1850	1780	2.52	16	<.020
MAR	29...	196	8	175	120	960	.22	2050	1870	2.79	25	<.020	
MAY	26...	168	6	147	92	850	.22	1730	1650	2.35	26	<.020	
JUN	24...	242	4	204	110	800	.27	1860	1660	2.53	180	<.020	
SEP	22...	155	5	135	48	340	.14	820	756	1.12	250	.090	

## GILA RIVER BASIN

00498500 SALT RIVER NEAR ROOSEVELT, AZ--Continued  
(National Water-Quality Assessment Station)

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ANTI- MONY, TOTAL (UG/L AS SB) (01097)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
OCT 19...	<.010	E.19	<.20	E.22	E.01	E1.0	<.020	<1	<1.0	8	7
FEB 16...	.020	E.18	<.20	E.22	.03	E1.0	.050	<1	<1.0	7	6
MAR 29...	.020	E.18	<.20	E.22	.03	E1.0	.020	<1	<1.0	7	7
MAY 26...	<.010	E.19	<.20	E.22	E.01	E1.0	.030	<1	<1.0	7	6
JUN 24...	<.010	E.18	1.8	E1.82	E.01	E8.1	.150	<1	<1.0	10	8
SEP 22...	.010	.59	.60	.69	.01	3.1	.230	<1	<1.0	6	5
DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)
OCT 19...	78	75	<.5	<.50	400	--	<1	<.50	<1	<1.0	1
FEB 16...	50	49	<.5	<.50	290	--	<1	<.50	<1	<1.0	<1
MAR 29...	54	53	<.5	<.50	320	320	<1	<.50	<1	<1.0	<1
MAY 26...	51	49	<.5	<.50	280	280	<1	<.50	<1	<1.0	<1
JUN 24...	110	82	<.5	<.50	340	320	<1	<.50	2	<1.0	7
SEP 22...	81	48	<.5	<.50	130	120	<1	<.50	5	<1.0	7
DATE	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)
OCT 19...	<1.0	220	<1.0	<1	<1.0	36	14	<.10	<.1	2	1.6
FEB 16...	9.1	170	2.0	<1	<1.0	12	2.9	<.10	<.1	<1	<1.0
MAR 29...	<1.0	220	2.6	<1	<1.0	18	3.0	<.10	<.1	<1	<1.0
MAY 26...	<1.0	270	37	<1	<1.0	19	3.8	<.10	<.1	<1	<1.0
JUN 24...	3.8	1100	6.5	2	<1.0	80	2.6	<.10	<.1	4	<1.0
SEP 22...	<1.0	4000	3.5	4	<1.0	250	48	<.10	<.1	8	1.1
DATE	SELE- NIUM, TOTAL SOLVED (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	THAL- LIUM, TOTAL SOLVED (UG/L AS TL) (01059)	THAL- LIUM, DIS- SOLVED (UG/L AS TL) (01057)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT 19...	<1	<1	<1	<1.0	<2	<2.0	4.1	3.4	100	784	339
FEB 16...	<1	<1	<1	<1.0	<2	<2.0	2.6	1.7	--	34	18
MAR 29...	<1	<1	<1	<1.0	<2	<2.0	3.0	1.4	--	37	19
MAY 26...	<1	<1	<1	<1.0	<2	<2.0	2.2	2.1	--	26	13
JUN 24...	<1	<1	<1	<1.0	<2	<2.0	9.8	<1.0	100	165	67
SEP 22...	<1	<1	<1	<1.0	<2	<2.0	17	5.3	100	273	362

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").



## 09498501 PINTO CREEK BELOW HAUNTED CANYON NEAR MIAMI, AZ

LOCATION.--Lat 33°25'07", long 111°00'32", in SE1/4NE1/4, sec. 23, T.1 N., R.13 E. (unsurveyed), Gila County, Hydrologic Unit 15060103, 3/4 mi downstream from Haunted Canyon, in Tonto National Forest, in Gila County, approximately 8 mi west northwest of Miami, AZ.

DRAINAGE AREA.--37.3 mi<sup>2</sup>, from topographic map.

PERIOD OF RECORD.--October 1995 to current year.

GAGE.--Water-stage recorder. Control is a 90° v-notch, since August 26, 1996. Elevation of gage is 3,180 ft above sea level, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are poor. Some flows affected by pumpage from upstream wells.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 822 ft<sup>3</sup>/s, Feb. 28, 1997 at gage height 8.01 ft, recorded at the gage. Minimum daily discharge, 0.01 ft<sup>3</sup>/s, June 7-10, June 16, and July 4-6, 1996.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 327 ft<sup>3</sup>/s, July 14, at gage height 6.23 ft, surveyed from high-water marks. Minimum daily discharge, 0.06 ft<sup>3</sup>/s, July 1

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.14	.18	.91	.58	.56	.50	.47	.45	.14	.06	.15	.32
2	.14	.18	1.2	.55	.53	.49	4.6	.45	.15	.07	.15	.48
3	.13	.18	1.4	.55	.51	.46	1.9	.43	.14	.07	.15	.30
4	.14	.19	.96	.51	.53	.46	5.3	.43	.14	.07	.15	.23
5	.14	.20	.84	.51	.64	.46	8.4	.43	.14	.07	.15	.21
6	.13	.20	.90	.53	.56	.46	14	.43	.13	.08	.14	.20
7	.12	.20	1.0	.54	.50	.48	12	.42	.12	1.1	.13	.20
8	.12	.21	.84	.54	.47	.57	8.7	.41	.12	.13	.13	.20
9	.12	.24	.81	.52	.44	.62	4.5	.39	.11	.10	.13	.23
10	.12	.25	.75	.52	.44	.60	2.7	.38	.11	.10	1.2	.27
11	.12	.24	.72	.54	.47	.58	2.0	.37	.11	.10	.54	.26
12	.11	.24	.74	.53	.53	.56	1.5	.35	.11	.08	.17	.31
13	.11	.25	.71	.52	.52	.53	1.1	.34	.10	.09	.14	.31
14	.11	.26	.68	.54	.55	.53	.98	.33	.09	e18	.15	.32
15	.11	.26	.64	.56	.54	.53	.85	.32	.11	3.7	.15	9.6
16	.12	.28	.60	.56	.53	.53	.77	.29	.11	.34	.19	2.2
17	.12	.28	.65	.56	.52	.52	.71	.28	.09	.15	.19	.49
18	.12	.28	.85	.57	.50	.53	.65	.27	.09	.74	.19	.32
19	.12	.29	.77	.58	.50	.53	.61	.26	.09	.61	.17	.31
20	.12	.29	.69	.60	.48	.51	.57	.25	.09	.15	.16	.36
21	.13	e.30	.64	.65	.48	.50	.53	.24	.08	.12	.15	.25
22	.13	e.29	.64	.76	.47	.49	.53	.23	.08	.11	.14	.24
23	.13	e.30	.62	.79	.48	.48	.49	.23	.08	1.7	.14	.37
24	.13	e.29	.58	.78	.48	.46	.47	.22	.07	1.1	.14	.25
25	.15	e.30	.64	.66	.49	.45	.48	.21	.07	.27	.14	.22
26	.14	e.31	.68	.62	.49	.45	.48	.20	.07	.49	.14	.21
27	.15	e.33	.68	.59	.49	.44	.45	.19	.07	.24	.14	.21
28	.15	.51	.65	.57	.50	.41	.44	.18	.07	.21	23	.20
29	.15	2.6	.65	.55	---	.41	.43	.16	.07	.22	12	.20
30	.16	1.2	.64	.57	---	.40	.44	.15	.07	.26	.87	.19
31	.18	---	.60	.58	---	.40	---	.15	---	.17	.38	---
TOTAL	4.06	11.13	23.68	18.03	14.20	15.34	77.05	9.44	3.02	30.70	41.77	19.46
MEAN	.13	.37	.76	.58	.51	.49	2.57	.30	.10	.99	1.35	.65
MAX	.18	2.6	1.4	.79	.64	.62	14	.45	.15	.18	.23	9.6
MIN	.11	.18	.58	.51	.44	.40	.43	.15	.07	.06	.13	.19
AC-FT	9.1	22	47	36	28	30	153	19	6.0	61	83	39
CFSM	.00	.01	.02	.02	.01	.01	.07	.01	.00	.03	.04	.02

CAL YR 1998 TOTAL 1874.99 MEAN 5.14 MAX 169 MIN .11 AC-FT 3720 CFSM .14  
WTR YR 1999 TOTAL 267.88 MEAN .73 MAX 23 MIN .06 AC-FT 531 CFSM .02

e Estimated

## 09498502 PINTO CREEK NEAR MIAMI, AZ

**LOCATION.**--Lat 33°29'16", long 110°59'41", in NW1/4SW1/4NW1/4 sec.25, T.2 S., R.13 E. (unsurveyed), Gila County, Hydrologic Unit 15060103, 2 mi downstream from West Pinto Creek, in Tonto National Forest, 1/2 mi downstream from Forest Road No. 287 crossing of Pinto Creek, approximately 12 mi northwest of Miami, AZ, on the right bank side, at Pinto Valley weir.

**DRAINAGE AREA.**--102 mi<sup>2</sup>.

**PERIOD OF RECORD.**--October 1994 to current year.

**GAGE.**--Water-stage recorder. Elevation of gage is 2,820 ft above sea level, from topographic map.

**REMARKS.**--Records fair except for estimated daily discharges, which are poor. Some flows may be affected by pumpage from many upstream wells.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 5.010 ft<sup>3</sup>/s, Jan. 5, 1995, at gage height 9.10 ft.

**EXTREMES FOR CURRENT YEAR.**--Maximum discharge, 548 ft<sup>3</sup>/s, Sept. 19, gage height, 4.57 ft, recorded at the gage; minimum daily discharge, 0.59 ft<sup>3</sup>/s, Jan. 13, 16-17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.2	.82	.62	.69	.93	1.0	1.6	1.7	1.5	1.9	1.5
2	1.5	1.2	.85	.62	.69	.94	1.2	1.7	1.7	1.5	2.0	1.5
3	1.4	1.2	.85	.62	.69	.97	1.1	1.7	1.7	1.5	1.9	1.5
4	1.5	1.2	.77	.61	.69	.98	1.1	1.7	1.7	1.5	1.9	1.4
5	1.4	1.2	.77	.61	.70	.98	1.1	1.7	1.7	1.5	1.9	1.4
6	1.5	1.2	.77	.62	.69	.98	1.1	1.7	1.7	1.6	1.9	1.4
7	1.5	1.2	.73	.63	.65	.97	1.1	1.7	1.7	1.6	1.8	1.4
8	1.5	1.2	.73	.64	.69	.97	1.1	1.7	1.6	1.5	1.8	1.4
9	1.5	1.1	.73	.63	.69	.98	1.0	1.7	1.6	1.4	1.7	1.5
10	1.4	1.1	.73	.64	.68	.98	.96	1.7	1.6	1.3	1.8	1.8
11	1.4	1.1	.69	.64	.65	.99	1.0	1.7	1.6	1.3	1.8	1.6
12	1.3	1.1	.70	.62	.65	.99	1.0	1.8	1.6	1.2	1.8	1.6
13	1.3	1.1	.70	.59	.66	1.0	1.0	1.8	1.5	1.2	1.8	1.6
14	1.3	1.1	.69	.60	.69	1.0	1.1	1.7	1.5	6.1	1.8	1.6
15	1.3	1.1	.69	.61	.77	1.0	1.1	1.8	1.6	9.8	1.8	25
16	1.3	1.1	.67	.59	.78	1.0	1.1	1.8	1.5	4.0	1.7	8.0
17	1.3	1.0	.64	.59	.80	1.0	1.1	1.8	1.5	1.8	1.7	2.2
18	1.3	1.0	.66	.60	.80	1.0	1.2	1.8	1.6	1.9	2.1	2.1
19	1.3	.99	.65	.62	.81	1.0	1.2	1.8	1.5	1.9	2.3	e20
20	1.3	.97	.65	.62	.82	1.0	1.3	1.8	1.4	1.9	2.1	e6.0
21	1.3	.97	.65	.62	.86	1.0	1.3	1.7	1.4	1.9	2.0	e2.0
22	1.3	.94	.63	.62	.87	1.0	1.4	1.7	1.4	1.9	1.9	e1.7
23	1.3	.92	.62	.62	.87	1.0	1.4	1.8	1.4	2.0	1.9	e1.7
24	1.2	.89	.62	.64	.85	1.0	1.5	1.8	1.5	2.1	1.8	e1.7
25	1.3	.89	.62	.65	.84	1.0	1.5	1.8	1.5	2.1	1.7	e1.7
26	1.2	.88	.62	.66	.84	1.0	1.5	1.8	1.4	2.0	1.7	e1.7
27	1.2	.85	.62	.67	.87	1.0	1.5	1.9	1.4	1.9	1.7	e1.7
28	1.2	.89	.62	.66	.90	1.0	1.5	1.9	1.4	e1.9	3.1	e1.7
29	1.2	.90	.62	.66	---	1.0	1.5	1.9	1.4	1.9	30	e1.7
30	1.3	.87	.62	.66	---	1.1	1.6	1.8	1.5	1.9	2.0	e1.7
31	1.2	---	.62	.67	---	1.0	---	1.7	---	1.9	1.5	---
TOTAL	41.4	31.36	21.35	19.45	21.19	30.76	36.56	54.5	46.3	67.5	86.8	101.8
MEAN	1.34	1.05	.69	.63	.76	.99	1.22	1.76	1.54	2.18	2.80	3.39
MAX	1.5	1.2	.85	.67	.90	1.1	1.6	1.9	1.7	9.8	30	25
MIN	1.2	.85	.62	.59	.65	.93	.96	1.6	1.4	1.2	1.5	1.4
AC-FT	82	62	42	39	42	61	73	108	92	134	172	202
CFSM	.01	.01	.01	.01	.01	.01	.01	.02	.02	.02	.03	.03

CAL YR 1998 TOTAL 4949.56 MEAN 13.6 MAX 424 MIN .15 AC-FT 9820 CFSM .13  
WTR YR 1999 TOTAL 558.97 MEAN 1.53 MAX 30 MIN .59 AC-FT 1110 CFSM .02

e Estimated

## 09498503 SOUTH FORK PARKER CREEK NEAR ROOSEVELT, AZ

LOCATION --Lat 33°47'50", long 110°57'35", in NE1/4NW1/4 sec.7, T.5 N., R.14 E., Gila County, Hydrologic Unit 15060103, in Tonto National Forest, 1.5 mi upstream from confluence with Pocket Creek, and 12 mi northeast of Roosevelt.

DRAINAGE AREA --1.09 mi<sup>2</sup>.

PERIOD OF RECORD --November 1985 to September 1992, June 1994 to current year. Prior to November 1985, station operated by the U.S. Forest Service (records unpublished).

GAGE --Water-stage recorder and two sharp-crested weirs. Elevation of gage is 5,440 ft above sea level, from topographic map.

REMARKS --Records good except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD --Maximum discharge, 87 ft<sup>3</sup>/s, Mar 6, 1995, gage height, 4.10 ft; no flow for many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD --Maximum discharge, since 1934, 270 ft<sup>3</sup>/s, Dec 23, 1945 as reported by the U.S. Forest Service.

EXTREMES FOR CURRENT YEAR --Maximum discharge, 4.0 ft<sup>3</sup>/s, Aug 28, 2200 hours; no flow for many days

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	.03	.48	.07	.03	.01	.02	.08	e.01	.00	.23	e.39
2	.01	.02	.36	.06	.03	.01	.03	.07	e.01	.00	.16	.16
3	.01	.02	.36	.06	.03	.01	.04	.07	e.01	.00	.11	.27
4	.01	.02	.38	.06	.04	.01	.05	.07	e.01	.00	.08	.21
5	.01	.02	.34	.06	.05	.01	.08	.07	e.01	.00	.06	.17
6	.01	.02	.31	.05	.05	.01	.15	.06	e.01	.00	.08	.13
7	.01	.02	.28	.05	.04	.01	.87	.05	e.01	.00	.05	.11
8	.01	.02	.25	.05	.03	.01	1.2	.05	.00	.00	.04	.09
9	.01	.01	.22	.05	.03	.01	1.1	.05	.00	.00	.04	.07
10	.01	.09	.20	.05	.03	.01	.96	.04	.00	.00	.06	.06
11	.01	.26	.20	.05	.03	.01	1.4	.04	.00	.00	.07	.05
12	.01	.20	.20	.04	.04	.01	1.8	.04	.00	.00	.05	.05
13	.01	.16	.18	.04	.03	.01	1.7	.04	.00	.00	.04	.04
14	.01	.14	.16	.04	.03	.01	1.5	.03	.00	.01	.05	.04
15	.01	.11	.15	.04	.03	.01	1.2	.03	.00	.02	.05	.04
16	.01	.10	.15	.04	.03	.01	.76	.03	.00	.02	.04	.04
17	.01	.08	.14	.04	.03	.01	.51	.03	.00	.01	.03	.04
18	.01	.07	.13	.04	.03	.01	.37	.03	.00	.01	.03	.03
19	.01	.07	.13	.04	.02	.01	.29	.02	.00	.00	.03	.03
20	.01	.06	.11	.04	.02	.01	.23	.02	.00	.00	.02	.04
21	.02	.05	.11	.04	.02	.01	.19	.02	.00	.00	.02	.03
22	.02	.05	.11	.04	.02	.01	.16	.02	.00	.03	.01	.03
23	.02	.05	.10	.04	.02	.02	.13	.01	.00	.05	.01	.03
24	.02	.04	.10	.04	.02	.02	.11	.01	.00	.04	.01	.03
25	.06	.04	.09	.03	.02	.01	.10	.01	.00	.02	.01	.03
26	.05	.04	.09	.04	.02	.01	.10	e.01	.00	.03	.01	.02
27	.03	.04	.08	.04	.02	.01	.09	e.02	.00	.07	.07	.02
28	.02	.06	.08	.03	.01	.01	.09	e.01	.00	.09	1.4	.02
29	.02	1.6	.08	.03	---	.01	.11	e.01	.00	.09	41.2	.02
30	.02	.84	.07	.03	---	.01	.10	e.01	.00	.22	e.48	.02
31	.02	---	.07	.03	---	.01	---	e.01	---	.26	e.39	---
TOTAL	0.50	4.93	5.71	1.36	0.80	0.33	15.44	1.06	0.07	0.97	4.93	2.51
MEAN	.016	.16	.18	.044	.029	.011	.51	.034	.002	.031	.16	.084
MAX	.06	1.6	.48	.07	.05	.02	1.8	.09	.01	.26	1.4	.39
MIN	.01	.02	.07	.03	.01	.01	.02	.01	.00	.00	.01	.02
AC-FT	1.0	9.8	11	2.7	1.6	.7	.31	2.1	.1	1.9	9.6	5.0
CFSM	.01	.15	.17	.04	.03	.01	.47	.03	.00	.03	.15	.08
IN.	.02	.17	.19	.15	.03	.01	.53	.04	.00	.03	.17	.09

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1999, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	.018	.076	.42	.94	1.37	1.75	.70	.10	.017	.003	.085	.049		
MAX	.16	.29	1.52	5.33	6.51	5.11	2.77	.22	.076	.034	.29	.19		
(WY)	1987	1987	1992	1995	1995	1995	1991	1986	1992	1998	1986	1986		
MIN	.000	.000	.002	.008	.023	.011	.041	.002	.000	.000	.000	.000		
(WY)	1990	1990	1990	1990	1996	1999	1996	1996	1989	1986	1996	1987		

## SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1986 - 1999

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1986 - 1999
ANNUAL TOTAL	228.02	38.61	
ANNUAL MEAN	.62	.11	.45
HIGHEST ANNUAL MEAN			1.50
LOWEST ANNUAL MEAN			.015
HIGHEST DAILY MEAN	3.3 Mar 6	1.8 Apr 12	51 Mar 6 1995
LOWEST DAILY MEAN	.01 Jun 26	.00 Jun 8	.00 Jun 7 1986
ANNUAL SEVEN-DAY MINIMUM	.01 Jun 26	.00 Jun 8	.00 Jun 7 1986
ANNUAL RUNOFF (AC-FT)	453	7	326
ANNUAL RUNOFF (CFM)	57	.097	.41
ANNUAL RUNOFF (INCHES)	7.78	1.32	5.61
10 PERCENT EXCEEDS	3.6	.22	1.1
50 PERCENT EXCEEDS	.11	.03	.03
90 PERCENT EXCEEDS	.01	.00	.00

e Estimated

## GILA RIVER BASIN

## 09499000 TONTO CREEK ABOVE GUN CREEK, NEAR ROOSEVELT, AZ

LOCATION.--Lat 33°58'48", long 111°18'10", in SW¼NE¼ sec.2, T.7 N., R.10 E., Gila County, Hydrologic Unit 15080105, in Tonto National Forest, on left bank 600 ft upstream from Gun Creek, 25 mi upstream from Roosevelt Dam, and 24 mi northwest of Roosevelt.

DRAINAGE AREA.--675 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1940 to current year.

REVISED RECORDS.--WSP 1283: Drainage area. WDR AZ-80-1: 1978(M), WDR AZ-88-1: 1979(P).

GAGE.--Water-stage recorder. Datum of gage is 2,523.14 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Small diversions above station for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 72,500 ft<sup>3</sup>/s Jan. 8, 1993, gage height, 17.95 ft; maximum gage height, 18.2 ft Sept. 5, 1970; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft<sup>3</sup>/s and maximum ('):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 31 .....	1710	*1,680	*5.46

Minimum daily discharge, no flow June 27-July 5, July 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	17	47	17	15	16	14	27	5.5	.00	50	67
2	4.8	15	37	17	16	16	50	28	6.4	.00	37	43
3	4.7	15	46	16	15	17	117	27	6.3	.00	29	31
4	4.5	14	64	16	16	18	171	26	6.0	.00	29	35
5	4.2	14	46	16	21	17	173	24	5.3	.00	33	26
6	4.3	14	44	16	26	17	251	23	5.4	2.0	54	20
7	4.2	14	41	16	27	15	331	22	5.3	.39	34	16
8	4.3	14	38	16	24	15	440	21	5.3	.00	25	13
9	4.2	19	34	16	22	16	296	21	4.5	.27	18	12
10	4.0	24	32	16	22	18	207	19	3.9	20	22	11
11	3.7	28	30	16	21	17	157	18	4.0	24	39	18
12	3.5	21	29	16	20	18	148	18	4.0	213	24	32
13	1.1	18	28	16	20	19	155	17	3.8	49	20	15
14	3.8	16	27	16	20	17	165	15	3.2	26	12	16
15	4.3	14	26	16	20	16	159	13	2.9	657	9.9	145
16	4.3	13	25	16	19	16	146	13	2.7	359	8.7	119
17	4.7	13	24	16	19	17	118	12	2.0	126	7.3	107
18	5.0	14	23	14	18	21	96	11	1.3	71	6.1	49
19	5.5	15	22	16	19	23	87	11	1.3	133	6.9	35
20	5.9	15	22	16	16	21	78	9.6	.88	78	9.4	31
21	7.0	15	21	16	17	18	66	9.1	1.9	47	9.9	28
22	7.5	16	20	15	17	16	58	9.1	2.2	51	7.5	26
23	7.8	14	21	14	15	15	50	8.7	1.8	59	6.9	158
24	7.5	16	20	16	14	14	43	7.4	2.0	292	6.2	206
25	15	15	20	15	14	14	38	7.3	1.7	139	5.7	110
26	73	14	20	14	14	14	36	7.2	.10	120	5.7	68
27	35	15	20	14	14	13	34	6.9	.00	65	6.0	50
28	25	20	19	15	14	13	33	6.9	.00	146	7.5	39
29	18	40	19	15	---	12	29	6.9	.00	237	21	33
30	16	76	19	16	---	12	27	6.4	.00	135	13	23
31	16	---	17	16	---	13	---	5.7	---	76	145	---
TOTAL	313.4	568	901	486	515	504	3773	457.2	89.68	3125.66	708.7	1582
MEAN	10.1	18.9	29.1	15.7	18.4	16.3	126	14.7	2.99	101	22.9	52.7
MAX	73	76	64	17	27	23	440	28	6.4	657	145	206
MIN	1.1	13	17	14	14	12	14	5.7	.00	.00	5.7	11
AC-FT	622	1130	1790	964	1020	1000	7480	907	178	6200	1410	3140
CFSM	.01	.03	.04	.02	.03	.02	.19	.02	.00	.15	.03	.08
IN.	.02	.03	.05	.03	.03	.03	.21	.03	.00	.17	.04	.09

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1999, BY WATER YEAR (WY)

MEAN	58.4	69.3	238	346	369	491	170	48.0	14.4	23.3	93.6	43.6
MAX	1053	438	2326	4272	4191	4159	1040	488	94.9	207	1091	626
(WY)	1973	1973	1966	1993	1980	1978	1941	1941	1955	1955	1951	1970
MIN	1.46	6.47	9.88	15.5	12.5	11.5	8.96	3.32	.000	.022	4.52	.78
(WY)	1954	1955	1957	1990	1961	1972	1972	1996	1996	1997	1944	1956

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1941 - 1999

ANNUAL TOTAL	58208.0	13023.64	
ANNUAL MEAN	159	35.7	
HIGHEST ANNUAL MEAN			159
LOWEST ANNUAL MEAN			652
HIGHEST DAILY MEAN	3810	Mar 29	657
LOWEST DAILY MEAN	1.1	Oct 13	.00
ANNUAL SEVEN-DAY MINIMUM	3.5	Oct 8	.00
ANNUAL RUNOFF (AC-FT)	115500	25830	115000
ANNUAL RUNOFF (CFSM)	.24	.053	.24
ANNUAL RUNOFF (INCHES)	3.21	.72	3.20
10 PERCENT EXCEEDS	488	78	270
50 PERCENT EXCEEDS	25	16	23
90 PERCENT EXCEEDS	7.5	4.2	4.8

## 09501000 RESERVOIR SYSTEM ON SALT RIVER AT AND BELOW ROOSEVELT DAM, AZ

**LOCATION.**--This system comprises four storage reservoirs created by four separate dams on Salt River, Hydrologic Unit 15060106: Roosevelt Lake, formed by Roosevelt Dam in sec.20, T 4 N., R.12 E. (unsurveyed), on State Highway 88; Apache Lake, formed by Horse Mesa Dam, 17 mi downstream from Roosevelt Dam; Canyon Lake, formed by Mormon Flat Dam, 27 mi downstream from Roosevelt Dam; Saguaro Lake, formed by Stewart Mountain Dam, 37 mi downstream from Roosevelt Dam. Contents given herein are combined usable contents of the four reservoirs.

**DRAINAGE AREA.**--6,211 mi<sup>2</sup>, at Stewart Mountain Dam.

**PERIOD OF RECORD.**--April 1910 to current year. Prior to October 1934, month end contents only, published in WSP 1313. Evaporation: April 1958 to June 1963.

**REVISED RECORDS.**--WSP 1283: Drainage area, WRD Ariz. 1975: 1974.

**GAGES.**--Roosevelt Lake, water-stage indicator in powerplant connected to long distance transmitter on lake (water-stage recorder prior to Jan. 1, 1967); Apache Lake, water-stage indicator in powerplant connected to long distance transmitter on lake since April 1949 (prior to that date, nonrecording gage or reference mark); Canyon and Saguaro Lakes, mercury column gages.

**REMARKS.**--Total capacity of the four reservoirs as of 1997 was 2,025,800 acre-ft, divided as follows: Roosevelt Lake, 1,653,000 acre-ft; Apache Lake, 245,000 acre-ft; Canyon Lake, 58,000 acre-ft; Saguaro Lake, 70,000 acre-ft. Dead storage negligible. Dams forming these reservoirs were built as follows: Roosevelt 1905-11; Horse Mesa 1924-27; Mormon Flat 1923-26; Stewart Mountain 1928-30. The four dams forming these reservoirs completely develop the fall in the Salt River from Roosevelt Lake to Stewart Mountain Dam. Elevation of water surface varies from 1,422.0 ft, sill of lowest outlet in Stewart Mountain Dam, to 2,151 ft, top of spillway year. Records given herein represent usable contents. Prior to Oct. 1, 1972, contents were given at 2400 hours. Water from this system is used for irrigation of Salt River Valley, power generation, municipal purposes, and recreation.

**COOPERATION.**--Records of daily contents furnished by Salt River Valley Water Users' Association.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum contents of system, 1,764,000 acre-ft May 22, 1941; minimum, 20,680 acre-ft Sept. 16, 1940.

**EXTREMES FOR CURRENT YEAR.**--Maximum contents of system at 0800 hours, 1,014,000 acre-ft Apr. 20, 21, minimum, 852,500 acre-ft Sept. 30.

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY OBSERVATION AT 0800 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	978500	981500	993500	1002000	1001000	1012000	996900	1009000	975000	908200	872900	879700
2	977900	982400	994100	1003000	1002000	1011000	998400	1008000	972800	905900	872600	879200
3	976500	983000	994400	1003000	1002000	1010000	999200	1008000	971700	903500	872600	878200
4	976200	983300	994500	1004000	1002000	1010000	999700	1006000	969200	901000	871500	877700
5	976100	983600	995100	1004000	1003000	1007000	1002000	1007000	967200	898200	870100	877000
6	976000	984800	995400	1005000	1004000	1006000	1001000	1006000	965900	896000	872200	876000
7	975700	984100	996100	1004000	1004000	1006000	1002000	1006000	964300	893600	873000	875200
8	976300	984900	996100	1004000	1005000	1005000	1003000	1005000	962500	890600	875000	873700
9	976100	985800	996600	1004000	1005000	1005000	1004000	1005000	960500	888700	874900	871900
10	976200	985800	996800	1004000	1005000	1004000	1005000	1004000	958700	887000	875600	869900
11	976300	986700	996500	1005000	1005000	1003000	1006000	1004000	956000	885900	876100	867300
12	976000	986800	996300	1004000	1006000	1002000	1007000	1003000	953900	884800	878500	864700
13	976100	987100	996800	1003000	1006000	1002000	1008000	1002000	952000	881600	881400	863600
14	976300	988000	997200	1002000	1006000	1002000	1009000	1002000	950300	881300	882400	861700
15	976600	987600	997500	1002000	1007000	1001000	1010000	999200	949600	880400	883000	859800
16	976700	987900	997500	1002000	1007000	1001000	1010000	998000	947500	881800	883000	858700
17	976300	988600	997100	1002000	1007000	1001000	1012000	997600	945700	882800	884700	859100
18	976400	988600	997600	1001000	1008000	1001000	1013000	996700	942900	882500	884300	857300
19	976500	988800	997700	1001000	1008000	1001000	1013000	996300	940200	882400	883800	856900
20	976200	989100	998200	1001000	1009000	1001000	1014000	996200	937800	881600	882500	857200
21	977100	989200	998600	1001000	1009000	1001000	1014000	996100	935500	880400	881600	856500
22	976700	989500	998800	1000000	1009000	1001000	1012000	992600	933500	879700	880900	856600
23	976100	989500	998700	999800	1009000	1000000	1012000	990800	931800	878200	880800	856300
24	976500	990100	999300	999700	1010000	1000000	1011000	988800	928500	876700	880000	855700
25	976400	990300	999500	1001000	1010000	999100	1011000	988900	926000	876100	878700	855300
26	977100	990700	1000000	1000000	1011000	999500	1012000	984500	923100	876100	877600	855200
27	978500	991000	1000000	1000000	1011000	998700	1012000	983300	920500	875400	876300	855100
28	979900	991200	1001000	1000000	1012000	998100	1012000	982000	917800	874800	876100	854500
29	980400	992600	1002000	1001000	---	997700	1010000	979800	915200	873300	875800	853500
30	980600	993000	1002000	1001000	---	997800	1009000	978400	911900	873000	877400	852500
31	981100	---	1002000	1002000	---	996900	---	976100	---	873000	878500	---
MAX	981100	993000	1002000	1005000	1012000	1012000	1014000	1009000	975000	908200	884700	879700
MIN	975700	981500	993500	999700	1001000	996900	996900	976100	911900	873000	870100	852500
(*)	+2600	+12000	+8500	-1000	+11000	-15100	+12100	-34100	-66800	-35300	+6800	-28200
CAL YR	1998	MAX	1241000	MIN	624500	(*)	+377400					
WTR YR	1999	MAX	1014000	MIN	852500	(*)	-127100					

(\*) Change in contents, in acre-feet (from 0800 first of month).

NOTE.--Contents at 0800 Oct. 1, 1999, 851,500 acre-feet.

## 09602000 SALT RIVER BELOW STEWART MOUNTAIN DAM, AZ

**LOCATION.**--Lat 33°33'10", long 111°34'33", in NW1/4NW1/4 sec.6, T.2 N., R.8 E. (unsurveyed), Maricopa County, Hydrologic Unit 15060106, on left bank 3.5 mi downstream from Stewart Mountain Dam and 6 mi upstream from Verde River.

**DRAINAGE AREA.**--6,232 mi<sup>2</sup>, of which 21 mi<sup>2</sup> is below Stewart Mountain Dam.

## WATER-QUALITY RECORDS

**PERIOD OF RECORD.**--March 1930 to current year. Monthly discharge only for some periods, published in WSP 1313. Published as "at Stewart Mountain Dam", 1934-41.

**REVISED RECORDS.**--WSP 1343: Drainage area.

**GAGE.**--Water-stage recorder. Elevation of gage is 1,370 ft above sea level, from topographic map. Prior to Sept. 27, 1934, at site 3.2 mi upstream at different datum. Sept. 27, 1934, to Jan. 20, 1950, at site 2.8 mi upstream at datum 1,396.33 ft above sea level.

**REMARKS.**--No estimated daily discharges. Records good. Flow regulated by four reservoirs above station. (See elsewhere in this report.) Entire flow (except during infrequent periods of extreme flooding) is diverted at Granite Reef Dam, 10 mi downstream, for irrigation in Salt River Valley and for municipal use by the city of Phoenix.

**AVERAGE DISCHARGE.**--69 years, 1,024 ft<sup>3</sup>/s, 741,900 acre-ft/yr.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 75,200 ft<sup>3</sup>/s Feb. 15, 1980, gage height, 25.0 ft, from highwater mark inside gage well, from rating curve then in use, extended above 10,000 ft<sup>3</sup>/s defined by known release rates from Stewart Mountain Dam and recorded gage heights; maximum daily discharge, 64,000 ft<sup>3</sup>/s Feb. 16, 1980; no flow at times in recent years.

**EXTREMES FOR CURRENT YEAR.**--Maximum daily discharge, 1,610 ft<sup>3</sup>/s June 25; minimum daily discharge, 5.6 ft<sup>3</sup>/s Oct. 19, Nov. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1060	6.9	51	8.3	9.3	353	275	575	863	1360	707	974
2	569	6.7	124	8.1	8.7	666	107	502	907	1570	793	1030
3	84	6.3	127	8.2	8.0	762	67	565	991	1560	975	1100
4	21	5.9	125	8.7	8.9	770	66	464	1010	1380	1040	1200
5	14	5.6	125	9.0	11	708	111	438	945	1360	1050	1090
6	9.9	5.8	126	126	10	591	222	585	882	1320	1100	1140
7	8.4	6.1	127	365	9.0	423	226	631	977	1440	1060	1210
8	7.8	6.4	125	308	8.7	494	106	433	1080	1200	1040	1300
9	7.5	10	124	296	8.6	550	229	393	1160	1080	1030	1380
10	7.3	7.8	122	293	8.0	597	114	396	1160	1020	1050	1550
11	6.9	7.6	164	294	8.1	613	90	507	1070	926	1070	1540
12	6.8	7.8	139	292	7.4	592	100	557	1040	1100	1160	1330
13	6.7	7.7	131	325	7.0	261	190	711	1040	1140	1110	1210
14	6.5	7.6	130	296	7.3	227	200	846	992	1080	1060	1130
15	6.4	7.9	130	293	7.6	254	177	839	1090	946	903	1180
16	6.1	7.6	130	294	8.0	329	221	684	1220	644	909	1150
17	6.1	7.2	130	294	8.1	207	253	724	1320	676	1000	1050
18	5.8	6.7	91	293	8.2	96	288	773	1410	509	1100	887
19	5.6	6.7	14	294	8.1	102	357	769	1380	668	1200	801
20	5.9	6.7	10	313	8.0	93	387	911	1200	749	1290	850
21	7.3	6.7	8.1	337	7.9	155	650	873	1220	965	1180	775
22	6.5	6.1	7.3	327	7.8	192	670	917	1350	1000	1110	666
23	6.3	6.3	7.3	294	7.6	275	711	850	1350	1100	1130	705
24	6.5	6.4	7.4	285	7.7	271	536	887	1320	1070	1150	655
25	6.3	6.5	6.9	267	8.4	406	376	945	1610	1050	1150	652
26	14	6.0	6.9	312	13	381	308	939	1540	1040	1160	596
27	7.7	5.7	7.3	280	10	390	457	874	1420	1100	1210	648
28	5.8	8.4	7.6	204	7.6	301	602	803	1200	1040	1120	651
29	6.4	9.6	7.8	20	---	294	683	1020	1250	991	953	714
30	6.9	7.4	8.0	13	---	338	702	1000	1240	1030	859	689
31	6.7	---	8.3	11	---	388	---	962	---	900	959	---
TOTAL	1933.1	210.1	2327.9	6768.3	238.0	12079	9481	22373	35237	33014	32628	29853
MEAN	62.4	7.00	75.1	218	8.50	390	316	722	1175	1065	1053	995
MAX	1060	10	164	365	13	770	711	1020	1610	1570	1290	1550
MIN	5.6	5.6	6.9	8.1	7.0	93	66	393	863	509	707	596
AC-FT	3830	417	4620	13420	472	23960	18810	44380	69890	65480	64720	59210

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1999, BY WATER YEAR (WY)

	MEAN	581	151	452	806	1014	1255	1299	1365	1461	1487	1403	1221
MAX	7128	1082	7169	20210	18950	7143	6452	5716	2322	2590	2216	2283	
(WY)	1984	1946	1979	1993	1980	1993	1973	1941	1992	1980	1992	1980	
MIN	4.41	.11	.000	.000	.000	1.53	3.49	1.07	346	749	205	10.3	
(WY)	1952	1975	1958	1953	1977	1982	1952	1957	1952	1965	1969	1951	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1941 - 1999	
ANNUAL TOTAL	201166.3		186142.4		1042	
ANNUAL MEAN	551		510		4435	
HIGHEST ANNUAL MEAN					281	
LOWEST ANNUAL MEAN					1965	
HIGHEST DAILY MEAN	1950	Aug 28	1610	Jun 25	64000	Feb 16 1980
LOWEST DAILY MEAN	5.6	Oct 19	5.6	Oct 19	.00	Nov 2 1952
ANNUAL SEVEN-DAY MINIMUM	6.1	Oct 14	6.1	Oct 14	.00	Nov 2 1952
ANNUAL RUNOFF AC-FT)	399000		369200		754600	
10 PERCENT EXCEEDS	1730		1170		1890	
50 PERCENT EXCEEDS	127		353		797	
90 PERCENT EXCEEDS	6.7		6.9		3.1	

## 09502000 SALT RIVER BELOW STEWART MOUNTAIN DAM, AZ--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD--August 1992, August 1999 to September 1999.

PERIOD OF DAILY RECORD--

SPECIFIC CONDUCTANCE: October 1964 to September 1982, March 1983 to September 1990.

WATER TEMPERATURES: December 1950 to September 1982, March 1983 to September 1990.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

		DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)		
AUG 11...	0700	1120	1350	7.6	29.0	23.3	1.3	724	4.1	51	13	
SEP 23...	1130	728	1340	8.1	32.0	25.2	1.2	721	8.4	108	24	
DATE	TIME	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREAASE (COL / 100 ML) (31633)	HARD-NESS TOTAL (MG/L AS CAC03) (00900)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L) (00904)	CALCIUM TOTAL RECOV-ERABLE (MG/L AS CA) (00916)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS MG) (00927)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
AUG 11...	36	K5	170	47	47	45	14	14	200	7	5.3	
SEP 23...	K14	K2	170	49	46	46	14	14	190	6	5.1	
DATE	TIME	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CAC03) (39066)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SOLIDS RESIDUE AT 150 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
AUG 11...	150	0	123	55	310	.30	751	704	1.02	4	<.020	
SEP 23...	142	4	122	55	300	.29	751	684	1.02	6	<.020	
DATE	TIME	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00610)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, AM-MONIA TOTAL (MG/L AS N) (00600)	NITRO-GEN, AM-MONIA TOTAL (MG/L AS NH4) (71845)	PHOS-PHORUS TOTAL (MG/L AS P) (00565)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01093)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)
AUG 11...	.020	<.20	E.20	.03	.030	<1	<1.0	4	5	64	63	
SEP 23...	.010	<.20	E.20	.01	.040	<1	<1.0	5	4	63	62	
DATE	TIME	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
AUG 11...	<.5	<.50	110	110	<1	<.50	<1	<1.0	<1	<1.0	40	
SEP 23...	<.5	<.50	110	110	<1	<.50	<1	<1.0	<1	<1.0	30	

## GILA RIVER BASIN

## 08602000 SALT RIVER BELOW STEWART MOUNTAIN DAM, AZ--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)
AUG 11...	1.0	<1	<1.0	64	18	<.10	<.1	1	<1.0	<1
SEP 23...	<1.0	<1	<1.0	74	10	<.10	<.1	<1	<1.0	<1
DATE	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	THAL- LIUM, TOTAL (UG/L AS TL) (01059)	THAL- LIUM, DIS- SOLVED (UG/L AS TL) (01057)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
AUG 11...	<1	<1	<1.0	<2	<2.0	1.8	<1.0	--	1	3.0
SEP 23...	<1	<1	<1.0	<2	<2.0	<1.0	3.1	100	87	171

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").



## 09602900 DEL RIO SPRINGS NEAR CHINO VALLEY, AZ

LOCATION:--Lat 34°49'32", long 112°26'38", in NE1/4NW1/4SW1/4, sec.26, T.17 N., R.2 W., Yavapai County, Hydrologic Unit 15080202, on left bank, about 3.5 mi north of Chino Valley, AZ.

DRAINAGE AREA:--40.9 mi<sup>2</sup>.

PERIOD OF RECORD --August 1996 to current year.

GAGE:--Water-stage recorder. Elevation of gage is 4,430 ft above sea level, from topographic map.

REMARKS:--Records good except for estimated daily discharges, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD:--Maximum discharge, 65 ft<sup>3</sup>/s, for extension of rating curve, gage height, 3.86 ft, from highwater mark.

EXTREMES FOR PERIOD OF RECORD:--Maximum discharge, 6.0 ft<sup>3</sup>/s, Sept. 20, 1999, gage height, 2.0 ft; minimum daily discharge, 1.4 ft<sup>3</sup>/s on many days in the 1999 water year.

EXTREMES FOR CURRENT YEAR --Maximum discharge, 6.0 ft<sup>3</sup>/s Sept. 20, gage height, 2.0 ft; minimum daily discharge, 1.4 ft<sup>3</sup>/s on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	e1.9	e2.2	e2.2	e2.2	2.1	2.3	2.0	1.5	1.4	1.7	1.9
2	2.4	e1.9	e2.2	e2.2	e2.2	2.1	e2.3	2.0	1.6	1.4	1.7	1.8
3	2.4	1.8	e2.2	e2.2	e2.2	2.1	2.4	2.0	1.6	1.4	1.7	1.8
4	2.4	1.8	e2.2	e2.2	e2.2	2.0	2.4	1.9	1.6	1.4	1.7	1.8
5	2.4	1.9	e2.2	e2.2	e2.2	2.0	2.2	2.0	1.5	1.4	1.8	1.8
6	2.5	1.9	e2.2	e2.1	e2.2	2.1	2.0	1.9	1.5	1.4	1.8	1.8
7	2.5	1.9	e2.2	e2.1	e2.1	2.1	2.0	1.9	1.5	1.4	1.7	1.7
8	2.5	2.0	e2.3	e2.1	e2.1	2.2	2.0	1.9	1.5	1.4	e1.8	1.7
9	2.5	2.2	e2.3	e2.1	e2.1	2.2	2.0	1.9	1.5	1.4	e1.8	1.7
10	2.5	2.0	e2.3	e2.1	e2.1	2.2	2.0	1.8	1.5	1.5	1.7	1.7
11	2.5	2.0	e2.3	e2.1	e2.1	2.1	2.0	1.8	1.5	1.5	1.7	1.7
12	2.5	2.0	e2.3	e2.1	e2.1	2.0	2.0	1.8	1.5	1.5	2.0	1.7
13	2.5	e2.0	e2.3	e2.1	e2.1	2.0	2.0	1.7	1.5	1.5	2.5	1.7
14	2.5	e2.0	e2.3	e2.1	e2.1	2.0	2.0	1.7	1.5	1.5	2.6	2.0
15	2.5	e2.0	e2.3	e2.1	e2.1	2.0	2.0	1.7	1.5	1.6	2.7	2.3
16	2.5	e2.0	e2.3	e2.1	e2.1	2.1	2.0	1.7	1.5	1.6	2.4	1.9
17	2.5	e2.0	e2.2	e2.1	e2.1	2.1	2.0	1.7	e1.5	1.5	1.8	2.0
18	2.6	e2.0	e2.2	e2.1	2.1	2.1	2.0	1.6	e1.5	1.5	1.8	1.9
19	1.9	e2.0	e2.2	e2.1	2.1	2.1	2.0	1.6	1.5	1.6	1.8	1.9
20	1.6	e2.0	e2.2	e2.1	2.1	2.1	2.0	1.6	1.5	1.6	1.8	3.0
21	1.7	e2.1	e2.2	e2.1	2.1	2.1	2.0	1.6	1.5	1.6	1.8	2.0
22	1.7	e2.1	e2.2	e2.1	2.1	2.1	2.0	1.6	1.5	1.6	1.8	2.0
23	1.7	e2.1	e2.2	e2.1	2.1	2.0	2.0	1.7	1.4	1.6	1.8	3.0
24	1.7	e2.1	e2.2	e2.1	2.1	2.0	1.9	1.7	1.4	1.6	1.8	2.3
25	1.8	e2.1	e2.2	e2.1	2.1	2.0	1.9	1.7	1.5	1.6	1.8	2.2
26	1.8	e2.1	e2.2	e2.1	2.1	2.0	1.9	1.6	1.4	1.7	1.8	2.1
27	1.8	e2.1	e2.2	e2.1	2.1	2.0	1.9	1.6	1.4	1.7	1.8	2.1
28	1.8	e2.1	e2.2	e2.1	2.1	2.0	1.9	1.6	1.4	2.1	1.8	2.1
29	1.8	e2.2	e2.2	e2.2	---	2.0	2.0	1.6	1.4	1.8	1.8	e2.1
30	1.8	e2.2	e2.2	e2.2	---	2.1	2.0	1.6	1.4	1.8	1.8	e2.0
31	1.8	---	e2.2	e2.2	---	2.1	---	1.6	---	1.7	1.8	---
TOTAL	67.4	60.5	69.1	65.9	59.4	64.1	61.1	54.1	44.6	48.3	58.3	59.7
MEAN	2.17	2.02	2.23	2.13	2.12	2.07	2.04	1.75	1.49	1.56	1.88	1.99
MAX	2.6	2.2	2.3	2.2	2.2	2.2	2.4	2.0	1.6	2.1	2.7	3.0
MIN	1.6	1.8	2.2	2.1	2.1	2.0	1.9	1.6	1.4	1.4	1.7	1.7
AC-FT	134	120	137	131	118	127	121	107	88	96	116	118
CAL YR 1998	TOTAL	736.9	MEAN	2.02	MAX	2.6	MIN	1.6	AC-FT	1460		
WTR YR 1999	TOTAL	712.5	MEAN	1.95	MAX	3.0	MIN	1.4	AC-FT	1410		

e Estimated

## 09502960 GRANITE CREEK AT PRESCOTT, AZ

LOCATION.--Lat 34°33'07", long 112°27'42", in NE1/4SW1/4NW1/4, sec.34, T.14 N., R.2 W., Yavapai County, Hydrologic Unit 15060202, at southwestern boundary of Yavapai-Prescott Indian Reservation, within the City of Prescott, AZ.

DRAINAGE AREA.--30.0 mi<sup>2</sup>.

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1994 to current year.

REVISED RECORDS.--WDR AZ-98-1: 1997.

GAGE.--Water-stage recorder. Elevation of gage is 5,285 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow is partly regulated by Goldwater Reservoirs on Bannon Creek.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,200 ft<sup>3</sup>/s Mar. 6, 1995, gage height, 8.58 ft from slope-conveyance survey. No flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s (revised) and maximum ("):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 6 .....	1345	405	7.45	Aug. 5 .....	1500	1,270	8.33
July 14 .....	0815	687	7.90	Aug. 31 .....	1515	470	7.66
July 25 .....	1915	883	8.07	Sept. 11 .....	1800	798	8.00
July 29 .....	1130	1,120	8.24	Sept. 23 .....	1245	1,750	8.58

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	.02	.79	.52	.52	.37	.67	.96	.04	.00	16	11
2	.03	.03	.79	.52	.52	.38	8.7	.62	33	.00	10	2.6
3	.05	.04	.73	.52	.52	.38	3.0	.54	.38	.00	7.0	1.2
4	.10	.06	.69	.52	1.7	.33	6.6	.49	.07	.00	5.6	.59
5	.07	.16	.65	.50	3.6	.34	3.6	.46	.06	.00	145	.29
6	.08	.49	.87	.46	.78	.34	2.4	.43	.04	30	45	.13
7	.08	.88	.71	.46	.70	.70	4.0	.33	.04	.51	16	.09
8	.08	20	.64	.46	.63	.39	2.1	.26	.04	.03	8.6	.07
9	.07	5.2	.59	.46	.56	.29	1.4	.24	.03	.03	5.5	.07
10	.07	1.0	.52	.46	.71	.29	1.2	.20	.03	.03	3.7	.07
11	.06	.80	.50	.46	.49	.28	.95	.19	.03	1.7	2.6	34
12	.06	.92	.46	.46	.47	.26	.89	.17	.03	4.0	1.6	4.2
13	.05	.75	.46	.46	.46	.22	.98	.15	.03	13	1.1	.97
14	.04	.66	.46	.50	.46	.23	.84	.14	.06	102	.88	25
15	.05	.63	.95	.52	.49	.28	.74	.13	.36	69	1.2	4.7
16	.06	.66	.59	.51	.51	2.1	.72	.14	e.15	30	.59	1.4
17	.08	.75	.53	.52	.50	7.1	.72	.14	e.06	17	.53	1.6
18	.09	.83	.53	.52	.48	1.1	.72	.11	e.03	21	3.9	1.1
19	.08	.88	.50	.52	.47	.68	.72	.09	e.03	12	2.6	.56
20	.09	.84	.48	.52	.46	.57	.69	.09	e.03	6.6	3.8	.26
21	.30	.82	.52	.52	.46	.49	.65	.08	e.02	4.0	.46	.18
22	.38	.79	.52	.52	.46	.46	.72	.07	e.02	2.5	.13	4.2
23	.06	.79	.52	.52	.39	.38	.82	.09	e.02	1.6	.10	244
24	.06	.74	.52	.52	.36	.46	.71	.09	e.01	2.4	3.0	26
25	14	.79	.52	2.7	.37	.49	.72	.09	e.01	79	1.8	12
26	3.3	.79	.52	2.4	.36	.47	.66	.07	.00	23	.34	6.9
27	.04	.79	.52	.79	.36	.47	.58	.06	.00	36	.12	4.3
28	.02	5.4	.52	.62	.36	.49	.54	.93	.00	81	1.7	2.8
29	.02	5.7	.52	.52	---	.47	.54	.05	.00	137	5.2	2.0
30	.41	1.0	.52	.52	---	.46	1.2	.04	.00	55	9.9	1.6
31	.03	---	.53	.52	---	.47	---	.04	---	28	27	---
TOTAL	19.94	53.21	18.17	20.02	18.15	21.74	48.78	7.49	34.62	756.40	330.95	393.88
MEAN	.64	1.77	.59	.65	.65	.70	1.63	.24	1.15	24.4	10.7	13.1
MAX	14	20	.95	2.7	3.6	7.1	8.7	.96	33	137	145	244
MIN	.02	.02	.46	.46	.36	.22	.54	.04	.00	.00	.10	.07
MED	.07	.79	.52	.52	.49	.46	.78	.14	.03	6.6	3.0	1.6
AC-FT	40	106	36	40	36	43	97	15	69	1500	656	781
CFSM	.02	.06	.02	.02	.02	.02	.05	.01	.04	.81	.36	.44

CAL YR 1998 TOTAL 3689.81 MEAN 10.1 MAX 140 MIN .00 MED 1.6 AC-FT 7320 CFSM .34  
WTR YR 1999 TOTAL 1723.35 MEAN 4.72 MAX 244 MIN .00 MED .52 AC-FT 3420 CFSM .16

e Estimated

## 09502960 GRANITE CREEK AT PRESCOTT, AZ--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD:--September 1994 to current year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

			DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)		SPE- CIFIC CON- DUCT- ANCE (US CM) (00095)		PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)		TEMPER- ATURE AIR (DEG C) (00020)		TEMPER- ATURE WATER (DEG C) (00010)		BARO- METRIC PRES- SURE (MM OF HG) (00025)		OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	
DATE	TIME	SAMPLE TYPE														
MAY																
26...	0915	ENVIRONMENTAL			10	698	7.7	20.0	18.5	635	4.3	53				
26...	0925	CONCURRENT REPLICATE			10	699	7.7	20.0	18.5	635	4.3	53				
JUL																
14...	1530	ENVIRONMENTAL			109	174	7.8	22.0	19.5	632	6.4	84				
		COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	E. COLI WATER TOTAL URCHASE (COLS./ 100 ML) (31633)	STREP- TOCOCCHI FECAL KF AGAR COLS. PER (100 ML) (31673)	HARD- NESS TOTAL AS CACO3 (MG/L) (00500)	HARD- NESS NONCARB DISSOLV FIELD AS CACO3 (MG/L) (00514)	CALCIUM DIS- SOLVED (MG/L) AS CA (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L) AS MG (00925)	SODIUM, DIS- SOLVED (MG/L) AS NA (00933)	SODIUM AD- SOPP- TION (MG/L) RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L) AS K (00935)	BICAR- BONATE WATER DIS IT FIELD AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD AS CO3 (00452)			
DATE																
MAY																
26...	100	71	76	280	30	77	20	36	.9	3.0	337	0				
26...	--	--	--	280	30	77	20	35	.9	3.0	339	0				
JUL																
14...	--	--	--	53	2	18	4.6	9.7	.5	3.3	74	0				
		ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L) AS SO4 (00945)	CHLO- RIDE, DIS- SOLVED (MG/L) AS CL (00940)	FLUO- RIDE, DIS- SOLVED (MG/L) AS F (00950)	SILICA, DIS- SOLVED (MG/L) AS SiO2 (00955)	SOLIDS, SUM OF CONSTI- TUENTS DIS- SOLVED (MG/L) (00301)	SOLIDS, DIS- SOLVED (MG/L) PER AC-FT (00303)	NITRO- GEN, DIS- SOLVED (MG/L) AS N (00418)	NITRO- GEN, DIS- SOLVED (MG/L) AS NO3 (00451)	NITRO- GEN, DIS- SOLVED (MG/L) AS N (00613)	NITRO- GEN, DIS- SOLVED (MG/L) AS N (00613)	NITRO- GEN, DIS- SOLVED (MG/L) AS N (00613)			
DATE																
MAY																
26...	276	22	51	.30	22	399	.54	--	--	<.010	<.050	<.020				
26...	278	22	50	.31	22	399	.54	--	--	<.010	<.050	<.020				
JUL																
14...	61	9.5	9.1	.19	12	105	.14	.360	1.6	.014	.374	.022				
		NITRO- GEN, AM- MONIA ORGANIC TOTAL (MG/L) AS N (00605)	NITRO- GEN, AM- MONIA ORGANIC TOTAL (MG/L) AS N (00625)	NITRO- GEN, AM- MONIA ORGANIC TOTAL (MG/L) AS N (00600)	PHOS- PHORUS ORTHOPHOS- PHATE, DIS- SOLVED (MG/L) AS P (00655)	PHOS- PHORUS ORTHOPHOS- PHATE, DIS- SOLVED (MG/L) AS P (00671)	PHOS- PHORUS ORTHOPHOS- PHATE, DIS- SOLVED (MG/L) AS P (00659)	ANTI- MONY, DIS- SOLVED (MG/L) AS SB (0093)	ARSENIC DIS- SOLVED (MG/L) AS AS (01000)	BARIUM, DIS- SOLVED (MG/L) AS BA (01005)	BERYL- LIUM, DIS- SOLVED (MG/L) AS BE (01010)					
DATE																
MAY																
26...	--	.29	--	.119	.053	.035	.11	<1.0	6	130	<1.6					
26...	--	.28	--	.1095	.070	.035	.11	<1.0	6	131	<1.6					
JUL																
14...	1.4	1.5	1.8	.563	.213	.164	.50	<1.0	3	46	<1.6					
		BORON, DIS- SOLVED (UG/L) AS B (01020)	CADMIUM DIS- SOLVED (UG/L) AS CD (01025)	CHRO- MIUM, DIS- SOLVED (UG/L) AS CR (01030)	COBALT, DIS- SOLVED (UG/L) AS CO (01035)	COPPER, DIS- SOLVED (UG/L) AS CU (01040)	IRON, DIS- SOLVED (UG/L) AS FE (01045)	LEAD, DIS- SOLVED (UG/L) AS PB (01049)	LITHIUM DIS- SOLVED (UG/L) AS LI (01130)	MANGA- NESE, DIS- SOLVED (UG/L) AS MN (01056)	MERCURY DIS- SOLVED (UG/L) AS HG (01390)	MOLYB- DENUM, DIS- SOLVED (UG/L) AS MO (01060)				
DATE																
MAY																
26...	85	<8.0	<14	<7.0	<10	120	<100	9	373	<.1	<50					
26...	94	<8.0	<14	<7.0	<10	110	<100	9	371	<.1	<50					
JUL																
14...	49	<8.0	<14	<7.0	<10	78	<100	<6	5.5	<.1	<50					

## 09502960 GRANITE CREEK AT PRESCOTT, AZ--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ALDRIN, TOTAL (UG/L) (39330)	AROCLOR 1016 PCB TOTAL (UG/L) (34671)	AROCLOR 1221 PCB TOTAL (UG/L) (39488)	AROCLOR 1232 PCB TOTAL (UG/L) (39492)	AROCLOR 1242 PCB TOTAL (UG/L) (39496)
MAY 26...	<40	<1	<4.0	525	<10	<20	<.040	<.100	<1.00	<.100	<.100
MAY 26...	<40	<1	<4.0	531	<10	<20	--	--	--	--	--
JUL 14...	<40	<1	<4.0	120	<10	<20	<.040	<.100	<1.00	<.100	<.100
DATE	AROCLOR 1248 PCB TOTAL (UG/L) (39500)	AROCLOR 1254 PCB TOTAL (UG/L) (39504)	AROCLOR 1260 PCB TOTAL (UG/L) (39508)	CHLOR- DANE, TECH- NICAL TOTAL (UG/L) (39350)	DI- ELDRIN TOTAL (UG/L) (39380)	ENDO- SULFAN SULFATE TOTAL (UG/L) (34351)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ENDRIN ALDE- HYDE TOTAL (UG/L) (34366)	HEPTA- CHLOR, EPOXIDE TOTAL (UG/L) (39410)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)	ISODRIN SUR SCD 1608 WTR, UNFLTRD PERCENT (90570)
MAY 26...	<.100	<.100	<.100	<.100	<.020	<.600	<.060	<.200	<.030	<.800	a84.0
MAY 26...	--	--	--	--	--	--	--	--	--	--	--
JUL 14...	<.100	<.100	<.100	<.100	<.020	<.600	<.060	<.200	<.030	<.800	a80.0
DATE	LINDANE TOTAL (UG/L) (39340)	TOX- APHENE, TOTAL (UG/L) (39400)	ENDO- SULFAN- I WATER WHOLE REC (UG/L) (34361)	ALPHA BHC TOTAL (UG/L) (39337)	ENDO- SULFAN II TOTAL (UG/L) (34356)	BETA BENZENE HEXA- CHLOR- IDE TOTAL (UG/L) (39338)	CHLOR- DANE CIS WATER WHOLE TOTAL (UG/L) (39062)	DELTA BENZENE HEXA- CHLOR- IDE TOTAL (UG/L) (34259)	P,P' DDD, TOTAL (UG/L) (39310)	P,P' DDE, TOTAL (UG/L) (39320)	P,P' DDT, TOTAL (UG/L) (39300)
MAY 26...	<.030	<2.00	<.100	<.030	<.040	<.030	<.100	<.090	<.100	<.040	<.100
MAY 26...	--	--	--	--	--	--	--	--	--	--	--
JUL 14...	<.030	<2.00	<.100	<.030	<.040	<.030	<.100	<.090	<.100	<.040	<.100
DATE	CHLOR- DANE TRANS WATER WHOLE TOTAL (UG/L) (39065)	ETHANE, 1,1,2- TRI- CHLORO- WAT UNF REC (UG/L) (77562)	1,1,1- TRI- CHLORO- ETHANE WAT UNF REC (UG/L) (34506)	ETHANE, 1,1,2,2 TETRA- CHLORO- WAT UNF REC (UG/L) (34516)	1,1,2- TRI- CHLORO- ETHANE WAT UNF REC (UG/L) (34511)	FREON- 113 WATER UNFLTRD ETHANE TOTAL (UG/L) (77652)	1,1-DI- CHLORO- ETHANE WAT UNF REC (UG/L) (34496)	1,1-DI- CHLORO- ETHYL- ENE TOTAL (UG/L) (34501)	1,1-DI- CHLORO- PRO- PENE, WAT, WH REC (UG/L) (77168)	1,2,3- TRI- CHLORO- BENZENE WAT, WH REC (UG/L) (77613)	123-TRI- CHLORO- PROPANE WATER WHOLE TOTAL (UG/L) (77443)
MAY 26...	<.100	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400
MAY 26...	--	--	--	--	--	--	--	--	--	--	--
JUL 14...	<.100	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400
DATE	BENZENE 1,2,4- TRI- CHLORO- WAT UNF REC (UG/L) (34551)	BENZENE 1,4-DI- CHLORO- METHYL WAT UNF REC (UG/L) (77222)	DIBROMO CHLORO- PROPANE WATER WHOLE TOT. REC (UG/L) (82625)	1,2- DIBROMO ETHANE WATER WHOLE TOTAL (UG/L) (77651)	BENZENE O-DI- CHLORO- METHYL WATER UNFLTRD REC (UG/L) (34536)	1,2-DI- CHLORO- ETHANE WAT UNF REC (UG/L) (32103)	ETHANE 12DICL SURROG VOC UNFLTRD REC (UG/L) (99832)	1,2-DI- CHLORO- PROPANE TOTAL (UG/L) (34541)	BENZENE 1,35-TRI- CHLORO- METHYL WATER UNFLTRD REC (UG/L) (77226)	BENZENE 1,3-DI- CHLORO- WATER UNFLTRD REC (UG/L) (34566)	1,3-DI- CHLORO- PROPANE WAT, WH TOTAL (UG/L) (77173)
MAY 26...	<.400	<.400	<2.00	<.400	<.400	<.400	a102	<.400	<.400	<.400	<.400
MAY 26...	--	--	--	--	--	--	--	--	--	--	--
JUL 14...	<.400	<.400	<2.00	<.400	<.400	<.400	a103	<.400	<.400	<.400	<.400
DATE	BENZENE 14BRFL- SURROG VOC UNFLTRD REC (UG/L) (99834)	BENZENE 1,4-DI- CHLORO- WATER UNFLTRD REC (UG/L) (34571)	2,2-DI- CHLORO- PRO- PANE WAT, WH TOTAL (UG/L) (77170)	O- CHLORO- TOLUENE WATER WHOLE TOTAL (UG/L) (77275)	TOLUENE P-CHLOR WATER UNFLTRD REC (UG/L) (77277)	P-ISO- PROPYL- TOLUENE WATER WHOLE REC (UG/L) (77356)	ACRYLO- NITRILE TOTAL (UG/L) (34215)	BENZENE TOTAL (UG/L) (34030)	BROMO- BENZENE WATER, WHOLE, UNFLTRD REC (UG/L) (81555)	METHANE BROMO CHLORO- WAT UNFLTRD REC (UG/L) (77297)	BROMO- DI- CHLORO- METHANE TOTAL (UG/L) (32101)
MAY 26...	a90.3	<.400	<.400	<.400	<.400	<.400	<5.00	<.400	<.400	<.400	<.400
MAY 26...	--	--	--	--	--	--	--	--	--	--	--
JUL 14...	a99.4	<.400	<.400	<.400	<.400	<.400	<5.00	<.400	<.400	<.400	<.400

## 09502960 GRANITE CREEK AT PRESCOTT, AZ—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	BROMO- FORM TOTAL (UG/L) (32104)	METHYL- BROMIDE TOTAL (UG/L) (34413)	BENZENE N-BUTYL WATER	CHLORO- BENZENE	CHLORO- ETHANE	CHLORO- FORM	METHYL- CHLO- RIDE	CHLORO- DI- BROMO- METHANE	DI- BROMO- METHANE WHOLE	DI- CHLORO- DI- FLUORO- METHANE	METHYL- ENE CHLO- RIDE	
			UNFLTRD REC	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	RECOVER	TOTAL	TOTAL
			(UG/L) (77342)	(UG/L) (34301)	(UG/L) (34311)	(UG/L) (32106)	(UG/L) (34418)	(UG/L) (32105)	(UG/L) (30217)	(UG/L) (34668)	(UG/L) (34423)	
MAY												
26...	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	
26...	--	--	--	--	--	--	--	--	--	--	--	
JUL												
14...	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	
DATE	ETHYL- BENZENE TOTAL (UG/L) (34371)	HEXA- CHLORO- BUT- ADIENE TOTAL (UG/L) (39702)	ISO- PROPYL- BENZENE	NAPHTH- ALENE	STYRENE	TETRA- CHLORO- ETHYL- ENE	CARBON TETRA- CHLO- RIDE	TOLUENE	TOLUENE D8 SURROG VOC	TRI- CHLORO- ETHYL- ENE	TRI- CHLORO- FLUORO- METHANE	
			WATER WHOLE REC	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	UNFLTRD REC	PERCENT	TOTAL	TOTAL
			(UG/L) (77223)	(UG/L) (34696)	(UG/L) (77128)	(UG/L) (34475)	(UG/L) (32102)	(UG/L) (34010)	(99833)	(UG/L) (39180)	(UG/L) (34488)	
MAY												
26...	<.400	<.400	<.400	<.400	<.400	<.400	<.400	1.41	a97.0	<.400	<.400	
26...	--	--	--	--	--	--	--	--	--	--	--	
JUL												
14...	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	a99.5	<.400	<.400	
DATE	VINYL CHLO- RIDE TOTAL (UG/L) (39175)	XYLENE WATER UNFLTRD REC (UG/L) (81551)	CIS-1,2 -DI- CHLORO- ETHENE	CIS 1,3-DI- CHLORO- PROPENE	BENZENE N-PROPY WATER	BENZENE SEC BUTYL- WATER	METHYL TERT- BUTYL- ETHER	BENZENE TERT- BUTYL- WATER	TRANS- 1,2-DI- CHLORO- ETHENE	TRANS- 1,3-DI- CHLORO- PROPENE		
			WATER TOTAL (UG/L) (77093)	TOTAL (UG/L) (34704)	UNFLTRD REC (UG/L) (77224)	UNFLTRD REC (UG/L) (77350)	WAT UNF REC (UG/L) (78032)	UNFLTRD REC (UG/L) (77353)	TOTAL (UG/L) (34546)	TOTAL (UG/L) (34699)		
MAY												
26...	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	<.400	
26...	--	--	--	--	--	--	--	--	--	--	--	
JUL												
14...	<.400	<.400	<.400	<.400	<.400	<.400	E.244	<.400	<.400	<.400	<.400	

&lt; Actual value is known to be less than the value shown.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

a Listed values are recovery percentages for the indicated compounds. These compounds are added to the sample to determine the relative recovery of other organic compounds that are detected using the same analytical method.

## 09503000 GRANITE CREEK NEAR PRESCOTT, AZ

**LOCATION.**--Lat 34°34', long 112°27', in SW1/4 sec.26, T.14 N., R.2 W., (unsurveyed), Yavapai County, Hydrologic Unit 15060202, at bridge on U.S. Highway 89, 2 mi north of Prescott and 4.5 mi upstream from Willow Creek.

**DRAINAGE AREA.**--36.3 mi<sup>2</sup>.

**PERIOD OF RECORD.**--July 1932 to September 1947, October 1994 to current year.

**REVISED RECORDS.**--WDR AZ-98-1: 1997

**GAGE.**--Water-stage recorder. Elevation of gage is 5,204.29 ft above sea level from surveyed bench-mark elevation and levels survey.

**REMARKS.**--No estimated daily discharges. Records fair. Flow is partly regulated by Goldwater Reservoirs on Bannock Creek.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 3,200 ft<sup>3</sup>/s Mar. 6, 1995, gage-height 8.90 ft, from slope-conveyance survey. No flow for many days during the period of record.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Flood of Aug. 19, 1963, discharge of 6,600 ft<sup>3</sup>/s, gage height 9.4 ft (original gage height of 12.4 ft with datum correction), from contracted opening survey.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s (revised) and maximum ("):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 14 .....	0900	674	6.10	Sept. 11 .....	1830	537	5.82
July 25 .....	1830	965	6.60	Sept. 14 .....	2245	442	5.60
July 29 .....	1200	1,000	6.66	Sept. 23 .....	1230	1,860	7.72
Aug. 5 .....	1515	1,000	6.66				

Minimum daily discharge, 0.03 ft<sup>3</sup>/s, July 1-4, 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.34	.59	.96	.69	.86	.59	.59	1.8	.24	.03	18	14
2	.34	.55	.93	.69	.86	.58	9.8	.90	.39	.03	8.7	2.0
3	.34	.52	.85	.69	.83	.56	3.4	.75	1.3	.03	4.7	.98
4	.34	.52	.80	.69	1.0	.56	8.4	.74	.71	.03	3.6	.80
5	.34	.52	.80	.69	5.9	.56	3.8	.73	.60	.04	190	.65
6	.34	.52	.94	.69	1.3	.55	2.3	.72	.58	21	65	.56
7	.34	.52	.94	.69	1.2	.69	4.3	.62	.49	.95	18	.52
8	.33	.18	.81	.69	1.1	.67	2.7	.59	.44	.10	7.6	.48
9	.34	9.3	.80	.69	.99	.56	1.8	.53	.41	.05	4.5	.45
10	.33	1.2	.79	.69	1.1	.54	1.6	.52	.37	.03	3.3	.45
11	.33	.99	.72	.69	.99	.51	1.5	.52	.33	.16	2.6	47
12	.31	1.0	.79	.69	.97	.49	1.4	.50	.31	1.2	2.0	6.8
13	.31	.93	.79	.69	.96	.49	1.4	.42	.31	9.9	1.6	1.1
14	.29	.87	.78	.69	.89	.49	1.4	.42	.25	149	1.4	50
15	.29	.81	1.2	.69	.88	.49	1.3	.40	.28	109	1.4	16
16	.29	.80	.88	.69	.87	1.5	1.2	.36	.53	36	1.6	2.6
17	.29	.80	.80	.69	.87	12	1.2	.36	.29	13	1.2	2.5
18	.31	.80	.80	.69	.76	1.5	1.1	.34	.22	18	3.5	2.1
19	.34	.80	.79	.75	.71	.91	1.1	.33	.19	8.4	2.5	1.7
20	.34	.80	.70	.77	.69	.76	1.0	.31	.16	2.8	6.1	1.2
21	.62	.82	.69	.71	.69	.64	.94	.29	.14	1.4	1.3	1.1
22	.57	.81	.69	.69	.59	.64	.91	.29	.11	2.2	.94	6.5
23	.49	.80	.69	.69	.69	.64	1.2	.27	.10	.55	.80	297
24	.41	.80	.69	.69	.67	.64	.99	.26	.10	2.9	2.0	33
25	16	.80	.69	1.2	.64	.64	.99	.27	.08	110	2.4	8.6
26	5.8	.82	.69	4.6	.64	.63	.96	.27	.07	32	1.1	4.5
27	.90	.80	.69	1.3	.64	.62	.83	.27	.06	34	.83	3.1
28	.62	1.9	.69	1.1	.60	.62	.79	1.2	.05	103	1.1	2.4
29	.56	10	.69	.99	---	.60	.79	.49	.04	198	7.2	2.0
30	.75	1.2	.71	.96	---	.58	.83	.30	.04	97	13	1.7
31	.78	---	.70	.92	---	.55	---	.26	---	40	41	---
TOTAL	33.98	59.59	24.49	27.79	28.99	31.80	61.62	16.03	47.80	990.80	438.97	511.79
MEAN	1.10	1.99	.79	.90	1.04	1.03	2.05	.52	1.59	32.0	14.2	17.1
MAX	16	18	1.2	4.6	5.9	12	9.8	1.8	39	198	190	297
MIN	.29	.52	.69	.69	.60	.49	.59	.26	.04	.03	.80	.45
AC-FT	67	118	49	55	58	63	122	32	95	1970	871	1020
CFSM	.03	.05	.02	.02	.03	.03	.06	.01	.04	.88	.39	.47

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1999, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1932	.73	7.32	1941	.000	1933
1933	.53	2.78	1947	.000	1933
1934	2.80	32.9	1941	.000	1933
1935	5.52	35.4	1941	.000	1934
1936	20.4	159	1937	.000	1934
1937	25.3	79.2	1941	.000	1934
1938	8.71	67.2	1941	.000	1934
1939	1.16	7.03	1941	.000	1935
1940	.29	1.59	1999	.000	1933
1941	2.77	32.0	1999	.000	1934
1942	3.25	14.2	1999	.003	1947
1943	3.19	17.1	1999	.000	1932

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1932 - 1999
ANNUAL TOTAL	4436.24	2273.65	
ANNUAL MEAN	12.2	6.23	6.18
HIGHEST ANNUAL MEAN			24.2
LOWEST ANNUAL MEAN			.37
HIGHEST DAILY MEAN	148 Mar 28	297 Sep 23	1450 Feb 7 1937
LOWEST DAILY MEAN	.26 Jul 17	.03 Jul 1	.00 Jul 1 1932
ANNUAL SEVEN-DAY MINIMUM	.30 Oct 12	.03 Jun 29	.00 Jul 4 1932
ANNUAL RUNOFF (AC-FT)	3800	4510	4480
ANNUAL RUNOFF (CFSM)	.33	.17	.17
10 PERCENT EXCEEDS	35	8.4	11
50 PERCENT EXCEEDS	3.0	.78	.20
90 PERCENT EXCEEDS	.39	.29	.00

## 09603700 VERDE RIVER NEAR PAULDEN, AZ

**LOCATION.**--Lat 34°53'40", long 112°20'32", in SW1/4SE1/4 sec. 39, T.18 N., R.1 W., Yavapai County, Hydrologic Unit 15060202, in Prescott National Forest, on right bank 0.3 mi upstream from Verde Valley Ranch, 7 mi east of Paulden, 8 mi upstream from Hell Canyon, 8 mi downstream from Granite Creek, and 10 mi downstream from Sullivan Lake.

**DRAINAGE AREA.**--2,507 mi<sup>2</sup> (includes 357 mi<sup>2</sup> in Aubrey Valley Playa, a closed basin).

**PERIOD OF RECORD.**--July 1963 to current year.

**REVISED RECORDS.**--WDR AZ-83-1: 1981, WDR AZ-89-1: Drainage area.

**GAGE.**--Water-stage recorder. Elevation of gage is 4,117 ft above sea level, from topographic map.

**REMARKS.**--No estimated daily discharges. Records good. Diversions and storage above station for irrigation and municipal use.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 23,200 ft<sup>3</sup>/s Feb. 20, 1993, gage height, 14.25 ft, from rating curve extended above 7,600 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily discharge, 15 ft<sup>3</sup>/s May 13-23, 1964.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 300 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 18 .....	0315	325	3.28	Sept. 24 .....	0600	*1,070	*4.67
Sept. 20 .....	1100	461	3.63				

Minimum daily discharge, 22 ft<sup>3</sup>/s on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	29	28	27	26	26	29	25	23	22	24	49
2	27	29	27	27	26	26	30	25	25	22	24	29
3	27	29	27	27	26	26	29	25	23	22	24	25
4	27	29	27	27	27	27	30	24	23	22	24	25
5	27	29	27	27	27	27	29	24	23	22	24	24
6	27	28	27	27	26	27	28	24	23	23	24	24
7	27	28	27	27	26	28	28	24	23	22	24	24
8	27	29	27	27	26	28	28	24	23	23	23	24
9	27	30	27	27	26	28	27	24	23	23	23	24
10	27	28	27	27	26	28	27	24	23	22	23	24
11	28	28	27	27	26	28	27	24	23	24	23	24
12	28	28	27	27	26	28	27	24	23	24	23	24
13	28	28	27	27	25	28	27	24	23	23	23	24
14	28	28	27	27	25	28	27	24	23	24	24	67
15	28	28	27	27	25	28	26	24	23	24	24	158
16	28	28	26	27	25	28	26	24	23	27	24	106
17	28	28	26	27	25	28	26	24	22	23	24	82
18	28	28	26	27	25	28	26	24	22	28	24	138
19	28	28	26	27	25	29	26	24	22	24	24	39
20	28	28	27	27	25	29	26	24	22	23	24	152
21	29	28	26	27	25	29	26	24	22	23	24	47
22	29	28	26	27	25	29	26	23	22	23	23	30
23	29	28	26	27	26	29	26	23	22	23	26	87
24	29	27	26	27	25	29	26	24	22	25	25	431
25	29	27	27	27	25	29	25	24	22	29	24	159
26	29	27	27	27	25	29	25	23	22	33	24	57
27	29	27	27	27	25	29	25	23	22	40	24	37
28	29	28	27	27	25	29	25	23	22	66	24	30
29	29	29	27	26	---	29	25	23	22	32	24	28
30	29	28	27	26	---	29	25	23	22	27	24	27
31	29	---	27	26	---	29	---	23	---	25	28	---
TOTAL	870	845	830	834	716	872	803	739	678	813	744	2019
MEAN	28.1	28.2	26.8	26.9	25.6	28.1	26.8	23.8	22.6	26.2	24.0	67.3
MAX	29	30	28	27	27	29	30	25	25	66	28	431
MIN	27	27	26	26	25	26	25	23	22	22	23	24
AC-FT	1730	1680	1650	1650	1420	1730	1590	1470	1340	1610	1480	4000
CFSM	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.03
IN.	.02	.01	.01	.01	.01	.02	.01	.01	.01	.01	.01	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1999, BY WATER YEAR (WY)

	MEAN	31.2	27.0	42.1	59.8	120	75.8	33.0	25.0	24.1	26.0	31.0	38.2
MAX	200	43.7	295	861	1443	669	155	30.7	27.5	36.4	80.9	440	
(WY)	1973	1986	1966	1993	1993	1978	1965	1967	1995	1996	1964	1983	
MIN	18.7	20.4	21.9	21.7	19.6	19.3	21.3	16.2	20.1	20.9	22.6	20.4	
(WY)	1964	1965	1978	1972	1964	1972	1964	1964	1964	1977	1965	1978	

SUMMARY STATISTICS

FOR 1999 WATER YEAR

WATER YEARS 1963 - 1999

ANNUAL TOTAL	10763												
ANNUAL MEAN	29.5									44.0			
HIGHEST ANNUAL MEAN										215		1993	
LOWEST ANNUAL MEAN										23.9		1972	
HIGHEST DAILY MEAN	431	Sep 24							13700		Feb 20	1993	
LOWEST DAILY MEAN	22	Jun 17							15		May 13	1964	
ANNUAL SEVEN-DAY MINIMUM	22	Jun 17							15		May 13	1964	
ANNUAL RUNOFF (AC-FT)	21350								31870				
ANNUAL RUNOFF (CFSM)	.014								.020				
ANNUAL RUNOFF (INCHES)	.19								.28				
10 PERCENT EXCEEDS	29								30				
50 PERCENT EXCEEDS	27								25				
90 PERCENT EXCEEDS	23								22				





## 09504000 VERDE RIVER NEAR CLARKDALE, AZ--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD--March 1976 to October 1979, January 1980 to August 1983, October 1986 to current year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

		DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE OF HG (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)		
NOV 17...	1220	79	520	8.4	16.0	14.0	1.2	672	10.4	115	<5	
JAN 20...	1030	81	524	8.2	23.0	12.0	.76	675	10.0	105	--	
FEB 24...	0930	79	521	8.2	23.0	11.0	.96	679	10.0	102	<5	
MAY 18...	0915	76	521	8.2	21.5	16.5	.81	675	8.9	103	<5	
DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	E. COLI WHOLE TOTAL UREASE (COL / 100 ML) (31633)	HARD- NESS TOTAL AS CACO3 (00960)	CALCIUM TOTAL RECOV- ERABLE (MG/L AS CA) (00916)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG) (00927)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION (MG/L AS NA) (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	
	NOV 17...	K6	K3	230	55	54	24	23	24	.7	1.8	305
	JAN 20...	--	K2	230	56	54	23	24	26	.7	1.8	318
	FEB 24...	K6	K11	230	56	54	23	24	26	.7	1.8	312
	MAY 18...	<1	<1	220	53	50	24	23	22	.6	1.6	317
DATE	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUC- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	
	NOV 17...	5	258	8.4	12	.21	276	279	.38	1	.130	.020
	JAN 20...	0	261	8.5	13	.21	311	284	.42	5	E.220	E.020
	FEB 24...	0	256	7.9	13	.21	296	281	.40	32	.120	.030
	MAY 18...	0	260	7.9	13	.20	295	274	.40	17	.020	.020
DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (11106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01097)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)		
	NOV 17...	<.20	.03	.020	<3.0	<1	<1.0	17	16	200	170	
	JAN 20...	<.20	.03	<.020	--	<1	<1.0	16	17	200	180	
	FEB 24...	<.20	.04	.060	--	<1	<1.0	18	17	200	180	
	MAY 18...	<.20	.03	<.020	--	<1	<1.0	19	17	200	170	

## 09504000 VERDE RIVER NEAR CLARKDALE, AZ-Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	BERYL- LITHIUM, TOTAL RECOVERABLE (UG/L AS BE) (01012)	BERYL- LITHIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, TOTAL RECOVERABLE (UG/L AS B) (01022)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
NOV 17...	<.5	<.50	170	--	<1	<.50	<1	<1.0	<1	<1.0
JAN 20...	<.5	<.50	170	--	<1	<.50	1	<1.0	<1	<1.0
FEB 24...	<.5	<.50	170	--	<1	<.50	1	<1.0	<1	<1.0
MAY 18...	<.5	<.50	160	160	<1	<.50	1	<1.0	2	<1.0
DATE	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)
NOV 17...	80	2.3	<1	<1.0	10	6.9	<.10	<.1	<1	<1.0
JAN 20...	100	2.8	<1	<1.0	12	7.4	<.10	<.1	<1	<1.0
FEB 24...	280	2.7	<1	<1.0	21	5.8	<.10	<.1	1	1.2
MAY 18...	210	3.1	<1	<1.0	19	6.5	.20	<.1	1	<1.0
DATE	SELE- NIUM, TOTAL RECOVERABLE (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	THAL- LIUM, TOTAL RECOVERABLE (UG/L AS TL) (01059)	THAL- LIUM, DIS- SOLVED (UG/L AS TL) (01057)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (MG/L (T DAY) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (MG/L (T DAY) (80155)
NOV 17...	<1	<1	<1	<1.0	<2	<2.0	2.7	1.6	108	23
JAN 20...	<1	<1	<1	<1.0	<2	<2.0	1.7	<1.0	41	9.0
FEB 24...	<1	<1	<1	<1.0	<2	2.0	2.3	<1.0	46	9.8
MAY 18...	<1	<1	<1	<1.0	<2	<2.0	4.2	<1.0	42	8.6

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

## 09504000 VERDE RIVER NEAR CLARKDALE, AZ--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Water-quality measurements in the following table were made as part of the ADEQ Fixed-Station Network Program. The following analyses are quality-assurance samples processed during the 1999 sampling period and are defined in the introductory text section titled "Water-Quality Control Data".

DATE	TIME	QUALITY ASSURANCE SAMPLE (TYPE)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
NOV 17...	1225	FIELD BLANK	<.020	<.00	<.10	<.020	.010	<.20	.01	.020
DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL 01105)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM, DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)
NOV 17...	<3.0	<.20	<.50	<.50	<1.0	<1.0	<1.0	<1.0	<.20	<1.0

< Actual value is known to be less than the value shown.

## 09504420 OAK CREEK NEAR SEDONA, AZ

LOCATION.--Lat 34°51'42", long 111°45'40", in NE1/4NE1/4NE1/4 sec. 18, T. 17 N., R. 6 E., Coconino County, Hydrologic Unit 15060202, on left bank 290 ft downstream from State Highway 179 bridge in Sedona, 28 mi southwest of Flagstaff, and 35.1 mi upstream from mouth.

DRAINAGE AREA.--233 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1981 to current year. Prior to October 1995 published under station 09504430.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 4,169.20 ft above sea level (Arizona Department of Transportation bench mark).

REMARKS.--No estimated daily discharges. Records good. Many diversions above and below station for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,200 ft<sup>3</sup>/s Feb. 19, 1993, gage height, 20.33 ft, from outside floodmark, from rating curve extended above 8,000 ft<sup>3</sup>/s on the basis of contracted-opening of peak flow; minimum daily, 19 ft<sup>3</sup>/s June 12, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft<sup>3</sup>/s and maximum ("):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 23 .....	1815	*2,000	*5.61

Minimum daily discharge, 28 ft<sup>3</sup>/s on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	33	35	32	32	32	35	32	29	28	31	36
2	30	33	34	31	32	32	36	32	33	28	31	35
3	30	33	34	31	32	32	33	32	31	29	31	33
4	30	33	35	31	33	32	37	32	30	28	31	32
5	30	33	35	31	36	32	36	32	30	28	31	31
6	30	33	35	31	35	31	34	32	30	29	32	31
7	30	33	35	31	34	31	56	32	29	29	31	30
8	30	39	35	32	34	32	144	32	29	29	30	30
9	30	113	34	32	34	31	146	31	29	29	31	30
10	30	61	35	32	34	31	119	31	29	29	33	31
11	30	42	35	32	34	31	152	31	29	30	33	37
12	30	37	35	31	34	31	202	31	29	31	31	46
13	30	36	34	32	34	31	159	31	29	30	30	34
14	30	35	34	32	34	31	138	30	29	58	31	62
15	31	35	33	32	33	31	97	30	29	59	31	211
16	31	35	34	32	33	31	62	30	29	45	33	52
17	31	34	34	32	33	33	46	30	29	33	32	37
18	31	35	34	32	33	32	38	30	29	32	31	39
19	31	35	33	32	33	31	35	30	29	32	31	35
20	31	35	33	32	33	31	34	30	29	31	31	34
21	32	35	33	32	32	31	33	30	29	32	31	33
22	33	35	33	32	32	31	33	30	28	31	31	33
23	32	34	33	32	32	31	34	29	28	32	31	704
24	32	34	33	32	32	31	33	30	29	31	31	346
25	40	35	33	32	32	31	33	30	28	31	31	90
26	58	35	33	34	32	31	33	30	28	31	31	43
27	35	35	32	32	32	31	33	30	28	130	31	38
28	33	36	32	32	32	31	32	30	28	54	31	35
29	33	40	32	32	---	31	32	30	28	39	31	34
30	35	35	32	32	---	31	32	29	28	34	53	34
31	34	---	32	32	---	31	---	29	---	32	42	---
TOTAL	1003	1158	1044	987	926	970	1967	948	871	1144	1000	2296
MEAN	32.4	38.6	33.7	31.8	33.1	31.3	65.6	30.6	29.0	36.9	32.3	76.5
MAX	58	113	35	34	36	33	202	32	33	130	53	704
MIN	30	33	32	31	32	31	32	29	28	28	30	30
AC-FT	1990	2300	2070	1960	1840	1920	3900	1880	1730	2270	1980	4550

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1999, BY WATER YEAR (WY)

MEAN	36.7	55.1	92.7	113	200	278	132	35.3	28.4	30.9	32.9	39.1
MAX	96.4	191	362	1084	980	703	376	67.1	34.0	44.5	49.1	103
(WY)	1987	1983	1983	1993	1993	1982	1998	1983	1995	1986	1992	1983
MIN	26.5	29.1	30.1	31.1	29.9	30.7	29.9	25.7	23.0	24.7	24.4	24.3
(WY)	1995	1996	1996	1986	1996	1996	1989	1989	1985	1985	1985	1989

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1982 - 1999

ANNUAL TOTAL	38958	14314	
ANNUAL MEAN	107	39.2	89.0
HIGHEST ANNUAL MEAN			249
LOWEST ANNUAL MEAN			31.7
HIGHEST DAILY MEAN	1580	Mar 28	704
LOWEST DAILY MEAN	25	Jul 2	28
ANNUAL SEVEN-DAY MINIMUM	26	Jun 28	28
ANNUAL RUNOFF (AC-FT)	77270		28390
10 PERCENT EXCEEDS	125		38
50 PERCENT EXCEEDS	35		32
90 PERCENT EXCEEDS	29		27

## 09604500 OAK CREEK NEAR CORNVILLE, AZ

LOCATION.--Lat 34°45'52", long 111°53'25", in NW1/4SW1/4 sec.23, T.16 N., R.4 E., Yavapai County, Hydrologic Unit 15060202, on right bank 250 ft downstream from county highway bridge, 0.2 mi upstream from Page Springs, 4 mi northeast of Cornville, and 15 mi upstream from mouth.

DRAINAGE AREA.--355 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1940 to September 1945. April 1948 to current year.

REVISED RECORDS.--WSP 1149: 1948(M). WRD Ariz. 1974: 1973. WDR AZ-89-1: Drainage area. WDR AZ-98-1: 1997.

GAGE.--Water-stage recorder and crest stage gage. Elevation of gage is 3,470 ft above sea level, from topographic map. Prior to March 10, 1981, at site 250 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Numerous diversions above and below station for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,400 ft<sup>3</sup>/s Feb. 19, 1980, gage height, 16.30 ft; maximum gage height, 19.15 ft, Feb. 20, 1993; minimum discharge, 6 ft<sup>3</sup>/s July 27, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1885, 23 ft in March 1938, from floodmarks (upstream side of bridge).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 23 .....	2230	*2,000	*5.95

Minimum daily discharge, 21 ft<sup>3</sup>/s July 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	34	55	61	55	40	38	32	24	22	25	35
2	28	33	55	63	55	39	56	32	26	22	24	30
3	27	38	57	64	55	38	56	31	30	23	24	29
4	28	36	61	62	55	36	53	31	27	24	23	27
5	29	38	62	59	60	35	65	30	27	23	24	25
6	29	40	64	43	60	34	59	31	27	22	25	24
7	29	38	66	39	60	35	51	30	26	22	24	24
8	28	40	65	39	54	34	105	30	25	22	24	23
9	27	89	64	37	49	34	219	29	25	22	23	23
10	27	97	63	38	42	33	177	29	24	22	44	24
11	28	63	64	38	38	34	173	29	25	22	60	24
12	28	53	63	38	41	36	239	29	24	26	50	35
13	28	49	63	38	39	40	212	29	24	25	42	30
14	27	45	62	39	39	53	189	28	24	69	38	46
15	27	43	61	38	37	58	153	28	33	146	35	265
16	27	39	63	39	37	47	117	27	25	43	31	110
17	27	39	65	40	37	56	79	27	24	37	32	47
18	28	42	64	47	37	62	57	26	25	24	29	34
19	28	44	63	45	38	51	44	26	24	24	28	34
20	27	45	65	44	37	47	38	26	23	22	27	29
21	57	43	67	41	39	43	35	26	23	21	26	28
22	45	44	70	42	38	41	35	27	22	22	26	26
23	31	46	65	48	35	36	35	27	22	22	25	485
24	30	45	64	46	32	37	35	27	24	22	25	657
25	32	48	63	45	35	35	35	26	24	22	28	185
26	113	48	73	43	36	35	34	26	24	24	28	91
27	57	48	75	52	37	42	33	26	23	45	29	52
28	33	49	77	53	39	50	31	26	22	163	30	40
29	31	59	75	53	---	46	30	26	22	41	30	38
30	32	62	73	54	---	45	33	26	22	31	29	36
31	40	---	61	56	---	34	---	25	---	28	54	---
TOTAL	1056	1437	2008	1446	1216	1285	2521	868	740	1103	962	2556
MEAN	34.1	47.9	64.8	46.6	43.4	41.5	84.0	28.0	24.7	35.6	31.0	85.2
MAX	113	97	77	64	60	62	239	32	33	163	60	657
MIN	27	33	55	37	32	33	30	25	22	21	23	23
AC-FT	2090	2850	3980	2870	2410	2550	5000	1720	1470	2190	1910	5070

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1999, BY WATER YEAR (WY)

	MEAN	46.6	62.8	112	101	184	248	169	32.2	20.5	24.0	33.7	40.2
MAX	571	450	881	1304	1391	1323	1097	216	58.0	40.8	90.9	373	
(WY)	1973	1966	1967	1993	1980	1978	1973	1973	1957	1950	1951	1970	
MIN	20.1	22.7	29.6	32.2	31.9	28.8	25.0	17.1	13.7	14.1	12.9	14.7	
(WY)	1990	1993	1996	1995	1970	1972	1995	1943	1943	1940	1944	1980	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1940 - 1999
ANNUAL TOTAL	40979	17198	
ANNUAL MEAN	112	47.1	99.2
HIGHEST ANNUAL MEAN			256
LOWEST ANNUAL MEAN			25.9
HIGHEST DAILY MEAN	1940	Mar 28	14000
LOWEST DAILY MEAN	15	Jul 30	8.0
ANNUAL SEVEN-DAY MINIMUM	15	Aug 1	9.4
ANNUAL RUNOFF (AC-FT)	81280	34110	64620
10 PERCENT EXCEEDS	335	64	140
50 PERCENT EXCEEDS	39	36	32
90 PERCENT EXCEEDS	21	24	18



LOCATION.--Lat 34°43'43", long 111°46'30", in NE1/4NW1/4 sec. 1, T.15 N., R.5 E., Yavapai County, Hydrologic Unit 15060202, in Coconino National Forest, on left upstream abutment of abandoned highway bridge, 1,000 ft upstream from present State Highway 179, and 5.5 mi north of Rimrock.

PERIOD OF RECORD --October 1960 to current year.

REVISÉD RECORDS.--WRD Ariz. 1969: Drainage area.

**GAGE.**--Water-stage recorder and concrete control. Datum of gage is 3,694.38 ft above sea level (Arizona Highway Department bench mark).

REMARKS.--Records good except for estimated daily discharges, which are fair. No known diversions above station.

**EXTREMES FOR PERIOD OF RECORD** -Maximum discharge, 26,600 ft<sup>3</sup>/s Sept. 5, 1970, gage height, 14.35 ft. from rating curve extended above 6,000 ft<sup>3</sup>/s on basis of computation of peak flow over weir at gage height 9.07 ft and 9.69 ft and slope-area measurement at gage height 14.35 ft; no flow for many days each year.

**EXTREMES FOR CURRENT YEAR --Peak discharges greater than base discharge of 600 ft<sup>3</sup>/s and maximum (\*)**

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 15 .....	0300	915	4.44
Sept. 23 .....	1630	*6,940	*8.24

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	1.2	1.7
2	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.47	e.10
3	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.12	e.01
4	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.07	.00
5	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.06	.00
6	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.06	.00
7	.00	.00	.00	.00	.00	.00	.04	.01	.00	.00	.05	.00
8	.00	.00	.00	.00	.00	.00	164	.00	.00	.00	.05	.00
9	.00	.16	.00	.00	.00	.00	222	.00	.00	.00	.04	.00
10	.00	14	.00	.00	.00	.00	182	.00	.00	.00	3.5	.00
11	.00	6.2	.00	.00	.00	.00	223	.00	.00	.00	2.5	.00
12	.00	2.9	.00	.00	.00	.00	254	.00	.00	.00	.10	.00
13	.00	.70	.00	.00	.00	.00	263	.00	.00	.00	.38	.00
14	.00	.17	.00	.00	.00	.00	173	.00	.00	38	.05	2.3
15	.00	.03	.00	.00	.00	.00	166	.00	.00	193	.05	3.6
16	.00	.01	.00	.00	.00	.00	79	.00	.00	12	.05	12
17	.00	.00	.00	.00	.00	.00	40	.00	.00	1.9	.04	5.4
18	.00	.00	.00	.00	.00	.00	22	.00	.00	.38	.04	2.1
19	.00	.00	.00	.00	.00	.00	13	.00	.00	.10	.04	.65
20	.00	.00	.00	.00	.00	.00	7.2	.00	.00	.06	.04	.16
21	.00	.00	.00	.00	.00	.00	4.9	.00	.00	.06	.03	.04
22	.00	.00	.00	.00	.00	.00	3.1	.00	.00	.05	.03	.01
23	.00	.00	.00	.00	.00	.00	1.7	.00	.00	.05	.02	1240
24	.00	.00	.00	.00	.00	.00	.88	.00	.00	.04	.02	337
25	.00	.00	.00	.00	.00	.00	.46	.00	.00	.04	e.31	48
26	6.1	.00	.00	.00	.00	.00	.27	.00	.00	.07	e.01	15
27	.42	.00	.00	.00	.00	.00	.15	.00	.00	9.3	.00	6.2
28	.01	.00	.00	.00	.00	.00	.03	.00	.00	53	e.00	3.5
29	.10	.00	.00	.00	---	.00	.05	.00	.00	14	e.00	1.7
30	.00	.00	.00	.00	---	.00	.04	.00	.00	5.1	22	.76
31	.00	---	.00	.00	---	.00	---	.00	---	2.0	5.9	---
TOTAL	6.53	24.17	0.00	0.00	0.00	0.00	1819.88	0.12	0.00	329.15	35.61	1680.23
MEAN	.21	.81	.0000	.0000	.0000	.0000	60.7	.004	.0000	10.6	1.18	56.0
MAX	6.1	14	.00	.00	.00	.00	263	.03	.00	193	.22	1240
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MED	.00	.00	.00	.00	.00	.00	2.4	.00	.00	.05	.05	.40
AC-FT	13	48	.00	.00	.00	.00	3510	.2	.00	653	.73	3330
CFSM	.00	.01	.00	.00	.00	.00	.43	.00	.00	.07	.01	.39
IN	.00	.01	.00	.00	.00	.00	.48	.00	.00	.09	.01	.44

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1999, BY WATER YEAR (WY)

MEAN	8.65	17.5	60.6	60.4	113	162	110	3.40	.005	.45	1.85	12.2
MAX	246	251	502	814	850	675	598	208	.17	10.6	34.9	224
(WY)	1973	1966	1979	1973	1980	1978	1973	1973	1979	1999	1992	1970
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1961	1961	1961	1961	1961	1967	1972	1961	1961	1965	1962	1962

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1961 - 1999
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ANNUAL TOTAL	26306.95		3836.69			
ANNUAL MEAN	72.1		10.7		45.9	
HIGHEST ANNUAL MEAN					144	1993
LOWEST ANNUAL MEAN					3.35	1996
HIGHEST DAILY MEAN	1710	Mar 28	1240	Sep 23	13100	Dec 13 1979
LOWEST DAILY MEAN	.00	Jan 1	.00	Oct 1	.00	Oct 1 1960
ANNUAL SEVEN-DAY MINIMUM	.00	Jun 4	.00	Oct 1	.00	Oct 1 1960
ANNUAL RUNOFF (AC-FT)	52180		7730		33250	
ANNUAL RUNOFF (CFSM)	.51		.075		.32	
ANNUAL RUNOFF (INCHES)	5.89		1.02		4.33	
17 PERCENT EXCEEDS	295		3.3		100	
50 PERCENT EXCEEDS	.00		.00		.00	
90 PERCENT EXCEEDS	.00		.00		.00	

e Estimated

LOCATION.--Lat 34°32'19", long 111°41'38", in NW1/4NW1/4 sec. 11, T. 13 N., R. 8 E., Yavapai County, Hydrologic Unit 15060203, in Coconino National Forest, on left bank at Bull Pen Ranch, 9 mi east of Camp Verde, and 11 mi upstream from mouth.

### WATER-DISCHARGE RECORDS

**GAGE.**--Water-stage recorder. Elevation of gage is 3,630 ft above sea level, from topographic map.

**EXTREMES FOR PERIOD OF RECORD.**—Maximum discharge, 24,800 ft<sup>3</sup>/s Jan. 8, 1993, gage height, 13.22 ft, from floodmarks and rating curve extended above 2,700 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 8.3 ft, 10.15 ft, and 13.22 ft; minimum daily, 11 ft<sup>3</sup>/s Aug. 1, 22, 1986.

**EXTREMES FOR CURRENT YEAR --Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):**

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 27 .....	1815	3,020	4.82
Sept. 24 .....	1945	1,330	3.36

Minimum daily discharge, 15.0 ft<sup>3</sup>/s on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	18	20	18	17	17	21	18	16	15	20	23
2	17	17	19	18	17	17	24	18	17	15	18	35
3	17	17	18	18	17	17	22	18	17	15	18	21
4	17	17	18	17	18	18	22	18	17	15	18	18
5	17	17	18	17	20	18	20	18	17	15	18	18
6	17	17	18	17	19	18	21	17	16	15	18	17
7	16	17	18	18	18	18	41	17	16	15	18	17
8	17	17	18	18	18	18	104	17	16	17	17	17
9	16	22	18	17	18	19	91	17	16	16	17	17
10	17	35	18	17	18	18	53	17	16	16	17	17
11	17	21	18	18	17	18	130	17	16	18	17	22
12	17	18	18	18	17	18	158	17	16	18	17	21
13	17	18	18	18	16	18	154	17	16	18	17	18
14	17	17	18	17	18	18	135	17	16	19	17	19
15	17	17	18	18	18	18	96	17	17	41	17	21
16	17	17	18	17	17	18	60	17	16	32	17	22
17	17	17	18	18	17	20	44	17	17	21	17	21
18	17	17	18	18	17	19	33	17	16	18	17	19
19	17	17	18	18	17	18	28	17	16	18	18	18
20	17	17	18	18	17	18	25	17	16	17	19	19
21	19	17	18	18	17	18	23	16	15	18	17	18
22	18	17	18	18	17	17	22	16	15	17	17	18
23	17	17	18	18	18	17	22	16	15	18	17	246
24	17	17	18	17	18	17	21	16	15	25	18	495
25	19	17	17	18	18	17	20	17	15	26	17	138
26	24	17	18	19	17	17	20	17	15	127	17	52
27	23	18	18	18	17	17	19	17	15	304	17	30
28	20	18	18	18	17	17	19	17	15	95	18	24
29	18	21	18	18	---	17	18	17	15	29	18	20
30	19	20	18	17	---	17	18	16	15	25	18	19
31	19	---	18	17	---	17	---	16	---	23	20	---
TOTAL	551	549	560	549	490	549	1484	526	476	1081	546	1460
MEAN	17.8	18.3	18.1	17.7	17.5	17.7	49.5	17.0	15.9	34.9	17.6	48.7
MAX	24	35	20	19	20	20	158	18	17	304	20	495
MIN	16	17	17	17	16	17	18	16	15	15	17	17
AC-FT	1090	1090	1110	1090	972	1090	2940	1040	944	2140	1080	2900

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1999, BY WATER YEAR (WY)

MEAN	32.5	28.0	85.1	81.7	146	210	121	25.7	16.5	18.0	21.7	22.6
MAX	458	110	758	1136	956	886	923	157	24.8	34.9	102	113
(WY)	1973	1973	1979	1993	1980	1978	1973	1973	1984	1999	1992	1983
MIN	13.8	15.2	15.7	16.3	14.8	15.3	15.4	14.5	13.2	13.8	13.5	14.0
(WY)	1977	1969	1970	1981	1974	1967	1967	1967	1970	1969	1980	1968

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1965 - 1999
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ANNUAL TOTAL	33426		8821				
ANNUAL MEAN	91.6		24.2			66.1	
HIGHEST ANNUAL MEAN						199	1973
LOWEST ANNUAL MEAN						16.1	1977
HIGHEST DAILY MEAN	2750	Mar 28	495	Sep 24	13100		Jan 8 1993
LOWEST DAILY MEAN	15	Jun 20	15	Jun 21	11		Aug 1 1986
ANNUAL SEVEN-DAY MINIMUM	15	Jun 20	15	Jun 21	12		Jun 25 1968
ANNUAL RUNOFF (AC-FT)	66300		17500		47920		
10 PERCENT EXCEEDS	224		23		109		
50 PERCENT EXCEEDS	18		18		18		
90 PERCENT EXCEEDS	16		16		15		



09506800 WEST CLEAR CREEK NEAR CAMP VERDE, AZ--Continued  
(National Water-Quality Assessment Station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1996 to April 1997.

WATER TEMPERATURE: October 1996 to April 1997.

INSTRUMENTATION.--Specific conductance and water temperature recorder October 1996 to April 1997.

REMARKS.--Samples were collected at Highway 260, approximately 7 mi downstream from the gage, on February 9, March 17, April 2, April 7, and April 14.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

		DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL MG/L AS CaCO3 00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	
OCT												
26...	1340	26	351	8.6	15.0	15.2	665	9.9	113	180	35	
NOV												
18...	1350	17	361	8.6	18.5	11.0	665	9.6	100	180	36	
DEC												
15...	1155	18	373	8.6	16.5	8.2	670	10.4	101	190	40	
JAN												
20...	1145	18	368	8.6	16.0	9.5	666	10.4	104	190	38	
FEB												
10...	1240	18	366	8.6	11.0	10.6	663	10.0	103	180	36	
MAR												
10...	1240	18	373	8.7	18.0	12.5	665	8.7	94	180	39	
APR												
29...	1140	19	335	8.8	12.0	15.2	663	9.4	109	170	37	
MAY												
28...	1220	17	358	8.6	28.5	21.5	663	8.3	108	170	34	
JUN												
29...	1120	15	346	8.5	32.5	24.9	667	7.8	108	170	33	
JUL												
13...	1300	17	351	8.5	26.5	25.0	667	7.3	101	170	34	
AUG												
24...	1230	18	360	8.6	29.0	22.9	668	7.7	103	170	34	
SEP												
13...	1240	18	352	8.5	28.5	21.7	668	7.6	99	180	35	
DATE		MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD (MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD (MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3 (33086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)
OCT												
26...	21	5.8	.2	1.2	207	10	186	2.2	3.4	<.10	15	
NOV												
18...	21	5.7	.2	1.2	223	8	197	2.0	3.5	<.10	15	
DEC												
15...	23	5.7	.2	1.3	239	5	204	2.5	5.2	.13	15	
JAN												
20...	22	5.8	.2	1.1	232	8	204	2.4	3.3	<.10	15	
FEB												
10...	21	5.1	.2	1.1	224	11	202	2.4	3.5	.14	14	
MAR												
10...	21	5.2	.2	1.2	223	11	201	1.7	3.8	<.10	15	
APR												
29...	20	5.4	.2	1.2	203	10	187	2.1	3.4	<.10	15	
MAY												
28...	21	6.0	.2	1.3	210	11	190	2.0	3.8	<.10	16	
JUN												
29...	21	6.3	.2	1.3	195	10	176	1.5	3.5	.12	18	
JUL												
13...	21	5.7	.2	1.2	200	11	182	1.4	4.0	<.10	17	
AUG												
24...	21	5.6	.2	1.4	206	8	183	1.3	3.6	<.10	15	
SEP												
13...	21	5.6	.2	1.6	204	8	182	2.0	3.2	<.10	17	

## GILA RIVER BASIN

08505800 WEST CLEAR CREEK NEAR CAMP VERDE, AZ--Continued  
(National Water-Quality Assessment Station)

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, ORGANIC DIS- SOLVED TOTAL (MG/L AS N) (00605)	NITRO- GEN, ORGANIC DIS- SOLVED TOTAL (MG/L AS N) (00607)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED TOTAL (MG/L AS N) (00623)
OCT 26...	203	196	.28	<.010	<.050	.020	--	--	<.10	<.10
NOV 18...	218	203	.30	<.010	<.050	.023	--	--	<.10	<.10
DEC 15...	221	216	.30	.023	<.050	.031	--	--	<.10	<.10
JAN 20...	219	210	.30	<.010	<.050	.045	--	--	E.06	<.10
FEB 10...	221	205	.30	<.010	<.050	<.020	--	--	.12	E.10
MAR 10...	220	208	.30	<.010	<.050	<.020	--	--	E.06	<.10
APR 29...	204	194	.28	<.010	<.050	.029	.08	.08	.11	.11
MAY 28...	216	199	.29	<.010	<.050	.020	.15	--	.17	E.10
JUN 29...	209	191	.28	<.010	<.050	.022	--	--	E.09	E.10
JUL 13...	197	194	.27	<.010	<.050	.036	.07	.11	.11	.14
AUG 24...	193	191	.26	<.010	<.050	<.020	--	--	.14	E.10
SEP 13...	198	194	.27	<.010	<.050	<.020	--	--	.19	.13

DATE	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT 26...	<.050	<.050	<.010	--	E7.2	<3.0	1.0	.30	3	.21
NOV 18...	<.050	.012	.011	.03	E6.5	<3.0	.80	.30	2	.09
DEC 15...	<.050	.019	.012	.04	E6.8	E1.9	.70	.30	1	.05
JAN 20...	.005	.004	<.010	--	E6.6	<3.0	.60	.30	2	.10
FEB 10...	.008	.006	.011	.03	E6.2	E1.7	.60	.20	3	.15
MAR 10...	.009	.005	.021	.06	<10	3.6	.60	.40	3	.15
APR 29...	.016	.009	.017	.05	E9.4	6.2	1.4	.30	3	.15
MAY 28...	.015	.005	.017	.05	E5.9	4.1	.80	.60	6	.28
JUN 29...	.055	.014	.017	.05	<10	4.1	1.0	.70	3	.12
JUL 13...	.012	.008	<.010	--	E8.1	4.6	1.1	.40	4	.18
AUG 24...	.014	.007	<.010	--	<10	4.8	1.1	.30	4	.19
SEP 13...	.047	.015	.014	.04	E5.7	4.7	1.6	.60	18	.87

&lt; Actual value is known to be less than the value shown.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

## 09606000 VERDE RIVER NEAR CAMP VERDE, AZ

LOCATION.--Lat 34°26'54", long 111°47'21", in NW1/4 sec. 11, T.12 N., R.5 E. (unsurveyed), Yavapai County, Hydrologic Unit 15060303, in Prescott National Forest, on right bank 600 ft upstream from Chasm Creek, 9.0 mi southeast of Camp Verde, and 9.7 mi downstream from West Clear Creek.

DRAINAGE AREA.--5,009 mi<sup>2</sup>, of which 365 mi<sup>2</sup> is noncontributing, including 357 mi<sup>2</sup> in Aubrey Valley Playa, a closed basin.

PERIOD OF RECORD.--April 1934 to September 1945, October 1988 to current year.

REVISED RECORDS.--WDR AZ-89-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,874.11 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Several diversions above station for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 119,000 ft<sup>3</sup>/s Feb. 20, 1993, gage height, 28.36 ft from floodmarks from rating curve extended above 17,000 ft<sup>3</sup>/s minimum daily, 35 ft<sup>3</sup>/s July 15, 1997

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*) from rating curve extended above 17,000 ft<sup>3</sup>/s.

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 11.....	2115	5.080	9.00
Sept. 24.....	0115	*9.900	*11.34

Minimum daily discharge, 42 ft<sup>3</sup>/s July 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	230	210	204	200	155	166	160	73	46	224	231
2	109	215	209	202	200	153	209	148	83	44	189	253
3	110	201	210	203	199	156	245	141	117	42	164	203
4	111	201	208	201	200	165	249	135	121	47	150	175
5	105	196	208	204	216	160	255	128	129	51	134	158
6	108	190	209	207	216	160	250	125	116	48	133	143
7	111	192	211	206	214	164	242	120	100	68	128	136
8	114	193	213	200	210	173	346	107	88	78	124	125
9	119	217	212	202	204	178	652	109	75	160	109	114
10	115	267	212	202	203	172	658	115	73	88	101	107
11	118	301	209	203	199	166	625	118	61	88	98	707
12	116	272	206	203	196	155	777	107	58	84	99	774
13	111	227	198	200	197	161	918	108	63	88	93	224
14	108	219	195	199	197	156	806	101	67	136	87	210
15	115	211	197	200	196	155	653	99	67	569	85	736
16	127	207	195	198	199	170	488	100	72	715	85	694
17	129	200	196	196	195	198	351	95	67	429	95	449
18	136	195	202	197	194	211	269	91	64	260	102	339
19	142	196	211	199	195	204	218	93	65	221	118	286
20	143	192	212	198	198	185	186	92	66	128	136	285
21	145	193	214	198	194	167	168	89	73	188	128	274
22	279	198	210	196	187	161	156	90	68	183	117	268
23	239	199	212	195	172	158	151	93	65	166	109	1130
24	206	194	210	200	160	142	158	79	57	140	89	5260
25	200	192	211	200	146	139	160	73	54	203	87	1540
26	226	194	209	202	140	134	157	85	64	560	100	846
27	295	203	209	203	151	134	146	82	62	314	87	520
28	260	203	208	205	147	132	155	98	61	791	81	347
29	216	209	209	204	---	126	155	66	60	466	88	284
30	210	211	205	204	---	108	157	64	57	371	87	252
31	250	---	204	201	---	116	---	83	---	294	113	---
TOTAL	4881	6318	6425	6232	5325	4914	10126	3220	2246	7187	3540	17070
MEAN	157	211	207	201	190	159	338	104	74.9	232	114	569
MAX	295	301	214	207	216	211	918	160	129	791	224	5260
MIN	105	190	195	195	140	108	146	73	54	42	81	107
AC-FT	9680	12530	12740	12360	10560	9750	20080	6390	4450	14260	7020	33860
CFSM	.03	.05	.04	.04	.04	.03	.07	.02	.02	.05	.02	.12
IN.	.04	.05	.05	.05	.04	.04	.08	.03	.02	.06	.03	.14

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 1999, BY WATER YEAR (WY)

	MEAN	187	207	301	632	1143	1430	710	136	84.4	114	201	255
MAX	551	338	1350	7156	6160	4028	3050	317	123	232	616	1152	
(WY)	1941	1941	1941	1993	1993	1938	1941	1941	1992	1999	1992	1939	
MIN	106	169	195	198	180	159	118	85.2	61.3	48.4	103	83.0	
(WY)	1992	1939	1997	1936	1991	1999	1996	1939	1989	1997	1991	1989	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR			FOR 1999 WATER YEAR			WATER YEARS 1935 - 1999		
ANNUAL TOTAL	187061			27484					
ANNUAL MEAN	512			212			144		
HIGHEST ANNUAL MEAN							1413		
LOWEST ANNUAL MEAN							169		
HIGHEST DAILY MEAN	7090			5260			61407		
LOWEST DAILY MEAN	39			40			38		
ANNUAL SEVEN-DAY MINIMUM	46			48			40		
ANNUAL RUNOFF (AC-FT)	371000			153700			323300		
ANNUAL RUNOFF (CFSM)	.11			.046			.096		
ANNUAL RUNOFF (INCHES)	1.50			.62			1.31		
10 PERCENT EXCEEDS	1630			281			76		
50 PERCENT EXCEEDS	206			187			166		
90 PERCENT EXCEEDS	78			83			61		

## 09507500 FOSSIL CREEK DIVERSIONS TO CHILDS POWERPLANT, NEAR CAMP VERDE, AZ

LOCATION.--Lat 34°22'06", long 111°39'56", in NE1/4SW1/4 sec. 20, T.11 N., R.7 E. (unsurveyed), Yavapai County, Hydrologic Unit 15060203, at head of Stehr Lake, 2.3 mi northeast of Childs powerplant, 4.4 mi by flume downstream from Irving powerplant, and 17 mi southeast of Camp Verde.

PERIOD OF RECORD.--January 1962 to current year.

GAGE.--Water-stage recorder and weir in concrete flume. Datum of gage is 3,716.2 ft above sea level.

REMARKS.--Records good. Record is obtained at the head of Stehr Lake, a regulatory basin, and shows the water used by Childs powerplant. Most of the flow originates at Fossil Springs, which are fairly constant. Diversion is made from Fossil Creek 8 mi upstream from this station and is first used by Irving powerplant. A second diversion from Fossil Creek enters the flume below Irving powerplant. Based on estimates and records for previous years, the flow through the Irving powerplant is estimated to be about 99 percent of the record published herewith.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 58 ft<sup>3</sup>/s Aug. 1, 2, 1982; no flow at times in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	42	38	43	44	43	42	42	39	38	41	43
2	41	43	41	43	44	43	42	43	39	38	41	41
3	41	42	44	43	45	43	42	43	39	32	42	42
4	41	41	43	43	45	44	42	43	39	37	41	e41
5	33	41	43	43	45	44	43	43	39	37	41	e41
6	37	41	43	43	45	44	44	44	39	38	41	e41
7	41	41	42	43	44	44	42	44	39	38	43	e41
8	41	42	43	43	45	43	43	43	39	38	44	e41
9	41	42	42	43	45	43	43	42	39	38	43	41
10	41	41	42	43	45	43	42	42	39	38	32	41
11	41	41	42	44	45	43	42	42	39	39	42	42
12	41	41	43	44	45	43	42	42	39	39	43	43
13	41	41	43	43	45	43	41	42	39	39	42	42
14	41	41	43	43	45	43	42	42	39	39	41	42
15	41	41	43	44	45	43	42	42	39	39	42	42
16	41	41	42	44	44	43	42	42	39	39	42	41
17	41	42	43	43	44	43	42	42	39	39	42	41
18	41	42	43	44	43	e43	42	42	39	39	42	42
19	39	41	43	43	42	43	43	42	38	39	41	41
20	41	41	43	44	41	43	43	43	38	39	41	41
21	41	41	42	44	23	43	43	43	38	40	42	42
22	41	42	43	43	24	43	43	43	38	39	42	42
23	41	42	43	43	44	44	42	44	38	40	42	40
24	41	42	43	44	44	44	43	43	39	40	42	37
25	41	42	43	44	43	44	43	44	39	40	42	40
26	42	42	43	45	43	44	42	43	38	38	42	40
27	42	42	43	44	43	44	42	43	38	40	42	41
28	42	42	43	43	43	44	42	42	38	40	43	42
29	42	42	43	43	---	38	42	42	38	41	43	42
30	42	36	43	44	---	43	42	42	38	40	43	42
31	42	---	43	44	---	43	---	41	---	40	39	---
TOTAL	1263	1241	1321	1347	1193	1338	1270	1320	1160	1200	1289	1238
MEAN	40.7	41.4	42.6	43.5	42.6	43.2	42.3	42.6	38.7	38.7	41.6	41.3
MAX	42	43	44	45	45	44	44	44	39	41	44	43
MIN	33	36	38	43	23	38	41	41	38	32	32	37
AC-FT	2510	2460	2620	2670	2370	2650	2520	2620	2300	2380	2560	2460
CAL YR 1998	TOTAL	13856.43	MEAN	38.0	MAX	45	MIN	.00	AC-FT	27480		
WTR YR 1999	TOTA	15180	MEAN	41.6	MAX	45	MIN	23	AC-FT	30110		

e Estimated

## 09607580 EAST VERDE RIVER DIVERSION FROM EAST CLEAR CREEK, NEAR PINE, AZ

LOCATION.--Lat 34°25'04", long 111°15'47", in NW1/4NE1/4 sec.23, T.12 N., R.10 E. (unsurveyed), Gila County, Hydrologic Unit 15060203, on East Verde River at mouth of Mail Creek, 0.4 mi southeast of Washington Park, and 11 mi east of Pine

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder and weir in concrete flume. Datum of gage is 5,773.80 ft above sea level (Phelps Dodge Corporation reference mark).

REMARKS.--No estimated daily discharges. Records excellent. Diversion is 9.5 mi northeast from Blue Ridge Reservoir, on East Clear Creek, in the Little Colorado River basin, to the East Verde River in the Gila River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 34 ft<sup>3</sup>/s Apr. 19, 29, May 5-7, 10, 12, 15, 18, June 2, 1969; no flow for long periods most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	16	18	18	17	.00	.00	.00	14	13	13	5.2
2	18	16	18	18	6.7	.00	.00	.00	14	14	14	14
3	17	16	18	18	.08	.00	.00	.00	14	14	14	13
4	17	16	18	18	.04	.00	.00	.00	14	13	13	14
5	17	13	18	18	.00	.00	.00	.00	14	14	14	13
6	17	17	17	18	.00	.00	.00	.00	14	14	13	14
7	17	18	18	18	.00	.00	.00	.00	14	14	14	13
8	17	18	17	17	.00	.00	.00	.00	14	13	13	14
9	17	18	17	18	.00	.00	.00	.00	14	14	14	13
10	17	7.2	18	18	.00	.00	.00	.00	14	14	13	14
11	17	13	18	17	.00	.00	.00	.00	14	13	14	13
12	17	20	18	18	.00	.00	.00	.00	14	14	13	13
13	12	17	17	18	.00	.00	.00	.00	14	14	14	13
14	10	17	18	17	.00	.00	.00	.00	14	13	13	13
15	16	18	17	18	.00	.00	.00	.00	14	14	14	12
16	16	18	18	18	.00	.00	.00	.00	14	14	13	13
17	16	18	18	17	.00	.00	.00	.00	13	13	14	14
18	16	18	18	18	.00	.00	.00	.00	14	14	4.2	13
19	16	16	18	17	.00	.00	.00	.00	14	14	.08	14
20	16	18	17	17	.00	.00	.00	.00	14	13	.05	13
21	16	18	18	17	.00	.00	.00	.00	13	14	.00	14
22	16	18	18	17	.00	.00	.00	.00	14	14	.00	13
23	16	18	17	17	.00	.00	.00	.00	14	12	.00	14
24	16	18	18	18	.00	.00	.00	.00	14	9.7	.00	13
25	16	18	18	17	.00	.00	.00	.00	14	12	.00	14
26	16	18	18	17	.00	.00	.00	.00	14	14	.00	13
27	16	18	18	17	.00	.00	.00	4.8	14	13	.00	14
28	16	18	12	18	.00	.00	.00	14	13	14	.00	14
29	16	18	.04	17	---	.00	.00	14	14	14	.00	13
30	16	18	8.4	17	---	.00	.00	13	14	13	.00	14
31	16	---	18	18	---	.00	---	14	---	14	3.5	---
TOTAL	501	510.2	517.44	544	23.82	0.00	0.00	59.80	417	416.7	237.83	394.2
MEAN	16.2	17.0	16.7	17.5	.85	.00	.000	1.93	13.9	13.4	7.67	13.1
MAX	19	20	18	18	17	.00	.00	14	14	14	14	14
MIN	10	7.2	.04	17	.00	.00	.00	.00	13	9.7	.00	5.2
AC-FT	994	1010	1030	1080	47	.00	.00	119	327	827	472	732
CAL YR	1998	TOTAL	5736.80	MEAN	15.7	MAX	20	MIN	.00	AC-FT	11380	
WTR YR	1999	TOTAL	3621.99	MEAN	9.92	MAX	20	MIN	.00	AC-FT	7180	

## GILA RIVER BASIN

## 09507980 EAST VERDE RIVER NEAR CHILDS, AZ

LOCATION.--Lat 34°16'35", long 111°38'17", in sec.21, T.11 N., R.7 E. (unsurveyed), Gila County Hydrologic Unit 15060203, in Tonto National Forest, on left bank 1.6 mi upstream from mouth and 6 mi southeast of Childs.

DRAINAGE AREA.--331 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1961 to December 1965, May 1967 to current year.

REVISED RECORDS.--WDR AZ-89-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,500 ft above sea level, from topographic map. Sept. 1, 1961, to Dec. 15, 1965, at site 1 mi upstream at elevation of 2,600 ft above sea level, datum raised 0.38 ft Oct. 4, 1963. May 25, 1967, to July 20, 1972, at present site at datum 3.29 ft higher, datum lowered 2.00 ft Jan. 7, 1993.

REMARKS.--No estimated daily discharges. Records fair. Since September 30, 1965, records include transbasin diversions from East Clear Creek to headwaters of East Verde River. (See sta 09507580 and 09398300.)

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,500 ft<sup>3</sup>/s Sept. 5, 1970, gage height, 22.5 ft, present datum, from profile past gage, from rating curve extended above 960 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 12.11 and 22.5 ft, present datum; no flow June 11-13, June 18-July 7, July 9, 19-27, 1996

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft<sup>3</sup>/s and maximum (\*).

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 24 .....	0700	*1,930	*4.55
Aug. 30 .....	2200	1,730	4.38

Minimum daily discharge, .19 ft<sup>3</sup>/s, June 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	25	30	13	24	7.7	9.4	7.8	1.0	3.1	19	135
2	21	24	28	18	25	7.6	19	7.7	1.7	3.2	16	37
3	22	24	54	21	26	7.2	19	7.4	2.0	3.1	15	30
4	22	24	56	21	22	6.8	19	7.3	1.2	3.3	14	15
5	21	23	33	21	25	6.9	19	6.6	.99	3.2	15	14
6	22	23	33	21	22	6.9	25	5.9	.93	4.1	16	13
7	19	22	32	21	19	7.2	59	5.3	.67	5.6	15	13
8	20	24	29	21	16	7.7	92	4.3	.43	7.6	14	12
9	19	30	28	21	14	7.1	55	4.0	.30	9.6	13	11
10	19	34	27	21	12	7.2	24	3.0	.25	9.9	17	12
11	19	28	26	21	11	7.1	20	2.4	.21	17	16	12
12	19	23	26	21	10	6.8	19	1.9	.19	59	15	15
13	20	21	25	20	10	6.7	20	1.7	.49	37	13	13
14	21	25	25	21	9.8	6.5	18	1.5	1.9	22	13	13
15	20	24	25	20	9.5	6.2	17	1.3	2.7	62	13	64
16	18	24	24	20	10	6.4	16	1.4	3.4	161	13	35
17	20	24	24	21	11	8.5	14	1.3	3.5	41	12	24
18	22	23	24	21	10	8.2	13	1.4	3.9	24	12	51
19	22	23	26	20	9.6	8.4	12	1.3	3.9	62	14	31
20	22	24	25	19	9.2	7.7	12	1.4	4.1	39	14	36
21	23	24	25	18	8.8	6.7	11	1.5	5.2	24	8.7	25
22	24	24	25	18	9.0	6.1	11	1.5	5.3	78	5.2	20
23	25	24	24	18	9.5	5.7	9.9	1.4	4.6	79	3.3	44
24	25	25	24	18	9.0	5.6	9.4	1.4	4.5	685	2.5	290
25	26	25	24	18	8.5	5.6	9.1	1.6	3.7	91	2.4	91
26	54	25	25	24	8.8	5.4	9.0	1.5	3.1	181	2.2	39
27	75	24	25	26	8.2	5.4	8.4	1.4	3.2	52	2.4	25
28	36	26	25	25	8.0	5.3	7.8	1.3	2.9	35	2.3	20
29	27	37	25	24	---	5.0	7.2	1.3	3.2	29	3.1	18
30	26	39	22	24	---	4.8	7.1	1.2	3.2	31	124	17
31	25	---	16	24	---	4.5	---	1.1	---	24	190	---
TOTAL	779	765	860	640	374.9	204.9	591.3	90.1	-2.66	1887.1	635.1	1165
MEAN	25.1	25.5	27.7	20.6	13.4	6.61	19.7	2.91	2.42	60.9	20.5	38.8
MAX	78	39	56	26	26	8.5	92	7.8	5.3	685	190	290
MIN	13	21	16	13	8.0	4.5	7.1	1.1	.19	3.1	2.2	11
AC-FT	1550	1520	1710	1270	744	406	1170	179	144	3740	1260	2310
CFSM	.03	.08	.08	.06	.04	.02	.06	.01	.01	.18	.06	.12
IN.	.09	.09	.10	.07	.04	.02	.07	.01	.01	.21	.07	.13

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1999, BY WATER YEAR (WY)

	MEAN	27.3	33.7	60.1	134	168	180	90.4	29.5	18.2	21.2	35.1	31.3
MAX	308	157	443	1819	1147	968	421	115	48.8	60.9	203	282	
(WY)	1973	1979	1979	1993	1980	1978	1998	1973	1980	1999	1992	1970	
MIN	.73	.83	1.42	2.25	3.69	6.29	4.29	1.79	.43	.35	1.17	.73	
(WY)	1992	1963	1963	1963	1964	1977	1963	1963	1996	1963	1962	1972	

## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1961 - 1999

ANNUAL TOTAL	37371.1	8065.06	
ANNUAL MEAN	102	22.1	58.8
HIGHEST ANNUAL MEAN			290
LOWEST ANNUAL MEAN			10.5
HIGHEST DAILY MEAN	2890	Mar 29	11000
LOWEST DAILY MEAN	8.1	Jul 4	.00
ANNUAL SEVEN-DAY MINIMUM	12	Jun 30	.00
ANNUAL RUNOFF (AC-FT)	74130	16000	49840
ANNUAL RUNOFF (CFSM)	.31	.067	.21
ANNUAL RUNOFF (INCHES)	4.20	.91	2.82
10 PERCENT EXCEEDS	203	34	107
50 PERCENT EXCEEDS	26	17	24
90 PERCENT EXCEEDS	18	2.4	2.4

## 09507980 EAST VERDE RIVER NEAR CHILDS, AZ--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD--December 1990 to current year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

		DIS-CHARGE, INST. CUBIC FEET PER SECOND (000061)	SPE-CIFIC CON-DUCT-ANCE (US CM) (000095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (000400)	TEMPER-ATURE AIR (DEG C) (000020)	TEMPER-ATURE WATER (DEG C) (000010)	TUR-BID-ITY (NTU) (000076)	BARO-METRIC PRES-SURE (MM HG) (000025)	OXYGEN, DIS-SOLVED (PER-CENT) (000300)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (000340)	
OCT 28...	1450	34	310	8.4	25.5	17.0	24	672	8.6	101	<10
NOV 24...	1240	25	342	8.2	27.5	11.3	.98	694	10.3	103	--
FEB 24...	1000	8.8	434	8.4	19.5	11.0	.42	697	9.9	99	<5
MAR 24...	1045	5.9	423	8.3	23.5	14.7	.40	693	10.1	110	<5
APR 28...	1330	7.5	404	8.4	28.0	20.6	.43	685	8.8	110	<5
AUG 25...	1240	2.4	428	8.2	37.0	30.6	2.4	691	7.6	112	<5
DATE	COLI-FORM, 0.7 UM-MF (COLS./100 ML) (31625)	E. COLI, WHOLE TOTAL UREASE (COL /100 ML) (31633)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CaCO3) (00900)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L) (00904)	CALCIUM TOTAL RECOV-ERABLE (MG/L AS Ca) (00916)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS Mg) (00927)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	SODIUM AD-SORP-TION RATIO (00931)
OCT 28...	290	230	230	150	--	44	37	16	14	8.6	.3
NOV 24...	K1	K3	--	170	11	43	42	17	16	7.7	.3
FEB 24...	<1	K2	--	190	--	45	45	20	20	18	.6
MAR 24...	<1	K1	--	180	--	39	39	19	20	21	.7
APR 28...	K1	<1	--	170	--	37	36	19	20	18	.6
AUG 25...	--	--	--	150	--	35	34	18	17	28	1
DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, WATER DIS IT (MG/L AS HCO3) (00453)	CAR-BONATE, WATER DIS IT (MG/L AS CO3) (00452)	ALKA-LINITY, WAT DIS TOT IT (MG/L AS CaCO3) (39036)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C (MG/L) (00300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (00301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (00303)
OCT 28...	1.4	167	12	158	5.6	6.5	.17	9.8	182	178	.25
NOV 24...	1.0	185	5	160	4.2	4.6	.16	--	200	172	.27
FEB 24...	1.5	250	5	213	7.1	10	.26	--	245	230	.33
MAR 24...	1.7	249	0	204	7.5	11	.31	--	242	223	.33
APR 28...	1.8	235	2	197	7.3	10	.29	--	228	211	.31
AUG 25...	2.7	220	6	190	6.1	14	.48	--	244	217	.33
DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ANTI-MONY, TOTAL (UG/L AS Sb) (01097)	ANTI-MONY, DIS-SOLVED (UG/L AS Sb) (01095)
OCT 28...	32	<.020	<.010	--	.24	--	.040	1200	66.2	<1	<1.0
NOV 24...	1	<.020	<.010	--	.20	--	.020	--	--	<1	<1.0
FEB 24...	<1	<.020	.030	--	<.20	.04	.030	--	--	<1	<1.0
MAR 24...	<1	<.020	.040	--	<.20	.05	.100	--	--	<1	<1.0
APR 28...	2	<.020	.030	--	<.20	.04	<.020	--	--	<1	<1.0
AUG 25...	2	<.020	.020	.25	.27	.03	<.020	--	--	<1	<1.0

## GILA RIVER BASIN

## 09507980 EAST VERDE RIVER NEAR CHILDS, AZ--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	ARSENIC	ARSENIC	BARIUM,	BARIUM,	BERYL-	BERYL-	BORON,	BORON,	CADMIUM	CADMIUM	CHRO-
	TOTAL (UG/L AS AS) (01002)	DIS- SOLVED (UG/L AS AS) (01000)	TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	DIS- SOLVED (UG/L AS BA) (01005)	LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	LIUM, DIS- SOLVED (UG/L AS BE) (01010)	TOTAL RECOV- ERABLE (UG/L AS B) (01022)	DIS- SOLVED (UG/L AS B) (01020)	WATER UNPLTRD TOTAL (UG/L AS CD) (01027)	DIS- SOLVED (UG/L AS CD) (01025)	MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)
OCT 28...	8	9	56	46	<.1	<1.6	60	54	--	<8.0	<4
NOV 24...	11	10	46	45	<.5	<.50	60	--	<1	<.50	<1
FEB 24...	28	24	54	55	<.5	<.50	120	--	<1	<.50	<1
MAR 24...	35	35	49	50	<.5	<.50	150	--	<1	<.50	<1
APR 28...	31	31	49	49	<.5	<.50	130	130	<1	<.50	<1
AUG 25...	67	66	48	48	<.5	<.50	270	270	<1	<.50	<1
DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)
OCT 28...	<14	1	<7.0	3	<10	--	67.0	1	<100	10	6
NOV 24...	<1.0	--	--	<1	<1.0	40	2.8	<1	<1.0	--	--
FEB 24...	<1.0	--	--	<1	<1.0	40	4.9	<1	<1.0	--	--
MAR 24...	<1.0	--	--	<1	<1.0	30	7.9	<1	<1.0	--	--
APR 28...	<1.0	--	--	<1	<1.0	40	5.3	<1	<1.0	--	--
AUG 25...	<1.0	--	--	<1	<1.0	120	5.8	<1	<1.0	--	--
DATE	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)
OCT 28...	40	<3.0	<.10	<.1	<1	<50	2	<40	<4	<1	<1
NOV 24...	6	3.9	<.10	<.1	--	--	<1	<1.0	<1	<1	<1
FEB 24...	9	7.1	<.10	<.1	--	--	<1	<1.0	<1	<1	<1
MAR 24...	7	5.6	<.10	<.1	--	--	<1	<1.0	<1	<1	<1
APR 28...	8	5.7	<.10	<.1	--	--	<1	<1.0	<1	<1	<1
AUG 25...	28	17	<.10	<.1	--	--	<1	<1.0	<1	<1	<1
DATE	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	THAL- LIUM, TOTAL RECOV- ERABLE (UG/L AS TL) (01059)	THAL- LIUM, DIS- SOLVED (UG/L AS TL) (01057)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	
OCT 28...	<4.0	110	109	<1	--	<10	6.4	<20	38	3.5	
NOV 24...	<1.0	--	--	<2	2.0	--	1.8	1.3	11	.75	
FEB 24...	<1.0	--	--	<2	<2.0	--	1.0	<1.0	3	.07	
MAR 24...	<1.0	--	--	<2	<2.0	--	<1.0	<1.0	1	.02	
APR 28...	<1.0	--	--	<2	<2.0	--	1.1	<1.0	<1	--	
AUG 25...	<1.0	--	--	<2	<2.0	--	2.8	1.1	4	.03	

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").



**09508300 WET BOTTOM CREEK NEAR CHILDS, AZ**  
(Hydrologic bench mark station)

**LOCATION**--Lat 34°09'39", long 111°41'32", in sec.36, T.9 N., R.6 E. (unsurveyed), Gila County, Hydrologic Unit 15060203, in Tonto National Forest, on right bank 1.4 mi upstream from mouth and 13 mi south of Childs.

**DRAINAGE AREA**--36.4 mi<sup>2</sup>.

**PERIOD OF RECORD**--June 1967 to current year.

**REVISED RECORDS**--WRD Ariz. 1970: 1988(M).

**GAGE**--Water-stage recorder. Elevation of gage is 2,320 ft above sea level, from topographic map.

**REMARKS**--No estimated daily discharges. Records fair.

**EXTREMES FOR PERIOD OF RECORD**--Maximum discharge, 7,380 ft<sup>3</sup>/s Jan. 8, 1993, gage height, 18.36 ft, from slope-area measurement of peak flow; no flow for many days most years.

**EXTREMES FOR CURRENT YEAR**--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 8 .....	0015	104	5.31
Sept. 23 .....	2400	221	5.82

No flow for many days during the year.

**DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999**  
**DAILY MEAN VALUES**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.28	.38	.65	.48	.53	.49	.58	.00	.00	2.3	.36
2	.00	.28	1.3	.65	.47	.52	1.1	.57	.00	.00	1.6	.29
3	.00	.28	3.2	.65	.47	.49	.92	.52	.02	.00	1.1	.24
4	.00	.25	8.2	.65	.53	.48	12	.50	.04	.00	.74	.21
5	.00	.27	5.6	.62	.90	.47	18	.45	.02	.00	.51	.20
6	.00	.28	4.0	.59	.80	.47	47	.42	.05	.00	.51	.17
7	.00	.28	3.5	.58	3.4	.49	61	.38	.00	.00	.38	.13
8	.00	.29	3.0	.58	4.2	.50	65	.36	.00	.00	.29	.08
9	.00	.35	2.7	.58	2.8	.47	41	.32	.00	.00	.24	.00
10	.00	.28	2.4	.58	2.1	.45	26	.31	.00	.00	.23	.08
11	.00	.26	2.0	.58	1.5	.42	19	.29	.00	.00	.22	3.4
12	.00	.28	1.8	.58	1.2	.42	17	.26	.00	.00	.15	1.3
13	.00	.28	1.6	.55	1.0	.42	19	.24	.00	.00	.08	.61
14	.00	.26	1.5	.53	.94	.42	18	.22	.00	.00	.00	1.9
15	.00	.27	1.4	.53	.86	.42	14	.20	.00	.41	.12	46
16	.02	.27	1.2	.53	.85	.41	11	.20	.00	.46	.08	24
17	.12	.26	1.1	.53	.77	.43	7.3	.18	.00	.23	.00	11
18	.12	.26	1.1	.53	.71	.42	5.2	.16	.00	.17	.00	5.7
19	.12	.28	1.0	.53	.65	.42	3.7	.14	.00	.17	.00	5.8
20	.13	.24	.95	.53	.65	.42	2.8	.12	.00	.13	.00	6.9
21	.17	.27	.92	.53	.65	.39	2.1	.11	.00	.01	.00	4.4
22	.24	.28	.86	.52	.62	.38	1.6	.07	.00	.00	.00	2.5
23	.23	.28	.86	.53	.58	.38	1.3	.05	.00	.00	.00	26
24	.21	.28	.79	.53	.58	.37	1.1	.04	.00	6.9	.00	104
25	.23	.28	.78	.53	.54	.37	.91	.03	.00	14	.00	35
26	.44	.28	.78	.53	.53	.37	.84	.02	.00	13	.00	17
27	.33	.28	.78	.53	.53	.36	.75	.00	.00	6.4	.00	10
28	.24	.38	.73	.52	.53	.37	.65	.00	.00	3.3	.39	5.7
29	.21	.57	.71	.50	---	.34	.61	.00	.00	2.1	1.3	3.4
30	.30	.42	.71	.49	---	.33	.58	.00	.00	2.6	.28	2.3
31	.38	---	.67	.49	---	.32	---	.00	---	3.3	.24	---
TOTAL	3.49	8.82	56.52	17.25	29.84	13.05	399.95	6.74	0.13	53.18	10.77	318.67
MEAN	.11	.29	1.82	.56	1.07	.42	13.3	.22	.004	1.72	.35	10.6
MAX	.44	.57	8.2	.65	4.2	.53	.65	.58	.05	14	2.3	104
MIN	.00	.24	.38	.49	.47	.32	.49	.00	.00	.00	.00	.00
AC-FT	6.9	17	112	34	59	26	793	13	.3	105	21	632
CFSM	.00	.01	.05	.02	.03	.01	.37	.01	.00	.05	.01	.29
IN.	.00	.01	.06	.02	.03	.01	.41	.01	.00	.05	.01	.33

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1999, BY WATER YEAR (WY)**

	4.90	7.59	20.5	40.3	44.2	46.9	10.4	.62	.088	1.08	4.31	3.21
MEAN	4.90	7.59	20.5	40.3	44.2	46.9	10.4	.62	.088	1.08	4.31	3.21
MAX	103	52.0	111	373	345	321	56.6	2.07	.55	12.0	48.3	27.1
(WY)	1973	1979	1968	1993	1980	1978	1998	1983	1979	1985	1992	1970
MIN	.010	.17	.28	.26	.56	.29	.085	.000	.000	.000	.000	.000
(WY)	1974	1976	1970	1970	1996	1977	1972	1972	1970	1970	1972	1972

**SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1967 - 1999**

ANNUAL TOTAL	6192.85	918.41	
ANNUAL MEAN	17.0	2.52	15.2
HIGHEST ANNUAL MEAN			47.2
LOWEST ANNUAL MEAN			.45
HIGHEST DAILY MEAN	481	Mar 28	3410
LOWEST DAILY MEAN	.00	Jun 17	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jun 17	.00
ANNUAL RUNOFF (AC-FT)	12280	1820	11050
ANNUAL RUNOFF (CFSM)	.47	.069	.42
ANNUAL RUNOFF (INCHES)	6.33	.94	5.69
10 PERCENT EXCEEDS	47	3.8	22
50 PERCENT EXCEEDS	.38	.42	.52
90 PERCENT EXCEEDS	.00	.00	.00

## GILA RIVER BASIN

## 09508500 VERDE RIVER BELOW TANGLE CREEK, ABOVE HORSESHOE DAM, AZ

LOCATION.--Lat 34°04'23", long 111°42'56", in sec.35, T.9 N., R.6 E. (unsurveyed), Yavapai County, Hydrologic Unit 15060203, in Tonto National Forest, on right bank 1.3 mi downstream from Tangle Creek and 9 mi upstream from Horseshoe Dam.

DRAINAGE AREA.--5,858 mi<sup>2</sup>, of which 365 mi<sup>2</sup> is noncontributing, including 357 mi<sup>2</sup> in Aubrey Valley Playa, a closed basin.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1945 to current year.

REVISED RECORDS.--WDR AZ-89-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,029.0 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. About 12,500 acres above station are irrigated by surface water and ground water. Low flow slightly regulated by powerplant 32 mi above station, using water from Fossil Creek. This station is above all major reservoirs on Verde River.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 145,000 ft<sup>3</sup>/s Jan. 8, 1993, gage height, 23.4 ft, from slope-area measurement of peak flow; minimum, 48 ft<sup>3</sup>/s June 17, 1956, July 18, 19, 1958, caused by power regulation on Fossil Creek; minimum daily, 61 ft<sup>3</sup>/s July 18, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1888, 150,000 ft<sup>3</sup>/s Feb. 24, 1891, based on comparison with peak discharge at other stations on Verde River.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 24.....	0910	*12,400	*12.69

Minimum daily discharge, 67 ft<sup>3</sup>/s July 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	159	317	312	271	280	190	169	200	112	90	372	307
2	156	295	311	269	277	189	286	205	118	87	295	465
3	157	278	301	273	281	189	338	190	114	81	255	359
4	156	267	345	274	284	190	358	182	133	78	232	274
5	159	265	327	272	325	200	373	176	148	67	209	242
6	152	263	319	278	316	196	382	171	155	92	199	219
7	151	256	325	283	307	195	400	168	149	97	187	200
8	153	259	318	283	299	208	471	161	134	89	178	190
9	158	274	318	277	288	214	531	145	121	114	173	181
10	167	292	313	281	282	221	791	146	112	177	161	173
11	165	348	307	281	274	217	682	152	104	158	155	229
12	167	373	304	282	267	212	697	158	100	141	149	1080
13	167	322	299	282	265	196	849	141	92	175	148	428
14	162	298	291	279	264	202	928	141	91	174	144	331
15	157	288	286	278	265	191	750	136	94	300	140	503
16	163	280	288	280	262	192	628	133	96	768	137	669
17	175	279	288	278	262	222	505	131	101	689	138	542
18	183	272	291	277	260	255	412	130	101	632	143	459
19	194	262	296	276	259	270	333	126	98	381	150	414
20	196	263	303	279	257	267	288	125	95	328	166	395
21	206	266	302	275	255	247	249	126	94	291	181	371
22	216	270	308	274	255	225	220	121	99	270	174	363
23	343	270	303	272	237	214	193	118	99	318	164	519
24	322	276	297	271	228	212	186	120	93	377	158	7350
25	298	277	290	275	213	200	193	116	97	378	142	3160
26	323	276	292	280	196	190	201	111	89	410	132	1170
27	366	279	295	281	186	185	197	116	87	520	146	701
28	407	291	298	280	191	184	184	115	93	522	144	501
29	348	313	288	279	---	180	187	117	91	495	146	410
30	299	312	284	282	---	170	193	116	91	465	134	357
31	289	---	280	282	---	151	---	114	---	430	353	---
TOTAL	6714	8581	9379	8604	7335	6374	12174	4407	3206	9194	5605	22562
MEAN	217	286	303	278	262	206	406	142	107	297	181	752
MAX	407	373	345	283	325	270	928	205	155	768	372	7350
MIN	151	256	280	269	186	151	169	111	67	67	132	173
MED	167	278	301	278	264	200	348	133	99	291	158	402
AC-FT	13320	17020	18600	17070	14550	12640	24150	8740	6360	18240	11120	44750
CFSM	.04	.05	.06	.05	.05	.04	.07	.03	.02	.05	.03	.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1999, BY WATER YEAR (WY)

	MEAN	326	364	729	854	1211	1548	873	216	134	180	326	283
MAX	4194	1384	4644	12420	11020	10420	5638	1322	316	430	1184	1463	
(WY)	1973	1966	1979	1993	1980	1978	1973	1973	1955	1953	1951	1970	
MIN	155	192	227	224	220	194	155	113	82.6	75.5	127	98.5	
(WY)	1951	1963	1951	1961	1964	1972	1963	1963	1963	1958	1962	1956	

## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1946 - 1999

ANNUAL TOTAL	279434	104135	584
ANNUAL MEAN	766	285	
HIGHEST ANNUAL MEAN			2229
LOWEST ANNUAL MEAN			189
HIGHEST DAILY MEAN	15900	7350	110000
LOWEST DAILY MEAN	94	67	61
ANNUAL SEVEN-DAY MINIMUM	108	84	63
ANNUAL RUNOFF (AC-FT)	554300	206600	423100
ANNUAL RUNOFF (CFSM)	.14	.052	.11
10 PERCENT EXCEEDS	2060	403	920
50 PERCENT EXCEEDS	288	259	239
90 PERCENT EXCEEDS	142	116	122

09508500 VERDE RIVER BELOW TANGLE CREEK ABOVE HORSESHOE DAM, AZ--Continued  
(National Water-Quality Assessment Station)

## WATER-QUALITY RECORDS

PERIOD OF RECORD--October 1980 to current year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US 'CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00075)	BARO- METRIC PRES- SURE OF HG (00025)	OXYGEN, DIS- SOLVED CENT (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (00340)
DEC 30...	1305	288	609	8.4	25.5	10.8	-1.6	704	10.6	106	<5
FEB 24...	1315	233	600	8.6	26.5	13.9	.61	708	10.9	114	<5
MAR 24...	1345	211	629	8.6	25.0	17.3	1.1	704	10.3	116	<5
MAY 18...	1255	127	658	8.4	30.5	21.5	.30	702	8.6	106	<5
JUN 23...	1220	96	712	8.4	36.5	26.6	.17	703	7.8	106	<5
SEP 29...	1410	413	514	8.4	31.5	21.2	80	707	7.5	91	12
DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL 100 ML) (31633)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	CALCIUM TOTAL RECOV- ERABLE (MG/L AS CA) (00916)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, TOTAL DIS- SOLV- ERABLE (MG/L AS MG) (00927)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
DEC 30...	<3	<3	250	24	50	49	32	32	35	1	2.2
FEB 24	K2	K1	240	2	45	46	31	31	36	1	2.2
MAR 24...	33	24	250	13	48	47	32	33	37	1	2.5
MAY 18...	K7	K3	250	24	44	43	35	35	43	1	2.5
JUN 23...	K13	K1	250	26	44	39	38	36	53	1	3.3
SEP 29...	160	K28	200	--	52	45	26	22	27	.8	3.0
DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITV WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
DEC 30...	267	7	231	53	21	.27	349	331	.47	2	<.020
FEB 24...	267	13	241	51	22	.30	353	333	.48	4	<.020
MAR 24...	279	7	241	59	24	.31	383	347	.52	19	<.020
MAY 18...	255	11	227	33	30	.35	413	374	.56	8	<.020
JUN 23...	253	7	219	96	34	.36	425	395	.58	31	<.020
SEP 29...	240	7	209	39	15	.24	324	276	.44	93	.150
DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ANTI- MONY, TOTAL (UG/L AS SB) (01097)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
DEC 30...	.020	--	<.20	E.20	.03	E1.0	<.020	<1	<1.0	17	17
FEB 24...	.020	--	<.20	E.20	.03	E1.0	.030	<1	<1.0	19	18
MAR 24...	.040	--	<.20	E.20	.05	E1.0	.040	<1	<1.0	18	19
MAY 18...	.020	--	<.20	E.20	.03	E1.0	<.020	<1	<1.0	22	21
JUN 23...	<.010	--	<.20	E.20	--	E1.0	.020	<1	<1.0	22	22
SEP 29...	.050	.33	.38	.53	.06	2.3	.140	<1	<1.0	21	18

## GILA RIVER BASIN

09608500 VERDE RIVER BELOW TANGLE CREEK ABOVE HORSESHOE DAM, AZ--Continued  
(National Water-Quality Assessment Station)

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)
DEC 30...	84	82	<.5	<.50	160	--	<1	<.50	<1	<1.0	<1
FEB 24...	79	80	<.5	<.50	160	--	<1	<.50	<1	<1.0	<1
MAR 24...	85	81	<.5	<.50	170	--	<1	<.50	<1	<1.0	<1
MAY 18...	70	70	<.5	<.50	200	200	<1	<.50	<1	<1.0	<1
JUN 23...	73	61	<.5	<.50	240	230	<1	<.50	<1	<1.0	1
SEP 29...	120	86	<.5	<.50	140	120	<1	<.50	4	<1.0	4
DATE	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)
DEC 30...	<1.0	60	1.8	<1	<1.0	5	2.8	<.10	<.1	2	<1.0
FEB 24...	<1.0	90	3.2	<1	<1.0	7	3.4	<.10	<.1	<1	<1.0
MAR 24...	<1.0	330	2.2	<1	<1.0	18	6.1	<.10	<.1	2	1.0
MAY 18...	<1.0	150	<1.0	<1	<1.0	11	4.3	<.10	<.1	1	<1.0
JUN 23...	<1.0	440	<1.0	<1	<1.0	25	4.4	<.10	<.1	2	<1.0
SEP 29...	<1.0	2100	1.9	2	<1.0	100	4.1	<.10	<.1	7	2.0
DATE	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	THAL- LIUM, TOTAL RECOV- ERABLE (UG/L AS TL) (01059)	THAL- LIUM, DIS- SOLVED (UG/L AS TL) (01057)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)
DEC 30...	<1	2	<1	<1.0	<2	<2.0	2.4	1.9	--	9	7.0
FEB 24...	<1	<1	<1	<1.0	<2	<2.0	1.3	<1.0	--	23	14
MAR 24...	1	<1	<1	<1.0	<2	<2.0	2.4	<1.0	--	36	21
MAY 18...	<1	<1	<1	<1.0	<2	<2.0	<1.0	<1.0	--	20	6.9
JUN 23...	<1	<1	<1	<1.0	<2	<2.0	2.8	2.5	--	30	7.8
SEP 29...	<1	<1	<1	<1.0	<2	<2.0	12	3.4	100	89	99

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text: section titled "Identifying Estimated Pesticide Concentrations").

## 09609500 RESERVOIR SYSTEM ON VERDE RIVER AT AND BELOW HORSESHOE DAM, AZ

**LOCATION**--This system comprises two storage reservoirs created by Horseshoe and Bartlett Dams on Verde River, Maricopa and Yavapai County, Hydrologic Unit 15060203. Gages on Horseshoe Reservoir, formed by Horseshoe Dam, lat 33°59'05", long 111°42'35", in sec. 2, T. 7 N., R. 6 E. (unsurveyed); and Bartlett Reservoir, formed by Bartlett Dam, lat 33°49'05", long 111°37'52", in sec. 34, T. 6 N., R. 7 E. (unsurveyed).

**DRAINAGE AREA**--6,157 mi<sup>2</sup> (at Bartlett Dam), of which 366 mi<sup>2</sup> is noncontributing, including 357 mi<sup>2</sup> in Aubrey Valley Playa, a closed basin.

**PERIOD OF RECORD**--July 1939 to current year. Prior to 1946 published as Bartlett Reservoir at Bartlett Dam.

**REVISED RECORDS**--WDR AZ-89-1: Drainage area.

**GAGE**--Water-stage recorders on dam structures. Datum of gage on Horseshoe Reservoir is 1,900.00 ft and on Bartlett Reservoir 1,599.46 ft above sea level. Prior to Oct. 14 1964, Bartlett Reservoir gage datum was 10.00 ft higher.

**REMARKS**--Horseshoe Reservoir is formed by earthfill and rockfill dam; dam completed and storage began Nov. 15, 1945. Bartlett Reservoir is formed by concrete multiple-arch dam; dam completed May 1939 and storage began Feb. 5, 1939. Total capacity of the two reservoirs (capacity tables dated 1978, based on survey in 1977-78) is 309,600 acre-ft divided as follows: Horseshoe Reservoir, 131,400 acre-ft between elevations 1,915.0 ft - sill of outlet gate - and 2,026.0 ft - top of spillway gates; Bartlett Reservoir 178,200 acre-ft between elevations 1,619.46 ft - 10 ft above sill of outlet gates - and 1,797.46 ft - top of spillway gates. No dead storage. Records given herein represent usable contents. Water is used for irrigation of Salt River Valley and for municipal supply.

**COOPERATION**--Capacity tables furnished by Salt River Valley Water Users' Association.

**EXTREMES FOR PERIOD OF RECORD**--Maximum contents of system, 318,000 acre-ft May 9, 1973; no storage at times when natural flow of river was passed through reservoir system.

**EXTREMES FOR CURRENT YEAR**--Maximum contents of system, 171,400 acre-ft Oct. 1; minimum, 65,350 acre-ft Feb. 28.

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	171400	123000	110800	101800	84920	65560	e71690	e92350	e91570	88180	102200	104800
2	169800	122600	110800	101300	85040	65800	e72160	e92440	e91430	88050	102600	105500
3	168000	122500	110700	100700	85210	66020	e72740	e92510	e91350	87800	102900	106000
4	166200	122200	110700	100100	85480	66180	e73360	e92590	e91200	87650	103200	106200
5	164100	121800	110800	99330	85880	66450	e73920	e92720	e91130	87510	103200	106400
6	161800	121200	111000	99170	86030	66690	e74590	e92810	e91120	87340	103500	106600
7	159600	120600	111200	98910	85940	66870	e75280	e93010	e91040	87200	103600	106600
8	157200	120100	111500	98630	85820	67100	e75970	e93060	e91170	86990	103700	106500
9	154400	119600	111600	98450	85580	67370	e76870	e92010	e91060	86880	103700	106500
10	152200	118800	111700	98260	85160	67600	e78160	e92950	e92010	86960	103700	106500
11	150200	118400	111600	98010	84550	67770	e79770	e93040	90720	86990	103700	106700
12	148300	118200	111600	97620	83940	67990	e81090	e92900	90710	86980	103600	106400
13	146200	118000	111800	97130	83210	68200	e82540	e92870	90630	87030	103500	109200
14	144000	117700	111900	96510	82420	68430	e84110	e92950	90500	87170	103600	109700
15	141600	117500	111800	96450	81130	68650	e86050	e92910	90400	87920	103500	110700
16	139500	117200	111700	96220	79840	68810	e87620	e92810	90320	89390	103500	112200
17	137500	116700	111500	95980	78600	69050	e88530	e92740	90110	90770	103500	113300
18	135700	116200	111100	95670	77440	69330	e89380	e92640	89980	92640	103500	114200
19	133700	115700	110500	95320	76200	69680	e90200	e92680	89910	93410	103400	114900
20	130900	115200	110000	94880	75050	70020	e90570	e92460	89830	93880	103400	115500
21	128900	114800	109500	94490	73960	70270	e91000	e92250	89590	94330	103500	116000
22	127100	114100	108800	94130	72890	70550	e91220	e91960	89510	94660	103600	116500
23	126200	113200	108100	93920	71560	70730	e91450	e92760	89400	95040	103600	117600
24	125600	112200	107600	93760	70310	70940	e91450	e91550	89210	95390	103600	128000
25	125800	111600	107300	93620	69140	e70690	e91470	e91460	89140	95300	103600	132800
26	125400	111400	106700	93330	67730	e70690	e91470	e91870	89010	97010	103500	134800
27	124700	111000	106100	92980	66390	e70750	e91490	e92020	88830	98140	103500	135900
28	124500	111000	105200	90860	65350	e70880	e92050	e91910	88650	99030	103700	136500
29	123900	110800	104200	89150	---	e71040	e92100	e91830	88500	100100	103800	136800
30	123300	110800	103200	85400	---	e71410	e92210	e91740	88360	101000	103700	137100
31	123100	---	102500	84670	---	e71640	---	e91680	---	101700	104400	---
MAX	171400	123000	111900	101800	86030	71640	92210	93060	92010	101700	104400	137100
MIN	123100	110800	102500	84670	65350	65560	71690	91460	88360	96880	102200	104800
(*)	-49300	-12300	-8300	-17830	-19320	+6290	+20570	-530	-3320	+13340	+2700	+32700
CAL. YR	1998	MAX	307200	MIN	102500	(*)	-2300					
WTR YR	1999	MAX	171400	MIN	65350	(*)	-15300					

e Estimated

(\*) Change in contents, in acre-feet.

## GILA RIVER BASIN

## 09510000 VERDE RIVER BELOW BARTLETT DAM, AZ

**LOCATION.**--Lat 33°48'30", long 111°39'46", in NW¼ sec.5, T.5 N., R.7 E. (unsurveyed), Maricopa County, 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 18 mi east of town of Cave Creek.

**DRAINAGE AREA.**--6,161 mi<sup>2</sup>, of which 365 mi<sup>2</sup> is noncontributing, including 357 mi<sup>2</sup> in Aubrey Valley Playa, a closed basin.

## WATER-DISCHARGE RECORDS

**PERIOD OF RECORD.**--August 1888 to current year. (Monthly discharge only August 1888 to December 1903, and January 1910 to September 1913. For some periods prior to December 1903 gage heights, discharge measurements, and daily discharge hydrograph are published in reports of the Geological Survey.) Prior to October 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.**--No estimated daily discharges. Records good. 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 of 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** (adjusted for storage in Bartlett and Horseshoe Reservoirs)--11 years, 675 ft<sup>3</sup>/s, 489,000 acre-ft/yr; median of yearly mean discharge, 540 ft<sup>3</sup>/s, 391,000 acre-ft/yr.

**EXTREMES FOR PERIOD OF RECORD.**--1888-1939: Maximum discharge not determined, probably over 150,000 ft<sup>3</sup>/s Feb. 24, 1891; minimum daily, 29 ft<sup>3</sup>/s July 11, 13, 1901. Floods of Nov. 27, 1905, Mar. 4, 1938, reached maximum discharges of 96,000 ft<sup>3</sup>/s and 95,000 ft<sup>3</sup>/s, respectively.

1939-99: Maximum discharge, 110,000 ft<sup>3</sup>/s Jan. 8, 1993; no flow at Bartlett Dam at times when gates in dam were closed.

**EXTREMES FOR CURRENT YEAR.**--Maximum daily discharge, 1,480 ft<sup>3</sup>/s Oct. 9; minimum daily, 90 ft<sup>3</sup>/s Apr. 11, 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	623	448	288	589	768	121	115	115	116	125	113	120
2	1000	409	332	563	784	111	111	116	117	125	113	120
3	1100	358	357	573	647	111	92	116	117	125	113	119
4	1150	392	329	657	587	111	91	116	116	124	113	118
5	1190	423	256	667	486	112	90	117	117	126	113	119
6	1230	446	214	355	448	114	90	115	117	126	113	118
7	1230	429	182	394	521	113	90	115	117	127	114	118
8	1370	453	173	396	571	114	90	114	117	128	113	117
9	1480	515	180	340	621	114	90	115	117	128	113	116
10	1320	592	223	341	618	114	90	116	117	127	113	116
11	1150	530	294	370	632	114	90	117	119	124	113	117
12	1110	497	261	455	646	116	99	117	119	124	113	117
13	1190	436	216	514	667	117	109	116	119	123	113	117
14	1270	391	217	451	743	117	109	117	117	122	113	117
15	1230	372	286	421	834	117	108	116	117	127	114	119
16	1210	371	275	368	949	116	108	119	118	121	113	117
17	1120	450	311	371	954	117	109	119	118	119	113	112
18	1120	497	483	409	966	117	109	119	118	120	112	110
19	1140	480	488	437	957	116	109	119	119	120	114	111
20	1230	420	567	462	930	114	110	119	119	118	114	111
21	1170	406	521	447	851	114	110	120	121	118	114	111
22	1040	586	644	428	879	114	110	119	122	118	114	109
23	805	682	662	341	953	114	110	117	122	119	114	108
24	592	712	571	340	921	114	110	117	122	116	114	109
25	654	548	434	339	853	115	111	118	122	116	114	125
26	832	282	574	363	957	116	114	118	122	116	114	178
27	710	355	654	437	923	115	114	118	124	116	115	194
28	554	369	774	916	775	114	114	118	125	114	115	241
29	486	296	856	831	---	114	115	119	125	113	115	279
30	542	252	828	733	---	114	114	117	125	113	115	281
31	448	---	646	718	---	114	---	116	---	113	128	---
TOTAL	31296	13397	13096	15026	21441	3554	3131	3630	3581	3751	3535	4064
MEAN	1010	447	422	485	766	115	104	117	119	121	114	135
MAX	1480	712	856	916	966	121	115	120	125	128	128	281
MIN	448	252	173	339	448	111	90	114	116	113	112	108
AC-FT	62080	26570	25980	29800	42530	7050	6210	7200	7100	7440	7010	8060

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1998, BY WATER YEAR (WY)

	MEAN	322	325	517	600	945	1156	786	454	638	591	456	322
MAX	1046	692	4591	14770	13680	9024	5247	1383	1854	1445	1925	994	
(WY)	1993	1981	1979	1993	1980	1978	1973	1995	1956	1968	1969	1951	
MIN	21.2	27.3	33.5	27.1	.000	.39	4.43	7.45	47.7	37.7	23.9	22.3	
(WY)	1979	1950	1970	1970	1981	1981	1981	1977	1970	1977	1977	1977	

## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1945 - 1998

ANNUAL TOTAL	269440	119502	
ANNUAL MEAN	738	327	591
HIGHEST ANNUAL MEAN			2545
LOWEST ANNUAL MEAN			169
HIGHEST DAILY MEAN	8100	Apr 13	84700
LOWEST DAILY MEAN	104	Aug 12	.00
ANNUAL SEVEN-DAY MINIMUM	108	Sep 8	.00
ANNUAL RUNOFF (AC-FT)	534400	237000	428100
10 PERCENT EXCEEDS	1540	831	1180
50 PERCENT EXCEEDS	450	121	302
90 PERCENT EXCEEDS	112	112	42

## 09510000 VERDE RIVER BELOW BARTLETT DAM, AZ--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD--December 1950 to August 1992, June 1999 to September 1999

PERIOD OF DAILY RECORD--

SPECIFIC CONDUCTANCE: October 1964 to December 1981, March 1982 to September 1982, April 1983 to September 1990.

WATER TEMPERATURES: December 1950 to December 1981, March 1982 to September 1982, April 1983 to September 1990.

REMARKS--Unpublished daily specific conductance measurements for period December 1950 to September 1964 available from district office in Tucson, AZ.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

		DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US CM) (00095)	PH WATEP WHOLE FIELD (STAND-ARD) (00400)	TEMPER-A-TURE (DEG C) (00020)	TEMPER-A-TURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN DEMAND, (PER-CENT) (00301)	OXYGEN CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	
JUN 03...	1140	117	608	8.3	30.5	15.9	2.9	716	10.1	109	<5	
AUG 12...	0830	117	587	8.2	28.5	17.4	3.7	719	8.7	97	10	
SEP 24...	1150	110	576	8.2	32.0	20.5	2.1	719	9.2	109	12	
DATE		COLI-FORM, FECAL, UM-MF (COLS./100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL /100 ML) (31633)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM TOTAL RECOV-ERABLE (MG/L AS CA) (00915)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS MG) (00927)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, WATER DIS IT FIELD (MG/L AS HCO3) (00453)
JUN 03...	K22	K3	220	44	42	29	28	35	1	2.4	270	
AUG 12...	E22	E13	220	45	41	29	29	37	1	2.8	266	
SEP 24...	K8	K1	220	41	41	29	28	36	1	2.7	259	
DATE		CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)
JUN 03...	4	227	53	20	.33	345	318	.47	8	<.020	<.010	
AUG 12...	4	224	53	21	.34	346	319	.47	6	.040	.100	
SEP 24...	5	220	51	22	.33	344	314	.47	4	.120	.130	
DATE		NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)
JUN 03...	E.19	<.20	E.22	E.01	E1.0	.020	<1	<1.0	14	13	55	
AUG 12...	.18	.28	.32	.13	1.4	.040	<1	<1.0	16	14	55	
SEP 24...	.09	.26	.40	.24	1.8	.060	<1	<1.0	17	16	51	
DATE		BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM WATER UNFLTRO TOTAL (UG/L AS CD) (01027)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)
JUN 03...	51	<.5	<.50	150	140	<1	<.50	<1	<1.0	<1	<1.0	
AUG 12...	51	<.5	<.50	160	150	<1	<.50	<1	<1.0	<1	<1.0	
SEP 24...	49	<.5	<.50	150	150	<1	<.50	<1	<1.0	<1	<1.0	

## GILA RIVER BASIN

09510000 VERDE RIVER BELOW BARTLETT DAM, AZ--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS PE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY, TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY, DIS- SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)
JUN 03...	180	1.8	<1	<1.0	58	25	<.10	<.1	1	1.0	<1
AUG 12...	140	2.7	<1	<1.0	85	34	<.10	<.1	1	<1.0	<1
SEP 24...	150	6.4	<1	<1.0	100	60	<.10	<.1	<1	<1.0	<1

DATE	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	THAL- LIUM, TOTAL RECOV- ERABLE (UG/L AS TL) (01059)	THAL- LIUM, DIS- SOLVED (UG/L AS TL) (01057)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SED. SUSP. SIEVE DIAM. & FINER THAN .062 MM (MG/L) (70331)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
JUN 03...	<1	<1	<1.0	<2	<2.0	3.1	2.7	--	15	4.7
AUG 12...	<1	<1	<1.0	<2	<2.0	2.2	1.7	--	5	1.6
SEP 24...	<1	<1	<1.0	<2	<2.0	10	10	100	5	1.5

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").



**LOCATION.** --Lat 33°41'39", long 111°32'28", in sec. 16, T. 4 N., R. 8 E. (unsurveyed), Maricopa County, Hydrologic Unit 15060203, in Tonto National Forest, on right bank 0.7 mi. southwest of Sugarloaf Mountain, 9 mi northeast of Fort McDowell, 10 mi upstream from mouth, and 25 mi northeast of Scottsdale.

PERIOD OF RECORD.--December 1960 to current year. Prior to Oct. 1, 1963, published as "near McDowell."

REVISED RECORDS.--WRD Ariz. 1970: Drainage area.

**GAGE.**--Water-stage recorder, crest-stage gage, and concrete control. Datum of gage is 1,759.33 ft above sea level. Prior to Oct. 1, 1970, at datum 0.16 ft lower.

**REMARKS.**--Records good except for estimated daily discharges, which are poor.

**EXTREMES FOR PERIOD OF RECORD** - Maximum discharge, 24,200 ft<sup>3</sup>/s Sept. 5, 1970, gage height, 19.7 ft. from profile past gage, from rating curve extended above 3,600 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 15.0, 16.0, and 19.7 ft; no flow at times in most years.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (").

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 27.....	1800	*1.490	*4.27

No flow for many days during the water year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB.	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.04	.06	.00	.01	.03	.99	1.8	.02	.01	.01	60
2	.04	.06	e.07	.00	.02	.03	1.1	1.2	.02	.01	.00	13
3	.04	.06	e.06	.00	.03	.03	1.4	1.4	.02	.01	.00	2.9
4	.04	.06	e.05	.00	.03	.03	1.6	1.2	.01	.00	.00	.16
5	.03	.06	e.05	.00	.03	.03	1.8	1.1	.01	.00	.00	.00
6	.05	.06	e.04	.01	.03	.03	1.5	.53	.01	.00	.00	.00
7	.05	.07	e.03	.01	.03	.03	2.3	.37	.01	.00	.00	.00
8	.06	.08	e.03	.01	.03	.03	16	.19	.01	.00	.00	.00
9	.06	.11	e.02	.01	.03	.03	25	.07	.00	.00	.00	.00
10	.05	.08	e.02	.01	.03	.03	21	.09	.00	.00	.00	.00
11	.04	.08	e.02	.01	.03	.03	19	.16	.01	.00	.00	.00
12	.04	.08	e.03	.01	.03	.03	16	.12	.01	.00	.00	.00
13	.05	.15	e.03	.01	.03	.03	15	.07	.01	.00	.00	.00
14	.03	.24	e.03	.01	.03	.03	15	.06	.01	.00	.00	.00
15	.04	.24	e.02	.01	.03	.03	13	.06	.01	9.6	.00	.00
16	.05	.24	.01	.01	.03	.03	8.2	.06	.01	12	.00	.00
17	.05	.24	.00	.01	.03	.03	5.5	.06	.02	.56	.00	.00
18	.01	.24	.00	.01	.03	.03	4.0	.06	.02	.01	.00	.00
19	.00	.22	.00	.02	.03	.03	2.8	.06	.02	2.2	.00	.00
20	.00	.08	.00	.03	.03	.04	2.7	.30	.02	2.4	.00	.00
21	.00	.08	.00	.03	.03	.04	2.2	.60	.02	.02	.00	.00
22	.01	.08	.00	.03	.03	.05	2.3	.13	.02	.00	.00	.00
23	.03	.08	.01	.03	.03	.06	2.1	.06	.03	.05	.00	9.0
24	.04	.08	.01	.03	.03	.06	1.9	.06	.03	.20	.00	9.4
25	.06	.08	.01	.03	.03	.07	2.2	.06	.03	.04	.00	1.7
26	.05	.08	.01	.02	.03	.08	2.2	.06	.03	.03	.00	.27
27	.05	.08	.01	.01	.03	.23	1.7	.05	.03	.02	73	.03
28	.04	.07	.01	.01	.03	.29	1.6	.03	.03	56	8.3	.01
29	.04	.07	.01	---	---	.46	1.3	.03	.03	6.9	.12	.00
30	.04	.07	.00	.01	---	.60	1.4	.02	.03	.66	.00	.00
31	.03	---	.00	.01	---	.73	---	.02	---	.00	5.7	---
TOTAL	1.18	3.26	0.64	0.40	0.81	3.28	192.79	10.08	0.53	90.72	87.13	96.47
MEAN	.038	.11	.021	.013	.029	.11	6.43	.33	.018	2.93	2.81	3.22
MAX	.06	.24	.07	.03	.03	.73	25	1.8	.03	56	73	60
MIN	.00	.04	.00	.00	.01	.03	.39	.02	.00	.00	.00	.00
AC-FT	2.3	6.5	1.3	.8	1.6	6.5	382	20	1.1	180	173	191
CFSM	.00	.00	.00	.00	.00	.00	.04	.00	.00	.02	.02	.02
IN.	.00	.00	.00	.00	.00	.00	.04	.00	.00	.02	.02	.02

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1999, BY WATER YEAR (WY)

MEAN	5.98	6.77	44.8	64.9	84.4	93.7	26.9	7.34	2.44	2.01	4.47	4.33
MAX	194	72.3	426	1065	852	881	120	51.7	20.5	15.4	52.3	92.6
(WY)	1973	1973	1966	1993	1980	1978	1973	1973	1973	1994	1992	1970
MIN	.000	.000	.000	.000	.004	.11	.069	.000	.000	.000	.000	.000
(WY)	1961	1961	1963	1963	1990	1999	1972	1961	1961	1962	1961	1962

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1961 - 1999
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ANNUAL TOTAL	11028.33		487.29						
ANNUAL MEAN	30.2		1.34				28.8		
HIGHEST ANNUAL MEAN							155		1993
LOWEST ANNUAL MEAN							.23		1961
HIGHEST DAILY MEAN	1040	Mar 29	73	Aug 27		8300		Mar 2	1978
LOWEST DAILY MEAN	.00	Jun 25	.00	Oct 19		.00		Oct 1	1960
ANNUAL SEVEN-DAY MINIMUM	.00	Jul 14	.00	Dec 30		.00		Oct 1	1960
ANNUAL RUNOFF (AC-FT)	21870		957			20860			
ANNUAL RUNOFF (CFSM)	.18		.008			.18			
ANNUAL RUNOFF (INCHES)	2.50		.11			2.39			
10 PERCENT EXCEEDS	80		1.7			43			
50 PERCENT EXCEEDS	.12		.03			.65			
90 PERCENT EXCEEDS	.01		.00			.00			

e Estimated

## 09511300 VERDE RIVER NEAR SCOTTSDALE, AZ

**LOCATION.**--Lat 33°33'31", long 111°40'07", in NW1/4NE1/4SE1/4 sec.31, T.3 N., R.7 E., Maricopa County, Hydrologic Unit 15060203, in Salt River Indian Reservation, on right bank, 0.75 mi north of City of Phoenix water-treatment plant, 1.0 mi upstream from mouth, 1.7 mi downstream from State Highway 87, and 16 mi northeast of Scottsdale.

**DRAINAGE AREA.**--6,615 mi<sup>2</sup>, of which 365 mi<sup>2</sup> is noncontributing, including 357 mi<sup>2</sup> in Aubrey Valley Playa, a closed basin.

**PERIOD OF RECORD.**--February 1961 to current year.

**REVISED RECORDS.**--WDR AZ-89-1: Drainage area.

**GAGE.**--Water-stage recorder. Datum of gage is 1,320.31 ft above sea level. Prior to Oct. 1, 1980, and Jan. 4 to Oct. 3, 1988, at site 1.7 mi upstream on State Highway 87 bridge at datum 31.04 ft higher. Oct. 1, 1980, to Jan. 3, 1988, at Verde Plant intake structure 0.1 mi upstream at same datum.

**REMARKS.**--Records good except for estimated daily discharges, which are fair. Flow regulated by Bartlett and Horseshoe Reservoirs (see sta 09509500) except during periods of spill or floodflow below Bartlett Dam. About 12,500 acres above reservoirs are irrigated by surface water and ground water. Below reservoirs water is diverted for municipal supply of city of Phoenix, and for irrigation of an undetermined acreage in Fort McDowell Indian Reservation. Remainder (except during infrequent period of extreme flooding) is diverted at Granite Reef Dam on Salt River, 6 mi downstream, for irrigation in Salt River Valley and for municipal use by the city of Phoenix.

**AVERAGE DISCHARGE.**--38 years, 740 ft<sup>3</sup>/s, 471,600 acre-ft/yr; median of yearly mean discharges, 470 ft<sup>3</sup>/s, 341,000 acre-ft/yr.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 127,000 ft<sup>3</sup>/s Jan. 8, 1993, from slope-area measurement of peak flow, gage height, 25.37 ft recorded; no flow at times some years.

**EXTREMES FOR CURRENT YEAR.**--Maximum daily discharge, 1,590 ft<sup>3</sup>/s, Oct. 26; minimum daily discharge, 55 ft<sup>3</sup>/s, June 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	232	479	273	607	703	443	102	79	82	56	97	222
2	738	464	319	568	748	163	135	95	86	62	91	138
3	927	392	347	526	637	135	125	89	75	72	89	118
4	1030	371	346	608	588	124	108	87	80	75	88	112
5	1080	405	295	636	516	116	102	82	86	76	88	110
6	1140	453	257	502	423	113	98	81	86	77	85	108
7	1120	430	228	377	453	118	95	80	74	69	81	106
8	1230	451	191	411	514	109	91	82	73	70	88	98
9	1340	471	182	363	567	110	87	91	69	70	84	95
10	1320	545	203	353	573	99	86	91	65	83	83	103
11	1140	543	253	349	567	100	83	92	65	90	132	103
12	1050	503	307	400	598	103	75	91	68	87	98	105
13	1090	461	261	453	576	110	74	89	79	77	93	96
14	1180	411	234	464	649	115	82	89	78	57	95	93
15	1180	379	262	413	696	107	80	86	70	150	99	110
16	1180	374	278	377	851	107	76	90	68	129	92	100
17	1100	396	301	355	874	119	86	82	64	106	88	91
18	1080	451	358	372	896	118	94	71	64	101	80	94
19	1080	468	452	401	903	117	84	73	67	100	86	97
20	1150	414	510	426	886	112	75	83	76	95	84	107
21	1150	389	465	417	818	108	81	82	67	90	80	90
22	1080	450	556	419	804	97	75	88	64	96	90	88
23	878	571	600	360	865	86	78	90	65	106	80	118
24	722	663	603	344	897	84	87	83	65	106	85	103
25	628	593	417	343	820	85	94	76	68	104	87	107
26	996	384	505	346	848	90	93	68	74	102	90	120
27	791	335	565	375	910	102	81	67	74	98	152	150
28	674	372	669	647	813	110	79	84	65	94	206	175
29	548	351	761	793	---	106	86	76	59	91	120	214
30	571	284	833	711	---	95	78	84	55	95	111	243
31	504	---	648	650	---	93	---	86	---	96	121	---
TOTAL	29929	13253	12479	14366	19993	3694	2670	2587	2131	2320	3043	3614
MEAN	965	442	403	463	714	119	89.0	83.5	71.0	91.0	98.2	120
MAX	1340	663	833	793	910	443	135	95	86	150	206	243
MIN	232	284	182	343	423	84	74	67	55	56	80	88
AC-FT	59360	26290	24750	28490	19660	7330	5300	5130	4230	5590	6040	7170

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1999, BY WATER YEAR (WY)

	MEAN	348	380	609	785	1256	1360	788	415	570	561	445	250
MAX	996	643	4225	14140	13720	10090	5574	1416	1715	1343	1852	864	
(WY)	1984	1981	1979	1993	1980	1978	1973	1973	1966	1968	1969	1983	
MIN	.085	15.3	21.7	18.0	3.38	.000	.000	1.73	5.30	32.3	40.9	20.4	
(WY)	1979	1962	1969	1970	1981	1981	1981	1977	1970	1977	1977	1990	

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1961 - 1999	
ANNUAL TOTAL	267766		110579		551	
ANNUAL MEAN	734		303		2522	1993
HIGHEST ANNUAL MEAN					151	1970
LOWEST ANNUAL MEAN					81.00	Jan 8 1993
HIGHEST DAILY MEAN	8120	Apr 13	1340	Oct 3	.00	Nov 8 1961
LOWEST DAILY MEAN	77	Aug 24	55	Jun 30	.00	Nov 8 1961
ANNUAL SEVEN-DAY MINIMUM	84	Aug 22	63	Jun 27		
ANNUAL RUN-OFF (AC-FT)	531100		219300		471400	
10 PERCENT EXCEEDS	1550		797		1510	
50 PERCENT EXCEEDS	450		111		215	
90 PERCENT EXCEEDS	94		75		30	

e Estimated

## 09512162 INDIAN BEND WASH AT CURRY ROAD, TEMPE, AZ

LOCATION.--Lat 33°26'25", long 111°54'52", in NW1/4SE1/4 sec.11, T.1 N., R.4 E., Maricopa County Hydrologic Unit 15060106, on upstream side of Curry Road bridge, 2 mi northeast of downtown Tempe, AZ.

DRAINAGE AREA.--82 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,162.45 ft above sea level.

REMARKS.--No estimated daily discharges. Records fair. FCDMC provided daily values prior to installation of gage in April 1993. Natural flow of wash affected by urbanization and partly regulated by artificial lakes upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge 21,000 ft<sup>3</sup>/s June 22, 1972, at gage 7 mi upstream (09512100)

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge 1,970 ft<sup>3</sup>/s, Jan. 11, 1993; minimum daily, no flow many days.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 315 ft<sup>3</sup>/s July 15, gage height, 1.68 ft, no flow many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	11	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	16	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	6.2	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	94	.00	.00	.00	.00	.00
6	.00	.00	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.3	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	7.3	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.4	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.82	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	147	.00	.00
16	.00	.64	.00	.00	.00	.00	.00	.00	.00	31	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.3	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.15
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.8
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	37	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	3.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.22	.00
28	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.04	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00
TOTAL	40.51	0.77	0.04	0.00	0.00	0.00	34.15	0.00	0.00	191.13	0.27	95.80
MEAN	1.31	.025	.001	.000	.000	.000	1.14	.000	.000	6.17	.009	3.19
MAX	37	.64	.04	.00	.00	.00	16	.00	.00	147	.22	52
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	30	1.5	.08	.00	.00	.00	58	.00	.00	379	.5	190

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1999, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
MEAN	6.94	4.75	7.18	33.3	6.37	3.87	.22	.056	.079	.95	.79	4.06
MAX	46.8	29.9	39.5	225	23.6	16.9	1.14	.39	.55	6.17	2.64	21.9
(WY)	1994	1994	1993	1993	1993	1993	1999	1995	1994	1999	1995	1995
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1993	1993	1994	1995	1999	1999	1993	1993	1993	1993	1994	1993

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1993 - 1999
ANNUAL TOTAL	164.54	362.67	
ANNUAL MEAN	2.09	.99	5.75
HIGHEST ANNUAL MEAN			25.8
LOWEST ANNUAL MEAN			.27
HIGHEST DAILY MEAN	107 Feb 5	147 Jul 15	1970 Jan 11 1993
LOWEST DAILY MEAN	.00 Jan 1	.00 Oct 1	.00 Oct 1 1992
ANNUAL SEVEN-DAY MINIMUM	.00 Jan 1	.00 Oct 1	.00 Oct 1 1992
ANNUAL RUNOFF (AC-FT)	1520	719	4160
10 PERCENT EXCEEDS	2.1	.00	.00
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

## 09512165 SALT RIVER AT PRIEST DRIVE NEAR PHOENIX, AZ

LOCATION.--Lat 33°26'22", long 111°57'37", in NE1/4NE1/4 sec.17, T.1 N., R.4 E., Maricopa County, Hydrologic Unit 15060106, on left bank at downstream side of Priest Road bridge, 1.3 mi southeast of Phoenix main post office.

DRAINAGE AREA.--13,223 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1993 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,135 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81,400 ft<sup>3</sup>/s Feb. 16, 1995, gage height 12.73 ft, from rating curve adjusted for drawdown based on high-water mark profile at gage; no flow many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since 1871, 300,000 ft<sup>3</sup>/s in Feb. 1891.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 584 ft<sup>3</sup>/s on Sept. 20, gage height 3.05 ft; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	e.00	.00	.00	.00	.00	e.00	e.00	.00	1.2	.98	1.1
2	.00	e.00	.00	.00	.00	.00	e5.0	e.00	.00	2.1	1.0	1.0
3	.00	e.00	.00	.00	.00	.00	e8.0	e.00	.00	.13	.85	.98
4	.00	e.00	.00	.00	.00	.00	e1.0	e.00	.00	.04	.71	1.1
5	.00	e.00	.00	.00	.00	.00	e.00	e.00	.00	.04	.69	1.3
6	.00	e.00	.00	.00	.00	.00	e.00	e.00	.00	.78	1.3	1.2
7	.00	e.00	.00	.00	.00	.00	e.00	e.00	.00	6.9	.89	.93
8	.00	e.00	.00	.00	.00	.00	e.00	e.00	.00	2.2	.88	.83
9	.00	e.00	.00	.00	.00	.00	e.00	e.00	.00	.87	2.0	.71
10	.00	e.00	.00	.00	.00	.00	e.00	e.00	.00	.72	2.4	.87
11	.00	e.00	.00	.00	.00	.00	e.00	e.00	.00	.91	1.7	.99
12	.00	e.00	.00	.00	.00	.00	e.00	e.00	.00	1.0	1.0	2.1
13	.00	e.00	.00	.00	.00	.00	e.00	e.00	.00	1.5	1.1	1.3
14	.00	e.00	.00	.00	.00	.00	e.00	.00	.00	16	.99	1.6
15	.00	e.00	.00	.00	.00	.00	e.00	.00	.00	135	.93	1.7
16	.00	.00	.00	.00	.00	.00	e.00	.00	.00	e10	.88	1.3
17	.00	.00	.00	.00	.00	.00	e.00	.00	.00	e1.5	.88	.99
18	.00	.00	.00	.00	.00	.00	e.00	.00	.00	4.0	.81	.85
19	.00	.00	.00	.00	.00	.00	e.00	.00	.00	4.0	.88	34
20	.00	.00	.00	.00	.00	.00	e.00	.00	.00	1.2	1.3	167
21	.00	.00	.00	.00	.00	.00	e.00	.00	.00	2.5	1.3	7.1
22	.00	.00	.00	.00	.00	.00	e.00	.00	.00	1.2	1.3	2.2
23	.00	.00	.00	.00	.00	.00	e.00	.00	.00	1.3	2.3	2.6
24	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.98	1.9	1.3
25	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.67	2.1	1.1
26	e15	.00	.00	.00	.00	.00	e.00	.00	.00	.58	1.1	.93
27	e5.0	.00	.00	.00	.00	.00	e.00	.00	e.05	1.3	13	1.6
28	e1.0	.00	.00	.00	.00	.00	e.00	.00	e.40	1.8	3.2	1.3
29	e.00	.00	.00	.00	---	.00	e.00	.00	e.60	25	1.2	e1.2
30	e.00	.00	.00	.00	---	.00	e.00	.00	e.80	2.2	1.3	e1.2
31	e.00	---	.00	.00	---	.00	---	.00	---	1.3	2.2	---
TOTAL	21.00	0.00	0.00	0.00	0.00	0.00	14.00	0.00	1.85	228.92	53.07	242.38
MEAN	.68	.000	.000	.000	.000	.000	.47	.000	.062	7.38	1.71	8.08
MAX	15	.00	.00	.00	.00	.00	8.0	.00	.80	135	13	167
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.69	.71
AC-FT	42	.00	.00	.00	.00	.00	28	.00	3.7	454	105	481

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1999, BY WATER YEAR (WY)

	MEAN	.14	.000	1.10	30.6	880	1260	224	.000	.010	1.23	.29	4.97
MAX	.68	.000	5.48	183	5309	7555	968	.000	.062	7.38	1.71	21.8	
(WY)	1999	1995	1995	1995	1995	1995	1998	1994	1999	1999	1999	1995	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1995	1995	1996	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1994 - 1999
ANNUAL TOTAL	29298.00	561.22	
ANNUAL MEAN	80.3	1.54	236
HIGHEST ANNUAL MEAN			1098
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	6600	Apr 13	40600
LOWEST DAILY MEAN	.00	Jan 1	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00
ANNUAL RUNOFF (AC-FT)	58110	1110	170800
10 PERCENT EXCEEDS	.00	1.4	.05
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated.

## 09512280 CAVE CREEK BELOW COTTONWOOD CREEK, NEAR CAVE CREEK, AZ

LOCATION.--Lat 33°53'14", long 111°57'12", in SE1/4SE1/4SW1/4 sec.4, T.6 N., R.4 E., Maricopa County, Hydrologic Unit 15060106, on left bank 1,500 ft downstream from Cottonwood Creek and 3.7 mi north of town of Cave Creek.

DRAINAGE AREA--82.7 mi<sup>2</sup>.

PERIOD OF RECORD --October 1980 to current year. Prior to October 1989, published as "below Cottonwood Wash."

GAGE.--Water-stage recorder. Elevation of gage is 2,280 ft above sea level, from topographic map. Prior to Jan. 8, 1993, at datum 2.00 ft lower.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,200 ft<sup>3</sup>/s Jan. 8, 1993, gage height, 15.24 ft from rating curve extended above 7,000 ft<sup>3</sup>/s on basis of slope-area measurement at 9,200 ft<sup>3</sup>/s; no flow for many days most years.

EXTREMES OUTSIDE PERIOD OF RECORD --Flood of Feb. 19, 1980, reached a stage of 10.4 ft, from flood marks, discharge, 7,020 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 10 .....	1830	*924	*6.47

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.28	.22	.25	.10	.06	.00	.00	.00	.00	.00
2	.00	.00	.34	.22	.24	.09	1.5	.00	.00	.00	.00	.00
3	.00	.00	.35	.21	.24	.08	1.4	.00	.00	.00	.00	.00
4	.00	.00	.32	.21	.27	.08	1.5	.00	.00	.00	.00	.00
5	.00	.00	.27	.21	.56	.09	1.6	.00	.00	.00	.00	.00
6	.00	.00	.30	.23	.83	.07	.82	.00	.00	.00	.00	.00
7	.00	.00	.42	.24	.57	.08	.53	.02	.00	1.0	.00	.00
8	.00	.00	.41	.24	.46	.10	.33	.02	.00	.04	.00	.00
9	.00	.00	.39	.22	.40	.11	.26	.01	.00	.00	.00	.00
10	.00	.00	.32	.22	.37	.08	.18	.01	.00	e100	.00	.00
11	.00	.00	.33	.21	.26	.07	.14	.01	.00	e30	.00	.00
12	.00	.00	.34	.21	.23	.06	.11	.00	.00	.00	.00	.00
13	.00	.00	.31	.20	.23	.06	.10	.00	.00	.00	.00	.00
14	.00	.00	.30	.20	.22	.04	.10	.00	.00	.00	.00	.00
15	.00	.00	.29	.21	.22	.03	.09	.00	.00	e120	.00	.00
16	.00	.00	.26	.21	.22	.05	.06	.00	.00	3.3	.00	.00
17	.00	.00	.26	.20	.22	.12	.04	.00	.00	.59	.00	.00
18	.00	.00	.28	.21	.21	.12	.03	.00	.00	.04	.00	.00
19	.00	.01	.31	.21	.22	.10	.01	.00	.00	.01	.00	.00
20	.00	.03	.31	.21	.21	.06	.00	.00	.00	.00	.00	.00
21	.00	.05	.28	.21	.20	.04	.00	.00	.00	.00	.00	.00
22	.00	.08	.27	.17	.19	.02	.00	.00	.00	25	.00	.00
23	.00	.09	.26	.18	.18	.02	.00	.00	.00	41	.00	.00
24	.00	.09	.26	.20	.18	.01	.00	.00	.00	3.2	.00	.00
25	.00	.09	.26	.23	.15	.00	.00	.00	.00	.44	.00	.00
26	2.2	.09	.27	.28	.13	.01	.00	.00	.00	.12	.00	.00
27	.00	.09	.26	.31	.12	.01	.00	.00	.00	.04	.00	.00
28	.00	.13	.24	.30	.10	.01	.00	.00	.00	.01	.00	.00
29	.00	.13	.24	.26	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.13	.24	.24	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.23	.25	---	.00	---	.00	---	.00	.00	---
TOTAL	2.20	1.41	9.20	6.92	7.78	1.71	8.86	0.07	0.00	324.79	0.00	0.00
MEAN	.071	.047	.30	.22	.28	.055	.30	.002	.000	10.5	.000	.000
MAX	2.2	.33	.42	.31	.83	.12	1.6	.02	.00	120	.00	.00
MIN	.00	.00	.23	.17	.10	.00	.00	.00	.00	.00	.00	.00
AC-FT	4.4	2.8	18	14	15	3.4	18	.1	.00	544	.00	.00
CFSM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.13	.00	.00
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.15	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1999, BY WATER YEAR (WY)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	1.49	3.22	7.63	27.7	20.3	19.7	3.47	1.04	.35	.86	2.14	2.02								
MAX	5.95	12.9	48.3	370	164	123	14.0	6.54	3.27	10.5	19.3	11.1								
(WY)	1982	1994	1983	1993	1993	1991	1983	1983	1993	1999	1992	1982								
MIN	.000	.000	.000	.22	.28	.055	.30	.000	.000	.000	.000	.000								
(WY)	1991	1990	1990	1999	1999	1999	1999	1989	1984	1982	1994	1981								

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1980 - 1999
ANNUAL TOTAL	1474.64	362.94	
ANNUAL MEAN	4.04	.99	7.46
HIGHEST ANNUAL MEAN			51.5
LOWEST ANNUAL MEAN			.73
HIGHEST DAILY MEAN	138 Mar 29	120 Jul 15	2750 Jan 8 1993
LOWEST DAILY MEAN	.00 May 29	.00 Oct 1	.00 Jul 13 1981
ANNUAL SEVEN-DAY MINIMUM	.70 May 29	.00 Oct 1	.00 Jul 13 1981
ANNUAL RUNOFF (AC-FT)	2920	720	5400
ANNUAL RUNOFF (CFSM)	.049	.012	.090
ANNUAL RUNOFF (INCHES)	.65	.16	1.23
10 PERCENT EXCEEDS	6.8	.31	5.7
50 PERCENT EXCEEDS	.03	.00	.65
90 PERCENT EXCEEDS	.00	.00	.20

e Estimated

## GILA RIVER BASIN

## 09612500 AGUA FRIA RIVER NEAR MAYER, AZ

LOCATION.--Lat 34°18'55", long 112°03'48", in NW1/4SE1/4 sec.20, T.11 N., R.3 E., Yavapai County, Hydrologic Unit 15070102, on left bank at Sycamore damsite, 700 ft downstream from Big Bug Creek and 12 mi southeast of Mayer.

DRAINAGE AREA.--585 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1940 to current year.

REVISED RECORDS.--WDR AZ-88-1: 1987. WDR AZ-89-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,434 ft above sea level.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Diversions above station for mining and irrigation of about 600 acres.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,100 ft<sup>3</sup>/s Feb. 19, 1980, from rating curve extended above 3,400 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow, gage height, 15.76 ft, from mean of surge, inside high-water mark 16.03 ft, floodmark 18.97 ft; negligible flow at times during the summer months in most previous years when entire flow was diverted to Perry Canal above station and flow past gage was seepage only.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft<sup>3</sup>/s from rating curve extended as explained above, and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 15.....	0615	*4,820	*7.48
Sept. 23.....	1715	4,110	7.07

Minimum daily discharge, 0.49 ft<sup>3</sup>/s July 1-2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1.2	3.3	4.8	5.2	4.9	4.8	5.2	3.2	1.3	.49	3.9	36
2	e1.2	2.9	4.8	5.1	4.8	4.9	13	3.2	1.6	.49	3.1	45
3	e1.1	2.8	4.8	5.1	4.6	4.8	11	3.0	1.4	.50	2.9	4.4
4	e1.1	2.9	4.7	5.2	5.3	4.6	9.4	3.1	1.3	.50	2.7	1.5
5	e1.1	3.0	4.8	5.0	9.5	4.5	7.8	3.0	1.3	.54	14	.99
6	e1.1	3.0	5.2	4.7	7.6	4.2	6.3	2.8	1.2	.62	67	.85
7	1.1	3.0	5.4	4.7	6.7	4.5	5.5	2.7	1.1	.65	e2.8	.77
8	1.1	3.1	5.2	4.5	6.1	4.6	5.3	2.5	1.1	.71	e1.3	.75
9	1.1	14	5.1	4.5	5.5	4.4	5.0	2.4	1.1	.68	e.63	.75
10	1.1	5.3	4.9	4.7	5.2	4.3	4.8	2.3	1.0	.64	e.63	.75
11	1.1	4.1	5.1	4.9	4.9	4.3	4.5	2.2	1.0	.65	e.63	85
12	1.1	3.9	5.1	4.6	4.8	4.3	4.4	2.1	.98	.64	e.63	33
13	1.1	3.8	5.1	4.4	4.7	4.3	4.3	1.9	.93	5.8	e.63	14
14	1.1	3.7	5.2	4.3	4.7	4.3	4.2	1.8	.90	154	e.63	135
15	1.1	3.6	5.1	4.8	4.8	4.3	3.7	1.9	.91	e374	e.63	278
16	1.2	3.5	4.9	4.8	4.6	4.9	3.5	1.6	.92	e72	e.63	e167
17	1.2	3.5	4.9	4.8	4.7	6.8	3.2	1.6	.90	18	e.63	e2.7
18	1.2	3.5	4.8	5.2	4.9	6.0	3.2	1.6	.86	18	e.63	e2.7
19	1.2	3.6	4.9	5.1	5.0	5.6	3.0	1.5	.83	15	.61	e2.7
20	1.2	3.7	4.9	4.9	5.0	5.2	2.9	1.5	.77	8.4	.60	e2.7
21	2.1	3.9	4.9	5.0	5.1	4.8	2.9	1.5	.76	7.4	.57	e2.7
22	1.4	4.0	4.9	4.5	5.1	4.6	2.8	1.5	.73	7.1	.56	e2.7
23	1.4	4.0	4.9	4.6	5.1	4.5	2.7	1.5	.73	6.8	.57	863
24	1.4	4.1	4.9	4.7	5.1	4.5	2.8	1.6	.69	6.6	.57	e188
25	4.2	4.1	5.0	4.5	4.9	4.3	3.0	1.6	.66	8.8	.56	e7.2
26	9.7	4.1	5.1	5.2	4.9	4.2	3.2	1.6	.62	e34	.57	e4.5
27	3.6	4.2	5.2	5.4	4.8	4.0	3.0	1.5	.59	e4.3	.57	e4.5
28	2.6	4.9	5.2	5.1	4.9	4.0	2.8	1.4	.57	e14	.58	3.1
29	2.5	5.6	5.3	4.9	---	3.9	2.9	1.4	.53	76	e9.3	2.6
30	3.0	5.1	5.5	5.0	---	3.9	3.0	1.4	.50	16	e.88	2.5
31	5.8	---	5.4	4.9	---	3.6	---	1.4	---	6.5	60	---
TOTAL	60.4	124.2	156.0	150.3	148.2	141.9	139.3	62.3	27.78	859.81	179.94	1895.36
MEAN	1.95	4.14	5.03	4.85	5.29	4.58	4.64	2.01	.93	27.7	5.80	63.2
MAX	9.7	14	5.5	5.4	9.5	6.8	13	3.2	1.6	374	67	863
MIN	1.1	2.8	4.7	4.3	4.6	3.6	2.7	1.4	.50	.49	.56	.75
AC-FT	120	246	309	298	294	281	276	124	55	1710	357	3760
CFSM	.00	.01	.01	.01	.01	.01	.01	.00	.00	.05	.01	.11
IN.	.00	.01	.01	.01	.01	.01	.01	.00	.00	.05	.01	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1999, BY WATER YEAR (WY)

	MEAN	8.91	9.38	29.6	33.1	63.7	50.9	20.3	3.42	2.66	11.2	32.8	16.9
MAX	223	146	453	718	1179	389	314	19.6	29.7	48.2	244	187	
(WY)	1973	1988	1966	1993	1980	1991	1941	1941	1940	1955	1951	1970	
MIN	.14	.10	.077	.071	.021	.006	.000	.032	.007	.15	.31	.20	
(WY)	1951	1950	1951	1951	1951	1951	1951	1951	1965	1960	1962	1945	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1940 - 1999

ANNUAL TOTAL	6712.2	3945.49	
ANNUAL MEAN	18.4	10.8	23.4
HIGHEST ANNUAL MEAN			143
LOWEST ANNUAL MEAN			1.45
HIGHEST DAILY MEAN	1440	863	7290
LOWEST DAILY MEAN	1.1	.49	.00
ANNUAL SEVEN-DAY MINIMUM	1.1	.51	.00
ANNUAL RUNOFF (AC-FT)	13310	7830	16970
ANNUAL RUNOFF (CFSM)	.031	.018	.040
ANNUAL RUNOFF (INCHES)	.43	.25	.54
10 PERCENT EXCEEDS	26	7.1	20
50 PERCENT EXCEEDS	4.9	4.0	2.2
90 PERCENT EXCEEDS	1.4	.67	.30

e Estimated

## 08612800 AGUA FRIA RIVER NEAR ROCK SPRINGS, AZ

LOCATION.--Lat 34°00'56", long 112°10'02", in NW1/4NW1/4 sec.28, T.8 N., R.2 E., Yavapai County, Hydrologic Unit 15070102, on right bank 2.5 mi southwest of Rock Springs and 10 mi upstream from Lake Pleasant.

DRAINAGE AREA.--1,111 mi<sup>2</sup>

PERIOD OF RECORD.--January 1970 to current year (monthly discharge only, October 1973 to September 1974). Low-flow records not equivalent prior to Oct. 1, 1974, due to spring flow in streambed between sites in use.

REVISED RECORDS.--WDR AZ-89-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,800 ft above sea level, from topographic map. Prior to Oct. 1, 1974, at site 600 ft upstream at datum 10.00 ft higher.

REMARKS.--No estimated daily discharges. Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,500 ft<sup>3</sup>/s Feb. 19, 1980, gage height, 21.08 ft recorded, 28.15 ft from floodmark, from rating curve extended above 21,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 27.2 ft; no flow at times each year prior to October 1974; since October 1974, no flow May 27 to July 12, 1977, and for many days in 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft<sup>3</sup>/s and maximum (\*), from rating curve extended on basis of slope-area measurement:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 15 .....	1345	2,330	8.87	Sept. 23 .....	2315	*4,830	*11.25
Sept. 15 .....	0600	2,000	8.45				

Minimum daily discharge, 0.01 ft<sup>3</sup>/s, Aug. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	1.8	1.3	1.4	1.5	1.2	2.0	1.5	.29	.04	28	301
2	1.3	1.7	1.2	1.3	1.5	1.2	3.2	1.6	.35	.03	12	254
3	1.2	1.4	1.4	1.3	1.5	1.1	3.3	1.4	.36	.04	5.3	117
4	1.2	1.1	1.5	1.4	1.6	1.2	3.3	1.5	.38	.03	2.7	50
5	1.0	1.1	1.4	1.3	1.9	1.2	3.2	1.4	.42	.03	1.8	24
6	.93	1.2	1.6	1.4	1.9	1.2	2.8	1.3	.32	.05	1.9	12
7	.98	1.3	1.8	1.4	1.8	1.3	2.7	.93	.28	4.6	27	6.3
8	.86	1.4	1.7	1.5	1.7	1.5	2.7	.70	.21	4.1	24	3.9
9	.92	1.4	1.5	1.4	1.6	1.5	2.5	.63	.19	4.0	7.7	3.1
10	.87	1.3	1.4	1.5	1.6	1.5	2.5	.66	.20	.34	2.8	2.7
11	.83	1.4	1.3	1.5	1.6	1.4	2.5	.55	.23	.29	1.3	2.3
12	.81	1.3	1.3	1.5	1.7	1.4	2.6	.47	.23	.25	.72	78
13	.75	1.3	1.2	1.6	1.6	1.5	2.6	.35	.22	.27	.42	52
14	.84	1.2	1.2	1.7	1.6	1.4	2.7	.23	.16	3.2	.29	186
15	.92	.95	1.1	1.7	1.6	1.3	2.3	.07	.15	663	.34	926
16	1.0	.97	1.0	1.7	1.6	1.6	2.0	.14	.15	172	.25	349
17	1.1	.95	1.0	1.7	1.6	1.9	1.6	.37	.17	98	.23	138
18	1.1	1.1	1.3	1.6	1.5	1.9	1.4	.53	.18	34	.16	66
19	.95	1.1	1.4	1.6	1.5	1.7	1.3	.22	.19	205	.14	38
20	.87	1.1	1.5	1.6	1.5	1.5	1.2	.21	.14	71	.14	84
21	8.8	.94	1.6	1.6	1.5	1.3	1.2	.22	.07	25	.10	49
22	2.1	.92	1.6	1.5	1.6	1.2	1.3	.22	.05	11	.08	32
23	1.8	.96	1.6	1.5	1.5	1.2	1.5	.24	.05	6.3	.07	540
24	1.6	.89	1.7	1.5	1.5	1.1	1.5	.29	.07	3.7	.04	1140
25	1.7	.81	1.6	1.5	1.4	1.3	1.4	.30	.07	2.5	.03	119
26	12	.72	1.6	1.6	1.2	1.4	1.4	.31	.07	1.8	.02	43
27	2.3	.65	1.5	1.6	1.3	1.6	1.2	.27	.07	1.7	.01	25
28	1.9	.88	1.5	1.6	1.2	1.6	1.0	.28	.06	4.6	.02	11
29	1.6	1.3	1.5	1.5	---	1.6	1.1	.24	.04	3.6	.02	7.0
30	1.8	1.3	1.6	1.5	---	1.6	1.3	.18	.04	207	.07	4.9
31	2.0	---	1.5	1.4	---	1.5	---	.27	---	71	7.8	---
TOTAL	57.23	34.44	44.4	46.9	43.6	43.9	61.3	17.28	5.41	1594.87	125.45	4659.2
MEAN	1.85	1.15	1.43	1.51	1.56	1.42	2.04	.56	.18	51.4	4.05	155
MAX	12	1.8	1.8	1.7	1.9	1.9	3.3	1.6	.42	663	28	1140
MIN	.75	.65	1.0	1.3	1.2	1.1	1.0	.07	.04	.03	.01	2.3
AC-FT	114	68	88	93	86	87	122	34	11	3160	249	9240
CFSM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.14
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.16

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1999, BY WATER YEAR (WY)

	MEAN	20.9	21.3	30.2	205	342	278	59.5	12.5	4.38	11.7	30.4	33.5
	MAX	381	176	943	3301	3320	1967	338	70.7	46.1	51.4	164	360
	(WY)	1973	1979	1979	1993	1980	1978	1973	1979	1979	1999	1988	1970
	MIN	12	.11	.10	.22	.66	.19	.000	.000	.000	.000	.35	.17
	(WY)	1975	1975	1978	1976	1977	1972	1972	1972	1971	1971	1975	1971

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1970 - 1999
ANNUAL TOTAL	23747.21	5733.98	
ANNUAL MEAN	65.1	18.4	91.2
HIGHEST ANNUAL MEAN			499
LOWEST ANNUAL MEAN			2.58
HIGHEST DAILY MEAN	2900	Mar 29	32700
LOWEST DAILY MEAN	.35	Aug 6	.00
ANNUAL SEVEN-DAY MINIMUM	.78	Jul 31	.00
ANNUAL RUNOFF (AC-FT)	47100		65050
ANNUAL RUNOFF (CFSM)	.053		.017
ANNUAL RUNOFF (INCHES)	.80		23
10 PERCENT EXCEEDS	175		112
50 PERCENT EXCEEDS	2.8		3.0
90 PERCENT EXCEEDS	1.0		.30

## GILA RIVER BASIN

## 09513780 NEW RIVER NEAR ROCK SPRINGS, AZ

LOCATION.--Lat 33°58'27", long 112°05'54", in SW1/4SW1/4 sec.6, T.7 N., R.3 E., Maricopa County, Hydrologic Unit 15070102, on right bank 180 ft upstream from road crossing and 6 mi southeast of Rock Springs.

DRAINAGE AREA.--68.3 mi<sup>2</sup>.

PERIOD OF RECORD.--Water years 1962-65 (annual maximums only), October 1966 to current year.

REVISED RECORDS.--WDR AZ-89-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,310 ft above sea level, from topographic map. Jan. 2, 1964, to Sept. 30, 1965, crest-stage gage, and Oct. 28, 1965, to Nov. 18, 1967, water-stage recorder, at same site at datum 1.00 ft higher.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,600 ft<sup>3</sup>/s Sept. 5, 1970, gage height, 13.5 ft, from profile past gage, from rating curve extended above 380 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 3.6, 4.73, 7.3, 10.7, and 13.5 ft; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum ("):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 15.....	0900	*529	*3.68

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.06	.00
2	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.70	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.8	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.24	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.58
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.21	.00	5.2
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.24	.00	6.8
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.7	.00	.61
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.59	.01	.10
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.22	.00	.07
28	.00	.00	.00	.00	.00	.00	e.00	.00	.00	.16	.00	.04
29	.00	.00	.00	.00	---	.00	e.00	.00	.00	.09	.00	.00
30	.00	.00	.00	.00	---	.00	e.00	.00	.00	.09	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.08	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	102.27	0.07	13.40
MEAN	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	3.30	.002	.45
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.70	.06	6.8
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	203	.1	.27
CFSM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.01
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1999, BY WATER YEAR (WY)

MEAN	1.22	5.35	20.0	37.3	42.5	42.8	5.15	1.21	.27	.75	1.35	3.70
MAX	11.9	52.4	218	573	348	444	29.5	10.5	2.17	8.55	15.3	104
(WY)	1973	1979	1979	1993	1980	1978	1992	1979	1980	1990	1971	1970
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1966	1968	1969	1970	1970	1971	1971	1966	1966	1966	1967	1968

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1966 - 1999
ANNUAL TOTAL	5199.70	115.74	
ANNUAL MEAN	14.2	.32	13.6
HIGHEST ANNUAL MEAN			71.7
LOWEST ANNUAL MEAN			.001
HIGHEST DAILY MEAN	794	70	5070
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	10310	230	9860
ANNUAL RUNOFF (CFSM)	.21	.005	.20
ANNUAL RUNOFF (INCHES)	2.87	.06	2.75
10 PERCENT EXCEEDS	24	.00	10
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated







## GILA RIVER BASIN

261

## 09614100 GILA RIVER AT ESTRELLA PARKWAY, NEAR GOODYEAR, AZ

LOCATION.--Lat 33°23'15", long 112°23'30" in SE 1/4 NE 1/4, sec. 31, T. 1 N., R. 1 W., Maricopa County, Hydrologic Unit 15070101, at downstream side of bridge, 3 mi southwest of Goodyear.

DRAINAGE AREA.--45,585 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1992 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 883 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair.

EXTREMES FOR PERIOD OF RECORD --Maximum discharge, 162,000 ft<sup>3</sup>/s Jan. 9, 1993, gage height, 19.15 ft, from rating curve extended above 122,000 ft<sup>3</sup>/s; no flow at times

EXTREMES FOR CURRENT YEAR --Maximum discharge, 624 ft<sup>3</sup>/s Apr. 2, gage height, 5.74 ft, no flow June 6-Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	5.0	19	21	24	40	16	7.7	.78	.00	.00	.00
2	2.3	5.0	18	20	22	22	375	9.9	.57	.00	.00	.00
3	2.4	4.8	18	20	22	21	461	11	.42	.00	.00	.00
4	2.4	4.7	19	21	23	21	482	10	.15	.00	.00	.00
5	2.2	5.0	20	20	28	20	219	8.0	.04	.00	.00	.00
6	2.0	169	21	19	23	21	52	6.6	.00	.00	.00	.00
7	1.6	294	65	19	25	22	52	6.1	.00	.00	.00	.00
8	1.2	341	65	18	26	20	47	4.6	.00	.00	.00	.00
9	1.2	329	64	19	22	20	51	4.4	.00	.00	.00	.00
10	1.5	268	68	19	21	19	48	4.0	.00	.00	.00	.00
11	1.7	226	57	20	18	19	37	3.8	.00	.00	.00	.00
12	1.6	231	46	20	18	19	47	3.9	.00	.00	.00	.00
13	1.7	234	40	19	18	18	51	3.5	.00	.00	.00	.00
14	2.2	226	38	19	23	17	42	2.7	.00	.00	.00	.00
15	2.3	236	24	18	23	18	21	2.7	.00	.00	.00	.00
16	2.4	113	23	19	27	15	20	2.3	.00	.00	.00	.00
17	2.5	22	21	20	23	19	19	1.9	.00	.00	.00	.00
18	2.4	18	19	20	19	19	19	1.8	.00	.00	.00	.00
19	3.4	16	19	21	20	21	20	1.4	.00	.00	.00	.00
20	3.4	16	18	21	20	20	21	1.1	.00	.00	.00	.00
21	3.5	16	18	22	23	19	18	.64	.00	.00	.00	.00
22	3.5	17	16	20	25	18	16	.45	.00	.00	.00	.00
23	3.4	17	16	19	23	16	11	.36	.00	.00	.00	.00
24	3.5	17	16	22	23	14	10	.88	.00	.00	.00	.00
25	4.6	17	16	26	21	13	12	1.7	.00	.00	.00	.00
26	5.6	17	17	22	21	13	11	2.7	.00	.00	.00	.00
27	10	20	17	21	23	14	9.9	2.1	.00	.00	.00	.00
28	5.8	19	18	20	129	18	9.4	1.2	.00	.00	.00	.00
29	4.8	19	18	20	---	19	7.8	.63	.00	.00	.00	.00
30	4.4	18	19	17	---	17	7.3	.86	.00	.00	.00	.00
31	4.6	---	20	21	---	16	---	.93	---	.00	.00	---
TOTAL	96.7	2940.5	873	623	733	598	2212.4	109.85	1.96	0.00	0.00	0.00
MEAN	3.12	98.0	28.2	20.1	26.2	19.0	73.7	3.54	.065	.000	.000	.000
MAX	10	341	65	26	129	40	482	11	.78	.00	.00	.00
MIN	1.2	4.7	16	17	16	13	7.3	.36	.00	.00	.00	.00
AC-FT	194	5830	1730	1240	1450	1170	4390	218	3.9	.00	.00	.00
CAL YR	1998	TOTAL	35945.03	MEAN	98.5	MAX	5350	MIN	.55	AC-FT	71300	
WTR YR	1999	TOTAL	8180.41	MEAN	22.4	MAX	482	MIN	.00	AC-FT	16230	



## 06517000 HASSAYAMPA RIVER NEAR ARLINGTON, AZ

LOCATION.--Lat 33°20'50", long 112°43'30", in NW1/4 sec.13, T.1 S., R.5 W., Maricopa County, Hydrologic Unit 15070103, at former U.S. Highway 80, 1.8 mi upstream from mouth and 2.8 mi northeast of Arlington.

DRAINAGE AREA.--1,471 mi<sup>2</sup>.

PERIOD OF RECORD.--Water years 1961-77 (annual maximums only), October 1977 to September 1990 (discharge above 500 ft<sup>3</sup>/s only), October 1990 to current year.

REVISED RECORDS.--WDR AZ-81-1: 1969(M); WDR AZ-89-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 824.75 ft above sea level. Prior to Nov. 11, 1993 at datum 2.07 ft higher.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Records include irrigation return flow past station. Small diversions above station for irrigation and livestock.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,000 ft<sup>3</sup>/s Sept. 5, 1970, gage height, 8.40 ft, result of slope-area measurement of peak flow, no natural flow for most of time each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 11 .....	0030	3,310	10.07	July 25 .....	2240	1,110	7.74
July 14 .....	1900	3,210	9.99				

Minimum daily discharge, 0.00 ft<sup>3</sup>/s Nov. 8-15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	38	96	126	91	71	80	40	45	24	40	123	e150		
2	41	109	111	110	73	63	176	55	56	30	97	e90		
3	76	90	114	131	95	39	17	62	40	40	66	81		
4	78	55	134	125	83	41	7.5	37	32	44	49	79		
5	47	48	129	120	137	41	11	39	47	45	50	94		
6	e20	137	144	131	109	42	167	38	48	40	39	69		
7	54	e20	157	112	91	54	142	42	44	48	75	31		
8	66	e.00	111	122	120	47	127	53	34	138	89	18		
9	42	e.00	119	110	103	35	109	99	24	147	90	18		
10	e15	e.00	157	101	95	28	85	93	48	162	73	24		
11	53	e.00	167	95	120	28	45	64	38	406	59	47		
12	43	e.00	151	80	109	17	86	34	38	146	47	95		
13	e25	e.00	166	48	103	21	94	34	45	95	102	32		
14	52	e.00	160	52	114	44	76	23	55	320	41	40		
15	56	e.00	120	34	116	32	68	37	54	120	107	59		
16	46	e5.0	106	61	88	36	61	67	40	124	120	70		
17	60	90	68	82	41	56	41	60	34	148	62	70		
18	77	46	66	42	37	75	42	32	29	193	52	64		
19	79	43	55	53	27	63	80	37	27	130	43	73		
20	82	59	56	60	42	55	58	36	49	84	36	63		
21	65	77	68	67	77	25	40	43	47	92	41	58		
22	45	91	53	102	88	9.9	40	38	31	107	32	84		
23	45	99	69	129	74	15	28	37	11	62	31	91		
24	54	113	86	127	65	14	39	52	e5.0	31	71	135		
25	75	119	108	97	82	24	54	31	24	106	39	47		
26	95	145	82	76	82	38	57	47	31	236	42	72		
27	96	150	101	35	76	33	40	53	41	82	45	51		
28	93	99	116	63	38	58	34	77	52	84	99	33		
29	105	129	114	83	---	73	29	82	37	146	115	47		
30	114	133	91	82	---	48	46	65	42	167	85	42		
31	113	---	91	92	---	29	---	48	---	144	e130	---		
TOTAL	1950	1953.00	3396	2713	2360	1268.9	1959.5	1560	1127.0	3757	2141	1978		
MEAN	62.9	65.1	110	87.5	84.3	40.9	65.3	50.3	37.6	121	69.1	65.9		
MAX	114	150	167	131	137	80	176	99	56	406	130	150		
MIN	15	.00	53	34	27	9.9	7.5	23	5.0	30	29	18		
AC-FT	3870	3870	6740	5380	4680	2520	3890	3090	2240	7450	4250	3920		
CFSM	.04	.04	.07	.06	.06	.03	.04	.03	.03	.08	.05	.04		
IN.	.05	.05	.09	.07	.06	.03	.05	.04	.03	.10	.05	.05		
CAL YR 1998	TOTAL	23947.00	MEAN	65.6	MAX	157	MIN	.00	AC-FT	47500	CFSM	.04	IN.	.61
WTR YR 1999	TOTAL	26163.40	MEAN	71.7	MAX	406	MIN	.00	AC-FT	51900	CFSM	.05	IN.	.66

e Estimated





## GILA RIVER BASIN

## 09518000 GILA RIVER ABOVE DIVERSIONS, AT GILLESPIE DAM, AZ--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD--February 1926 to June 1927 and March 1946 (partial-record station), December 1950 to September 1971, December 1971 to June 1973 (partial-record station), March 1974 to current year. Prior to October 1967, published as 09519500, Gila River below Gillespie Dam.

## PERIOD OF DAILY RECORD--

SPECIFIC CONDUCTANCE: October 1964 to June 1968, August to September 1968, February to September 1969, October 1970 to September 1971, April 1974 to July 1981.

WATER TEMPERATURES: December 1950 to February 1968, May to August 1969, October 1970 to September 1971, April 1974 to July 1981.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

		DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	
OCT 01...	1020	96	4140	8.3	34.5	22.0	17	715	9.4	116	19	K320
DEC 14...	1110	197	3730	8.2	21.5	13.0	13	743	9.3	91	20	--
FEB 26...	0920	183	3900	8.1	16.5	15.1	2.3	740	9.1	95	<5	120
MAR 30...	1215	176	4220	8.2	31.0	18.4	.34	737	9.2	103	20	550
MAY 24...	1040	140	5140	8.6	34.0	22.5	.72	740	10.3	125	13	K130
SEP 09...	1220	48	5210	8.2	36.0	27.0	65	737	7.1	93	<5	K2400
DATE	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)	STREP-TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CaCO3) (00900)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L) (00904)	CALCIUM TOTAL RECOV-ERABLE (MG/L AS Ca) (00916)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS MG) (00927)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)
OCT 01...	K120	96	740	470	160	170	76	76	632	10	11	288
DEC 14...	--	--	640	400	150	150	63	64	540	9	12	292
FEB 26...	K53	--	660	390	150	150	68	69	550	9	11	311
MAR 30...	210	--	640	390	160	150	64	65	630	11	11	294
MAY 24...	K20	--	820	560	190	190	83	84	730	11	9.4	282
SEP 09...	93	--	850	560	210	200	85	84	750	11	10	353
DATE	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2-HO3 TOTAL (MG/L AS N) (00630)	
OCT 01...	17	264	560	910	2.1	22	2720	2550	3.70	49	7.50	
DEC 14...	0	239	460	810	1.6	--	2320	2180	3.16	54	--	
FEB 26...	7	267	470	820	1.7	--	2420	2230	3.29	44	7.70	
MAR 30...	4	247	510	830	1.8	--	2480	2350	3.37	24	9.00	
MAY 24...	19	263	710	1100	2.0	--	3180	2990	4.32	94	11.0	
SEP 09...	0	289	680	1100	1.9	--	3290	3000	4.47	110	8.40	



## 09518000 GILA RIVER ABOVE DIVERSIONS, AT GILLESPIE DAM, AZ--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, TOTAL (UG/L AS SB) (01097)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)
OCT 01...	.050	1.5	1.5	9.0	.06	40	1.30	900	E18	<1	<1.0
DEC 14...	--	--	--	--	--	--	--	--	--	<1	<1.0
FEB 26...	.100	.85	.95	8.6	.13	38	1.30	--	--	<1	<1.0
MAR 30...	.060	.62	.68	9.7	.08	43	1.20	--	--	2	<1.0
MAY 24...	.140	1.9	2.0	13	.18	58	.630	--	--	<1	<1.0
SEP 09...	.080	.92	1.0	9.4	.10	42	.710	--	--	<1	<1.0
DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)
OCT 01...	9	8	71	59	<.1	<4.8	1700	1700	--	<24	<4
DEC 14...	7	7	57	51	<.5	<.50	1400	--	<1	<.50	2
FEB 26...	7	7	57	51	<.5	<.50	1500	--	<1	<.50	2
MAR 30...	8	7	51	49	<.5	<.50	1500	1500	<1	<.50	1
MAY 24...	9	8	68	57	<.5	<.50	2200	2200	<1	<.50	3
SEP 09...	7	7	160	140	<2.0	<2.0	2200	2200	<1	<.50	4
DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)
OCT 01...	E30	1	<21	5	<30	--	<30	1	<300	200	240
DEC 14...	<1.0	--	--	3	<1.0	680	10	<1	<1.0	--	--
FEB 26...	<1.0	--	--	4	<1.0	820	4.8	<1	<1.0	--	--
MAR 30...	<1.0	--	--	3	<1.0	430	3.2	<1	<1.0	--	--
MAY 24...	1.8	--	--	2	<1.0	1400	36	<1	<1.0	--	--
SEP 09...	<2.0	--	--	7	<2.0	2800	<2.0	<2	<2.0	--	--
DATE	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)
OCT 01...	91	18	<.10	.2	16	<150	6	<120	6	4	<1
DEC 14...	90	48	<.10	<.1	--	--	7	6.3	2	4	<1
FEB 26...	140	99	<.10	<.1	--	--	6	5.2	<1	3	<1
MAR 30...	81	48	<.10	<.1	--	--	5	4.2	<1	3	<1
MAY 24...	130	23	<.10	<.1	--	--	6	7.0	4	3	<1
SEP 09...	310	180	<.10	<.1	--	--	8	4.8	11	12	<2

## GILA RIVER BASIN

09518000 GILA RIVER ABOVE DIVERSIONS, AT GILLESPIE DAM, AZ--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	THAL- LIUM, TOTAL (UG/L AS TL) (01059)	THAL- LIUM, DIS- SOLVED (UG/L AS TL) (01057)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	SED. SUSP. SIEVE DIAM. % PINER THAN (70331)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT 01...	<12	2600	2690	<1	--	30	7.6	<60	--	40	10
DEC 14...	<1.0	--	--	<2	<2.0	--	14	12	100	75	40
FEB 26...	<1.0	--	--	<2	<2.0	--	10	6.3	--	39	19
MAR 30...	<1.0	--	--	<2	<2.0	--	7.0	6.0	--	22	10
MAY 24...	<1.0	--	--	<2	<2.0	--	9.2	3.0	100	133	50
SEP 09...	<2.0	--	--	<2	<2.0	--	20	6.2	100	100	13

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

## 09519500 GILA RIVER BELOW GILLESPIE DAM, AZ

**LOCATION.**--Lat 33°13'45", long 112°46'00", in SE1/4NE1/4 sec.28, T.2 S., R.5 W., Maricopa County, Hydrologic Unit15070101, at left end of Gillespie Dam, 8 mi downstream from Hassayampa River.

**DRAINAGE AREA.**--49,650 mi<sup>2</sup>.

**PERIOD OF RECORD.**--August 1921 to current year. Low-flow records prior to October 1970 are not equivalent as leakage of less than 5 ft<sup>3</sup>/s not included, and from October 1971 to September 1973, when no leakage was included. Annual estimate of leakage was listed in REMARKS for the 1972 water year. Prior to 1939, published as "at Gillespie Dam."

**REVISED RECORDS.**--WSP 1213: 1939. WSP 1243: 1924(M). WSP 1926: Drainage area.

**GAGE.**--Water-stage recorder since July 28, 1924. Datum of gage is 9.95 ft below average elevation of crest of dam, which is 753.46 ft above sea level. Prior to Nov. 11, 1924 depth of water read on crest at left end of dam. Nov. 11, 1924, to July 22, 1932, datum of gage was at average elevation of dam crest. July 23, 1932, to Apr. 27, 1955, datum of gage was 5.00 ft below average elevation of crest of dam. Apr. 27, 1974 to Jan. 31, 1986, supplementary water-stage recorder and concrete control 70 ft downstream from crest of dam at datum 5.64 ft lower than datum of base gage. Since Jan. 31, 1986, supplementary water-stage recorder at bridge 0.1 mi downstream at different datum.

**REMARKS.**--Records poor. On Jan. 9, 1993 the dam breached causing all the flow to go through an opening about 150 ft wide. Flow does not include water diverted to Gila Bend or Enterprise Canals. See sta 09518000, Gila River above diversions, at Gillespie Dam, for records of flow reaching dam, and of diversions to Gila Bend and Enterprise Canals. For diversions and regulation above station, see REMARKS for sta 09518000.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 178,000 ft<sup>3</sup>/s Feb. 16, 1980, gage height, 18.81 ft, present datum; no flow at times.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Maximum discharge since at least 1891, 250,000 ft<sup>3</sup>/s, estimated, in February 1891.

**EXTREMES FOR CURRENT YEAR.**--Maximum daily discharge, 207 ft<sup>3</sup>/s, Apr. 6; minimum daily, no flow Oct. 1-14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	61	148	97	6.0	e5.0	23	8.1	.76	.35	105	20
2	.00	70	145	99	8.0	11	152	35	.81	.25	75	5.8
3	.00	103	146	108	6.4	e4.0	168	68	1.6	28	32	.81
4	.00	63	149	124	9.2	e2.0	133	37	.51	57	.45	.95
5	.00	48	151	125	14	e2.0	159	2.5	2.2	35	.20	1.5
6	.00	27	148	136	30	e3.0	207	3.0	.82	.93	.11	12
7	.00	116	152	122	54	e3.0	186	2.0	11	.31	.06	.48
8	.00	34	157	100	86	e2.0	124	1.5	.33	53	.12	.07
9	.00	13	155	105	119	e1.0	108	4.1	.37	85	12	.07
10	.00	3.6	178	97	90	e1.0	73	25	.27	62	.14	.05
11	.00	7.9	187	65	65	e1.0	67	2.5	.26	159	2.0	5.4
12	.00	12	163	56	62	e1.0	61	1.2	.24	114	.25	9.3
13	.00	11	186	43	53	e2.0	68	1.0	.20	81	.33	.54
14	.00	12	189	25	46	e2.0	59	1.0	.17	60	4.1	.07
15	.01	7.4	190	23	55	e2.0	62	.96	.16	153	.06	.08
16	.02	16	154	21	63	e3.0	60	7.0	.11	69	7.5	.09
17	.02	49	148	34	34	e10	52	36	.09	92	.43	7.3
18	.36	110	141	41	e5.0	41	34	4.3	.07	127	.04	30
19	2.7	40	136	21	e4.0	43	46	1.2	8.4	105	.05	23
20	4.2	28	122	25	e3.0	47	29	1.5	8.9	46	.04	11
21	2.4	25	76	27	e3.0	34	8.8	15	25	35	.04	.23
22	1.9	19	81	45	e5.0	23	5.0	15	23	49	.06	8.2
23	6.0	74	79	44	e8.0	1.3	8.0	1.8	2.6	40	.06	17
24	1.2	145	76	42	e4.0	.95	2.9	3.7	.13	17	2.7	47
25	1.8	145	144	54	e3.0	.81	3.7	2.5	.12	3.3	1.5	60
26	8.3	150	148	33	e3.0	1.1	11	1.7	.16	99	.05	15
27	41	152	143	7.5	e2.0	.75	2.4	6.9	31	79	3.7	52
28	98	150	148	.15	e4.0	1.0	5.5	18	42	44	.95	62
29	94	140	138	.09	---	19	4.1	20	19	94	114	15
30	105	142	109	.06	---	13	2.3	5.8	.57	105	102	31
31	78	---	51	.05	---	1.0	---	1.1	---	106	12	---
TOTAL	445.41	1973.9	4344	1719.85	844.6	279.92	1924.7	334.36	188.47	1998.14	569.60	435.94
MEAN	14.4	65.8	140	55.5	30.2	9.03	64.2	10.8	5.28	64.5	19.4	14.5
MAX	105	152	190	136	119	47	207	68	42	159	114	62
MIN	.00	3.6	51	.05	2.0	.76	2.3	.96	.07	.25	.03	.05
AC-FT	893	3920	8620	3410	1680	555	3820	663	374	3960	1130	865
CAL YR 1998	TOTAL	41714.51	MEAN	114	MAX	4760	MIN	.00	AC-FT	82740		
WTR YR 1999	TOTAL	15058.89	MEAN	41.3	MAX	207	MIN	.00	AC-FT	29870		

e Estimated

## GILA RIVER BASIN

## 08519800 GILA RIVER BELOW PAINTED ROCK DAM, AZ

LOCATION.--Lat 33°04'30", long 113°00'50", in SE1/4 sec.18, T.4 S., R.7 W., Maricopa County, Hydrologic Unit 15070201, on left bank 0.3 mi downstream from Painted Rock Dam and 19 mi northeast of Sentinel.

DRAINAGE AREA.--50,910 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 518.69 ft above sea level (levels by Army Corps of Engineers). Auxiliary gage at site 0.3 mi upstream: May 5, 1969, to Mar. 30, 1973, at datum 2.87 ft higher; Feb. 8, 1979 to Jan. 21, 1993, at same datum.

REMARKS.--No estimated daily discharges. Records poor. Many diversions above station for irrigation. Flow above station regulated by many reservoirs, the largest of which is Painted Rock Reservoir - capacity, 2,492,000 acre-ft. (See REMARKS for sta 09518000, Gila River above diversions, at Gillespie Dam.)

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,000 ft<sup>3</sup>/s, Feb. 26, 1993, before dike broke, gage height, 16.79 ft; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 7.7 ft<sup>3</sup>/s, Apr. 3; no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	2.2	4.8	4.8	5.1	4.5	.80	.00	.43	.00
2	.00	.00	.25	2.2	5.3	4.8	7.2	4.5	.83	.00	.35	.00
3	.00	.00	.00	2.3	5.4	5.0	7.7	4.5	.98	.00	.27	.00
4	.00	.00	.00	2.4	5.7	5.1	7.0	4.5	1.0	.00	.24	.00
5	.00	.00	.00	2.4	5.7	5.1	6.3	4.4	1.0	.00	.16	.00
6	.00	.00	.00	2.6	5.5	5.1	5.7	4.2	.98	.00	.07	.00
7	.01	.00	.00	2.6	5.4	5.2	5.7	4.0	.96	.00	.00	.00
8	.05	.00	.00	2.8	6.0	5.4	5.7	3.8	.95	.00	.00	.00
9	.04	.00	.00	2.9	6.1	5.4	5.7	3.5	.82	.00	.00	.00
10	.07	.00	.00	2.9	5.9	5.7	5.7	3.0	.75	.03	.00	.00
11	.10	.00	.00	3.1	5.2	5.7	5.7	2.9	.74	.44	.00	.00
12	.16	.00	.00	3.1	4.9	5.7	5.7	2.9	.71	.59	.00	.00
13	.20	.00	.00	3.1	4.5	5.4	5.7	2.8	.67	.75	.00	.00
14	.17	.00	4.4	3.3	5.5	5.1	5.7	2.4	.71	.66	.00	.00
15	.19	.00	1.9	3.4	6.5	5.1	5.6	2.4	.54	.73	.06	.00
16	.16	.00	1.7	3.5	6.6	5.1	5.1	2.4	.53	.71	.01	.00
17	.20	.00	1.4	3.6	6.6	5.1	5.1	2.1	.45	.61	.00	.00
18	.20	.00	1.3	3.6	7.3	5.1	5.1	1.9	.34	.56	.00	.00
19	.20	.00	1.5	3.6	7.0	5.1	5.1	1.6	.33	.60	.00	.00
20	.20	.00	1.6	3.6	6.1	5.1	5.1	1.3	.25	.53	.00	.00
21	.27	.00	1.6	3.6	5.1	5.1	5.1	1.3	.09	.44	.00	.00
22	.30	.00	1.7	3.6	4.7	5.1	5.0	1.3	.00	.40	.00	.00
23	.23	.00	1.7	3.6	4.9	5.1	4.5	1.3	.00	.31	.00	.00
24	.28	.00	1.7	3.8	5.3	5.1	4.7	1.3	.00	.28	.00	.00
25	.25	.00	1.7	4.2	4.9	5.1	5.1	1.3	.00	.40	.00	.00
26	.25	.00	1.7	4.2	4.8	5.1	5.5	1.2	.00	.31	.00	.00
27	.26	.00	1.7	4.2	4.8	5.1	5.7	1.0	.00	.31	.00	.00
28	.14	.00	1.7	4.2	4.8	5.1	5.0	1.0	.00	.50	.00	.00
29	.00	.00	1.7	4.0	---	5.1	4.5	.89	.00	.62	.00	.00
30	.00	.00	1.9	4.1	---	5.1	4.5	.80	.00	.83	.00	.00
31	.00	---	2.2	4.6	---	5.1	---	.80	---	.53	.00	---
TOTAL	3.93	0.00	33.35	103.3	155.3	160.2	165.3	75.79	14.43	11.14	1.59	0.00
MEAN	.13	.000	1.08	3.33	5.55	5.17	5.51	2.44	.48	.36	.051	.000
MAX	.30	.00	4.4	4.6	7.3	5.7	7.7	4.5	1.0	.83	.43	.00
MIN	.00	.00	.00	2.2	4.5	4.8	4.5	.80	.00	.00	.00	.00
AC-FT	7.8	.00	66	205	308	318	328	150	29	22	3.2	.00
CAL YR 1998	TOTAL	3611.45	MEAN	9.89	MAX	200	MIN	.00	AC-FT	7160		
WTR YR 1999	TOTAL	724.33	MEAN	1.98	MAX	7.7	MIN	.00	AC-FT	1440		

**LOCATION** --Lat 32°52'56", long 113°32'26", in NE1/4NE1/4NE1/4 sec. 25, T.6 S., R.13 W., Yuma County, Hydrologic Unit 15070201, in center of channel on downstream side of bridge on Hyder Road, (Ave 64E), and 5.5 mi north of Dateland, AZ.

**PERIOD OF RECORD.**—October 1993 to current year.

**GAGE.**—Water-stage recorder. Elevation of gage is 363.33 ft above sea level, from Highway Department bridge pin. Prior to October 1, 1993, gage site was located downstream at Ave 51E.

**REMARKS.** --No estimated daily discharges. Records fair. The flow is regulated by Painted Rock Dam. Capacity of the reservoir at Painted Rock Dam is 2,492,000 acre-ft. (See remarks for sta 09519800.)

**EXTREMES FOR PERIOD OF RECORD** --Maximum daily discharge, 3,320 ft<sup>3</sup>/s July 3, 1995. No flow for many days.

**EXTREMES FOR CURRENT YEAR.**--Maximum daily discharge, 1 7 ft<sup>3</sup>/s July 13 No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.7	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.74	0.00	0.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.056	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.7	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.5	.00	.00
CAL YR 1998	TOTAL	1.15	MEAN	.003	MAX	.79	MIN	.00	AC-FT	2.3		
WTR YR 1999	TOTAL	1.74	MEAN	.005	MAX	1.7	MIN	.00	AC-FT	3.5		

## 09520500 GILA RIVER NEAR DOME, AZ

**LOCATION.**--Lat 35°45'39", long 114°25'11", in SW1/4 sec.4, T.8 S., R.21 E., Yuma County, Hydrologic Unit 15070201, on right bank 440 ft upstream from McPhaul bridge on old route of State Highway 95, 3 mi west of Dome, and 12 mi upstream from mouth.

**DRAINAGE AREA.**--57,850 mi<sup>2</sup>, approximately, includes 373 mi<sup>2</sup> in Aubrey Valley Playa, a closed basin, but excludes all other closed basins.

**PERIOD OF RECORD.**--January 1903 to current year. Monthly total, maximum, and minimum daily discharges only for January 1903 to December 1904 and January 1906 to July 1929 in WSP 918 or WSP 1313. Published as "at Yuma and Gila City" 1903, as "near Dome" 1904, and as "at Dome (Gila City)" 1905-6. Records for 1907-29 are published in WSP 918 as "at Yuma and at and near Dome."

**REVISED RECORDS.**--WSP 918: 1906. WSP 1733: July 1942. WSP 1926: Drainage area.

**GAGE.**--Water-stage recorder. Datum of gage is 139.18 ft above sea level. Prior to October 1903 and January 1907 to April 1929, no gage; discharge estimated. October 1903 to December 1906, principal nonrecording gage 4 mi upstream at datum 19.19 ft higher, supplemented by many nonrecording gages at different datums. May 1929 to May 31, 1981, at datum 9.00 ft higher.

**REMARKS.**--No estimated daily discharge. Records good. Many diversions above station for irrigation. Flow above station regulated by reservoirs at and above Painted Rock Dam; capacity of reservoir at Painted Rock Dam is 2,492,000 acre-ft. Painted Rock Reservoir, which is for flood control only, was completed in October 1959 (see also REMARKS for sta 09518000).

**EXTREMES FOR PERIOD OF RECORD.**--1903-29: Maximum daily discharge, 200,000 ft<sup>3</sup>/s, roughly estimated, Jan. 22, 1916.

1929-59: Maximum discharge, 20,700 ft<sup>3</sup>/s Feb. 15, 1932, gage height, 25.75 ft, present datum; no flow for part or all of most years.

1959-99: Maximum discharge 28,900 ft<sup>3</sup>/s Mar. 3, 1993, maximum gage height, 26.81 ft; no flow for part or all of most year.

**EXTREMES FOR CURRENT YEAR.**--Maximum discharge, 282 ft<sup>3</sup>/s Mar. 7, gage height, 15.92 ft; minimum daily, 1.4 ft<sup>3</sup>/s Oct. 8, 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	6.5	11	6.7	9.3	16	8.5	4.2	2.9	3.5	3.5	3.6
2	2.5	5.9	11	5.4	9.0	17	12	3.6	2.9	3.2	4.1	3.6
3	2.3	5.8	10	4.2	10	18	11	4.0	2.8	3.5	3.9	3.6
4	2.0	5.5	9.9	3.9	11	16	10	3.8	2.7	2.8	3.7	3.8
5	2.5	5.5	10	4.2	12	17	9.3	3.2	2.5	2.8	3.0	4.0
6	2.1	5.7	11	4.0	13	15	10	2.9	2.4	3.7	2.8	4.0
7	1.5	5.5	11	3.7	14	31	10	2.9	2.4	5.2	2.8	4.0
8	1.4	5.3	8.8	3.3	16	12	9.9	2.7	2.4	6.3	2.8	4.3
9	1.5	5.2	7.6	2.7	16	11	10	2.6	2.4	6.1	2.8	4.1
10	1.5	5.0	8.2	2.7	20	11	8.2	2.9	3.1	5.9	2.7	4.4
11	1.4	5.5	7.8	2.2	22	11	8.9	2.6	3.6	5.3	2.5	5.7
12	1.6	5.6	7.8	2.4	17	9.1	7.9	2.5	3.8	5.3	2.3	5.0
13	1.9	5.0	7.2	3.5	17	8.5	8.1	3.3	3.2	5.4	2.1	5.7
14	2.0	5.2	7.3	6.2	17	8.5	6.7	3.8	2.6	5.5	3.3	7.9
15	2.3	5.2	6.5	5.4	16	8.9	6.1	19	2.3	5.4	2.6	8.6
16	2.1	5.2	4.2	6.1	15	8.3	5.1	5.8	2.0	8.6	2.1	9.7
17	2.0	4.9	6.3	5.0	15	9.4	4.7	4.9	2.2	19	2.6	11
18	2.4	6.0	4.9	4.4	14	10	4.8	4.4	2.7	11	9.7	12
19	2.9	8.2	4.5	4.4	13	8.6	7.8	4.4	3.1	9.7	4.8	12
20	2.8	8.8	4.8	6.9	12	8.6	8.0	4.4	2.9	9.5	3.2	14
21	3.0	7.8	4.7	7.7	12	8.2	6.8	4.9	3.6	6.6	2.9	16
22	3.3	8.4	4.2	6.5	11	8.7	7.0	4.3	3.8	6.2	2.9	20
23	3.1	8.8	3.3	6.3	11	8.9	5.2	4.3	3.8	7.4	2.9	19
24	3.2	7.9	3.1	7.5	11	10	5.0	4.8	3.4	6.0	2.9	19
25	3.6	7.7	25	7.3	12	12	5.5	4.6	3.1	5.7	2.9	19
26	6.0	8.9	3.9	7.3	11	13	5.1	3.9	8.7	4.8	3.0	20
27	6.9	8.6	3.3	8.0	21	12	5.6	3.5	4.6	4.3	3.4	24
28	6.1	7.7	3.4	8.1	19	10	5.8	3.5	9.5	4.3	3.5	23
29	8.1	56	3.1	8.8	---	13	5.7	3.2	3.8	4.3	3.4	20
30	8.6	12	5.5	8.9	---	11	4.4	2.9	8.5	4.0	3.3	21
31	7.8	---	8.0	8.6	---	8.8	---	2.9	---	3.7	3.6	---
TOTAL	101.3	249.3	227.3	172.3	396.3	370.5	223.1	130.7	107.7	184.0	102.0	334.0
MEAN	3.27	8.31	7.33	5.56	14.2	12.0	7.44	4.22	3.59	5.94	3.29	11.1
MAX	8.6	56	25	8.9	22	31	12	19	9.5	19	9.7	24
MIN	1.4	4.9	3.1	2.2	9.0	8.2	4.4	2.5	2.0	2.8	2.1	3.6
AC-FT	201	494	451	342	786	735	443	259	214	355	202	662
CAL YR	1998	TOTAL	4030.84	MEAN	11.0	MAX	56	MIN	.00	AC-FT	8000	
WTR YR	1999	TOTAL	2598.5	MEAN	7.12	MAX	56	MIN	1.4	AC-FT	5150	

**09521100 COLORADO RIVER BELOW YUMA MAIN CANAL  
WASTEWAY, AT YUMA, AZ**

**LOCATION** --Lat 32°43'54", long 114°37'55", in SW1/4SW1/4 sec.26, T.16 S., R.22 E., San Bernardino meridian, in Imperial County, California. Hydrologic Unit 15030107, on right bank 1,000 ft downstream from Yuma Main Canal wasteway, 0.6 mi downstream from former gaging station on Colorado River at Yuma, 1.1 mi northwest of downtown post office in Yuma, 5.2 mi downstream from Gila River, and 6.4 mi upstream from northerly international boundary.

**DRAINAGE AREA** --246,500 mi<sup>2</sup>, approximately, including all closed basins entirely within the drainage boundary, also 3,959 mi<sup>2</sup> in Great Divide basin in southern Wyoming.

**PERIOD OF RECORD** --October 1963 to current year. If records for Yuma Main Canal wasteway at Yuma (sta 09525000) and Reservation Main Drain No. 4 (sta 09530000) are subtracted from records at this station, records equivalent to those published 1902-64 as "Colorado River at Yuma" (sta 09521000) can be obtained.

**GAGE** --Water-stage recorder. Datum of gage is 101.99 ft above sea level.

**REMARKS** --No estimated daily discharges. Records good. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation, municipal, and industrial uses, and return flows from irrigated areas.

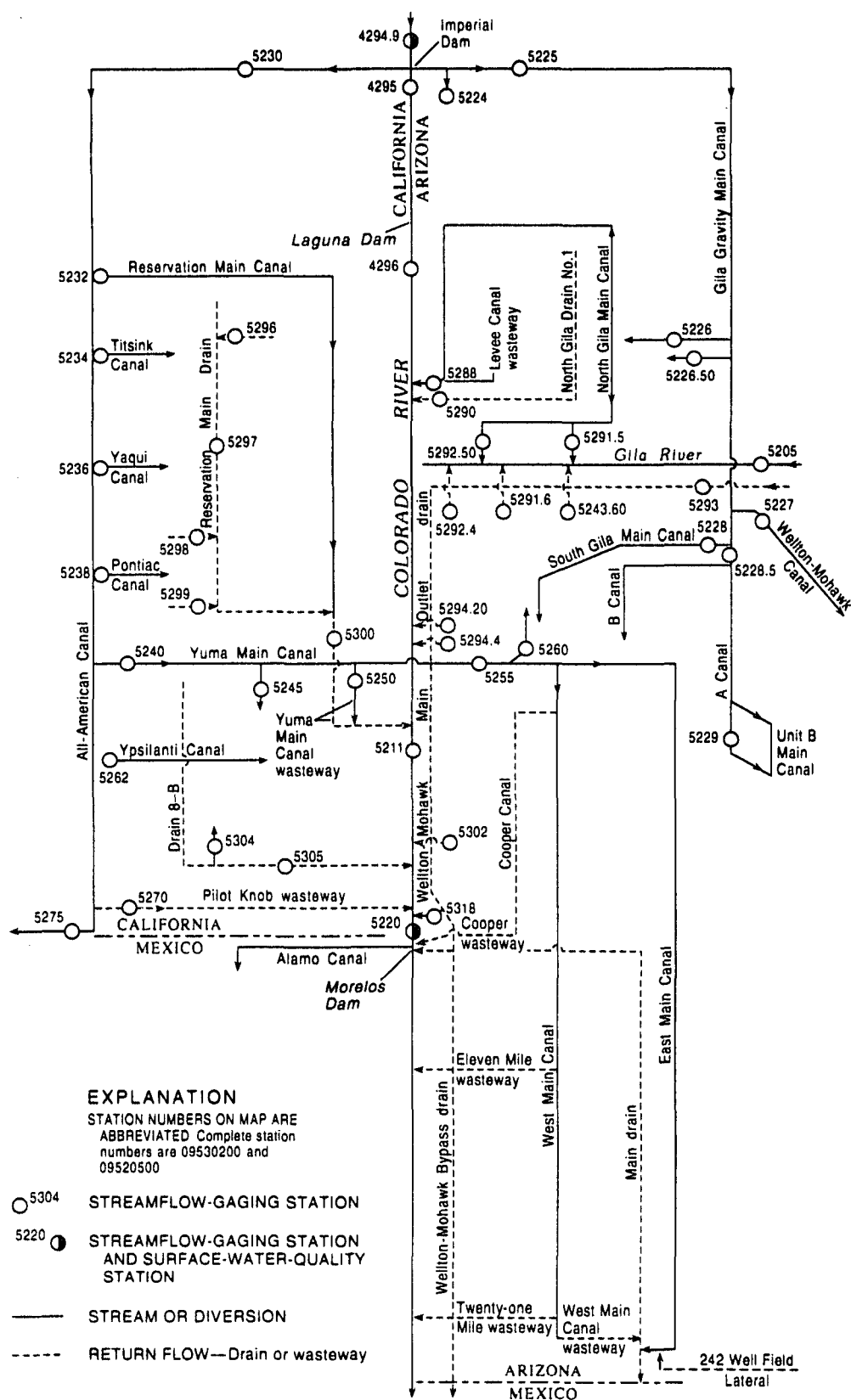
**EXTREMES FOR PERIOD OF RECORD** --Maximum discharge, 31,600 ft<sup>3</sup>/s Aug. 19, 1983, gage height, 26.67 ft; maximum gage height, 27.67 ft July 4, 1983, minimum daily discharge, 260 ft<sup>3</sup>/s Jan. 17, 1970.

**EXTREMES OUTSIDE PERIOD OF RECORD** --Maximum gage height since at least 1878, 34.0 ft Jan. 22, 1916, discharge, 250,000 ft<sup>3</sup>/s, at former gaging station at Yuma

**EXTREMES FOR CURRENT YEAR** --Maximum discharge 8,040 ft<sup>3</sup>/s Dec. 26, gage height, 19.32 ft, minimum daily, 640 ft<sup>3</sup>/s Aug. 7

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	830	1910	3500	6770	1370	1400	810	1120	724	706	676	1090
2	808	1810	3430	5340	960	2070	1090	1100	732	709	776	1040
3	733	1690	3340	3820	1060	1630	1330	1230	723	741	817	855
4	823	2090	3210	2600	1050	1010	996	1670	748	762	954	1160
5	656	2120	3150	1280	1610	881	853	1150	728	833	1160	1260
6	663	2050	3400	1250	2560	883	1180	977	697	722	804	1300
7	1040	2000	3380	1280	2320	971	1620	950	1140	1070	640	1090
8	988	1520	3290	1320	2560	1090	1140	864	2960	747	691	1220
9	926	1440	3240	1420	1930	912	872	897	3220	649	673	1220
10	877	1170	3100	2040	1630	907	894	843	3350	682	663	1170
11	855	1160	3250	2750	868	879	1070	890	2800	720	716	1180
12	933	1290	3750	2210	770	844	861	792	2320	714	733	1230
13	902	1250	4300	1900	731	930	881	805	2220	895	746	1160
14	957	1210	4780	1840	844	1140	901	804	2150	839	782	1090
15	860	1310	4240	2020	963	1410	833	793	1290	824	757	990
16	929	1240	4730	2080	764	1210	1081	906	855	791	974	917
17	913	1180	4600	1630	787	1070	1010	933	808	767	981	934
18	956	1260	4500	1450	870	985	993	960	801	809	1340	985
19	1010	1310	4280	1250	1050	873	962	1000	788	1070	1210	1040
20	1050	1340	4160	987	779	967	973	807	916	985	1260	1070
21	1020	1300	4180	839	786	1160	965	764	765	945	1180	1070
22	913	1400	3720	787	876	908	975	736	754	814	1160	1070
23	967	1320	3830	756	770	872	934	732	763	795	1220	1160
24	1010	1310	4350	780	761	759	964	848	773	785	1460	1190
25	1050	1260	7170	756	754	806	1030	972	720	758	1630	1160
26	1080	2700	7300	797	756	839	993	880	747	756	1460	1130
27	993	3430	5460	807	799	873	1020	760	762	1020	1340	1010
28	994	2980	5090	810	881	876	1070	746	751	831	1160	2070
29	1090	3430	4730	796	---	969	1270	764	720	952	1150	1120
30	1150	3490	4910	793	---	841	1070	740	713	1050	1220	157
31	1600	---	5440	1100	---	859	---	714	---	940	1200	---
TOTAL	29566	53100	132540	54478	11909	31745	30466	28147	37938	25681	31751	31039
MEAN	954	1770	4275	1757	1140	1024	1022	908	1265	828	1024	1136
MAX	1600	3490	7300	6770	2560	2070	1620	1670	3350	1070	1630	2070
MIN	656	1160	3100	756	731	759	813	714	697	649	640	855
AC-FT	53640	105300	262900	108100	63290	62970	60830	55830	75250	50940	62980	67610
CAL YR	1998	TOTAL	1041982	MEAN	2655	MAX	8620	MIN	656	AC-FT	2067000	
WTR YR	1999	TOTAL	521609	MEAN	1429	MAX	7370	MIN	640	AC-FT	1035000	



**Figure 6.** Streamflow-gaging stations and surface-water-quality stations on streams, diversions, and return flows between Imperial Dam and the southerly international boundary.



**DRAINAGE AREA.**--248,700  $\text{mi}^2$ , approximately, including all closed basins entirely within the drainage boundary, also 3,959  $\text{mi}^2$  in Great Divide Basin in southern Wyoming.

**EXTREMES FOR CURRENT YEAR.**--Maximum daily discharge, 14,500 ft<sup>3</sup>/s Jan. 1; minimum daily, 1,290 ft<sup>3</sup>/s Sept. 1.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4910	4480	9710	14500	2620	3200	3240	2930	2560	2850	2690	1290
2	5120	4980	9710	14000	2160	4030	3740	2700	2550	2850	2650	1610
3	5540	5050	9890	12500	2190	3850	5930	2690	2560	2870	2930	2770
4	4380	5440	10100	10900	2190	3210	6250	3450	2570	2830	2830	3470
5	3060	5440	9710	8190	2680	3060	4130	3740	2530	2860	2710	3570
6	3140	5470	10600	8330	3780	3030	3810	2740	2490	2870	2610	3470
7	3220	5650	9850	8370	3510	3080	4130	2700	2730	2860	2600	4200
8	2990	6040	9680	8330	1670	3210	3570	2660	3340	2890	2470	3410
9	3060	5720	10100	8760	3640	3110	3260	2700	3520	3240	2300	2940
10	3480	5650	10300	9710	3470	3160	3290	2560	3710	3990	2310	3600
11	3850	5370	10600	10300	2590	3160	3220	2560	3570	4730	2100	3990
12	3670	5510	11200	9990	2580	3150	2990	2540	3280	4100	2080	3500
13	4030	5440	12400	9640	2820	3160	3000	2500	3220	4520	1820	3810
14	3640	5260	12500	9500	2890	3320	3020	2400	3130	4980	1820	4170
15	3300	5470	11500	9610	2910	3600	3040	2410	2840	4700	1800	4030
16	3030	5620	13000	9710	2970	3570	3070	3380	2540	3310	1850	4310
17	2910	5720	12700	9010	3150	3490	3170	2920	2610	2840	1840	4380
18	3710	6140	12600	5120	3220	3340	3220	2670	2610	2820	1510	4520
19	3810	6180	12500	3460	3280	3260	3190	2610	2510	3030	1390	4590
20	3960	6220	12700	3210	3290	3260	3210	2670	2510	2790	1440	4520
21	4060	6460	12200	3290	3260	3160	3190	2680	2620	2760	1380	5050
22	3510	6960	11000	2080	3230	3110	3210	2670	2620	2770	1370	5230
23	3710	6360	11200	2000	3250	3140	3170	2670	2590	2780	1380	5970
24	4100	6220	12600	2020	3260	3280	3210	2690	2590	2780	1510	6430
25	4340	5830	13900	1960	3210	3300	3180	2800	2590	2750	1760	6710
26	4700	7380	14300	1890	3210	3270	3150	2760	2770	2750	1610	6570
27	4410	8480	13500	1920	3230	3300	3200	2700	2510	2780	1490	6320
28	4520	8190	12900	1900	3230	3310	3210	2770	2450	2770	1400	6460
29	4560	9390	12300	1890	---	3160	3240	2780	2440	3220	1370	6500
30	4240	9180	12200	1910	---	3200	3310	2780	2550	4380	1400	6290
31	4170	---	12800	2130	---	3270	---	2680	---	4270	1390	---
TOTAL	121130	185300	361650	206130	85550	101750	104550	85510	83120	101940	59810	133680
MEAN	3907	6177	11670	6649	3055	3282	3485	2758	2771	3288	1929	4456
MAX	5540	9390	14300	14500	3780	4030	6250					

## 09522000 COLORADO RIVER AT NORTHERLY INTERNATIONAL BOUNDARY, ABOVE MORELOS DAM, NEAR ANDRADE, CA--Continued

## WATER-QUALITY RECORDS

**PERIOD OF RECORD.**--October 1968 to current year.

PERIOD OF DAILY RECORD.--

**SPECIFIC CONDUCTANCE:** October 1969 to September 1984.

REMARKS: -Discharge reported by International Boundary and Water Commission. Unpublished chemical analyses for water years 1961-68 available from district office in Tucson, AZ.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	SAMPLE TYPE	DIS-	SPE-	PH	TEMPER-	TEMPER-	TUR-	BARO-	OXYGEN,
			CHARGE,	CIFIC	WATER				METRIC	
			INST.	CON-	FIELD				PRES-	
			CUBIC	DUCT-	(STAND-				SURE	
PER	ANCE	ARD	DIS-	OF	SOLVED					
SECOND	(US/CM)	UNITS)	(MG/L)							
(00061)	(00095)	(00400)	(00020)	(00010)	(00076)	(00025)	(00300)			
DEC										
17...	1245	ENVIRONMENTAL	12800	1050	8.1	19.0	12.5	4.4	775	10.2
17...	1246	ENVIRONMENTAL (ADEQ)	12800	1050	8.1	19.0	12.5	5.9	775	10.2
17...	1255	CONCURRENT REPLICATE	12800	--	--	19.0	12.5	--	--	--
MAP										
25...	1030	ENVIRONMENTAL	3240	1220	8.3	27.0	18.5	5.1	760	8.3
25...	1031	ENVIRONMENTAL (ADEQ)	3240	1220	8.3	27.0	18.5	5.8	760	8.3
25...	1040	CONCURRENT REPLICATE	3240	1220	8.3	27.0	18.5	4.9	760	8.3
APR										
27...	0930	ENVIRONMENTAL	3230	1160	8.1	31.0	21.5	10	760	7.8
27...	0940	CONCURRENT REPLICATE	3230	--	--	31.0	21.5	--	--	--
MAY										
25...	0915	ENVIRONMENTAL	2800	1220	8.1	28.0	24.0	4.4	765	7.4
25...	0925	CONCURRENT REPLICATE	2800	--	--	28.0	24.0	--	--	--
JUL										
01...	0900	ENVIRONMENTAL	2850	1200	8.2	38.0	29.0	5.2	760	7.4
01...	0901	ENVIRONMENTAL (ADEQ)	2850	1200	8.2	38.0	29.0	5.14	760	7.4
01...	0910	CONCURRENT REPLICATE	2850	--	--	38.0	29.0	--	--	--
AUG										
24...	0930	ENVIRONMENTAL	1750	1380	8.1	39.0	28.5	10	760	6.7
24...	0931	ENVIRONMENTAL (ADEQ)	1750	1380	8.1	39.0	28.5	7.1	760	6.7
24...	0940	CONCURRENT REPLICATE	1750	--	--	39.0	28.5	--	--	--

[illegible]

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	POTAS- SIUM, DIS- SOLVED	BICAR- BONATE WATER DIS IT FIELD	CAR- BONATE WATER DIS IT FIELD	ALKA- LINITY WAT DIS TOT IT FIELD	SULFATE DIS- SOLVED	CHLO- RIDE, DIS- SOLVED	FLUO- RIDE, DIS- SOLVED	SILICA, DIS- SOLVED	SOLIDS, RESIDUE AT 180 DEG. C	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED	SOLIDS, DIS- SOLVED	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED
	(MG/L AS K)	(MG/L AS HCO3)	(MG/L AS CO3)	(MG/L AS CaCO3)	(MG/L AS SO4)	(MG/L AS CL)	(MG/L AS F)	(MG/L AS SiO2)	(70300)	(70301)	(70303)	(MG/L) (00530)
	(000935)	(004533)	(00452)	(39086)	(00094)	(000940)	(000950)	(000955)				
DEC												
17...	4.3	171	0	140	250	88	.42	8.8	658	633	.89	30
17...	3.9	171	0	140	250	90	.31	--	674	633	.92	30
17...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
25...	4.3	188	0	154	270	120	.35	10	774	740	1.05	16
25...	3.7	188	0	154	270	120	.34	--	778	715	1.06	16
25...	4.4	188	--	--	--	120	.37	10	774	735	1.05	--
APR												
27...	4.1	183	0	150	270	110	.36	11	748	722	1.02	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
25...	4.1	188	0	154	280	120	.36	10	784	742	1.07	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
01...	4.4	185	0	152	280	120	.38	10	774	733	1.05	--
01...	4.0	185	0	152	270	110	.34	--	799	695	1.09	18
01...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
24...	4.9	205	0	168	310	150	.44	13	888	850	1.21	--
24...	4.7	205	0	168	300	140	.42	--	908	823	1.23	28
24...	--	--	--	--	--	--	--	--	--	--	--	--
DATE	NITRO- GEN, NITRATE DIS- SOLVED	NITRO- GEN, NITRATE DIS- SOLVED	NITRO- GEN, NITRITE DIS- SOLVED	NITRO- GEN, NO2+NO3 TOTAL	NITRO- GEN, NO2+NO3 DIS- SOLVED	NITRO- GEN, AMMONIA TOTAL	NITRO- GEN, AMMONIA DIS- SOLVED	NITRO- GEN, ORGANIC TOTAL	NITRO- GEN, ORGANIC DIS- SOLVED	NITRO- GEN,AM- MONIA + ORGANIC TOTAL	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED	NITRO- GEN, TOTAL
	(MG/L AS N)	(MG/L AS NO3)	(MG/L AS N)	(MG/L AS N)	(MG/L AS N)	(MG/L AS N)	(MG/L AS N)	(MG/L AS N)	(MG/L AS N)	(MG/L AS N)	(MG/L AS N)	(MG/L AS N)
	(00618)	(71851)	(0643)	(00610)	(00611)	(00610)	(00608)	(00605)	(00607)	(00625)	(00623)	(00600)
JUL												
17...	.206	.91	.024	.250	.231	.030	.046	.21	.13	.24	.17	.49
17...	--	--	--	.250	--	.030	--	.31	--	.34	--	.59
17...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
25...	.410	1.8	.016	.440	.426	.130	.097	.16	.10	.29	.19	.73
25...	--	--	--	.440	--	.130	--	.12	--	.25	--	.69
25...	.400	1.8	.013	--	.413	--	.083	.20	.11	.28	.19	.69
APR												
27...	.351	1.6	.013	--	.364	--	.052	.24	.16	.29	.22	.65
27...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
25...	.433	1.9	.010	--	.443	--	.070	.19	--	.25	<.10	.70
25...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
01...	.296	1.3	.032	--	.363	--	.071	.15	.14	.22	.21	.53
01...	--	--	--	.320	--	.060	--	.31	--	.37	--	.69
01...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
24...	.476	2.1	.011	--	.487	--	.065	.34	.16	.40	.23	.89
24...	--	--	--	.490	--	.090	--	.24	--	.33	--	.82
24...	--	--	--	--	--	--	--	--	--	--	--	--

**COLORADO RIVER MAIN STEM**

09522000 COLORADO RIVER AT NORTHERLY INTERNATIONAL BOUNDARY, ABOVE MORELOS DAM, NEAR ANDRADE, CA--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible][illegible]

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

**COLORADO RIVER MAIN STEM**

09522000 COLORADO RIVER AT NORTHERLY INTERNATIONAL BOUNDARY, ABOVE MORELOS DAM, NEAR ANDRADE, CA--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

## COLORADO RIVER MAIN STEM

08522000 COLORADO RIVER AT NORTHERLY INTERNATIONAL BOUNDARY, ABOVE MORELOS DAM, NEAR ANDRADE, CA--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TERBUTH YLAZINE SURROGT WAT FLT 0.7 U GF, REC (UG/L) (91064)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
DEC										
17...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	a98.6	<.0020	<.0010	<.0020
17...	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--
MAR										
25...	<.0040	<.0130	E.0024	<.0100	<.0070	<.0130	a77.2	<.0020	<.0010	<.0020
25...	--	--	--	--	--	--	--	--	--	--
25...	<.0040	<.0130	E.0022	<.0100	<.0070	<.0130	a82.4	<.0020	<.0010	<.0020
APR										
27...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	a100	<.0020	<.0010	<.0020
27...	--	--	--	--	--	--	--	--	--	--
MAY										
25...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020
25...	--	--	--	--	--	--	--	--	--	--
JUL										
01...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
AUG										
24...	<.0040	<.0130	<.0050	<.0100	<.0070	<.0130	--	<.0020	<.0010	<.0020
24...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

a Listed values are recovery percentages for the indicated compounds. These compounds are added to the sample to determine the relative recovery of other organic compounds that are detected using the same analytical method.



## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

**Abstract**

RIN 

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## 09522000 COLORADO RIVER AT NORTHERLY INTERNATIONAL BOUNDARY, ABOVE MORELOS DAM, NEAR ANDRADE, CA--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	METHYL PARA- THION WAT FLT 0.7 U GP, REC (UG/L) (82667)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MOL- INATE WATER FLTRD 0.7 U GP, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GP, REC (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PEB- ULATE WATER FILTRD 0.7 U GP, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GP, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GP, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GP, REC (UG/L) (82664)	PRO- METON, WATER, DISS. REC (UG/L) (04037)
MAY 25...	.113	.116	.121	.106	.106	.108	.105	.104	.0648	.0860	.119
JUL 01...	--	--	--	--	--	--	--	--	--	--	--
AUG 24...	--	--	--	--	--	--	--	--	--	--	--
DATE	PRON- AMIDE WATER FLTRD 0.7 U GP, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GP, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GP, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GP, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GP, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GP, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GP, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GP, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GP, REC (UG/L) (82661)
MAY 25...	.122	.127	.124	E.125	.112	E.183	E.106	.112	.107	.104	.0984
JUL 01...	--	--	--	--	--	--	--	--	--	--	--
AUG 24...	--	--	--	--	--	--	--	--	--	--	--

< Actual value is known to be less than the value shown.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

a Listed values are recovery percentages for the indicated compounds. These compounds are added to the sample to determine the relative recovery of other organic compounds that are detected using the same analytical method.

Two major diversions for irrigation water are located at Imperial Dam, the Gila Gravity Main Canal, and the All-American Canal. The Gila Gravity Main Canal diverts water for irrigation in the Gila Project which is located entirely in Arizona. The All-American Canal diverts water for irrigation in Imperial Valley in California and the Yuma Project in Arizona and California. Between Imperial Dam and the northerly international boundary with Mexico, water is diverted from these principal canals for the individual diversions of the Gila and Yuma Projects.

Between Imperial Dam and the northerly international boundary with Mexico, flows from irrigated areas enter the Colorado River through many drains and wasteways in Arizona and California. Other return flows enter the Gila River below the gaging station near Dome (09520500).

See figure 6 on p. 274 for schematic diagram showing location of diversions and return flows.

#### Diversions at and below Imperial Dam, AZ-CA

##### 09522500. GILA GRAVITY MAIN CANAL AT IMPERIAL DAM.--See p. 288.

##### 09522600. NORTH GILA MAIN CANAL.

LOCATION.--Water-stage recorder and sharp-crested weir, in SW1/4SW1/4 sec.23, T.7 S., R.22 W., Yuma County, Hydrologic Unit 15030107, about 700 ft downstream from turnout from Gila Gravity Main Canal and 1.2 mi south of Laguna Dam.

PERIOD OF RECORD.--October 1965 to current year (monthly discharge only).

REMARKS.--Record shows water available for irrigation in North Gila Valley.

##### 09522650. NORTH GILA MAIN CANAL NO. 2.

LOCATION.--Water-stage recorder in SW1/4NW1/4 sec.11, T.8 S., R.22 W., Yuma County, Hydrologic Unit 15070201, at turnout from Gila Gravity Main Canal and 3.5 mi downstream from turnout to North Gila Main Canal.

PERIOD OF RECORD.--June 1969 to current year (monthly discharge only).

REMARKS.--Record shows water available for irrigation in North Gila Valley.

##### 09522700. WELLTON-MOHAWK CANAL.

LOCATION.--Three water-stage recorders to record forebay and tailrace elevations and gate openings since June 1, 1974, in NW1/4NE1/4 sec.17, T.8 S., R.21 W., Yuma County, Hydrologic Unit 15070201, at turnout from Gila Gravity Main Canal.

PERIOD OF RECORD.--October 1965 to current year (monthly discharge only).

REMARKS.--Record shows water available for irrigation in the Dome, Wellton, and Mohawk areas of the lower Gila Valley.

COOPERATION.--Supplementary record of gate openings furnished by Wellton-Mohawk Irrigation District.

##### 09522800. SOUTH GILA MAIN CANAL.

LOCATION.--Soaring flowmeter, in SE1/4SW1/4 sec.36, T.8 S., R.22 W., Yuma County, Hydrologic Unit 15070201, 110 ft downstream from turnout from Gila Gravity Main Canal.

PERIOD OF RECORD.--October 1965 to current year (monthly discharge only).

REMARKS.--Record shows water available for irrigation in South Gila Valley.

COOPERATION.--Daily discharges furnished by Yuma Irrigation District.

##### 09522850. GILA GRAVITY MAIN CANAL AT PUMPING PLANT.

LOCATION.--Intake consisting of five pumps, in NE1/4NW1/4 sec.1, T.9 S., R.22 W., Yuma County, Hydrologic Unit 15070201, at end of Gila Gravity Main Canal and head of Yuma Mesa canals.

PERIOD OF RECORD.--October 1965 to current year (monthly discharge only).

REMARKS.--Record shows water available for irrigation on Yuma Mesa and in Yuma Auxiliary Division of Yuma Valley.

COOPERATION.--Records furnished by Yuma Mesa Irrigation and Drainage District.

##### 09522900. UNIT B MAIN CANAL.

LOCATION.--Headworks in NW1/4SW1/4 sec.28, T.9 S., R.23 W., Yuma County, Hydrologic Unit 15030108, 5 mi northeast of Somerton.

PERIOD OF RECORD.--October 1965 to current year (monthly discharge only).

REMARKS.--Record shows water available for irrigation in Yuma Auxiliary Division of the Yuma Project.

COOPERATION.--Records furnished by Yuma Mesa Irrigation and Drainage District.

##### 09523000. ALL-AMERICAN CANAL NEAR IMPERIAL DAM --See p. 289.

##### 09523200. RESERVATION MAIN CANAL.

LOCATION.--Water-stage recorder and, since Sept. 5, 1975, gate-opening recorder, in NE1/4NE1/4 sec.35, T.15 S., R.23 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107, at turnout from All-American Canal and 5.8 mi downstream from Imperial Dam.

PERIOD OF RECORD.--August 1950 to current year (monthly discharge only). Prior to October 1965 included in total diversions from All-American Canal and Yuma Main Canal above siphon-drop powerplant and published as part of sta 09524000.

REMARKS.--Record computed from rated gate on turnout from All-American Canal and shows water available for irrigation in parts of Reservation Division of Yuma Project in California.

COOPERATION.--Record of gate openings furnished by Bard Water District.

##### 09523400. TITSINK CANAL.

LOCATION.--Water-stage recorder and Parshall flume, in NE1/4SW1/4 sec.27, T.15 S., R.23 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107, 0.5 mi downstream from turnout from All-American Canal and 7.2 mi downstream from Imperial Dam.

PERIOD OF RECORD.--August 1950 to current year (monthly discharge only). Prior to October 1965 included in total diversions from All-American Canal and Yuma Main Canal above siphon-drop powerplant and published as part of sta 09524000.

REMARKS.--Record shows water available for irrigation in parts of Reservation Division of Yuma Project in California.

## Diversion at and below Imperial Dam, AZ-CA--Continued

**09523600. YAQUI CANAL.**

LOCATION.--Water-stage recorder and Parshall flume in NW1/4SE1/4 sec.31, T.15 S., R.23 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107, 700 ft downstream from turnout from All-American Canal and 11.1 mi downstream from Imperial Dam.

PERIOD OF RECORD.--June 1950 to current year (monthly discharge only). Prior to October 1965 included in total diversions from All-American Canal and Yuma Main Canal above siphon-drop powerplant and published as part of sta 09524000.

REMARKS.--Record shows water available for irrigation in parts of Reservation Division of Yuma Project in California.

**09523800. PONTIAC CANAL.**

LOCATION.--Water-stage recorder and Parshall flume in NW1/4W1/4 sec.1, T.16 S., R.22 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107, 500 ft downstream from turnout from All-American Canal and 13.1 mi downstream from Imperial Dam.

PERIOD OF RECORD.--August 1950 to current year (monthly discharge only). Prior to October 1965 included in total diversions from All-American Canal and Yuma Main Canal above siphon-drop powerplant and published as part of sta 09524000.

REMARKS.--Record shows water available for irrigation in parts of Reservation Division of Yuma Project in California.

**09524000. YUMA MAIN CANAL AT SIPHON-DROP POWERPLANT.--See p. 290.****09524500. DIVERSIONS FROM YUMA MAIN CANAL BETWEEN SIPHON-DROP POWERPLANT AND YUMA MAIN CANAL WASTEWAY.**

LOCATION.--Turnouts for several canals diverting from Yuma Main Canal between siphon-drop powerplant, 4 mi north of Yuma, and Yuma Main Canal wasteway, 1,600 ft upstream from Colorado River siphon, in Imperial County.

PERIOD OF RECORD.--October 1940 to current year (monthly discharge only). Prior to October 1947 in WSP 1313. October 1947 to September 1965 published as supplemental table with records for Yuma Main Canal at siphon-drop powerplant.

REMARKS.--Record shows water available for irrigation in parts of Reservation Division of Yuma Project in California.

COOPERATION.--Record furnished by Bard Water District.

**09525500. YUMA MAIN CANAL BELOW COLORADO RIVER SIPHON.--See p. 292.****09526000. DIVERSION FROM YUMA MAIN CANAL FOR MUNICIPAL SUPPLY FOR YUMA.**

LOCATION.--Sparting and Venturi flowmeters, in NW1/4NE1/4 sec.35, T.16 S., R.22 E., San Bernardino meridian, Yuma County, Hydrologic Unit 15030107, on two pipelines, respectively, about 1,000 ft downstream from intake, which is at outlet of Colorado River siphon of Yuma Main Canal, on Arizona side of Colorado River at Yuma.

PERIOD OF RECORD.--June 1945 to current year (monthly discharge only). Prior to October 1973 published as a supplemental table with records for Yuma Main Canal below Colorado River siphon.

REMARKS.--Record shows water for Yuma municipal supply. Figures shown in table herewith are also included in record for Yuma Main Canal below Colorado River siphon (sta 09525500).

COOPERATION.--Records furnished by Yuma County Water Users' Association.

**09526200. YPSILANTI CANAL NEAR WINTERHAVEN, CA.**

LOCATION.--Water-stage recorder and Cippoletti weir in SE1/4SE1/4 sec.16, T.16 S., R.22 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107, 700 ft downstream from turnout from All-American Canal and 1.5 mi northwest of Winterhaven, CA.

PERIOD OF RECORD.--April 1995 to current year (monthly discharge only).

REMARKS.--Records shows water available for irrigation in parts of Reservation Division of Yuma Project in California.

**09527500. ALL-AMERICAN CANAL BELOW PILOT KNOB WASTEWAY.--See p. 298.**

## Diversions at and below Imperial Dam, AZ-CA--Continued

## MONTHLY DIVERSIONS, IN ACRE-FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Month	North Gila Main Canal 09522600	North Gila Main Canal No. 2 09522660	Wellton-Mohawk Canal 09522700	South Gila Main Canal 09522800	Gila Gravity Main Canal at pumping plant 09522850
October.....	4,340	601	29,040	4,600	18,706
November.....	2,780	436	24,220	2,900	14,963
December.....	2,110	297	17,910	2,000	10,845
CAL YR 1998	39,170	6,110	395,100	37,830	242,287
January.....	2,220	316	17,360	2,160	11,373
February.....	2,410	291	22,110	1,890	10,711
March.....	3,290	541	35,220	3,640	18,059
April.....	3,530	599	27,770	3,620	17,050
May.....	4,800	785	47,080	4,740	25,644
June.....	4,940	590	45,950	3,210	29,416
July.....	3,130	482	38,000	3,160	31,493
August.....	1,850	305	31,050	2,880	30,652
September.....	2,850	293	31,660	3,890	24,244
WTR YR 1999	38,230	5,540	367,400	38,700	243,156

Month	Unit B Main Canal 09522900	Reservation Main Canal 09523200	Tittink Canal 09523400	Yaqui Canal 09523600	Pontiac Canal 09523800
October.....	2,470	6,050	33	779	1,090
November.....	1,857	4,140	44	647	568
December.....	1,249	2,900	30	540	597
CAL YR 1998	27,426	55,710	471	8,880	7,000
January.....	1,358	3,070	33	309	485
February.....	1,518	3,670	23	517	507
March.....	2,276	5,120	51	823	606
April.....	2,104	5,820	63	896	668
May.....	2,921	7,210	53	1,100	755
June.....	3,735	5,600	38	941	189
July.....	3,856	4,050	0	647	357
August.....	3,498	3,750	42	704	503
September.....	2,849	3,480	14	619	206
WTR YR 1999	29,691	54,850	423	8,520	6,530

Month	Diversions from Yuma Main Canal 09524500	Division from Yuma Main Canal for Yuma supply 09526000	Ypsilanti Canal near Winterhaven, CA 09526200
October.....	1,110	2,082	1,870
September.....	904	1,786	1,040
December.....	490	1,684	954
CAL YR 1998	8,540	23,450	11,200
January.....	569	1,664	865
February.....	508	1,474	479
March.....	1,010	1,800	891
April.....	1,220	1,620	1,120
May.....	1,410	2,023	1,130
June.....	365	2,246	307
July.....	458	2,398	566
August.....	597	2,443	562
September.....	343	2,224	643
WTR YR 1999	8,990	23,444	10,430

NOTE.--Yearly totals given above have been computed from total cfs-days and may differ slightly from the summation of monthly total acre-feet on occasion.

## DIVERSIONS AND RETURN FLOWS AT AND BELOW IMPERIAL DAM

## 09522500 GILA GRAVITY MAIN CANAL AT IMPERIAL DAM, AZ-CA

**LOCATION.**--Lat 32°52'34", long 114°27'18", in SE1/4SW1/4 sec.30, T.6 S., R.21 W., Gila and Salt River meridian, Yuma County, Hydrologic Unit 15030107, on right bank 3,200 ft downstream from intake at east end of Imperial Dam.

**PERIOD OF RECORD.**--August 1943 to current year.

**GAGE.**--Water-stage recorder. Datum of gage is 160.00 ft above sea level.

**REMARKS.**--No estimated daily discharges. Records good except those below 500 ft<sup>3</sup>/s, which are fair. Gila Gravity Main Canal diverts water from Colorado River at left end of Imperial Dam for irrigation of lands in the Gila Project area in Arizona. Diversions to this canal began Aug. 17, 1943. Diversions to North Gila Valley from this canal began Dec. 16, 1954.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum daily discharge, 2,240 ft<sup>3</sup>/s May 25, 1965; no flow at canal intake at times in several years when intake gates were closed.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1430	372	17	141	957	1380	1280	801	1860	1990	513	1250
2	1060	1060	18	444	922	1340	324	554	1870	1650	1350	1110
3	659	1050	18	308	1110	1430	109	1770	1670	1020	1620	956
4	573	1150	98	845	1000	1360	140	1860	1310	708	1700	671
5	1120	973	824	793	409	1070	752	1740	723	1530	1470	539
6	1320	688	370	913	165	652	668	1930	550	1900	1150	1240
7	1330	576	697	588	309	424	711	1610	1560	1750	886	1480
8	1330	585	759	642	544	1320	955	1090	1780	1770	663	1580
9	1270	1030	756	450	453	1230	916	628	1580	1520	1600	1410
10	554	1090	798	335	732	1260	656	1510	1550	839	1330	1140
11	533	1010	587	882	781	1130	547	1810	1330	751	1620	1050
12	1140	985	545	706	480	824	1550	1850	969	1520	1660	749
13	1340	581	302	853	575	565	1310	1800	694	1200	1520	1430
14	1250	691	1250	796	286	305	1460	1410	1620	995	863	1450
15	1370	487	935	524	1000	1200	1320	802	1870	936	611	1650
16	1270	999	971	484	1140	1330	914	775	1960	991	1390	1320
17	597	1020	877	305	1160	1280	669	1740	1810	699	1600	1400
18	608	1000	644	985	1180	1370	487	1770	1650	647	1560	1000
19	1500	899	437	1320	904	1080	1560	1960	1120	1490	1520	808
20	1330	949	405	805	510	696	1630	1940	681	1710	1300	1530
21	1270	527	1160	733	280	577	1640	1760	2010	1680	701	1490
22	1180	521	1470	575	1210	1430	1620	991	1830	1610	643	1440
23	885	1260	1170	462	1210	1550	1630	535	1960	1360	1310	1220
24	581	1310	408	345	1220	1500	1060	1870	1740	1090	1480	973
25	453	1330	92	889	1210	1450	562	1960	1790	611	1220	491
26	1030	785	314	873	1100	1280	1440	1850	1160	1630	1350	593
27	1050	838	330	913	886	668	1130	1870	788	1550	1040	1470
28	1150	774	799	715	442	840	1190	1450	1940	1240	693	1470
29	843	32	854	473	---	1290	1210	1000	2060	1180	298	1500
30	616	18	767	451	---	1440	1310	641	1940	848	1300	1490
31	439	---	628	204	---	1350	---	1530	---	551	1260	---
TOTAL	31081	24590	19300	19552	22175	34621	30750	44807	45375	39006	37221	35900
MEAN	1003	820	623	631	792	1117	1025	1445	1512	1258	1201	1197
MAX	1500	1330	1470	1020	1220	1550	1640	1960	2060	1990	1700	1650
MIN	439	18	17	141	165	305	109	535	550	551	298	491
AC-FT	61650	48770	38280	38780	43980	68670	60990	88870	90000	77370	73830	71210
CAL YR 1998	TOTAL	385081	MEAN	1055	MAX	2020	MIN	17	AC-FT	763800		
WTR YR 1999	TOTAL	384378	MEAN	1053	MAX	2060	MIN	17	AC-FT	762400		

## 08522000 ALL-AMERICAN CANAL NEAR IMPERIAL DAM, AZ-CA

LOCATION.--Lat 32°52'17", long 114°28'47", in SE1/4NW1/4 sec.17, T.15 S., R.24 E., San Bernardino meridian, in Imperial County, California, Hydrologic Unit 15030107, on left bank 6,000 ft downstream from intake at west end of Imperial Dam and 13.7 mi upstream from turnout to Yuma Main Canal.

PERIOD OF RECORD.--October 1938 to current year. Prior to October 1939 monthly discharge only, published in WSP 1313.

GAGE.--Water-stage recorder. Datum of gage is 150.00 ft above sea level (subject to undetermined changes caused by earthquake of May 18, 1940). Since Aug. 21, 1952, auxiliary water-stage recorder 18.5 mi downstream from base gage.

REMARKS.--No estimated daily discharges. Records excellent. All-American Canal diverts water from Colorado River at Imperial Dam. Water is used for power development and for irrigation in Yuma, Coachella, and Imperial Valleys. Water can be released back to the river through Pilot Knob powerplant and wasteway for power, regulatory purposes, or for downstream use in Mexico. First diversion to All-American Canal began October 1938, but prior to October 1940 was used only for priming canal.

COOPERATION.--Daily discharge figures furnished by Imperial Irrigation District.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 14,400 ft<sup>3</sup>/s, Apr. 17, July 15, 16, 1980; no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10500	8020	10300	10700	4710	7050	9150	9070	8730	9250	6650	6560
2	10800	8220	10300	11600	5070	8030	8460	8670	8430	9190	7260	6870
3	10200	8240	10600	11400	4990	8040	8660	8580	8630	8660	7830	8190
4	8900	8420	10900	11700	5120	8170	8640	9100	8040	8300	7880	8140
5	8660	8390	9990	10600	4600	8250	7670	9620	7470	8810	7940	7440
6	8930	8400	10500	11500	3770	7940	7690	8980	7090	9260	8170	7400
7	8830	8230	9930	11400	3430	7430	7880	8690	7080	9080	8380	7760
8	8640	8440	10100	11500	3350	7820	7970	8680	7020	9430	7730	8310
9	8780	8780	11000	11300	3740	8260	7990	8910	6730	9570	7810	8100
10	8260	9130	11800	11300	4260	8640	8090	9110	7060	9500	8260	8800
11	8420	9180	12100	11800	4610	8380	7310	9380	7470	9770	8080	8930
12	8550	9320	12000	11800	4670	8180	8320	9720	7370	8980	7940	7870
13	8890	9360	11500	12200	5220	7600	8730	9750	7250	9550	7630	8420
14	8850	8260	12100	12000	5010	7220	9270	9260	7360	9590	6930	9230
15	8520	8210	12200	11900	5940	7300	9730	8980	8140	9160	6210	8550
16	7860	8550	12200	11800	6670	7790	9300	9940	9120	7720	6720	9600
17	7390	8790	12200	10600	7620	8070	9100	8820	9560	7440	6940	9640
18	9140	9470	12200	6960	8000	8540	8530	9340	9130	7030	6730	9620
19	8170	9400	12200	5760	7070	8680	9340	9290	8420	7520	6700	9610
20	8710	9350	11900	5930	7160	8540	10000	9110	7780	7800	6590	9770
21	8790	9580	12200	5880	6970	8160	9860	9090	8770	8080	6040	10400
22	8320	9180	12200	4790	7540	8670	10300	8700	8950	8820	5850	10300
23	8500	9260	12100	4630	8010	8800	10100	8360	9060	8900	6320	10700
24	8050	9090	11200	4430	8230	9210	9780	8020	9160	8790	6670	10900
25	8350	9310	10000	4640	8360	9170	9460	7980	8950	8770	6820	11300
26	8740	8660	11700	4950	7950	8880	9900	8030	8670	9340	6950	10900
27	8850	9030	11600	4770	7790	8640	10200	8600	8160	9150	6610	10600
28	8980	9000	12100	4890	7290	7810	10200	8640	8420	9090	6040	11800
29	9150	9700	12100	4910	---	8210	10100	8400	8760	8700	5640	12100
30	8600	9920	11900	4750	---	8690	9900	8030	8890	8730	6050	11500
31	7960	---	11100	3980	---	9170	---	8440	---	8420	6550	---
TOTAL	270290	266890	354220	266370	167150	255340	271630	275290	245670	272400	217920	279310
MEAN	8719	8896	11430	8593	5370	8237	9054	8880	8189	8787	7030	9310
MAX	10800	9920	12200	12200	8360	9210	10300	9940	9560	9770	8380	12100
MIN	7390	8020	9930	3980	3350	7050	7310	7980	6730	7030	5640	6560
AC-FT	536100	529400	702600	528300	331500	506500	538800	546000	487300	540300	432200	554000
CAL YR 1998	TOTAL	3397970	MEAN	9310	MAX	12400	MIN	5070	AC-FT	6740000		
WTR YR 1999	TOTAL	3142480	MEAN	8610	MAX	12200	MIN	3350	AC-FT	6233000		

## DIVERSIONS AND RETURN FLOWS AT AND BELOW IMPERIAL DAM

## 09524000 YUMA MAIN CANAL AT SIPHON-DROP POWERPLANT, NEAR YUMA, AZ

LOCATION.--Lat 32°46'36", long 114°38'06", in SE1/4SE1/4 sec.10, T.16 S., R.22 E., San Bernardino meridian, in Imperial County, California, Hydrologic Unit 15030107, 500 ft from turnout from All-American Canal to Yuma Main Canal, 4.0 mi north of Yuma, and 14.9 mi downstream from intake of All-American Canal at Imperial Dam.

PERIOD OF RECORD.--July 1926 to current year. Prior to October 1938, monthly discharge only published in WSP 1313. Diversions from All-American Canal and Yuma Main Canal previously published with this record are listed separately in this report.

GAGE.--Acoustic flowmeters.

REMARKS.--Records are good above 100 ft<sup>3</sup>/s and poor below. New powerplant began operation Sept. 14, 1987, replacing former powerplant located 500 ft downstream that ended operation Dec. 8, 1972. A weir, installed in forebay of former powerplant, is used to measure flow bypassing the new powerplant. Separate gates on the All-American Canal to powerplant and bypass weir are controlled automatically on signal from the powerplant acoustic flowmeters on the two generators. Records of daily discharge show quantity of water diverted from All-American Canal to Yuma Main Canal (powerplant and bypass), except that diverted from forebay of former powerplant to Walapai Canal (see sta. 09523900).

COOPERATION.--Daily discharge record furnished by Yuma County Water Users' Association.

EXTREMES.--1930 to current year: Maximum daily discharge, 2,040 ft<sup>3</sup>/s Nov. 11, 1943; no flow for several days in 1937-39, 1945.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1003	1007	1020	1019	427	534	790	1020	522	685	372	930
2	1002	1005	1020	1015	563	740	586	842	581	659	421	869
3	1002	991	1020	1016	627	913	374	792	563	501	523	760
4	1003	990	1020	1018	559	926	373	885	503	390	637	1010
5	1004	1006	1010	1017	388	893	382	1030	451	437	746	1010
6	1004	993	1020	1019	374	818	538	1060	393	552	703	1009
7	1010	1013	1020	1028	371	693	617	1050	490	615	702	997
8	1016	1016	1020	1019	369	627	668	1040	603	685	553	1006
9	1014	1018	1020	1009	371	864	731	975	668	638	471	1000
10	1017	1017	1020	1014	381	955	751	942	658	671	577	1007
11	1015	1022	1020	1015	437	933	747	960	568	616	621	1001
12	1017	1016	1020	1019	490	871	770	1030	514	527	675	1004
13	1021	1015	1020	1025	514	671	887	1000	439	782	663	1006
14	1017	1014	1020	1012	516	402	995	981	390	780	510	1006
15	1012	1021	1030	1016	515	373	1003	911	464	780	394	1002
16	1015	1020	1030	1021	694	371	981	699	569	781	434	1000
17	1010	1018	1010	1027	812	506	968	709	633	688	656	1001
18	1017	1019	1030	1030	820	790	898	926	656	462	1163	1004
19	1019	1008	1030	1024	744	930	920	1100	645	409	1173	1004
20	1025	1024	1030	778	712	955	979	991	489	364	1158	1008
21	1029	1023	1020	582	593	848	1021	947	395	366	995	1014
22	1032	1026	1020	487	685	762	1017	725	581	699	908	1013
23	1018	1025	1020	410	839	765	946	590	708	770	908	1014
24	1013	1023	1020	366	890	828	857	600	685	811	1148	1019
25	1014	1021	1030	435	864	856	743	651	608	716	1148	1010
26	1016	1012	1030	549	821	906	850	706	600	671	1134	1005
27	1021	1012	1020	583	839	804	989	658	513	715	1086	1004
28	1029	1011	1030	521	649	560	1030	615	519	730	918	1004
29	1021	1012	1020	553	---	679	1078	530	550	518	846	999
30	989	1015	1020	578	---	812	1077	381	619	458	699	998
31	995	---	1020	459	---	825	---	401	---	459	844	---
TOTAL	31420	30413	31680	25664	16864	23410	24566	25747	16577	18935	23786	29714
MEAN	1014	1014	1022	828	602	755	819	831	553	611	767	990
MAX	1030	1030	1030	1030	890	955	1080	1100	708	811	1170	1020
MIN	989	990	1010	366	369	371	373	381	390	364	372	760
AC-FT	62320	60320	62840	50900	33450	46430	48730	51070	32880	37560	47180	58940
CAL YR 1998	TOTAL	329336	MEAN	902	MAX	1690	MIN	66	AC-FT	653200		
WTR YR 1999	TOTAL	298776	MEAN	819	MAX	1170	MIN	364	AC-FT	592600		



## 09626000 YUMA MAIN CANAL WASTEWAY AT YUMA, AZ

**LOCATION.**--Lat 32°44'00", long 114°37'20", in SW1/4SE1/4 sec.26, T.16 S., R.22 E., San Bernardino meridian, in Imperial County, California, Hydrologic Unit 15030107, 45 ft downstream from wasteway gates from Yuma Main Canal which are 1,645 ft upstream from intake of Colorado River siphon on Yuma Main Canal, 0.5 mi north of Yuma, and 3.2 mi downstream from siphon-drop powerplant on Yuma Main Canal.

**PERIOD OF RECORD.**--April 1913 to current year. Monthly discharge only for some periods, published in WSP 1313.

**GAGE.**--Water-stage recorder for low flows only prior to Jan. 29, 1988. Datum of gage is 122.51 ft above sea level. Prior to Apr. 1, 1968, gate-opening record used for low flows only.

**REMARKS.**--Records fair above 100 ft<sup>3</sup>/s and poor below. The wasteway discharges into Colorado River 1,000 ft upstream from station on Colorado River below Yuma Main Canal wasteway at Yuma. Discharges are computed as difference between discharge of Yuma Main Canal at siphon-drop powerplant and Yuma Main Canal below Colorado River siphon, with deductions for small irrigation diversions from canal between these stations. Records do not include flow of Reservation Main Drain No. 4.

**EXTREMES.**--1930 to current year: Maximum daily discharge, 2,020 ft<sup>3</sup>/s Dec. 24, 25, 1948; no flow for several days in 1937-39, 1945, 1950, 1971, 1997, 1999.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	261	516	696	845	113	282	132	170	39	21	40	409
2	263	444	662	768	136	434	196	184	41	27	42	331
3	261	349	610	726	111	582	202	166	39	33	66	186
4	268	306	584	666	131	264	203	103	40	29	87	467
5	304	376	599	513	155	182	116	139	27	23	73	573
6	246	342	793	487	167	208	146	160	15	24	70	608
7	189	385	828	538	191	235	196	133	7.0	36	78	605
8	161	520	776	603	132	213	211	116	1.0	47	94	530
9	168	559	728	680	125	174	237	186	47	47	91	550
10	168	366	459	738	80	157	235	128	79	47	105	498
11	238	299	363	696	97	159	209	93	76	71	103	508
12	267	426	495	555	110	190	198	83	50	20	103	555
13	204	433	690	514	110	188	169	81	45	79	96	481
14	218	488	804	527	113	155	149	76	7.0	83	111	424
15	189	557	716	603	137	113	126	64	22	71	93	327
16	176	488	685	647	137	54	121	26	22	51	59	250
17	182	442	431	754	154	120	133	36	.00	23	213	284
18	117	423	421	759	165	146	161	164	32	117	571	320
19	355	407	561	544	129	119	156	227	12	275	480	393
20	307	457	646	292	142	137	165	53	25	250	516	431
21	247	488	683	146	180	182	142	28	2.0	252	464	433
22	219	590	460	122	160	158	137	22	8.0	136	474	418
23	261	519	477	114	137	144	122	33	33	64	452	467
24	249	427	723	144	136	139	135	33	41	37	627	500
25	341	455	869	124	151	156	138	23	3.0	51	616	452
26	365	684	784	140	149	169	147	29	23	58	602	404
27	267	588	745	133	196	183	165	28	26	67	595	308
28	241	511	667	114	186	181	134	30	21	96	449	213
29	270	696	574	97	---	173	162	41	12	124	451	162
30	269	686	560	114	---	166	167	28	23	69	347	131
31	343	---	689	114	---	166	---	17	---	61	395	---
TOTAL	7814	14227	19778	13817	3930	5929	4910	2700	822.00	2389	8563	12218
MEAN	252	474	638	446	140	191	164	87.1	27.4	77.1	276	407
MAX	365	696	869	845	196	582	237	227	79	275	627	608
MIN	161	299	363	97	80	54	116	17	.00	20	40	131
AC-FT	15500	28220	39230	27410	7800	11760	9740	5360	1630	4740	16980	24230
CAL YR 1998	TOTAL	136843	MEAN	375	MAX	1440	MIN	10	AC-FT	271400		
WTR YR 1999	TOTAL	97097.00	MEAN	266	MAX	869	MIN	.00	AC-FT	192600		

**LOCATION.**--Two gages, one at each end of canal siphon passing under Colorado River. At intake, lat 32°43'49", long 114°37'09", in NW1/4NE1/4 sec.35, T.16 S., R.22 E., San Bernardino meridian, in Imperial County, California, Hydrologic Unit 15030107, on left bank 1,645 ft downstream from center of Yuma Main Canal wasteway gates and 3.5 mi downstream from siphon-drop powerplant. At outlet, in NW1/4NE1/4 sec.35, T.16 S., R.22 E., San Bernardino meridian, in Yuma County, Arizona, on right bank. Siphon crossing is 1,300 ft upstream from 4th Avenue bridge over Colorado River at Yuma.

**REVISED RECORDS.**--WSP 1713: 1958, 1959 (Yuma municipal supply).

REMARKS.--Records good except those below 100 ft<sup>3</sup>/s, which are poor. Daily discharge computed from relation between discharge and head on siphon, which is the difference between intake and outlet gages. Records show quantity of water delivered through Colorado River siphon for irrigation in the Valley Division of the Yuma Project and for municipal supply for city of Yuma (see sta 09526000).

**EXTREMES.**--1930 to current year: Maximum daily discharge, 984 ft<sup>3</sup>/s Oct. 9, 1992; no flow at times.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	724	478	303	174	307	239	613	839	458	664	312	521
2	732	558	341	231	423	275	368	658	535	632	343	530
3	731	622	390	281	516	318	172	615	524	468	434	567
4	715	661	436	334	427	660	170	737	463	361	538	543
5	682	615	411	492	233	697	238	852	424	414	645	437
6	731	639	227	515	207	599	369	880	378	528	604	393
7	783	626	185	464	180	455	395	884	483	579	606	385
8	820	493	244	404	234	413	443	866	587	638	441	460
9	828	458	275	320	246	673	477	780	603	591	364	449
10	820	648	552	276	298	783	501	770	575	620	472	509
11	764	716	652	310	338	752	523	833	480	545	518	490
12	729	576	516	464	380	660	562	881	441	588	572	447
13	785	548	330	508	395	482	707	902	388	700	567	524
14	775	523	203	476	390	232	816	893	383	636	399	581
15	810	460	297	410	370	232	849	834	434	767	301	661
16	825	525	340	363	544	294	834	662	538	730	371	733
17	804	574	573	264	636	358	805	657	602	665	443	713
18	685	585	595	266	652	619	720	751	606	345	592	678
19	645	571	468	452	595	775	723	847	626	134	693	608
20	696	550	366	456	540	794	777	908	460	114	642	567
21	774	510	330	436	408	650	852	868	393	114	520	570
22	804	410	558	352	519	581	380	656	573	551	431	591
23	756	471	527	286	695	617	811	534	675	686	456	544
24	762	551	291	222	751	667	710	549	644	754	521	514
25	667	528	161	297	679	674	605	617	605	662	517	550
26	640	328	244	398	633	700	677	677	577	599	512	592
27	734	410	272	443	622	616	808	630	487	640	471	686
28	768	466	355	407	460	379	864	568	496	619	449	784
29	734	316	431	451	---	491	885	478	539	359	387	832
30	697	314	453	463	---	642	887	353	596	343	352	864
31	624	---	329	345	---	644	---	357	---	371	449	---
TOTAL	23044	15730	11655	11560	12678	16971	19041	22336	15574	16407	14922	17323
MEAN	743	524	376	373	453	547	635	721	519	529	481	577
MAX	828	716	652	515	751	794	837	908	675	754	693	864
MIN	624	314	161	174	180	232	170	353	378	114	301	385
AC-FT	45710	31200	23120	22930	25150	33660	37770	44300	30890	32540	29600	34360
CAL YR	1998	TOTAL	188231	MEAN	516	MAX	926	MIN	54	AC-FT	173400	
WTR YR	1999	TOTAL	197241									

Return surface flows below Imperial Dam, AZ-CA

**095250000. YUMA MAIN CANAL WASTEWAY.**--See p. 291.

**095270000. PILOT KNOB POWERPLANT AND WASTEWAY.**--See p. 297.

**09528800. LEVEE CANAL WASTEWAY.**

LOCATION.--Water-stage recorder at sharp-crested weir, in SE1/4SW1/4 sec.4, T.8 S., R.22 W., Yuma County, Hydrologic Unit 15030107, 1,000 ft upstream from outlet to Colorado River.

PERIOD OF RECORD.--October 1960 to current year (monthly discharge only).

REMARKS --Record shows waste water from North Gila Valley Irrigation District.

**09529000. NORTH GILA DRAIN NO. 1.**

LOCATION.--Water-stage recorder, in SE1/4SW1/4 sec.4, T.8 S., R.22 W., Yuma County, Hydrologic Unit 15030107, 0.25 mi upstream from outlet to Colorado River and 5.5 mi downstream from Laguna Dam.

PERIOD OF RECORD.--October 1960 to current year (monthly discharge only).

REMARKS --Record shows waste water from North Gila Valley Irrigation District.

**09529150. NORTH GILA MAIN CANAL WASTEWAY.**

LOCATION.--Water-stage recorder, in NE1/4NW1/4 sec.22, T.8 S., R.22 W., Yuma County, Hydrologic Unit 15070201, 1,000 ft upstream from outlet to Gila River.

PERIOD OF RECORD.--October 1960 to current year (monthly discharge only).

REMARKS --Record shows waste water from North Gila Valley Irrigation District.

**09529160. SOUTH GILA PUMP OUTLET CHANNEL NO. 3.**

LOCATION.--In NW1/4SE1/4 sec.22, T.8 S., R.22 W., Yuma County, Hydrologic Unit 15070201, 0.5 mi upstream from outlet to Gila River.

PERIOD OF RECORD.--January 1965 to current year (monthly discharge only).

REMARKS.--Record shows water pumped from wells in South Gila Valley.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation.

**09529240. SOUTH GILA PUMP OUTLET CHANNEL NO. 2.**

LOCATION.--In SW1/4NW1/4 sec.28, T.8 S., R.22 W., Yuma County, Hydrologic Unit 15070201, 0.6 mi upstream from outlet to Gila River.

PERIOD OF RECORD --January 1962 to current year (monthly discharge only).

REMARKS --Record shows water pumped from wells in South Gila Valley.

COOPERATION --Record furnished by U.S. Bureau of Reclamation.

**09529250. BRUCE CHURCH WASTEWAY.**

LOCATION.--Water-stage recorder and sharp-crested weir, in SE1/4SE1/4 sec.20, T.8 S., R.22 W., Yuma County, Hydrologic Unit 15070201, 500 ft upstream from outlet to Gila River.

PERIOD OF RECORD.--October 1960 to current year (monthly discharge only).

REMARKS.--Record shows waste water from North Gila Valley Irrigation District.

**09529300. WELLTON-MOHAWK MAIN OUTLET DRAIN (CONVEYANCE CHANNEL).**

LOCATION.--Water-stage recorder and Parshall flume in NE1/4NW1/4 sec.17, T.8 S., R.21 W., Yuma County, Hydrologic Unit 15070201, 7.8 mi upstream from outlet to Gila River (M.O.D.E. 1), which is 0.6 mi upstream from mouth of Gila River

PERIOD OF RECORD.--October 1960 to current year (monthly discharge only).

REMARKS.--Record shows water pumped from numerous wells in Wellton-Mohawk Irrigation and Drainage District to lower the water table. Flow can be discharged to the Gila River or Colorado River by any one of or combination of four outlets. These outlets are: M.O.D.E. 1 (release to Gila River about 7.8 mi below station); an overflow flume about 11.3 mi below station releases water to Colorado River; M.O.D.E. 2 (see sta 09531800) releases water to Colorado River above Morelos Dam; and M.O.D.E. 3 (see sta 09531900) releases water to Colorado River below Morelos Dam.

**09529360. SOUTH GILA PUMP OUTLET CHANNEL NO. 1.**

LOCATION.--In SW1/4NE1/4 sec.30, T.8 S., R.22 W., Yuma County, Hydrologic Unit 15070201, 0.2 mi upstream from outlet to Gila River, which is 0.6 mi upstream from mouth of Gila River.

PERIOD OF RECORD.--August 1961 to current year (monthly discharge only).

REMARKS --Record shows water pumped from wells in South Gila Valley.

COOPERATION.--Record furnished by U.S. Bureau of Reclamation.

**09529420. SOUTH GILA TERMINAL WASTEWAY.**

LOCATION.--Water-stage recorder and Parshall flume, in SW1/4NW1/4 sec.36, T.8 S., R.23 W., Yuma County, Hydrologic Unit 15030107, 2.0 mi upstream from outlet to Colorado River.

PERIOD OF RECORD.--March 1965 to current year (monthly discharge only).

REMARKS.--Record shows waste water from South Gila Canal of South Gila Valley.

**09529440. SOUTH GILA PUMP OUTLET CHANNEL NO. 4.**

LOCATION.--In NW1/4NW1/4 sec.26, T.8 S., R.23 W., Yuma County, Hydrologic Unit 15030107, 1.5 mi upstream from outlet to Colorado River

PERIOD OF RECORD --July 1965 to current year (monthly discharge only).

REMARKS.--Records show water pumped from wells in South Gila Valley.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation.

## Return surface flows below Imperial Dam, AZ-CA--Continued

**09529600. RESERVATION DRAIN NO. 7.**

LOCATION.--At downstream end of culvert on State Road 24, in NE1/4NE1/4 sec.33, T.15 S., R.23 E., San Bernardino Meridian, Imperial County, Hydrologic Unit 15030107, 0.5 mi upstream from outlet to Reservation Main Drain.

PERIOD OF RECORD.--March 1966 to current year (monthly discharge only).

REMARKS.--Record shows drainage water from sec.34, T.15 S., R.23 E., in Reservation Division.

**09529700. RESERVATION MAIN DRAIN NO. 6.**

LOCATION.--Nonrecording gage on upstream right piling of Stallnacker Road Bridge, SE1/4SW1/4 sec.32, T.15 S., R.23 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107.

PERIOD OF RECORD.--March 1966 to current year (monthly discharge only).

REMARKS.--Record shows waste and drainage water from the Reservation Division.

**09529800. RESERVATION DRAIN NO. 2.**

LOCATION.--At upstream side of bridge on White Road, in SW1/4NW1/4 sec.6, T.16 S., R.23 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107, 0.9 mi upstream from outlet to Reservation Main Drain.

PERIOD OF RECORD.--March 1966 to current year (monthly discharge only).

REMARKS.--Record shows drainage water from sec.31, T.15 S., R.22 E., in Reservation Division.

**09529900. RESERVATION DRAIN NO. 3.**

LOCATION.--At Jackson Road Bridge, in SE1/4SE1/4 sec.10, T.16 S., R.22 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107, 1.0 mi upstream from outlet to Reservation Main Drain.

PERIOD OF RECORD.--March 1966 to current year (monthly discharge only).

REMARKS.--Record shows drainage water from Reservation Division upstream from Yuma Main Canal.

**09530000. RESERVATION MAIN DRAIN NO. 4.**

LOCATION.--Water-stage recorder in NW1/4SE1/4 sec.26, T.16 S., R.22 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107, 500 ft upstream from railroad culvert.

PERIOD OF RECORD.--January 1913 to April 1920, October 1921 to March 1925, January 1934 to current year (monthly discharge only) (calendar year discharge only 1934-36). Prior to October 1955, published as California drainage canal.

REMARKS.--Record shows waste and drainage water from area east of Yuma Main Canal on Reservation Division.

**09530200. YUMA MESA OUTLET DRAIN.**

LOCATION.--In SE1/4SW1/4 sec.28, T.16 S., R.22 E., San Bernardino meridian, Yuma County, in Arizona, Hydrologic Unit 15030108, 0.3 mi from outlet to Colorado River.

PERIOD OF RECORD.--July 1970 to current year (monthly discharge only).

REMARKS.--Record shows water pumped from wells on the Yuma Mesa and conveyed by underground conduit to Colorado River.

COOPERATION.--Records furnished by Bureau of Reclamation.

**09530400. RESERVATION DRAIN NO. 11.**

LOCATION.--At outlet to Drain 8-B, in NE1/4NE1/4 sec.19, T.16 S., R.22 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107.

PERIOD OF RECORD.--March 1966 to current year (monthly discharge only).

REMARKS.--Record shows drainage from sec.20, T.16 S., R.22 E. in Reservation Division.

**09530500. DRAIN 8-B.**

LOCATION.--Enters Colorado River in SW1/4SW1/4 sec.19, T.16 S., R.22 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107, 4 mi downstream from outlet of Yuma Main Canal wasteway.

PERIOD OF RECORD.--March 1948 to current year (monthly discharge only). Prior to October 1955, published as Araz Drain.

REMARKS.--Record shows waste and drainage water west of Yuma Main Canal on the Reservation Division.

**09531800. MAIN OUTLET DRAIN EXTENSION ABOVE MORELOS DAM (M.O.D.E. 2).**

LOCATION.--Nonrecording gage and Parshall flume, in NW1/4NW1/4 sec.36, T.16 S., R.21 E., San Bernardino meridian, Yuma County in Arizona, Hydrologic Unit 15030107, at outlet to Colorado River, 1.7 mi upstream from Morelos Dam.

PERIOD OF RECORD.--November 1965 to current year (monthly discharge only).

REMARKS.--Record shows water conveyed to Colorado River, 1.7 mi above Morelos Dam, from Wellton-Mohawk Main Outlet Drain (see sta 09529300).

## Return surface flows below Imperial Dam, AZ-CA--Continued

## MONTHLY RETURN FLOWS, IN ACRE-FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Month	Levee Canal wasteway 09528800	North Gila Drain No. 1 09529000	North Gila Main Canal wasteway 09529150	South Gila Pump Outlet Channel No. 3 09529160	South Gila Pump Outlet Channel No. 2 09529240
October .....	79	646	123	163	2,200
November .....	98	521	191	1,120	2,200
December .....	112	392	79	932	2,250
CAL YR 1998	1,130	5,240	1,120	8,290	25,960
January .....	91	301	43	780	2,290
February .....	129	255	56	1,180	1,980
March .....	72	310	61	1,410	2,280
April .....	111	356	106	1,310	2,200
May .....	69	491	226	819	2,180
June .....	60	442	57	1,070	2,090
July .....	93	428	23	1,110	2,260
August .....	72	338	41	1,110	2,200
September .....	58	303	297	968	2,200
WTR YR 1999	1,040	4,780	1,300	11,970	26,330

Month	Bruce Church wasteway 09529250	Wellton-Mohawk Main Outlet Drain 09529300	South Gila Pump Outlet Channel No. 1 09529360	South Gila Terminal wasteway 09529420	South Gila Pump Outlet Channel No. 4 09529440
October .....	31	8,690	2,830	262	369
November .....	154	9,720	3,080	282	357
December .....	161	10,330	3,200	173	369
CAL YR 1998	1,010	98,420	33,230	1,980	4,050
January .....	186	10,450	2,560	87	369
February .....	111	8,660	2,890	87	305
March .....	116	9,650	3,060	108	338
April .....	65	8,790	3,090	69	327
May .....	33	6,880	3,200	143	338
June .....	67	7,470	2,580	111	317
July .....	91	7,220	1,480	154	338
August .....	78	6,670	2,330	182	338
September .....	101	5,240	2,180	143	327
WTR YR 1999	1,200	99,770	32,480	1,800	4,090

Month	Reservation Main Drain No. 7 09529600	Reservation Main Drain No. 6 09529700	Reservation Main Drain No. 2 09529800	Reservation Main Drain No. 3 09529900	Reservation Main Drain No. 4 09530000
October .....	126	1,370	91	411	4,940
September .....	194	1,340	80	373	4,950
December .....	156	1,330	88	390	4,690
CAL YR 1998	1,850	15,600	858	4,450	52,220
January .....	108	1,210	62	413	4,910
February .....	92	1,040	59	308	4,250
March .....	127	1,200	57	380	4,580
April .....	151	1,230	63	332	4,040
May .....	189	1,270	54	401	4,490
June .....	193	1,300	55	336	4,340
July .....	160	1,260	65	385	4,110
August .....	165	1,300	55	364	4,400
September .....	153	1,270	51	359	4,600
WTR YR 1999	1,810	15,220	780	4,450	54,300

NOTE.--Yearly totals given above have been computed from total cfs-days and may differ slightly from the summation of monthly total acre-feet on occasion.

## DIVERSIONS AND RETURN FLOWS AT AND BELOW IMPERIAL DAM

Return surface flows below Imperial Dam AZ-CA--Continued

## MONTHLY RETURN FLOWS, IN ACRE-FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Month	Yuma Mesa Outlet Drain 09530200	Reservation Drain No. 11 09530400	Drain 8-B 09530600	M.O.D.E. 2 --(above)-- Morelos Dam 09531800
October .....	4,060	412	1,210	0
November .....	3,750	310	970	0
December .....	3,930	307	789	0
CAL YR 1998	35,050	2,580	9,560	0
January .....	4,200	274	871	0
February .....	3,370	192	645	0
March .....	3,350	166	639	0
April .....	3,510	167	658	0
May .....	3,820	174	656	0
June .....	3,850	126	615	0
July .....	3,870	149	676	0
August .....	3,720	174	712	0
September .....	2,300	150	714	0
WTR YR 1999	43,730	2,600	9,150	0

NOTE.--Yearly totals given above have been computed from total cfs-days and may differ slightly from the summation of monthly total acre-feet on occasion.

## 08527000 PILOT KNOB POWERPLANT AND WASTEWAY NEAR PILOT KNOB, CA

LOCATION.--Lat 32°44'15", long 114°42'56", in NW1/4SW1/4 sec.25, T.18 S., R.21 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107, 2 mi east of summit of Pilot Knob, 6 mi west of Yuma, AZ, and 20.8 mi downstream from intake of All-American Canal at Imperial Dam.

PERIOD OF RECORD.--February 1939 to current year. Prior to October 1943 monthly discharge only, published in WSP 1313. Prior to October 1956, published as Pilot Knob wasteway near Pilot Knob.

GAGE.--Water-stage recorder in forebay on right bank of All-American Canal (also used as auxiliary gage for sta 09527500); tailrace gage with remote recorder logged hourly in control house; calibrated wicket gates for turbine flow and calibrated bypass gates for wasteway flow which are logged for each change. Datum of forebay staff gage is 150.00 ft; that of tailrace staff gage is 0.00 ft; elevation of sill of bypass gates is 147.88 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Daily discharge computed from head and gate openings on wicket gates. Records show water released through Pilot Knob powerplant and wasteway from All-American Canal and returned to Colorado River through Rockwood gates. Pilot Knob wasteway was completed in summer of 1938 and first flow occurred Feb. 5, 1939. Pilot Knob powerplant was completed in January 1957 and first flow occurred Jan. 14, 1957. See table below for monthly return flow by Pilot Knob wasteway only.

COOPERATION.--Daily discharges furnished by Imperial Irrigation District.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 9,930 ft<sup>3</sup>/s Dec. 6, 1985, no flow for long periods.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3800	2930	6200	7990	913	1460	2260	1520	1660	2170	1550	.00
2	4100	2940	6220	8000	993	1800	2710	1350	1670	2110	1760	345
3	4540	2800	6510	8020	922	1810	5080	1250	1610	2100	1980	1800
4	3120	2990	6810	7760	937	1870	5850	1910	1650	2050	1730	2280
5	2200	2990	6310	6710	839	1920	3110	2640	1550	1990	1490	2090
6	2410	3120	7200	7450	951	1920	2440	1650	1580	2110	1730	1560
7	2210	3370	6130	7230	813	1900	2440	1610	1010	1720	1910	2000
8	1900	4282	6220	7390	814	1820	2020	1700	116	2030	1640	1760
9	2160	3990	6840	7740	1170	1990	2190	1700	.00	2620	1460	1330
10	2530	4350	7300	8000	1260	2110	2240	1420	.00	3370	1480	2300
11	3030	4120	7440	7820	1450	2110	1810	1450	537	4240	1210	3270
12	2510	4200	7890	8010	1560	2040	2050	1500	795	3080	1200	2490
13	2880	4180	7990	8020	1800	2040	2070	1430	795	3540	950	2600
14	2510	3830	7880	8020	1760	2000	2130	1320	795	4140	950	3240
15	2260	4250	7480	8020	1600	1870	2130	1420	1280	3640	950	2330
16	1830	4200	7680	7970	1980	2040	1820	2690	1480	2260	801	3110
17	1760	4590	7420	7680	2200	2170	2030	1810	1650	1930	794	3380
18	2840	4840	7480	3390	2140	2030	2090	1510	1590	1950	.00	3940
19	2730	4830	7540	1810	1890	2130	2080	1410	1430	1760	.00	4120
20	3000	4880	7900	2070	2290	2090	2090	1690	1490	1710	.00	3670
21	2960	5250	7430	2270	2270	1690	2070	1740	1760	1730	.00	3690
22	2250	5650	7220	1030	2140	2080	2070	1750	1660	1850	.00	3710
23	2720	4970	7650	974	2290	2180	2090	1750	1660	1840	.00	4610
24	2990	4660	7990	968	2290	2440	2060	1650	1660	1860	.00	5760
25	3410	4740	7990	950	2260	2380	1990	1650	1750	1870	.00	6750
26	3450	5210	8010	845	2220	2310	2040	1630	2030	1880	.00	6460
27	3410	5010	8010	845	2200	2300	2050	1750	1740	1560	.00	5480
28	3530	5240	7770	846	2150	2300	2010	1890	1710	1800	.00	5160
29	3410	6330	7710	846	---	2160	1890	1900	1750	2220	.00	6000
30	2950	5920	7790	908	---	2230	2000	1900	1890	3310	.00	5380
31	2650	---	8010	845	---	2340	---	1760	---	3200	.00	---
TOTAL	88050	130662	228020	150427	46102	63530	70910	52350	40358.00	73640	23585.00	100615.00
MEAN	2840	4355	7355	4852	1646	2049	2364	1689	1345	2375	761	3354
MAX	4540	6330	8010	8020	2290	2440	5850	2690	2030	4240	1980	6750
MIN	1760	2800	6130	845	813	1460	1810	1250	.00	1560	.00	.00
AC-FT	174600	259200	452300	298400	91440	126000	140600	103800	80050	146100	46780	199600
(*)	0	0	79	0	0	0	0	0	0	0	0	0
CAL YR 1998	TOTAL	1251603.00	MEAN	3429	MAX	8020	MIN	.00	AC-FT	2483000	(*)	91
WTR YR 1999	TOTAL	1068249.00	MEAN	2927	MAX	8020	MIN	.00	AC-FT	2119000	(*)	79

(\*) Return flow, in acre-feet, by Pilot Knob Wasteway (included in daily discharge table).

## DIVERSIONS AND RETURN FLOWS AT AND BELOW IMPERIAL DAM

## 09527500 ALL-AMERICAN CANAL BELOW PILOT KNOB WASTEWAY, CA

LOCATION.--Lat 32°44'07", long 114°43'25", in NE1/4SE1/4 sec.26, T.16 S., R.21 E., San Bernardino meridian, Imperial County, Hydrologic Unit 15030107, on left bank 0.4 mi downstream from Pilot Knob wasteway, 6 mi west of Yuma, Az., 15 mi upstream from turnout to Coachella Canal, and 21.2 mi downstream from intake at Imperial Dam.

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 150.00 ft above sea level. Auxiliary water-stage recorder on right bank 0.4 mi upstream, used to determine head on Pilot Knob check gates (also used as forebay gage for sta 09527000, Pilot Knob powerplant and wasteway). Datum of auxiliary gage is 150.00 ft above NGVD.

REMARKS.--No estimated daily discharges. Records excellent. Water is used for power development at four sites below station and for irrigation in Coachella and Imperial Valleys.

COOPERATION.--Daily discharges furnished by Imperial Irrigation District.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 7,610 ft<sup>3</sup>/s Apr. 27, 28, 1976; no flow Jan. 4, 1967.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5310	3890	2990	1600	3090	4760	5750	6340	6420	6280	4530	5280
2	5310	4050	2990	2790	3260	5230	5060	6170	6120	6270	4900	5260
3	4550	4220	3020	2620	3180	5110	3170	6150	6210	5990	5310	5290
4	4450	4170	3060	3090	3330	5140	2330	5880	5810	5780	5440	4850
5	4980	4170	2610	3190	3180	5170	4230	5860	5410	6090	5660	4260
6	5180	4070	2080	3360	2230	4950	4750	6000	5120	6250	5700	4620
7	5310	3710	2660	3550	2030	4570	4830	5720	5390	6410	5710	4570
8	5400	2770	2690	3320	2060	5030	5210	5720	6020	6340	5450	5280
9	5280	3520	2930	2940	1860	5100	5020	6010	5780	5970	5660	5520
10	4630	3670	3280	2530	2250	5340	5070	6450	6060	5400	5960	5180
11	4260	3860	3510	3130	2480	5090	4700	6640	6040	4680	6040	4640
12	4670	3970	2880	2930	2360	4990	5340	6780	5840	5210	5940	4220
13	4760	4020	2050	3200	2680	4670	5600	6830	5790	5020	5920	4580
14	4970	3450	2610	3120	2560	4510	5920	6530	5950	4490	5530	4900
15	4950	2750	3520	2970	3320	4640	6280	6320	6100	4740	4870	4900
16	4640	3230	3230	2910	3600	4990	6200	6250	6670	4560	5280	5180
17	4280	3050	3550	2320	4320	5120	5800	6260	6980	4730	5350	5060
18	3930	3420	3550	2740	4820	5340	5530	6570	6570	4470	5380	4650
19	4200	3370	3490	2870	4190	5370	6190	6500	6060	5150	5340	4340
20	4380	3200	2710	2870	4000	5290	6770	6250	5550	5650	5310	4910
21	4570	3160	3490	3020	3920	5310	6610	6140	6340	5810	4890	5500
22	4680	2450	3850	3030	4360	5570	6930	6150	6490	6110	4830	5350
23	4440	3060	3500	2970	4560	5570	6880	5880	6490	6150	5200	4920
24	3910	3360	2060	2790	4780	5650	6710	5750	6620	6020	5300	4100
25	3580	3360	926	3010	4930	5650	6580	5630	6390	6090	5470	3660
26	3970	2330	2320	3370	4660	5440	6750	5600	6090	6450	5590	3530
27	4180	2850	2320	3190	4470	5350	6810	6100	5830	6540	5280	4150
28	4190	2520	3360	3350	4260	4790	6740	6090	5970	6280	4880	4270
29	4440	2180	3630	3360	---	5030	6830	5930	6230	5730	4540	4910
30	4420	2860	3550	3230	---	5330	6660	5740	6210	4770	5000	5000
31	4060	---	2250	2500	---	5580	---	6070	---	4710	5340	---
TOTAL	141880	100690	90666	91870	96740	159680	171250	190310	182550	174140	165600	142880
MEAN	4577	3356	2925	2964	3455	5151	5708	6139	6085	5617	5342	4763
MAX	5400	4220	3850	3550	4930	5650	6930	6830	6980	6540	6040	5520
MIN	3580	2180	926	1600	1860	4510	2330	5600	5120	4470	4530	3530
AC-FT	281400	199700	179800	182200	191900	316700	339700	377500	362100	345400	328500	283400
CAL YR 1998	TOTAL	1731731	MEAN	4744	MAX	7220	MIN	775	AC-FT	3435000		
WTR YR 1999	TOTAL	1708256	MEAN	4680	MAX	6980	MIN	926	AC-FT	3388000		



**RIO SONOYTA BASIN  
SAN SIMON WASH BASIN**

299

**09535100 SAN SIMON WASH NEAR PISINIMO, AZ**

**LOCATION**--Lat 32°02'39", long 112°22'13", in SE1/4 sec 9, T.16 S., R.1 W. (unsurveyed), Pima County, Hydrologic Unit 15080101, in Tohono O'odham Indian Reservation, on right bank about 100 ft downstream from road, just upstream from Gu Vo Wash, and 3.2 mi west of Pisinimo.

**DRAINAGE AREA**--569 mi<sup>2</sup>.

**PERIOD OF RECORD**--February 1972 to current year.

**GAGE**--Water-stage recorder. Elevation of gage is 1,830 ft above sea level, from topographic map. Prior to Oct. 1, 1980, at site 120 ft upstream at same datum.

**REMARKS**--Records fair except for estimated daily discharges, which are poor.

**EXTREMES FOR PERIOD OF RECORD**--Maximum discharge, 12,500 ft<sup>3</sup>/s Sept. 24, 1976, gage height, 10.82 ft, from rating curve extended above 1,700 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow for most of each year.

**EXTREMES FOR CURRENT YEAR**--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Aug. 24 .....	1945	*174	*4.39

No flow for most of year.

**DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.5
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.84
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.20
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.30	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	1.2	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.24	6.9
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	18	.87
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	10	.48
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.53	2.4
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	1.3
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.46
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.01
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	19	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	3.2	e.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.34	e.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	13	e.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.30	2.3	e.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	61	e.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	36	e.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	3.2	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	168.01	14.96
MEAN	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.019	5.42	.50
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.30	.61	6.9
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.2	333	.30
CFSM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1999, BY WATER YEAR (WY)**

MEAN	4.66	1.21	1.89	2.38	1.91	.93	.029	.078	.001	7.23	13.0	9.81
MAX	44.2	14.3	21.1	39.0	26.0	8.50	.35	1.97	.018	39.5	92.5	140
(WY)	1984	1979	1998	1993	1998	1983	1997	1976	1984	1976	1984	1976
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1974	1978	1973	1973	1974	1977	1973	1973	1973	1979	1975	1973

**SUMMARY STATISTICS**

**FOR 1998 CALENDAR YEAR**

**FOR 1999 WATER YEAR**

**WATER YEARS 1973 - 1999**

ANNUAL TOTAL	764.58	183.57	3.61
ANNUAL MEAN	2.09	.50	15.2
HIGHEST ANNUAL MEAN			1976
LOWEST ANNUAL MEAN			1980
HIGHEST DAILY MEAN	286	61	3320
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	1520	354	2620
ANNUAL RUNOFF (CFSM)	.004	.001	.006
ANNUAL RUNOFF (INCHES)	.05	.01	.09
10 PERCENT EXCEEDS	.31	.00	.00
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

**RIO SONOYTA BASIN**  
**SAN SIMON WASH BASIN**

**09535295 VAMORI WASH AT INTERNATIONAL BOUNDARY NEAR SELLS, AZ**

**LOCATION.**--Lat 31°33'55", long 111°46'58", in SW1/4SE1/4 sec.25, T.21 S., R.5 E., San Miguel quad, Pima County, Hydrologic Unit 15080101, Tohono O'odham Indian Reservation on right bank approximately 600 ft downstream from International Boundary.

**DRAINAGE AREA.**--250 mi<sup>2</sup>, approximately, in Mexico.

**PERIOD OF RECORD.**--July 1995 to current year.

**GAGE.**--Water-stage recorder. Elevation of gage is 2,525 ft above sea level, from topographic map.

**REMARKS.**--Records poor.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum discharge, 6,820 ft<sup>3</sup>/s, Aug. 29, 1999, gage height 10.68 ft; no flow for many days each year.

**EXTREMES FOR CURRENT YEAR.**--Peak discharges greater than base discharge of 1,300 ft<sup>3</sup>/s and maximum ("):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 11 .....	2215	1,890	7.26	Aug. 4 .....	1945	2,080	7.63
July 15 .....	2345	1,740	7.31	Aug. 26 .....	2300	2,980	8.36
July 27 .....	1700	2,690	8.14	Aug. 29 .....	1845	*6,820	*10.68

No flow for many days.

**DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999**  
**DAILY MEAN VALUES**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e66	e38
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.24
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e217	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e129	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e3.1	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e1.1	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	e365	e.03	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	e8.5	.00	e33
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	e33	.00	e.16
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	e100	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	e39	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	e2.1	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.76	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	e102	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	e386	e16	e150
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	e422	.00	e35
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	e207	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	e53	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	e13	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	e46	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.07	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e161	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	e439	e154	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	e164	e235	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	e219	e594	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	e75	e153	.00
31	.00	---	.00	.00	---	.00	---	.00	---	e28	e12	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2702.43	1741.23	256.40
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	87.2	56.2	8.55
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	439	594	150
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	5360	3450	509
CAL YR 1998	TOTAL	5967.61	MEAN	16.3	MAX	850	MIN	.00	AC-FT	11840		
WTR YR 1999	TOTAL	4700.06	MEAN	12.9	MAX	594	MIN	.00	AC-FT	9320		

e Estimated

## SAN SIMON WASH BASIN

09635300 VAMORI WASH AT KOM VO, AZ

LOCATION.--Lat 31°57'04", long 112°20'50", in NW1/4 sec.14, T.17 S., R.1 W (unsurveyed), Pima County, Hydrologic Unit 15080101, in Tohono O'Odham Indian Reservation, on right bank 200 ft downstream from road crossing, 0.6 mi south of Kom Vo (Santa Cruz Village) and 5 mi upstream from mouth.

DRAINAGE AREA.--1,250 mi<sup>2</sup>, approximately, of which about 250 mi<sup>2</sup> is in Mexico.

PERIOD OF RECORD.--February 1972 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,770 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,400 ft<sup>3</sup>/s Oct. 3, 1983, gage height, 10.54 ft, from rating curve extended above 550 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow for most of each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 24 .....	unknown	*958	*9.06	Aug. 28 .....	1700	414	8.63
July 27 or 28	unknown	639	8.85	Aug. 31 .....	1100	678	8.88

No flow for most of year

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	185
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	111
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	58
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e12	e4.0
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e70	e.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.8	e22	e.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.3	e6.6	e.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	24	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	e85	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	e48	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	e147	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	e59	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	e8.9	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	e31	.00	.78
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	e12	.00	.20
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	e29	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	e84	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	e31	.00	.30
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	e127	.00	12
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	e89	.00	7.1
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	e3.2	.00	41
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.34	.00	3.6
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	e105	.00	.49
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	e313	.00	.04
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	15	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	72	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	e128	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	e113	56	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	e118	21	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	e45	74	.00
31	.00	---	.00	.00	---	.00	---	.00	---	e16	365	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1709.54	626.60	423.51
MEAN	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	55.1	20.2	14.1
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	313	365	185
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	3390	1240	840
CFSM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.02	.01
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.02	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1999, BY WATER YEAR (WY)

	MEAN	25.5	2.89	4.84	7.89	4.35	2.21	.47	.039	.002	17.4	29.3	15.1
MAX	463	36.7	26.4	61.3	33.1	27.8	10.2	.49	.067	.113	106	103	
(WY)	1984	1973	1983	1993	1983	1992	1987	1984	1990	1984	1976	1975	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.73	.000	
(WY)	1974	1974	1973	1973	1974	1974	1973	1973	1977	1985	1973	1973	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1973 - 1999
ANNUAL TOTAL	1313.82	2759.65	
ANNUAL MEAN	3.60	7.56	9.25
HIGHEST ANNUAL MEAN			52.3
LOWEST ANNUAL MEAN			.97
HIGHEST DAILY MEAN	132	355	8030
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	2610	5470	6700
ANNUAL RUNOFF (CFSM)	.003	.006	.007
ANNUAL RUNOFF (INCHES)	.04	.08	.10
10 PERCENT EXCEEDS	6.0	5.0	4.5
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

## SULPHUR SPRING VALLEY

## WHITEWATER DRAW BASIN

## 09637200 LESLIE CREEK NEAR McNEAL, AZ

LOCATION.--Lat 31°35'24", long 109°30'30", in SE1/4NE1/4 sec.20, T.21 S., R.28 E., Cochise County, Hydrologic Unit 15080301, on right bank 10 mi east of McNeal.

DRAINAGE AREA.--79.1 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1969 to September 1977, July 1982 to current year.

GAGE.--Water-stage recorder and concrete control with shallow sharp-crested V-notch weir. Elevation of gage is 4,620 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,200 ft<sup>3</sup>/s Sept. 1, 1994, gage height, 9.00 ft, from rating curve extended above 12 ft<sup>3</sup>/s on basis of slope-area measurements of peak flow at gage height 7.33 ft and 8.54 ft; no flow for many days in 1976, 1977, and 1990.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, October 1977 to July 1982, 468 ft<sup>3</sup>/s, date unknown, gage height, 4.76 ft in gage well.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 18 .....	1800	451	4.61	Aug. 15 .....	1845	4,510	8.38
July 20 .....	1530	374	4.50	Sept. 23 .....	0100	1,110	5.42
Aug. 3 .....	1830	1,700	5.99				

No flow for several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.13	.19	.17	.19	.14	.17	.14	.12	.04	.01	.20	.07
2	.13	.18	.17	.19	.14	.17	.14	.12	.01	.01	.20	.07
3	.13	.19	.18	.19	.14	.16	.14	.11	.01	.05	199	.07
4	.13	.18	.18	.19	.14	.16	.14	.09	.01	.04	1.7	.06
5	.14	.17	.18	.19	.13	.16	.14	.09	.00	.05	.76	.06
6	.16	.18	.16	.19	.13	.15	.14	.09	.01	.31	.25	.06
7	.16	.17	.16	.19	.14	.15	.14	.09	.00	.33	.18	.06
8	.16	.16	.16	.19	.14	.15	.14	.09	.00	.08	.20	.06
9	.16	.16	.18	.19	.14	.15	.14	.09	.01	.07	13	.06
10	.15	.16	.17	.19	.14	.16	.14	.08	.00	.07	174	.06
11	.16	.15	.17	.19	.14	.16	.14	.08	.00	.08	.30	.06
12	.16	.16	.17	.17	.14	.16	.14	.08	.00	.07	.20	.06
13	.15	.16	.17	.16	.13	.16	.14	.07	.01	.06	.17	.06
14	.15	.14	.18	.16	.13	.16	.14	.07	.01	.07	.16	.06
15	.15	.14	.19	.16	.13	.16	.14	.07	.01	1.0	611	.06
16	.16	.14	.19	.16	.13	.15	.14	.07	.02	.12	.76	.06
17	.19	.13	.19	.16	.13	.14	.14	.07	.06	.12	.29	.06
18	.17	.13	.19	.16	.16	.15	.14	.06	.06	29	.18	.06
19	.18	.13	.19	.16	.16	.16	.13	.06	.05	.31	.15	.07
20	.19	.13	.20	.16	.14	.16	.13	.06	.05	23	.13	.07
21	.19	.14	.20	.16	.14	.16	.13	.05	.07	.37	.12	.07
22	.19	.14	.20	.16	.15	.16	.13	.05	.05	.28	.11	1.0
23	.20	.14	.20	.16	.16	.16	.13	.05	.06	.26	.10	117
24	.20	.14	.20	.16	.16	.14	.13	.05	.03	.22	.09	.07
25	.19	.14	.20	.16	.16	.15	.13	.05	.03	.20	.07	.05
26	.19	.14	.20	.14	.16	.14	.13	.04	.02	.18	.07	.04
27	.23	.16	.20	.14	.16	.14	.12	.05	.01	.17	.08	.05
28	.21	.16	.20	.14	.17	.14	.12	.06	.01	.30	.07	.07
29	.19	.17	.20	.14	---	.14	.12	.07	.01	2.8	.07	.07
30	.19	.16	.19	.14	---	.14	.12	.08	.01	.14	.07	.08
31	.20	---	.19	.14	---	.14	---	.08	---	.19	.07	---
TOTAL	5.29	4.64	5.73	5.18	4.03	4.75	4.04	2.29	0.66	59.96	1078.99	119.75
MEAN	.17	.15	.18	.17	.14	.15	.13	.074	.022	1.93	34.8	3.99
MAX	.23	.19	.20	.19	.17	.17	.14	.12	.07	.29	611	117
MIN	.13	.13	.16	.14	.13	.14	.12	.04	.00	.01	.07	.04
AC-FT	10	9.2	11	10	8.0	9.4	8.0	4.5	1.3	119	2140	238
CFSM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.44	.05
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.51	.06

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 1999, BY WATER YEAR (WY)

	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999
MEAN	.16	.11	.14	.15	.18	.23	.20	.20	.16	2.96	18.1	2.07
MAX	.17	.15	.18	.17	.21	.31	.27	.33	.29	3.99	34.8	3.99
(WY)	1999	1999	1999	1999	1998	1998	1998	1998	1998	1998	1999	1999
MIN	.14	.060	.10	.13	.14	.15	.13	.074	.022	1.93	1.44	.15
(WY)	1998	1998	1998	1998	1999	1999	1999	1999	1999	1999	1998	1998

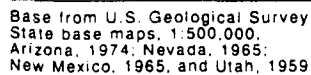
## SUMMARY STATISTICS

## FOR 1998 CALENDAR YEAR

## FOR 1999 WATER YEAR

## WATER YEARS 1998 - 1999

ANNUAL TOTAL	235.27	1295.31	
ANNUAL MEAN	.64	3.55	2.09
HIGHEST ANNUAL MEAN			3.55
LOWEST ANNUAL MEAN			.63
HIGHEST DAILY MEAN	63	611	611
LOWEST DAILY MEAN	.12 Jan 1	.00 Jun 5	.00 Jun 5
ANNUAL SEVEN-DAY MINIMUM	.12 Jan 1	.00 Jun 5	.00 Jun 5
ANNUAL RUNOFF (AC-FT)	467	2570	1510
ANNUAL RUNOFF (CFSM)	.008	.045	.026
ANNUAL RUNOFF (INCHES)	.11	.61	.36
10 PERCENT EXCEEDS	.33	.20	.31
50 PERCENT EXCEEDS	.20	.14	.16
90 PERCENT EXCEEDS	.13	.05	.06



▲<sub>5172</sub> PARTIAL-RECORD STREAMFLOW-GAGING STATION EQUIPPED WITH CREST-STAGE GAGE ONLY—Abbreviated number is station identifier. The complete station number is 09517200

5375 ▲ PARTIAL-RECORD STREAMFLOW-GAGING STATION EQUIPPED WITH CREST-STAGE GAGE AND FLOOD-HYDROGRAPH RECORDER—Abbreviated number is station identifier. The complete station number is 09537500

**Figure 7. Partial-record streamflow-gaging stations, water year 1999.**

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at crest-stage partial-record stations are presented in the following table. Discharge measurements made at low-flow partial-record sites and at miscellaneous sites and for special studies are given in separate tables.

## Crest-stage partial-record stations

The following table contains annual maximum discharges of independent peaks at crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, and discharge measurements may have been made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

## Maximum discharge at crest-stage partial-record stations

Station name and number	Location and drainage area (mi <sup>2</sup> )	Period of record	Water year 1999 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis-charge (ft <sup>3</sup> /s)	Date	Gage height (ft)	Dis-charge (ft <sup>3</sup> /s)
Gila River Basin								
Walnut Creek below lower Lake Mary near Flagstaff, AZ (09400890)	Lat 35°07'17", long 111°35'32", in NE1/4NW1/4, sec.18, T.20 N., R.8 E., Coconino County, Hydrologic Unit 15020015, on left bank about 0.5 mi downstream from Lake Mary Road., 7.5 mi southeast of Flagstaff. Drainage area, undetermined.	1995-99	--	--	--	04-00-97	10.21	--
Walnut Creek at Fisher Point near Flagstaff, AZ (09400920)	Lat 35°09'02", long 111°35'42", in SE1/4SW1/4, sec.31, T.21 N., R.8 E., Coconino County, Hydrologic Unit 15020015, about 0.4 mi downstream from the confluence of Walnut Creek and Skunk Canyon, 4.0 mi south of Flagstaff. Drainage area, undetermined.	1995-99	--	--	--	--	a	--
Walnut Creek near upstream (west) boundary of Walnut Canyon National Monument near Flagstaff, AZ (09400930)	Lat 35°09'54", long 111°31'27", in NE1/4NE1/4, sec.34, T.21 N., R.8 E., Coconino County, Hydrologic Unit 15020015, 0.8 mi south of Walnut Canyon Rd. at Walnut Canyon boundary, 0.2 mi upstream of boundary, 5.5 mi southeast of Flagstaff. Drainage area, undetermined.	1995-99	--	--	--	--	a	--
Cherry Creek near downstream boundary of Walnut Canyon National Monument near Flagstaff, AZ (09400940)	Lat 35°09'23", long 111°28'54", in NE1/4SW1/4, sec.31, T.21 N., R.9 E., Coconino County, Hydrologic Unit 15020015, 0.1 mi upstream from the confluence with Walnut Creek in Walnut Canyon National Monument, 7.5 mi southeast of Flagstaff. Drainage area, undetermined.	1995-99	--	--	--	09-00-97	12.20	--
Vekol Wash near Stanfield, AZ (09488650)	Lat 32°50'30", long 112°15'04", in SW1/4SW1/4 sec.3, T.7 S., R.1 E., Maricopa County, Hydrologic Unit 15050303, on left bank 400 ft downstream from I-8 highway bridge. Drainage area, 150 mi <sup>2</sup> .	1991-96* 1997-99	09-23-99	5.66	481	07-25-96	9.77	7,780
Tortilla Creek at Tortilla Flat, AZ (09501300)	Lat 33°31'38", long 111°23'13", in NW1/4 sec. 13, T.2 N., R.9 E (unsurveyed), Maricopa County, Hydrologic Unit 15060106, 600 ft upstream from State Highway 88 and Tortilla Flat Store, and 3.7 mi southeast of Mormon Flat Dam. Drainage area, 24.3 mi <sup>2</sup> .	1966-83, 1991-99	04-02-99	4.36	69.2	09-01-71	13.23	7,500
Tributary to Granite Creek at Prescott, AZ (09502970)	Lat 34°33'04", long 112°27'37", in SW1/4SW1/4, sec.34, T.14 N., R.2 W., Yavapai County, Hydrologic Unit 15060202 on the Yavapai Indian Reservation near the southern boundary at Prescott. Drainage area, undetermined.	1994-99	08-05-99	11.13	--	08-24-98	13.46	--
Government Canyon Wash at Prescott, AZ (09502980)	Lat 34°33'24", long 112°26'54", in SE1/4SE1/4, sec.27, T.14 N., R.2 W., Yavapai County, Hydrologic Unit 15060202 on the Yavapai Indian Reservation, 0.1 mi upstream of the mouth on the old Highway 89 bridge at Prescott. Drainage area, undetermined.	1994-99	07-29-99	6.03	--	03-06-95	6.53	--
Goat Ranch Wash at Prescott, AZ (09502990)	Lat 34°33'27", long 112°26'37", in SW1/4SW1/4, sec.26, T.14 N., R.2 W., Yavapai County Hydrologic Unit 15060202 on the Yavapai Indian Reservation, 0.1 mi upstream of the mouth on the old Highway 89 bridge at Prescott. Drainage area, undetermined.	1994-99	07-29-99	3.19	--	07-09-96	3.64	--

See footnotes at end of table.

Station name and number	Location and drainage area (mi <sup>2</sup> )	Period of record	Water year 1999 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft <sup>3</sup> /s)	Date	Gage height (ft)	Discharge (ft <sup>3</sup> /s)
Gila River Basin--Continued								
Slaughter House Wash near Prescott, AZ (09502995)	Lat 34°33'40", long 112°26'29", in NE1/4SW1/4, sec.26, T.14 N., R.2 W., Yavapai County, Hydrologic Unit 15060202 on the Yavapai Indian Reservation, 0.1 mi upstream from the mouth, on the Highway 39 bridge abutment, 0.5 mi north of Prescott. Drainage area, undetermined.	1994-99	07-29-99	12.47	--	08-23-95	12.59	--
Camp Creek near Sunflower, AZ (09510170)	Lat 33°45'35", long 111°29'44", in SW1/4 sec.24, T.5 N., R.8 E., Maricopa County, Hydrologic Unit 15060203, on right bank at upstream side of culvert on State Highway 87, half a mile upstream from mouth and 7 mi south of Sunflower. Drainage area, 2.6 mi <sup>2</sup>	1963-66*, 1967-79, 1991-99	08-27-99	1.22	28.8	03-02-78	5.05	402
Rock Creek near Sunflower, AZ (09510180)	Lat 33°43'49", long 111°30'28", in SW1/4 sec.24, T.5 N., R.8 E., Maricopa County, Hydrologic Unit 15060203, on left bank 300 ft from culvert on State Highway 87, 0.3 mi upstream from mouth, and 10 mi south of Sunflower. Drainage area, 15.2 mi <sup>2</sup>	1963-72, 1991-99	08-27-99	6.25	1,204	01-08-93	7.30	2,550
Indian Bend Wash at Shea Boulevard at Phoenix, AZ (09512090)	Lat 33°35'05", long 111°58'10", in SW1/4 SW1/4SE1/4 sec.20, T.3 N., R.4 E., Maricopa County, Hydrologic Unit 15060106, on left bank 500 ft upstream from Shea Boulevard bridge. Drainage area, 24.5 mi <sup>2</sup>	1984-99	09-19-99	2.44	1,371	10-06-93	3.89	4,700
Salt River tributary in South Mountain Park at Phoenix, AZ (09512200)	Lat 33°20'49", long 112°05'03", in NE1/4 NE1/4 sec.18, T.1 N., R.3 E., Maricopa County, Hydrologic Unit 15060106, in South Mountain Park, on left bank 7.4 mi south of Phoenix main post office. Drainage area, 1.75 mi <sup>2</sup>	1961-98*, 1999	07-07-99	9.91	720	08-15-90	10.31	1,210
Agua Fria River tributary No. 2 near Rock Springs, AZ (09512700)	Lat 33°02'00", long 112°08'42", in SW1/4 sec.14, T.8 N., R.2 E., Maricopa County, Hydrologic Unit 15070102, at culvert on Interstate Highway 17 (southbound lane), 1 mi south of Rock Springs, and 9 mi north of New River. Drainage area, 1.07 mi <sup>2</sup>	1963-80, 1991-99	07-15-99	4.32	228	08-02-64	19.54	1,200
Deadman Wash near New River, AZ (09513820)	Lat 33°50'30", long 112°08'40", in NW1/4 sec.27, T.6 N., R.2 E., Maricopa County, Hydrologic Unit 15070102, 300 ft downstream from bridge on Interstate Highway 17, 4.5 mi south of New River. Drainage area, 11.1 mi <sup>2</sup>	1960-79, 1991-99	07-06-99	6.78	467	12-25-59	7.00	1,850
Waterman Wash near Buckeye, AZ (09514200)	Lat 33°19'49", long 112°30'33", in SW1/4 NE1/4 sec.24, T.1 S., R.3 W., Maricopa County, Hydrologic Unit 15070101, 2.4 mi above mouth, 5.2 mi southeast of Buckeye. Drainage area, 420 mi <sup>2</sup>	1964-99	07-28-99	4.63	916	08-08-97	7.80	9,400
Hartman Wash near Wickenburg, AZ (09515800)	Lat 33°57'46", long 112°49'40", in SW1/4 sec.12, T.7 S., R.6 W., Maricopa County, Hydrologic Unit 15070103, at U.S Highway 60, 5.7 mi west of Wickenburg. Drainage area, 5.57 mi <sup>2</sup>	1964-79, 1983, 1991-99	07-15-99	2.93	179	09-14-67	8.05	2,600
Ox Wash near Morristown, AZ (09516600)	Lat 33°53'00", long 112°39'00", in NW1/4 sec.11, T.6 N., R.4 W., Maricopa County, Hydrologic Unit 15070103, at U.S Highway 60, 2.4 mi northwest of Morristown, and 7.6 mi southeast of Wickenburg. Drainage area, 6.31 mi <sup>2</sup>	1960, 1963-79, 1991-99	07-15-99	3.01	446	08-26-64	10.2	2,900
Jack Rabbit Wash near Tonopah, AZ (09516800)	Lat 33°39'32", long 112°49'40", in NE1/4 NW1/4 sec.25, T.4 N., R.6 W., Maricopa County, Hydrologic Unit 15070103, 35 ft downstream from Wickenburg-Hassavampa Road, 4.5 mi upstream from Star Wash, and 14 mi northeast of Tonopah. Drainage area, 137 mi <sup>2</sup>	1964-79, e1983, 1991-99	07-29-99	9.26	706	09--83	11.2	13,000
Centennial Wash tributary near Wenden, AZ (09517200)	Lat 33°50'40", long 113°28'00", in SW1/4 SW1/4 sec.24, T.6 N., R.12 W., La Paz County, Hydrologic Unit 15070104, at U.S Highway 60, 5 mi northeast of Wenden. Drainage area, 2.79 mi <sup>2</sup>	1963-79, 1983, 1991-99	--	4	--	09-05-70	4.66	790
Tiger Wash near Aguila, AZ (09517280)	Lat 33°44'30", long 113°16'43", in SW1/4 SW1/4 sec.26, T.5 N., R.10 W., Maricopa County, Hydrologic Unit 15070104, 17 mi south of Aguila. Drainage area, 85.2 mi <sup>2</sup>	1963-79, 1983, 1991-99	08-30-99	5.17	755	09-26-97	10.17	8,070

See footnotes at end of table.

Station name and number	Location and drainage area (mi <sup>2</sup> )	Period of record	Water year 1999 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft <sup>3</sup> /s)	Date	Gage height (ft)	Discharge (ft <sup>3</sup> /s)
Gila River Basin—Continued								
Winter's Wash near Tonopah, AZ (09517400)	Lat 33°29'22", long 112°55'05", in SW1/4NW1/4 sec.30, T.2 N., R.6 W., Maricopa County, Hydrologic Unit 15070104, on right bank 0.3 mi downstream from Interstate 10 and 1 mi east of Tonopah. Drainage area, 47.8 mi <sup>2</sup> .	1963-79, 1999	09-11-99	3.89	654	09-25-76	10.10	3,640
Rainbow Wash tributary near Buckeye, AZ (09519600)	Lat 33°14'35", long 112°38'15", in NE1/4 sec.23, T.2 S., R.4 W., Maricopa County, Hydrologic Unit 15070101, at U.S. Highway 80, 9.5 mi southwest of Buckeye. Drainage area, c.3.45 (1.02) mi <sup>2</sup> .	1963-79, 1983, 1991-99	07-02-99	2.65	116	09-03-67	7.42	1,430
Bender Wash near Gila Bend, AZ (09519750)	Lat 32°54'25", long 112°33'05", in NE1/4 sec.15, T.6 S., R.3 W., Maricopa County, Hydrologic Unit 15070101, along side of Interstate 8, 10 mi southeast of Gila Bend. Prior to Aug. 26, 1966, at site 0.65 mi downstream. Drainage area, 68.8 mi <sup>2</sup> .	1963-79, 1983, 1991-99	07-14-99	4.54	628	02--83	8.49	3,610
Sauceda Wash near Gila Bend, AZ (09519760)	Lat 32°52'14", long 112°45'30", in SE1/4SW1/4 sec.27, T.6 S., R.5 W., Black Gap Quadrangle, Maricopa County, Hydrologic Unit 15070101 on the east side of State Highway 85, 5.3 mi south of Gila Bend at Mile Marker 5.3. Drainage area, 126 mi <sup>2</sup> .	1963-79, 1990-94*, 1995-99	07-14-99	2.23	105	09-25-76	6.30	3,153
Military Wash near Sentinel, AZ (09520100)	Lat 32°50'43", long 113°16'44", in SW1/4 sec.3, T.7 S., R.10 W., Maricopa County, Hydrologic Unit 15070201, at Interstate Highway 8, 4.1 mi west of Sentinel. Drainage area, 8.70 mi <sup>2</sup> .	1963-79, 1983, 1991-99	--	a	--	08-02-74	5.35	1,530
Crater Range Wash near Ajo, AZ (09520230)	Lat 32°33'44", long 112°52'37", in NW1/4 NW1/4 sec.15, T.10 S., R.6 W., Maricopa County, Hydrologic Unit 15070202, at State Highway 85, 4.1 mi north of Maricopa-Pima County line, and 13.5 north of Ajo. Drainage area, 1.49 mi <sup>2</sup> .	1963-79, 1983, 1991-99	--	a	--	09-04-69	3.70	590
Whitewater Draw Basin								
Whitewater Draw near Douglas, AZ (09537500)	Lat 31°21'08", long 109°35'04", in SW1/4SE1/4 sec.10, T.24 S., R.27 E., Cochise County, Hydrologic Unit 15080301, on downstream side of pier of bridge on U.S. Highway 80, 1.5 mi upstream from international boundary and 2 mi west of Douglas. Drainage area, 1,023 mi <sup>2</sup> .	1947-82*, b1983-99	08-06-99	8.60	453	08-07-55	14.66	5,060

\* Operated as a continuous-record gaging station.

a No highwater marks recorded.

b Record furnished by International Boundary and Water Commission.

c Portion of drainage basin is generally noncontributing.

d Revised.

e Estimated.



## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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## Discharge measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations are given in the following table. Those that are measurements of base flow are designated by one asterisk (\*); measurements of peak flow by two asterisks (\*\*).

## Discharge measurements made at miscellaneous sites during water year 1999

Stream	Tributary to	Location	Drainage area (mi <sup>2</sup> )	Measured previously (water years)	Measurements	
					Date	Discharge (ft <sup>3</sup> /s)
Colorado River Basin						
Big Ditch 200 ft below Colorado River diversion from Little Colorado River near Eager, AZ	Colorado River	Lat 34°05'15", long 109°23'47", NW1/4NW1/4SE1/4, sec.16 T.8 N., R.28 E., Apache County, Hydrologic Unit 15020001.	---	---	05-18-99	28.1
Big Ditch at 26 Bar Ranch near Eager, AZ	Colorado River	Lat 34°05'52", long 109°20'00", SW1/4SW1/4SW1/4, sec.7 T.8 N., R.29 E., Apache County, Hydrologic Unit 15020001.	---	---	05-18-99	26.4
Santa Cruz River Basin						
Rillito Creek at Craycroft Blvd. at Tucson, AZ	Santa Cruz River	Lat 33°42'44", long 110°52'55", in SW1/4NW1/4SW1/4, sec.25 T.13 S., R.14 E., Pima County, Hydrologic Unit 15050301.	a833	1998	07-16-99	125
Rillito Creek at Swan Blvd. at Tucson, AZ	Santa Cruz River	Lat 33°42'45", long 110°53'55", in NE1/4NE1/4SE1/4, sec.27 T.13 S., R.14 E., Pima County, Hydrologic Unit 15050301.	a846	1998	07-16-99	123
Rillito Creek at Campbell Avenue at Tucson, AZ	Santa Cruz River	Lat 33°42'53", long 110°56'47", in NW1/4SW1/4NW1/4, sec.20 T.13 S., R.14 E., Pima County, Hydrologic Unit 15050301.	a886	1998	07-16-99	50.1
Rillito Creek at First Avenue at Tucson, AZ	Santa Cruz River	Lat 33°42'55", long 110°57'45", in NW1/4SW1/4NW1/4, sec.19 T.13 S., R.14 E., Pima County, Hydrologic Unit 15050301.	a892	1998	07-16-99	49.0
Rillito Creek at Oracle Road at Tucson, AZ	Santa Cruz River	Lat 33°42'61", long 110°58'44", in SW1/4SW1/4SW1/4, sec.13 T.13 S., R.13 E., Pima County, Hydrologic Unit 15050301.	a913	1998	07-16-99	21.4
Florence-Casa Grande Canal						
Southside Canal	Florence-Casa Grande Canal	Lat 33°42'61", long 110°58'44", in SE1/4SE1/4NE1/4, sec.22 T.5 S., R.7 E., Pinal County, Hydrologic Unit 15050100.	---	---	04-21-99	69.2
Southside Canal	Florence-Casa Grande Canal	Lat 33°42'61", long 110°58'44", in SE1/4SE1/4NE1/4, sec.22 T.5 S., R.7 E., Pinal County, Hydrologic Unit 15050100.	---	---	04-27-99	77.5
Southside Canal	Florence-Casa Grande Canal	Lat 33°42'61", long 110°58'44", in SE1/4SE1/4NE1/4, sec.22 T.5 S., R.7 E., Pinal County, Hydrologic Unit 15050100.	---	---	04-27-99	83.8

a Approximately

**ANALYSIS OF SAMPLES COLLECTED AT MISCELLANEOUS SITES  
WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999**

**MISCELLANEOUS STATION ANALYSES**

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	
333300111385701 SALT RIVER NEAR COON BLUFF, AZ (LAT 33 33 00N LONG 111 38 57W)--ADEQ												
MAY 1999 31...	1700	956	1390	8.7	35.0	22.7	.30	723	11.1	136	7	20
342848111475700 VERDE R. AT BEASLEY PLATS NR CAMP VERDE, AZ. (LAT 34 28 48N LONG 111 47 57W)--ADEQ												
JUL 1999 13...	0935	85	949	8.5	32.0	27.0	77	690	6.8	94	6	100
344500112013001 VERDE RIVER ABV DEAD HORSE RANCH STATE PARK (LAT 34 45 00N LONG 112 01 30W)--ADEQ												
JUN 1999 10...	1035	14	556	8.5	--	21.5	1.4	680	8.4	108	6	K4
344505112010001 VERDE RIVER BLW DEAD HORSE RANCH STATE PARK (LAT 34 45 05N LONG 112 01 00W)--ADEQ												
JUN 1999 10...	1530	14	546	8.6	--	26.0	1.2	680	9.7	135	<5	K21
344557112014600 VERDE RIVER AT TUZIGOOT BRIDGE NR CLARKDALE, ARIZ (LAT 34 45 57N LONG 112 01 46W)--ADEQ												
JUN 1999 23...	0845	63	475	8.6	--	21.4	.54	678	7.1	91	6	30
344610112022501 VERDE RIVER AT SEWAGE DISPOSAL POND (LAT 34 46 10N LONG 112 02 25W)--ADEQ												
JUN 1999 23...	1005	63	468	8.6	--	23.0	.40	677	7.6	100	5	K14
344615112023501 VERDE RIVER ABV SEWAGE DISPOSAL POND (LAT 34 46 15N LONG 112 02 35W)--ADEQ												
JUN 1999 23...	1440	62	464	8.5	--	23.9	.45	675	8.2	111	<5	K7
344650112025501 VERDE RIVER BLW DIVERSION DAM (LAT 34 46 50N LONG 112 02 55W)--ADEQ												
JUN 1999 24...	0850	62	483	8.4	--	22.3	.55	680	7.4	96	<5	33
344744112032701 VERDE RIVER BLW TAPCO SUBSTATION (LAT 34 47 44N LONG 112 03 27W)--ADEQ												
JUN 1999 11...	0740	66	476	8.6	--	18.0	1.6	675	7.2	86	<5	K12
343349112263701 YP-8 (LAT 34 33 49N LONG 112 26 37W)--YAVAPAI-PRESCOTT INDIAN TRIBE												
MAY 1999 25...	1315	--	769	7.3	--	14.5	--	--	2.1	--	--	--
343308112274201 YP-12 (LAT 34 33 08N LONG 112 27 42W)--YAVAPAI-PRESCOTT INDIAN TRIBE												
MAY 1999 26...	1535	--	752	6.8	--	14.0	--	--	.6	--	--	--
354236109331400 PUEBLO COLORADO WASH NR GANADO (LAT 35 42 36N LONG 109 33 14W)--HUBBELL TRADING POST(NPS)												
SEP 1998 29...	0945	.04	612	7.9	23.5	16.5	21	609	10.1	130	--	660
AUG 1999 09...	1255	.17	701	8.6	24.0	21.0	120	610	7.5	106	--	220
354237109331201 A-27-26 27CAC (LAT 35 42 37N LONG 109 33 12W)--HUBBELL TRADING POST(NPS)												
SEP 1998 29...	1100	--	630	7.4	20.0	14.0	--	609	--	--	--	--

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[illegible]

DATE	MISCELLANEOUS STATION ANALYSES										RESIDUE TOTAL AT 105 DEG. C.	NITRO- GEN, NITRATE DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L)
	CAR- BONATE WATER DIS IT FIELD	ALKA- LINITY WAT DIS TOT IT FIELD	SULFATE DIS- SOLVED (MG/L)	CHLO- RIDE, DIS- SOLVED (MG/L)	PLUO- RIDE, DIS- SOLVED (MG/L)	SILICA, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DTS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (MG/L)	AC- PER (MG/L)			
	CO3 (00452)	CACO3 (39086)	AS SO4 (00945)	AS CL (00940)	AS P (00950)	STO2 (00955)	(70300)	(70301)	(70303)	(00530)	AS N (00618)	AS NO3 (71851)	

[illegible]

	NITRO- GEN, NITRITE DIS- SOLVED	NITRO- GEN, NO2+NO3 TOTAL	NITRO- GEN, NO2+NO3 SOLVED	NITRO- GEN, AMMONIA TOTAL	NITRO- GEN, AMMONIA SOLVED	NITRO- GEN, ORGANIC TOTAL	NITRO- GEN, AM- MONIA + ORGANIC TOTAL	NITRO- GEN, AM- MONIA + ORGANIC DIS.	NITRO- GEN, TOTAL	NITRO- GEN SOLVED	NITRO- GEN, AMMONIA TOTAL
DATE	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)
AS N	AS N	AS N	AS N	AS N	AS N	AS N	AS N	AS N	AS N	AS N	AS NH4
(00613)	(00630)	(00631)	(00610)	(00608)	(00605)	(00607)	(00625)	(00623)	(00600)	(00602)	(71845)

[illegible]

[illegible]

## 313

[illegible]

ANALYSIS OF SAMPLES COLLECTED AT MISCELLANEOUS SITES  
WATER YEAR OCTOBER 1988 TO SEPTEMBER 1999—Continued

### MISCELLANEOUS STATION ANALYSES

[illegible]



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[illegible]

[illegible]



**ANALYSIS OF SAMPLES COLLECTED AT MISCELLANEOUS SITES  
WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999--Continued**

**MISCELLANEOUS STATION ANALYSES**

DATE	PRO- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GP, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GP, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GP, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GP, REC (UG/L) (82665)	TER- BUPOS WATER FLTRD 0.7 U GP, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GP, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GP, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GP, REC (UG/L) (82661)	AROCOR 1016 PCB TOTAL (UG/L) (34671)	AROCOR 1221 PCB TOTAL (UG/L) (39488)
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343349112263701 YP-8 (LAT 34 33 49N LONG 112 26 37W)

MAY 1999

25... <.0070 <.0040 <.0220 .0350 E.0136 <.0070 <.0130 <.0020 <.0010 <.0020 -- --

343308112274201 YP-12 (LAT 34 33 08N LONG 112 27 42W)

MAY 1999

26... -- -- -- -- -- -- -- -- -- -- <.100 <.100

DATE	AROCOR 1232 PCB TOTAL (UG/L) (39492)	AROCOR 1242 PCB TOTAL (UG/L) (39496)	AROCOR 1248 PCB TOTAL (UG/L) (39500)	AROCOR 1260 PCB TOTAL (UG/L) (39508)	ENDO- SULFAN SULFATE TOTAL (UG/L) (34351)	ENDRIN ALDE- HYDE TOTAL (UG/L) (34366)	ISODRIN SUR SCD 1608 WTR, UNFLTRD PERCENT (90570)	ENDO- SULFAN- I WATER WHOLE REC (UG/L) (34361)	ALPHA BHC TOTAL (UG/L) (39337)	ENDO- SULFAN II TOTAL (UG/L) (34356)	BETA BENZENE HEXA- CHLOR- IDE TOTAL (UG/L) (39338)	CHLOR- DANE CIS WATER WHOLE TOTAL (UG/L) (39062)
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343349112263701 YP-8 (LAT 34 33 49N LONG 112 26 37W)

MAY 1999

25... -- -- -- -- -- -- -- -- -- -- -- --

343308112274201 YP-12 (LAT 34 33 08N LONG 112 27 42W)

MAY 1999

26... <.100 <.100 <.100 <.100 <.600 <.200 a98.0 <.100 <.030 <.040 <.030 <.100

DATE	DELTA BENZENE HEXA- CHLOR- IDE TOTAL (UG/L) (34259)	CHLOR- DANE TRANS WATER WHOLE TOTAL (UG/L) (39065)	ETHANE, 1112- TETRA- CHLORO- WAT UNF REC (UG/L) (77562)	1,1,1- TRI- CHLORO- ETHANE TOTAL (UG/L) (34506)	ETHANE, 1,1,2,2- TETRA- CHLORO- WAT UNF REC (UG/L) (34516)	1,1,2- TRI- CHLORO- ETHANE TOTAL (UG/L) (34511)	PREON- 113 WATER UNFLTRD REC (UG/L) (77652)	1,1-DI- CHLORO- ETHYL- ENE TOTAL (UG/L) (34496)	1,1-DI- CHLORO- ETHYL- ENE TOTAL (UG/L) (34501)	1,1-DI- CHLORO- PRO- FENE, WAT, WH TOTAL (UG/L) (77168)	1,2,3- TRI- CHLORO- BENZENE WAT, WH REC (UG/L) (77613)
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343349112263701 YP-8 (LAT 34 33 49N LONG 112 26 37W)

MAY 1999

25... -- -- <.200 2.83 <.200 <.200 <.200 1.89 <.200 <.200 <.200

343308112274201 YP-12 (LAT 34 33 08N LONG 112 27 42W)

MAY 1999

26... <.090 <.100 <.200 <.200 <.200 <.200 <.200 <.200 <.200 <.200 <.200

DATE	123-TRI CHLORO- PROPANE WATER WHOLE TOTAL (UG/L) (77443)	BENZENE 1,2,4- TRI- CHLORO- WAT UNF REC (UG/L) (34551)	BENZENE 124-TRI- METHYL UNFILT RECOVER (UG/L) (77222)	DIBROMO CHLORO- PROPANE WATER WHOLE TOT. REC (UG/L) (82625)	1,2- DIBROMO ETHANE WATER WHOLE TOTAL (UG/L) (77651)	BENZENE O-DI- CHLORO- WATER UNFLTRD REC (UG/L) (34536)	ETHANE 12DICI SURROG VOC TOTAL (UG/L) (32103)	ETHANE 1,2-DI- CHLORO- PROPANE UNFLTRD REC (UG/L) (99832)	BENZENE 135-TRI- METHYL WATER UNFLTRD REC (UG/L) (34541)	BENZENE 1,3-DI- CHLORO- WATER UNFLTRD REC (UG/L) (77226)	BENZENE 1,3-DI- CHLORO- WATER UNFLTRD REC (UG/L) (34566)
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343349112263701 YP-8 (LAT 34 33 49N LONG 112 26 37W)

MAY 1999

25... <.200 <.200 <.200 <1.00 <.200 <.200 <.200 a103 <.200 <.200 <.200

343308112274201 YP-12 (LAT 34 33 08N LONG 112 27 42W)

MAY 1999

26... <.200 <.200 <.200 <1.00 <.200 <.200 <.200 a105 <.200 <.200 <.200

## MISCELLANEOUS STATION ANALYSES

DATE	1,3-DI- CHLORO- PROPANE WAT. WH	BENZENE 14BRPL- SURROG VOC UNFLTRD	BENZENE 1,4-DI- CHLORO- WATER UNFLTRD	2,2-DI- CHLORO- PRO- PANE WAT. WH	O- CHLORO- TOLUENE WATER WHOLE	TOLUENE P-CHLOR WATER UNFLTRD	P-ISO- PROPYL- TOLUENE WATER WHOLE	ACRYLO- NITRILE TOTAL (UG/L)	BENZENE TOTAL (UG/L)	BROMO- BENZENE WATER, WHOLE, TOTAL (UG/L)	BROMO- CHLORO- WAT UNFLTRD REC (UG/L)
	TOTAL (UG/L)	REC (99834)	REC (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	REC (UG/L)	REC (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)
	(77173)		(34571)	(77170)	(77275)	(77277)	(77356)	(34215)	(34030)	(81555)	(77297)
	343349112263701 YP-8 (LAT 34 33 49N LONG 112 26 37W)										
MAY 1999 25...	<.200	a93.5	.123	<.200	<.200	<.200	<.200	<2.50	<.200	<.200	<.200
	343308112274201 YP-12 (LAT 34 33 08N LONG 112 27 42W)										
MAY 1999 26...	<.200	a95.5	<.200	<.200	<.200	<.200	<.200	<2.50	<.200	<.200	<.200
DATE	BROMO- DI- CHLORO- METHANE TOTAL (UG/L)	BROMO- FORM TOTAL (UG/L)	METHYL- BROMIDE TOTAL (UG/L)	BENZENE N-BUTYL WATER UNFLTRD REC (UG/L)	CHLORO- BENZENE TOTAL (UG/L)	CHLORO- ETHANE TOTAL (UG/L)	CHLORO- FORM TOTAL (UG/L)	METHYL- CHLO- RIDE TOTAL (UG/L)	CHLORO- DI- BROMO- METHANE TOTAL (UG/L)	DI- BROMO- METHANE WATER WHOLE RECOVER (UG/L)	DI- CHLORO- DI- FLUORO- METHANE TOTAL (UG/L)
	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	REC (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	RECOVER (UG/L)	TOTAL (UG/L)
	(32101)	(32104)	(34413)	(77342)	(34301)	(34311)	(32106)	(34418)	(32105)	(30217)	(34668)
	343349112263701 YP-8 (LAT 34 33 49N LONG 112 26 37W)										
MAY 1999 25...	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200
	343308112274201 YP-12 (LAT 34 33 08N LONG 112 27 42W)										
MAY 1999 26...	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200
DATE	METHYL- ENE CHLO- RIDE TOTAL (UG/L)	ETHYL- BENZENE TOTAL (UG/L)	HEXA- CHLORO- BUT- ADIENE TOTAL (UG/L)	ISO- PROPYL- BENZENE WATER WHOLE REC (UG/L)	NAPHTH- ALENE TOTAL (UG/L)	STYRENE TOTAL (UG/L)	TETRA- CHLORO- ETHYL- ENE TOTAL (UG/L)	CARBON TETRA- CHLO- RIDE TOTAL (UG/L)	TOLUENE D8 SURROG VOC TOTAL (UG/L)	TRI- CHLORO- ETHYL- ENE TOTAL (UG/L)	
	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	REC (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	PERCENT (99833)	
	(34423)	(34371)	(39702)	(77223)	(34696)	(77128)	(34475)	(32102)	(34010)	(39180)	
	343349112263701 YP-8 (LAT 34 33 49N LONG 112 26 37W)										
MAY 1999 25...	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	a97.3	<.200
	343308112274201 YP-12 (LAT 34 33 08N LONG 112 27 42W)										
MAY 1999 26...	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	a101	<.200
DATE	TRI- CHLORO- FLUORO- METHANE TOTAL (UG/L)	VINYL CHLO- RIDE TOTAL (UG/L)	XYLENE WATER UNFLTRD REC (UG/L)	CIS-1,2 -DI- CHLORO- ETHENE WATER TOTAL (UG/L)	CIS 1,3-DI- CHLORO- PROPENE TOTAL (UG/L)	BENZENE N-PROPY WATER UNFLTRD REC (UG/L)	BENZENE SEC BUTYL- WATER UNFLTRD REC (UG/L)	METHYL TERT- BUTYL- ETHER WAT UNF REC (UG/L)	BENZENE TERT- BUTYL- WATER UNFLTRD REC (UG/L)	TRANS- 1,2-DI- CHLORO- ETHENE TOTAL (UG/L)	TRANS- 1,3-DI- CHLORO- PROPENE TOTAL (UG/L)
	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)	REC (UG/L)	REC (UG/L)	REC (UG/L)	REC (UG/L)	TOTAL (UG/L)	TOTAL (UG/L)
	(34488)	(39175)	(81551)	(77093)	(34704)	(77224)	(77350)	(78032)	(77353)	(34546)	(34699)
	343349112263701 YP-8 (LAT 34 33 49N LONG 112 26 37W)										
MAY 1999 25...	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200
	343308112274201 YP-12 (LAT 34 33 08N LONG 112 27 42W)										
MAY 1999 26...	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200

&lt; Actual value is known to be less than the value shown.

K Based on non-ideal colony count.

E Estimated (for pesticide data, see introductory text section titled "Identifying Estimated Pesticide Concentrations").

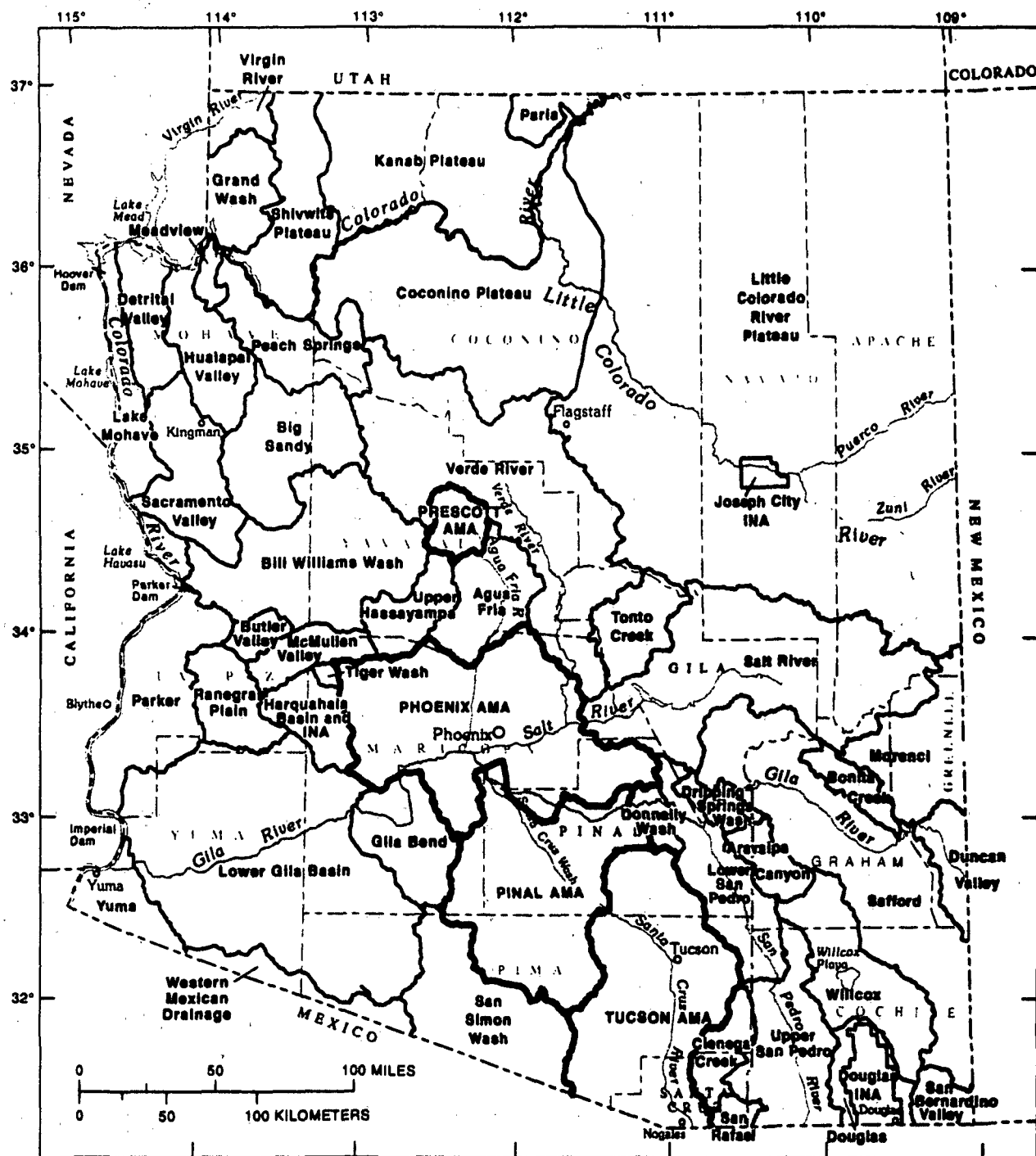
a Listed values are recovery percentages for the indicated compounds. These compounds are added to the sample to determine the relative recovery of other organic compounds that are detected using the same analytical method.

## Program Legend:

ADEQ: Arizona Department of Environmental Quality, Fixed-Station Network Program.

Yavapai-Prescott Indian Tribe: Water Quality Monitoring Program.

Hubbell Trading Post (NPS): National Park Service Inventory Program.



Base from U.S. Geological Survey  
State base maps, 1:500,000.  
Arizona, 1974; Nevada, 1965;  
New Mexico, 1965; and Utah, 1959

#### EXPLANATION

- BOUNDARY OF GROUND-WATER BASIN OR SUBBASIN
- BOUNDARY OF ACTIVE MANAGEMENT AREA (AMA)

**Figure 8. Arizona Department of Water Resources ground-water basins, Active Management Areas (AMA's), and Irrigation Non-Expansion Areas (INA's).**

## Municipal Ground-Water Withdrawals (acre-feet)

Basin	1998
Agua Fria Basin	299
Big Sandy Basin	1
Bill Williams Basin	434
Cienega Creek Basin	11
Detrital Valley Basin	90
Douglas Basin	5,812
Duncan Valley Basin	302
Gila Bend Basin	509
Harquahala Basin	95
Hualapai Valley Basin	162
Kanab Plateau Basin	838
Lake Havasu Basin	14,351
Lake Mohave Basin	12,374
Little Colorado River Plateau Basin	9,797
Lower Gila Basin	297
Lower San Pedro Basin	2,869
McMullen Valley Basin	149
Meadview Basin	89
Morenci Basin	2,600
Paria Basin	40
Parker Basin	1,780
Peach Springs Basin	157
Ranegras Plain Basin	60
Sacramento Valley Basin	7,769
Safford Basin	5,046
Salt River Basin	2,714
San Rafeael Basin	1
Tonto Creek Basin	1,475
Upper Hassayampa Basin	1,565
Upper San Pedro Basin	9,187
Verde River Basin	5,820
Virgin River Basin	30
Willcox Basin	1,368
Yuma Basin	8,657

## Estimated Ground-Water Withdrawals in Arizona, 1998

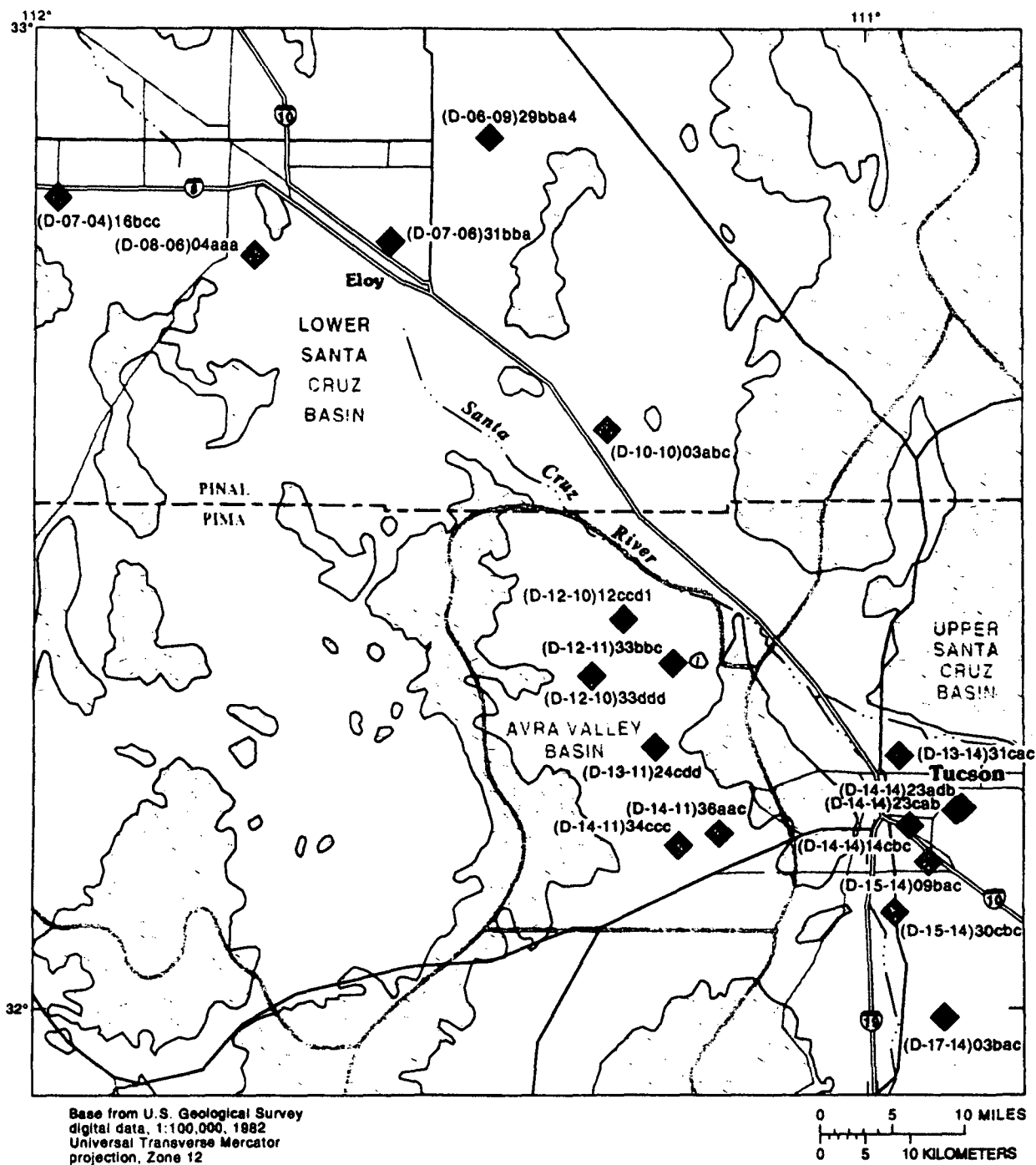
## Industrial Ground-Water Withdrawals (acre-feet)

Basin	1998
Lake Havasu Basin	72
Little Colorado River Basin	51,750
Lower San Pedro Basin	16,084
Morenci Basin	18,652
Sacramento Valley Basin	150
Safford Basin	290
Salt River Basin	919
Upper San Pedro Basin	181
Verde River Basin	765
Willcox Basin	5,586

## Irrigation Ground-Water Withdrawals (acre-feet)

Basin	1998
Aravaipa Canyon Basin	4,073
Bill Williams Basin	5,004
Cienega Creek Basin	871
Douglas Basin	19,337
Duncan Valley Basin	3,857
Gila Bend Basin	31,396
Harquahala Basin	18,055
Kanab Plateau Basin	1,800
Lake Mohave Basin	93,556
Little Colorado River Basin	27,740
Lower Gila Basin	139,501
Lower San Pedro Basin	23,696
McMullen Valley Basin	67,705
Ranegras Plain Basin	8,473
Safford Basin	21,775
Salt River Basin	1,663
Tonto Creek Basin	1,900
Upper San Pedro Basin	35,176
Verde River Basin	9,750
Virgin River Basin	8,000
Willcox Basin	172,748





- EXPLANATION**
- |  |   |                |  |
|--|---|----------------|--|
|  | BASIN SEDIMENTS AND SURFICIAL ALLUVIAL DEPOSITS |                | WELL AND EXTENSOMETER SITE CURRENTLY MONITORED BY U.S. GEOLOGICAL SURVEY—<br>(D-13-11)24cdd is local well number |
|  | BEDROCK   | (D-13-11)24cdd |  |
|  | BOUNDARY OF GROUND-WATER BASIN                  |                |  |

**Figure 9.** Location of wells and extensometer sites, south-central Arizona.

## GROUND-WATER LEVELS AND COMPACTION VALUES

## PIMA COUNTY

315909110640601. Local number, (D-17-14)03baa

LOCATION.--Lat 31°59'09", long 110°54'06". Hydrologic Unit 15060301, in Sahuarita, about 10 mi south of Tucson, 6 mi east of Old Nogales Highway. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 16 in., depth 965 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 2,735.0 ft above sea level, from topographic map. Measuring point: Top of casing 0.0 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--June 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 182.4 ft below land-surface datum, Jan. 24, 1989; lowest recorded, 225.8 ft below land-surface datum, Oct. 14, 1991.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	220.3	223.1	220.5	216.1	207.9	209.5	206.1	207.3	213.3	216.4	216.9	216.7
2	220.2	223.2	220.3	215.3	208.1	209.3	206.0	207.7	213.4	216.7	217.1	216.6
3	220.3	223.1	220.2	214.6	208.2	209.1	205.8	207.9	213.5	216.8	217.3	216.4
4	220.3	223.1	220.0	213.9	208.1	209.0	205.8	208.2	213.7	216.9	217.5	216.4
5	220.3	223.2	219.9	213.2	208.3	208.8	205.6	208.5	213.9	216.9	217.6	216.3
6	220.4	223.2	219.9	212.5	208.3	208.7	205.5	208.7	214.0	217.0	217.5	216.3
7	220.6	223.4	220.0	211.8	208.2	208.6	205.4	209.0	214.1	217.0	217.4	216.2
8	220.6	223.4	220.1	211.1	208.3	208.4	205.2	209.1	214.2	216.9	217.6	216.1
9	220.7	223.4	220.0	210.6	208.3	208.3	205.1	209.4	214.4	217.0	217.7	216.1
10	220.8	223.4	220.0	209.9	208.4	208.1	205.0	209.5	214.4	217.0	217.7	216.0
11	220.9	223.5	220.1	209.3	208.4	208.0	204.9	209.6	214.5	217.0	217.7	215.9
12	221.1	223.4	220.1	208.7	208.5	207.9	204.8	209.8	214.6	216.9	217.5	216.0
13	221.2	223.3	220.1	208.1	208.5	207.8	204.8	209.9	214.8	216.8	217.5	216.0
14	221.4	223.3	220.1	207.8	208.4	207.6	204.7	210.2	214.9	216.8	217.6	215.9
15	221.5	223.1	220.0	207.5	208.5	207.6	204.7	210.4	215.0	216.9	217.7	215.8
16	221.7	223.0	220.0	207.3	208.6	207.6	204.7	210.5	215.1	217.0	217.7	215.7
17	221.8	222.8	220.0	207.3	208.7	207.5	204.6	210.8	215.1	217.0	217.7	215.4
18	221.9	222.6	219.9	207.3	208.9	207.4	204.6	211.0	215.2	217.1	217.7	215.2
19	222.1	222.5	219.8	207.4	209.1	207.2	204.6	211.2	215.1	217.1	217.8	215.0
20	222.2	222.3	219.8	207.5	209.5	207.1	204.5	211.4	215.2	217.3	217.8	214.9
21	222.3	222.2	219.8	207.5	209.9	207.0	204.5	211.6	215.3	217.3	217.8	214.7
22	222.4	222.0	219.9	207.5	210.1	206.9	204.5	211.8	215.5	217.4	217.7	214.5
23	222.5	221.7	219.9	207.5	210.3	206.8	204.5	212.0	215.6	217.4	217.5	214.4
24	222.5	221.5	219.8	207.6	210.5	206.7	204.9	212.2	215.7	217.3	217.3	214.3
25	222.4	221.4	219.6	207.7	210.6	206.5	205.2	212.3	215.8	217.4	217.2	214.1
26	222.6	221.2	219.2	207.8	210.4	206.5	205.5	212.5	215.8	217.4	217.0	214.0
27	222.7	221.1	218.8	207.7	210.1	206.5	205.8	212.7	215.8	217.3	216.8	213.8
28	222.9	221.0	218.3	207.8	209.7	206.4	206.2	212.8	216.0	217.2	216.7	213.9
29	222.9	220.9	217.9	208.0	---	206.3	206.6	212.8	216.2	217.0	216.7	213.8
30	222.8	220.6	217.5	207.9	---	206.2	207.0	213.0	216.3	217.1	216.6	213.7
31	222.9	---	216.8	208.0	---	206.2	---	213.2	---	216.9	216.7	---
MEAN	221.6	222.5	219.6	209.4	209.0	207.6	205.2	210.5	214.9	217.0	217.4	215.3
MAX	222.9	223.5	220.5	216.1	210.6	209.5	207.0	213.2	216.3	217.4	217.8	216.7
MIN	220.2	220.6	216.8	207.3	207.9	206.2	204.5	207.3	213.3	216.4	216.6	213.7

WTR YR 1999 MEAN 214.2 HIGH 204.5 LOW 223.5

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.171	.175	.175	.173	.166	.164	.162	.159	.166	.171	.166	.171
2	.171	.175	.175	.173	.166	.164	.162	.159	.167	.171	.166	.170
3	.172	.175	.174	.173	.166	.164	.162	.160	.167	.172	.166	.171
4	.172	.175	.174	.173	.166	.164	.162	.160	.167	.172	.167	.171
5	.172	.175	.174	.173	.166	.164	.161	.160	.167	.172	.167	.171
6	.172	.175	.174	.173	.166	.164	.161	.161	.167	.172	.167	.171
7	.172	.176	.174	.173	.165	.164	.161	.161	.167	.172	.167	.171
8	.172	.176	.174	.172	.164	.164	.161	.161	.168	.171	.167	.171
9	.173	.176	.174	.172	.164	.164	.160	.161	.168	.171	.168	.171
10	.173	.176	.174	.172	.164	.164	.160	.162	.168	.171	.168	.171
11	.173	.176	.174	.172	.164	.164	.160	.162	.168	.170	.168	.172
12	.173	.176	.174	.172	.164	.163	.160	.162	.168	.170	.168	.172
13	.173	.176	.174	.172	.164	.164	.159	.162	.168	.169	.169	.172
14	.173	.176	.174	.172	.164	.163	.159	.163	.169	.169	.169	.172
15	.173	.176	.174	.172	.164	.163	.159	.163	.169	.169	.169	.172
16	.173	.176	.174	.171	.164	.163	.159	.163	.169	.169	.170	.172
17	.174	.176	.174	.171	.164	.163	.159	.163	.169	.169	.170	.172
18	.174	.176	.174	.171	.164	.163	.158	.164	.169	.168	.170	.172
19	.174	.176	.173	.171	.164	.163	.158	.164	.169	.168	.170	.172
20	.174	.176	.173	.170	.164	.163	.158	.164	.170	.168	.170	.172
21	.174	.176	.173	.170	.164	.163	.158	.164	.170	.168	.170	.172
22	.174	.176	.173	.170	.164	.163	.158	.165	.170	.167	.171	.172
23	.175	.176	.173	.170	.164	.163	.159	.165	.170	.167	.171	.173
24	.175	.176	.173	.169	.164	.163	.159	.165	.170	.167	.171	.173
25	.175	.176	.173	.168	.164	.163	.158	.165	.170	.167	.171	.172
26	.175	.176	.173	.168	.164	.162	.158	.166	.171	.167	.171	.172
27	.175	.176	.173	.167	.164	.162	.158	.166	.171	.167	.171	.172
28	.175	.175	.173	.167	.164	.162	.159	.166	.171	.167	.171	.173
29	.175	.175	.173	.167	---	.162	.159	.166	.171	.166	.171	.173
30	.175	.175	.173	.167	---	.162	.159	.166	.171	.166	.171	.173
31	.175	---	.173	.166	---	.162	---	.166	---	.166	.171	---
MEAN	.173	.176	.174	.171	.164	.163	.160	.163	.169	.169	.169	.172
MAX	.175	.176	.175	.173	.166	.164	.162	.166	.171	.172	.171	.173
MIN	.171	.175	.173	.166	.164	.162	.158	.159	.166	.166	.166	.170

WTR YR 1999 MEAN .169 MAX .176 MIN .158

## PIMA COUNTY

320640110673401. Local number, (D-15-14)30cbc

LOCATION.--Lat 32°05'37", long 110°57'38", Hydrologic Unit 15050301, within the Tucson ground-water basin off Old Nogales Hwy. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 16 in., depth 805 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 2,587.0 ft above sea level, from topographic map. Measuring point: Top of casing 1.0 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--November 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 106.09 ft below land-surface datum, Apr. 13, 1993; lowest recorded, 120.82 ft below land-surface datum, Aug. 25, 1982.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	118.83	118.78	117.71	117.11	116.40	117.09	117.87	118.06	118.25	118.51	118.82	119.15
2	118.83	118.77	117.69	117.05	116.37	117.14	117.91	118.00	118.24	118.50	118.84	119.15
3	118.84	118.73	117.64	117.03	116.33	117.16	117.94	117.96	118.26	118.52	118.84	119.16
4	118.83	118.73	117.66	117.01	116.31	117.21	117.92	117.99	118.30	118.53	118.86	119.17
5	118.84	118.73	117.66	116.90	116.36	117.30	117.99	118.05	118.33	118.53	118.86	119.20
6	118.85	118.70	117.70	116.84	116.36	117.32	117.94	118.05	118.32	118.54	118.86	119.19
7	118.87	118.69	117.58	116.76	116.38	117.35	117.99	118.05	118.33	118.54	118.87	119.19
8	118.85	118.67	117.58	116.74	116.26	117.47	118.00	118.05	118.35	118.55	118.87	119.20
9	118.85	118.65	117.65	116.76	116.23	117.46	117.96	118.07	118.37	118.56	118.88	119.19
10	118.85	118.60	117.59	116.69	116.23	117.43	117.96	118.08	118.38	118.57	118.89	119.18
11	118.85	118.48	117.54	116.61	116.33	117.46	117.98	118.11	118.39	118.58	118.90	119.17
12	118.84	118.42	117.53	116.58	116.30	117.53	117.99	118.10	118.41	118.59	118.91	119.18
13	118.85	118.37	117.47	116.59	116.28	117.56	118.03	118.09	118.42	118.60	118.90	119.17
14	118.83	118.29	117.48	116.60	116.27	117.55	117.98	118.12	118.41	118.61	118.93	119.17
15	118.83	118.23	117.50	116.52	116.30	117.55	118.01	118.13	118.40	118.62	118.95	119.17
16	118.86	118.19	117.44	116.51	116.33	117.57	118.06	118.14	118.42	118.63	118.96	119.16
17	118.85	118.16	117.45	116.53	116.35	117.65	118.07	118.16	118.44	118.64	118.96	119.17
18	118.86	118.11	117.43	116.52	116.37	117.68	118.07	118.16	118.44	118.66	118.99	119.16
19	118.88	118.11	117.44	116.47	116.37	117.67	118.06	118.17	118.43	118.68	119.01	119.16
20	118.90	118.09	117.47	116.45	116.45	117.69	118.01	118.17	118.44	118.70	119.02	119.16
21	118.91	118.05	117.39	116.41	116.43	117.70	117.97	118.18	118.48	118.72	119.04	119.15
22	118.92	117.99	117.42	116.47	116.50	117.72	118.01	118.23	118.49	118.73	119.05	119.16
23	118.90	117.95	117.45	116.41	116.52	117.75	118.07	118.26	118.48	118.74	119.07	119.15
24	118.89	117.91	117.40	116.35	116.67	117.78	118.12	118.24	118.48	118.76	119.08	119.15
25	118.87	117.86	117.32	116.35	116.80	117.78	118.10	118.22	118.49	118.77	119.09	119.15
26	118.87	117.83	117.34	116.38	116.87	117.76	118.08	118.12	118.49	118.78	119.10	119.14
27	118.85	117.81	117.36	116.35	117.00	117.85	118.08	118.14	118.49	118.79	119.12	119.14
28	118.83	117.84	117.33	116.37	117.06	117.89	118.01	118.16	118.50	118.81	119.13	119.13
29	118.81	117.80	117.26	116.43	---	117.87	118.06	118.21	118.51	118.81	119.13	119.13
30	118.81	117.74	117.19	116.41	---	117.84	118.06	118.26	118.51	118.82	119.14	119.12
31	118.80	---	117.12	116.38	---	117.84	---	118.28	---	118.82	119.14	---
MEAN	118.85	118.28	117.48	116.60	116.44	117.57	118.01	118.13	118.41	118.65	118.97	119.16
MAX	118.92	118.78	117.71	117.11	117.06	117.89	118.12	118.28	118.51	118.82	119.14	119.20
MIN	118.80	117.74	117.12	116.35	116.23	117.09	117.87	117.96	118.24	118.50	118.82	119.12

WTR YR 1999 MEAN 118.05 HIGH 116.23 LOW 119.20

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.160	.161	.161	.160	.159	.161	.163	---	.165	.166	.166	.167
2	.160	.161	.161	.161	.159	.161	.163	---	.165	.166	.166	.167
3	.160	.161	.161	.160	.159	.161	.163	---	.165	.166	.166	.167
4	.160	.161	.161	.160	.159	.161	.163	---	.165	.166	.166	.167
5	.160	.161	.161	.160	.160	.161	.163	.163	.165	.166	.166	.167
6	.160	.161	.161	.160	.160	.162	.164	.164	.165	.166	.166	.167
7	.160	.161	.161	.160	.160	.162	.164	.164	.165	.166	.166	.167
8	.160	.161	.161	.160	.160	.162	.164	.164	.165	.166	.166	.167
9	.160	.161	.161	.160	.161	.162	.164	.164	.166	.166	.166	.167
10	.160	.161	.161	.160	.161	.162	.164	.164	.165	.167	.167	.167
11	.160	.161	.161	.160	.161	.162	.164	.164	.166	.166	.167	.167
12	---	.161	.161	.161	.161	.162	.164	.164	.166	.166	.167	.167
13	---	.161	.161	.160	.161	.162	.164	.164	.166	.167	.167	.167
14	---	.161	.161	.160	.161	.162	.164	.164	.166	.167	.167	.167
15	---	.161	.160	.160	.161	.163	.164	.164	.166	.167	.167	.168
16	---	.161	.160	.160	.161	.163	.164	.164	.166	.166	.167	.167
17	---	.161	.160	.160	.161	.163	.164	.164	.166	.166	.167	.168
18	---	.161	.160	.160	.161	.163	.164	.164	.166	.166	.167	.168
19	---	.161	.160	.160	.161	.163	.164	---	.166	.166	.167	.168
20	---	.161	.160	.160	.161	.163	.164	---	.166	.166	.167	.168
21	---	.161	.160	.160	.161	.163	.164	---	.166	.166	.167	.168
22	.161	.161	.160	.160	.161	.163	.164	.164	.166	.167	.167	.168
23	.161	.161	.160	.159	.161	.163	.164	.164	.166	.167	.167	.168
24	.161	.161	.160	.160	.161	.163	.164	.164	.166	.166	.167	.168
25	.161	.161	.160	.159	.161	.163	.164	.164	.166	.166	.167	.168
26	.161	.161	---	.159	.161	.163	.164	.164	.166	.166	.167	.168
27	.160	.161	---	.159	.161	.163	.163	.164	.166	.166	.167	.168
28	.161	.161	---	.159	.161	.163	.164	.164	.166	.166	.167	.168
29	.161	.161	.160	.159	---	.163	.164	.164	.166	.166	.167	.168
30	.161	.161	.161	.159	---	.163	.163	.165	.166	.166	.167	.168
31	.161	---	.161	.159	---	.163	---	.165	---	.166	.167	---
MEAN	---	.161	---	.160	.161	.162	.164	---	.166	.166	.167	.167
MAX	---	.161	---	.161	.161	.163	.164	---	.166	.167	.167	.168
MIN	---	.161	---	.159	.159	.161	.163	---	.165	.166	.166	.167

## GROUND-WATER LEVELS AND COMPACTION VALUES

## PIMA COUNTY

320848110551201. Local number, (D-16-14)09bac

LOCATION.--Lat 32°08'45", long 110°55'12". Hydrologic Unit 15050301, within the Tucson ground-water basin, about .25 mi east of Country Club on Alford Road. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 8 in., depth 1,030 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 2,836 ft above sea level, from topographic map. Measuring point: Top of casing 1.5 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--November 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 143.29 ft below land-surface datum, Apr. 6, 1984; lowest recorded, 148.40 ft below land-surface datum, Sept. 28, 1999.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	147.98	147.92	147.97	147.77	147.65	147.61	147.46	147.48	147.58	147.66	147.97	148.32
2	147.99	147.92	147.96	147.77	147.64	147.55	147.50	147.46	147.59	147.65	147.99	148.30
3	147.97	147.92	147.94	147.75	147.67	147.52	147.43	147.46	147.53	147.64	148.04	148.30
4	147.96	147.92	147.92	147.71	147.65	147.52	147.43	147.49	147.54	147.66	148.03	148.32
5	147.95	147.89	147.90	147.72	147.65	147.48	147.44	147.51	147.55	147.65	148.03	148.31
6	147.94	147.91	147.91	147.76	147.64	147.51	147.46	147.49	147.55	147.64	148.04	148.31
7	147.92	147.93	147.87	147.72	147.61	147.45	147.48	147.47	147.52	147.60	148.07	148.27
8	147.88	147.89	147.86	147.69	147.61	147.53	147.43	147.47	147.56	147.63	148.00	148.27
9	147.88	147.92	147.86	147.68	147.58	147.49	147.42	147.47	147.59	147.61	148.04	148.28
10	147.88	147.90	147.84	147.65	147.61	147.47	147.39	147.47	147.58	147.62	148.05	148.27
11	147.90	147.89	147.83	147.69	147.62	147.46	147.40	147.48	147.56	147.62	148.04	148.28
12	147.90	147.89	147.81	147.65	147.61	147.45	147.38	147.46	147.55	147.66	148.07	148.28
13	147.88	147.93	147.80	147.68	147.60	147.44	147.42	147.46	147.53	147.68	148.08	148.28
14	147.88	147.90	147.79	147.70	147.60	147.45	147.43	147.48	147.54	147.69	148.08	148.27
15	147.91	147.89	147.81	147.76	147.58	147.43	147.41	147.48	147.54	147.69	148.11	148.30
16	147.91	147.91	147.80	147.66	147.59	147.46	147.44	147.49	147.53	147.69	148.13	148.32
17	147.92	147.93	147.84	147.73	147.60	147.44	147.47	147.50	147.57	147.74	148.14	148.31
18	147.91	147.95	147.82	147.70	147.60	147.44	147.46	147.51	147.55	147.74	148.16	148.32
19	147.92	147.96	147.82	147.69	147.59	147.46	147.47	147.54	147.57	147.76	148.19	148.34
20	147.94	147.98	147.84	147.73	147.61	147.48	147.49	147.52	147.58	147.80	148.20	148.34
21	147.96	147.99	147.77	147.68	147.62	147.48	147.50	147.55	147.60	147.82	148.23	148.32
22	147.96	147.98	147.86	147.68	147.63	147.46	147.51	147.55	147.61	147.84	148.24	148.33
23	147.95	147.95	147.87	147.69	147.60	147.47	147.49	147.58	147.61	147.85	148.24	148.32
24	147.95	147.95	147.86	147.66	147.63	147.51	147.53	147.57	147.61	147.86	148.24	148.33
25	147.95	147.97	147.82	147.69	147.61	147.48	147.55	147.58	147.61	147.88	148.25	148.31
26	147.97	147.98	147.83	147.67	147.58	147.49	147.49	147.58	147.63	147.91	148.26	148.35
27	147.96	148.01	147.82	147.69	147.62	147.49	147.49	147.56	147.64	147.93	148.27	148.36
28	147.95	148.01	147.76	147.69	147.59	147.48	147.48	147.57	147.67	147.94	148.31	148.37
29	147.94	147.99	147.77	147.66	---	147.49	147.52	147.57	147.66	147.95	148.32	148.37
30	147.94	148.00	147.79	147.68	---	147.45	147.49	147.58	147.64	147.96	148.33	148.36
31	147.97	---	147.72	147.62	---	147.46	---	147.57	---	147.96	148.30	---
MEAN	147.93	147.94	147.84	147.70	147.61	147.48	147.46	147.51	147.58	147.75	148.14	148.31
MAX	147.99	148.01	147.97	147.77	147.67	147.61	147.55	147.58	147.67	147.96	148.33	148.37
MIN	147.88	147.89	147.72	147.62	147.58	147.43	147.38	147.46	147.52	147.60	147.97	148.27

WTR YR 1999 MEAN 147.77 HIGH 147.38 LOW 148.37

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.033	.033	.033	.032	.032	.032	.033	.034	.035	.037	.038	.038
2	.033	.033	.033	.032	.032	.032	.034	.034	.035	.037	.038	.038
3	.033	.033	.032	.032	.032	.032	.034	.034	.035	.037	.038	.038
4	.033	.033	.032	.032	.032	.032	.034	.034	.035	---	.038	.038
5	.033	.033	.032	.032	.032	.032	.034	.034	.035	---	.038	.038
6	.033	.033	.033	.032	.032	.032	.034	.034	.035	---	.038	.038
7	.033	.033	.032	.032	.032	.032	.034	.034	.035	---	.038	.038
8	.033	.033	.032	.032	.032	.032	.034	.034	.035	---	.038	.038
9	.033	.033	.032	.032	.032	.032	.034	.034	.035	---	.038	.038
10	.033	.033	.032	.032	.032	.032	.034	.034	.035	.037	.038	.038
11	.033	.033	.032	.032	.032	.032	.034	.034	.035	.037	.038	.038
12	.033	.033	.032	.032	.032	.032	.034	.034	.035	.037	.038	.038
13	.033	.033	.032	.032	.032	.032	.034	.034	.035	.037	.038	.038
14	.033	.033	.032	.032	.032	.032	.034	.034	.035	.037	.038	.038
15	.033	.033	.032	.032	.032	.033	.034	.034	.035	.037	.038	.038
16	.033	.033	.032	.032	.032	.033	.034	.034	.035	.037	.038	.038
17	.033	.033	.032	.032	.032	.033	.034	.034	.035	.037	.038	.038
18	.033	.033	.032	.032	.032	.033	.034	.034	.035	.037	.038	.038
19	.033	.033	.032	.032	.032	.033	.034	.034	.035	.037	.038	.038
20	.033	.033	.032	.032	.032	.033	.034	.034	.035	.038	.038	.038
21	.033	.033	.032	.032	.032	.033	.034	.034	.035	.038	.038	.038
22	.033	.033	.032	.032	.032	.033	.034	.034	.035	.038	.038	.038
23	.033	.033	.032	.032	.032	.033	.034	.034	.035	.038	.038	.038
24	.033	.033	.032	.032	.032	.033	.034	.034	.035	.038	.038	.038
25	.033	.033	.032	.032	.032	.033	.034	.034	.035	.038	.038	.038
26	.033	.033	.032	.032	.032	.033	.034	.035	.035	.038	.038	.038
27	.033	.033	.032	.032	.032	.033	.034	.034	.036	.038	.038	.038
28	.033	.033	.032	.032	.032	.033	.034	.034	.036	.038	.038	.038
29	.033	.033	.032	.032	---	.033	.034	.035	.036	.038	.038	.038
30	.033	.033	.032	.032	---	.033	.034	.035	.036	.038	.038	.038
31	.033	---	.032	.032	---	.033	---	.035	---	.038	.038	---
MEAN	.033	.033	.032	.032	.032	.033	.034	.034	.035	---	.038	.038
MAX	.033	.033	.033	.032	.032	.033	.034	.035	.036	---	.038	.038
MIN	.033	.033	.032	.032	.032	.032	.033	.034	.035	---	.038	.038

## PIMA COUNTY

32102811100301. Local number, (D-14-11)36aac

LOCATION.--Lat 32°10'28", long 111°10'03", Hydrologic Unit 15050304, within the Avra Valley ground-water basin, approximately 3 mi north of Ajo Highway on Bopp Road along CAP canal. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 11.9 in., depth 1,400 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 2,377 ft above sea level, from topographic map. Measuring point: Top of casing 0.6 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--April 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 400.2 ft below land-surface datum, May 1, 1989; lowest recorded, 421.8 ft below land-surface datum, Sept. 24, 1999.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	418.1	418.5	418.9	419.2	419.4	419.7	420.1	420.4	420.5	420.9	421.1	421.5
2	418.0	418.4	419.0	419.2	419.4	419.7	420.1	420.4	420.6	420.9	421.1	421.5
3	418.1	418.5	419.0	419.3	419.4	419.7	420.1	420.3	420.6	420.9	421.1	421.5
4	418.2	418.4	418.9	419.2	419.3	419.7	420.3	420.4	420.7	420.9	421.1	421.5
5	418.2	418.4	419.0	419.2	419.5	419.9	420.2	420.5	420.6	421.0	421.1	421.5
6	418.1	418.4	419.0	419.2	419.5	419.8	420.2	420.5	420.6	421.0	421.2	421.5
7	418.1	418.5	419.1	419.2	419.3	419.8	420.3	420.4	420.6	421.0	421.2	421.5
8	418.1	418.4	418.9	419.2	419.4	420.1	420.3	420.5	420.6	421.0	421.2	421.5
9	418.1	418.6	418.9	419.2	419.4	420.0	420.1	420.4	420.7	421.0	421.1	421.5
10	418.1	418.5	419.1	419.1	419.4	419.8	420.1	420.4	420.6	421.0	421.2	421.5
11	418.0	418.4	418.9	419.1	419.5	419.8	420.1	420.4	420.6	421.0	421.2	421.6
12	418.0	418.5	418.9	419.1	419.4	420.0	420.1	420.4	420.7	421.0	421.2	421.6
13	418.0	418.6	418.9	419.2	419.3	420.0	420.2	420.3	420.6	421.0	421.2	421.6
14	418.1	418.5	418.8	419.2	419.3	419.9	420.2	420.4	420.7	421.0	421.2	421.6
15	418.2	418.5	418.9	419.1	419.3	419.8	420.1	420.4	420.6	421.1	421.3	421.6
16	418.3	418.6	419.0	419.1	419.4	420.0	420.2	420.5	420.6	421.1	421.4	421.7
17	418.2	418.6	418.9	419.2	419.4	420.1	420.2	420.5	420.7	421.1	421.4	421.6
18	418.2	418.6	419.1	419.2	419.5	420.1	420.2	420.4	420.7	421.2	421.3	421.6
19	418.2	418.7	419.0	419.2	419.4	420.0	420.2	420.5	420.7	421.1	421.3	421.7
20	418.2	418.8	419.1	419.2	419.5	420.0	420.1	420.5	420.7	421.0	421.4	421.7
21	418.3	418.7	419.1	419.3	419.4	420.0	420.1	420.5	420.8	421.1	421.4	421.6
22	418.3	418.8	419.0	419.4	419.7	420.0	420.1	420.5	420.8	421.2	421.3	421.7
23	418.3	418.8	419.2	419.3	419.6	420.0	420.3	420.6	420.8	421.2	421.4	421.7
24	418.2	418.7	419.2	419.2	419.6	420.1	420.4	420.5	420.8	421.2	421.4	421.7
25	418.2	418.7	419.2	419.3	419.6	420.1	420.4	420.5	420.8	421.0	421.4	421.6
26	418.3	418.7	419.0	419.5	419.6	420.0	420.4	420.6	420.9	421.1	421.4	421.6
27	418.4	418.7	419.2	419.5	419.7	420.2	420.3	420.6	420.9	421.1	421.5	421.6
28	418.4	418.8	419.1	419.5	419.6	420.1	420.2	420.6	420.9	421.2	421.6	421.7
29	418.3	419.0	419.0	419.5	---	420.0	420.3	420.6	420.9	421.1	421.5	421.6
30	418.4	419.0	419.2	419.4	---	419.9	420.4	420.6	420.8	421.1	421.5	421.6
31	418.6	---	419.0	419.3	---	419.9	---	420.6	---	421.0	421.5	---
MEAN	418.2	418.6	419.0	419.3	419.5	419.9	420.2	420.5	420.7	421.0	421.3	421.6
MAX	418.6	419.0	419.2	419.5	419.7	420.2	420.4	420.6	420.9	421.2	421.6	421.7
MIN	418.0	418.4	418.8	419.1	419.3	419.7	420.1	420.3	420.5	420.9	421.1	421.5

WTR YR 1999 MEAN 420.0 HIGH 418.0 LOW 421.7

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	.018	.018	.017	.018	.017	.018	.018	.019	---	.017	---
2	.019	.018	.018	.018	.018	.017	.018	.018	.019	---	.017	---
3	.019	.018	.018	.018	.018	.018	.018	.019	.019	---	.016	---
4	.019	.018	.018	.018	.018	.018	.017	.018	.019	---	.016	---
5	.019	.018	.019	.017	.018	.017	.019	.018	---	---	---	---
6	.019	.018	.018	.018	.018	.017	.019	.018	---	---	---	---
7	.019	.018	.018	.018	.017	.017	.018	.018	---	---	---	---
8	.019	.018	.018	.018	.018	.017	.019	.017	.019	---	---	---
9	.018	.018	.018	.018	.018	.017	.019	.018	.019	---	---	---
10	.018	.018	.018	.017	.018	.017	.019	.018	.019	.018	.016	---
11	.018	.018	.019	.018	.018	.018	.019	.018	.019	.018	.016	---
12	.018	.018	.018	.018	.018	.017	.018	.018	.019	.018	.016	---
13	.018	.019	.018	.018	.017	.017	.018	.018	.019	.018	.016	---
14	.018	.018	.018	.018	.017	.018	.019	.018	.019	.018	.016	---
15	.018	.018	.018	.018	.018	.018	.019	.018	---	.017	.016	---
16	.018	.018	.018	.018	.018	.018	.018	.018	---	.017	.016	---
17	.017	.019	.018	.018	.018	.017	.018	.018	---	.017	.016	---
18	.018	.018	.018	.018	.018	.017	.018	.018	---	.017	.016	---
19	.018	.018	.019	.018	.018	.018	.019	.018	---	.017	.015	---
20	.018	.018	.018	.018	.017	.018	.019	.018	---	.017	.015	---
21	.018	.019	.018	.019	.017	.018	.019	.018	---	.017	.015	---
22	.018	.018	.018	.018	.017	.018	.019	.018	---	.017	.015	---
23	.018	.018	.018	.017	.017	.018	.018	.018	---	.016	.015	---
24	.018	.018	.018	.018	.018	.018	.018	.018	---	.016	.015	---
25	.018	.018	.018	.019	.018	.018	.018	.018	---	.016	.015	---
26	.018	.019	.018	.018	.017	.018	.018	.018	---	.016	.015	---
27	.018	.018	.018	.017	.017	.018	.019	.019	---	.016	.015	---
28	.018	.018	.018	.018	.017	.017	.019	.019	---	.016	.015	---
29	.018	.018	.018	.018	---	.017	.018	.019	---	.016	.015	---
30	.018	.018	.018	.018	---	.018	.018	.019	---	.016	---	---
31	.018	---	.017	.017	---	.018	---	.019	---	.016	---	---
MEAN	---	.018	.018	.018	.018	.018	.018	.018	---	---	---	---
MAX	---	.019	.019	.019	.018	.018	.019	.019	---	---	---	---
MIN	---	.018	.017	.017	.017	.017	.017	.017	---	---	---	---

## GROUND-WATER LEVELS AND COMPACTION VALUES

## PIMA COUNTY

321058110663301. Local number, (D-14-14)29cbe

LOCATION.--Lat 32°10'58", long 110°56'33". Hydrologic Unit 15050301, within the Tucson ground-water basin, on the northeast corner of Campbell and Granito Road. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 18 in., depth 885 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 2,502.0 ft above sea level, from topographic map. Measuring point: Top of casing 2.0 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--April 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 191.9 ft below land-surface datum, Apr. 10, 1981; lowest recorded, 221.7 ft below land-surface datum, July 10, 1989.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	217.1	---	219.4	---	---	220.1	220.6	---	---	---	220.8	219.8
2	217.1	---	219.4	---	---	220.0	220.7	---	---	---	220.9	219.7
3	216.9	---	219.3	---	---	220.0	220.8	---	---	---	220.9	219.7
4	216.8	---	219.5	---	---	219.9	220.8	---	---	---	220.7	219.7
5	216.9	---	219.5	---	---	220.0	220.7	220.2	---	---	220.4	219.8
6	217.0	---	219.7	---	---	220.1	220.8	220.2	---	---	220.4	219.7
7	217.1	---	219.5	---	---	220.0	221.0	220.3	---	---	220.5	219.8
8	217.0	---	---	---	---	220.2	221.0	220.2	---	---	220.7	219.9
9	217.0	---	---	---	---	220.2	221.0	220.1	---	---	220.6	219.8
10	217.1	---	---	---	---	220.1	220.9	220.2	---	221.7	220.5	219.9
11	217.2	---	---	---	219.8	220.1	220.6	220.1	---	221.5	220.6	219.8
12	217.1	---	---	---	219.9	220.2	220.5	219.9	---	221.6	220.6	219.8
13	217.1	---	---	---	219.9	220.2	220.6	220.2	---	221.6	220.7	219.7
14	216.9	---	---	---	219.7	220.4	220.7	---	---	221.6	220.7	219.5
15	216.8	---	---	---	219.6	220.4	220.7	---	---	221.5	220.7	219.2
16	216.9	---	---	---	219.8	220.5	220.6	---	---	221.6	220.7	219.4
17	217.3	---	---	---	219.7	220.5	220.8	---	---	221.6	220.7	219.5
18	217.3	---	---	---	219.9	220.5	220.7	---	---	221.6	220.6	219.6
19	217.4	---	---	---	220.0	220.4	---	---	---	221.6	220.6	219.4
20	217.5	---	---	---	219.9	220.3	---	---	---	221.6	220.5	219.3
21	217.7	---	---	---	219.7	220.4	---	---	---	221.5	220.5	219.4
22	217.7	---	---	---	219.9	220.4	---	---	---	221.5	220.5	219.3
23	217.7	219.1	---	---	219.9	220.4	---	---	---	221.5	220.4	219.2
24	217.6	219.2	---	---	220.0	220.7	---	---	---	221.3	220.2	219.2
25	217.5	219.3	---	---	219.9	220.7	---	---	---	221.2	220.2	219.4
26	---	219.3	---	---	219.9	220.4	---	---	---	221.1	220.2	219.3
27	---	219.3	---	---	220.0	220.6	---	---	---	221.0	220.2	219.3
28	---	219.3	---	---	220.2	220.8	---	---	---	221.2	220.0	219.4
29	---	219.5	---	---	---	220.8	---	---	---	221.2	219.9	219.5
30	---	219.5	---	---	---	220.6	---	---	---	221.0	219.7	219.0
31	---	---	---	---	---	220.6	---	---	---	220.8	219.9	---
MEAN	---	---	---	---	---	220.3	---	---	---	---	220.5	219.5
MAX	---	---	---	---	---	220.8	---	---	---	---	220.9	219.9
MIN	---	---	---	---	---	219.9	---	---	---	---	219.7	219.0

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.209	.211	.212	.214	.215	.217	.218	.221	.223	---	.229	.230
2	.209	.211	.212	.214	.215	.217	.219	.221	.224	---	.229	.230
3	.209	.211	.212	.214	.215	.217	.219	.221	.224	---	.229	.231
4	.209	.211	.212	.214	.215	.217	.219	.222	.224	---	.229	.231
5	.209	.211	.212	.214	.215	.217	.219	.222	.224	---	.229	.231
6	.209	.211	.212	.214	.215	.217	.219	.222	.225	---	.229	.231
7	.209	.211	.212	.214	.215	.217	.219	.222	.225	---	.229	.231
8	.209	.211	.212	.214	.215	.217	.219	.222	---	---	.229	.231
9	.209	.211	.212	.214	.215	.217	.219	.222	---	---	.228	.231
10	.209	.211	.213	.214	.215	.217	.219	.222	---	.227	.229	.231
11	.209	.211	.213	.214	.216	.217	.219	.222	---	.227	.229	.231
12	.209	.212	.213	.214	.216	.217	.219	.222	---	.227	.229	.231
13	.209	.212	.213	.214	.216	.217	.219	.222	---	.227	.229	.231
14	.209	.212	.213	.214	.216	.217	.219	.222	---	.227	.229	.231
15	.209	.212	.213	.214	.216	.217	.219	.223	---	.227	.229	.231
16	.210	.212	.213	.214	.216	.217	.220	.223	---	.227	.229	.231
17	.210	.212	.213	.214	.216	.217	.220	.223	---	.227	.229	.231
18	.210	.212	.213	.214	.216	.218	.220	.223	---	.227	.229	.231
19	.210	.212	.213	.214	.216	.218	.220	.223	---	.228	.229	.231
20	.210	.212	.213	.214	.216	.218	.220	.223	---	.228	.229	.231
21	.210	.212	.213	.214	.216	.218	.220	.223	---	.228	.229	.231
22	.210	.212	.213	.214	.216	.218	.220	.223	---	.228	.229	.231
23	.210	.212	.213	.214	.216	.218	.220	.223	---	.228	.229	.232
24	.210	.212	.213	.214	.216	.218	.220	.223	---	.228	.229	.232
25	.210	.212	.213	.214	.216	.218	.220	.223	---	.228	.229	.232
26	.210	.212	.213	.214	.216	.218	.221	.223	---	.228	.229	.232
27	.210	.212	.213	.215	.216	.218	.221	.223	---	.229	.229	.232
28	.210	.212	.214	.215	.217	.218	.221	.223	---	.229	.229	.232
29	.210	.212	.214	.215	---	.218	.221	.223	---	.229	.229	.232
30	.211	.212	.214	.215	---	.218	.221	.223	---	.229	.229	.232
31	.211	---	.214	.215	---	.218	---	.223	---	.229	.229	---
MEAN	.210	.212	.213	.214	.216	.217	.220	.222	---	---	.229	.231
MAX	.211	.212	.214	.215	.217	.218	.221	.223	---	---	.229	.232
MIN	.209	.211	.212	.214	.215	.217	.218	.221	---	---	.228	.230

## PIMA COUNTY

321142110630301. Local Number, (D-14-14)23cab

LOCATION.--Lat 32°11'57", long 110°53'15". Hydrologic Unit 15060301, within the Tucson ground-water basin, on 29th Street and Swan at Freedom Park. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 16 in., depth 1,030 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 2,592.0 ft above sea level, from topographic map. Measuring point: Top of casing 1.0 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--March 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 270.4 ft below land-surface datum, Apr. 9, 1980; lowest recorded, 320.4 ft below land-surface datum, Sept. 30, 1999.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	316.4	316.5	317.1	317.4	317.6	317.9	318.2	318.4	318.4	318.8	318.8	319.8
2	316.4	316.4	317.2	317.5	317.6	317.9	318.3	318.4	318.4	318.7	318.8	319.9
3	316.4	316.5	317.1	317.5	317.6	317.9	318.4	318.3	318.4	318.8	318.8	319.8
4	316.2	316.5	317.2	317.7	317.5	317.9	318.3	318.4	318.4	318.9	318.8	319.8
5	316.4	316.5	317.2	317.6	317.6	317.9	318.5	318.5	318.5	318.9	318.8	319.9
6	316.4	316.5	317.4	317.6	317.7	317.9	318.3	318.4	318.4	319.0	318.9	319.9
7	316.4	316.7	317.3	317.5	317.7	317.8	318.2	318.3	318.3	318.9	318.9	319.9
8	316.3	316.6	317.2	317.4	317.6	318.1	318.2	318.3	318.4	318.9	318.8	319.8
9	316.2	316.6	317.4	317.6	317.6	318.1	318.2	318.3	318.5	318.9	318.8	319.9
10	316.2	316.8	317.3	317.6	317.6	318.0	318.2	318.2	318.5	318.9	319.0	319.8
11	316.3	316.7	317.3	317.4	317.9	318.0	318.1	318.2	318.5	318.9	318.9	319.9
12	316.2	316.8	317.2	317.4	317.8	318.0	318.1	318.2	318.5	318.8	318.9	319.9
13	316.1	316.9	317.1	317.5	317.7	318.1	318.2	318.2	318.5	318.7	318.9	320.0
14	316.0	316.8	317.1	317.5	317.7	318.1	318.1	318.2	318.5	318.8	319.0	320.0
15	316.1	316.7	317.3	317.4	317.7	318.0	318.1	318.2	318.4	318.8	319.1	320.1
16	316.2	316.8	317.2	317.4	317.7	318.1	318.2	318.3	318.5	318.8	319.1	320.1
17	316.2	316.8	317.2	317.6	317.7	318.2	318.2	318.4	318.5	318.9	319.2	320.1
18	316.1	316.9	317.2	317.6	317.7	318.2	318.2	318.3	318.5	318.8	319.1	320.0
19	316.1	317.0	317.3	317.6	317.8	318.2	318.2	318.3	318.4	318.8	319.3	320.2
20	316.2	317.1	317.5	317.6	317.9	318.1	318.1	318.3	318.5	318.8	319.4	320.3
21	316.4	317.0	317.4	317.4	317.9	318.2	318.0	318.3	318.6	318.8	319.3	320.3
22	316.5	317.1	317.4	317.7	317.9	318.1	318.1	318.4	318.6	318.8	319.3	320.2
23	316.4	317.1	317.6	317.7	317.9	318.0	318.3	318.5	318.6	318.9	319.4	320.2
24	316.3	317.1	317.6	317.5	317.9	318.1	318.5	318.5	318.6	318.8	319.5	320.2
25	316.2	317.0	317.5	317.5	318.0	318.2	318.6	318.4	318.7	318.8	319.5	320.2
26	316.2	317.0	317.4	317.7	318.0	318.1	318.5	318.5	318.7	318.8	319.5	320.2
27	316.4	317.1	317.5	317.6	318.0	318.3	318.4	318.4	318.7	318.8	319.7	320.2
28	316.4	317.2	317.4	317.5	318.0	318.3	318.2	318.4	318.8	318.9	319.8	320.3
29	316.3	317.2	317.4	317.7	---	318.3	318.3	318.4	318.7	318.8	319.8	320.4
30	316.3	317.2	317.3	317.6	---	318.1	318.4	318.5	318.7	318.8	319.9	320.4
31	316.5	---	317.4	317.5	---	318.1	---	318.5	---	318.7	319.8	---
MEAN	316.3	316.8	317.3	317.5	317.8	318.1	318.3	318.4	318.5	318.8	319.2	320.1
MAX	316.5	317.2	317.6	317.7	318.0	318.3	318.6	318.5	318.8	319.0	319.9	320.4
MIN	316.0	316.4	317.1	317.4	317.5	317.8	318.0	318.2	318.3	318.7	318.8	319.8

WTR YR 1999 MEAN 318.1 HIGH 316.0 LOW 320.4

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.162	.163	.164	.165	.168	.171	.173	.176	.179	.181	.183	.184
2	.162	.163	.164	.165	.168	.171	.173	.176	.180	.182	.183	.184
3	.162	.163	.165	.165	.168	.171	.173	.176	.180	.182	.183	---
4	.162	.163	.165	.165	.168	.171	.174	.177	.180	.182	.183	---
5	.162	.163	.165	.165	.168	.171	.175	.177	.180	.182	.183	---
6	.162	.163	.165	.165	.169	.171	.175	.177	.180	.182	.183	---
7	.162	.163	.165	.166	.169	.172	.175	.177	.180	.182	.183	---
8	.162	.163	.165	.166	.169	.172	.175	.177	.180	.182	.183	---
9	.162	.163	.165	.166	.169	.172	.175	.177	.181	.182	.183	---
10	.162	.164	.165	.166	.169	.171	.175	.177	.181	.182	.183	---
11	.163	.164	.165	.166	.169	.171	.175	.177	.181	.182	.183	---
12	.163	.164	.165	.166	.169	.171	.175	.177	.181	.182	.183	---
13	.163	.164	.165	.166	.169	.172	.175	.177	.181	.182	.183	---
14	.163	.164	.165	.166	.169	.172	.175	.177	.181	.182	.183	---
15	.163	.164	.165	.166	.169	.171	.175	.177	.181	.182	.183	---
16	.163	.164	.165	.166	.169	.172	.175	.177	.181	.182	.183	---
17	.163	.164	.165	.166	.169	---	.175	.177	.181	.182	.183	---
18	.163	.164	.165	.166	.169	---	.175	.178	.181	.183	.183	---
19	.163	.164	.165	.166	.169	---	.176	.178	.181	.182	.183	---
20	.163	.164	.165	.167	.170	.172	.176	.178	.181	.182	.183	---
21	.163	.164	.165	.166	.170	.173	.176	.178	.181	.183	.183	---
22	.163	.164	.165	.167	.170	.173	.176	.178	.181	.183	.183	---
23	.163	.164	.165	.167	.170	.173	.176	.178	.181	.183	.183	---
24	.163	.164	.165	.168	.171	.173	.176	.178	.181	.183	.183	---
25	.163	.164	.165	.168	.170	.173	.176	.178	.181	.183	.183	---
26	.163	.164	.165	.168	.170	.173	.176	.178	.181	.183	.183	---
27	.163	.164	.165	.168	.171	.173	.176	.179	.181	.183	.183	---
28	.163	.164	.165	.168	.171	.173	.176	.179	.181	.183	.183	---
29	.163	.164	.165	.168	---	.173	.176	.179	.181	.183	.184	---
30	.163	.164	.165	.168	---	.173	.176	.179	.181	.183	.184	---
31	.163	---	.165	.168	---	.173	---	.179	---	.183	.184	---
MEAN	.163	.164	.165	.166	.169	---	.175	.178	.181	.182	.183	---
MAX	.163	.164	.165	.168	.171	---	.176	.179	.181	.183	.184	---
MIN	.162	.163	.164	.165	.168	---	.173	.176	.179	.181	.183	---

## GROUND-WATER LEVELS AND COMPACTION VALUES

## PIMA COUNTY

321208110525001. Local number, (D-14-14)22adb

LOCATION.--Lat 32°12'08", long 110°53'45". Hydrologic Unit 15060301, within the Tucson ground-water basin, on Belvedere Avenue south of 28th street. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 12 in., depth 485 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 2,555.0 ft above sea level, from topographic map. Measuring point: Top of well 1.0 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--December 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 252.75 ft below land-surface datum, Jan. 24, 1980; lowest recorded, 314.59 ft below land-surface datum, Sept. 29, 1999.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	308.88	309.78	310.11	311.01	311.53	312.00	312.12	312.38	312.63	313.18	313.63	314.03
2	308.91	309.80	310.09	311.06	311.56	311.86	312.14	312.31	312.64	313.21	313.66	314.06
3	308.93	309.85	310.03	311.03	311.60	311.75	312.12	312.28	312.61	313.25	313.70	314.04
4	308.96	309.87	310.10	311.08	311.55	311.65	312.06	---	312.64	313.25	313.71	314.10
5	309.03	309.86	310.50	311.10	311.51	311.60	312.11	---	312.64	313.26	313.70	314.11
6	309.02	309.93	310.63	311.21	311.52	311.44	312.05	---	312.68	313.25	313.69	314.12
7	309.05	309.98	310.48	311.37	311.50	311.36	312.09	312.44	312.70	313.24	313.68	314.15
8	309.07	309.94	310.47	311.41	311.57	311.57	312.05	312.41	312.73	313.26	313.68	314.15
9	309.06	310.02	310.57	311.43	---	311.73	312.03	312.41	312.77	313.25	313.80	314.15
10	309.09	310.05	310.52	311.51	---	311.72	312.04	312.42	312.79	313.26	313.98	314.14
11	309.17	310.01	310.51	311.56	---	311.66	312.06	312.42	312.82	313.22	313.98	314.17
12	309.17	310.08	310.52	311.57	311.66	311.70	312.10	312.44	312.85	313.25	313.98	314.21
13	309.17	310.10	310.52	311.51	311.68	311.66	312.16	312.45	312.85	313.63	313.98	314.21
14	309.18	310.10	310.62	311.39	311.71	311.57	312.13	312.45	312.87	313.66	313.99	314.19
15	309.23	310.14	310.69	311.40	311.78	311.59	312.17	312.47	312.88	313.65	314.01	314.24
16	309.32	310.22	310.65	311.38	311.88	311.62	312.24	312.49	312.91	313.62	313.99	314.29
17	309.33	310.24	310.71	311.38	311.89	311.75	312.25	312.49	312.94	313.63	313.98	314.30
18	309.31	310.29	310.67	311.39	311.96	311.94	312.22	312.50	312.94	313.63	313.98	314.31
19	309.37	310.33	310.69	311.41	311.99	312.10	312.21	312.49	312.93	313.60	314.00	314.34
20	309.40	310.35	310.70	311.51	312.09	312.07	312.17	312.48	312.97	313.60	313.99	314.36
21	309.54	310.37	310.60	311.42	312.14	312.08	312.17	312.50	313.01	313.75	314.00	314.36
22	309.60	310.41	310.67	311.43	312.18	312.08	312.26	312.51	313.04	313.78	314.01	314.37
23	309.57	310.44	310.70	311.48	312.22	312.06	312.34	312.52	313.05	313.78	314.01	314.38
24	309.59	310.43	310.64	311.53	312.18	312.04	312.37	312.56	313.06	313.76	314.02	314.42
25	309.59	310.42	310.63	311.48	312.17	312.11	312.35	312.58	313.07	313.74	314.01	314.42
26	309.65	310.41	310.78	311.51	312.11	312.09	312.32	312.54	313.11	313.73	314.00	314.44
27	309.72	310.43	310.77	311.55	312.12	312.19	312.32	312.54	313.14	313.72	314.02	314.45
28	309.70	310.34	310.84	311.50	312.09	312.17	312.29	312.57	313.15	313.73	314.02	314.55
29	309.68	310.31	310.85	311.50	---	312.10	312.38	312.56	313.13	313.69	314.01	314.57
30	309.76	310.08	310.95	311.56	---	312.06	312.36	312.58	313.15	313.66	314.01	314.54
31	309.82	---	310.91	311.53	---	312.07	---	312.60	---	313.64	314.02	---
MEAN	309.32	310.15	310.58	311.39	---	311.85	312.19	---	312.89	313.52	313.91	314.27
MAX	309.82	310.44	310.95	311.57	---	312.19	312.38	---	313.15	313.78	314.02	314.57
MIN	308.88	309.78	310.03	311.01	---	311.36	312.03	---	312.61	313.18	313.63	314.03

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.226	.227	.230	.230	.230	.232	.235	.237	.239	.240	.244	.246
2	.226	.227	.230	.230	.230	.232	.233	.237	.239	.241	.244	.246
3	.226	.227	.229	.230	.230	.232	.235	.238	.239	.241	.244	.246
4	.227	.227	.230	.230	.230	.232	.233	.238	.239	.241	.244	.246
5	.226	.227	.230	.230	.230	.231	.234	.237	.239	.241	.244	.246
6	.226	.226	.229	.230	.230	.232	.235	.238	.239	.241	.244	.246
7	.226	.226	.227	.228	.230	.233	.235	.238	.239	.242	.244	.246
8	.226	.227	.229	.229	.230	.231	.234	.238	.239	.242	.244	.246
9	.227	.226	.230	.229	.230	.233	.236	.238	.239	.242	.244	.246
10	.227	.226	.229	.229	.230	.233	.236	.238	.239	.242	.244	.246
11	.226	.227	.227	.229	.230	.233	.236	.238	.239	.242	.244	.246
12	.226	.226	.229	.229	.230	.232	.236	.238	.240	.242	.244	.246
13	.227	.227	.230	.229	.231	.233	.235	.238	.240	.242	.244	.246
14	.227	.227	.230	.229	.232	.234	.236	.238	.240	.242	.244	.246
15	.227	.228	.230	.229	.231	.234	.236	.238	.240	.242	.245	.247
16	.226	.227	.231	.229	.231	.234	.235	.238	.240	.242	.244	.247
17	.226	.227	.229	.229	.231	.232	.235	.238	.240	.242	.244	.247
18	.227	.227	.230	.229	.231	.233	.236	.238	.241	.242	.245	.247
19	.227	.227	.230	.229	.231	.234	.236	.238	.241	.242	.245	.247
20	.227	.226	.230	.229	.230	.234	.237	.238	.241	.242	.245	.247
21	.227	.227	.230	.229	.231	.234	.237	.238	.240	.242	.245	.247
22	.227	.228	.230	.229	.230	.234	.237	.238	.240	.242	.245	.247
23	.227	.229	.228	.229	.231	.234	.236	.238	.240	.242	.245	.248
24	.227	.229	.230	.229	.232	.234	.236	.238	.240	.242	.245	.248
25	.228	.229	.229	.230	.232	.234	.237	.238	.240	.243	.245	.248
26	.227	.229	.227	.229	.232	.234	.237	.238	.240	.243	.245	.248
27	.227	.229	.228	.230	.230	.233	.237	.238	.240	.243	.245	.248
28	.227	.229	.230	.230	.231	.233	.238	.238	.240	.243	.245	.247
29	.228	.228	.230	.230	---	.235	.237	.239	.240	.243	.245	.247
30	.227	.229	.230	.230	---	.235	.237	.239	.240	.244	.245	.247
31	.226	---	.230	.230	---	.235	---	.239	---	.244	.245	---
MEAN	.227	.227	.229	.229	.231	.233	.236	.238	.240	.242	.244	.247
MAX	.228	.229	.231	.230	.232	.235	.238	.239	.241	.244	.245	.248
MIN	.226	.226	.227	.228	.230	.231	.233	.237	.239	.240	.244	.246

WTR YR 1999 MEAN .235 MAX .248 MIN .226



## PIMA COUNTY

321517110671802. Local number, (D-13-14)31cac

LOCATION --Lat 32°15'17", long 110°57'18", Hydrologic Unit 15050301, within the Tucson ground-water basin, between Park Avenue and Mountain Avenue on Mitchell Street at Mitchell Park. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS --Drilled observation well fitted with a borehole, pipe extensometer, diameter 6.0 in., depth 808 ft, open throughout casing.

INSTRUMENTATION --Water-level and compaction recorders.

DATUM --Elevation of land surface is 2,395.0 ft above sea level, from topographic map. Measuring point: Top of casing 1.5 ft above land-surface datum.

REMARKS --Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD --September 1982 to current year.

EXTREMES FOR PERIOD OF RECORD --Highest water level recorded, 174.42 ft below land-surface datum, Dec. 1, 1982; lowest recorded, 237.27 ft below land-surface datum, Sept. 22, 1999.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	233.59	---	---	---	---	---	233.89	234.42	235.41	---	---	---
2	233.55	---	---	---	---	---	232.65	234.40	235.36	---	---	---
3	233.53	---	---	---	---	---	232.53	234.33	235.39	---	236.23	---
4	233.41	---	---	---	---	---	232.35	234.48	235.44	---	236.28	---
5	233.15	---	---	---	---	---	231.83	234.67	235.48	---	236.34	---
6	232.42	---	---	---	---	---	231.72	234.65	235.52	---	236.37	---
7	232.10	---	---	---	---	---	232.30	234.66	235.48	---	235.47	---
8	231.99	---	---	---	---	---	231.93	234.63	235.47	---	236.50	236.97
9	232.44	---	---	---	---	---	230.84	234.65	235.51	---	---	236.98
10	232.93	---	---	---	---	---	230.50	234.73	235.53	---	---	237.02
11	233.09	---	---	---	---	233.79	230.28	234.82	235.60	---	---	237.03
12	233.15	---	---	---	---	233.89	231.16	234.87	235.65	---	---	237.04
13	233.09	---	---	---	---	233.96	232.60	234.92	235.64	---	---	237.08
14	232.97	---	---	---	---	233.90	231.13	234.94	235.73	---	---	236.99
15	232.84	---	---	---	---	233.32	230.41	234.96	235.71	---	---	237.12
16	232.91	---	---	---	---	233.80	230.55	235.01	235.71	---	---	237.07
17	---	---	---	---	233.67	233.22	231.74	235.18	235.54	---	---	237.08
18	---	---	---	---	234.50	233.24	232.72	235.14	235.50	---	---	237.08
19	232.70	---	---	---	234.64	232.00	233.09	235.13	235.58	---	---	237.06
20	232.76	---	---	---	234.00	232.35	233.14	235.20	235.62	---	---	237.08
21	232.78	---	---	---	232.66	232.96	233.18	235.15	235.73	---	---	237.11
22	232.82	---	---	---	232.61	233.49	233.26	235.19	235.82	---	---	237.18
23	232.81	---	---	---	232.33	233.74	233.56	235.30	235.92	---	---	236.67
24	232.81	---	---	---	232.03	233.95	233.78	235.33	235.91	---	---	235.85
25	---	---	---	---	231.89	233.98	233.96	235.26	235.88	---	---	235.50
26	---	---	---	---	230.91	233.92	234.02	235.36	235.84	---	---	235.26
27	---	---	---	---	231.35	234.11	234.07	235.35	235.88	---	---	236.12
28	---	---	---	---	---	234.28	234.02	235.32	236.02	---	---	236.67
29	---	---	---	---	---	234.29	234.18	235.31	---	---	---	236.93
30	---	---	---	---	---	234.21	234.33	235.40	---	---	---	237.11
31	---	---	---	---	---	234.18	---	235.45	---	---	---	---
MEAN	---	---	---	---	---	---	232.52	234.97	---	---	---	---
MAX	---	---	---	---	---	---	234.33	235.45	---	---	---	---
MIN	---	---	---	---	---	---	230.28	234.33	---	---	---	---

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.091	.092	.092	.091	.090	.089	.090	.088	.088	.089	.095	.094
2	.091	.092	.092	.091	.090	.089	.089	.088	.089	.089	.095	.094
3	.091	.092	.092	.091	.090	.090	.089	.089	.089	.089	.095	.094
4	.091	.092	.092	.091	.091	.090	.089	.089	.088	.089	.095	.094
5	.091	.092	.092	.091	.091	.090	.088	.088	.088	.089	.095	.094
6	.091	.092	.092	.090	.090	.090	.089	.088	.088	.090	.095	.095
7	.091	.092	.091	.089	.090	.090	.089	.088	.088	.090	.095	.095
8	.091	.092	.091	.089	.090	.089	.089	.088	.089	.090	.095	.095
9	.091	.092	.092	.090	.090	.089	.089	.088	.089	.090	.095	.095
10	.091	.092	.091	.090	.090	.089	.089	.088	.089	.090	.095	.095
11	.091	.091	.091	.090	.089	.089	.090	.088	.089	.091	.095	.094
12	.091	.091	.091	.091	.089	.089	.090	.088	.089	.091	.095	.094
13	.091	.092	.091	.091	.090	.089	.089	.088	.089	.091	.095	.094
14	.091	.091	.092	.089	.090	.089	.089	.088	.089	.091	.095	.094
15	.092	.091	.092	.090	.091	.089	.090	.088	.089	.091	.095	.094
16	.091	.091	.092	.090	.091	.089	.089	.088	.089	.091	.095	.094
17	.091	.091	.092	.090	.091	.088	.089	.088	.089	.092	.095	.094
18	.091	.091	.092	.091	.091	.088	.089	.088	.089	.092	.095	.094
19	.091	.091	.092	.090	.091	.089	.089	.088	.089	.092	.095	.094
20	.091	.091	.092	.090	.090	.089	.090	.088	.089	.092	.095	.094
21	.091	.092	.091	.089	.090	.089	.090	.088	.089	.093	.095	.094
22	.091	.092	.092	.090	.090	.089	.090	.088	.089	.093	.095	.095
23	.091	.092	.091	.091	.090	.089	.090	.088	.089	.093	.095	.095
24	.092	.092	.090	.091	.090	.089	.089	.088	.089	.093	.094	.095
25	.092	.092	.090	.090	.090	.090	.089	.088	.089	.093	.094	.095
26	.092	.092	.091	.090	.090	.089	.089	.088	.089	.094	.094	.095
27	.092	.092	.091	.090	.089	.089	.088	.088	.089	.094	.094	.095
28	.092	.091	.091	.090	.089	.088	.089	.089	.089	.094	.094	---
29	.092	.092	.090	.090	---	.089	.089	.088	.089	.094	.094	---
30	.092	.092	.091	.091	---	.089	.088	.088	.089	.094	.094	---
31	.092	---	.091	.091	---	.090	---	.088	---	.095	.094	---
MEAN	.091	.092	.091	.090	.090	.089	.089	.088	.089	.092	.095	---
MAX	.092	.092	.092	.091	.091	.090	.090	.089	.089	.095	.095	---
MIN	.091	.091	.090	.089	.089	.088	.088	.088	.088	.089	.094	---

## GROUND-WATER LEVELS AND COMPACTION VALUES

## PIMA COUNTY

32154711144001, Local number, (D-13-11)29cdd

LOCATION.--Lat 32°15'47", long 111°14'40". Hydrologic Unit 15050304, within the Avra Valley ground-water basin on Mile Wide Road along CAP canal. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 10 in., depth 790 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 2,192.0 ft above sea level, from topographic map. Measuring point: Top of casing 1.0 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--March 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 347.3 ft below land-surface datum, Sept. 30, 1999; lowest recorded, 361.5 ft below land-surface datum, Mar. 22, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	357.0	356.8	356.2	355.5	354.9	353.8	352.7	351.2	350.3	349.4	348.5
2	---	356.9	356.8	356.2	355.4	354.8	353.9	352.6	351.2	350.3	349.5	348.5
3	---	356.9	356.7	356.2	355.3	354.7	353.8	352.5	351.2	350.2	349.5	348.4
4	---	356.8	356.8	356.3	355.4	354.7	353.9	352.5	351.2	350.2	349.5	348.3
5	---	356.6	356.7	356.4	355.4	354.5	353.8	352.5	351.1	350.2	349.4	348.2
6	---	356.6	356.6	356.3	355.5	354.6	353.7	352.4	351.0	350.3	349.4	348.2
7	---	356.8	356.6	356.1	355.3	354.6	353.7	352.3	351.0	350.3	349.3	348.1
8	---	356.5	356.5	356.1	355.3	354.8	353.7	352.2	350.9	350.3	349.3	348.1
9	---	356.7	356.5	356.0	355.3	354.7	353.6	352.1	350.8	350.2	349.1	348.1
10	---	356.7	356.5	356.1	355.2	354.6	353.4	352.1	350.7	350.2	349.1	348.1
11	---	356.7	356.4	355.9	355.3	354.5	353.3	352.0	350.7	350.0	349.2	348.0
12	---	356.8	356.6	355.8	355.2	354.5	353.2	351.9	350.7	349.9	349.1	348.0
13	---	356.7	356.8	355.9	355.1	354.6	353.3	351.9	350.6	349.8	349.0	347.9
14	---	356.6	356.6	355.9	355.0	354.5	353.2	351.9	350.6	349.8	349.0	347.8
15	---	356.5	356.5	355.8	355.0	354.5	353.2	351.9	350.6	349.8	349.0	347.9
16	---	356.6	356.6	355.9	355.1	354.5	353.2	351.9	350.6	349.8	349.1	347.9
17	357.2	356.6	356.5	355.9	355.1	354.5	353.1	351.9	350.6	349.9	349.1	347.9
18	357.1	356.6	356.6	355.9	355.0	354.6	353.1	351.7	350.6	349.9	349.0	347.9
19	357.1	356.7	356.6	355.9	355.0	354.5	353.0	351.7	350.5	349.8	349.0	347.8
20	357.1	356.8	356.6	355.8	355.1	354.3	352.9	351.7	350.5	349.8	348.9	347.8
21	357.3	356.7	356.5	355.9	355.0	354.2	352.8	351.6	350.4	349.7	348.8	347.7
22	357.3	356.8	356.7	355.9	355.2	354.1	352.8	351.6	350.5	349.8	348.8	347.7
23	357.3	---	356.6	355.9	355.1	354.1	352.9	351.5	350.5	349.8	348.8	347.6
24	357.1	---	356.5	355.7	354.9	354.0	352.9	351.5	350.4	349.7	348.6	347.5
25	356.9	---	356.6	355.7	354.9	354.0	352.9	351.4	350.5	349.7	348.6	347.5
26	357.0	---	356.5	355.8	354.9	354.0	352.8	351.4	350.5	349.7	348.7	347.5
27	357.0	---	356.4	355.8	354.9	354.1	352.7	351.4	350.5	349.7	348.8	347.5
28	357.0	---	356.4	355.7	355.0	354.2	352.7	351.3	350.5	349.8	348.8	347.6
29	357.0	---	356.4	355.7	---	354.1	352.7	351.3	350.5	349.7	348.7	347.5
30	357.0	---	356.4	355.7	---	353.9	352.7	351.3	350.3	349.6	348.7	347.5
31	357.0	---	356.2	355.5	---	353.8	---	351.3	---	349.5	348.7	---
MEAN	---	---	356.6	355.9	355.2	354.4	353.2	351.9	350.7	349.9	349.0	347.9
MAX	---	---	356.8	356.4	355.5	354.9	353.9	352.7	351.2	350.3	349.5	348.5
MIN	---	---	356.2	355.5	354.9	353.8	352.7	351.3	350.3	349.5	348.6	347.5

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.007	.005	.006	.002	.005	.006	.007	.006	.006	.006	.007	.006
2	.007	.006	.006	.004	.006	.007	.003	.006	.006	.006	.006	.006
3	.007	.006	.005	.006	.005	.007	.006	.007	.006	.006	.007	.006
4	.007	.007	.006	.006	.005	.007	.004	.006	.006	.006	.007	.006
5	.007	.005	.007	.004	.006	.006	.004	.005	.006	.006	.007	.006
6	.007	.005	.006	.006	.007	.006	.005	.006	.006	.006	.007	.006
7	.007	.005	.004	.007	.005	.006	.005	.006	.006	.006	.007	.006
8	.007	.006	.004	.007	.004	.004	.005	.006	.006	.006	.007	.006
9	.007	.006	.002	.007	.005	.005	.006	.006	.006	.007	.007	.005
10	.007	.006	.004	.007	.006	.006	.007	.006	.006	.006	.006	.006
11	.007	.005	.006	.007	.006	.007	.007	.006	.006	.006	.006	.006
12	.007	.006	.005	.006	.006	.005	.005	.006	.006	.006	.006	.006
13	.007	.006	.003	.005	.003	.004	.005	.006	.006	.006	.006	.006
14	.008	.006	.002	.005	.003	.006	.006	.006	.006	.006	.006	.006
15	.008	.005	.004	.005	.006	.007	.007	.006	.006	.006	.006	.006
16	.006	.005	.005	.006	.006	.006	.006	.006	.006	.006	.006	.006
17	.004	.005	.006	.005	.007	.004	.006	.006	.006	.006	.006	.006
18	.005	.006	.006	.005	.006	.004	.006	.006	.006	.006	.006	.006
19	.006	.004	.007	.005	.007	.005	.006	.006	.006	.006	.006	.006
20	.005	.003	.006	.006	.005	.005	.008	.006	.006	.006	.006	.006
21	.005	.004	.005	.006	.006	.006	.008	.006	.006	.006	.006	.006
22	.005	.004	.007	.006	.005	.006	.008	.006	.006	.006	.006	.006
23	.005	.003	.006	.004	.005	.006	.006	.006	.005	.006	.006	.006
24	.005	.003	.007	.005	.006	.005	.005	.006	.006	.007	.006	.006
25	.005	.004	.007	.006	.006	.006	.005	.006	.006	.007	.006	.006
26	.005	.005	.005	.007	.006	.006	.006	.006	.006	.007	.006	.006
27	.006	.005	.004	.003	.005	.005	.006	.006	.006	.007	.006	.005
28	.006	.005	.005	.005	.004	.004	.007	.007	.006	.007	.006	.005
29	.006	.005	.006	.006	---	.005	.006	.006	.006	.007	.006	.006
30	.006	.005	.004	.005	---	.006	.005	.006	.006	.007	.006	.006
31	.005	---	.002	.004	---	.007	---	.006	---	.007	.006	---
MEAN	.006	.005	.005	.005	.005	.006	.006	.006	.006	.006	.006	.006
MAX	.008	.007	.007	.007	.007	.007	.008	.007	.006	.007	.007	.006
MIN	.004	.003	.002	.002	.003	.004	.003	.005	.005	.006	.006	.005

WTR YR 1999 MEAN .006 MAX .008 MIN .002

WATER YEAR 1999. Local number, 07-12-1033000  
 LOCATION.--Lat 32°20'09", long 111°19'18", Hydrologic Unit 15050304, within the Avra Valley ground-water basin, approximately 12 mi west of Interstate 10, 3 mi south on corner of Anway and Tucker. Owner: U.S. Geological Survey

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 20 in., depth 1,000 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 2,068 ft above sea level, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--August 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 335.5 ft below land-surface datum, Mar. 6, 1999; lowest recorded, 349.8 ft below land-surface datum, Aug. 22, 1985.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	338.7	338.0	337.0	336.7	336.5	335.9	337.7	336.1	337.1	339.3	338.6	338.9
2	338.5	337.7	337.1	336.6	336.5	335.9	337.4	335.9	337.2	339.4	338.8	338.9
3	338.5	337.7	337.1	336.7	336.4	335.8	337.1	335.9	337.2	339.4	338.9	338.8
4	338.5	337.6	337.2	336.8	336.4	335.8	336.9	336.1	337.4	339.4	339.1	338.7
5	338.5	337.6	337.2	336.7	336.4	335.7	336.7	336.3	337.7	339.4	339.2	338.7
6	338.4	337.6	337.1	336.6	336.4	335.7	336.6	336.5	338.0	339.4	339.2	338.6
7	338.4	337.6	337.0	336.5	336.2	335.8	336.7	336.6	338.0	339.1	339.1	338.6
8	338.4	337.6	336.9	336.5	336.2	336.1	336.8	336.6	338.2	338.6	338.9	338.6
9	338.4	337.5	336.9	336.6	336.0	336.4	336.8	336.7	338.2	338.2	338.7	338.6
10	338.3	337.6	337.1	336.5	336.2	336.0	336.7	336.9	338.3	337.8	338.8	338.4
11	338.4	337.5	337.1	336.6	336.2	335.9	336.5	337.0	338.4	337.8	338.7	338.4
12	338.3	337.5	337.0	336.6	336.2	335.9	336.7	337.1	338.5	337.9	338.8	338.4
13	338.3	337.6	337.0	336.8	336.1	336.0	336.8	337.3	338.6	338.0	339.0	338.3
14	338.3	337.7	336.9	336.9	336.0	335.8	336.6	337.3	338.6	338.1	339.3	338.2
15	338.3	337.6	336.8	336.8	336.0	335.8	336.5	337.5	338.7	337.9	339.3	338.3
16	338.3	337.6	336.8	336.8	336.1	335.9	336.5	337.6	338.7	337.5	339.2	338.2
17	338.4	337.5	336.8	336.8	336.0	336.3	336.5	337.6	338.7	337.7	339.3	338.4
18	338.4	337.5	336.8	336.8	336.0	336.5	336.5	337.7	338.6	337.8	339.3	338.1
19	338.2	337.6	336.7	336.8	336.0	336.7	336.4	338.0	338.2	337.6	339.4	338.2
20	338.3	337.7	336.8	336.7	336.0	336.8	336.3	338.0	338.0	337.4	339.5	338.0
21	338.3	337.6	336.9	336.6	336.0	337.0	336.2	337.9	338.0	337.6	339.4	338.0
22	338.4	337.5	336.8	336.6	336.1	337.0	336.1	337.8	338.0	337.9	339.3	338.0
23	338.4	337.5	336.8	336.6	336.0	337.2	336.2	337.9	338.2	338.2	339.4	338.0
24	338.2	337.5	336.9	336.6	336.1	337.2	336.4	337.6	338.5	338.3	339.5	337.9
25	338.1	337.5	337.0	336.5	336.1	337.4	336.3	337.5	338.8	338.6	339.6	337.9
26	338.0	337.4	336.9	336.6	335.9	337.5	336.3	337.5	338.9	338.4	339.7	337.8
27	338.1	337.2	336.8	336.5	336.0	337.7	336.2	337.4	339.0	338.5	339.6	337.8
28	338.0	337.2	336.9	336.6	335.9	337.8	336.0	337.3	339.2	338.6	339.2	337.8
29	338.0	337.3	336.7	336.6	---	337.9	336.0	337.3	339.3	338.5	339.1	337.9
30	337.9	337.2	336.7	336.6	---	337.9	336.0	337.3	339.3	338.4	339.2	337.7
31	337.9	---	336.7	336.5	---	337.8	---	337.3	---	338.4	339.2	---
MEAN	338.3	337.5	336.9	336.6	336.1	336.6	336.5	337.1	338.3	338.4	339.2	338.3
MAX	338.7	338.0	337.2	336.9	336.5	337.9	337.7	338.0	339.3	339.4	339.7	338.9
MIN	337.9	337.2	336.7	336.5	335.9	335.7	336.0	335.9	337.1	337.4	338.6	337.7

WTR YR 1999 MEAN 337.5 HIGH 335.7 LOW 339.7

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.138	.136	.138	.135	.139	.139	.140	.141	.143	.144	.144	.145
2	.138	.137	.139	.138	.139	.139	.140	.142	.143	.144	.145	.145
3	.138	.138	.138	.139	.138	.139	.140	.143	.143	.144	.145	.145
4	.138	.138	.139	.138	.139	.140	.140	.142	.142	.144	.145	.145
5	.138	.137	.139	.138	.140	.139	.140	.141	.142	.144	.145	.145
6	.138	.137	.139	.139	.141	.139	.140	.141	.142	.144	.145	.145
7	.138	.137	.138	.140	.139	.139	.140	.142	.142	.144	.145	.145
8	.138	.138	.137	.140	.137	.137	.140	.142	.143	.145	.145	.145
9	.138	.138	.134	.140	.139	.139	.140	.142	.143	.144	.145	.145
10	.138	.137	.136	.139	.140	.139	.140	.142	.143	.144	.144	.145
11	.138	.137	.138	.139	.138	.140	.140	.142	.143	.144	.144	.145
12	.138	.137	.136	.140	.139	.139	.140	.142	.143	.144	.144	.145
13	.138	.138	.135	.138	.136	.139	.140	.142	.143	.144	.144	.145
14	.138	.138	.135	.138	.135	.139	.140	.142	.143	.144	.144	.145
15	.138	.136	.136	.139	.138	.139	.140	.142	.143	.144	.144	.145
16	.138	.136	.137	.140	.138	.139	.140	.142	.143	.144	.144	.145
17	.137	.137	.138	.139	.139	.139	.141	.142	.143	.144	.144	.145
18	.138	.137	.139	.138	.139	.139	.141	.142	.143	.144	.144	.145
19	.138	.135	.139	.139	.139	.140	.141	.143	.143	.144	.144	.145
20	.138	.136	.138	.139	.138	.140	.142	.143	.143	.144	.144	.145
21	.138	.137	.139	.140	.138	.139	.142	.143	.143	.144	.144	.145
22	.138	.136	.139	.140	.137	.140	.143	.142	.143	.144	.144	.145
23	.138	.136	.139	.137	.138	.140	.141	.142	.143	.144	.144	.145
24	.138	.136	.140	.139	.138	.140	.141	.142	.143	.144	.144	.145
25	.137	.136	.139	.140	.139	.140	.141	.142	.143	.144	.144	.145
26	.137	.137	.139	.140	.139	.140	.141	.142	.143	.144	.145	.145
27	.137	.138	.136	.138	.137	.140	.142	.143	.143	.144	.145	.145
28	.137	.137	.139	.139	.138	.140	.143	.143	.144	.144	.145	.145
29	.138	.138	.138	.139	---	.140	.141	.143	.144	.144	.145	.145
30	.138	.138	.137	.139	---	.140	.141	.143	.144	.144	.145	.145
31	.137	---	.135	.137	---	.140	---	.142	---	.144	.145	---
MEAN	.138	.137	.138	.139	.138	.139	.141	.142	.143	.144	.144	.145
MAX	.138	.138	.140	.140	.141	.140	.143	.143	.144	.145	.145	.145
MIN	.137	.135	.134	.135	.135	.137	.140	.141	.142	.144	.144	.145

WTR YR 1999 MEAN .141 MAX .145 MIN .134

## GROUND-WATER LEVELS AND COMPACTION VALUES

## PIMA COUNTY

322057111134801. Local number, (D-12-11)33bbc

LOCATION.--Lat 32°20'57", long 111°13'22". Hydrologic Unit 16050304, within the Tucson ground-water basin, between Park Avenue and Mountain Avenue on Mitchell Street at Mitchell Park. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 15.0 in., depth 998 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 2,104.0 ft above sea level, from topographic map. Measuring point: Top of casing 1.7 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--March 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 346.4 ft below land-surface datum, Feb. 19, 1999; lowest recorded, 354.5 ft below land-surface datum, Sept. 29, 1989.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	347.4	347.2	---	346.9	---	346.6	346.9	347.1	347.0	346.9	347.0	347.2
2	347.3	347.2	---	347.0	---	---	346.9	347.1	346.9	346.9	347.0	347.0
3	347.3	347.2	---	347.0	---	---	347.0	347.0	346.9	346.9	347.0	347.0
4	347.3	347.1	---	347.1	346.7	---	347.0	347.0	346.9	346.9	347.0	347.1
5	347.2	347.2	---	346.9	346.7	---	347.2	347.0	347.0	346.9	347.0	347.0
6	347.3	347.1	---	347.0	346.8	---	347.2	347.0	347.0	346.9	347.1	347.0
7	347.3	347.2	---	346.8	346.8	---	347.1	347.0	347.0	347.0	347.1	347.0
8	347.3	347.2	---	346.7	346.7	---	347.2	347.0	347.1	346.9	347.1	347.0
9	347.3	347.3	---	346.9	346.7	---	347.2	346.9	346.9	346.9	347.0	347.0
10	347.2	347.2	---	346.9	346.6	---	347.1	346.9	346.9	346.9	347.1	346.9
11	347.3	347.4	---	346.9	346.7	---	347.0	346.9	346.9	346.9	347.1	346.9
12	347.3	347.3	347.1	346.9	346.6	---	347.0	346.8	346.9	346.8	347.1	346.9
13	347.3	347.1	347.0	346.9	346.6	346.6	347.2	346.8	346.9	346.8	347.1	346.9
14	347.4	347.2	346.8	347.0	346.5	346.5	347.1	346.8	346.9	346.8	347.1	346.8
15	347.3	347.3	346.9	347.0	346.6	346.5	347.1	346.9	346.9	346.9	347.2	346.8
16	347.3	347.4	346.9	346.9	346.5	346.5	347.1	346.9	346.9	347.0	347.2	346.9
17	347.4	347.3	346.9	346.9	346.6	346.6	347.1	347.0	346.9	347.1	347.2	346.9
18	347.4	347.3	346.9	347.0	346.5	346.7	347.2	346.9	347.0	347.1	347.1	346.9
19	347.3	---	346.9	346.9	346.4	346.7	347.1	347.0	347.0	347.0	347.1	346.9
20	347.3	---	346.9	346.9	346.5	346.8	347.0	347.1	346.9	347.0	347.2	346.9
21	347.3	---	347.0	346.9	346.5	346.7	346.9	347.1	346.9	346.9	347.1	347.0
22	347.4	---	347.0	---	346.5	346.7	346.9	347.1	346.9	347.0	347.1	346.9
23	347.4	---	347.0	---	346.5	346.7	347.0	347.1	347.0	347.0	347.1	346.9
24	347.3	---	347.0	---	346.5	346.7	347.1	347.0	346.9	347.0	347.1	346.9
25	347.2	---	347.0	---	346.5	346.8	347.2	347.0	346.9	347.0	347.1	347.0
26	347.1	---	347.0	---	346.7	346.7	347.2	347.0	346.9	347.0	347.1	346.9
27	347.1	---	346.9	---	346.7	346.8	347.1	347.0	347.0	347.0	347.2	346.8
28	347.3	---	346.9	---	346.6	346.9	347.0	346.9	347.0	347.0	347.3	346.8
29	347.2	---	347.0	---	---	346.9	347.1	346.9	347.0	347.0	347.3	346.9
30	347.1	---	347.0	---	---	346.9	347.1	346.9	346.9	347.1	347.3	346.9
31	347.1	---	346.8	---	---	346.8	---	346.9	---	347.0	347.2	---
MEAN	347.3	---	---	---	---	---	347.1	347.0	346.9	347.0	347.1	346.9
MAX	347.4	---	---	---	---	---	347.2	347.1	347.1	347.1	347.3	347.2
MIN	347.1	---	---	---	---	---	346.9	346.8	346.9	346.8	347.0	346.8

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.055	.055	.056	.054	.056	.056	.058	.058	.058	.060	.060	.060
2	.055	.055	.056	.054	.056	.056	.058	.058	.059	.060	.060	.060
3	.055	.055	.056	.054	.056	.056	.058	.058	.059	.060	.060	.060
4	.055	.055	.056	.054	.056	.056	.058	.058	.059	.060	.060	.060
5	.055	.055	.056	.054	.056	.056	.058	.058	.059	.060	.060	.060
6	.055	.055	.056	.054	.056	.056	.058	.058	.059	.060	.060	.060
7	.055	.055	.055	.054	.056	.056	.058	.058	.060	.060	.060	.060
8	.055	.055	.055	.054	.056	.056	.058	.058	.060	.060	.060	.060
9	.055	.055	.055	.054	.056	.056	.058	.058	.060	.060	.061	.060
10	.055	.055	.055	.054	.056	.056	.058	.058	.060	.060	.060	.060
11	.055	.055	.055	.054	.056	.056	.058	.058	.060	.060	.060	.060
12	.055	.055	.055	.054	.056	.056	.058	.058	.060	.060	.060	.060
13	.055	.055	.055	.054	.056	.056	.058	.058	.060	.060	.060	.060
14	.055	.055	.055	.054	.056	.056	.058	.058	.060	.060	.060	.060
15	.055	.055	.055	.054	.056	.056	.058	.058	.060	.060	.060	.060
16	.055	.055	.055	.054	.056	.056	.058	.058	.060	.060	.060	.060
17	.055	.055	.055	.054	.056	.056	.058	.058	.060	.060	.060	.060
18	.055	.055	.055	.055	.056	.056	.058	.058	.060	.060	.060	.060
19	.055	.055	.055	.056	.056	.057	.058	.058	.060	.060	.060	.060
20	.055	.055	.055	.056	.056	.057	.058	.058	.060	.060	.060	.060
21	.055	.055	.055	.056	.056	.057	.058	.058	.060	.060	.060	.060
22	.055	.055	.055	.056	.056	.057	.058	.058	.060	.060	.060	.060
23	.055	.055	.055	.056	.056	.057	.058	.058	.060	.060	.060	.060
24	.055	.055	.055	.056	.056	.057	.058	.058	.060	.060	.060	.060
25	.055	.056	.055	.056	.056	.057	.058	.058	.060	.060	.060	.059
26	.055	.055	.055	.056	.056	.057	.058	.058	.060	.060	.060	.059
27	.055	.055	.055	.056	.056	.058	.058	.058	.060	.060	.060	.059
28	.055	.056	.055	.056	.056	.058	.058	.058	.060	.060	.060	.059
29	.055	.056	.055	.056	---	.058	.058	.058	.060	.060	.060	.059
30	.055	.056	.055	.056	---	.058	.058	.053	.060	.060	.060	.059
31	.055	---	.054	.056	---	.058	---	.058	---	.060	.060	---
MEAN	.055	.055	.055	.055	.056	.057	.058	.058	.060	.060	.060	.060
MAX	.055	.056	.056	.056	.056	.058	.058	.058	.060	.060	.061	.060
MIN	.055	.055	.054	.054	.056	.056	.058	.058	.058	.060	.060	.059

WTR YR 1999 MEAN .057 MAX .061 MIN .054

## PIMA COUNTY

32233911170001. Local Number, (D-12-10)12cccd1

LOCATION.--Lat 32°23'39", long 111°17'00". Hydrologic Unit 15050304, within the Avra Valley ground-water basin, approximately 10 mi west of Interstate 10, on Avra Valley Road.  
 Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 20 in., depth 1,010 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 1,996.20 ft above sea level, from topographic map. Measuring point: Top of casing 1.0 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--August 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 249.5 ft below land-surface datum, June 28, 1999; lowest recorded, 300.8 ft below land-surface datum, Sept. 14, 1989.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	265.2	262.4	260.1	258.0	261.6	260.5	269.1	259.7	267.0	262.9	---	264.8
2	265.3	262.2	260.2	258.1	261.4	260.7	267.9	259.5	267.3	264.1	---	264.9
3	265.9	262.1	260.1	258.4	261.1	260.4	266.8	259.5	267.5	264.9	---	264.9
4	266.0	262.0	259.8	258.6	261.0	260.6	266.3	260.1	267.7	265.5	---	264.8
5	266.1	261.9	259.9	258.6	261.1	261.3	265.7	261.8	268.0	266.0	---	264.6
6	266.2	261.9	259.8	259.2	261.1	259.9	265.2	263.9	268.0	264.9	---	266.0
7	266.2	261.9	259.9	259.2	259.3	259.6	265.2	264.5	267.8	---	---	267.0
8	266.1	261.6	259.7	258.9	258.5	259.9	265.2	264.4	268.2	---	---	266.9
9	266.0	261.6	259.5	258.9	258.2	259.7	265.1	264.4	268.3	---	---	266.9
10	266.0	261.7	259.6	258.7	258.1	260.3	265.0	265.0	268.3	---	---	267.1
11	266.1	261.5	259.6	258.6	258.1	261.3	264.9	266.0	268.1	---	---	267.2
12	266.1	261.4	259.4	258.5	257.9	261.8	264.9	266.6	268.2	---	---	266.5
13	266.1	261.4	259.2	258.6	257.7	261.8	265.1	266.6	268.2	---	---	265.9
14	266.0	261.3	258.9	258.7	257.4	261.8	264.6	266.3	268.1	---	---	265.3
15	265.7	261.0	258.9	259.3	257.4	261.7	264.0	264.6	268.0	---	---	265.0
16	264.9	261.0	259.0	261.3	257.4	261.6	263.6	264.3	268.3	---	---	264.3
17	264.5	261.0	258.9	261.8	257.3	262.6	263.4	264.4	268.1	---	---	263.4
18	264.2	260.9	258.8	262.0	257.3	263.8	263.2	264.0	266.5	---	---	261.3
19	263.9	260.9	258.7	261.9	257.2	264.2	263.1	262.6	265.2	---	---	260.7
20	263.8	261.0	258.7	261.9	257.2	264.8	262.9	262.1	263.1	---	266.8	260.3
21	263.8	260.8	258.8	262.0	257.2	265.9	262.7	262.1	262.4	---	266.9	260.0
22	263.6	260.7	258.5	262.5	258.3	266.5	262.8	263.1	261.5	---	267.1	259.7
23	263.5	260.6	258.6	263.0	260.1	267.1	263.0	263.4	259.4	---	267.3	259.6
24	263.2	260.5	258.7	263.9	260.6	267.5	263.1	263.9	258.2	---	267.7	259.3
25	263.0	260.5	258.6	264.2	260.5	268.0	262.0	265.7	255.1	---	268.9	259.0
26	262.9	260.4	258.3	264.6	260.5	268.2	260.5	266.3	251.7	---	268.9	258.9
27	262.9	260.2	258.2	264.1	260.6	268.6	260.0	266.5	251.4	---	268.0	258.9
28	262.8	260.1	258.2	262.4	260.6	268.9	259.6	266.6	254.6	---	266.5	258.8
29	262.5	260.3	258.1	262.0	---	268.7	259.7	266.9	261.4	---	265.9	258.7
30	262.4	260.4	258.0	261.9	---	268.6	259.5	267.0	261.8	---	265.4	258.5
31	262.5	---	257.8	261.6	---	268.0	---	267.0	---	---	265.1	---
MEAN	264.6	261.2	259.0	260.7	259.1	263.7	263.8	264.2	264.2	---	---	263.0
MAX	266.2	262.4	260.2	264.6	261.6	268.9	268.1	267.0	268.3	---	---	267.2
MIN	262.4	260.1	257.8	258.0	257.2	259.6	259.5	259.5	251.4	---	---	258.5

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.028	.025	---	.021	.022	.020	.031	.022	.030	.028	.028	.027
2	.028	.025	---	.021	.022	.020	.031	.022	.031	.029	.028	.026
3	.028	.025	---	.021	.022	.020	.031	.022	.031	.030	.029	.026
4	.028	.025	---	.021	.022	.020	.031	.022	.032	.030	.029	.026
5	.028	.025	---	.021	.022	.021	.031	.023	.032	.031	.029	.026
6	.028	.024	---	.021	.022	.019	.030	.024	.033	.032	.029	.025
7	.028	.024	---	.021	.022	.019	.030	.025	.033	.032	.030	.026
8	.028	.024	---	.021	.022	.019	.030	.026	.033	.032	.030	.026
9	.028	.024	---	.021	.021	.019	.030	.026	.034	.031	.030	.026
10	.028	.024	---	.021	.021	.019	.030	.026	.034	.030	.029	.027
11	.028	.023	---	.020	.021	.019	.030	.027	.034	.029	.028	.027
12	.028	.023	.023	.020	.020	.019	.030	.028	.034	.028	.028	.027
13	.028	.023	.023	.020	.020	.019	.030	.029	.034	.026	.028	.027
14	.028	.023	.023	.020	.020	.020	.029	.029	.035	.026	.028	.026
15	.028	.023	.022	.020	.019	.020	.028	.028	.035	.025	.027	.026
16	.027	.023	.022	.021	.019	.020	.028	.028	.035	.025	.025	.026
17	.027	---	.022	.021	.019	.020	.027	.028	.035	.024	.026	.025
18	.027	---	.022	.021	.019	.021	.027	.028	.035	.024	.027	.024
19	.027	---	.022	.021	.019	.021	.027	.028	.034	.024	.027	.023
20	.027	---	.022	.021	.019	.022	.026	.026	.033	.023	.028	.022
21	.027	---	.022	.021	.019	.023	.026	.026	.032	.023	.028	.022
22	.026	---	.022	.021	.019	.024	.026	.026	.031	.023	.029	.021
23	.026	---	.022	.022	.019	.025	.026	.025	.029	.023	.029	.021
24	.026	---	.022	.022	.019	.026	.026	.026	.028	.023	.030	.021
25	.026	---	.022	.023	.019	.027	.025	.026	.027	.023	.031	.020
26	.026	---	.022	.023	.020	.028	.024	.028	.027	.023	.030	.020
27	.025	---	.021	.023	.020	.029	.024	.028	.027	.023	.029	.020
28	.025	---	.021	.023	.020	.029	.023	.029	.027	.024	.029	.020
29	.025	---	.021	.023	---	.030	.023	.029	.027	.025	.028	.020
30	.025	---	.021	.022	---	.031	.023	.030	.027	.026	.027	.020
31	.025	---	.021	.022	---	.031	---	.030	---	.027	.027	---
MEAN	.027	---	---	.021	.020	.023	.028	.026	.032	.027	.028	.024
MAX	.028	---	---	.023	.022	.031	.031	.030	.035	.032	.031	.027
MIN	.025	---	---	.020	.019	.019	.023	.022	.027	.023	.025	.020

## GROUND-WATER LEVELS AND COMPACTION VALUES

## PINAL COUNTY

32351011181001. Local number, (D-10-10)03abc

LOCATION.--Lat 32°35'10", long 111°18'10", Hydrologic Unit 15050303, within the Pinal ground-water basin in Redrock, off Interstate 10 on Park Link Drive, along the CAP canal. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 12 in., depth 1,400 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 1,920.0 ft above sea level, from topographic map. Measuring point: Top of casing 1.8 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--March 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 240.2 ft below land-surface datum, Jan. 31, 1990; lowest recorded, 248.9 ft below land-surface datum, Sept. 27, 1997.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	246.2	245.9	245.6	245.4	245.8	245.8	245.6	245.8	246.2	246.4	246.4	246.3
2	246.1	245.8	245.6	245.4	245.8	245.7	245.6	245.8	246.2	246.4	246.3	246.3
3	246.0	245.7	245.6	245.5	245.7	245.7	245.6	245.8	246.1	246.4	246.3	246.4
4	246.1	245.8	245.6	245.5	245.8	245.7	245.6	245.8	246.1	246.4	246.3	246.3
5	246.1	245.8	245.5	245.4	245.8	245.7	245.6	245.8	246.2	246.4	246.3	246.3
6	246.2	245.7	245.5	245.4	245.8	245.6	245.6	245.8	246.1	246.4	246.3	246.3
7	246.1	245.7	245.6	245.4	245.8	245.5	245.5	245.7	246.1	246.5	246.3	246.3
8	246.1	245.7	245.4	245.4	245.7	245.6	245.7	245.8	246.1	246.4	246.3	246.3
9	246.0	245.7	245.5	245.4	245.6	245.5	245.7	245.8	246.1	246.4	246.3	246.3
10	246.0	245.6	245.5	245.4	245.5	245.5	245.7	245.8	246.0	246.4	246.4	246.3
11	245.9	245.6	245.5	245.4	245.6	245.4	245.7	245.8	246.0	246.4	246.5	246.3
12	245.9	245.7	245.5	245.6	245.6	245.5	245.6	245.8	246.1	246.3	246.5	246.4
13	245.9	245.7	245.5	245.6	245.7	245.5	245.7	245.8	246.0	246.3	246.5	246.3
14	245.9	245.6	245.4	245.8	245.6	245.4	245.7	245.7	246.1	246.3	246.5	246.3
15	245.9	245.7	245.4	245.7	245.6	245.4	245.6	245.8	246.1	246.3	246.5	246.3
16	245.9	245.6	245.4	245.6	245.6	245.4	245.6	245.9	246.1	246.3	246.6	246.4
17	246.0	245.7	245.4	245.7	245.6	245.5	245.7	245.9	246.1	246.3	246.5	246.4
18	245.9	245.7	245.4	245.7	245.7	245.5	245.7	245.9	246.2	246.3	246.5	246.4
19	245.8	245.7	245.5	245.7	245.7	245.6	245.7	245.8	246.2	246.3	246.5	246.4
20	246.0	245.8	245.5	245.7	245.6	245.6	245.7	245.9	246.1	246.4	246.5	246.5
21	246.1	245.7	245.6	245.7	245.6	245.5	245.6	245.9	246.2	246.4	246.5	246.4
22	246.1	245.8	245.5	245.7	245.7	245.5	245.6	245.9	246.2	246.4	246.5	246.4
23	246.1	245.7	245.5	245.8	245.7	245.5	245.7	246.1	246.3	246.4	246.5	246.4
24	246.0	245.6	245.7	245.6	245.6	245.5	245.8	246.0	246.3	246.4	246.5	246.4
25	245.9	245.6	245.6	245.7	245.6	245.5	245.8	246.0	246.2	246.4	246.4	246.4
26	245.8	245.6	245.6	245.7	245.6	245.5	245.7	246.0	246.3	246.4	246.4	246.3
27	245.9	245.6	245.5	245.7	245.7	245.5	245.7	246.0	246.3	246.4	246.4	246.3
28	245.9	245.6	245.5	245.7	245.6	245.6	245.7	246.0	246.3	246.4	246.4	246.3
29	245.8	245.6	245.5	245.8	---	245.5	245.7	246.0	246.3	246.4	246.4	246.3
30	245.7	245.6	245.4	245.8	---	245.5	245.8	246.1	246.3	246.4	246.4	246.3
31	245.9	---	245.5	245.8	---	245.6	---	246.1	---	246.4	246.4	---
MEAN	246.0	245.7	245.5	245.6	245.7	245.5	245.7	245.9	246.2	246.4	246.4	246.3
MAX	246.2	245.9	245.7	245.8	245.8	245.8	245.8	246.1	246.3	246.5	246.6	246.5
MIN	245.7	245.6	245.4	245.4	245.5	245.4	245.5	245.7	246.0	246.3	246.3	246.3

WTR YR 1999 MEAN 245.9 HIGH 245.4 LOW 246.6

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.009	.008	.006	.005	.005	.004	.005	.005	.006	.007	.010	.010
2	.009	.008	.006	.005	.006	.004	.004	.006	.006	.007	.010	.010
3	.009	.008	.006	.005	.006	.004	.004	.006	.006	.007	.010	.010
4	.009	.008	.006	.005	.005	.004	.004	.006	.006	.008	.010	.010
5	.009	.008	.006	.005	.005	.004	.004	.005	.006	.008	.010	.010
6	.009	.008	.006	.005	.005	.004	.004	.006	.006	.008	.010	.010
7	.009	.007	.005	.005	.005	.004	.004	.006	.006	.008	.010	.010
8	.009	.007	.006	.005	.005	.004	.004	.006	.006	.008	.010	.010
9	.009	.007	.006	.005	.005	.004	.004	.006	.006	.009	.010	.010
10	.009	.007	.005	.005	.004	.004	.005	.006	.006	.009	.010	.010
11	.009	.007	.006	.005	.004	.004	.004	.006	.006	.009	.010	.010
12	.009	.007	.006	.005	.004	.004	.004	.006	.006	.009	.010	.010
13	.009	.007	.006	.005	.005	.004	---	.005	.006	.009	.010	.010
14	.009	.007	.006	.006	.004	.004	---	.005	.006	.009	.009	.010
15	.009	.007	.006	.005	.004	.004	.005	.005	.006	.009	.009	.010
16	.009	.007	.006	.005	.004	.004	.005	.005	.006	.009	.009	.010
17	.008	.007	.006	.005	.004	.004	.005	.005	.006	.009	.009	.010
18	.008	.007	.006	.005	.004	.004	.005	.005	.006	.009	.009	.010
19	.008	.007	.006	.005	.004	.004	.005	.005	.006	.010	.009	.010
20	.008	.007	.005	.005	.004	.004	.005	.005	.006	.010	.009	.010
21	.008	.007	.005	.005	.004	.004	.005	.005	.006	.010	.009	.010
22	.008	.007	.005	.005	.004	.004	.005	.005	.006	.010	.009	.010
23	.008	.006	.005	.006	.004	.004	.005	.005	.006	.010	.009	.010
24	.008	.007	.005	.005	.004	.004	.005	.005	.007	.010	.009	.010
25	.008	.007	.005	.005	.004	.004	.005	.006	.007	.010	.010	.010
26	.008	.006	.006	.005	.004	.005	.005	.006	.007	.010	.010	.010
27	.008	.007	.005	.005	.004	.004	.005	.006	.007	.010	.010	.010
28	.008	.006	.005	.005	.004	.004	.005	.006	.007	.010	.010	.010
29	.008	.006	.006	.005	---	.005	.005	.006	.007	.010	.010	.010
30	.008	.006	.005	.006	---	.005	.005	.006	.007	.010	.010	.009
31	.008	---	.005	.005	---	.005	---	.006	---	.010	.010	---
MEAN	.009	.007	.006	.005	.004	.004	---	.006	.006	.009	.010	.010
MAX	.009	.008	.006	.006	.006	.005	---	.006	.007	.010	.010	.010
MIN	.008	.006	.005	.005	.004	.004	---	.005	.006	.007	.009	.009

## PINAL COUNTY

324845111432201. Local number, (D-08-06)04aaa

LOCATION.--Lat 32°45'45", long 111°43'23", Hydrologic Unit 15050100, within the Picacho ground-water basin off I-10 on Bataglia Road. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 15.0 in., depth 684 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 1,471.0 ft above sea level, from topographic map. Measuring point: Top of casing 2.4 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--August 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 177.2 ft below land-surface datum, Apr. 22, 1999; lowest recorded, 199.2 ft below land-surface datum, Sept. 13, 1989.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	179.9	---	---	---	---	---	---	178.1	178.5	---	178.6	179.3
2	180.0	---	---	---	---	---	---	178.1	178.6	---	178.6	179.2
3	179.8	---	---	---	---	---	---	178.1	178.6	---	178.6	179.1
4	179.8	---	---	---	---	---	---	178.0	---	---	178.7	179.1
5	179.9	---	---	---	---	---	---	177.9	---	---	178.8	179.0
6	180.0	---	---	---	---	---	---	177.9	---	---	178.7	179.1
7	180.0	---	---	---	---	---	---	178.1	---	---	178.7	179.1
8	179.7	---	---	---	---	---	---	178.0	---	---	178.7	179.2
9	---	---	---	---	---	---	---	178.0	---	---	178.7	179.1
10	---	---	---	---	---	---	---	178.0	---	---	178.7	179.2
11	---	---	---	---	---	---	---	177.8	---	---	178.7	179.4
12	---	---	---	---	---	---	---	177.8	---	---	178.7	179.4
13	---	---	---	---	---	---	---	178.0	---	---	178.7	179.5
14	---	---	---	---	---	---	---	178.0	---	---	178.8	179.6
15	---	---	---	---	---	---	177.5	178.1	---	---	178.9	179.6
16	---	---	---	---	---	---	177.5	178.1	---	---	178.8	179.6
17	---	---	---	---	---	---	177.6	178.2	---	---	178.8	179.5
18	---	---	---	---	---	---	177.7	178.0	---	---	178.9	179.5
19	---	---	---	---	---	---	177.5	178.0	---	---	179.0	179.6
20	---	---	---	---	---	---	177.3	177.8	---	178.7	179.1	179.5
21	---	---	---	---	---	---	177.3	177.7	---	178.7	179.0	179.5
22	---	---	---	---	---	---	177.3	178.0	---	178.6	178.9	179.4
23	---	---	---	---	---	---	177.6	178.0	---	178.5	178.9	179.3
24	---	---	---	---	---	---	177.8	178.1	---	178.6	178.9	179.1
25	---	---	---	---	---	---	177.5	178.1	---	178.6	178.9	179.2
26	---	---	---	---	---	---	177.7	178.2	---	178.7	179.0	179.4
27	---	---	---	---	---	---	177.8	178.0	---	178.6	179.0	179.2
28	---	---	---	---	---	---	178.0	178.1	---	178.6	179.2	179.1
29	---	---	---	---	---	---	178.1	178.4	---	178.7	179.2	179.1
30	---	---	---	---	---	---	178.1	178.7	---	178.8	179.1	179.2
31	---	---	---	---	---	---	---	178.5	---	178.6	179.1	---
MEAN	---	---	---	---	---	---	---	178.1	---	---	178.9	179.3
MAX	---	---	---	---	---	---	---	178.7	---	---	179.2	179.6
MIN	---	---	---	---	---	---	---	177.7	---	---	178.6	179.0

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.109	.110	---	---	---	.110	.110	.111	---	---	.111	.111
2	.109	.110	---	---	---	.110	.110	.111	---	---	.111	.111
3	.109	.110	---	---	---	.110	.110	.111	---	---	.111	.111
4	.109	.110	---	---	---	.110	.110	---	---	---	.111	.111
5	.109	---	---	---	---	.110	.110	---	---	---	.111	.111
6	.109	---	---	---	---	.110	.110	---	---	---	.111	.111
7	.109	---	---	---	---	.110	.110	---	---	---	.111	.112
8	.109	---	---	---	---	.110	.110	---	---	---	.111	.112
9	.110	---	---	---	---	.110	.110	---	---	---	.111	---
10	.110	---	---	---	---	.110	.110	---	---	---	.111	---
11	.110	---	---	---	.110	.110	.110	---	---	---	.111	---
12	.110	---	---	---	.110	.110	.110	---	---	---	.111	---
13	.110	---	---	---	.110	.110	.110	---	---	---	.111	---
14	.110	---	---	---	.110	.110	.110	---	---	---	.111	---
15	.110	---	---	---	.110	.110	.110	---	---	---	.111	---
16	.110	---	---	---	.110	.110	.110	---	---	---	.111	---
17	.110	---	---	---	.110	.110	.110	---	---	---	.111	---
18	.110	---	---	---	.110	.110	.111	---	---	---	.111	---
19	.110	---	---	---	.110	.110	.111	---	---	---	.111	---
20	.110	---	---	---	.110	.110	.110	---	---	.111	.111	---
21	.110	---	---	---	.110	.110	.110	---	---	.111	.111	---
22	.110	---	---	---	.110	.110	.111	---	---	.111	.111	---
23	.110	---	---	---	.110	.110	.111	---	---	.111	.111	---
24	.110	---	---	---	.110	.110	.111	---	---	.111	.111	---
25	.110	---	---	---	.110	.110	.111	---	---	.111	.111	---
26	.110	---	---	---	.110	.110	.111	---	---	.111	.111	---
27	.110	---	---	---	.110	.110	.111	---	---	.111	.111	---
28	.110	---	---	---	.110	.110	.111	---	---	.111	.111	---
29	.110	---	---	---	---	.110	.111	---	---	.111	.111	---
30	.110	---	---	---	---	.110	.111	---	---	.111	.111	---
31	.110	---	---	---	---	.110	---	---	---	.111	.111	---
MEAN	.110	---	---	---	---	.110	.110	---	---	---	.111	---
MAX	.110	---	---	---	---	.110	.111	---	---	---	.111	---
MIN	.109	---	---	---	---	.110	.110	---	---	---	.111	---

## PINAL COUNTY

324637111335001. Local number, (D-07-06)31bba

LOCATION.--Lat 32°46'37", long 111°33'46", Hydrologic Unit 15050100, within the Picacho ground-water basin of Arizona Hwy 87 on Houser Road. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter 8.0 in., depth 828 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 1,534.0 ft above sea level, from topographic map. Measuring point: Top of casing 1.0 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--July 1987 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 244.1 ft below land-surface datum, Feb. 4, 1995; lowest recorded, 382.3 ft below land-surface datum, Sept. 13, 1989.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	270.0	262.5	258.3	---	---	257.1	---	270.9	275.3	279.4	289.0	294.8
2	269.2	262.2	257.0	---	---	257.1	---	270.9	275.7	279.8	288.8	294.7
3	269.0	261.8	256.2	---	---	257.1	---	271.2	276.2	280.2	288.6	294.9
4	268.6	261.6	256.8	---	---	257.2	264.4	271.0	276.6	280.5	288.6	295.0
5	268.3	261.4	---	---	---	257.2	266.2	270.9	276.8	280.9	288.3	294.8
6	268.0	261.3	---	---	---	257.2	265.6	270.9	277.1	281.4	288.5	294.6
7	267.6	261.3	---	---	---	257.3	265.2	270.8	277.3	281.9	288.5	294.4
8	267.6	260.9	---	---	---	257.2	265.7	270.6	277.4	282.4	288.6	294.0
9	267.0	260.9	---	---	256.9	257.3	266.1	270.5	277.5	282.9	288.7	293.8
10	266.8	261.1	---	---	256.7	257.2	266.3	270.3	277.7	283.3	289.1	293.5
11	266.7	262.1	---	---	256.8	257.2	266.4	270.0	277.9	283.7	289.1	293.4
12	266.3	261.1	---	---	256.9	257.5	266.4	269.9	277.9	284.0	289.4	293.4
13	266.0	260.5	---	---	256.9	257.5	266.6	269.9	277.9	284.5	290.0	293.3
14	266.0	259.9	---	---	256.9	257.3	266.6	269.8	277.9	285.1	290.3	293.3
15	265.9	259.5	---	---	257.0	257.6	266.9	269.9	277.7	285.4	290.6	293.5
16	265.8	259.2	---	---	257.1	257.7	267.1	269.9	277.7	285.6	290.9	293.4
17	265.6	259.0	---	---	257.3	258.6	267.2	270.2	277.6	286.0	291.0	293.5
18	265.2	258.8	---	---	257.2	259.1	267.4	270.4	277.7	286.4	291.1	293.4
19	265.0	258.8	---	---	257.0	258.4	267.7	270.7	277.8	286.6	291.2	293.0
20	264.7	258.6	---	---	256.9	258.4	268.1	271.0	277.8	287.0	291.5	292.8
21	264.5	258.9	---	---	256.7	258.7	268.4	271.4	277.9	287.1	291.8	292.4
22	264.4	258.3	---	---	256.9	258.9	268.6	271.7	277.9	287.2	291.8	291.8
23	264.2	258.0	---	---	257.2	259.1	268.7	272.0	277.9	287.5	292.1	291.3
24	263.9	257.7	---	---	257.2	259.3	268.9	272.3	277.9	287.7	292.3	291.0
25	263.8	257.7	---	---	257.1	259.5	269.3	272.7	278.2	287.8	292.6	290.3
26	263.7	257.6	---	---	257.1	---	269.5	272.9	278.5	288.0	293.0	289.5
27	263.5	257.4	---	---	257.2	---	269.8	273.2	278.6	288.4	293.3	288.8
28	263.2	257.4	---	---	257.2	---	270.2	273.7	278.9	288.8	293.6	288.1
29	263.1	257.2	---	---	---	---	270.4	274.2	278.9	288.7	294.0	287.3
30	263.0	258.5	---	---	---	---	270.8	274.6	279.4	289.2	294.3	286.4
31	262.9	---	---	---	---	---	---	274.9	---	289.1	294.5	---
MEAN	265.8	259.7	---	---	---	---	---	271.4	277.7	285.0	290.8	292.5
MAX	270.0	262.5	---	---	---	---	---	274.9	279.4	289.2	294.5	295.0
MIN	262.9	257.2	---	---	---	---	---	269.8	275.3	279.4	288.3	286.4

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	.516	.510	.508	.509	.513	.519	.524	.535	.545	.546	---
2	---	.515	.510	.508	.509	.513	.519	.524	.535	.545	.545	---
3	---	.515	.510	---	.509	.513	.519	.524	.535	.546	.545	---
4	---	.515	.509	---	.509	.513	.520	.523	.535	.547	.548	---
5	---	.515	.509	---	.510	.513	.520	.523	.536	.547	.549	---
6	---	.515	.509	---	.510	.513	.520	.523	.537	.548	.551	---
7	---	.515	.509	---	.510	.513	.520	.524	.536	.549	.552	---
8	---	.514	.508	---	.510	.513	.520	.525	.536	.549	.552	---
9	---	.514	.508	---	.510	.513	.520	.525	.536	.550	.553	---
10	.519	.514	.508	---	.510	.513	.521	.526	.536	.551	.553	---
11	.519	.514	.508	---	.510	.513	.521	.525	.536	.552	.552	---
12	.519	.514	.508	---	.510	.514	.521	.524	.536	.553	.551	---
13	.519	.513	.508	.508	.511	.514	.520	.525	.536	.553	.549	---
14	.518	.513	.508	.508	.511	.515	.520	.526	.536	.553	.549	---
15	.518	.513	.508	.509	.511	.515	.521	.527	.536	.553	.548	---
16	.518	.513	.508	.509	.511	.515	.521	.527	.537	.552	.547	---
17	.518	.513	.508	.509	.511	.516	.521	.528	.537	.552	.547	---
18	.517	.512	.508	.509	.511	.516	.522	.529	.537	.552	.547	---
19	.517	.512	.508	.509	.511	.517	.522	.530	.537	.552	.549	---
20	.517	.512	.508	.509	.512	.517	.522	.530	.537	.552	.550	---
21	.517	.512	.508	.509	.512	.517	.523	.531	.537	.553	.549	---
22	.517	.512	.508	.509	.512	.517	.523	.531	.538	.554	.549	---
23	.517	.512	.508	.509	.512	.518	.524	.531	.539	.553	.548	---
24	.517	.511	.508	.509	.512	.518	.525	.531	.540	.552	.548	---
25	.517	.511	.508	.509	.512	.518	.526	.531	.543	.551	.548	---
26	.517	.511	.508	.509	.512	.518	.525	.532	.544	.550	---	---
27	.516	.511	.508	.509	.513	.518	.525	.532	.545	.550	---	---
28	.516	.510	.508	.509	.513	.519	.525	.533	.545	.549	---	---
29	.516	.510	.508	.509	---	.519	.525	.533	.545	.549	---	---
30	.516	.510	.508	.509	---	.519	.525	.534	.544	.549	---	---
31	.516	---	.508	.509	---	.519	---	.534	---	.547	---	---
MEAN	---	.513	.508	---	.511	.516	.522	.528	.538	.550	---	---
MAX	---	.516	.510	---	.513	.519	.526	.534	.545	.554	---	---
MIN	---	.510	.508	---	.509	.513	.519	.523	.535	.545	---	---



## GROUND-WATER LEVELS AND COMPACTION VALUES

339

## PINAL COUNTY

32485611250301. Local number, (D-07-09)16aca

LOCATION.--Lat 32°48'56", long 111°25'03". Hydrologic Unit 15050100, within the Picacho ground-water basin of AZ Hwy 87 on Houser Road, 5 mi east of I-10. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, depth 1,630 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 1,589.0 ft above sea level, from topographic map. Measuring point: Top of casing 1.0 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--September 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 285.4 ft below land-surface datum, Jan. 29, 1996; lowest recorded, 306.3 ft below land-surface datum, Oct. 23, 1989.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	286.8	---	---	288.1	288.8	---	290.2	291.6
2	---	---	---	---	286.7	---	---	288.1	288.8	---	290.2	291.6
3	---	---	---	---	286.3	---	---	288.2	289.1	---	290.2	291.5
4	---	---	---	---	286.4	---	---	288.2	289.0	---	290.3	291.5
5	---	---	---	---	287.2	---	---	288.1	289.1	---	290.3	291.6
6	---	---	---	---	287.5	---	---	288.2	289.1	---	290.3	291.6
7	---	---	---	---	287.4	---	---	288.1	289.1	---	290.4	291.6
8	---	---	---	---	287.3	---	---	288.2	289.1	---	290.4	291.7
9	---	---	---	---	287.2	---	---	288.3	289.1	---	290.4	291.7
10	---	---	---	---	287.3	---	---	288.3	289.2	---	290.5	291.7
11	---	---	---	---	287.3	---	---	288.3	289.2	---	290.6	291.8
12	---	---	---	---	287.2	---	---	288.3	289.2	---	290.5	291.9
13	---	---	---	287.4	287.2	---	---	288.4	289.2	---	290.6	291.9
14	---	---	---	287.4	287.2	---	---	288.4	289.3	---	290.7	291.9
15	---	---	---	287.4	287.2	---	287.0	288.4	---	---	290.7	292.0
16	---	---	---	287.3	287.1	---	286.9	288.4	---	---	290.8	292.2
17	---	---	---	287.3	287.1	---	287.0	288.3	---	---	290.8	292.3
18	---	---	---	287.4	287.1	---	287.1	288.4	---	---	290.9	292.3
19	---	---	---	287.3	287.1	---	287.1	288.4	---	---	290.9	292.3
20	---	---	---	287.4	287.2	---	287.0	288.5	---	289.8	290.9	292.2
21	---	---	---	287.3	287.1	---	287.0	288.5	---	289.8	291.0	292.2
22	---	---	---	287.3	287.0	---	287.9	288.5	---	289.9	291.0	292.3
23	---	---	---	287.2	---	---	287.9	288.6	---	290.0	291.1	292.3
24	---	---	---	287.3	---	---	288.0	288.6	---	290.0	291.1	292.4
25	---	---	---	287.5	---	---	288.0	288.6	---	290.0	291.1	292.4
26	---	---	---	287.4	---	---	287.9	288.7	---	290.0	291.1	292.3
27	---	---	---	287.4	---	---	288.0	288.6	---	290.0	291.3	292.3
28	---	---	---	287.7	---	---	288.1	288.7	---	290.2	291.5	292.4
29	---	---	---	287.5	---	---	288.1	288.7	---	290.2	291.6	---
30	---	---	---	287.1	---	---	288.1	288.7	---	290.3	291.5	---
31	---	---	---	286.8	---	---	---	288.8	---	290.2	291.6	---
MEAN	---	---	---	---	---	---	---	288.4	---	---	290.8	---
MAX	---	---	---	---	---	---	---	288.8	---	---	291.6	---
MIN	---	---	---	---	---	---	---	288.1	---	---	290.2	---

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.305	.307	.307	.308	.309	.311	.313	.315	.316	.318	.322	.323
2	.305	.307	.307	.308	.309	.311	.313	.315	.316	.318	.322	.323
3	.305	.307	.307	.308	.309	.311	.313	.315	.316	.319	.322	.323
4	.305	.307	.307	.308	.309	.312	.313	.315	.316	.319	.322	.323
5	.306	.307	.307	.308	.309	.312	.313	.315	.316	.319	.322	.323
6	.306	.307	.307	.308	.309	.312	.313	.315	.316	.320	.322	.323
7	.306	.307	.307	.308	.309	.312	.313	.315	.317	.320	.322	.323
8	.306	.307	.307	.308	.309	.312	.313	.315	.317	.320	.322	.323
9	.306	.307	.307	.308	.310	.312	.313	.315	.318	.320	.322	.323
10	.306	.307	.307	.309	.310	.312	.313	.315	.318	.321	.322	.323
11	.306	.307	.307	.309	.310	.312	.313	.315	.318	.321	.322	.323
12	.306	.307	.307	.309	.310	.312	.313	.315	.318	.321	.322	.323
13	.306	.307	.307	.309	.310	.312	.313	.316	.318	.321	.322	.323
14	.306	.307	.308	.309	.310	.312	.313	.316	.318	.321	.322	.323
15	.306	.308	.308	.309	.310	.312	.314	.316	.318	.321	.322	.323
16	.306	.308	.308	.309	.310	.312	.314	.316	.318	.321	.322	.323
17	.306	.308	.308	.309	.310	.312	.315	.316	.318	.321	.322	.323
18	.306	.308	.308	.309	.310	.312	.315	.316	.318	.321	.322	.324
19	.306	.308	.308	.309	.310	.312	.315	.316	.318	.321	.322	.324
20	.307	.308	.308	.309	.310	.312	.315	.316	.318	.321	.322	.324
21	.307	.308	.308	.309	.310	.312	.315	.316	.318	.321	.322	.324
22	.307	.308	.308	.309	.311	.313	.315	.316	.318	.321	.322	.324
23	.307	.308	.308	.309	.311	.313	.315	.316	.318	.321	.323	.324
24	.307	.308	.308	.309	.311	.313	.315	.316	.318	.321	.323	.324
25	.307	.308	.308	.309	.311	.313	.315	.316	.318	.321	.323	.324
26	.307	.308	.308	.309	.311	.313	.315	.316	.318	.321	.323	.324
27	.307	.308	.308	.309	.311	.313	.315	.316	.318	.321	.323	.324
28	.307	.308	.308	.309	.311	.313	.315	.316	.318	.321	.323	.324
29	.307	.308	.308	.309	---	.313	.315	.316	.318	.322	.323	.324
30	.307	.307	.308	.309	---	.313	.315	.316	.318	.322	.323	.324
31	.307	---	.308	.309	---	.313	---	.316	---	.322	.323	---
MEAN	.306	.308	.308	.309	.310	.312	.314	.316	.318	.321	.322	.323
MAX	.307	.308	.308	.309	.311	.313	.315	.316	.318	.322	.323	.324
MIN	.305	.307	.307	.308	.309	.311	.313	.315	.316	.318	.322	.323

WTR YR 1999 MEAN .314 MAX .324 MIN .305

## GROUND-WATER LEVELS AND COMPACTION VALUES

## PINAL COUNTY

324908111674401. Local number, (D-07-04)16bcc

LOCATION.--Lat 32°49'08", long 111°57'44", Hydrologic Unit 15050306, within the Picacho ground-water basin approximately 20 mi west of I-10 on Stanfield Road. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, depth 996 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Measuring point: Top of casing 1.6 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--August 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 635.0 ft below land-surface datum, Aug. 7, 1999; lowest recorded, 671.8 ft below land-surface datum, Aug. 29, 1989.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	638.4	638.2	638.2	638.1	638.1	---	---	637.3	636.3	635.6	635.8	---
2	638.6	638.1	638.2	638.2	637.9	---	---	637.1	636.2	635.6	635.4	---
3	638.3	637.9	638.0	638.0	---	---	---	636.9	636.1	635.5	635.6	---
4	638.4	637.9	638.0	637.9	---	---	---	636.9	636.2	635.4	635.4	---
5	638.5	637.9	637.9	637.9	---	---	---	637.0	636.1	635.3	635.3	---
6	638.5	637.8	637.8	637.7	---	---	---	636.9	635.8	635.4	635.2	---
7	638.4	637.8	637.7	637.7	---	---	---	636.8	635.8	635.4	635.1	---
8	638.2	637.9	637.8	637.8	---	---	---	636.6	635.8	635.3	635.4	---
9	638.0	637.8	637.9	637.9	---	---	---	636.7	635.7	635.5	635.4	---
10	638.1	638.1	637.9	637.8	---	---	---	636.8	635.8	635.5	635.5	---
11	638.1	638.2	637.9	637.9	---	---	---	636.8	635.9	635.4	635.5	---
12	638.1	638.2	638.1	638.0	---	---	---	636.7	635.9	635.4	635.5	---
13	638.0	638.0	638.0	638.0	---	---	---	636.7	635.9	635.5	635.5	---
14	638.0	638.1	637.8	637.8	---	---	---	636.7	635.9	635.5	635.6	---
15	637.9	637.9	637.6	637.7	---	---	---	636.8	635.9	635.6	635.7	---
16	637.9	638.0	637.8	637.7	---	---	---	636.9	636.0	635.7	635.7	---
17	638.2	638.3	637.7	637.7	---	---	---	636.8	636.0	635.9	636.0	---
18	638.2	638.3	637.8	638.0	---	---	---	636.6	635.8	635.9	635.7	---
19	638.3	638.2	638.1	637.9	---	---	---	636.4	635.6	635.7	635.5	---
20	638.3	638.2	638.1	638.0	---	---	---	636.6	635.6	635.9	635.3	---
21	638.4	638.2	638.1	637.9	---	---	637.1	636.6	635.7	635.9	635.3	---
22	638.3	638.3	638.3	638.0	---	---	637.2	636.6	635.7	635.9	635.2	---
23	638.2	638.2	638.2	638.1	---	---	637.3	636.6	635.6	635.9	---	---
24	638.1	638.0	638.0	638.0	---	---	637.4	636.4	635.5	635.8	---	---
25	637.9	637.9	637.9	637.9	---	---	637.6	636.4	635.5	636.0	---	---
26	638.0	637.9	637.8	637.8	---	---	637.4	636.5	635.4	636.0	---	---
27	638.3	638.1	637.7	637.8	---	---	637.2	636.4	635.6	636.0	---	---
28	638.5	638.3	638.0	638.0	---	---	637.0	636.3	635.7	636.0	---	---
29	638.1	638.0	638.2	638.2	---	---	637.3	636.3	635.6	635.9	---	---
30	638.0	638.0	638.1	637.9	---	---	637.4	636.5	635.6	635.9	---	---
31	638.3	---	637.9	637.8	---	---	---	636.4	---	635.8	---	---
MEAN	638.2	638.1	638.0	637.9	---	---	---	636.7	635.8	635.7	---	---
MAX	638.6	638.3	638.3	638.2	---	---	---	637.3	636.3	636.0	---	---
MIN	637.9	637.8	637.6	637.7	---	---	---	636.3	635.4	635.3	---	---

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.207	.209	.210	.211	.212	.213	.215	.216	.218	.221	.222	.222
2	.207	.209	.210	.211	.212	.213	.215	.216	.218	.221	.222	.222
3	.207	.209	.210	.211	.212	.213	.215	.216	.218	.221	.222	.222
4	.207	.209	.210	.211	.212	.214	.215	.216	.218	.221	.222	.222
5	.208	.209	.210	.211	.212	.213	.215	.216	.219	.221	.222	.222
6	.208	.209	.210	.211	.212	.214	.215	.216	.219	.221	.222	.222
7	.208	.209	.210	.211	.212	.214	.215	.216	.219	.221	.222	.222
8	.208	.209	.210	.211	.212	.214	.215	.216	.219	.221	.222	.222
9	.208	.209	.211	.211	.213	.214	.215	.217	.219	.221	.222	.222
10	.208	.209	.211	.211	.212	.214	.215	.217	.219	.221	.222	.222
11	.208	.209	.210	.211	.213	.214	.215	.217	.219	.221	.222	.222
12	.208	.209	.210	.211	.213	.214	.215	.217	.219	.221	.222	.222
13	.208	.209	.211	.211	.213	.214	.215	.217	.219	.221	.222	.222
14	.208	.210	.211	.211	.213	.214	.215	.217	.219	.222	.222	.222
15	.208	.210	.211	.211	.213	.214	.215	.217	.219	.222	.223	.222
16	.208	.210	.211	.212	.213	.214	.215	.217	.219	.222	.223	.222
17	.208	.210	.211	.212	.213	.214	.215	.217	.220	.222	.223	.222
18	.208	.210	.211	.212	.213	.214	.215	.217	.220	.222	.223	.222
19	.208	.210	.211	.212	.213	.214	.215	.217	.220	.222	.223	.222
20	.208	.210	.211	.212	.213	.214	.215	.217	.220	.222	.223	.221
21	.208	.210	.211	.212	.213	.214	.215	.217	.220	.222	.223	.221
22	.208	.210	.211	.212	.213	.214	.215	.217	.220	.222	.223	.221
23	.209	.210	.211	.211	.213	.214	.216	.218	.220	.222	.223	.221
24	.209	.210	.211	.211	.213	.214	.216	.218	.220	.222	.223	.221
25	.209	.210	.211	.212	.213	.214	.216	.218	.220	.222	.223	.221
26	.209	.210	.211	.212	.213	.214	.216	.218	.220	.222	.224	.221
27	.209	.210	.211	.212	.213	.214	.216	.218	.220	.222	.223	.221
28	.209	.210	.211	.212	.213	.214	.216	.218	.221	.222	.222	.221
29	.209	.210	.211	.212	---	.215	.216	.218	.221	.222	.222	.221
30	.209	.210	.211	.212	---	.215	.216	.218	.221	.222	.222	.221
31	.209	---	.211	.212	---	.215	---	.218	---	.222	.222	---
MEAN	.208	.210	.211	.211	.213	.214	.215	.217	.219	.222	.222	.222
MAX	.209	.210	.211	.212	.213	.215	.216	.218	.221	.222	.224	.222
MIN	.207	.209	.210	.211	.212	.213	.215	.216	.218	.221	.222	.221

WTR YR 1999 MEAN .215 MAX .224 MIN .207

## PINAL COUNTY

325243111264001. Local number, (D-06-09)29bba4

LOCATION.--Lat: 32°52'43" long 111°26'40". Hydrologic Unit 15050100, within the Picacho ground-water basin off AZ Hwy 87 on Steele Road along the CAP canal, 5 mi east of I-10. Owner: U.S. Geological Survey.

WELL CHARACTERISTICS.--Drilled observation well fitted with a borehole, pipe extensometer, diameter, 8 in., depth 1,520 ft, open throughout casing.

INSTRUMENTATION.--Water-level and compaction recorders.

DATUM.--Elevation of land surface is 1,542.0 ft above sea level, from topographic map. Measuring point: Top of casing 1.2 ft above land-surface datum.

REMARKS.--Water level affected by pumping from nearby wells. For previous record, contact the District Office in Tucson, Arizona.

PERIOD OF RECORD.--November 1989 to current year.

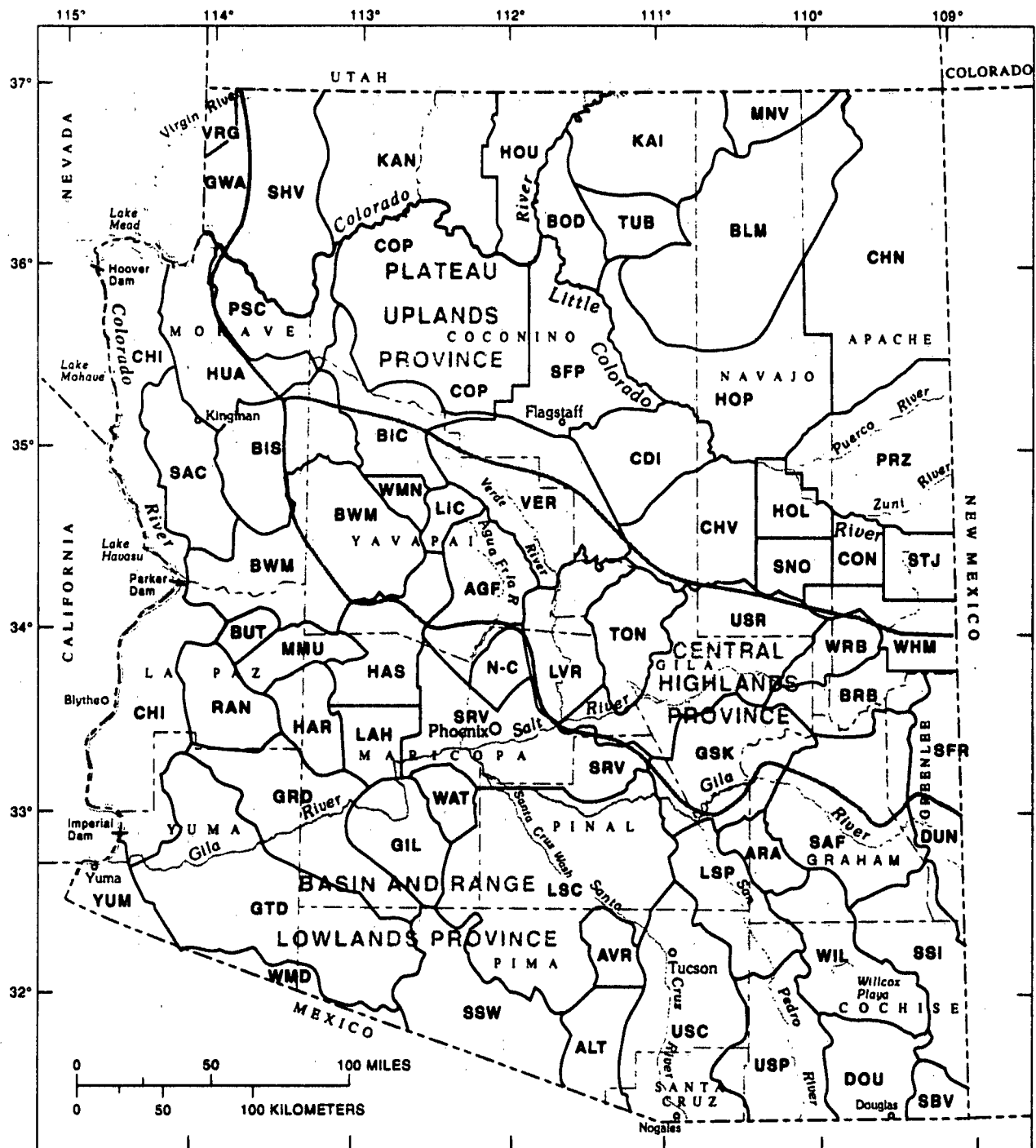
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 234.4 ft below land-surface datum, Mar. 18, 1994; lowest recorded, 288.9 ft below land-surface datum, Oct. 1, 1990.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	261.3	257.7	252.8	249.6	---	247.0	252.5	256.1	259.8	261.8	267.8	273.1
2	261.4	257.5	252.9	249.7	---	246.9	253.1	256.3	259.9	262.0	268.1	273.3
3	261.1	257.3	252.7	249.6	---	247.0	253.2	256.4	259.9	262.2	268.2	273.4
4	260.9	257.2	252.4	249.7	---	247.1	253.4	256.5	260.0	262.4	268.3	273.4
5	260.8	256.7	252.2	249.9	---	247.1	253.4	256.6	260.0	262.6	268.3	273.5
6	260.7	256.3	251.8	250.0	---	247.2	253.5	256.7	260.0	263.0	268.7	273.4
7	260.6	256.3	251.8	249.4	---	247.3	253.5	256.8	260.0	263.4	268.8	273.5
8	260.4	256.0	251.6	248.8	---	247.5	253.5	257.0	260.0	263.5	268.8	273.5
9	260.2	255.9	251.3	248.9	---	247.7	254.0	257.1	260.0	263.7	268.9	273.6
10	260.1	255.7	251.0	249.0	---	247.7	254.1	257.1	259.9	263.6	269.0	273.6
11	259.9	255.4	251.0	248.8	247.0	247.7	254.0	257.3	259.9	263.9	269.3	273.7
12	259.9	255.4	250.9	---	246.7	247.9	254.1	257.4	259.9	264.1	269.3	273.7
13	259.9	255.3	250.5	---	246.6	248.1	254.2	257.4	259.7	264.2	269.5	273.8
14	259.5	255.1	250.4	---	246.4	248.1	254.4	257.6	259.7	264.7	269.8	273.7
15	259.4	255.0	250.0	---	246.4	248.2	254.3	257.8	259.7	264.9	270.1	273.8
16	259.4	254.7	249.8	---	246.6	248.6	254.2	257.9	259.7	264.9	270.2	273.8
17	259.4	254.7	250.0	---	246.5	249.0	254.3	258.1	259.7	265.1	270.3	273.7
18	259.4	254.6	250.2	---	246.5	249.2	254.4	258.1	259.8	265.2	270.5	273.7
19	259.2	254.3	250.1	---	246.4	249.3	254.4	258.3	259.9	265.4	270.7	273.9
20	259.1	254.3	249.8	---	246.4	249.4	254.5	258.4	260.1	265.7	270.9	274.0
21	259.1	254.2	249.8	---	246.4	249.5	254.7	258.6	260.2	265.8	271.0	274.0
22	259.0	254.0	249.4	---	246.4	249.7	254.9	258.7	260.3	266.1	271.1	273.7
23	258.8	253.7	249.4	---	246.4	250.1	255.0	259.0	260.4	266.4	271.3	273.7
24	258.6	253.6	249.7	---	246.4	250.3	255.2	259.1	260.4	266.9	271.5	273.9
25	258.3	253.3	249.5	---	246.5	250.5	255.3	259.1	260.6	266.9	271.8	274.0
26	258.3	253.4	249.7	---	246.7	250.8	255.5	259.2	260.8	267.1	272.0	273.9
27	258.3	253.3	249.6	---	246.8	251.1	255.6	259.5	261.0	267.0	272.3	273.8
28	258.1	253.3	249.8	---	246.9	251.3	255.7	259.5	261.3	267.4	272.6	273.9
29	257.9	253.1	249.8	---	---	251.7	256.0	259.5	261.5	267.4	272.5	273.9
30	257.8	252.8	249.9	---	---	251.9	256.1	259.7	261.7	267.6	272.9	273.9
31	257.8	---	249.7	---	---	252.0	---	259.8	---	267.7	273.0	---
MEAN	259.5	255.0	250.6	---	---	248.9	254.4	258.0	260.2	264.9	270.2	273.7
MAX	261.4	257.7	252.9	---	---	252.0	256.1	259.8	261.7	267.7	273.0	274.0
MIN	257.8	252.8	249.4	---	---	246.9	252.5	256.1	259.7	261.8	267.8	273.1

COMPACTION SEDIMENT (FEET), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.037	.034	.031	---	.032	.034	.039	.041	.047	---	.053	.059
2	.037	.034	.031	---	.031	.035	.039	.041	.047	---	.053	.058
3	.037	.034	.031	---	.031	.035	.039	.041	.047	---	.054	.058
4	.036	.034	.031	---	.031	.035	.039	.042	.047	---	.054	.058
5	.036	.033	.031	---	.031	.036	.039	.042	.047	---	.054	.058
6	.036	.033	.032	---	.031	.036	.038	.043	.047	---	.054	.057
7	.036	.033	.032	---	.031	.036	.038	.043	.047	---	.054	.057
8	.036	.033	.032	---	.031	.036	.038	.044	.047	---	.055	.057
9	.036	.033	.031	---	.031	.036	.038	.044	.047	---	.055	.057
10	.036	.034	.031	---	.031	.036	.038	.044	.047	---	.055	.057
11	.036	.034	.031	---	.031	.036	.038	.044	.047	---	.055	.057
12	.036	.034	.031	---	.031	.036	.039	.045	.047	---	.055	.057
13	.036	.033	.031	.032	.031	.036	.039	.045	.047	---	.055	.058
14	.036	.033	.031	.032	.031	.036	.039	.045	.047	---	.055	.058
15	.036	.033	.032	.032	.031	.036	.039	.045	.047	---	.056	.058
16	.036	.033	.032	.032	.031	.036	.039	.045	.047	---	.056	.058
17	.036	.033	.032	.032	.030	.037	.039	.046	.047	---	.057	.058
18	.035	.033	.032	.032	.030	.037	.039	.046	.048	---	.057	.058
19	.035	.032	.032	.032	.030	.037	.039	.046	---	---	.057	.058
20	.035	.032	.032	.032	.031	.038	.039	.047	---	.053	.057	.058
21	.035	.032	.032	.032	.031	.038	.039	.047	---	.053	.058	.058
22	.035	.032	.032	.032	.032	.038	.039	.047	---	.053	.058	.058
23	.035	.032	.032	.032	.032	.038	.040	.047	---	.053	.058	.058
24	.035	.032	---	.032	.032	.038	.039	.047	---	.053	.058	.057
25	.035	.032	---	.032	.032	.039	.039	.047	---	.053	.059	.057
26	.035	.032	---	.032	.033	.039	.039	.047	---	.053	.059	.057
27	.035	.031	---	.032	.033	.039	.039	.047	---	.053	.059	.057
28	.035	.031	---	.032	.034	.039	.040	.047	---	.053	.059	.057
29	.034	.031	---	.032	---	.039	.040	.047	---	.053	.059	.057
30	.034	.031	---	.032	---	.039	.041	.047	---	.053	.059	.057
31	.034	---	---	.032	---	.039	---	.047	---	.053	.059	---
MEAN	.036	.033	---	---	.031	.037	.039	.045	---	---	.056	.058
MAX	.037	.034	---	---	.034	.039	.041	.047	---	---	.059	.059
MIN	.034	.031	---	---	.030	.034	.038	.041	---	---	.053	.057



Base from U.S. Geological Survey  
State base maps, 1:500,000.  
Arizona, 1974; Nevada, 1965;  
New Mexico, 1965; and Utah, 1959

#### EXPLANATION

— BOUNDARY OF GROUND-WATER AREA

Figure 10. U.S. Geological Survey ground-water areas in Arizona.

## GROUND-WATER AREAS AND ABBREVIATIONS

<b>AGF</b> — Agua Fria basin	<b>LHA</b> — Lower Hassayampa
<b>ALT</b> — Altar Valley	<b>LSP</b> — Lower San Pedro basin
<b>ARA</b> — Aravaipa Valley	<b>LSC</b> — Lower Santa Cruz basin
<b>AVR</b> — Avra Valley	<b>LVR</b> — Lower Verde River
<b>BIC</b> — Big Chino Valley	<b>MMU</b> — McMullen Valley
<b>BIS</b> — Big Sandy Valley	<b>MNV</b> — Monument Valley
<b>BWM</b> — Bill Williams	<b>N-C</b> — New River-Cave Creek
<b>BLM</b> — Black Mesa	<b>PSC</b> — Peach Springs Canyon
<b>BRB</b> — Black River basin	<b>PRZ</b> — Puerco-Zuni
<b>BOD</b> — Bodaway Mesa	<b>RAN</b> — Ranegras Plain
<b>BUT</b> — Butler Valley	<b>SAC</b> — Sacramento Valley
<b>CDI</b> — Canyon Diablo	<b>SAF</b> — Safford basin
<b>CHV</b> — Chevelon	<b>SRV</b> — Salt River Valley
<b>CHN</b> — Chinle	<b>SBV</b> — San Bernardino Valley
<b>COP</b> — Coconino Plateau	<b>SFP</b> — San Francisco Peaks
<b>CHI</b> — Colorado River, Hoover Dam to Imperial Dam	<b>SFR</b> — San Francisco River basin
<b>CON</b> — Concho	<b>SSI</b> — San Simon basin
<b>DOU</b> — Douglas basin	<b>SSW</b> — San Simon Wash
<b>DUN</b> — Duncan basin	<b>SHV</b> — Shivwits
<b>GIL</b> — Gila Bend basin	<b>SNO</b> — Snowflake
<b>GRD</b> — Gila River from Painted Rock Dam to Texas Hill	<b>STJ</b> — St. Johns
<b>GSK</b> — Gila River from head of San Carlos Reservoir to Kelvin	<b>TON</b> — Tonto basin
<b>GTD</b> — Gila River from Texas Hill to Dome	<b>TUB</b> — Tuba City
<b>GWA</b> — Grand Wash	<b>USR</b> — Upper Salt River basin
<b>HAR</b> — Harquahala Plains	<b>USP</b> — Upper San Pedro basin
<b>HAS</b> — Hassayampa basin	<b>USC</b> — Upper Santa Cruz basin
<b>HOL</b> — Holbrook	<b>VER</b> — Upper Verde River
<b>HOP</b> — Hopi	<b>VRG</b> — Virgin River
<b>HOU</b> — House Rock	<b>WAT</b> — Waterman Wash
<b>HUA</b> — Hualapai Valley	<b>WMD</b> — Western Mexican drainage
<b>KAI</b> — Kaibito	<b>WHM</b> — White Mountains
<b>KAN</b> — Kanab	<b>WRB</b> — White River basin
<b>LIC</b> — Little Chino Valley	<b>WIL</b> — Willcox basin
	<b>WMN</b> — Williamson Valley
	<b>YUM</b> — Yuma

## QUALITY OF WATER IN SELECTED WELLS IN ARIZONA, BY GROUND WATER AREA

## SITE INFORMATION

LOCAL WELL NUMBER	STATE	COUNTY	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	HYDROLOGIC UNIT (OWDC)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)
AGUA FRIA BASIN									
A-09-02 27CBB1	AZ	YAVAPAI	340525	1120900	15070102	H	100	--	--
A-11-02 25BDD	AZ	YAVAPAI	341815	1120615	15070102	P	232	32	232
B-14-01 14ACC	AZ	YAVAPAI	343535	1122000	15070102	P	496	26	496
ALTAR VALLEY									
D-20-08 35BDB	AZ	PIMA	313850	1112955	15050304	H	650	495 598	595 650
ARAVAIPA VALLEY									
D-08-21 20BAD	AZ	GRAHAM	324345	1101320	15050203	S	56.0	--	--
AVRA VALLEY									
D-15-10 33DBC1	AZ	PIMA	320435	1111935	15050304	I	616	302	353
BIG CHINO VALLEY									
B-18-03 25CDA	AZ	YAVAPAI	345440	1123200	15060201	H	334	234	334
B-21-02 14BCC	AZ	YAVAPAI	351207	1122837	15060201	P	1700	1390	1700
B-22-07 08DDD	AZ	YAVAPAI	351750	1130140	15060201	-	1000	704	--
B-24-08 17DCD2	AZ	YAVAPAI	352735	1130825	15060201	S	1750	1500	1750
BIG SANDY VALLEY									
B-16-13 22CCC1	AZ	MOHAVE	344220	1133655	15030201	H	188	--	--
B-21-14 24DAC	AZ	MOHAVE	351110	1134251	15030201	S	980	700	980
BILL WILLIAMS									
B-11-16 27CCB2	AZ	MOHAVE	341549	1135513	15030204	I	115	--	--
BUTLER VALLEY									
B-07-15 12DAD	AZ	LA PAZ	335745	1134550	15030105	I	673	150	605
B-07-15 13ACB	AZ	LA PAZ	335715	1134625	15030105	I	540	340	540
B-07-15 15AAD1	AZ	LA PAZ	335720	1134805	15030105	I	604	200 400 580	400 580 604
B-07-15 15AAD3	AZ	LA PAZ	335720	1134805	15030105	U	585	400	585
CANYON DIABLO									
A-18-14 13ABD2	AZ	COCONINO	345750	1104825	15020008	P	620	20.0	620
COCONINO PLATEAU									
A-26-02 11DDB	AZ	COCONINO	353845	1120835	15010004	P	3450	2600	3450
A-30-02 24CAA	AZ	COCONINO	355810	1120745	15010004	P	3110	2330	3110
COLORADO RIVER, HOOVER DAM TO IMPERIAL DAM									
B-04-19 28BDD	AZ	LA PAZ	333940	1141330	15030106	H	69.0	60	69
B-04-19 29BCB1	AZ	LA PAZ	333945	1141500	15030106	P	591	365 511	403 591
B-09-20 01DBC2	AZ	LA PAZ	340855	1141730	15030104	P	400	263	400
B-14-20 33DCB	AZ	MOHAVE	343019	1142134	15030101	P	509	89	497
B-17-22 11DCC	AZ	MOHAVE	345200	1143520	15030101	I	180	--	--
B-20-22 24DDC	AZ	MOHAVE	350555	1133355	15030101	H	480	435	455
B-21-21 27CCB	AZ	MOHAVE	351016	1143059	15030101	P	1080	930 970 1010 1030	950 990 1030 1080
B-30-20 06CAD UNSURV	AZ	MOHAVE	360055	1142810	15010014	U	590	--	--
DUNCAN BASIN									
20S 21W 17 111	NM	HIDALGO	323425	1090220	15040002	S	171	--	--
D-06-30 01BAA	AZ	GREENLEE	325655	1091350	15040002	P	303	260	--
D-09-32 03AAAS	AZ	GREENLEE	324110	1090250	15040002	I	80.0	20	80
GILA BEND BASIN									
C-04-04 04DAA	AZ	MARICOPA	330630	1124000	15070101	I	650	--	--
C-06-06 10BCB	AZ	MARICOPA	325520	1125210	15070101	I	1390	994	1390

See codes used to identify Primary Use of Water at end of table.

## SITE INFORMATION—Continued

LOCAL WELL NUMBER	STATE	COUNTY	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	HYDROLOGIC UNIT (OWIC)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)
GILA RIVER FROM HEAD OF SAN CARLOS RESERVOIR TO KELVIN									
A-01-16 19BAD	AZ	GILA	332505	1104250	15040007	R	983	500 900	820 983
GILA RIVER FROM PAINTED ROCK DAM TO TEXAS HILL									
C-04-11 21BCB	AZ	YUMA	330410	1132430	15070201	I	580	300 460 530	415 490 535
C-07-13 24ADA2	AZ	YUMA	324825	1133130	15070201	I	701	10	690
C-11-06 24ACA	AZ	PIMA	322730	1125000	15070202	P	1330	--	--
GILA RIVER FROM TEXAS HILL TO DOME									
C-09-19 04BBB	AZ	YUMA	324040	1141335	15070201	D	133	80.0	105
HARQUAHALA PLAINS									
B-01-09 24CEB	AZ	MARICOPA	332450	1130840	15070104	U	1000	--	--
B-01-09 28DED	AZ	MARICOPA	332335	1131045	15070104	I	996	609 310	996 609
B-01-09 32CCC	AZ	MARICOPA	332240	1131250	15070104	U	986	586 300	986 586
B-01-09 36CCC	AZ	MARICOPA	332245	1130835	15070104	U	1190	700	1190
B-02-08 30AAA2	AZ	MARICOPA	332940	1130640	15070104	I	1180	500	1180
B-02-09 09ABB	AZ	MARICOPA	333215	1131120	15070104	U	1540	600 1500	1500 1540
B-02-09 11CBB	AZ	MARICOPA	333145	1130940	15070104	U	1500	400 603	600 1500
B-04-12 09ACC	AZ	LA PAZ	334215	1132955	15070104	I	782	--	--
B-05-09S02BBD	AZ	MARICOPA	334830	1131025	15070104	S	400	--	--
C-01-09 05CCC	AZ	MARICOPA	332150	1131245	15070104	P	1100	741 845	831 1100
HASSAYAMPA BASIN									
B-07-05 01CDB	AZ	MARICOPA	335825	1124355	15070103	P	110	50.0	96.0
B-09-06 02DCD	AZ	YAVAPAI	340840	1125045	15070103	P	1400	921 1030	1030 1400
HOLBROOK									
A-18-19 33DAD2	AZ	NAVAJO	345445	1101925	15020008	E	410	60 271	271 410
HOUSE ROCK									
A-41-08 14BCA	AZ	COCONINO	365725	1113030	14070006	P	1200	1030 880 1010	1200 1010 1200
HUALAPAI VALLEY									
B-22-16 28BEA2	AZ	MOHAVE	351550	1135910	15010007	P	1010	500 740	740 1010
B-23-13 20CCD	AZ	MOHAVE	352130	1134150	15010007	P	355	65	336
B-24-12 09AAD	AZ	MOHAVE	352905	1133335	15010007	P	385	--	--
B-29-17 26AAA	AZ	MOHAVE	355250	1140405	15010005	P	1200	1060	1200
KANAB									
B-40-04 17DDB	AZ	MOHAVE	365149	1124422	15010003	S	--	--	--
B-41-06 06BAD1	AZ	MOHAVE	365914	1125900	15010009	P	98.0	30 30 80	42 98 98
B-42-06 31CCC	AZ	MOHAVE	365930	1125925	15010009	P	585	480	580
LITTLE CHINO VALLEY									
B-16-02 03DDC4	AZ	YAVAPAI	344725	1122655	15060202	H	85.0	20	85
LOWER HASSAYAMPA									
B-02-06 29BAB	AZ	MARICOPA	332935	1125350	15070104	I	1000	292	992
LOWER SAN PEDRO BASIN									
D-07-16 10ABC	AZ	PINAL	325035	1104150	15050203	P	136	24	136
D-10-18 21DDB	AZ	PINAL	323245	1103010	15050203	H	120	--	--

See codes used to identify Primary Use of Water at end of table.

## QUALITY OF WATER IN SELECTED WELLS IN ARIZONA, BY GROUND WATER AREA

## SITE INFORMATION-Continued

LOCAL WELL NUMBER	STATE	COUNTY	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	HYDROLOGIC UNIT (OWDC)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)
LOWER SANTA CRUZ BASIN									
D-05-07 23DDA	AZ	PINAL	325815	1112605	15050100	I	1500	--	--
D-06-03 17ACC	AZ	PINAL	325405	1120325	15050303	I	1200	200	580
								600	1040
								1040	1200
D-06-04N04ABB	AZ	PINAL	325615	1115605	15050303	I	1010	313	607
D-06-04S04DDD3	AZ	PINAL	325525	1115545	15050303	P	755	510	737
D-07-04W01DAD	AZ	PINAL	325040	1115340	15050303	I	1460	500	822
								764	1370
								1370	1460
D-07-06 29DDD2	AZ	PINAL	324640	1114420	15050303	I	270	200	270
								115	190
D-07-06 34CDD2	AZ	PINAL	324550	1114250	15050303	I	770	312	657
								657	755
D-09-07 02CDD	AZ	PINAL	323940	1113540	15050303	I	562	126	542
								416	562
D-09-07 03ADD	AZ	PINAL	324005	1113610	15050303	I	1000	250	980
D-10-09 10AAD2	AZ	PINAL	323410	1112350	15050303	I	752	--	--
LOWER VERDE RIVER									
A-03-06 15ABA	AZ	MARICOPA	333635	1114320	15060203	P	735	447	735
								450	735
A-11-10 34DCA	AZ	GILA	341456	1111844	15060105	P	203	103	203
MCMULLEN VALLEY									
B-05-13 02DBB	AZ	LA PAZ	334820	1133500	15070104	U	250	160	250
B-06-11 05ADD	AZ	LA PAZ	335335	1132505	15070104	U	417	191	417
B-07-09 11AAA	AZ	MARICOPA	335815	1130930	15070104	I	1020	380	755
								755	1010
NEW RIVER-CAVE CREEK									
A-04-02 11ADB	AZ	MARICOPA	334230	1120710	15070102	T	900	425	600
A-05-02 03DCB	AZ	MARICOPA	334805	1120830	15070102	H	410	295	380
								385	410
A-06-04 26DCC	AZ	MARICOPA	334945	1115500	15060106	P	485	423	485
								150	435
PEACH SPRINGS CANYON									
B-25-11 02CBC	AZ	MORAVE	353445	1132550	15010002	S	--	--	--
PUERCO-ZUNI									
A-18-24 09ABB	AZ	APACHE	345850	1094750	15020007	P	110	85.0	105
RANEGRAS PLAIN									
B-03-14 11DDC	AZ	LA PAZ	333635	1133940	15030105	P	665	--	--
B-04-14 04ABD1	AZ	LA PAZ	334320	1134205	15030105	P	652	577	652
B-04-14 19BAA	AZ	LA PAZ	334055	1134430	15030105	I	730	625	730
								290	625
B-04-14 19BDD1	AZ	LA PAZ	334030	1134430	15030105	I	725	545	725
								225	545
B-04-14 19DAA	AZ	LA PAZ	334025	1134400	15030105	I	610	468	610
								220	468
B-04-14 29BAA	AZ	LA PAZ	334000	1134325	15030105	I	705	240	580
								580	705
B-04-14 32BAA	AZ	LA PAZ	333910	1134330	15030105	I	905	605	905
								280	605
B-04-15 13BDA	AZ	LA PAZ	334135	1134530	15030105	I	648	265	648
B-04-15 14AAA	AZ	LA PAZ	334145	1134605	15030105	I	1020	275	645
								645	1020
B-04-15 14BAA	AZ	LA PAZ	334150	1134630	15030105	I	1000	275	668
								668	1000
B-04-16 18BCC2	AZ	LA PAZ	334125	1135720	15030105	H	--	--	--
B-04-16 19ABA	AZ	LA PAZ	334055	1135640	15030105	H	600	--	--
B-04-16 19BCA3	AZ	LA PAZ	334040	1135715	15030105	P	--	--	--
B-04-16 19BCB	AZ	LA PAZ	334040	1135720	15030105	H	530	--	--
B-05-15 04BAA	AZ	LA PAZ	334840	1134940	15030105	U	525	--	--
B-05-15 06ACB	AZ	LA PAZ	334825	1135140	15030105	S	500	400	500
B-06-15 30AAA	AZ	LA PAZ	335025	1135105	15030105	I	989	--	--
B-06-15 30DAA	AZ	LA PAZ	335000	1135110	15030105	I	853	--	--
B-06-15 32DAD	AZ	LA PAZ	334905	1134900	15030105	U	625	360	500
								510	625
B-06-16 15BCC	AZ	LA PAZ	335145	1135515	15030105	I	--	--	--
B-06-16 15CDB1	AZ	LA PAZ	335130	1135500	15030105	H	275	185	245
								245	275
B-06-16 27BBB	AZ	LA PAZ	335025	1135515	15030105	I	206	180	206
B-06-16 34BBB	AZ	LA PAZ	334930	1135515	15030105	I	490	460	480
B-07-17 22CDA	AZ	LA PAZ	335550	1140105	15030105	R	255	223	253
								253	255
B-07-17 23CCB	AZ	LA PAZ	335540	1140025	15030105	P	200	180	--

See codes used to identify Primary Use of Water at end of table.



## SITE INFORMATION—Continued

LOCAL WELL NUMBER	STATE	COUNTY	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	HYDROLOGIC UNIT (OWDC)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)
SACRAMENTO VALLEY									
B-17-18 12ABD	AZ	MOHAVE	345239	1140840	15030103	N	600	--	--
B-21-18 05DBD	AZ	MOHAVE	351400	1141325	15030103	P	1350	1030	1350
SAFFORD BASIN									
D-07-26 15BCC	AZ	GRAHAM	324925	1094050	15040005	I	86.0	30.0	82.0
D-09-26 18DDA	AZ	GRAHAM	323950	1094305	15040005	S	--	--	--
D-10-27 28DCD	AZ	GRAHAM	323140	1093505	15040006	S	520	--	--
SALT RIVER VALLEY									
B-06-03 33DCB	AZ	MARICOPA	334850	1123430	15070102	H	660	--	--
D-01-10 35DBC	AZ	PINAL	331755	1111735	15050100	P	500	--	--
D-04-09 06AAA2	AZ	PINAL	330705	1112720	15050100	I	1000	450 600	600 1000
SAN BERNARDINO VALLEY									
D-24-30 23BBA2	AZ	COCHISE	312005	1091550	15080302	S	--	--	--
SAN FRANCISCO PEAKS									
A-22-05 16DBC	AZ	COCONINO	351710	1115210	15060202	N	850	--	--
A-27-09 06ADB	AZ	COCONINO	354505	1112805	15020016	P	1600	1290	1600
SAN SIMON BASIN									
D-13-29 25CCC1	AZ	COCHISE	321550	1092050	15040006	I	863	403 793	803 863
D-13-29 25CCC2	AZ	COCHISE	321550	1092050	15040006	I	180	90	180
D-18-32 33CAA	AZ	COCHISE	314900	1090455	15040006	S	391	150 245 330 380	160 250 370 391
D-20-32 29ABB	AZ	COCHISE	314000	1090540	15040006	H	412	--	--
D-21-31 03BCD2	AZ	COCHISE	313800	1091045	15040006	H	750	--	--
SNOWFLAKE									
A-13-21 26ADB2	AZ	NAVAJO	342940	1100451	15020005	P	440	380	440
UPPER SAN PEDRO BASIN									
D-13-22 33DAC	AZ	COCHISE	321525	1100555	15050202	S	1440	454	1440
D-17-21 31DDA	AZ	COCHISE	315430	1101350	15050202	I	333	0 90	90 333
D-22-20 01BBD	AZ	COCHISE	313305	1101610	15050202	P	710	491 642	642 710
D-24-21 03AAB	AZ	COCHISE	312255	1101135	15050202	H	--	--	--
UPPER SANTA CRUZ BASIN									
D-11-14 32CCC	AZ	PIMA	322530	1105635	15050301	P	522	160 310	310 522
D-16-15 14ACB	AZ	PIMA	320240	1104655	15050301	C	905	445	900
D-19-13 29CBB2	AZ	PIMA	314445	1110230	15050301	H	--	--	--
D-19-17 17BBD	AZ	PIMA	314725	1103800	15050302	S	845	331	845
D-22-13 34ADD UNSURV	AZ	SANTA CRUZ	312820	1105940	15050301	I	200	30.0	200
D-24-14 05ADB2	AZ	SANTA CRUZ	312225	1105540	15050301	N	550	--	--
UPPER VERDE RIVER									
A-13-05 04BBA	AZ	YAVAPAI	343315	1114955	15060203	Z	205	100	205
A-13-05 27DCD1	AZ	YAVAPAI	342856	1114827	15060203	I	225	39.2	145
A-14-05 01BCD	AZ	YAVAPAI	343811	1114633	15060202	P	350	180 210	200 350
A-15-03 12CDC	AZ	YAVAPAI	344110	1115915	15060202	-	--	--	--
A-15-04 02BCA1	AZ	YAVAPAI	344337	1115357	15060202	I	260	204	260
A-16-02 12CAD2	AZ	YAVAPAI	344642	1120520	15060202	N	833	640	833
A-16-03 34ADC	AZ	YAVAPAI	344428	1120048	15060202	P	300	75.0	300
A-17-06 08BDC	AZ	YAVAPAI	345210	1114520	15060202	P	747	505	706
A-18-07 15CCC1	AZ	COCONINO	345612	1113852	15060202	P	200	110	195
A-20-07 20CCA	AZ	COCONINO	350547	1114057	15060202	P	1210	637 968	968 1210
VIRGIN RIVER									
B-41-15 33CAC	AZ	MOHAVE	365430	1135545	15010010	H	150	120	150
WATERMAN WASH									
C-02-02 19AAD	AZ	MARICOPA	331435	1122945	15070101	H	434	301	351

See codes used to identify Primary Use of Water at end of table.

## QUALITY OF WATER IN SELECTED WELLS IN ARIZONA, BY GROUND WATER AREA

## SITE INFORMATION—Continued

LOCAL WELL NUMBER	STATE	COUNTY	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	HYDROLOGIC UNIT (OWDC)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)
WESTERN MEXICAN DRAINAGE									
C-17-05 17ACB UNSURV	AZ	PIMA	315700	1124805	15080102	P	430	365	425
WHITE MOUNTAINS									
A-10-25 22BBD2	AZ	APACHE	341515	1094125	15020002	P	340	240	340
WILCOX BASIN									
D-13-24 05BAB	AZ	COCHISE	322025	1095515	15050201	I	1400	--	--
D-14-25 11CAA	AZ	COCHISE	321350	1094555	15050201	S	100	80	100
D-15-24 20CAC	AZ	COCHISE	320640	1095515	15050201	I	450	150	280
D-17-28 14CCB3	AZ	COCHISE	315705	1092825	15050201	H	120	270	450
YUMA									
C-08-22 28CCC	AZ	YUMA	324158	1143145	15070201	I	169	116	168
C-10-24 12BCC	AZ	YUMA	323430	1144058	15030108	D	190	150	178

## CODES USED TO IDENTIFY PRIMARY USE OF WATER

C Commercial	P Public Supply
D Drain	R Recreation
E Power	S Stock
H Domestic	T Institutional
I Irrigation	U Unused
N Industrial	Z Other

## WATER-QUALITY DATA

LOCAL IDENT- I- FIELD	STATION	NUMBER	DATE	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAIN- LESS) APD UNITS (00400)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
AGUA FRIA BASIN										
A-09-02 27CBB1	340527112085301	06-11-99	690	7.3	21.0	210	55	17	62	
A-11-02 25BDD	341816112041301	06-11-99	681	7.4	20.5	300	92	16	27	
B-14-01 14ACC	343540112195701	06-07-99	525	7.8	18.5	240	69	16	18	
ALTAR VALLEY										
D-20-08 35BDB	313850111095701	03-22-99	380	8.2	32.0	50	15	3.0	62	
ARAIPA VALLEY										
D-08-21 20BAD	324343110131501	06-17-99	335	7.8	18.0	120	35	9.2	22	
AVRA VALLEY										
D-15-10 33DBC1	310434111193702	03-25-99	582	7.9	27.5	120	39	5.8	65	
BIG CHINO VALLEY										
B-18-03 25CDA	345442112315801	06-08-99	390	7.9	18.5	150	24	22	23	
B-21-02 14BCC	351207112283701	06-10-99	617	7.6	24.5	200	52	18	48	
B-22-07 08DDD	351750113014001	06-08-99	463	7.6	24.0	230	57	20	7.0	
B-24-08 17DCD2	352730113081002	06-08-99	479	7.4	28.5	210	45	23	18	
BIG SANDY VALLEY										
B-16-13 22CCC1	344219113365701	05-10-99	559	9.1	26.0	9	2.8	.54	107	
B-21-14 24DAC	351110113425101	05-13-99	553	7.9	32.0	140	20	21	44	
BILL WILLIAMS										
B-11-16 27CCB2	341548113551501	05-04-99	985	7.6	22.0	260	69	22	100	
BUTLER VALLEY										
B-07-15 12DAD	335744113460201	08-12-99	840	7.8	29.0	99	33	3.3	129	
B-07-15 13ACB	335717113452501	08-12-99	990	7.7	28.0	190	65	6.1	123	
B-07-15 15AAD1	335718113480301	08-12-99	1350	7.7	29.0	270	92	9.2	166	
B-07-15 15AAD3	335718113480501	01-19-99	830	8.6	29.0	31	11	.73	149	
CANYON DIABLO										
A-18-14 13ABD2	345750110482501	06-01-99	2300	7.7	17.0	330	73	36	322	
COCONINO PLATEAU										
A-26-02 11DDB	353843112083301	06-10-99	902	7.4	27.0	350	77	39	47	
A-30-02 24CAA	355811112074501	06-10-99	448	7.6	22.5	230	48	27	5.1	
COLORADO RIVER, HOOVER DAM TO IMPERIAL DAM										
B-04-19 28BDD	333937114133001	05-05-99	465	7.4	27.0	220	74	8.6	7.5	
B-04-19 29BCB1	333946114150101	05-05-99	890	7.5	29.5	240	79	11	87	
B-09-20 01DBC2	340853114173201	05-05-99	1790	7.9	29.0	110	42	1.8	245	
B-14-20 33DCB	343022114213401	05-14-99	1500	7.8	27.0	270	59	29	204	
B-17-22 11DCC	345200114352001	05-11-99	3890	7.3	23.0	990	250	86	551	
B-20-22 24DDC	350557113335701	05-11-99	2570	7.5	38.0	540	190	15	228	
B-21-21 27CCB	351015114305901	05-11-99	508	8.0	40.0	32	12	.20	92	
B-30-20 06CAD UNSURV	350105114281101	01-21-99	1450	7.5	25.0	370	100	30	137	
DUNCAN BASIN										
20S 21W 17 111	323425109022101	06-16-99	440	8.6	22.0	13	3.4	1.1	98	
D-06-30 01BAA	325655109135001	06-16-99	285	8.1	22.0	79	22	5.9	31	
D-09-32 03AAAS	324108109025401	06-16-99	448	7.5	16.0	150	46	8.9	38	
GILA BEND BASIN										
C-04-04 04DAA	330632112395901	03-26-99	4400	7.2	27.5	1000	320	50	489	
C-06-06 10BCB	325518112521101	03-25-99	1930	8.4	32.0	94	34	2.0	306	
GILA RIVER FROM HEAD OF SAN CARLOS RESERVOIR TO KELVIN										
A-01-16 19BAD	332507110425001	06-18-99	452	7.8	30.0	220	40	29	21	
GILA RIVER FROM PAINTED ROCK DAM TO TEXAS HILL										
C-04-11 21BCB	330415113242701	04-07-99	2600	7.9	30.0	500	180	13	310	
C-07-13 24ADA2	324823113312901	03-23-99	1820	8.1	34.5	110	36	4.8	315	
C-11-06 24ACA	322728112500201	03-22-99	995	8.1	42.5	43	12	3.0	166	

## WATER-QUALITY DATA--Continued

LOCAL IDENT- IFIER	DATE	SODIUM AD- SORP- TION RATIO (009311)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ANC WATER UNFLTRD FET FIELD (MG/L AS CACO3) (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L) (70301)
AGUA FRIA BASIN										
A-09-02 27CBB1	06-11-99	2	1.2	250	63	23	.75	--	18	392
A-11-02 25BDD	06-11-99	.7	.97	238	58	37	.44	--	33	412
B-14-01 14ACC	06-07-99	.5	.95	157	94	9.1	.17	--	22	331
ALTAR VALLEY										
D-20-08 35BDB	03-22-99	4	2.9	143	14	8.4	7.6	--	29	238
ARAVAIPA VALLEY										
D-08-21 20BAD	06-17-99	.9	2.5	152	11	6.2	.38	--	41	222
AVRA VALLEY										
D-15-10 31DBC1	03-25-99	3	2.0	124	52	55	1.3	--	33	359
BIG CHINO VALLEY										
B-18-03 25CDA	06-08-99	.8	2.2	162	5.8	24	.76	--	70	270
B-21-02 14BCC	06-10-99	1	5.9	173	87	28	.38	--	16	373
B-22-07 08DDD	06-08-99	.2	1.2	201	9.4	16	.20	--	14	261
B-24-08 17DCD2	06-08-99	.6	2.3	219	4.3	10	.56	--	19	261
BIG SANDY VALLEY										
B-16-13 22CCC1	05-10-99	15	1.8	126	45	43	2.4	--	19	303
B-21-14 24DAC	05-13-99	2	3.6	--	13	10	4.5	--	45	285
BILL WILLIAMS										
B-11-16 27CCB2	05-04-99	3	6.5	229	99	110	1.1	--	33	579
BUTLER VALLEY										
B-07-15 12DAD	08-12-99	6	5.0	109	79	130	1.5	.31	30	494
B-07-15 13ACB	08-12-99	4	7.1	101	110	180	1.0	.39	31	596
B-07-15 15AAD1	08-12-99	4	6.8	86	85	320	1.6	1.3	30	793
B-07-15 15AAD3	01-19-99	12	2.5	--	170	82	5.1	--	18	480
CANYON DIABLO										
A-18-14 13ABD2	06-01-99	8	2.1	209	130	530	.18	--	11	1230
COCONINO PLATEAU										
A-26-02 11DDB	06-10-99	.1	3.1	247	92	85	.51	--	9.8	504
A-30-02 24CAA	06-10-99	.1	1.4	218	12	9.2	.16	--	8.9	246
COLORADO RIVER, HOOVER DAM TO IMPERIAL DAM										
B-04-19 28BDD	05-05-99	.2	1.6	189	3.4	12	.11	--	39	293
B-04-19 29BCB1	05-05-99	2	4.7	158	190	60	.74	--	39	573
B-09-20 01DBC2	05-05-99	10	3.7	81	240	230	2.2	--	21	855
B-14-20 33DCB	05-14-99	5	6.9	143	270	220	1.5	--	24	909
B-17-22 11DCC	05-11-99	8	16	334	1000	590	.62	--	26	2720
B-20-22 24DDC	05-11-99	4	9.5	73	250	670	2.8	--	48	1460
B-21-21 27CCB	05-11-99	7	4.1	121	36	40	3.7	--	52	335
B-30-20 06CAD UNSURV	01-21-99	3	7.1	119	390	130	1.0	--	41	931
DUNCAN BASIN										
20S 21W 17 111	06-16-99	12	.62	181	12	8.6	2.0	--	41	299
D-06-30 01BAA	06-16-99	1	2.1	124	9.4	7.7	.44	--	25	183
D-09-32 03AAA5	06-16-99	1	2.4	177	36	14	1.7	--	33	288
GILA BEND BASIN										
C-04-04 04DAA	03-26-99	7	11	156	330	1200	.80	--	26	2560
C-06-06 10BCB	03-25-99	14	3.8	40	150	440	4.8	--	37	1010
GILA RIVER FROM HEAD OF SAN CARLOS RESERVOIR TO KELVIN										
A-01-16 19BAD	06-18-99	.6	2.2	239	9.4	13	.28	--	34	300
GILA RIVER FROM PAINTED ROCK DAM TO TEXAS HILL										
C-04-11 21BCB	04-07-99	6	8.5	48	210	610	2.8	--	33	1470
C-07-13 24ADA2	03-23-99	13	5.2	72	260	330	5.3	--	20	1030
C-11-06 24ACA	03-22-99	11	3.5	106	92	160	5.0	--	52	571

## WATER-QUALITY DATA--Continued

LOCAL IDENT- 1- FIER	DATE	NITRO- GEN. NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN. NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS ORTHO. DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO. DIS- SOLVED (MG/L AS PO4) (00660)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHPO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
AGUA FRIA BASIN										
A-09-02 27CSE1	06-11-99	<.010	.392	.036	.11	--	--	352	--	--
A-11-02 25BDE	06-11-99	<.010	1.10	.014	.04	--	--	41	--	--
B-14-01 14AC2	06-07-99	<.010	1.88	.021	.06	--	--	E13	--	--
ALTAP VALLEY										
D-20-08 35BDB	03-22-99	<.010	2.12	<.010	--	--	--	115	--	--
ARAVAIPA VALLEY										
D-08-21 20BAD	06-17-99	<.010	.751	.039	.12	--	--	37	--	--
AVRA VALLEY										
D-15-10 33DEC1	03-25-99	<.010	7.14	<.010	--	--	--	93	--	--
BIG CHINO VALLEY										
B-19-03 25CDA	06-08-99	<.010	.568	.015	.05	--	--	122	--	--
B-21-02 14BCC	06-10-99	<.010	2.90	.021	.06	--	--	136	--	--
B-22-07 08DDD	06-08-99	<.010	3.37	<.010	--	--	--	41	--	--
B-24-08 17DCD2	06-08-99	<.010	1.61	.017	.05	--	--	105	--	--
BIG SANDY VALLEY										
B-16-13 22CCC1	05-10-99	<.010	1.36	.017	.05	--	--	272	--	--
B-21-14 24DAC	05-13-99	<.010	1.32	.011	.03	--	--	100	--	--
BILL WILLIAMS										
B-11-16 27CCB2	05-04-99	<.010	1.13	.049	.15	--	--	397	--	--
BUTLER VALLEY										
B-07-15 12DAD	08-12-99	<.010	2.54	<.010	--	4	115	212	17	<1.0
B-07-15 13ACB	08-12-99	<.010	2.26	.012	.04	2	76	217	4.1	<1.0
B-07-15 15AAD1	08-12-99	<.010	5.70	<.010	--	3	233	235	17	<1.0
B-07-15 15AAD3	01-19-99	<.010	2.17	<.010	--	--	--	357	--	--
CANYON DIABLO										
A-18-14 13ABD2	06-01-99	<.010	.242	.019	.06	--	--	61	--	--
COCONINO PLATEAU										
A-26-02 11DDB	06-10-99	<.010	.423	.011	.03	--	--	241	--	--
A-30-02 24CAA	06-10-99	<.010	.991	.012	.04	--	--	22	--	--
COLORADO RIVER, HOOVER DAM TO IMPERIAL DAM										
B-04-19 28BDE	05-05-99	<.010	7.31	.020	.06	--	--	40	--	--
B-04-19 29BCB1	05-05-99	<.010	2.44	.016	.05	--	--	254	--	--
B-09-20 01DBC2	05-05-99	<.010	2.67	.011	.03	--	--	507	--	--
B-14-20 33DCB	05-14-99	<.010	1.52	.014	.04	--	--	415	--	--
B-17-22 11DCC	05-11-99	<.010	.071	<.010	--	--	--	791	--	--
B-20-22 24DDC	05-11-99	<.010	.351	.014	.04	<1	--	520	--	--
B-21-21 27CCB	05-11-99	<.010	4.91	.012	.04	21	--	248	--	--
B-30-20 06CAD UNSURV	01-21-99	<.010	6.05	<.010	--	--	--	512	--	--
DUNCAN BASIN										
20S 21W 17 111	06-16-99	<.010	4.99	.043	.13	--	--	165	--	--
D-06-30 01BAA	06-16-99	<.010	1.38	.020	.06	--	--	32	--	--
D-09-32 03AAA5	06-16-99	<.010	.369	.080	.25	--	--	47	--	--
GILA BEND BASIN										
C-04-04 04DAA	03-26-99	<.010	10.0	<.010	--	--	--	499	--	--
C-06-06 10BCB	03-25-99	<.010	2.93	<.010	--	--	--	1370	--	--
GILA RIVER FROM HEAD OF SAN CARLOS RESERVOIR TO KELVIN										
A-01-16 19BAD	06-18-99	<.010	1.62	.024	.07	--	--	34	--	--
GILA RIVER FROM PAINTED ROCK DAM TO TEXAS HILL										
C-04-11 21BCB	04-07-99	<.010	16.5	<.010	--	--	--	431	--	--
C-07-13 24ADA2	03-23-99	<.010	2.69	<.010	--	--	--	1520	--	--
C-11-06 24ACA	03-22-99	<.010	3.70	.014	.04	80	--	484	--	--

## QUALITY OF WATER IN SELECTED WELLS IN ARIZONA, BY GROUND WATER AREA

## WATER-QUALITY DATA-Continued

LOCAL IDENT- FIER	DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STROM- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
<b>AQUA FRIA BASIN</b>										
A-09-02 27CB81	06-11-99	140	--	--	16	--	--	--	--	<20
A-11-02 25BDD	06-11-99	<10	--	--	<3.0	--	--	--	--	<20
B-14-01 14ACC	06-07-99	<10	--	--	<3.0	--	--	--	--	<20
<b>ALTAR VALLEY</b>										
D-20-08 35BDB	03-22-99	<10	--	--	<3.0	--	--	--	--	26
<b>ARAVAIPA VALLEY</b>										
D-08-21 20BAD	06-17-99	E5.3	--	--	<3.0	--	--	--	--	E9.1
<b>AVRA VALLEY</b>										
D-15-10 33DBC1	03-25-99	<10	--	--	<3.0	--	--	--	--	<20
<b>BIG CHINO VALLEY</b>										
B-18-03 25CDA	06-08-99	<10	--	--	<3.0	--	--	--	--	44
B-21-02 14BCC	06-10-99	<10	--	--	<3.0	--	--	--	--	<20
B-22-07 08DDD	06-08-99	<10	--	--	<3.0	--	--	--	--	<20
B-24-08 17DCD2	06-08-99	<10	--	--	<3.0	--	--	--	--	<20
<b>BIG SANDY VALLEY</b>										
B-16-13 22CCC1	05-10-99	E7.0	--	--	<3.0	--	--	--	--	<20
B-21-14 24DAC	05-13-99	<10	--	--	<3.0	--	--	--	--	34
<b>BILL WILLIAMS</b>										
B-11-16 27CCB2	05-04-99	16	--	--	<3.0	--	--	--	--	<20
<b>BUTLER VALLEY</b>										
B-07-15 12DAD	08-12-99	<10	<1.0	47	<2.2	6.3	<1	1550	23	<20
B-07-15 13ACB	08-12-99	<10	<1.0	46	<2.2	5.0	1	2150	14	<20
B-07-15 15AAD1	08-12-99	E6.6	<1.0	63	E1.5	5.0	2	3980	20	<20
B-07-15 15AAD3	01-19-99	24	--	--	<3.0	--	--	410	--	--
<b>CANYON DIABLO</b>										
A-18-14 13ABD2	06-01-99	<30	--	--	<9.0	--	--	--	--	<60
<b>COCONINO PLATEAU</b>										
A-26-02 11DDDB	06-10-99	25	--	--	5.6	--	--	--	--	<20
A-30-02 24CAA	06-10-99	<10	--	--	<3.0	--	--	--	--	E11
<b>COLORADO RIVER, HOOVER DAM TO IMPERIAL DAM</b>										
B-04-19 28BDD	05-05-99	<10	--	--	<3.0	--	--	--	--	<20
B-04-19 29BCB1	05-05-99	<10	--	--	E2.5	--	--	--	--	549
B-09-20 01DBC2	05-05-99	<10	--	--	<3.0	--	--	--	--	<20
B-14-20 33DCB	05-14-99	E5.6	--	--	<3.0	--	--	--	--	<20
B-17-22 11DCC	05-11-99	990	--	--	1510	--	--	--	--	<60
B-20-22 24DDC	05-11-99	<30	--	--	9.3	--	--	--	--	E7.6
B-21-21 27CCB	05-11-99	<10	--	--	<3.0	--	--	--	--	E7.9
B-30-20 06CAD UNSURV	01-21-99	E6.1	--	--	<3.0	--	--	--	--	--
<b>DUNCAN BASIN</b>										
20S 21W 17 111	06-16-99	E7.5	--	--	<3.0	--	--	--	--	<20
D-06-30 01BAA	06-16-99	<10	--	--	<3.0	--	--	--	--	34
D-09-32 03AAA5	06-16-99	<10	--	--	<3.0	--	--	--	--	<20
<b>GILA BEND BASIN</b>										
C-04-04 04DAA	03-26-99	<30	--	--	<12	--	--	--	--	<60
C-06-06 10BCB	03-25-99	E6.9	--	--	<3.0	--	--	--	--	<20
<b>GILA RIVER FROM HEAD OF SAN CARLOS RESERVOIR TO KELVIN</b>										
A-01-16 19BAD	06-18-99	<10	--	--	<3.0	--	--	--	--	181
<b>GILA RIVER FROM PAINTED ROCK DAM TO TEXAS HILL</b>										
C-04-11 21BCB	04-07-99	<10	--	--	<3.0	--	--	--	--	<20
C-07-13 24ADA2	03-23-99	<10	--	--	<3.0	--	--	--	--	<20
C-11-06 24ACA	03-22-99	<10	--	--	<3.0	--	--	--	--	<20

## WATER-QUALITY DATA--Continued

LOCAL IDENT- IFIER	STATION	NUMBER	DATE	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (50900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
GILA RIVER FROM TEXAS HILL TO DOME										
C-09-19 04BBB	344040114133501	03-23-99	5100	7.5	22.5	920	210	94	841	
HARQUAHALA PLAINS										
B-01-09 24CBB	332448113084001	08-16-99	1750	8.2	27.5	65	15	6.5	344	
B-01-09 28DDD	332333113104701	08-11-99	1080	7.9	30.0	80	17	8.8	243	
B-01-09 32CCC	332241113124801	08-11-99	1280	7.3	32.0	150	33	17	218	
B-01-09 36CCC	332243113083501	08-09-99	1300	8.1	30.0	55	11	6.9	246	
B-02-08 30AAA2	332938113063901	08-10-99	1250	7.3	34.0	250	61	24	148	
B-02-09 09ABB	333213113111801	08-10-99	800	8.0	34.0	120	27	12	118	
B-02-09 11CBB	333147113093901	08-09-99	1700	7.4	32.0	180	55	10	284	
B-04-12 09ACC	334216113295701	08-17-99	1020	7.2	28.0	210	54	19	140	
B-05-09S02BBD	334830113102401	05-07-99	675	7.7	24.0	190	46	18	61	
C-01-09 05CCC	332149113124601	05-03-99	1020	8.0	37.0	30	17	3.5	174	
HASSAYAMPA BASIN										
B-07-05 01CDB	333925112435101	05-20-99	510	7.6	18.5	190	51	16	29	
B-09-06 02DCD	347838112504501	05-10-99	430	7.7	29.5	150	50	6.0	31	
HOLBROOK										
A-18-19 33DAD2	345444110192501	06-02-99	1550	7.8	17.0	270	56	32	185	
HOUSE ROCK										
A-41-08 14BCA	335723111302801	08-19-99	--	7.8	21.0	340	75	38	86	
HUALAPAI VALLEY										
B-22-16 28BDA2	351552113590801	05-13-99	418	8.1	28.0	140	26	18	30	
B-23-13 20CCD	352130113413901	06-09-99	747	7.6	20.0	290	58	35	40	
B-24-12 09AAD	352904113333401	06-09-99	538	7.8	21.0	230	35	33	19	
B-29-17 26AAA	355248114040501	07-28-99	650	7.7	30.0	240	63	20	31	
KANAB										
B-40-04 17DDB	355149112442201	08-18-99	--	8.3	19.0	200	45	20	29	
B-41-06 06BAD1	355914112590001	08-18-99	--	7.5	15.0	480	120	43	133	
B-42-06 31CCC	355931112592301	08-18-99	--	7.8	18.0	190	34	27	43	
LITTLE CHINO VALLEY										
B-16-02 03DDC4	344723112265701	08-16-99	--	7.7	18.0	190	44	20	18	
LOWER HASSAYAMPA										
B-02-06 29BAB	332936112535001	05-19-99	1140	7.8	29.0	140	43	6.9	159	
LOWER SAN PEDRO BASIN										
D-07-16 10ABC	338133110414901	05-24-99	618	7.5	20.5	240	80	9.9	31	
D-10-18 21DDB	332244110300801	05-24-99	843	7.5	19.5	290	91	16	67	
LOWER SANTA CRUZ BASIN										
D-05-07 23DDA	325913111360401	07-27-99	4330	7.3	25.0	1200	370	52	598	
D-06-03 17ACC	325407112032401	04-27-99	1040	8.0	28.0	91	20	9.8	179	
D-06-04N04ABB	325617111560601	04-27-99	1020	7.6	28.5	250	81	11	104	
D-06-04S04DDD3	325913111554301	05-03-99	1420	7.6	24.5	420	130	21	116	
D-07-04W01DAD	325941111534201	04-27-99	570	8.4	31.0	30	8.0	2.5	93	
D-07-06 29DDD2	324545111442301	05-03-99	3190	7.2	24.0	1200	370	55	282	
D-07-06 34CDD2	324550111424901	04-28-99	1160	7.7	27.5	240	77	11	135	
D-09-07 02CDD	323954111353101	04-29-99	1010	7.6	25.0	310	98	15	78	
D-09-07 03ADD	324071111361001	07-27-99	650	7.8	26.0	170	55	7.4	65	
D-10-09 10AAD2	323413111235101	04-29-99	654	7.6	27.5	190	63	8.2	72	
LOWER VERDE RIVER										
A-03-06 15ABA	333639111433101	06-03-99	552	7.5	33.0	170	51	10	42	
A-11-10 34DCA	341456111184401	06-01-99	349	6.9	17.0	170	45	15	14	
MCMULLEN VALLEY										
B-05-13 02DBB	334818113350001	01-20-99	1580	8.8	22.5	10	1.6	1.5	365	
B-06-11 05ADD	335334113250701	01-20-99	510	9.1	25.0	4	1.4	.099	104	
B-07-09 11AAA	335815113093001	05-06-99	546	7.9	30.5	110	23	12	66	

## QUALITY OF WATER IN SELECTED WELLS IN ARIZONA, BY GROUND WATER AREA

## WATER-QUALITY DATA-Continued

LOCAL IDENT- IFIER	DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ANC WATER UNFLTRD FET FIELD (MG/L AS CACO3) (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L SiO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)
GILA RIVER FROM TEXAS HILL TO DOME										
C-09-19 048BB	03-23-99	12	8.5	423	970	910	2.5	--	33	3340
HARQUAHALA PLAINS										
B-01-09 24CBB	08-16-99	19	5.6	190	310	190	2.6	.87	56	1090
B-01-09 28DDD	03-11-99	12	3.5	222	140	160	3.0	.80	25	771
B-01-09 32CCC	03-11-99	8	3.6	188	150	190	2.4	.72	29	784
B-01-09 36CCC	03-09-99	14	3.5	217	140	160	3.3	.71	28	745
B-02-08 30AAA2	08-10-99	4	4.8	74	140	200	2.4	.82	31	738
B-02-09 09ABB	08-10-99	5	2.8	123	140	64	1.8	.32	39	501
B-02-09 11CBB	08-09-99	9	2.9	115	320	210	2.3	.83	59	1060
B-04-12 09ACC	03-17-99	4	3.5	294	87	80	2.9	.48	38	629
B-05-09 02BBB	05-07-99	2	2.5	168	30	62	.31	--	26	390
C-01-09 05CCC	05-03-99	8	4.1	158	120	140	2.6	--	14	587
HASSAYAMPA BASIN										
B-07-05 01CDB	05-20-99	.9	1.9	190	39	20	.41	--	27	302
B-09-06 02CDB	05-10-99	1	2.1	157	14	18	.29	--	<.10	222
HOLBROOK										
A-18-19 33DAD2	06-02-99	5	2.4	188	130	280	.35	--	12	810
HOUSE ROCK										
A-41-08 14BCA	08-19-99	2	8.5	198	240	74	.25	--	13	659
HUALAPAI VALLEY										
B-22-16 28BDA2	05-13-99	1	5.2	138	16	25	1.1	--	54	270
B-23-13 20CCD	06-09-99	1	3.0	273	36	49	.66	--	59	452
B-24-12 09AAD	06-09-99	.5	1.5	173	21	40	.40	--	30	305
B-29-17 26AAA	07-28-99	.9	6.2	138	63	70	2.1	.75	28	378
KANAB										
B-40-04 17DDB	03-18-99	.9	3.1	181	40	24	.24	--	14	301
B-41-06 06BAD1	08-18-99	3	6.7	390	310	59	.23	--	12	922
B-42-06 31CCC	08-18-99	1	3.1	266	11	10	.76	--	14	303
LITTLE CHINO VALLEY										
B-16-02 03DDC4	08-16-99	.6	2.0	--	24	31	.45	--	32	288
LOWER HASSAYAMPA										
B-02-06 29BAB	05-19-99	6	4.7	75	93	220	5.3	--	20	611
LOWER SAN PEDRO BASIN										
D-07-16 10ABC	05-24-99	.9	2.3	196	100	9.2	1.2	--	40	396
D-10-18 21DDB	05-24-99	2	4.3	235	180	17	1.4	--	31	550
LOWER SANTA CRUZ BASIN										
D-05-07 23DDA	07-27-99	8	8.0	144	890	920	.48	--	31	3040
D-06-03 17ACC	04-27-99	8	2.7	190	120	110	1.7	--	28	613
D-06-04 04ABB	04-27-99	3	3.3	111	150	150	.22	--	24	616
D-06-04 04DDD1	03-03-99	2	3.3	116	230	200	.32	--	32	875
D-07-04 010AD	04-27-99	7	1.3	135	55	27	1.4	--	26	306
D-07-06 29DDD2	05-03-99	4	6.3	239	860	380	.29	--	43	2280
D-07-06 34CDD2	04-28-99	4	3.6	117	180	150	.49	--	32	716
D-09-07 02CDD	04-29-99	2	3.3	135	110	95	.36	--	31	648
D-09-07 03ADD	07-27-99	2	3.0	132	73	44	.46	--	30	404
D-10-09 10AAD2	04-29-99	2	2.6	178	92	43	.63	--	33	453
LOWER VERDE RIVER										
A-03-06 15ABA	06-03-99	1	2.0	184	22	41	1.8	--	46	333
A-11-10 34DCA	06-01-99	.5	.55	171	8.9	8.5	.55	--	34	234
MCMULLEN VALLEY										
B-05-13 02DBB	01-20-99	50	.31	380	130	120	6.9	--	11	1000
B-06-11 05ADD	01-20-99	23	.29	114	21	42	3.2	--	16	274
B-07-09 11AAA	05-06-99	3	3.1	139	30	64	2.6	--	28	328



## WATER-QUALITY DATA--Continued

LOCAL IDENT- I- FIER	DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L (00631)	PHOS- PHORUS ORTHOPHOSPHATE DIS- SOLVED (MG/L (00671)	PHOS- PHATE, ORTHOPHOSPHATE DIS- SOLVED (MG/L (00660)	ARSENIC DIS- SOLVED (UG/L (01000)	BARIUM, DIS- SOLVED (UG/L (01005)	BORON, DIS- SOLVED (UG/L (01020)	CHRO- MIUM, DIS- SOLVED (UG/L (01030)	COPPER, DIS- SOLVED (UG/L (01040)
GILA RIVER FROM TEXAS HILL TO DOME										
C-09-19 04BBB	03-23-99	<.010	.686	.018	.06	31	--	1420	--	--
HARQUAHALA PLAINS										
B-01-09 24CBB	08-16-99	<.010	7.64	<.010	--	8	8.2	1020	58	<1.0
B-01-09 28DDD	08-11-99	<.010	7.41	<.010	--	5	30	537	51	<1.0
B-01-09 32CCC	08-11-99	<.010	5.96	<.010	--	4	46	481	18	<1.0
B-01-09 36CCC	08-09-99	<.010	5.31	.010	.03	7	3.6	523	51	<1.0
B-02-08 30AAA2	08-10-99	<.010	18.6	<.010	--	18	13	364	37	<1.0
B-02-09 09ABB	08-10-99	<.010	5.09	<.010	--	9	4.2	296	42	<1.0
B-02-09 11CBB	08-09-99	<.010	12.3	<.010	--	7	8.3	911	37	<1.0
B-04-12 09ACC	08-17-99	<.010	5.88	<.010	--	8	51	347	12	<1.0
B-05-09S02BBB	05-07-99	<.010	9.81	.025	.08	--	--	129	--	--
C-01-09 05CCC	05-03-99	<.010	3.54	.013	.04	--	--	447	--	--
HASSAYAMPA BASIN										
B-07-05 01CDB	05-20-99	<.010	.803	.054	.17	--	--	79	--	--
B-09-06 02DCD	05-10-99	<.010	1.52	.013	.04	--	--	58	--	--
HOLBROOK										
A-18-19 33DAD2	06-02-99	<.010	<.050	.027	.08	--	--	74	--	--
HOUSE ROCK										
A-41-08 14BCA	08-19-99	<.010	.609	<.010	--	--	--	97	--	--
HUALAPAI VALLEY										
B-22-16 28BDA2	05-13-99	<.010	2.79	.014	.04	--	--	112	36	--
B-23-13 20CCD	06-09-99	<.010	1.48	.037	.11	--	--	137	--	--
B-24-12 09AAD	06-09-99	<.010	4.63	.017	.05	--	--	83	--	--
B-29-17 26AAA	07-28-99	<.010	2.25	<.010	--	<1	5.4	88	2.6	<1.0
KANAB										
B-40-04 17DDDB	08-18-99	<.010	3.55	<.010	--	--	--	161	--	--
B-41-06 06BAD1	08-18-99	<.010	.553	<.010	--	--	--	387	--	--
B-42-06 31CCC	08-18-99	<.010	<.050	<.010	--	--	--	250	--	--
LITTLE CHINO VALLEY										
B-16-02 03DDC4	08-16-99	<.010	6.37	<.010	--	--	--	51	--	--
LOWER HASSAYAMPA										
B-02-06 29BAB	05-19-99	<.010	2.37	<.010	--	--	--	695	--	--
LOWER SAN PEDRO BASIN										
D-07-16 10ABC	05-24-99	<.010	.339	.040	.12	--	--	50	--	--
D-10-18 21DDB	05-24-99	<.010	.617	.050	.15	--	--	125	--	--
LOWER SANTA CRUZ BASIN										
D-05-07 23DDA	07-27-99	<.010	17.1	<.010	--	--	--	1130	--	--
D-06-03 17ACC	04-27-99	<.010	5.43	.019	.06	16	--	466	--	--
D-06-04N04ABB	04-27-99	<.010	6.45	.015	.05	--	--	185	--	--
D-06-04S04DDD3	05-03-99	<.010	15.9	.017	.05	--	--	226	--	--
D-07-04W01DAD	04-27-99	<.010	2.22	.019	.06	--	--	199	--	--
D-07-06 29DDD2	05-03-99	<.010	31.1	.016	.05	--	--	863	--	--
D-07-06 34CDD2	04-28-99	<.010	12.0	.016	.05	--	--	209	--	--
D-09-07 02CDD	04-29-99	<.010	29.7	.021	.06	--	--	90	--	--
D-09-07 03ADD	07-27-99	<.010	10.8	<.010	--	--	--	86	--	--
D-10-09 10AAD2	04-29-99	<.010	7.12	.018	.06	--	--	106	--	--
LOWER VERDE RIVER										
A-03-06 15ABA	06-03-99	<.010	1.26	.017	.05	--	--	84	--	--
A-11-10 34DCA	06-01-99	<.010	1.14	.012	.04	--	--	22	--	--
MCMULLEN VALLEY										
B-05-13 02DBB	01-20-99	<.010	29.4	.069	.21	--	--	1170	--	--
B-06-11 05ADD	01-20-99	<.010	4.04	.010	.03	--	--	289	--	--
B-07-09 11AAA	05-06-99	<.010	3.77	.014	.04	--	--	161	--	--

## WATER-QUALITY DATA--Continued

LOCAL IDENT- IFIER	DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
GILA RIVER FROM TEXAS HILL TO DOME										
C-09-19 04BBB	03-23-99	<50	--	--	1560	--	<1	--	--	<100
HARQUAHALA PLAINS										
B-01-09 24CBB	08-16-99	E5.1	<1.0	83	<2.2	21	4	548	43	E13
B-01-09 28DDD	08-11-99	<10	<1.0	45	<2.2	13	3	563	35	<20
B-01-09 32CCC	08-11-99	10	<1.0	46	<2.2	9.7	2	1000	35	<20
B-01-09 36CCC	08-09-99	10	<1.0	45	<2.2	14	2	353	37	<20
B-02-08 30AAA2	08-10-99	<10	<1.0	55	<2.2	5.3	3	519	31	<20
B-02-09 09ABB	08-10-99	16	<1.0	43	<2.2	7.0	1	236	36	<20
B-02-09 11CBB	08-09-99	32	<1.0	53	E1.2	5.1	4	468	31	E12
B-04-12 09ACC	08-17-99	<10	<1.0	35	<2.2	12	1	1120	32	<20
B-05-09S02BBD	05-07-99	<10	--	--	<3.0	--	--	--	--	164
C-01-09 05CCC	05-03-99	<10	--	--	<3.0	--	--	--	--	E12
HASSAYAMPA BASIN										
B-07-05 01CDB	05-20-99	<10	--	--	<3.0	--	--	--	--	<20
B-09-06 02DCD	05-10-99	<10	--	--	<3.0	--	--	--	--	22
HOLBROOK										
A-18-19 J3DAD2	06-02-99	<10	--	--	<3.0	--	--	--	--	<20
HOUSE ROCK										
A-41-08 14BCA	08-19-99	16	--	--	<3.0	--	--	--	--	293
HUALAPAI VALLEY										
B-22-16 28BDA2	05-13-99	<10	--	--	<3.0	--	--	--	--	<20
B-23-13 20CCD	06-09-99	<10	--	--	<3.0	--	--	--	--	<20
B-24-12 09AAD	06-09-99	<10	--	--	<3.0	--	--	--	--	<20
B-29-17 26AAA	07-28-99	E6.7	<1.0	25	E2.7	2.7	4	507	2	<20
KANAB										
B-40-04 17DDB	08-18-99	<10	--	--	<3.0	--	--	--	--	<20
B-41-06 06BAD1	08-18-99	1800	--	--	1020	--	--	--	--	<20
B-42-06 31CCC	08-18-99	120	--	--	66	--	--	--	--	<20
LITTLE CHINO VALLEY										
B-16-02 03DDC4	08-16-99	<10	--	--	<3.0	--	--	--	--	<20
LOWER HASSAYAMPA										
B-02-06 29BAB	05-19-99	<10	--	--	<3.0	--	--	--	--	<20
LOWER SAN PEDRO BASIN										
D-07-16 10ABC	05-24-99	<10	--	--	E1.8	--	--	--	--	E7.6
D-10-18 21DDB	05-24-99	<10	--	--	E2.2	--	--	--	--	<20
LOWER SANTA CRUZ BASIN										
D-05-07 23DDA	07-27-99	34	--	--	E8.6	--	--	--	--	<60
D-06-03 17ACC	04-27-99	<10	--	--	E2.0	--	--	--	--	21
D-06-04N04ABB	04-27-99	<10	--	--	<3.0	--	--	--	--	<20
D-06-04S04DDD3	05-03-99	<10	--	--	<3.0	--	--	--	--	<20
D-07-04W01DAD	04-27-99	<10	--	--	<3.0	--	--	--	--	<20
D-07-06 29DDD2	05-03-99	<30	--	--	<9.0	--	--	--	--	<60
D-07-06 34CDD2	04-28-99	<10	--	--	<3.0	--	--	--	--	<20
D-09-07 02CDD	04-29-99	<10	--	--	<3.0	--	--	--	--	<20
D-09-07 03ADD	07-27-99	<10	--	--	<3.0	--	--	--	--	<20
D-10-09 10AAD2	04-29-99	<10	--	--	<3.0	--	--	--	--	<20
LOWER VERDE RIVER										
A-03-06 15ABA	06-03-99	<10	--	--	<3.0	--	--	--	--	<20
A-11-10 34DCA	06-01-99	<10	--	--	<3.0	--	--	--	--	<20
MCMULLEN VALLEY										
B-05-13 02DBB	01-20-99	<10	--	--	<3.0	--	--	--	--	--
B-06-11 05ADD	01-20-99	E8.8	--	--	<3.0	--	--	--	--	--
B-07-09 11AAA	05-06-99	<10	--	--	<3.0	--	--	--	--	<20

## WATER-QUALITY DATA--Continued

LOCAL IDENT- I- FIER	STATION	NUMBER	DATE	SPE- CIFIC CON- DUCT- ANCE (US CM (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM DIS- SOLVED (MG/L AS MG) (00925)	SODIUM DIS- SOLVED (MG/L AS NA) (00930)
NEW RIVER-CAVE CREEK										
A-04-02 11ADB	334231112070901	05-11-99	422	7.7	28.5	130	27	16		37
A-05-02 03DCB	334801112083201	06-02-99	515	7.9	31.5	86	17	10		78
A-06-04 26DCC	334941111545901	05-12-99	463	7.8	27.0	130	22	18		45
PEACH SPRINGS CANYON										
B-25-11 02CBC	353444113254901	06-09-99	669	7.6	19.5	300	59	36		20
PUERCO-RUN:										
A-18-24 09ABB	345850113475001	06-03-99	2500	8.1	16.0	160	44	13		474
RANEGRAS PLAIN										
B-03-14 11DC	333631113394001	05-01-99	1620	7.9	31.5	150	58	2.3		262
B-04-14 04ABD1	334320113420601	08-11-99	460	8.5	33.0	13	4.2	4.4		96
B-04-14 19BAA	334054113442901	08-10-99	1800	8.0	29.0	78	25	3.8		310
B-04-14 19BDD1	334029113443301	08-10-99	2400	8.0	29.0	200	57	15		504
B-04-14 19DAA	334026113435901	08-10-99	3500	7.8	29.0	380	100	28		592
B-04-14 29BAA	334002113432701	08-10-99	2250	7.9	29.0	230	63	17		381
B-04-14 32BAA	333910113432801	08-10-99	1650	8.3	30.0	90	25	6.4		288
B-04-15 13BDA	334122113453802	08-10-99	1800	8.0	31.0	150	58	1.5		266
B-04-15 14AAA	334147113460301	08-10-99	3250	7.8	32.0	470	180	7.8		507
B-04-15 14BAA	334148113463601	08-10-99	3750	7.8	32.0	880	340	4.1		536
B-04-16 18BCC2	334123113572201	08-11-99	910	7.3	31.0	240	75	12		96
B-04-16 19ABA	334053113564001	08-11-99	1160	7.3	32.0	460	170	8.6		81
B-04-16 19BCA3	334038113571301	08-11-99	560	7.6	29.0	72	13	9.1		99
B-04-16 19BCB	334040113572101	05-04-99	704	7.9	31.0	100	16	15		115
B-05-15 04BAA	334842113493901	08-12-99	1650	7.8	30.0	170	48	12		257
B-05-15 06ACB	334826113513801	05-06-99	4180	7.7	27.5	470	140	29		694
B-06-15 30AAA	335025113510701	08-12-99	1480	7.8	30.0	120	31	8.9		239
B-06-15 30DAA	335000113511001	08-12-99	1420	7.8	30.0	100	29	7.0		245
B-06-15 32DAD	334903113500601	08-12-99	1450	7.9	29.0	120	33	7.8		245
B-06-16 15BCC	335145113551701	08-18-99	2450	7.6	28.0	340	100	22		469
B-06-16 15CDB1	335129113545901	08-18-99	4100	7.4	27.0	640	190	41		671
B-06-16 27BBB	335024113551701	08-18-99	3900	7.4	27.0	530	170	19		587
B-06-16 34BBB	334931113551701	08-18-99	1180	7.8	28.0	150	59	7.9		177
B-07-17 22CDA	335550114010501	08-17-99	1480	7.9	30.0	130	49	1.5		254
B-07-17 23CCB	335549114002701	08-17-99	1220	7.7	27.0	180	54	9.2		184
SACRAMENTO VALLEY										
B-17-18 12ABD	345239114084001	05-13-99	559	7.8	32.0	180	38	21		40
B-21-18 05DBD	351401114132401	05-12-99	600	8.0	39.0	130	32	13		64
SAFFORD BASIN										
D-07-26 15BCC	324926109405201	06-17-99	3000	7.6	19.0	270	75	19		538
D-09-26 18DDA	323850109430701	06-15-99	315	7.1	21.0	110	30	7.8		20
D-10-27 28DCD	323138109350701	06-15-99	340	8.9	26.0	5	2.0	0.089		76
SALT RIVER VALLEY										
B-06-03 33DCB	334848112342901	05-20-99	655	7.8	31.5	140	34	13		75
D-01-10 35DBC	331756111173701	05-13-99	1160	7.6	21.5	540	160	36		40
D-04-09 06AAA2	330704111272201	05-13-99	1950	7.2	25.5	520	150	35		170
SAN BERNARDINO VALLEY										
D-24-30 23BBA2	312001109154501	05-26-99	457	7.8	31.5	74	15	8.6		69
SAN FRANCISCO PEAKS										
A-22-05 16DBC	351716111520901	06-29-99	194	8.3	10.5	88	18	11		5.9
A-27-09 06ADB	354510111280101	08-19-99	--	7.5	18.5	520	120	56		173
SAN SIMON BASIN										
D-13-29 25CCC1	321552109205201	06-15-99	536	9.3	33.5	3	1.3	0.016		111
D-13-29 25CCC2	321552109205101	06-15-99	540	7.6	23.5	170	57	5.8		43
D-18-32 33CAA	314900109045501	05-27-99	164	6.7	19.0	40	12	2.2		17
D-20-32 29ABB	314001109054201	05-27-99	295	7.9	23.5	79	22	5.7		29
D-21-31 03BCD2	313754109104701	05-27-99	369	7.7	28.0	110	33	6.8		32
SNOWFLAKE										
A-13-21 26ADB2	342940110045101	06-02-99	333	7.3	14.5	120	25	15		15

## QUALITY OF WATER IN SELECTED WELLS IN ARIZONA, BY GROUND WATER AREA

## WATER-QUALITY DATA-Continued

LOCAL IDENT- IFIER	DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ANC WATER UNFLTRD FET FIELD (MG/L AS CACO3 (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)
NEW RIVER-CAVE CREEK										
A-04-02 11ADB	05-12-99	1	2.9	174	10	16	1.0	--	43	273
A-05-02 03DCB	06-02-99	4	3.7	206	15	17	3.2	--	54	345
A-06-04 26DCC	05-12-99	2	3.2	168	14	23	1.0	--	43	289
PEACH SPRINGS CANYON										
B-25-11 02CBC	06-09-99	.5	1.2	218	27	43	.19	--	16	386
PUERCO-ZUNI										
A-18-24 09ABB	06-03-99	16	2.2	503	290	330	1.3	--	17	1480
RANEGRAS PLAIN										
B-01-14 11DDC	05-01-99	9	2.6	64	350	200	2.8	--	22	956
B-04-14 04ABD1	08-11-99	12	2.1	128	41	31	.89	.16	17	280
B-04-14 19BAA	08-10-99	15	2.2	99	170	320	6.8	1.3	18	950
B-04-14 19BDD1	08-10-99	15	3.2	76	230	650	6.4	.42	17	1600
B-04-14 19DAA	08-10-99	13	7.3	82	510	720	4.9	.51	30	2100
B-04-14 29BAA	08-10-99	11	5.4	124	420	340	7.2	1.2	37	1390
B-04-14 32BAA	08-10-99	13	2.2	98	140	320	7.9	1.1	20	920
B-04-15 13BDA	08-10-99	9	3.4	88	290	220	7.9	.65	39	969
B-04-15 14AAA	08-10-99	10	4.8	45	780	510	6.5	1.6	29	2270
B-04-15 14BAA	08-10-99	8	3.8	23	1100	560	4.6	1.8	20	2680
B-04-16 18BCC2	08-11-99	3	3.2	144	150	84	.97	.41	35	584
B-04-16 19ABA	08-11-99	2	3.5	141	410	36	1.1	.17	36	854
B-04-16 19BCA3	08-11-99	5	4.1	230	23	26	.51	.049	20	353
B-04-16 19BCB	05-04-99	5	4.8	286	9.7	29	.38	--	31	420
B-05-15 04BAA	08-12-99	9	6.6	112	300	210	4.3	.60	39	942
B-05-15 06ACB	05-06-99	14	9.2	81	1200	550	4.3	--	34	2690
B-06-15 30AAA	08-12-99	10	4.8	122	250	190	6.4	.62	37	865
B-06-15 30DAA	08-12-99	11	4.8	121	250	200	6.4	.64	39	874
B-06-15 32DAD	08-12-99	10	5.6	107	260	190	6.0	.61	39	880
B-06-16 15BCC	08-18-99	11	8.2	83	520	520	3.7	1.9	36	1760
B-06-16 15CDB1	08-18-99	12	11	74	880	770	3.4	2.6	39	2700
B-06-16 27BBB	08-18-99	11	5.8	42	410	940	3.7	3.1	18	2220
B-06-16 34BBB	08-18-99	6	1.2	46	280	130	5.3	.43	41	738
B-07-17 22CDA	08-17-99	10	3.4	49	330	180	4.8	.57	23	894
B-07-17 23CCB	08-17-99	6	4.9	148	220	140	3.2	.40	33	752
SACRAMENTO VALLEY										
B-17-18 12ABD	05-13-99	1	3.8	132	51	60	1.2	--	34	338
B-21-18 05DBD	05-12-99	2	9.3	108	100	56	.75	--	48	397
SAFFORD BASIN										
D-07-26 15BCC	06-17-99	14	5.8	403	300	500	4.0	--	54	1770
D-09-26 18DDA	06-15-99	8	.92	82	51	6.5	.83	--	39	214
D-10-27 28DCD	06-15-99	14	.68	133	12	9.5	5.0	--	39	225
SALT RIVER VALLEY										
B-06-03 33DCB	05-20-99	3	2.8	143	83	58	1.6	--	33	391
D-01-10 35DBC	05-13-99	8	3.5	231	320	40	.34	--	37	781
D-04-09 06AAA2	05-13-99	3	6.0	139	220	360	.67	--	32	1140
SAN BERNARDINO VALLEY										
D-24-30 23BBA2	05-26-99	3	2.5	208	11	6.5	.57	--	30	273
SAN FRANCISCO PEAKS										
A-22-05 16DBC	06-29-99	3	1.2	93	3.8	2.4	<.10	--	22	122
A-27-09 06ADB	08-19-99	3	4.3	344	110	320	.44	--	13	994
SAN SIMON BASIN										
D-13-29 25CCC1	06-15-99	26	.49	109	93	24	2.5	--	22	321
D-13-29 25CCC2	06-15-99	1	1.4	142	47	38	1.4	--	31	334
D-18-32 13CAA	05-27-99	1	1.9	52	7.7	8.8	.69	--	60	147
D-20-32 29ABB	05-27-99	1	4.1	127	8.9	4.8	2.3	--	48	203
D-21-31 03BCD2	05-27-99	1	7.6	172	7.4	5.5	1.5	--	52	251
SNOWFLAKE										
A-13-21 26ADB2	06-02-99	.6	3.0	94	56	11	.13	--	23	206

## WATER-QUALITY DATA--Continued

LOCAL IDENT- IFIER	DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00611)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
NEW RIVER-CAVE CREEK										
A-04-02 11ADB	05-12-99	<.010	3.58	.024	.07	--	--	79	--	--
A-05-02 03DCB	06-02-99	<.010	5.19	.030	.09	35	--	146	--	--
A-06-04 26DCC	05-12-99	<.010	4.33	.010	.03	--	--	87	--	--
PEACH SPRINGS CANYON										
B-25-11 02CBC	06-09-99	<.010	12.1	.015	.05	--	--	77	--	--
PUERCO-ZUNI										
A-18-24 09ABB	06-01-99	<.010	<.050	.083	.25	--	--	497	--	--
RANEGRAS PLAIN										
B-03-14 11DEC	05-03-99	<.010	5.51	.012	.04	--	--	846	--	--
B-04-14 04ABD1	08-11-99	<.010	2.08	<.010	--	15	3.1	113	25	<1.0
B-04-14 19BAA	08-10-99	<.010	9.45	<.010	--	32	42	700	80	<1.0
B-04-14 19BDD1	08-10-99	<.010	17.2	.013	.04	23	135	594	84	<1.0
B-04-14 19DAA	08-10-99	<.010	13.5	<.010	--	13	79	889	72	<1.0
B-04-14 29BAA	08-10-99	<.010	9.66	<.010	--	35	33	877	88	<1.0
B-04-14 32BAA	08-10-99	<.010	11.1	<.010	--	36	50	665	110	<1.0
B-04-15 13BDA	08-10-99	<.010	5.97	<.010	--	38	22	875	78	<1.0
B-04-15 14AAA	08-10-99	<.010	13.1	<.010	--	30	41	975	68	<1.0
B-04-15 14BAA	08-10-99	.041	15.6	<.010	--	20	28	1110	37	<1.0
B-04-16 18BCC2	08-11-99	<.010	7.51	<.010	--	20	33	323	17	<1.0
B-04-16 19ABA	08-11-99	<.010	4.23	<.010	--	16	21	305	7.8	1.5
B-04-16 19BCA3	08-11-99	<.010	4.41	<.010	--	<1	5.8	358	<1.0	<1.0
B-04-16 19BCB	05-04-99	<.010	6.05	.018	.06	--	--	396	16	--
B-05-15 04BAA	08-12-99	.061	1.46	<.010	--	11	26	1020	44	1.1
B-05-15 06ACB	05-06-99	<.010	5.67	.012	.04	--	--	2000	--	--
B-06-15 30AAA	08-12-99	<.010	5.22	<.010	--	15	21	870	72	<1.0
B-06-15 30DAA	08-12-99	<.010	5.61	<.010	--	21	20	865	77	<1.0
B-06-15 32DAD	08-12-99	<.010	4.89	<.010	--	18	21	1040	62	<1.0
B-06-16 15BCC	08-18-99	<.010	6.29	<.010	--	9	21	1290	147	<1.0
B-06-16 15CDB1	08-18-99	<.010	8.64	<.010	--	8	30	1490	138	<1.0
B-06-16 27BBB	08-18-99	<.010	4.02	<.010	--	2	22	1350	89	<1.0
B-06-16 34BBB	08-18-99	<.010	4.53	<.010	--	80	11	933	45	<1.0
B-07-17 22CDA	08-17-99	<.010	3.57	<.010	--	25	20	951	42	<1.0
B-07-17 23CCB	08-17-99	<.010	3.10	<.010	--	10	24	623	23	<1.0
SACRAMENTO VALLEY										
B-17-18 12ABD	05-13-99	<.010	2.26	.024	.07	--	--	133	--	--
B-21-18 05DBD	05-12-99	<.010	1.73	.010	.03	--	--	168	16	--
SAFFORD BASIN										
D-07-26 15BCC	06-17-99	<.010	8.35	.058	.18	--	--	547	--	--
D-09-26 18DDA	06-15-99	<.010	1.94	.020	.06	--	--	E12	--	--
D-10-27 28DCD	06-15-99	<.010	.063	.043	.13	--	--	200	--	--
SALT RIVER VALLEY										
B-06-03 31DCB	05-20-99	<.010	1.28	.013	.04	--	--	290	--	--
D-01-10 35DBC	05-13-99	<.010	.934	.030	.09	--	--	45	--	--
D-04-09 06AAA2	05-13-99	<.010	17.3	<.010	--	--	--	131	--	--
SAN BERNARDINO VALLEY										
D-24-30 23BBA2	05-26-99	<.010	1.08	.014	.04	--	--	55	--	--
SAN FRANCISCO PEAKS										
A-22-05 16DBC	06-29-99	<.010	.372	.058	.18	--	--	E13	--	--
A-27-09 06ADB	08-19-99	<.010	.318	<.010	--	--	--	113	--	--
SAN SIMON BASIN										
D-13-29 25CCC1	06-15-99	<.010	.233	.031	.10	--	--	87	--	--
D-13-29 25CCC2	06-15-99	<.010	5.57	.015	.05	2	--	50	--	--
D-18-32 33CAA	05-27-99	<.010	1.10	.096	.29	--	--	E15	--	--
D-20-32 29ABB	05-27-99	<.010	.571	.015	.05	--	--	34	--	--
D-21-31 03BCD2	05-27-99	<.010	.488	.015	.05	--	--	25	--	--
SNOWFLAKE										
A-13-21 26ADB2	06-02-99	<.010	.145	.026	.08	--	--	E15	--	--

## QUALITY OF WATER IN SELECTED WELLS IN ARIZONA, BY GROUND WATER AREA

## WATER-QUALITY DATA-Continued

LOCAL IDENT- IFIER	DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (1056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NEW RIVER-CAVE CREEK										
A-04-02 11ACB	05-12-99	<10	--	--	<3.0	--	--	--	--	<20
A-05-02 03DCB	06-02-99	<10	--	--	<3.0	--	--	--	--	<20
A-06-04 26DCC	05-12-99	<10	--	--	<3.0	--	--	--	--	<20
PEACH SPRINGS CANYON										
B-25-11 02CBC	06-09-99	<10	--	--	<3.0	--	--	--	--	<20
PUERCO-ZUNI										
A-18-24 09ABB	06-03-99	E28	--	--	315	--	--	--	--	<60
RANEGRAS PLAIN										
B-03-14 11DDC	05-03-99	<10	--	--	<3.0	--	--	--	--	E13
B-04-14 04ABC	08-11-99	20	<1.0	13	<2.2	7.0	1	250	52	<20
B-04-14 19BAA	08-10-99	<10	<1.0	61	E2.0	11	3	309	57	<20
B-04-14 19BCC	08-10-99	<30	<1.0	96	<9.0	8.5	6	678	47	<60
B-04-14 19DAA	08-10-99	<30	<1.0	150	E4.6	9.7	6	1260	29	<60
B-04-14 29BAA	08-10-99	11	<1.0	97	<2.2	18	4	915	62	<20
B-04-14 32BAA	08-10-99	<10	<1.0	66	<2.2	14	3	424	78	E14
B-04-15 13BDA	08-10-99	E5.9	<1.0	57	<2.2	14	2	707	70	<20
B-04-15 14AAA	08-10-99	<30	<1.0	92	<9.0	12	6	1570	63	<60
B-04-15 14BAA	08-10-99	E15	<1.0	100	<9.0	15	6	2010	70	<60
B-04-16 18BCC2	08-11-99	E6.6	<1.0	66	<2.2	4.4	2	4100	7	<20
B-04-16 19ABA	08-11-99	<10	<1.0	66	<2.2	8.9	2	5630	<1	364
B-04-16 19BCA3	08-11-99	73	<1.0	22	145	4.3	<1	944	<1	<20
B-04-16 19BCB	05-04-99	<10	--	--	<3.0	--	--	719	--	97
B-05-15 04BAA	08-12-99	<10	<1.0	99	E1.5	22	2	1190	34	<20
B-05-15 06ACB	05-06-99	<30	--	--	E8.6	--	--	3620	--	E26
B-06-15 30AAA	08-12-99	E6.6	<1.0	81	<2.2	20	3	951	43	<20
B-06-15 30DAA	08-12-99	E5.7	<1.0	84	E2.0	16	3	750	50	<20
B-06-15 32DAD	08-12-99	<10	<1.0	100	<2.2	19	2	797	54	<20
B-06-16 15BCC	08-18-99	<30	<1.0	130	<9.0	11	7	3130	36	<60
B-06-16 15CDB1	08-18-99	<30	1.1	180	<9.0	6.9	9	5290	29	<60
B-06-16 27BBB	08-18-99	<30	<1.0	170	<9.0	20	8	15800	39	E22
B-06-16 34BBB	08-18-99	<10	<1.0	89	E1.7	27	<1	1050	37	E11
B-07-17 22CDA	08-17-99	<30	<1.0	150	<9.0	17	3	2480	15	E38
B-07-17 23CCB	08-17-99	<10	1.2	84	E1.5	15	1	1810	14	E12
SACRAMENTO VALLEY										
B-17-18 12ABD	05-13-99	<10	--	--	4.1	--	--	--	--	<20
B-21-18 05DBD	05-12-99	<10	--	--	E2.7	--	--	--	--	<20
SAFFORD BASIN										
D-07-26 15BCC	06-17-99	<30	--	--	<9.0	--	--	--	--	<60
D-09-26 18DDA	06-15-99	<10	--	--	<3.0	--	--	--	--	E8.7
D-10-27 28DCD	06-15-99	53	--	--	<3.0	--	--	--	--	25
SALT RIVER VALLEY										
B-06-03 33DCB	05-20-99	<10	--	--	<3.0	--	--	--	--	69
D-01-10 35DBC	05-13-99	10	--	--	<3.0	--	--	--	--	E9.1
D-04-09 06AAA2	05-13-99	10	--	--	<3.0	--	--	--	--	<20
SAN BERNARDINO VALLEY										
D-24-30 23BBA2	05-26-99	<10	--	--	<3.0	--	--	--	--	<20
SAN FRANCISCO PEAKS										
A-22-05 16DBC	06-29-99	<10	--	--	<3.0	--	--	--	--	52
A-27-09 06ADB	08-19-99	<10	--	--	3.7	--	--	--	--	652
SAN SIMON BASIN										
D-13-29 25CCC1	06-15-99	<10	--	--	<3.0	--	--	--	--	<20
D-13-29 25CCC2	06-15-99	<10	--	--	<3.0	--	--	--	--	<20
D-18-32 33CAA	05-27-99	<10	--	--	<3.0	--	--	--	--	<20
D-20-32 29ABB	05-27-99	<10	--	--	<3.0	--	--	--	--	E12
D-21-31 03BCD2	05-27-99	<10	--	--	<3.0	--	--	--	--	49
SNOWFLAKE										
A-13-21 26ADB2	06-02-99	<10	--	--	<3.0	--	--	--	--	<20

## WATER-QUALITY DATA-Continued

LOCAL IDENT- I- FIER	STATION	NUMBER	DATE	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
UPPER SAN PEDRO BASIN										
D-13-22 33DAC	321526110055701	05-25-99	353	7.6	30.0	100	33	5.4	36	
D-17-21 31DDA	315429110135201	06-14-99	1100	7.8	18.0	280	76	22	133	
D-22-20 01BBD	313253110162401	06-14-99	360	8.3	23.0	160	47	11	13	
D-24-21 03AAB	312255110113301	06-14-99	403	7.9	25.0	170	57	5.5	20	
UPPER SANTA CRUZ BASIN										
D-11-14 32CCC	322528110563301	03-23-99	267	7.7	22.0	96	27	6.6	18	
D-16-15 14ACB	320238110465201	03-25-99	997	7.8	25.5	390	120	24	60	
D-19-13 29CBB2	314448111023301	03-24-99	847	7.7	20.0	250	79	13	79	
D-19-17 17BBD	314719110383001	03-24-99	323	8.8	21.0	21	7.9	33	63	
D-22-13 34ADD UNSURV	312818110594501	03-23-99	638	7.4	19.5	230	73	12	41	
D-24-14 05ADB2	312223110554201	03-23-99	553	7.2	20.0	200	62	11	36	
UPPER VERDE RIVER										
A-13-05 04BBA	343313111495701	06-24-99	618	7.4	22.0	270	50	14	31	
A-13-05 17DCD1	342856111482701	06-21-99	1230	7.3	18.5	500	88	59	68	
A-14-05 01BCD	343811111463301	06-23-99	825	7.3	20.0	340	81	34	43	
A-15-03 12CDC	344213111591101	06-22-99	681	7.4	23.0	240	43	32	55	
A-15-04 02BCA1	344337111535701	06-22-99	1260	6.7	21.0	520	130	48	72	
A-16-02 12CAD2	344642112052001	06-30-99	722	7.3	27.0	330	81	32	27	
A-16-03 34ADC	344428112004801	06-22-99	572	7.3	21.0	270	62	29	16	
A-17-06 08BDC	345212111452001	06-23-99	314	7.8	17.0	160	36	17	5.3	
A-18-07 15CCC1	345612111385201	06-23-99	273	8.2	11.5	130	26	16	6.0	
A-20-07 20CCA	350547111405701	08-20-99	--	7.8	12.0	200	49	20	4.5	
VIRGIN RIVER										
B-41-15 33CAC	365429113554501	08-17-99	--	7.2	22.0	920	210	93	245	
WATERMAN WASH										
C-02-02 19AAD	331437112294401	05-19-99	1280	8.3	29.0	50	17	1.6	225	
WESTERN MEXICAN DRAINAGE										
C-17-05 17ACB UNSURV	315655112480301	03-22-99	780	8.0	33.0	110	25	11	109	
WHITE MOUNTAINS										
A-10-25 22BBD2	341516109412401	06-03-99	197	8.1	13.5	73	15	8.4	8.2	
WILLCOX BASIN										
D-13-24 05BAB	322023109551301	05-28-99	510	9.2	48.5	8	3.0	.033	106	
D-14-25 11CAA	321322109455301	05-25-99	958	7.6	20.0	210	48	21	120	
D-15-24 20CAC	320645109551501	05-25-99	4840	7.4	23.0	680	150	74	790	
D-17-28 14CCB3	315703109282301	05-26-99	330	7.6	19.0	110	35	6.1	24	
YUMA										
C-08-22 28CCC	324158114314501	03-24-99	3850	7.7	22.5	520	120	55	521	
C-10-24 12BCC	323430114405801	03-24-99	2230	7.7	25.5	530	140	44	279	

## QUALITY OF WATER IN SELECTED WELLS IN ARIZONA, BY GROUND WATER AREA

## WATER-QUALITY DATA--Continued

LOCAL IDENT- I- FIER	DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ANC WATER UNFLTRD PET FIELD MG/L AS CAC03 (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS P) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
UPPER SAN PEDRO BASIN										
D-13-23 33DAC	05-25-99	2	1.6	170	3.2	7.8	.57	--	52	244
D-17-21 31DDA	06-14-99	3	1.8	391	99.	29	3.0	--	40	697
D-22-20 01BBD	06-14-99	.4	.68	179	4.7	4.6	.15	--	32	223
D-24-21 03AAB	06-14-99	.7	.85	188	15	6.6	.35	--	38	258
UPPER SANTA CRUZ BASIN										
D-11-14 32CCC	03-23-99	.8	1.5	107	14	6.0	.33	--	38	184
D-16-15 14ACB	03-25-99	1	2.9	197	300	19	.24	--	32	681
D-19-13 29CBB2	03-24-99	2	4.4	235	150	26	.88	--	39	548
D-19-17 17BBD	03-24-99	6	.95	122	37	2.8	.61	--	13	199
D-22-13 34ADD UNSURV	03-23-99	1	3.0	223	63	28	.44	--	36	397
D-24-14 05ADB2	03-23-99	1	3.5	199	40	23	.37	--	39	353
UPPER VERDE RIVER										
A-13-05 04BBA	06-24-99	.8	4.3	260	42	15	.72	--	79	495
A-13-05 27DCD1	06-21-99	1	4.2	--	240	52	.24	--	42	776
A-14-05 01BCD	06-23-99	1	6.0	380	12	34	.45	--	30	471
A-15-03 12CDC	06-22-99	2	5.0	321	9.2	25	.39	--	46	410
A-15-04 02BCA1	06-22-99	1	6.3	594	25	51	.39	--	17	706
A-16-02 12CAD2	06-30-99	.6	1.5	241	100	22	.19	--	21	444
A-16-03 34ADC	06-22-99	.4	1.9	238	6.6	30	.18	--	22	314
A-17-06 08BDC	06-23-99	.2	1.1	158	1.9	4.0	<.10	--	19	181
A-18-07 15CCC1	06-23-99	.2	<.10	125	3.3	5.0	<.10	--	22	--
A-20-07 20CCA	08-20-99	.1	.70	206	.78	3.2	.11	--	16	219
VIRGIN RIVER										
B-41-15 33CAC	08-17-99	4	16	246	720	360	.44	--	34	1830
WATERMAN WASH										
C-02-02 19AAD	05-19-99	14	4.2	66	110	240	4.6	--	17	688
WESTERN MEXICAN DRAINAGE										
C-17-05 17ACB UNSURV	03-22-99	5	4.4	162	56	88	2.2	--	69	479
WHITE MOUNTAINS										
A-10-25 22BBD2	06-03-99	.4	2.2	82	5.9	7.8	<.10	--	27	127
WILCOX BASIN										
D-13-24 05BAB	05-28-99	17	1.4	161	38	12	10	--	72	341
D-14-25 11CAA	05-25-99	4	1.9	229	82	120	3.0	--	37	570
D-15-24 20CAC	05-25-99	13	6.7	143	510	1200	1.6	--	21	2890
D-17-28 14CCB3	05-26-99	1	1.4	130	19	9.8	.50	--	40	219
YUMA										
C-08-22 28CCC	03-24-99	10	6.0	252	380	750	.98	--	28	2010
C-10-24 12BCC	03-24-99	5	5.1	204	310	460	.43	--	29	1390



## WATER-QUALITY DATA--Continued

LOCAL IDENT- IFIER	DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
UPPER SAN PEDRO BASIN										
D-13-22 33DAC	05-25-99	<.010	.739	.023	.07	--	--	51	--	--
D-17-21 31DDA	06-14-99	<.010	13.1	.017	.05	--	--	391	--	--
D-22-20 018BD	06-14-99	<.010	.688	.014	.04	--	--	E9.9	--	--
D-24-21 03AAB	06-14-99	<.010	.511	.026	.08	--	--	19	--	--
UPPER SANTA CRUZ BASIN										
D-11-14 32CCC	03-23-99	<.010	1.83	.037	.11	--	--	22	--	--
D-16-15 14ACB	03-25-99	<.010	1.63	.013	.04	--	--	98	--	--
D-19-13 29CBB2	03-24-99	<.010	2.45	.038	.12	--	--	136	--	--
D-19-17 178BD	03-24-99	<.010	.057	.011	.03	--	--	224	--	--
D-22-13 34ADD UNSURV	03-23-99	<.010	1.40	.041	.13	--	--	85	--	--
D-24-11 05ADE2	03-23-99	<.010	4.05	.310	.95	--	--	77	--	--
UPPER VERDE RIVER										
A-13-05 048BA	06-24-99	<.010	18.6	<.010	--	--	--	205	--	--
A-13-05 27DCD1	06-21-99	<.010	.621	.049	.15	--	--	341	--	--
A-14-05 01BCD	06-23-99	<.010	.497	.037	.11	--	--	532	--	--
A-15-03 12CDC	06-22-99	<.010	.304	.020	.06	--	--	164	--	--
A-15-04 02BCA1	06-22-99	<.010	<.050	<.010	--	--	--	549	--	--
A-16-02 12CAD2	06-30-99	<.010	2.21	.031	.10	--	--	142	--	--
A-16-03 34ADC	06-22-99	<.010	.732	<.010	--	--	--	48	--	--
A-17-06 08BDC	06-23-99	<.010	.092	.024	.07	--	--	E13	--	--
A-18-07 15CCCL	06-23-99	<.010	.352	<.010	--	--	--	<16	--	--
A-20-07 20CCA	08-20-99	<.010	.423	<.010	--	--	--	<16	--	--
VIRGIN RIVER										
B-41-15 33CAC	08-17-99	<.010	1.52	<.010	--	--	--	967	--	--
WATERMAN WASH										
C-02-02 19AAD	05-19-99	<.010	6.12	.010	.03	--	--	459	--	--
WESTERN MEXICAN DRAINAGE										
C-17-05 17ACB UNSURV	03-22-99	<.010	4.13	.014	.04	--	--	427	--	--
WHITE MOUNTAINS										
A-10-25 228BD2	06-03-99	<.010	.569	.059	.18	--	--	<16	--	--
WILLCOX BASIN										
D-13-24 05BAB	05-28-99	<.010	.301	.033	.10	71	--	118	--	--
D-14-25 11CAA	05-25-99	<.010	.719	.019	.06	--	--	214	--	--
D-15-24 20CAC	05-25-99	<.010	.773	.012	.04	--	--	1360	--	--
D-17-28 14CCB3	05-26-99	<.010	.988	.027	.08	--	--	33	--	--
YUMA										
C-08-22 28CCC	03-24-99	<.010	.587	.059	.18	--	--	762	--	--
C-10-24 12BCC	03-24-99	<.010	<.050	.012	.04	--	--	292	--	--

## QUALITY OF WATER IN SELECTED WELLS IN ARIZONA, BY GROUND WATER AREA

## WATER-QUALITY DATA--Continued

LOCAL IDENT- I- FIER	DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
UPPER SAN PEDRO BASIN										
D-13-22 33DAC	05-25-99	<10	--	--	<3.0	--	--	--	--	84
D-17-21 31DDA	06-14-99	<10	--	--	<3.0	--	--	--	--	<20
D-22-20 01BBD	06-14-99	<10	--	--	<3.0	--	--	--	--	<20
D-24-21 03AAB	06-14-99	<10	--	--	<3.0	--	--	--	--	33
UPPER SANTA CRUZ BASIN										
D-11-14 32CCC	03-23-99	<10	--	--	<3.0	--	--	--	--	<20
D-16-15 14ACB	03-25-99	<10	--	--	81.7	--	--	--	--	<20
D-19-13 29CBB2	03-24-99	<10	--	--	<3.0	--	--	--	--	59
D-19-17 178BD	03-24-99	10	--	--	6.0	--	--	--	--	<20
D-22-13 34ADD UNSURV	03-23-99	<10	--	--	9.4	--	--	--	--	<20
D-24-14 05ADB2	03-23-99	<10	--	--	<3.0	--	--	--	--	21
UPPER VERDE RIVER										
A-13-05 04BBA	06-24-99	<10	--	--	<3.0	--	--	--	--	<20
A-13-05 27DCD1	06-21-99	<10	--	--	3.3	--	--	--	--	<20
A-14-05 01BCD	06-23-99	<10	--	--	<3.0	--	--	--	--	813
A-15-03 12CDC	06-22-99	<10	--	--	<3.0	--	--	--	--	22
A-15-04 02BCA1	06-22-99	<10	--	--	<3.0	--	--	--	--	<20
A-16-02 12CAD2	06-30-99	<10	--	--	<3.0	--	--	--	--	<20
A-16-03 34ADC	06-22-99	<10	--	--	<3.0	--	--	--	--	<20
A-17-06 08BDC	06-23-99	<10	--	--	<3.0	--	--	--	--	<20
A-18-07 15CCC1	06-23-99	<10	--	--	<3.0	--	--	--	--	<20
A-20-07 20CCA	08-20-99	<10	--	--	<3.0	--	--	--	--	<20
VIRGIN RIVER										
B-41-15 33CAC	08-17-99	<30	--	--	<9.0	--	--	--	--	86
WATERMAN WASH										
C-02-02 19AAD	05-19-99	<10	--	--	<3.0	--	--	--	--	25
WESTERN MEXICAN DRAINAGE										
C-17-05 17ACB UNSURV	03-22-99	86.4	--	--	<3.0	--	--	--	--	<20
WHITE MOUNTAINS										
A-10-25 22BBD2	06-03-99	<10	--	--	<3.0	--	--	--	--	811
WILCOX BASIN										
D-13-24 05BAB	05-28-99	<10	--	--	<3.0	--	--	--	--	<20
D-14-25 11CAA	05-25-99	89.7	--	--	3.7	--	--	--	--	135
D-15-24 20CAC	05-25-99	180	--	--	218	--	--	--	--	449
D-17-28 14CCB3	05-26-99	<10	--	--	<3.0	--	--	--	--	816
YUMA										
C-08-22 28CCC	03-24-99	<30	--	--	887	--	<1	--	--	<60
C-10-24 12BCC	03-24-99	35	--	--	534	--	<1	--	--	<60

E Estimated

&lt; Actual value is known to be less than value shown.

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## CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
<i>Length</i>		
inch (in.)	$2.54 \times 10^1$	millimeter
	$2.54 \times 10^{-2}$	meter
foot (ft)	$3.048 \times 10^{-1}$	meter
mile (mi)	$1.609 \times 10^0$	kilometer
<i>Area</i>		
acre	$4.047 \times 10^3$	square meter
	$4.047 \times 10^{-1}$	square hectometer
	$4.047 \times 10^{-3}$	square kilometer
square mile (mi <sup>2</sup> )	$2.590 \times 10^0$	square kilometer
<i>Volume</i>		
gallon (gal)	$3.785 \times 10^0$	liter
	$3.785 \times 10^0$	cubic decimeter
	$3.785 \times 10^{-3}$	cubic meter
million gallons (Mgal)	$3.785 \times 10^3$	cubic meter
	$3.785 \times 10^{-3}$	cubic hectometer
cubic foot (ft <sup>3</sup> )	$2.832 \times 10^1$	cubic decimeter
	$2.832 \times 10^{-2}$	cubic meter
cubic-foot-per-second day [(ft <sup>3</sup> /s) d]	$2.447 \times 10^3$	cubic meter
	$2.447 \times 10^{-3}$	cubic hectometer
acre-foot (acre-ft)	$1.233 \times 10^3$	cubic meter
	$1.233 \times 10^{-3}$	cubic hectometer
	$1.233 \times 10^{-6}$	cubic kilometer
<i>Flow</i>		
cubic foot per second (ft <sup>3</sup> /s)	$2.832 \times 10^1$	liter per second
	$2.832 \times 10^1$	cubic decimeter per second
	$2.832 \times 10^{-2}$	cubic meter per second
gallon per minute (gal/min)	$6.309 \times 10^{-2}$	liter per second
	$6.309 \times 10^{-2}$	cubic decimeter per second
	$6.309 \times 10^{-5}$	cubic meter per second
million gallons per day (Mgal/d)	$4.381 \times 10^1$	cubic decimeter per second
	$4.381 \times 10^{-2}$	cubic meter per second
<i>Mass</i>		
ton (short)	$9.072 \times 10^{-1}$	megagram or metric ton

*Sea level:* In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

**U.S. DEPARTMENT OF THE INTERIOR**  
**U.S. Geological Survey**  
**520 N. Park Avenue, Suite 221**  
**Tucson AZ 85719**



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# Department of Pesticide Regulation



Gray Davis  
Governor

Winston H. Hickox  
Secretary, California  
Environmental  
Protection Agency

Paul E. Helliker  
Director

## MEMORANDUM

TO: Philip Gruenberg, Executive Officer  
Colorado River Basin Regional  
Water Quality Control Board  
73-720 Fred Waring Drive, Suite 100  
Palm Desert, California 92260-2564

FROM: Paul E. Helliker  
Director  
(916) 445-4000

*Paul Helliker*

DATE: April 5, 2001

SUBJECT: PUBLIC SOLICITATION OF WATER QUALITY INFORMATION FOR  
303(d) LIST PREPARATION

Regional Water Quality Control Boards are, or will soon be, requesting information that may assist in the development of lists of impaired water bodies as required by section 303(d) of the Clean Water Act. The Department of Pesticide Regulation (DPR) would like to notify you of data that may be useful in developing the lists.

DPR's surface water database contains reports of sampling of surface waters for pesticides. It includes studies conducted by both DPR and other entities in the public and private sectors. A CD ROM containing the database was sent to each regional board. Updated information is available on DPR's Web site at <<http://www.cdpr.ca.gov/docs/surfwatr/surfddata.htm>>. The Web site also provides a contact for further information.

In addition, DPR has conducted and reported on a number of studies that may be of interest to you. Reports have been provided to appropriate regional boards and can also be found on DPR's Web site. These include:

- Studies conducted by DPR's Environmental Hazards Assessment Program  
<<http://www.cdpr.ca.gov/docs/empm/pubs/ehapreps.htm>>
- DPR reports published in refereed publications  
<<http://www.cdpr.ca.gov/docs/empm/pubs/ehapref.htm>>
- Monitoring for the Glassy-Winged Sharpshooter Project  
<<http://www.cdpr.ca.gov/docs/gwss>>
- Monitoring for Red Imported Fire Ant Project  
<<http://www.cdpr.ca.gov/docs/rifa>>

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Philip Gruenberg  
April 5, 2001  
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- National Forest Herbicide Monitoring Project  
<<http://www.cdpr.ca.gov/docs/empm/pubs/forest/forstprj.htm>>
- Northwestern California Tribal Territories Herbicide Monitoring Project  
<<http://www.cdpr.ca.gov/docs/empm/pubs/tribal/tribproj.htm>>

If you would like further information about any of these resources, please feel free to call Kathy Brunetti, DPR's Management Agency Agreement Coordinator, at (916) 324-4100 or e-mail her at <[brunetti@empm.cdpr.ca.gov](mailto:brunetti@empm.cdpr.ca.gov)>.

cc: Walt Shannon, Management Agency Agreement Coordinator  
State Water Resources Control Board  
Stefan Lorenzato, Total Maximum Daily Load Coordinator  
State Water Resources Control Board  
~~Jose Angel~~, Designated Pesticide Contact  
Colorado River Basin Regional Water Quality Control Board  
Kathy Brunetti



NZ

File Code: 2500

Date: May 10, 2001

Teresa Newkirk  
Colorado River Basin Regional Water  
Quality Control Board (Region 7)  
73-720 Fred Waring Drive,-Suite 100  
Palm Desert, CA 92260

Re: Response to Request for Water Quality Information

Dear Ms. Newkirk:


This letter is in response to your March 14, 2001 request for data and information on the quality of surface waters of the State. The Southern California Province, including the Los Padres, Angeles, San Bernardino, and Cleveland National Forests are currently in the process of revising or updating our four Forest Land and Resources Management Plans (FLRMP). During this effort we will be assembling and analyzing available water quality data and watershed condition information to define water resource goals, objectives and, as necessary, develop new standards and guidelines to protect and maintain riparian and water resources.

In addition to our on-going work on the FLRMP revisions, this past year the Forest conducted Watershed Condition Assessments on all 31 of our 5<sup>th</sup> field watersheds. This effort included a Geographic Information Systems (GIS) assessment of road interactions on the hydrology, soils and geology within each 5<sup>th</sup> field watershed. The assessment also included professional judgment ratings of indicators of watershed condition such as floodplain connectivity, water quality, water quantity, stream corridor vegetation, channel stability, and aquatic integrity.

We are very interested in working closely with the State Water Resources Control Board (SWRCB) in your efforts to revise the list of waters considered by the State to be impaired (*not attaining water quality standards*) now and during the public process to be conducted during December 2001 through March 2002. We would like to meet with you in the near future to discuss this recent solicitation of water quality information and explain our processes and timelines for completing the FLRMP revisions.

We look forward to working with you in the protection and maintenance of the water resources on the San Bernardino National Forest. Please contact Gil Garcia, Forest Hydrologist at (909) 884-6634 ext. 3160 for further information.

Respectfully,

  
for GENE ZIMMERMAN  
Forest Supervisor

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**BIG BEAR AREA  
REGIONAL WASTEWATER AGENCY**  
P.O. Box 517, 122 Palomino Drive, Big Bear City, CA 92314-0517  
(909) 584-4018 • FAX (909) 585-4340  
Email: [info@bbarwa.org](mailto:info@bbarwa.org) • Internet: [www.bbarwa.org](http://www.bbarwa.org)

---

May 15, 2001

To: Teresa Newkirk  
California Regional Water Quality Control Board  
Colorado River Basin Region  
73-720 Fred Waring Drive, Suite 100  
Palm Desert, CA 92260

From: Bob Sellards

Subject: Big Bear Lake Water Quality Information

In response to your "Public Solicitation of Water Quality Information" letter dated February 28, 2001, the Big Bear Area Regional Wastewater Agency would like to provide you with the enclosed information on Big Bear Lake. Some of this information may have already been provided to you. The report is in Microsoft Excel 5 format. All of the analyses were performed either here at BBARWA, at Clinical Laboratories of San Bernardino, or at E.S. Babcock Laboratories in Riverside, CA. All of the laboratory procedures were performed by California State Department of Health Services-certified laboratories.

If you have any questions, please call.

*Bob Sellards*

Bob Sellards  
Senior Laboratory Analyst  
BBARWA

Cc: Sheila Hamilton  
Steve Schindler

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REGION 7

~ JOINT POWERS AGENCY ~

Big Bear City Community Services District • City of Big Bear Lake • San Bernardino County Service Area 53B

<u>Location</u>	<u>SampleDate</u>	<u>SampleTime</u>	<u>Analysis</u>	<u>Result</u>
Big Bear Lake - Site #1	10/28/1998		9:40 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #1	11/19/1998		9:47 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #1	04/21/1999		9:17 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #1	09/28/1999		10:48 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #1	12/14/1999		8:30 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #1	08/20/1998		8:27 Boron (mg/l)	<0.100
Big Bear Lake - Site #1	08/28/1998		9:25 Boron (mg/l)	<0.100
Big Bear Lake - Site #1	09/02/1998		9:25 Boron (mg/l)	<0.100
Big Bear Lake - Site #1	09/09/1998		9:24 Boron (mg/l)	<0.100
Big Bear Lake - Site #1	09/16/1998		9:11 Boron (mg/l)	<0.100
Big Bear Lake - Site #1	10/28/1998		9:40 Boron (mg/l)	<0.100
Big Bear Lake - Site #1	11/19/1998		9:47 Boron (mg/l)	<0.100
Big Bear Lake - Site #1	04/21/1999		9:17 Boron (mg/l)	<0.100
Big Bear Lake - Site #1	09/28/1999		10:48 Boron (mg/l)	<0.100
Big Bear Lake - Site #1	12/14/1999		8:30 Boron (mg/l)	<0.100
Big Bear Lake - Site #1	08/20/1998		8:27 Chloride (mg/l)	9.3
Big Bear Lake - Site #1	08/28/1998		9:25 Chloride (mg/l)	9.4
Big Bear Lake - Site #1	09/02/1998		9:25 Chloride (mg/l)	9.3
Big Bear Lake - Site #1	09/09/1998		9:24 Chloride (mg/l)	9.40
Big Bear Lake - Site #1	09/16/1998		9:11 Chloride (mg/l)	9.70
Big Bear Lake - Site #1	10/28/1998		9:40 Chloride (mg/l)	10.0
Big Bear Lake - Site #1	11/19/1998		9:47 Chloride (mg/l)	10.5
Big Bear Lake - Site #1	04/21/1999		9:17 Chloride (mg/l)	10.4
Big Bear Lake - Site #1	09/28/1999		10:48 Chloride (mg/l)	10.7
Big Bear Lake - Site #1	12/14/1999		8:30 Chloride (mg/l)	11.2
Big Bear Lake - Site #1	09/02/1998		9:25 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #1	09/09/1998		9:24 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #1	09/16/1998		9:11 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #1	10/28/1998		9:40 Coliform (MPN/100ml)	27
Big Bear Lake - Site #1	04/21/1999		9:17 Coliform (MPN/100ml)	7
Big Bear Lake - Site #1	09/28/1999		10:48 Coliform (MPN/100ml)	50
Big Bear Lake - Site #1	12/14/1999		8:30 Coliform (MPN/100ml)	<2
Big Bear Lake - Site #1	09/02/1998		9:25 Fecal Coliform (MPN/100r	<2
Big Bear Lake - Site #1	09/09/1998		9:24 Fecal Coliform (MPN/100r	<2
Big Bear Lake - Site #1	09/16/1998		9:11 Fecal Coliform (MPN/100r	21

<u>Location</u>	<u>SampleDate</u>	<u>SampleTime</u>	<u>Analysis</u>	<u>Result</u>
Big Bear Lake - Site #1	10/28/1998		9:40 Fecal Coliform (MPN/100r 6	
Big Bear Lake - Site #1	04/21/1999		9:17 Fecal Coliform (MPN/100r <2	
Big Bear Lake - Site #1	09/28/1999		10:48 Fecal Coliform (MPN/100r 4	
Big Bear Lake - Site #1	12/14/1999		8:30 Fecal Coliform (MPN/100r <2	
Big Bear Lake - Site #1	09/28/1999		10:48 Fecal Streptococcus (MPN <2	
Big Bear Lake - Site #1	12/14/1999		8:30 Fecal Streptococcus (MPN <2	
Big Bear Lake - Site #1	08/20/1998		8:27 Fluoride (mg/l)	0.19
Big Bear Lake - Site #1	08/28/1998		9:25 Fluoride (mg/l)	0.217
Big Bear Lake - Site #1	09/02/1998		9:25 Fluoride (mg/l)	0.21
Big Bear Lake - Site #1	09/09/1998		9:24 Fluoride (mg/l)	0.225
Big Bear Lake - Site #1	09/16/1998		9:11 Fluoride (mg/l)	0.217
Big Bear Lake - Site #1	10/28/1998		9:40 Fluoride (mg/l)	0.183
Big Bear Lake - Site #1	11/19/1998		9:47 Fluoride (mg/l)	0.213
Big Bear Lake - Site #1	04/21/1999		9:17 Fluoride (mg/l)	<0.10
Big Bear Lake - Site #1	09/28/1999		10:48 Fluoride (mg/l)	0.148
Big Bear Lake - Site #1	12/14/1999		8:30 Fluoride (mg/l)	0.211
Big Bear Lake - Site #1	08/20/1998		8:27 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #1	08/28/1998		9:25 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #1	09/02/1998		9:25 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #1	09/09/1998		9:24 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #1	09/16/1998		9:11 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #1	10/28/1998		9:40 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #1	11/19/1998		9:47 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #1	04/21/1999		9:17 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #1	09/28/1999		10:48 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #1	12/14/1999		8:30 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #1	08/20/1998		8:27 o-Phosphate (mg/l)	0.160
Big Bear Lake - Site #1	08/28/1998		9:25 o-Phosphate (mg/l)	0.140
Big Bear Lake - Site #1	09/02/1998		9:25 o-Phosphate (mg/l)	0.040
Big Bear Lake - Site #1	09/09/1998		9:24 o-Phosphate (mg/l)	0.060
Big Bear Lake - Site #1	09/16/1998		9:11 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #1	10/28/1998		9:40 o-Phosphate (mg/l)	0.070
Big Bear Lake - Site #1	11/19/1998		9:47 o-Phosphate (mg/l)	0.020
Big Bear Lake - Site #1	04/21/1999		9:17 o-Phosphate (mg/l)	0.020
Big Bear Lake - Site #1	09/28/1999		10:48 o-Phosphate (mg/l)	0.020



Big Bear Lake - Site #1	12/14/1999	8:30 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #1	08/28/1998	9:25 pH (SU)	8.46
Big Bear Lake - Site #1	09/02/1998	9:25 pH (SU)	8.15
Big Bear Lake - Site #1	09/09/1998	9:24 pH (SU)	7.64
Big Bear Lake - Site #1	09/16/1998	9:11 pH (SU)	9.39
Big Bear Lake - Site #1	10/28/1998	9:40 pH (SU)	8.62
Big Bear Lake - Site #1	08/20/1998	8:27 Sodium (mg/l)	12.5
Big Bear Lake - Site #1	08/28/1998	9:25 Sodium (mg/l)	11.3
Big Bear Lake - Site #1	09/02/1998	9:25 Sodium (mg/l)	11.4
Big Bear Lake - Site #1	09/09/1998	9:24 Sodium (mg/l)	12.3
Big Bear Lake - Site #1	09/16/1998	9:11 Sodium (mg/l)	11.1
Big Bear Lake - Site #1	10/28/1998	9:40 Sodium (mg/l)	11.7
Big Bear Lake - Site #1	11/19/1998	9:47 Sodium (mg/l)	11.9
Big Bear Lake - Site #1	04/21/1999	9:17 Sodium (mg/l)	13.2
Big Bear Lake - Site #1	09/28/1999	10:48 Sodium (mg/l)	14.1
Big Bear Lake - Site #1	12/14/1999	8:30 Sodium (mg/l)	15.3
Big Bear Lake - Site #1	08/20/1998	8:27 Sulfate (mg/l)	8.1
Big Bear Lake - Site #1	08/28/1998	9:25 Sulfate (mg/l)	8.2
Big Bear Lake - Site #1	09/02/1998	9:25 Sulfate (mg/l)	8.4
Big Bear Lake - Site #1	09/09/1998	9:24 Sulfate (mg/l)	8.50
Big Bear Lake - Site #1	10/28/1998	9:40 Sulfate (mg/l)	8.40
Big Bear Lake - Site #1	11/19/1998	9:47 Sulfate (mg/l)	8.55
Big Bear Lake - Site #1	04/21/1999	9:17 Sulfate (mg/l)	9.00
Big Bear Lake - Site #1	09/28/1999	10:48 Sulfate (mg/l)	9.53
Big Bear Lake - Site #1	12/14/1999	8:30 Sulfate (mg/l)	9.15
Big Bear Lake - Site #1	10/28/1998	9:40 TKN (mg/l)	<1.0
Big Bear Lake - Site #1	11/19/1998	9:47 TKN (mg/l)	<1.0
Big Bear Lake - Site #1	04/21/1999	9:17 TKN (mg/l)	<1.0
Big Bear Lake - Site #1	09/28/1999	10:48 TKN (mg/l)	4.50
Big Bear Lake - Site #1	12/14/1999	8:30 TKN (mg/l)	<1.0
<u>Location</u>	<u>SampleDate</u>	<u>Analysis</u>	<u>Result</u>
Big Bear Lake - Site #2	10/28/1998	9:20 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #2	11/19/1998	9:42 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #2	04/21/1999	9:20 Ammonia-N (mg/l)	0.50
Big Bear Lake - Site #2	09/28/1999	10:53 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #2	12/14/1999	8:32 Ammonia-N (mg/l)	<0.50

Big Bear Lake - Site #2	08/20/1998	8:47 Boron (mg/l)	<0.100
Big Bear Lake - Site #2	08/28/1998	9:20 Boron (mg/l)	<0.100
Big Bear Lake - Site #2	09/02/1998	9:20 Boron (mg/l)	<0.100
Big Bear Lake - Site #2	09/09/1998	9:15 Boron (mg/l)	<0.100
Big Bear Lake - Site #2	09/16/1998	9:15 Boron (mg/l)	<0.100
Big Bear Lake - Site #2	10/28/1998	9:20 Boron (mg/l)	<0.100
Big Bear Lake - Site #2	11/19/1998	9:42 Boron (mg/l)	<0.100
Big Bear Lake - Site #2	04/21/1999	9:20 Boron (mg/l)	<0.100
Big Bear Lake - Site #2	09/28/1999	10:53 Boron (mg/l)	<0.100
Big Bear Lake - Site #2	12/14/1999	8:32 Boron (mg/l)	<0.100
Big Bear Lake - Site #2	08/20/1998	8:47 Chloride (mg/l)	7.9
Big Bear Lake - Site #2	08/28/1998	9:20 Chloride (mg/l)	9.5
Big Bear Lake - Site #2	09/02/1998	9:20 Chloride (mg/l)	9.3
Big Bear Lake - Site #2	09/09/1998	9:15 Chloride (mg/l)	9.30
Big Bear Lake - Site #2	09/16/1998	9:15 Chloride (mg/l)	9.70
Big Bear Lake - Site #2	10/28/1998	9:20 Chloride (mg/l)	9.80
Big Bear Lake - Site #2	11/19/1998	9:42 Chloride (mg/l)	10.3
Big Bear Lake - Site #2	04/21/1999	9:20 Chloride (mg/l)	10.4
Big Bear Lake - Site #2	09/28/1999	10:53 Chloride (mg/l)	10.6
Big Bear Lake - Site #2	12/14/1999	8:32 Chloride (mg/l)	11.2
Big Bear Lake - Site #2	09/02/1998	9:20 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #2	09/09/1998	9:15 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #2	09/16/1998	9:15 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #2	10/28/1998	9:20 Coliform (MPN/100ml)	60
Big Bear Lake - Site #2	04/21/1999	9:20 Coliform (MPN/100ml)	17
Big Bear Lake - Site #2	09/28/1999	10:53 Coliform (MPN/100ml)	17
Big Bear Lake - Site #2	12/14/1999	8:32 Coliform (MPN/100ml)	2
Big Bear Lake - Site #2	09/02/1998	9:20 Fecal Coliform (MPN/100r)	2
Big Bear Lake - Site #2	09/09/1998	9:15 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #2	09/16/1998	9:15 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #2	10/28/1998	9:20 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #2	04/21/1999	9:20 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #2	09/28/1999	10:53 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #2	12/14/1999	8:32 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #2	09/28/1999	10:53 Fecal Streptococcus (MPN)	<2
Big Bear Lake - Site #2	12/14/1999	8:32 Fecal Streptococcus (MPN)	<2

<u>Location</u>	<u>SampleDate</u>	<u>SampleTime</u>	<u>Analysis</u>	<u>Result</u>
Big Bear Lake - Site #2	08/20/1998		8:47 Fluoride (mg/l)	0.142
Big Bear Lake - Site #2	08/28/1998		9:20 Fluoride (mg/l)	0.182
Big Bear Lake - Site #2	09/02/1998		9:20 Fluoride (mg/l)	0.186
Big Bear Lake - Site #2	09/09/1998		9:15 Fluoride (mg/l)	0.215
Big Bear Lake - Site #2	09/16/1998		9:15 Fluoride (mg/l)	0.203
Big Bear Lake - Site #2	10/28/1998		9:20 Fluoride (mg/l)	0.208
Big Bear Lake - Site #2	11/19/1998		9:42 Fluoride (mg/l)	0.218
Big Bear Lake - Site #2	04/21/1999		9:20 Fluoride (mg/l)	<0.10
Big Bear Lake - Site #2	09/28/1999		10:53 Fluoride (mg/l)	0.148
Big Bear Lake - Site #2	12/14/1999		8:32 Fluoride (mg/l)	0.194
Big Bear Lake - Site #2	08/20/1998		8:47 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #2	08/28/1998		9:20 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #2	09/02/1998		9:20 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #2	09/09/1998		9:15 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #2	09/16/1998		9:15 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #2	10/28/1998		9:20 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #2	11/19/1998		9:42 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #2	04/21/1999		9:20 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #2	09/28/1999		10:53 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #2	12/14/1999		8:32 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #2	08/20/1998		8:47 o-Phosphate (mg/l)	0.110
Big Bear Lake - Site #2	08/28/1998		9:20 o-Phosphate (mg/l)	0.040
Big Bear Lake - Site #2	09/02/1998		9:20 o-Phosphate (mg/l)	0.040
Big Bear Lake - Site #2	09/09/1998		9:15 o-Phosphate (mg/l)	0.030
Big Bear Lake - Site #2	09/16/1998		9:15 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #2	10/28/1998		9:20 o-Phosphate (mg/l)	0.130
Big Bear Lake - Site #2	11/19/1998		9:42 o-Phosphate (mg/l)	0.020
Big Bear Lake - Site #2	04/21/1999		9:20 o-Phosphate (mg/l)	0.030
Big Bear Lake - Site #2	09/28/1999		10:53 o-Phosphate (mg/l)	0.020
Big Bear Lake - Site #2	12/14/1999		8:32 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #2	08/28/1998		9:20 pH (SU)	8.56
Big Bear Lake - Site #2	09/02/1998		9:20 pH (SU)	8.61
Big Bear Lake - Site #2	09/09/1998		9:15 pH (SU)	8.18
Big Bear Lake - Site #2	09/16/1998		9:15 pH (SU)	8.93
Big Bear Lake - Site #2	10/28/1998		9:20 pH (SU)	8.56

Location	SampleDate	SampleTime	Analysis	Result
Big Bear Lake - Site #2	08/20/1998		8:47 Sodium (mg/l)	12.9
Big Bear Lake - Site #2	08/28/1998		9:20 Sodium (mg/l)	11.4
Big Bear Lake - Site #2	09/02/1998		9:20 Sodium (mg/l)	11.4
Big Bear Lake - Site #2	09/09/1998		9:15 Sodium (mg/l)	12.2
Big Bear Lake - Site #2	09/16/1998		9:15 Sodium (mg/l)	10.5
Big Bear Lake - Site #2	10/28/1998		9:20 Sodium (mg/l)	11.5
Big Bear Lake - Site #2	11/19/1998		9:42 Sodium (mg/l)	12.0
Big Bear Lake - Site #2	04/21/1999		9:20 Sodium (mg/l)	13.0
Big Bear Lake - Site #2	09/28/1999		10:53 Sodium (mg/l)	13.7
Big Bear Lake - Site #2	12/14/1999		8:32 Sodium (mg/l)	15.1
Big Bear Lake - Site #2	08/20/1998		8:47 Sulfate (mg/l)	6.9
Big Bear Lake - Site #2	08/28/1998		9:20 Sulfate (mg/l)	8.3
Big Bear Lake - Site #2	09/02/1998		9:20 Sulfate (mg/l)	8.7
Big Bear Lake - Site #2	09/09/1998		9:15 Sulfate (mg/l)	8.50
Big Bear Lake - Site #2	09/16/1998		9:15 Sulfate (mg/l)	8.20
Big Bear Lake - Site #2	10/28/1998		9:20 Sulfate (mg/l)	8.30
Big Bear Lake - Site #2	11/19/1998		9:42 Sulfate (mg/l)	8.43
Big Bear Lake - Site #2	04/21/1999		9:20 Sulfate (mg/l)	9.00
Big Bear Lake - Site #2	09/28/1999		10:53 Sulfate (mg/l)	9.42
Big Bear Lake - Site #2	12/14/1999		8:32 Sulfate (mg/l)	9.20
Big Bear Lake - Site #2	10/28/1998		9:20 TKN (mg/l)	<1.0
Big Bear Lake - Site #2	11/19/1998		9:42 TKN (mg/l)	<1.0
Big Bear Lake - Site #2	04/21/1999		9:20 TKN (mg/l)	<1.0
Big Bear Lake - Site #2	09/28/1999		10:53 TKN (mg/l)	3.30
Big Bear Lake - Site #2	12/14/1999		8:32 TKN (mg/l)	<1.0
Big Bear Lake - Site #3	10/28/1998		9:25 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #3	11/19/1998		9:35 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #3	04/21/1999		9:23 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #3	09/28/1999		10:59 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #3	12/14/1999		8:36 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #3	08/20/1998		9:10 Boron (mg/l)	<0.100
Big Bear Lake - Site #3	08/28/1998		9:15 Boron (mg/l)	<0.100
Big Bear Lake - Site #3	09/02/1998		9:15 Boron (mg/l)	<0.100
Big Bear Lake - Site #3	09/09/1998		9:11 Boron (mg/l)	<0.100
Big Bear Lake - Site #3	09/16/1998		9:20 Boron (mg/l)	<0.100

Big Bear Lake - Site #3	10/28/1998	9:25 Boron (mg/l)	<0.100
Big Bear Lake - Site #3	11/19/1998	9:35 Boron (mg/l)	<0.100
Big Bear Lake - Site #3	04/21/1999	9:23 Boron (mg/l)	<0.100
Big Bear Lake - Site #3	09/28/1999	10:59 Boron (mg/l)	<0.100
Big Bear Lake - Site #3	12/14/1999	8:36 Boron (mg/l)	<0.100
Big Bear Lake - Site #3	08/20/1998	9:10 Chloride (mg/l)	9.3
Big Bear Lake - Site #3	08/28/1998	9:15 Chloride (mg/l)	9.5
Big Bear Lake - Site #3	09/02/1998	9:15 Chloride (mg/l)	9.4
Big Bear Lake - Site #3	09/09/1998	9:11 Chloride (mg/l)	9.40
Big Bear Lake - Site #3	09/16/1998	9:20 Chloride (mg/l)	10.0
Big Bear Lake - Site #3	10/28/1998	9:25 Chloride (mg/l)	9.70
Big Bear Lake - Site #3	11/19/1998	9:35 Chloride (mg/l)	10.3
Big Bear Lake - Site #3	04/21/1999	9:23 Chloride (mg/l)	10.4
Big Bear Lake - Site #3	09/28/1999	10:59 Chloride (mg/l)	10.6
Big Bear Lake - Site #3	12/14/1999	8:36 Chloride (mg/l)	11.2
Big Bear Lake - Site #3	09/02/1998	9:15 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #3	09/09/1998	9:11 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #3	09/16/1998	9:20 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #3	10/28/1998	9:25 Coliform (MPN/100ml)	50
Big Bear Lake - Site #3	04/21/1999	9:23 Coliform (MPN/100ml)	2
Big Bear Lake - Site #3	09/28/1999	10:59 Coliform (MPN/100ml)	11
Big Bear Lake - Site #3	12/14/1999	8:36 Coliform (MPN/100ml)	<2
Big Bear Lake - Site #3	09/02/1998	9:15 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #3	09/09/1998	9:11 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #3	09/16/1998	9:20 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #3	10/28/1998	9:25 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #3	04/21/1999	9:23 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #3	09/28/1999	10:59 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #3	12/14/1999	8:36 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #3	09/28/1999	10:59 Fecal Streptococcus (MPN)	<2
Big Bear Lake - Site #3	12/14/1999	8:36 Fecal Streptococcus (MPN)	2
Big Bear Lake - Site #3	08/20/1998	9:10 Fluoride (mg/l)	0.205
Big Bear Lake - Site #3	08/28/1998	9:15 Fluoride (mg/l)	0.193
Big Bear Lake - Site #3	09/02/1998	9:15 Fluoride (mg/l)	0.227
Big Bear Lake - Site #3	09/09/1998	9:11 Fluoride (mg/l)	0.223
Big Bear Lake - Site #3	09/16/1998	9:20 Fluoride (mg/l)	0.199

<u>Location</u>	<u>SampleDate</u>	<u>SampleTime</u>	<u>Analysis</u>	<u>Result</u>
Big Bear Lake - Site #3	10/28/1998		9:25 Fluoride (mg/l)	0.174
Big Bear Lake - Site #3	11/19/1998		9:35 Fluoride (mg/l)	0.229
Big Bear Lake - Site #3	04/21/1999		9:23 Fluoride (mg/l)	<0.10
Big Bear Lake - Site #3	09/28/1999		10:59 Fluoride (mg/l)	0.141
Big Bear Lake - Site #3	12/14/1999		8:36 Fluoride (mg/l)	0.207
Big Bear Lake - Site #3	08/20/1998		9:10 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #3	08/28/1998		9:15 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #3	09/02/1998		9:15 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #3	09/09/1998		9:11 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #3	09/16/1998		9:20 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #3	10/28/1998		9:25 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #3	11/19/1998		9:35 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #3	04/21/1999		9:23 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #3	09/28/1999		10:59 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #3	12/14/1999		8:36 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #3	08/20/1998		9:10 o-Phosphate (mg/l)	0.0600
Big Bear Lake - Site #3	08/28/1998		9:15 o-Phosphate (mg/l)	0.040
Big Bear Lake - Site #3	09/02/1998		9:15 o-Phosphate (mg/l)	0.050
Big Bear Lake - Site #3	09/09/1998		9:11 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #3	09/16/1998		9:20 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #3	10/28/1998		9:25 o-Phosphate (mg/l)	0.060
Big Bear Lake - Site #3	11/19/1998		9:35 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #3	04/21/1999		9:23 o-Phosphate (mg/l)	0.100
Big Bear Lake - Site #3	09/28/1999		10:59 o-Phosphate (mg/l)	0.020
Big Bear Lake - Site #3	12/14/1999		8:36 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #3	08/28/1998		9:15 pH (SU)	8.66
Big Bear Lake - Site #3	09/02/1998		9:15 pH (SU)	8.6
Big Bear Lake - Site #3	09/09/1998		9:11 pH (SU)	8.41
Big Bear Lake - Site #3	09/16/1998		9:20 pH (SU)	8.76
Big Bear Lake - Site #3	10/28/1998		9:25 pH (SU)	8.54
Big Bear Lake - Site #3	08/20/1998		9:10 Sodium (mg/l)	13
Big Bear Lake - Site #3	08/28/1998		9:15 Sodium (mg/l)	11.4
Big Bear Lake - Site #3	09/02/1998		9:15 Sodium (mg/l)	11.3
Big Bear Lake - Site #3	09/09/1998		9:11 Sodium (mg/l)	11.5
Big Bear Lake - Site #3	09/16/1998		9:20 Sodium (mg/l)	10.7

Big Bear Lake - Site #3	10/28/1998	9:25 Sodium (mg/l)	11.4
Big Bear Lake - Site #3	11/19/1998	9:35 Sodium (mg/l)	11.5
Big Bear Lake - Site #3	04/21/1999	9:23 Sodium (mg/l)	12.8
Big Bear Lake - Site #3	09/28/1999	10:59 Sodium (mg/l)	13.5
Big Bear Lake - Site #3	12/14/1999	8:36 Sodium (mg/l)	14.6
Big Bear Lake - Site #3	08/20/1998	9:10 Sulfate (mg/l)	8.2
Big Bear Lake - Site #3	08/28/1998	9:15 Sulfate (mg/l)	8.5
Big Bear Lake - Site #3	09/02/1998	9:15 Sulfate (mg/l)	8.3
Big Bear Lake - Site #3	09/09/1998	9:11 Sulfate (mg/l)	8.70
Big Bear Lake - Site #3	09/16/1998	9:20 Sulfate (mg/l)	8.10
Big Bear Lake - Site #3	10/28/1998	9:25 Sulfate (mg/l)	8.30
Big Bear Lake - Site #3	11/19/1998	9:35 Sulfate (mg/l)	8.37
Big Bear Lake - Site #3	04/21/1999	9:23 Sulfate (mg/l)	9.60
Big Bear Lake - Site #3	09/28/1999	10:59 Sulfate (mg/l)	9.51
Big Bear Lake - Site #3	12/14/1999	8:36 Sulfate (mg/l)	9.20
Big Bear Lake - Site #3	10/28/1998	9:25 TKN (mg/l)	<1.0
Big Bear Lake - Site #3	11/19/1998	9:35 TKN (mg/l)	<1.0
Big Bear Lake - Site #3	04/21/1999	9:23 TKN (mg/l)	<1.0
Big Bear Lake - Site #3	09/28/1999	10:59 TKN (mg/l)	2.50
Big Bear Lake - Site #3	12/14/1999	8:36 TKN (mg/l)	<1.0
<u>Location</u>	<u>SampleDate</u>	<u>SampleTime</u>	<u>Result</u>
Big Bear Lake - Site #4	10/28/1998	9:30 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #4	11/19/1998	9:25 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #4	04/21/1999	9:32 Ammonia-N (mg/l)	0.644
Big Bear Lake - Site #4	09/28/1999	11:05 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #4	12/14/1999	8:40 Ammonia-N (mg/l)	0.867
Big Bear Lake - Site #4	08/20/1998	9:34 Boron (mg/l)	<0.100
Big Bear Lake - Site #4	08/28/1998	9:10 Boron (mg/l)	<0.100
Big Bear Lake - Site #4	09/02/1998	9:08 Boron (mg/l)	<0.100
Big Bear Lake - Site #4	09/09/1998	9:02 Boron (mg/l)	<0.100
Big Bear Lake - Site #4	09/16/1998	9:25 Boron (mg/l)	<0.100
Big Bear Lake - Site #4	10/28/1998	9:30 Boron (mg/l)	<0.100
Big Bear Lake - Site #4	11/19/1998	9:25 Boron (mg/l)	<0.100
Big Bear Lake - Site #4	04/21/1999	9:32 Boron (mg/l)	<0.100
Big Bear Lake - Site #4	09/28/1999	11:05 Boron (mg/l)	<0.100
Big Bear Lake - Site #4	12/14/1999	8:40 Boron (mg/l)	<0.100

Big Bear Lake - Site #4	08/20/1998	9:34 Chloride (mg/l)	9.2
Big Bear Lake - Site #4	08/28/1998	9:10 Chloride (mg/l)	9.5
Big Bear Lake - Site #4	09/02/1998	9:08 Chloride (mg/l)	9.4
Big Bear Lake - Site #4	09/09/1998	9:02 Chloride (mg/l)	9.40
Big Bear Lake - Site #4	09/16/1998	9:25 Chloride (mg/l)	9.70
Big Bear Lake - Site #4	10/28/1998	9:30 Chloride (mg/l)	9.70
Big Bear Lake - Site #4	11/19/1998	9:25 Chloride (mg/l)	10.3
Big Bear Lake - Site #4	04/21/1999	9:32 Chloride (mg/l)	10.5
Big Bear Lake - Site #4	09/28/1999	11:05 Chloride (mg/l)	10.6
Big Bear Lake - Site #4	12/14/1999	8:40 Chloride (mg/l)	11.3
Big Bear Lake - Site #4	09/02/1998	9:08 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #4	09/09/1998	9:02 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #4	09/16/1998	9:25 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #4	10/28/1998	9:30 Coliform (MPN/100ml)	110
Big Bear Lake - Site #4	04/21/1999	9:32 Coliform (MPN/100ml)	<2
Big Bear Lake - Site #4	09/28/1999	11:05 Coliform (MPN/100ml)	50
Big Bear Lake - Site #4	12/14/1999	8:40 Coliform (MPN/100ml)	7
Big Bear Lake - Site #4	09/02/1998	9:08 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #4	09/09/1998	9:02 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #4	09/16/1998	9:25 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #4	10/28/1998	9:30 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #4	04/21/1999	9:32 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #4	09/28/1999	11:05 Fecal Coliform (MPN/100r)	<2
Big Bear Lake - Site #4	12/14/1999	8:40 Fecal Coliform (MPN/100r)	7
Big Bear Lake - Site #4	09/28/1999	11:05 Fecal Streptococcus (MPN)	<2
Big Bear Lake - Site #4	08/20/1998	8:40 Fecal Streptococcus (MPN)	<2
Big Bear Lake - Site #4	08/28/1998	9:34 Fluoride (mg/l)	0.177
Big Bear Lake - Site #4	09/02/1998	9:10 Fluoride (mg/l)	0.185
Big Bear Lake - Site #4	09/09/1998	9:08 Fluoride (mg/l)	0.175
Big Bear Lake - Site #4	09/16/1998	9:02 Fluoride (mg/l)	0.229
Big Bear Lake - Site #4	10/28/1998	9:25 Fluoride (mg/l)	0.229
Big Bear Lake - Site #4	11/19/1998	9:30 Fluoride (mg/l)	0.194
Big Bear Lake - Site #4	04/21/1999	9:25 Fluoride (mg/l)	0.226
Big Bear Lake - Site #4	09/28/1999	9:32 Fluoride (mg/l)	<0.10
Big Bear Lake - Site #4	12/14/1999	11:05 Fluoride (mg/l)	0.169
Big Bear Lake - Site #4		8:40 Fluoride (mg/l)	0.212



<u>Location</u>	<u>SampleDate</u>	<u>SampleTime</u>	<u>Analysis</u>	<u>Result</u>
Big Bear Lake - Site #4	08/20/1998		9:34 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #4	08/28/1998		9:10 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #4	09/02/1998		9:08 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #4	09/09/1998		9:02 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #4	09/16/1998		9:25 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #4	10/28/1998		9:30 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #4	11/19/1998		9:25 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #4	04/21/1999		9:32 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #4	09/28/1999		11:05 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #4	12/14/1999		8:40 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #4	08/20/1998		9:34 o-Phosphate (mg/l)	0.0400
Big Bear Lake - Site #4	08/28/1998		9:10 o-Phosphate (mg/l)	0.050
Big Bear Lake - Site #4	09/02/1998		9:08 o-Phosphate (mg/l)	0.060
Big Bear Lake - Site #4	09/09/1998		9:02 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #4	09/16/1998		9:25 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #4	10/28/1998		9:30 o-Phosphate (mg/l)	0.060
Big Bear Lake - Site #4	11/19/1998		9:25 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #4	04/21/1999		9:32 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #4	09/28/1999		11:05 o-Phosphate (mg/l)	0.030
Big Bear Lake - Site #4	12/14/1999		8:40 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #4	08/28/1998		9:10 pH (SU)	8.63
Big Bear Lake - Site #4	09/02/1998		9:08 pH (SU)	8.71
Big Bear Lake - Site #4	09/09/1998		9:02 pH (SU)	8.50
Big Bear Lake - Site #4	09/16/1998		9:25 pH (SU)	8.72
Big Bear Lake - Site #4	10/28/1998		9:30 pH (SU)	8.46
Big Bear Lake - Site #4	08/20/1998		9:34 Sodium (mg/l)	12.8
Big Bear Lake - Site #4	08/28/1998		9:10 Sodium (mg/l)	11.3
Big Bear Lake - Site #4	09/02/1998		9:08 Sodium (mg/l)	11.3
Big Bear Lake - Site #4	09/09/1998		9:02 Sodium (mg/l)	11.7
Big Bear Lake - Site #4	09/16/1998		9:25 Sodium (mg/l)	10.3
Big Bear Lake - Site #4	10/28/1998		9:30 Sodium (mg/l)	11.2
Big Bear Lake - Site #4	11/19/1998		9:25 Sodium (mg/l)	11.6
Big Bear Lake - Site #4	04/21/1999		9:32 Sodium (mg/l)	12.9
Big Bear Lake - Site #4	09/28/1999		11:05 Sodium (mg/l)	13.3
Big Bear Lake - Site #4	12/14/1999		8:40 Sodium (mg/l)	15.4

<u>Location</u>	<u>SampleDate</u>	<u>SampleTime</u>	<u>Analysis</u>	<u>Result</u>
Big Bear Lake - Site #4	08/20/1998		9:34 Sulfate (mg/l)	8.4
Big Bear Lake - Site #4	08/28/1998		9:10 Sulfate (mg/l)	8.4
Big Bear Lake - Site #4	09/02/1998		9:08 Sulfate (mg/l)	8.2
Big Bear Lake - Site #4	09/09/1998		9:02 Sulfate (mg/l)	8.70
Big Bear Lake - Site #4	09/16/1998		9:25 Sulfate (mg/l)	8.00
Big Bear Lake - Site #4	10/28/1998		9:30 Sulfate (mg/l)	8.30
Big Bear Lake - Site #4	11/19/1998		9:25 Sulfate (mg/l)	8.15
Big Bear Lake - Site #4	04/21/1999		9:32 Sulfate (mg/l)	9.00
Big Bear Lake - Site #4	09/28/1999		11:05 Sulfate (mg/l)	9.40
Big Bear Lake - Site #4	12/14/1999		8:40 Sulfate (mg/l)	9.30
Big Bear Lake - Site #4	10/28/1998		9:30 TKN (mg/l)	<1.0
Big Bear Lake - Site #4	11/19/1998		9:25 TKN (mg/l)	<1.0
Big Bear Lake - Site #4	04/21/1999		9:32 TKN (mg/l)	<1.0
Big Bear Lake - Site #4	09/28/1999		11:05 TKN (mg/l)	2.90
Big Bear Lake - Site #4	12/14/1999		8:40 TKN (mg/l)	<1.0
Big Bear Lake - Site #5	10/28/1998		9:35 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #5	11/19/1998		9:17 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #5	04/21/1999		9:37 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #5	09/28/1999		11:11 Ammonia-N (mg/l)	0.50
Big Bear Lake - Site #5	12/14/1999		8:45 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #5	08/20/1998		9:54 Boron (mg/l)	<0.100
Big Bear Lake - Site #5	08/28/1998		9:08 Boron (mg/l)	<0.100
Big Bear Lake - Site #5	09/02/1998		9:05 Boron (mg/l)	<0.100
Big Bear Lake - Site #5	09/09/1998		8:55 Boron (mg/l)	<0.100
Big Bear Lake - Site #5	09/16/1998		9:29 Boron (mg/l)	<0.100
Big Bear Lake - Site #5	10/28/1998		9:35 Boron (mg/l)	<0.100
Big Bear Lake - Site #5	11/19/1998		9:17 Boron (mg/l)	<0.100
Big Bear Lake - Site #5	04/21/1999		9:37 Boron (mg/l)	<0.100
Big Bear Lake - Site #5	09/28/1999		11:11 Boron (mg/l)	<0.100
Big Bear Lake - Site #5	12/14/1999		8:45 Boron (mg/l)	<0.100
Big Bear Lake - Site #5	08/20/1998		9:54 Chloride (mg/l)	9.3
Big Bear Lake - Site #5	08/28/1998		9:08 Chloride (mg/l)	9.6
Big Bear Lake - Site #5	09/02/1998		9:05 Chloride (mg/l)	9.3
Big Bear Lake - Site #5	09/09/1998		8:55 Chloride (mg/l)	9.40
Big Bear Lake - Site #5	09/16/1998		9:29 Chloride (mg/l)	9.70

Big Bear Lake - Site #5	10/28/1998	9:35 Chloride (mg/l)	10.5
Big Bear Lake - Site #5	11/19/1998	9:17 Chloride (mg/l)	10.3
Big Bear Lake - Site #5	04/21/1999	9:37 Chloride (mg/l)	10.4
Big Bear Lake - Site #5	09/28/1999	11:11 Chloride (mg/l)	10.7
Big Bear Lake - Site #5	12/14/1999	8:45 Chloride (mg/l)	11.3
Big Bear Lake - Site #5	09/02/1998	9:05 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #5	09/09/1998	8:55 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #5	09/16/1998	9:29 Coliform (MPN/100ml)	>1600
Big Bear Lake - Site #5	10/28/1998	9:35 Coliform (MPN/100ml)	70
Big Bear Lake - Site #5	04/21/1999	9:37 Coliform (MPN/100ml)	11
Big Bear Lake - Site #5	09/28/1999	11:11 Coliform (MPN/100ml)	50
Big Bear Lake - Site #5	12/14/1999	8:45 Coliform (MPN/100ml)	4
Big Bear Lake - Site #5	09/02/1998	9:05 Fecal Coliform (MPN/100r 4	4
Big Bear Lake - Site #5	09/09/1998	8:55 Fecal Coliform (MPN/100r <2	<2
Big Bear Lake - Site #5	09/16/1998	9:29 Fecal Coliform (MPN/100r <2	<2
Big Bear Lake - Site #5	10/28/1998	9:35 Fecal Coliform (MPN/100r <2	<2
Big Bear Lake - Site #5	04/21/1999	9:37 Fecal Coliform (MPN/100r <2	<2
Big Bear Lake - Site #5	09/28/1999	11:11 Fecal Coliform (MPN/100r <2	<2
Big Bear Lake - Site #5	12/14/1999	8:45 Fecal Coliform (MPN/100r 4	4
Big Bear Lake - Site #5	09/28/1999	11:11 Fecal Streptococcus (MPN <2	<2
Big Bear Lake - Site #5	12/14/1999	8:45 Fecal Streptococcus (MPN <2	<2
Big Bear Lake - Site #5	08/20/1998	9:54 Fluoride (mg/l)	0.188
Big Bear Lake - Site #5	08/28/1998	9:08 Fluoride (mg/l)	0.201
Big Bear Lake - Site #5	09/02/1998	9:05 Fluoride (mg/l)	0.204
Big Bear Lake - Site #5	09/09/1998	8:55 Fluoride (mg/l)	0.235
Big Bear Lake - Site #5	09/16/1998	9:29 Fluoride (mg/l)	0.222
Big Bear Lake - Site #5	10/28/1998	9:35 Fluoride (mg/l)	0.179
Big Bear Lake - Site #5	11/19/1998	9:17 Fluoride (mg/l)	0.236
Big Bear Lake - Site #5	04/21/1999	9:37 Fluoride (mg/l)	<0.10
Big Bear Lake - Site #5	09/28/1999	11:11 Fluoride (mg/l)	0.172
Big Bear Lake - Site #5	12/14/1999	8:45 Fluoride (mg/l)	0.202
<u>Location</u>			<u>Result</u>
Big Bear Lake - Site #5	08/20/1998	9:54 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #5	08/28/1998	9:08 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #5	09/02/1998	9:05 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #5	09/09/1998	8:55 Nitrate-N (mg/l)	<0.40
<u>SampleDate</u>			<u>SampleTime</u>
			<u>Analysis</u>

Big Bear Lake - Site #5	09/16/1998	9:29 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #5	10/28/1998	9:35 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #5	11/19/1998	9:17 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #5	04/21/1999	9:37 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #5	09/28/1999	11:11 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #5	12/14/1999	8:45 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #5	08/20/1998	9:54 o-Phosphate (mg/l)	0.0800
Big Bear Lake - Site #5	08/28/1998	9:08 o-Phosphate (mg/l)	0.090
Big Bear Lake - Site #5	09/02/1998	9:05 o-Phosphate (mg/l)	0.040
Big Bear Lake - Site #5	09/09/1998	8:55 o-Phosphate (mg/l)	0.020
Big Bear Lake - Site #5	09/16/1998	9:29 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #5	10/28/1998	9:35 o-Phosphate (mg/l)	0.100
Big Bear Lake - Site #5	11/19/1998	9:17 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #5	04/21/1999	9:37 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #5	09/28/1999	11:11 o-Phosphate (mg/l)	0.040
Big Bear Lake - Site #5	12/14/1999	8:45 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #5	08/28/1998	9:08 pH (SU)	8.97
Big Bear Lake - Site #5	09/02/1998	9:05 pH (SU)	8.53
Big Bear Lake - Site #5	09/09/1998	8:55 pH (SU)	8.48
Big Bear Lake - Site #5	09/16/1998	9:29 pH (SU)	8.61
Big Bear Lake - Site #5	10/28/1998	9:35 pH (SU)	8.44
Big Bear Lake - Site #5	08/20/1998	9:54 Sodium (mg/l)	12.9
Big Bear Lake - Site #5	08/28/1998	9:08 Sodium (mg/l)	11.5
Big Bear Lake - Site #5	09/02/1998	9:05 Sodium (mg/l)	11.4
Big Bear Lake - Site #5	09/09/1998	8:55 Sodium (mg/l)	11.8
Big Bear Lake - Site #5	09/16/1998	9:29 Sodium (mg/l)	10.9
Big Bear Lake - Site #5	10/28/1998	9:35 Sodium (mg/l)	11.3
Big Bear Lake - Site #5	11/19/1998	9:17 Sodium (mg/l)	11.8
Big Bear Lake - Site #5	04/21/1999	9:37 Sodium (mg/l)	12.9
Big Bear Lake - Site #5	09/28/1999	11:11 Sodium (mg/l)	14.4
Big Bear Lake - Site #5	12/14/1999	8:45 Sodium (mg/l)	15.4
Big Bear Lake - Site #5	08/20/1998	9:54 Sulfate (mg/l)	8.6
Big Bear Lake - Site #5	08/28/1998	9:08 Sulfate (mg/l)	8.5
Big Bear Lake - Site #5	09/02/1998	9:05 Sulfate (mg/l)	8.4
Big Bear Lake - Site #5	09/09/1998	8:55 Sulfate (mg/l)	8.80
Big Bear Lake - Site #5	09/16/1998	9:29 Sulfate (mg/l)	7.90

Big Bear Lake - Site #5	10/28/1998	9:35 Sulfate (mg/l)	8.50
Big Bear Lake - Site #5	11/19/1998	9:17 Sulfate (mg/l)	8.44
Big Bear Lake - Site #5	04/21/1999	9:37 Sulfate (mg/l)	9.30
Big Bear Lake - Site #5	09/28/1999	11:11 Sulfate (mg/l)	9.48
Big Bear Lake - Site #5	12/14/1999	8:45 Sulfate (mg/l)	9.20
Big Bear Lake - Site #5	10/28/1998	9:35 TKN (mg/l)	1.10
Big Bear Lake - Site #5	11/19/1998	9:17 TKN (mg/l)	<1.0
Big Bear Lake - Site #5	04/21/1999	9:37 TKN (mg/l)	<1.0
Big Bear Lake - Site #5	09/28/1999	11:11 TKN (mg/l)	3.10
Big Bear Lake - Site #5	12/14/1999	8:45 TKN (mg/l)	<1.0
<u>Location</u>	<u>SampleDate</u>	<u>Analysis</u>	<u>Result</u>
Big Bear Lake - Site #6	10/28/1998	9:40 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #6	11/19/1998	9:07 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #6	04/21/1999	9:42 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #6	12/14/1999	8:48 Ammonia-N (mg/l)	<0.50
Big Bear Lake - Site #6	08/20/1998	10:06 Boron (mg/l)	<0.100
Big Bear Lake - Site #6	08/28/1998	9:05 Boron (mg/l)	<0.100
Big Bear Lake - Site #6	09/02/1998	9:01 Boron (mg/l)	<0.100
Big Bear Lake - Site #6	09/09/1998	8:48 Boron (mg/l)	<0.100
Big Bear Lake - Site #6	09/16/1998	9:35 Boron (mg/l)	<0.100
Big Bear Lake - Site #6	10/28/1998	9:40 Boron (mg/l)	<0.100
Big Bear Lake - Site #6	11/19/1998	9:07 Boron (mg/l)	<0.100
Big Bear Lake - Site #6	04/21/1999	9:42 Boron (mg/l)	<0.100
Big Bear Lake - Site #6	12/14/1999	8:48 Boron (mg/l)	<0.100
Big Bear Lake - Site #6	08/20/1998	10:06 Chloride (mg/l)	9.5
Big Bear Lake - Site #6	08/28/1998	9:05 Chloride (mg/l)	10
Big Bear Lake - Site #6	09/02/1998	9:01 Chloride (mg/l)	9.6
Big Bear Lake - Site #6	09/09/1998	8:48 Chloride (mg/l)	9.80
Big Bear Lake - Site #6	09/16/1998	9:35 Chloride (mg/l)	9.80
Big Bear Lake - Site #6	10/28/1998	9:40 Chloride (mg/l)	9.80
Big Bear Lake - Site #6	11/19/1998	9:07 Chloride (mg/l)	10.4
Big Bear Lake - Site #6	04/21/1999	9:42 Chloride (mg/l)	10.4
Big Bear Lake - Site #6	12/14/1999	8:48 Chloride (mg/l)	11.3
Big Bear Lake - Site #6	09/02/1998	9:01 Coliform (MPN/100ml)	240
Big Bear Lake - Site #6	09/09/1998	8:48 Coliform (MPN/100ml)	900
Big Bear Lake - Site #6	09/16/1998	9:35 Coliform (MPN/100ml)	>1600

Location	SampleDate	SampleTime	Analysis	Result
Big Bear Lake - Site #6	10/28/1998		9:40 Coliform (MPN/100ml)	110
Big Bear Lake - Site #6	04/21/1999		9:42 Coliform (MPN/100ml)	50
Big Bear Lake - Site #6	09/02/1998		9:01 Fecal Coliform (MPN/100r <2	
Big Bear Lake - Site #6	09/09/1998		8:48 Fecal Coliform (MPN/100r <2	
Big Bear Lake - Site #6	09/16/1998		9:35 Fecal Coliform (MPN/100r <2	
Big Bear Lake - Site #6	10/28/1998		9:40 Fecal Coliform (MPN/100r <2	
Big Bear Lake - Site #6	04/21/1999		9:42 Fecal Coliform (MPN/100r <2	
Big Bear Lake - Site #6	08/20/1998		10:06 Fluoride (mg/l)	0.197
Big Bear Lake - Site #6	08/28/1998		9:05 Fluoride (mg/l)	0.227
Big Bear Lake - Site #6	09/02/1998		9:01 Fluoride (mg/l)	0.199
Big Bear Lake - Site #6	09/09/1998		8:48 Fluoride (mg/l)	0.226
Big Bear Lake - Site #6	09/16/1998		9:35 Fluoride (mg/l)	0.202
Big Bear Lake - Site #6	10/28/1998		9:40 Fluoride (mg/l)	0.170
Big Bear Lake - Site #6	11/19/1998		9:07 Fluoride (mg/l)	0.196
Big Bear Lake - Site #6	04/21/1999		9:42 Fluoride (mg/l)	<0.10
Big Bear Lake - Site #6	12/14/1999		8:48 Fluoride (mg/l)	0.223
Big Bear Lake - Site #6	08/20/1998		10:06 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #6	08/28/1998		9:05 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #6	09/02/1998		9:01 Nitrate-N (mg/l)	<1.0
Big Bear Lake - Site #6	09/09/1998		8:48 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #6	09/16/1998		9:35 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #6	10/28/1998		9:40 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #6	11/19/1998		9:07 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #6	04/21/1999		9:42 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #6	12/14/1999		8:48 Nitrate-N (mg/l)	<0.40
Big Bear Lake - Site #6	08/20/1998		10:06 o-Phosphate (mg/l)	0.190
Big Bear Lake - Site #6	08/28/1998		9:05 o-Phosphate (mg/l)	0.040
Big Bear Lake - Site #6	09/02/1998		9:01 o-Phosphate (mg/l)	0.040
Big Bear Lake - Site #6	09/09/1998		8:48 o-Phosphate (mg/l)	0.060
Big Bear Lake - Site #6	09/16/1998		9:35 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #6	10/28/1998		9:40 o-Phosphate (mg/l)	0.050
Big Bear Lake - Site #6	11/19/1998		9:07 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #6	04/21/1999		9:42 o-Phosphate (mg/l)	0.020
Big Bear Lake - Site #6	12/14/1999		8:48 o-Phosphate (mg/l)	<0.020
Big Bear Lake - Site #6	08/28/1998		9:05 pH (SU)	9.52

Location	SampleDate	SampleTime	Analysis	Result
Big Bear Lake - Site #6	09/02/1998		9:01 pH (SU)	8.69
Big Bear Lake - Site #6	09/09/1998		8:48 pH (SU)	9.03
Big Bear Lake - Site #6	09/16/1998		9:35 pH (SU)	8.51
Big Bear Lake - Site #6	10/28/1998		9:40 pH (SU)	8.37
Big Bear Lake - Site #6	08/20/1998		10:06 Sodium (mg/l)	13.1
Big Bear Lake - Site #6	08/28/1998		9:05 Sodium (mg/l)	11.8
Big Bear Lake - Site #6	09/02/1998		9:01 Sodium (mg/l)	11.7
Big Bear Lake - Site #6	09/09/1998		8:48 Sodium (mg/l)	11.6
Big Bear Lake - Site #6	09/16/1998		9:35 Sodium (mg/l)	10.6
Big Bear Lake - Site #6	10/28/1998		9:40 Sodium (mg/l)	11.5
Big Bear Lake - Site #6	11/19/1998		9:07 Sodium (mg/l)	11.9
Big Bear Lake - Site #6	04/21/1999		9:42 Sodium (mg/l)	12.8
Big Bear Lake - Site #6	12/14/1999		8:48 Sodium (mg/l)	15.5
Big Bear Lake - Site #6	08/20/1998		10:06 Sulfate (mg/l)	8.5
Big Bear Lake - Site #6	08/28/1998		9:05 Sulfate (mg/l)	8.5
Big Bear Lake - Site #6	09/02/1998		9:01 Sulfate (mg/l)	8.4
Big Bear Lake - Site #6	09/09/1998		8:48 Sulfate (mg/l)	8.70
Big Bear Lake - Site #6	09/16/1998		9:35 Sulfate (mg/l)	7.90
Big Bear Lake - Site #6	10/28/1998		9:40 Sulfate (mg/l)	8.20
Big Bear Lake - Site #6	11/19/1998		9:07 Sulfate (mg/l)	8.19
Big Bear Lake - Site #6	04/21/1999		9:42 Sulfate (mg/l)	9.60
Big Bear Lake - Site #6	12/14/1999		8:48 Sulfate (mg/l)	9.20
Big Bear Lake - Site #6	10/28/1998		9:40 TKN (mg/l)	2.00
Big Bear Lake - Site #6	11/19/1998		9:07 TKN (mg/l)	<1.0
Big Bear Lake - Site #6	04/21/1999		9:42 TKN (mg/l)	<1.0
Big Bear Lake - Site #6	12/14/1999		8:48 TKN (mg/l)	<1.0
Big Bear Lake @ MWD Mai	12/05/2000		9:05 Ammonia-N (mg/l)	<0.50
Big Bear Lake @ MWD Mai	03/03/2000		9:56 Boron (mg/l)	<0.1
Big Bear Lake @ MWD Mai	12/05/2000		9:05 Boron (mg/l)	<0.1
Big Bear Lake @ MWD Mai	03/03/2000		9:56 Chloride (mg/l)	10
Big Bear Lake @ MWD Mai	12/05/2000		9:05 Chloride (mg/l)	12.6
Big Bear Lake @ MWD Mai	04/06/1999		8:59 Coliform (MPN/100ml)	<2
Big Bear Lake @ MWD Mai	03/03/2000		9:56 Coliform (MPN/100ml)	80
Big Bear Lake @ MWD Mai	12/05/2000		9:05 Coliform (MPN/100ml)	110
Big Bear Lake @ MWD Mai	04/06/1999		8:59 Fecal Coliform (MPN/100r)	<2

<u>Location</u>	<u>SampleDate</u>	<u>SampleTime</u>	<u>Analysis</u>	<u>Result</u>
Big Bear Lake @ MWD Mai	03/03/2000		9:56 Fecal Coliform (MPN/100r	17
Big Bear Lake @ MWD Mai	09/19/2000		10:45 Fecal Coliform (MPN/100r	<2
Big Bear Lake @ MWD Mai	12/05/2000		9:05 Fecal Coliform (MPN/100r	30
Big Bear Lake @ MWD Mai	04/06/1999		8:59 Fecal Streptococcus (MPN	23
Big Bear Lake @ MWD Mai	09/19/2000		10:45 Fecal Streptococcus (MPN	2
Big Bear Lake @ MWD Mai	12/05/2000		9:05 Fecal Streptococcus (MPN	23
Big Bear Lake @ MWD Mai	12/05/2000		9:05 Fluoride (mg/l)	0.231
Big Bear Lake @ MWD Mai	03/03/2000		9:56 Nitrate-N (mg/l)	<0.2
Big Bear Lake @ MWD Mai	12/05/2000		9:05 Nitrate-N (mg/l)	<0.40
Big Bear Lake @ MWD Mai	12/05/2000		9:05 Nitrite-N (mg/l)	<0.4
Big Bear Lake @ MWD Mai	03/03/2000		9:56 Sodium (mg/l)	13
Big Bear Lake @ MWD Mai	12/05/2000		9:05 Sodium (mg/l)	15.7
Big Bear Lake @ MWD Mai	03/03/2000		9:56 Sulfate (mg/l)	8.3
Big Bear Lake @ MWD Mai	12/05/2000		9:05 TIN (mg/l)	<1.3
Big Bear Lake @ MWD Mai	12/05/2000		9:05 TKN (mg/l)	<1.0
Big Bear Lake @ MWD Mai	03/03/2000		9:56 Total Phosphorous (mg/l)	0.07
Big Bear Lake @ MWD Mai	12/05/2000		9:05 Total Phosphorous (mg/l)	0.007
Big Bear Lake at Big Bear	06/22/1999		13:44 Ammonia-N (mg/l)	<0.50
Big Bear Lake at Big Bear	12/05/2000		9:37 Ammonia-N (mg/l)	<0.50
Big Bear Lake at Big Bear	06/22/1999		13:44 Boron (mg/l)	<0.100
Big Bear Lake at Big Bear	03/03/2000		9:11 Boron (mg/l)	<0.1
Big Bear Lake at Big Bear	12/05/2000		9:37 Boron (mg/l)	<0.1
Big Bear Lake at Big Bear	06/22/1999		13:44 Chloride (mg/l)	10.3
Big Bear Lake at Big Bear	03/03/2000		9:11 Chloride (mg/l)	9
Big Bear Lake at Big Bear	12/05/2000		9:37 Chloride (mg/l)	12.4
Big Bear Lake at Big Bear	09/29/1998		10:53 Coliform (MPN/100ml)	8
Big Bear Lake at Big Bear	12/07/1998		10:55 Coliform (MPN/100ml)	500
Big Bear Lake at Big Bear	04/06/1999		9:30 Coliform (MPN/100ml)	80
Big Bear Lake at Big Bear	06/22/1999		13:44 Coliform (MPN/100ml)	2
Big Bear Lake at Big Bear	03/03/2000		9:11 Coliform (MPN/100ml)	130
Big Bear Lake at Big Bear	12/05/2000		9:37 Coliform (MPN/100ml)	<2
Big Bear Lake at Big Bear	09/29/1998		10:53 Fecal Coliform (MPN/100r	4
Big Bear Lake at Big Bear	12/07/1998		10:55 Fecal Coliform (MPN/100r	<2
Big Bear Lake at Big Bear	04/06/1999		9:30 Fecal Coliform (MPN/100r	<2
Big Bear Lake at Big Bear	06/22/1999		13:44 Fecal Coliform (MPN/100r	<2



Location	SampleDate	SampleTime	Analysis	Result
Big Bear Lake at Big Bear	03/03/2000		9:11 Fecal Coliform (MPN/100r	2
Big Bear Lake at Big Bear	12/05/2000		9:37 Fecal Coliform (MPN/100r	<2
Big Bear Lake at Big Bear	09/29/1998		10:53 Fecal Streptococcus (MPN	<2
Big Bear Lake at Big Bear	12/07/1998		10:55 Fecal Streptococcus (MPN	8
Big Bear Lake at Big Bear	04/06/1999		9:30 Fecal Streptococcus (MPN	<2
Big Bear Lake at Big Bear	06/22/1999		13:44 Fecal Streptococcus (MPN	2
Big Bear Lake at Big Bear	12/05/2000		9:37 Fecal Streptococcus (MPN	<2
Big Bear Lake at Big Bear	06/22/1999		13:44 Fluoride (mg/l)	<0.10
Big Bear Lake at Big Bear	12/05/2000		9:37 Fluoride (mg/l)	0.219
Big Bear Lake at Big Bear	06/22/1999		13:44 Nitrate-N (mg/l)	<0.40
Big Bear Lake at Big Bear	03/03/2000		9:11 Nitrate-N (mg/l)	<0.2
Big Bear Lake at Big Bear	12/05/2000		9:37 Nitrate-N (mg/l)	<0.40
Big Bear Lake at Big Bear	12/05/2000		9:37 Nitrite-N (mg/l)	<0.4
Big Bear Lake at Big Bear	06/22/1999		13:44 o-Phosphate (mg/l)	<0.020
Big Bear Lake at Big Bear	06/22/1999		13:44 Sodium (mg/l)	13.2
Big Bear Lake at Big Bear	03/03/2000		9:11 Sodium (mg/l)	14
Big Bear Lake at Big Bear	12/05/2000		9:37 Sodium (mg/l)	15.8
Big Bear Lake at Big Bear	06/22/1999		13:44 Sulfate (mg/l)	9.20
Big Bear Lake at Big Bear	03/03/2000		9:11 Sulfate (mg/l)	8.2
Big Bear Lake at Big Bear	12/05/2000		9:37 Sulfate (mg/l)	9.50
Big Bear Lake at Big Bear	12/05/2000		9:37 TIN (mg/l)	<1.3
Big Bear Lake at Big Bear	06/22/1999		13:44 TKN (mg/l)	<1.0
Big Bear Lake at Big Bear	12/05/2000		9:37 TKN (mg/l)	<1.0
Big Bear Lake at Big Bear	03/03/2000		9:11 Total Phosphorous (mg/l)	0.12
Big Bear Lake at Big Bear	12/05/2000		9:37 Total Phosphorous (mg/l)	0.039
Big Bear Lake at Cluster Pi	09/19/2000		11:17 Fecal Coliform (MPN/100r	<2
Big Bear Lake at Cluster Pi	09/19/2000		11:17 Fecal Streptococcus (MPN	2
Big Bear Lake at Dam	06/22/1999		13:17 Ammonia-N (mg/l)	<0.50
Big Bear Lake at Dam	12/05/2000		9:20 Ammonia-N (mg/l)	<0.50
Big Bear Lake at Dam	06/22/1999		13:17 Boron (mg/l)	<0.100
Big Bear Lake at Dam	03/03/2000		10:13 Boron (mg/l)	<0.1
Big Bear Lake at Dam	12/05/2000		9:20 Boron (mg/l)	<0.1
Big Bear Lake at Dam	06/22/1999		13:17 Chloride (mg/l)	10.3
Big Bear Lake at Dam	03/03/2000		10:13 Chloride (mg/l)	10
Big Bear Lake at Dam	12/05/2000		9:20 Chloride (mg/l)	12.2

Big Bear Lake at Dam	09/29/1998	10:30 Coliform (MPN/100ml)	50
Big Bear Lake at Dam	12/07/1998	11:20 Coliform (MPN/100ml)	8
Big Bear Lake at Dam	04/06/1999	9:14 Coliform (MPN/100ml)	<2
Big Bear Lake at Dam	06/22/1999	13:17 Coliform (MPN/100ml)	<2
Big Bear Lake at Dam	03/03/2000	10:13 Coliform (MPN/100ml)	500
Big Bear Lake at Dam	12/05/2000	9:20 Coliform (MPN/100ml)	<2
Big Bear Lake at Dam	09/29/1998	10:30 Fecal Coliform (MPN/100r 2	
Big Bear Lake at Dam	12/07/1998	11:20 Fecal Coliform (MPN/100r <2	
Big Bear Lake at Dam	04/06/1999	9:14 Fecal Coliform (MPN/100r <2	
Big Bear Lake at Dam	06/22/1999	13:17 Fecal Coliform (MPN/100r <2	
Big Bear Lake at Dam	03/03/2000	10:13 Fecal Coliform (MPN/100r 2	
Big Bear Lake at Dam	09/19/2000	11:05 Fecal Coliform (MPN/100r 130	
Big Bear Lake at Dam	12/05/2000	9:20 Fecal Coliform (MPN/100r <2	
Big Bear Lake at Dam	09/29/1998	10:30 Fecal Streptococcus (MPN 9	
Big Bear Lake at Dam	12/07/1998	11:20 Fecal Streptococcus (MPN <2	
Big Bear Lake at Dam	04/06/1999	9:14 Fecal Streptococcus (MPN <2	
Big Bear Lake at Dam	06/22/1999	13:17 Fecal Streptococcus (MPN 2	
Big Bear Lake at Dam	09/19/2000	11:05 Fecal Streptococcus (MPN >1,600	
Big Bear Lake at Dam	12/05/2000	9:20 Fecal Streptococcus (MPN 4	
Big Bear Lake at Dam	06/22/1999	13:17 Fluoride (mg/l)	<0.10
Big Bear Lake at Dam	12/05/2000	9:20 Fluoride (mg/l)	0.225
Big Bear Lake at Dam	06/22/1999	13:17 Nitrate-N (mg/l)	<0.40
Big Bear Lake at Dam	03/03/2000	10:13 Nitrate-N (mg/l)	<0.2
Big Bear Lake at Dam	12/05/2000	9:20 Nitrate-N (mg/l)	<0.40
Big Bear Lake at Dam	12/05/2000	9:20 Nitrite-N (mg/l)	<0.4
Big Bear Lake at Dam	06/22/1999	13:17 o-Phosphate (mg/l)	0.030
Big Bear Lake at Dam	06/22/1999	13:17 Sodium (mg/l)	13.2
Big Bear Lake at Dam	03/03/2000	10:13 Sodium (mg/l)	13
Big Bear Lake at Dam	12/05/2000	9:20 Sodium (mg/l)	15.3
Big Bear Lake at Dam	06/22/1999	13:17 Sulfate (mg/l)	9.00
Big Bear Lake at Dam	03/03/2000	10:13 Sulfate (mg/l)	8.4
Big Bear Lake at Dam	12/05/2000	9:20 Sulfate (mg/l)	9.50
Big Bear Lake at Dam	12/05/2000	9:20 TIN (mg/l)	<1.3
Big Bear Lake at Dam	06/22/1999	13:17 TKN (mg/l)	<1.0
Big Bear Lake at Dam	12/05/2000	9:20 TKN (mg/l)	<1.0
Big Bear Lake at Dam	03/03/2000	10:13 Total Phosphorous (mg/l)	0.05

Location	SampleDate	SampleTime	9:20 Total Phosphorous (mg/l)	0.007
Big Bear Lake at Dana Poir	06/22/1999		Analysis	Result
Big Bear Lake at Dana Poir	06/22/1999		13:31 Ammonia-N (mg/l)	<0.50
Big Bear Lake at Dana Poir	06/22/1999		13:31 Boron (mg/l)	<0.100
Big Bear Lake at Dana Poir	09/29/1998		13:31 Chloride (mg/l)	10.1
Big Bear Lake at Dana Poir	12/07/1998		10:42 Coliform (MPN/100ml)	27
Big Bear Lake at Dana Poir	06/22/1999		11:05 Coliform (MPN/100ml)	900
Big Bear Lake at Dana Poir	09/29/1998		13:31 Coliform (MPN/100ml)	17
Big Bear Lake at Dana Poir	12/07/1998		10:42 Fecal Coliform (MPN/100r <2	
Big Bear Lake at Dana Poir	06/22/1999		11:05 Fecal Coliform (MPN/100r <2	
Big Bear Lake at Dana Poir	09/29/1998		13:31 Fecal Coliform (MPN/100r 2	
Big Bear Lake at Dana Poir	12/07/1998		10:42 Fecal Streptococcus (MPN <2	
Big Bear Lake at Dana Poir	06/22/1999		11:05 Fecal Streptococcus (MPN <2	
Big Bear Lake at Dana Poir	06/22/1999		13:31 Fecal Streptococcus (MPN 2	
Big Bear Lake at Dana Poir	06/22/1999		13:31 Fluoride (mg/l)	<0.10
Big Bear Lake at Dana Poir	06/22/1999		13:31 Nitrate-N (mg/l)	<0.40
Big Bear Lake at Dana Poir	06/22/1999		13:31 o-Phosphate (mg/l)	0.050
Big Bear Lake at Dana Poir	06/22/1999		13:31 Sodium (mg/l)	13.0
Big Bear Lake at Dana Poir	06/22/1999		13:31 Sulfate (mg/l)	9.00
Big Bear Lake at Dana Poir	06/22/1999		13:31 TKN (mg/l)	<1.0
Big Bear Lake at Eagle Poi	03/07/2000		15:40 Coliform (MPN/100ml)	1600
Big Bear Lake at Eagle Poi	03/07/2000		15:50 Coliform (MPN/100ml)	>1,600
Big Bear Lake at Eagle Poi	03/07/2000		15:30 Coliform (MPN/100ml)	900
Big Bear Lake at Eagle Poi	03/07/2000		15:50 Fecal Coliform (MPN/100r 170	
Big Bear Lake at Eagle Poi	03/07/2000		15:40 Fecal Coliform (MPN/100r 21	
Big Bear Lake at Eagle Poi	03/07/2000		15:30 Fecal Coliform (MPN/100r 40	
Big Bear Lake at Fisher Po	04/18/2001		8:47 Coliform (MPN/100ml)	110
Big Bear Lake at Fisher Po	04/18/2001		8:43 Coliform (MPN/100ml)	90
Big Bear Lake at Fisher Po	04/18/2001		8:47 Fecal Coliform (MPN/100r <2	
Big Bear Lake at Fisher Po	04/18/2001		8:43 Fecal Coliform (MPN/100r <2	
Big Bear Lake at LPS	06/22/1999		12:35 Ammonia-N (mg/l)	<0.50
Big Bear Lake at LPS	06/22/1999		12:35 Boron (mg/l)	<0.100
Big Bear Lake at LPS	06/22/1999		12:35 Chloride (mg/l)	10.4
Big Bear Lake at LPS	09/29/1998		10:09 Coliform (MPN/100ml)	1600
Big Bear Lake at LPS	12/07/1998		11:45 Coliform (MPN/100ml)	>1,600
Big Bear Lake at LPS	06/22/1999		12:35 Coliform (MPN/100ml)	8

Location	SampleDate	SampleTime	Analysis	Result
Big Bear Lake at LPS	09/29/1998		10:09 Fecal Coliform (MPN/100r 80	
Big Bear Lake at LPS	12/07/1998		11:45 Fecal Coliform (MPN/100r <2	
Big Bear Lake at LPS	06/22/1999		12:35 Fecal Coliform (MPN/100r 2	
Big Bear Lake at LPS	09/29/1998		10:09 Fecal Streptococcus (MPN <2	
Big Bear Lake at LPS	12/07/1998		11:45 Fecal Streptococcus (MPN 11	
Big Bear Lake at LPS	06/22/1999		12:35 Fecal Streptococcus (MPN 2	
Big Bear Lake at LPS	06/22/1999		12:35 Fluoride (mg/l)	<0.10
Big Bear Lake at LPS	06/22/1999		12:35 Nitrate-N (mg/l)	<0.40
Big Bear Lake at LPS	06/22/1999		12:35 o-Phosphate (mg/l)	0.070
Big Bear Lake at LPS	06/22/1999		12:35 Sodium (mg/l)	13.7
Big Bear Lake at LPS	06/22/1999		12:35 Sulfate (mg/l)	9.00
Big Bear Lake at LPS	06/22/1999		12:35 TKN (mg/l)	<1.0
Big Bear Lake at Stanfield	12/05/2000		9:45 Ammonia-N (mg/l)	<0.50
Big Bear Lake at Stanfield	12/05/2000		9:45 Boron (mg/l)	0.36
Big Bear Lake at Stanfield	12/05/2000		9:45 Chloride (mg/l)	13.0
Big Bear Lake at Stanfield	09/29/1998		11:02 Coliform (MPN/100ml)	9
Big Bear Lake at Stanfield	12/07/1998		10:45 Coliform (MPN/100ml)	900
Big Bear Lake at Stanfield	12/05/2000		9:45 Coliform (MPN/100ml)	4
Big Bear Lake at Stanfield	09/29/1998		11:02 Fecal Coliform (MPN/100r <2	
Big Bear Lake at Stanfield	12/07/1998		10:45 Fecal Coliform (MPN/100r 30	
Big Bear Lake at Stanfield	09/19/2000		11:35 Fecal Coliform (MPN/100r <2	
Big Bear Lake at Stanfield	12/05/2000		9:45 Fecal Coliform (MPN/100r <2	
Big Bear Lake at Stanfield	09/29/1998		11:02 Fecal Streptococcus (MPN <2	
Big Bear Lake at Stanfield	12/07/1998		10:45 Fecal Streptococcus (MPN 7	
Big Bear Lake at Stanfield	09/19/2000		11:35 Fecal Streptococcus (MPN 17	
Big Bear Lake at Stanfield	12/05/2000		9:45 Fecal Streptococcus (MPN 50	
Big Bear Lake at Stanfield	12/05/2000		9:45 Fluoride (mg/l)	0.228
Big Bear Lake at Stanfield	12/05/2000		9:45 Nitrate-N (mg/l)	<0.40
Big Bear Lake at Stanfield	12/05/2000		9:45 Nitrite-N (mg/l)	<0.4
Big Bear Lake at Stanfield	12/05/2000		9:45 Sodium (mg/l)	16.3
Big Bear Lake at Stanfield	12/05/2000		9:45 Sulfate (mg/l)	9.68
Big Bear Lake at Stanfield	12/05/2000		9:45 TIN (mg/l)	<1.3
Big Bear Lake at Stanfield	12/05/2000		9:45 TKN (mg/l)	<1.0
Big Bear Lake at Stanfield	12/05/2000		9:45 Total Phosphorous (mg/l)	0.0261
Stanfield Marsh @ Division	06/22/1999		14:02 Ammonia-N (mg/l)	0.602

Location	SampleDate	SampleTime	Analysis	Result
Stanfield Marsh @ Division	06/22/1999		14:02 Boron (mg/l)	<0.100
Stanfield Marsh @ Division	03/03/2000		8:58 Boron (mg/l)	<0.1
Stanfield Marsh @ Division	06/22/1999		14:02 Chloride (mg/l)	21.7
Stanfield Marsh @ Division	03/03/2000		8:58 Chloride (mg/l)	9
Stanfield Marsh @ Division	04/06/1999		8:40 Coliform (MPN/100ml)	1600
Stanfield Marsh @ Division	06/22/1999		14:02 Coliform (MPN/100ml)	240
Stanfield Marsh @ Division	03/03/2000		8:58 Coliform (MPN/100ml)	>1,600
Stanfield Marsh @ Division	04/06/1999		8:40 Fecal Coliform (MPN/100r 11	
Stanfield Marsh @ Division	06/22/1999		14:02 Fecal Coliform (MPN/100r 80	
Stanfield Marsh @ Division	03/03/2000		8:58 Fecal Coliform (MPN/100r 30	
Stanfield Marsh @ Division	04/06/1999		8:40 Fecal Streptococcus (MPN 50	
Stanfield Marsh @ Division	06/22/1999		14:02 Fecal Streptococcus (MPN 130	
Stanfield Marsh @ Division	06/22/1999		14:02 Fluoride (mg/l)	0.171
Stanfield Marsh @ Division	06/22/1999		14:02 Nitrate-N (mg/l)	<0.40
Stanfield Marsh @ Division	03/03/2000		8:58 Nitrate-N (mg/l)	<0.2
Stanfield Marsh @ Division	06/22/1999		14:02 o-Phosphate (mg/l)	0.500
Stanfield Marsh @ Division	06/22/1999		14:02 Sodium (mg/l)	26.0
Stanfield Marsh @ Division	03/03/2000		8:58 Sodium (mg/l)	14
Stanfield Marsh @ Division	06/22/1999		14:02 Sulfate (mg/l)	14.1
Stanfield Marsh @ Division	03/03/2000		8:58 Sulfate (mg/l)	13
Stanfield Marsh @ Division	06/22/1999		14:02 TKN (mg/l)	2.50
Stanfield Marsh @ Division	03/03/2000		8:58 Total Phosphorous (mg/l)	0.27
Location	SampleDate	SampleTime	Analysis	Result
Stanfield Marsh @ Stanfiel	06/22/1999		13:55 Ammonia-N (mg/l)	<0.50
Stanfield Marsh @ Stanfiel	12/05/2000		9:52 Ammonia-N (mg/l)	<0.50
Stanfield Marsh @ Stanfiel	06/22/1999		13:55 Boron (mg/l)	<0.100
Stanfield Marsh @ Stanfiel	03/03/2000		9:25 Boron (mg/l)	<0.1
Stanfield Marsh @ Stanfiel	12/05/2000		9:52 Boron (mg/l)	<0.1
Stanfield Marsh @ Stanfiel	06/22/1999		13:55 Chloride (mg/l)	11.2
Stanfield Marsh @ Stanfiel	03/03/2000		9:25 Chloride (mg/l)	9
Stanfield Marsh @ Stanfiel	12/05/2000		9:52 Chloride (mg/l)	13.9
Stanfield Marsh @ Stanfiel	04/06/1999		8:45 Coliform (MPN/100ml)	1600
Stanfield Marsh @ Stanfiel	06/22/1999		13:55 Coliform (MPN/100ml)	300
Stanfield Marsh @ Stanfiel	03/03/2000		9:25 Coliform (MPN/100ml)	>1,600
Stanfield Marsh @ Stanfiel	12/05/2000		9:52 Coliform (MPN/100ml)	4
Stanfield Marsh @ Stanfiel	04/06/1999		8:45 Fecal Coliform (MPN/100r <2	

Stanfield Marsh @ Stanfield	06/22/1999	13:55 Fecal Coliform (MPN/100r 21
Stanfield Marsh @ Stanfield	03/03/2000	9:25 Fecal Coliform (MPN/100r 8
Stanfield Marsh @ Stanfield	09/19/2000	11:25 Fecal Coliform (MPN/100r <2
Stanfield Marsh @ Stanfield	12/05/2000	9:52 Fecal Coliform (MPN/100r <2
Stanfield Marsh @ Stanfield	04/06/1999	8:45 Fecal Streptococcus (MPN <2
Stanfield Marsh @ Stanfield	06/22/1999	13:55 Fecal Streptococcus (MPN 7
Stanfield Marsh @ Stanfield	09/19/2000	11:25 Fecal Streptococcus (MPN 50
Stanfield Marsh @ Stanfield	12/05/2000	9:52 Fecal Streptococcus (MPN 8
Stanfield Marsh @ Stanfield	06/22/1999	13:55 Fluoride (mg/l) <0.10
Stanfield Marsh @ Stanfield	12/05/2000	9:52 Fluoride (mg/l) 0.273
Stanfield Marsh @ Stanfield	06/22/1999	13:55 Nitrate-N (mg/l) <0.40
Stanfield Marsh @ Stanfield	03/03/2000	9:25 Nitrate-N (mg/l) <0.2
Stanfield Marsh @ Stanfield	12/05/2000	9:52 Nitrate-N (mg/l) <0.40
Stanfield Marsh @ Stanfield	12/05/2000	9:52 Nitrite-N (mg/l) <0.4
Stanfield Marsh @ Stanfield	06/22/1999	13:55 o-Phosphate (mg/l) 0.100
Stanfield Marsh @ Stanfield	06/22/1999	13:55 Sodium (mg/l) 14.4
Stanfield Marsh @ Stanfield	03/03/2000	9:25 Sodium (mg/l) 13
Stanfield Marsh @ Stanfield	12/05/2000	9:52 Sodium (mg/l) 17.6
Stanfield Marsh @ Stanfield	06/22/1999	13:55 Sulfate (mg/l) 10.0
Stanfield Marsh @ Stanfield	03/03/2000	9:25 Sulfate (mg/l) 9.3
Stanfield Marsh @ Stanfield	12/05/2000	9:52 Sulfate (mg/l) 9.64
Stanfield Marsh @ Stanfield	12/05/2000	9:52 TIN (mg/l) <1.3
Stanfield Marsh @ Stanfield	06/22/1999	13:55 TKN (mg/l) <1.0
Stanfield Marsh @ Stanfield	12/05/2000	9:52 TKN (mg/l) <1.0
Stanfield Marsh @ Stanfield	03/03/2000	9:25 Total Phosphorous (mg/l) 0.08
Stanfield Marsh @ Stanfield	12/05/2000	9:52 Total Phosphorous (mg/l) 0.0228

# **MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

*Office of the General Manager*

May 14, 2001

Ms. Teresa Newkirk  
California Regional Water Quality Control Board  
Colorado River Basin Region  
73-720 Fred Waring Drive, Suite 100  
Palm Desert, CA 92260

Dear Ms. Newkirk:

## Response to Public Solicitation of Water Quality Information

In response to the February 28, 2001 public solicitation of water quality information issued by the California Regional Water Quality Control Board, Colorado River Basin Region (Regional Board), Metropolitan submits the enclosed data it has generated on water quality conditions in surface waters within the Colorado River Basin Region of California since July 1997. Pursuant to the Regional Board's request, an electronic file and paper copies are enclosed for each of the following data sets:

- Lake Havasu radiological data (near Whitsett Intake Pumping Plant on the lake);
- Lake Havasu general mineral data (near Whitsett Intake on the lake);
- Lake Havasu trace metals (near Whitsett Intake on the lake);
- Lake Havasu perchlorate data (various sample point locations);
- Lake Havasu coliform results (monthly averages at influent to the Whitsett Intake);
- Pathogen monitoring data (at influent to the Whitsett Intake);
- Pesticide, herbicide, and semi-volatile organic compound data for various source waters and treated waters.

The majority of data was generated by Metropolitan at its Water Quality Laboratory (WQL), which is a certified laboratory under the California Department of Health Services' Environmental Laboratory Accreditation Program. Analyses for the radiologicals, pesticide, herbicide, and semi-volatile organic compounds were conducted by certified commercial laboratories. Metropolitan's WQL maintains a Quality Assurance Manual which details sample collection procedures, sample and data tracking systems, quality assurance protocols, and standard operating procedures for methods used in its laboratory. This document is available upon request.

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MAY 16 2001

Ms. Teresa Newkirk

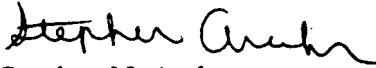
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May 14, 2001

For questions on the enclosed data or for additional information, please contact:

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Metropolitan Water District  
of Southern California  
P.O. Box 54153  
Los Angeles, CA 90054-0153  
(909) 392-5089  
hwang@mwd.dst.ca.us

Very truly yours,



Stephen N. Arakawa

Manager

Water Resources Management Group

JLS:bps

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Enclosures



The Metropolitan Water District of Southern California  
Lake Havasu Radiological Data (Jul 1997 to Feb 2001)  
(pCi/L)

SAMPLE	Gross alpha		Total Uranium		Gross Beta		Radium 226	
MONTH	Result	error	Result	error	Result	error	Result	error
JUL-97	6.29	2.02						
AUG-97	2.3	1.0						
SEP-97	2.5	0.5						
OCT-97	3.90	0.6						
NOV-97	5.32	1.9						
DEC-97	7.37	2.31						
JAN-98	5.47	1.96						
FEB-98	6.81	2.15						
MAR-98	5.84	2.0						
APR-98	6.07	2.09						
MAY-98	4.9	1.9						
JUN-98	4.2	2.1						
JUL-98	7.41	2.19						
AUG-98	6.0	1.7	3	0.9	4.7	1.3	0	0.19
SEP-98	4.65	1.95	3.2	0.87				
OCT-98	6.70	2.2	3.13	0.88	4.86	3.29	0.65	0.23
NOV-98	6.90	2.5	2.65	0.81				
DEC-98	1.97	1.9	3.54	0.91				
JAN-99	5.31	2.1	3.13	0.84	6.24	3.27	0.19	0.11
FEB-99	4.00	2.2	3.18	0.88				
MAR-99	4.50	2.3	3.76	0.94				
APR-99	6.08	1.91	2.26	0.79	4.23	3.37	0.55	0.25
MAY-99	4.6	1.5	3.6	0.9				
JUN-99	4.8	1.5	2.68	0.79				
JUL-99	1.10	1.15	3.53	0.86				
AUG-99	2.3	1.3	3.68	1.08				
SEP-99	3.59	1.40	3	0.91				
OCT-99	3.67	1.40	3.36	0.94				
NOV-99	4.67	1.41	2.87	0.84				
DEC-99	6.10	2.10	3.27	0.88				
JAN-00	4.52	1.45	4.02	1.08				
FEB-00	3.51	1.34	4.83	1.17				
MAR-00	4.27	1.46	3.92	1.08				
APR-00	2.93	1.34	2.96	0.96				
MAY-00	6.34	1.76	4.33	1.09				
JUN-00	3.87	1.33	3.5	1.13				
JUL-00	3.89	1.47	4.57	1.14				
AUG-00	4.22	1.49	2.42	0.86				
SEP-00	2.7	1.22	3.4	0.99				
OCT-00	4.14	1.42	4.32	1.1				
NOV-00	5.31	1.59	3.29	1.01				
DEC-00	3.57	1.42	3.64	1.05				
JAN-01	4.32	0.9	3.62	1				
FEB-01	3.72	0.94	3.02	0.6				

The Metropolitan Water District of Southern California  
Lake Havasu Radiological Data (Jul 1997 to Feb 2001)  
(pCi/L)

SAMPLE	Radium 228		Strontium 90		Tritium		Radon 222	
	Result	error	Result	error	Result	error	Result	error
JUL 97								
AUG 97								
SEP 97								
OCT 97								
NOV 97								
DEC 97								
JAN 98								
FEB 98								
MAR 98								
APR 98								
MAY 98								
JUN 98								
JUL 98								
AUG 98	0	0.39	1.14	0.19	40.9	150	51	14
SEP 98								
OCT 98	1.05	0.23	1.95	0.73	50.5	110	18	5
NOV 98								
DEC 98								
JAN 99	1.09	1	0.88	0.35	66.6	110	58	14
FEB 99								
MAR 99								
APR 99	1.64	0.4	1.26	0.4	36.7	170	51	12
MAY 99								
JUN 99								
JUL 99								
AUG 99								
SEP 99								
OCT 99								
NOV 99								
DEC 99								
JAN 00								
FEB 00								
MAR 00								
APR 00								
MAY 00								
JUN 00								
JUL 00								
AUG 00								
SEP 00								
OCT 00								
NOV 00								
DEC 00								
JAN 01								
FEB 01								

The Metropolitan Water District of Southern California  
Lake Havasu Radiological Data (Jul 1997 to Feb 2001)  
(pCi/L)

SAMPLE	Gross alpha		Total Uranium		Gross Beta		Radium 226	
MONTH	Result	error	Result	error	Result	error	Result	error
Jul-97	6.29	2.02						
Aug-97	2.3	1.0						
Sep-97	2.5	0.5						
Oct-97	3.90	0.6						
Nov-97	5.32	1.9						
Dec-97	7.37	2.31						
Jan-98	5.47	1.96						
Feb-98	6.81	2.15						
Mar-98	5.84	2.0						
Apr-98	6.07	2.09						
May-98	4.9	1.9						
Jun-98	4.2	2.1						
Jul-98	7.41	2.19						
Aug-98	6.0	1.7	3	0.9	4.7	1.3	0	0.19
Sep-98	4.65	1.95	3.2	0.87				
Oct-98	6.70	2.2	3.13	0.88	4.86	3.29	0.65	0.23
Nov-98	6.90	2.5	2.65	0.81				
Dec-98	1.97	1.9	3.54	0.91				
Jan-99	5.31	2.1	3.13	0.84	6.24	3.27	0.19	0.11
Feb-99	4.00	2.2	3.18	0.88				
Mar-99	4.50	2.3	3.76	0.94				
Apr-99	6.08	1.91	2.26	0.79	4.23	3.37	0.55	0.25
May-99	4.6	1.5	3.6	0.9				
Jun-99	4.8	1.5	2.68	0.79				
Jul-99	1.10	1.15	3.53	0.86				
Aug-99	2.3	1.3	3.68	1.08				
Sep-99	3.59	1.40	3	0.91				
Oct-99	3.67	1.40	3.36	0.94				
Nov-99	4.67	1.41	2.87	0.84				
Dec-99	6.10	2.10	3.27	0.88				
Jan-00	4.52	1.45	4.02	1.08				
Feb-00	3.51	1.34	4.83	1.17				
Mar-00	4.27	1.46	3.92	1.08				
Apr-00	2.93	1.34	2.96	0.96				
May-00	6.34	1.76	4.33	1.09				
Jun-00	3.87	1.33	3.5	1.13				
Jul-00	3.89	1.47	4.57	1.14				
Aug-00	4.22	1.49	2.42	0.86				
Sep-00	2.7	1.22	3.4	0.99				
Oct-00	4.14	1.42	4.32	1.1				
Nov-00	5.31	1.59	3.29	1.01				
Dec-00	3.57	1.42	3.64	1.05				
Jan-01	4.32	0.9	3.62	1				
Feb-01	3.72	0.94	3.02	0.6				

The Metropolitan Water District of Southern California  
Lake Havasu Radiological Data (Jul 1997 to Feb 2001)  
(pCi/L)

SAMPLE	Radium 228		Strontium 90		Tritium		Radon 222	
	Result	error	Result	error	Result	error	Result	error
NOV 97								
DEC 97								
JAN 98								
FEB 98								
MAR 98								
APR 98								
MAY 98								
JUN 98								
JUL 98								
AUG 98	0	0.39	1.14	0.19	40.9	150	51	14
SEP 98								
OCT 98	1.05	0.23	1.95	0.73	50.5	110	18	5
NOV 98								
DEC 98								
JAN 99	1.09	1	0.88	0.35	66.6	110	58	14
FEB 99								
MAR 99								
APR 99	1.64	0.4	1.26	0.4	36.7	170	51	12
MAY 99								
JUN 99								
JUL 99								
AUG 99								
SEP 99								
OCT 99								
NOV 99								
DEC 99								
JAN 00								
FEB 00								
MAR 00								
APR 00								
MAY 00								
JUN 00								
JUL 00								
AUG 00								
SEP 00								
OCT 00								
NOV 00								
DEC 00								
JAN 01								
FEB 01								

The Metropolitan Water District of Southern California  
Lake Havasu Water Quality Data

Date	L. Havasu Boron ppm	L. Havasu Bromide ppm	L. Havasu Calcium ppm	L. Havasu Chloride ppm	L. Havasu CO2 ppm	L. Havasu Carbonate ppm	L. Havasu Color
7/7/1997		0.09	76	85	1.5	0	
8/5/1997		0.10	73	82	1.0	1	
9/2/1997	0.11	0.08	71	81	1.0	2	
10/7/1997		0.07	73	80	1.2	1	
11/4/1997		0.07	74	82	1.5	0	5
12/1/1997	0.12	0.06	75	82	1.4	0	
1/6/1998		0.07	75	82	1.7	0	
2/3/1998		0.07	75	77	1.8	0	4
3/2/1998	0.09	0.08	73	75	1.7	0	
4/7/1998		0.07	74	74	1.3	0	
5/5/1998		0.06	75	75	1.3	0	2
6/2/1998	0.11	0.07	74	73	1.9	0	
7/7/1998		0.06	71	73	1.6	0	
8/11/1998		0.08	70	75	0.8	4	7
9/1/1998	0.11	0.07	70	72	1.4	0	
10/13/1998		0.08	72	78	1.5	0	
11/3/1998		0.07	70	73	1.3	0	6
12/1/1998	0.11	0.07	69	71	1.5	0	
1/12/1999		0.07	73	71	1.2	1	
2/2/1999		0.07	72	70	1.4	0	5
3/2/1999	0.13	0.06	73	72	1.4	0	
4/6/1999		0.07	73	72	1.5	0	
5/4/1999		0.07	72	69	1.4	0	5
6/2/1999	0.13	0.07	72	67	1.6	0	
7/20/1999		0.06	73	68	1.8	0	
8/3/1999		0.06	72	69	0.9	2	5
9/8/1999	0.08	0.07	71	67	2.0	0	
10/5/1999		0.07	72	68	1.6	0	
11/2/1999		0.07	70	70	1.4	0	2
12/7/1999	0.08	0.07	73	68	1.4	0	
1/4/2000		0.07	72	69	1.8	0	
1/31/2000		0.06	74	67	1.2	1	3
3/13/2000	0.09	0.06	72	69	1.5	0	
4/3/2000		0.06	73	66	1.3	1	
5/2/2000		0.06	72	66	1.5	0	4
6/6/2000	0.10	0.06	71	65	1.7	0	
7/5/2000		0.05	69	65	1.7	0	
8/1/2000		0.06	69	66	1.7	0	6
9/11/2000	0.08	0.05	68	65	1.8	0	
10/3/2000		0.06	68	65	1.3	0	
11/8/2000		0.07	70	68	1.3	0	10
12/5/2000	0.12	0.07	70	68	1.2	1	
1/10/2001		0.06	73	69	1.1	1	
2/6/2001		0.07	71	68	1.1	1	6
Min	0.08	0.05	68	65	0.8	0	2
Max	0.13	0.10	76	85	2.0	4	10
Avg	0.10	0.07	72	72	1.4	0	5

The Metropolitan Water District of Southern California  
Lake Havasu Water Quality Data

Date	L. Havasu Conductivity umho/cm	L. Havasu Fluoride ppm	L. Havasu Bicarbonate ppm	L. Havasu Potassium ppm	L. Havasu Magnesium ppm	L. Havasu Sodium ppm	L. Havasu Nitrate ppm
7/7/1997	956	0.26	163	4.2	27	87	0.5
8/5/1997	993	0.28	161	4.4	27.5	89	0.5
9/2/1997	978	0.29	153	4.3	27.5	93	0.5
10/7/1997	958	0.30	156	4.3	27.5	92	0.6
11/4/1997	972	0.33	159	4.3	27	89	0.8
12/1/1997	952	0.33	163	4.4	26.5	89	0.8
1/6/1998	970	0.34	168	4.3	27	88	0.9
2/3/1998	948	0.35	163	3.9	26.5	85	1.1
3/2/1998	917	0.31	161	4.0	26.5	84	1.1
4/7/1998	917	0.25	161	4.0	25.5	82	1.0
5/5/1998	910	0.33	162	4.1	25	81	1.0
6/2/1998	930	0.30	161	4.1	25	81	0.9
7/7/1998	928	0.29	162	3.9	25.5	84	0.9
8/11/1998	923	0.29	148	4.0	27.5	85	0.5
9/1/1998	918	0.32	159	3.9	26	82	0.6
10/13/1998	925	0.29	160	3.9	26.5	82	0.8
11/3/1998	933	0.31	160	3.9	26	85	0.7
12/1/1998	922	0.31	160	4.0	27.5	87	0.8
1/12/1999	916	0.29	161	3.9	26	82	1.2
2/2/1999	922	0.30	163	3.9	26	81	1.2
3/2/1999	917	0.32	162	4.0	26	81	1.2
4/6/1999	914	0.27	161	4.0	26	83	1.2
5/4/1999	901	0.28	161	4.1	25.5	79	1.0
6/2/1999	898	0.28	159	4.0	25.5	81	1.0
7/20/1999	895	0.29	156	3.9	25	79	1.0
8/3/1999	904	0.31	155	4.0	25.5	80	0.6
9/8/1999	892	0.28	155	3.9	25	79	0.8
10/5/1999	880	0.31	156	4.0	25	79	0.8
11/2/1999	901	0.27	155	4.1	25.5	79	0.9
12/7/1999	898	0.30	160	4.0	25.5	79	1.0
1/4/2000	881	0.28	160	3.8	25.5	79	1.1
1/31/2000	916	0.31	159	3.8	24.5	78	1.2
3/13/2000	911	0.32	160	3.9	26	82	1.3
4/3/2000	896	0.29	160	4.0	25.5	75	1.1
5/2/2000	885	0.31	161	4.1	25.5	74	1.1
6/6/2000	890	0.27	162	4.1	26	77	1.1
7/5/2000	898	0.28	162	4.0	25.5	74	1.0
8/1/2000	895	0.29	162	4.0	25.5	75	1.0
9/11/2000	893	0.28	160	4.1	26	76	0.7
10/3/2000	883	0.28	153	4.0	26.5	75	0.7
11/8/2000	894	0.28	161	4.1	26	78	0.6
12/5/2000	903	0.29	160	3.9	26	78	0.6
1/10/2001	917	0.29	160	4.0	26.5	76	0.8
2/6/2001	910	0.28	161	4.1	26	77	1.1
Min	880	0.25	148	3.8	24.5	74	0.5
Max	993	0.35	168	4.4	27.5	93	1.3
Avg	917	0.30	160	4.0	26.5	81	0.9

The Metropolitan Water District of Southern California  
Lake Havasu Water Quality Data

Date	L. Havasu pH	L. Havasu Silica ppm	L. Havasu Sulfate ppm	L. Havasu Alkalinity ppm as CaCO3	L. Havasu TDS ppm	L. Havasu Temp C	L. Havasu Hardness ppm as CaCO3
7/7/1997	8.27	8.8	250	134	620	26	301
8/5/1997	8.44	9.9	247	134	616	29	296
9/2/1997	8.43	9.7	245	129	611	27	291
10/7/1997	8.36	9.3	242	130	608	25	296
11/4/1997	8.25	9.2	249	130	615	18	296
12/1/1997	8.29	9.0	243	134	612	16	296
1/6/1998	8.21	9.6	247	138	618	11	298
2/3/1998	8.18	9.6	236	134	596	13	296
3/2/1998	8.19	9.5	229	132	582	14	291
4/7/1998	8.31	9.1	228	132	578	15	290
5/5/1998	8.33	9.5	232	133	584	20	290
6/2/1998	8.14	9.3	229	132	577	20	288
7/7/1998	8.24	9.3	229	133	578	23	282
8/11/1998	8.51	9.3	236	127	585	28	288
9/1/1998	8.27	8.6	230	130	573	25	282
10/13/1998	8.24	8.9	229	131	582	20	289
11/3/1998	8.30	8.9	230	131	578	19	282
12/1/1998	8.24	8.5	226	131	574	15	286
1/12/1999	8.36	9.0	230	134	578	10	289
2/2/1999	8.30	8.6	230	134	575	10	287
3/2/1999	8.30	8.6	231	133	578	13	289
4/6/1999	8.25	8.4	234	132	582	16	289
5/4/1999	8.29	8.8	225	132	565	18	285
6/2/1999	8.23	8.3	223	130	561	20	285
7/20/1999	8.15	9.2	222	128	560	23	285
8/3/1999	8.47	8.4	226	131	566	28	285
9/8/1999	8.11	9.0	220	127	554	24	280
10/5/1999	8.21	9.0	223	128	559	23	283
11/2/1999	8.25	8.9	227	127	563	19	280
12/7/1999	8.29	9.0	224	131	563	13	287
1/4/2000	8.16	9.0	224	131	564	11	285
1/31/2000	8.36	8.7	221	132	559	12	286
3/13/2000	8.25	8.8	228	131	572	15	287
4/3/2000	8.33	8.0	218	133	553	16	287
5/2/2000	8.24	8.1	217	132	549	20	285
6/6/2000	8.19	8.8	214	133	548	22	284
7/5/2000	8.21	8.8	213	133	541	23	277
8/1/2000	8.19	9.0	214	133	545	24	277
9/11/2000	8.18	8.7	213	131	542	23	277
10/3/2000	8.28	8.9	214	125	539	21	279
11/8/2000	8.30	9.0	220	132	556	18	282
12/5/2000	8.35	8.8	220	133	557	13	282
1/10/2001	8.39	9.5	223	133	563	11	291
2/6/2001	8.41	8.9	222	134	560	15	284
Min	8.11	8.0	213	125	539	10	277
Max	8.51	9.9	250	138	620	29	301
Avg	8.28	9.0	228	132	574	19	287

The Metropolitan Water District of Southern California  
Lake Havasu Water Quality Data

Date	L. Havasu TOC ppm	L. Havasu Turbidity NTU
7/7/1997	2.69	1.4
8/5/1997	2.79	0.66
9/2/1997	3.00	0.75
10/7/1997	2.78	0.61
11/4/1997	2.64	2.2
12/1/1997	2.70	2.3
1/6/1998	2.64	1.2
2/3/1998	2.58	1.3
3/2/1998	2.70	1.6
4/7/1998	2.74	1.5
5/5/1998	2.75	0.57
6/2/1998	2.88	1.6
7/7/1998	2.84	1.3
8/11/1998	2.98	0.81
9/1/1998	2.96	1
10/13/1998	3.01	1.7
11/3/1998	2.84	1.5
12/1/1998	2.82	1.5
1/12/1999	2.72	1.8
2/2/1999	2.73	1.2
3/2/1999	2.83	0.99
4/6/1999	2.86	1.9
5/4/1999	2.89	1.2
6/2/1999	2.83	1.2
7/20/1999	2.93	1.4
8/3/1999	2.87	0.76
9/8/1999	2.92	1.7
10/5/1999	2.93	2.6
11/2/1999	2.84	1.5
12/7/1999	2.74	0.91
1/4/2000	2.74	1.31
1/31/2000	2.67	0.9
3/13/2000	2.60	1.4
4/3/2000	2.69	1.8
5/2/2000	2.99	1.1
6/6/2000	2.92	1.3
7/5/2000	3.03	1.2
8/1/2000	2.85	1.6
9/11/2000	2.85	1.7
10/3/2000	2.87	1.9
11/8/2000	3.00	2.9
12/5/2000	2.98	2.3
1/10/2001	3.03	2
2/6/2001	2.95	1.5
Min	2.58	0.57
Max	3.03	2.9
Avg	2.83	1.4



The Metropolitan Water District of Southern California  
Lake Havasu Water Quality Data

Date	L. Havasu Boron ppm	L. Havasu Bromide ppm	L. Havasu Calcium ppm	L. Havasu Chloride ppm	L. Havasu CO2 ppm	L. Havasu Carbonate ppm	L. Havasu Color
7/7/1997		0.09	76	85	1.5	0	
8/5/1997		0.10	73	82	1.0	1	
9/2/1997	0.11	0.08	71	81	1.0	2	
10/7/1997		0.07	73	80	1.2	1	
11/4/1997		0.07	74	82	1.5	0	5
12/1/1997	0.12	0.06	75	82	1.4	0	
1/6/1998		0.07	75	82	1.7	0	
2/3/1998		0.07	75	77	1.8	0	4
3/2/1998	0.09	0.08	73	75	1.7	0	
4/7/1998		0.07	74	74	1.3	0	
5/5/1998		0.06	75	75	1.3	0	2
6/2/1998	0.11	0.07	74	73	1.9	0	
7/7/1998		0.06	71	73	1.6	0	
8/11/1998		0.08	70	75	0.8	4	7
9/1/1998	0.11	0.07	70	72	1.4	0	
10/13/1998		0.08	72	78	1.5	0	
11/3/1998		0.07	70	73	1.3	0	6
12/1/1998	0.11	0.07	69	71	1.5	0	
1/12/1999		0.07	73	71	1.2	1	
2/2/1999		0.07	72	70	1.4	0	5
3/2/1999	0.13	0.06	73	72	1.4	0	
4/6/1999		0.07	73	72	1.5	0	
5/4/1999		0.07	72	69	1.4	0	5
6/2/1999	0.13	0.07	72	67	1.6	0	
7/20/1999		0.06	73	68	1.8	0	
8/3/1999		0.06	72	69	0.9	2	5
9/8/1999	0.08	0.07	71	67	2.0	0	
10/5/1999		0.07	72	68	1.6	0	
11/2/1999		0.07	70	70	1.4	0	2
12/7/1999	0.08	0.07	73	68	1.4	0	
1/4/2000		0.07	72	69	1.8	0	
1/31/2000		0.06	74	67	1.2	1	3
3/13/2000	0.09	0.06	72	69	1.5	0	
4/3/2000		0.06	73	66	1.3	1	
5/2/2000		0.06	72	66	1.5	0	4
6/6/2000	0.10	0.06	71	65	1.7	0	
7/5/2000		0.05	69	65	1.7	0	
8/1/2000		0.06	69	66	1.7	0	6
9/11/2000	0.08	0.05	68	65	1.8	0	
10/3/2000		0.06	68	65	1.3	0	
11/8/2000		0.07	70	68	1.3	0	10
12/5/2000	0.12	0.07	70	68	1.2	1	
1/10/2001		0.06	73	69	1.1	1	
2/8/2001		0.07	71	68	1.1	1	6
Min	0.08	0.05	68	65	0.8	0	2
Max	0.13	0.10	76	85	2.0	4	10
Avg	0.10	0.07	72	72	1.4	0	5

The Metropolitan Water District of Southern California  
Lake Havasu Water Quality Data

Date	L. Havasu Conductivity umho/cm	L. Havasu Fluoride ppm	L. Havasu Bicarbonate ppm	L. Havasu Potassium ppm	L. Havasu Magnesium ppm	L. Havasu Sodium ppm	L. Havasu Nitrate ppm
7/7/1997	956	0.26	163	4.2	27	87	0.5
8/5/1997	993	0.28	161	4.4	27.5	89	0.5
9/2/1997	978	0.29	153	4.3	27.5	93	0.5
10/7/1997	958	0.30	156	4.3	27.5	92	0.6
11/4/1997	972	0.33	159	4.3	27	89	0.8
12/1/1997	952	0.33	163	4.4	26.5	89	0.8
1/6/1998	970	0.34	168	4.3	27	88	0.9
2/3/1998	948	0.35	163	3.9	26.5	85	1.1
3/2/1998	917	0.31	161	4.0	26.5	84	1.1
4/7/1998	917	0.25	161	4.0	25.5	82	1.0
5/5/1998	910	0.33	162	4.1	25	81	1.0
6/2/1998	930	0.30	161	4.1	25	81	0.9
7/7/1998	928	0.29	162	3.9	25.5	84	0.9
8/11/1998	923	0.29	148	4.0	27.5	85	0.5
9/1/1998	918	0.32	159	3.9	26	82	0.6
10/13/1998	925	0.29	160	3.9	26.5	82	0.8
11/3/1998	933	0.31	160	3.9	26	85	0.7
12/1/1998	922	0.31	160	4.0	27.5	87	0.8
1/12/1999	916	0.29	161	3.9	26	82	1.2
2/2/1999	922	0.30	163	3.9	26	81	1.2
3/2/1999	917	0.32	162	4.0	26	81	1.2
4/6/1999	914	0.27	161	4.0	26	83	1.2
5/4/1999	901	0.28	161	4.1	25.5	79	1.0
6/2/1999	898	0.28	159	4.0	25.5	81	1.0
7/20/1999	895	0.29	156	3.9	25	79	1.0
8/3/1999	904	0.31	155	4.0	25.5	80	0.6
9/8/1999	892	0.28	155	3.9	25	79	0.8
10/5/1999	880	0.31	156	4.0	25	79	0.8
11/2/1999	901	0.27	155	4.1	25.5	79	0.9
12/7/1999	898	0.30	160	4.0	25.5	79	1.0
1/4/2000	881	0.28	160	3.8	25.5	79	1.1
1/31/2000	916	0.31	159	3.8	24.5	78	1.2
3/13/2000	911	0.32	160	3.9	26	82	1.3
4/3/2000	896	0.29	160	4.0	25.5	75	1.1
5/2/2000	885	0.31	161	4.1	25.5	74	1.1
6/6/2000	890	0.27	162	4.1	26	77	1.1
7/5/2000	898	0.28	162	4.0	25.5	74	1.0
8/1/2000	895	0.29	162	4.0	25.5	75	1.0
9/11/2000	893	0.28	160	4.1	26	76	0.7
10/3/2000	883	0.28	153	4.0	26.5	75	0.7
11/8/2000	894	0.28	161	4.1	26	78	0.6
12/5/2000	903	0.29	160	3.9	26	78	0.6
1/10/2001	917	0.29	160	4.0	26.5	76	0.8
2/6/2001	910	0.28	161	4.1	26	77	1.1
Min	880	0.25	148	3.8	24.5	74	0.5
Max	993	0.35	168	4.4	27.5	93	1.3
Avg	917	0.30	160	4.0	26.5	81	0.9

The Metropolitan Water District of Southern California  
Lake Havasu Water Quality Data

Date	L. Havasu pH	L. Havasu Silica ppm	L. Havasu Sulfate ppm	L. Havasu Alkalinity ppm as CaCO3	L. Havasu TDS ppm	L. Havasu Temp C	L. Havasu Hardness ppm as CaCO3
7/7/1997	8.27	8.8	250	134	620	26	301
8/5/1997	8.44	9.9	247	134	616	29	296
9/2/1997	8.43	9.7	245	129	611	27	291
10/7/1997	8.36	9.3	242	130	608	25	296
11/4/1997	8.25	9.2	249	130	615	18	296
12/1/1997	8.29	9.0	243	134	612	16	296
1/6/1998	8.21	9.6	247	138	618	11	298
2/3/1998	8.18	9.6	236	134	596	13	296
3/2/1998	8.19	9.5	229	132	582	14	291
4/7/1998	8.31	9.1	228	132	578	15	290
5/5/1998	8.33	9.5	232	133	584	20	290
6/2/1998	8.14	9.3	229	132	577	20	288
7/7/1998	8.24	9.3	229	133	578	23	282
8/11/1998	8.51	9.3	236	127	585	28	288
9/1/1998	8.27	8.6	230	130	573	25	282
10/13/1998	8.24	8.9	229	131	582	20	289
11/3/1998	8.30	8.9	230	131	578	19	282
12/1/1998	8.24	8.5	226	131	574	15	286
1/12/1999	8.36	9.0	230	134	578	10	289
2/2/1999	8.30	8.6	230	134	575	10	287
3/2/1999	8.30	8.6	231	133	578	13	289
4/6/1999	8.25	8.4	234	132	582	16	289
5/4/1999	8.29	8.8	225	132	565	18	285
6/2/1999	8.23	8.3	223	130	561	20	285
7/20/1999	8.15	9.2	222	128	560	23	285
8/3/1999	8.47	8.4	226	131	566	28	285
9/8/1999	8.11	9.0	220	127	554	24	280
10/5/1999	8.21	9.0	223	128	559	23	283
11/2/1999	8.25	8.9	227	127	563	19	280
12/7/1999	8.29	9.0	224	131	563	13	287
1/4/2000	8.16	9.0	224	131	564	11	285
1/31/2000	8.36	8.7	221	132	559	12	286
3/13/2000	8.25	8.8	228	131	572	15	287
4/3/2000	8.33	8.0	218	133	553	16	287
5/2/2000	8.24	8.1	217	132	549	20	285
6/6/2000	8.19	8.8	214	133	548	22	284
7/5/2000	8.21	8.8	213	133	541	23	277
8/1/2000	8.19	9.0	214	133	545	24	277
9/11/2000	8.18	8.7	213	131	542	23	277
10/3/2000	8.28	8.9	214	125	539	21	279
11/8/2000	8.30	9.0	220	132	556	18	282
12/5/2000	8.35	8.8	220	133	557	13	282
1/10/2001	8.39	9.5	223	133	563	11	291
2/6/2001	8.41	8.9	222	134	560	15	284
Min	8.11	8.0	213	125	539	10	277
Max	8.51	9.9	250	138	620	29	301
Avg	8.28	9.0	228	132	574	19	287

The Metropolitan Water District of Southern California  
Lake Havasu Water Quality Data

Date	L. Havasu TOC ppm	L. Havasu Turbidity NTU
7/7/1997	2.69	1.4
8/5/1997	2.79	0.66
9/2/1997	3.00	0.75
10/7/1997	2.78	0.61
11/4/1997	2.64	2.2
12/1/1997	2.70	2.3
1/6/1998	2.64	1.2
2/3/1998	2.58	1.3
3/2/1998	2.70	1.6
4/7/1998	2.74	1.5
5/5/1998	2.75	0.57
6/2/1998	2.88	1.6
7/7/1998	2.84	1.3
8/11/1998	2.98	0.81
9/1/1998	2.96	1
10/13/1998	3.01	1.7
11/3/1998	2.84	1.5
12/1/1998	2.82	1.5
1/12/1999	2.72	1.8
2/2/1999	2.73	1.2
3/2/1999	2.83	0.99
4/6/1999	2.86	1.9
5/4/1999	2.89	1.2
6/2/1999	2.83	1.2
7/20/1999	2.93	1.4
8/3/1999	2.87	0.76
9/8/1999	2.92	1.7
10/5/1999	2.93	2.6
11/2/1999	2.84	1.5
12/7/1999	2.74	0.91
1/4/2000	2.74	1.31
1/31/2000	2.67	0.9
3/13/2000	2.60	1.4
4/3/2000	2.69	1.8
5/2/2000	2.99	1.1
6/6/2000	2.92	1.3
7/5/2000	3.03	1.2
8/1/2000	2.85	1.6
9/11/2000	2.85	1.7
10/3/2000	2.87	1.9
11/8/2000	3.00	2.9
12/5/2000	2.98	2.3
1/10/2001	3.03	2
2/6/2001	2.95	1.5
Min	2.58	0.57
Max	3.03	2.9
Avg	2.83	1.4

The Metropolitan Water District of Southern California  
Lake Havasu Trace Metals - Jul 1997 - Feb 2001  
(parts per billion)

SAMPLE ID	Reporting Limit	L20688-12	L25397-15	L25703-14	L26652-14	L26850-3	L26864-12	L27346-12	L27785-15	L28526-13	L28736-13
SAMPLE DATE		21-Jul-97	18-Aug-97	29-Sep-97	27-Oct-97	4-Nov-97	18-Nov-97	16-Dec-97	27-Jan-98	23-Feb-98	30-Mar-98
Aluminum	5					48					
Antimony	2					ND					
Arsenic	0.5					2.8					
Barium	5					104					
Beryllium	0.1					ND					
Calcium	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*					2**					
Copper	10	ND	ND	ND	ND	ND	ND	ND	14	ND	ND
Fluorine	50					ND					
Lead	1					ND					
Chromium	10					37					
Manganese	5					6					
Mercury	0.2					ND					
Molybdenum	2					5					
Nickel	2					ND					
Selenium	5					ND					
Silver	10					ND					
Sunium	20					1040					
Thallium	1					ND					
Vanadium	1									3	
Zinc	20					ND					

\* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.  
\*\* Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California  
Lake Havasu Trace Metals - Jul 1997 - Feb 2001  
(parts per billion)

SAMPLE ID	Reporting Limit	L29337-1 7-Apr-98	L29353-13 27-Apr-98	L30032-12 26-May-98	L30623-13 22-Jun-98	L31066-13 27-Jul-98	L31585-13 24-Aug-98	L32084-12 28-Sep-98	L32643-1 13-Oct-98	L32662-12 28-Oct-98	L33145-14 23-Nov-98
Aluminum	5	20							11		
Antimony	2	ND							ND		
Arsenic	0.5	2.5							3		
Barium	5	102							84		
Beryllium	0.1	ND							ND		
Cadmium	0.1	0.31	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*	ND							ND		
Copper	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoride	50	ND							ND		
Lead	1	ND							ND		
Lithium	10	41							39		
Manganese	5	ND							ND		
Mercury	0.2	ND							ND		
Molybdenum	2	5							5		
Nickel	2	2							2		
Selenium	5	ND							ND		
Silver	10	ND							ND		
Sodium	20	1000							912		
Thallium	1	ND							ND		
Vanadium	1										
Zinc	20	ND							ND		

\* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

\*\* Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California  
Lake Havasu Trace Metals - Jul 1997 - Feb 2001  
(parts per billion)

SAMPLE ID	Reporting Limit	M614-34 22-Feb-99	M843-23 22-Mar-99	M1304-1 6-Apr-99	M1317-12 26-Apr-99	M1977-1 2-Jun-99	M2471-12 28-Jun-99	M3074-12 26-Jul-99	M3558-1 3-Aug-99	M4143-12 27-Sep-99	M4826-1 4-Oct-99	M4839-12 25-Oct-99
Aluminum	5			51							13	
Arsenic	2			ND							ND	
Boron	0.5			2.6							2.9	
Barium	5			97							88	
Beryllium	0.1			ND							ND	
Cadmium	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*			ND							ND	
Copper	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	50			ND							ND	
Lead	1			ND							ND	
Lithium	10			38							34	
Manganese	5			ND							ND	
Mercury	0.2			ND							ND	
Molybdenum	2			5							4	
Nickel	2			3							2	
Selenium	5			ND							ND	
Silver	10			ND							ND	
Strontium	20			962							892	
Thallium	1			ND							ND	
Vanadium	1											
Zinc	20			ND							ND	

\* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

\*\* Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California  
Lake Havasu Trace Metals - Jul 1997 - Feb 2001  
(parts per billion)

SAMPLE ID	Reporting Limit	M5436-1 29-Nov-99	M6797-1 31-Jan-00	M7334-14 28-Feb-00	M8098-12 27-Mar-00	M8657-1 3-Apr-00	M9275-1 29-May-00	M11748-1 31-Jul-00	M12058-1 28-Aug-00	M12201-7 25-Sep-00	M12775-1 4-Oct-00	M12795-1 4-Oct-00
Aluminum	5					19					16	
Antimony	2					ND					ND	
Arsenic	0.5					2.8					3	
Barium	5					94					98	
Beryllium	0.1					ND					ND	
Chromium	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium 1(2)*						ND					ND	
Copper	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt	50					ND					ND	
Fluoride	1					ND					ND	
Iron	10					32					40	
Manganese	5					ND					ND	
Molybdenum	0.2					ND					ND	
Molybdenum	2					5					5	
Nickel	2					ND					3	
Selenium	5					ND					ND	
Silver	10					ND					ND	
Strontium	20					942					1000	
Thallium	1					ND					ND	
Vanadium	1										2	
Zinc	20					ND					ND	

\* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

\*\* Suspected to be a result of positive interference by ICP-MS methodology.



The Metropolitan Water District of Southern California  
Lake Havasu Trace Metals - Jul 1997 - Feb 2001  
(parts per billion)

SAMPLE ID	Reporting Limit	M13436-12 27-Nov-00	M14206-7 19-Dec-00	M14750-1 10-Jan-01	M15224-8 6-Feb-01
Aluminum	5				
Antimony	2				
Arsenic	0.5				
Boron	5				
Beryllium	0.1				
Cadmium	0.1	ND	ND	ND	ND
Chromium	1(2)*				
Copper	10	ND	ND	ND	ND
Iron	50				
Lead	1				
Chromium	10				
Manganese	5				
Mercury	0.2				
Molybdenum	2				
Nickel	2				
Selenium	5				
Silver	10				
Strontium	20				
Thallium	1				
Vanadium	1				
Zinc	20				

\* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.  
\*\* Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California  
Lake Havasu Trace Metals - Jul 1997 - Feb 2001  
(parts per billion)

SAMPLE ID	Reporting Limit	L20688-12 21-Jul-97	L25397-15 18-Aug-97	L25703-14 29-Sep-97	L26652-14 27-Oct-97	L26650-3 4-Nov-97	L28864-12 18-Nov-97	L27346-12 16-Dec-97	L27785-15 27-Jan-98	L28526-13 23-Feb-98	L28738-13 30-Mar-98
Aluminum	5					48					
Antimony	2					ND					
Arsenic	0.5					2.8					
Barium	5					104					
Beryllium	0.1					ND					
Cadmium	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*					2**					
Copper	10	ND	ND	ND	ND	ND	ND	ND	14	ND	ND
Iron	50					ND					
Lead	1					ND					
Lithium	10					37					
Manganese	5					6					
Mercury	0.2					ND					
Molybdenum	2					5					
Nickel	2					ND					
Selenium	5					ND					
Silver	10					ND					
Strontium	20					1040					
Thallium	1					ND					
Vanadium	1									3	
Zinc	20					ND					

\* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

\*\* Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California  
Lake Havasu Trace Metals - Jul 1997 - Feb 2001  
(parts per billion)

SAMPLE ID	Reporting Limit	L29337-1 7-Apr-98	L29353-13 27-Apr-98	L30032-12 26-May-98	L30623-13 22-Jun-98	L31066-13 27-Jul-98	L31585-13 24-Aug-98	L32084-12 28-Sep-98	L32643-1 13-Oct-98	L32662-12 28-Oct-98	L33145-14 23-Nov-98
Aluminum	5	20							11		
Antimony	2	ND							ND		
Arsenic	0.5	2.5							3		
Barium	5	102							94		
Beryllium	0.1	ND							ND		
Calcium	0.1	0.31	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*	ND							ND		
Copper	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	50	ND							ND		
Lead	1	ND							ND		
Lithium	10	41							39		
Manganese	5	ND							ND		
Mercury	0.2	ND							ND		
Molybdenum	2	5							5		
Nickel	2	2							2		
Selenium	5	ND							ND		
Silver	10	ND							ND		
Sodium	20	1000							912		
Thallium	1	ND							ND		
Vanadium	1										
Zinc	20	ND							ND		

\* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.  
\*\* Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California  
Lake Havasu Trace Metals - Jul 1997 - Feb 2001  
(parts per billion)

SAMPLE ID	Reporting Limit	M614-34 22-Feb-99	M843-23 22-Mar-99	M1304-1 6-Apr-99	M1317-12 26-Apr-99	M1977-1 2-Jun-99	M2471-12 28-Jun-99	M3074-12 26-Jul-99	M3558-1 3-Aug-99	M4143-12 27-Sep-99	M4826-1 4-Oct-99	M4839-12 25-Oct-99
Aluminum	5			51							13	
Antimony	2			ND							ND	
Arsenic	0.5			2.6							2.9	
Barium	5			97							88	
Beryllium	0.1			ND							ND	
Cadmium	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*			ND							ND	
Copper	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt	50			ND							ND	
Iron	1			ND							ND	
Lead	10			38							34	
Lithium	5			ND							ND	
Manganese	0.2			ND							ND	
Mercury	2			5							4	
Molybdenum	2			3							2	
Nickel	5			ND							ND	
Selenium	10			ND							ND	
Silver	20			962							892	
Strontium	1			ND							ND	
Tantalum	1											
Vanadium	20			ND							ND	
Zinc												

\* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

\*\* Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California  
Lake Havasu Trace Metals - Jul 1997 - Feb 2001  
(parts per billion)

SAMPLE ID	Reporting Limit	M5436-1 29-Nov-99	M6797-1 31-Jan-00	M7334-14 28-Feb-00	M8098-12 27-Mar-00	M8657-1 3-Apr-00	M9275-1 29-May-00	M11748-1 31-Jul-00	M12058-1 28-Aug-00	M12201-7 25-Sep-00	M12775-1 4-Oct-00	M12795-1 4-Oct-00
Aluminum	5					19					16	
Antimony	2					ND					ND	
Arsenic	0.5					2.8					3	
Barium	5					94					96	
Beryllium	0.1					ND					ND	
Cadmium	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*					ND					ND	
Copper	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	50					ND					ND	
Lead	1					ND					ND	
Lithium	10					32					40	
Manganese	5					ND					ND	
Mercury	0.2					ND					ND	
Molybdenum	2					5					5	
Nickel	2					ND					3	
Selenium	5					ND					ND	
Silver	10					ND					ND	
Sroutium	20					942					1000	
Thallium	1					ND					ND	
Vanadium	1										2	
Zinc	20					ND					ND	

\* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

\*\* Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California  
 Lake Havasu Trace Metals - Jul 1997 - Feb 2001  
 (parts per billion)

SAMPLE ID	Reporting Limit	M13436-12 27-Nov-00	M14206-7 19-Dec-00	M14750-1 10-Jan-01	M15224-8 6-Feb-01
Aluminum	5				
Antimony	2				
Arsenic	0.5				
Barium	5				
Beryllium	0.1				
Cadmium	0.1	ND	ND	ND	ND
Chromium	1(2)*				
Copper	10	ND	ND	ND	ND
Iron	50				
Lead	1				
Lithium	10				
Manganese	5				
Mercury	0.2				
Molybdenum	2				
Nickel	2				
Selenium	5				
Silver	10				
Strontium	20				
Thallium	1				
Vanadium	1				
Zinc	20				

\* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.  
 \*\* Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California

Lake Havasu Perchlorate Data

September 1997 to April 2001

Sample Site	Depth	Sample Date	Perchlorate (ppb)
Lake Havasu Intake	3M	29-Sep-97	8
Lake Havasu Intake	6M	29-Sep-97	7
Lake Havasu Intake	9M	29-Sep-97	8
Lake Havasu Intake	12M	29-Sep-97	8
Lake Havasu Intake	15M	29-Sep-97	7
Lake Havasu Intake	18M	29-Sep-97	6
Lake Havasu Intake	0.4M	29-Sep-97	9
Lake Havasu at Contact Point	0M	29-Sep-97	6
Lake Havasu at Contact Point	3M	29-Sep-97	6
Lake Havasu at Contact Point	6M	29-Sep-97	7
Lake Havasu at Contact Point	9M	29-Sep-97	7
Lake Havasu at Contact Point	12M	29-Sep-97	7
Lake Havasu at Mesquite Bay	0M	29-Sep-97	7
Lake Havasu at Mesquite Bay	3M	29-Sep-97	6
Lake Havasu at Mesquite Bay	6M	29-Sep-97	6
Lake Havasu at National Wildlife Refuge Buoy Line	3M	29-Sep-97	9
Lake Havasu Intake	3M	27-Oct-97	5
Lake Havasu Intake	6M	27-Oct-97	7
Lake Havasu Intake	9M	27-Oct-97	5
Lake Havasu Intake	12M	27-Oct-97	6
Lake Havasu Intake	15M	27-Oct-97	4
Lake Havasu Intake	18M	27-Oct-97	6
Lake Havasu Intake	0.4M	27-Oct-97	5
Lake Havasu Contact Point	0M	27-Oct-97	5
Lake Havasu Contact Point	3M	27-Oct-97	5
Lake Havasu Contact Point	6M	27-Oct-97	4
Lake Havasu Contact Point	9M	27-Oct-97	5
Lake Havasu Contact Point	12M	27-Oct-97	4
Lake Havasu at Mesquite Bay	0M	27-Oct-97	5
Lake Havasu at Mesquite Bay	3M	27-Oct-97	6
Lake Havasu at Mesquite Bay	6M	27-Oct-97	5
Lake Havasu at National Wildlife Refuge Buoy Line	3M	27-Oct-97	4
Lake Havasu Intake	Inlet Depth	4-Nov-97	6
Lake Havasu Intake	Inlet Depth	2-Dec-97	7
Lake Havasu Intake	Inlet Depth	6-Jan-98	5
Lake Havasu Intake	Inlet Depth	3-Feb-98	6
Lake Havasu Intake	Inlet Depth	2-Mar-98	7
Lake Havasu Intake	Inlet Depth	7-Apr-98	6
Lake Havasu Intake	Inlet Depth	5-May-98	9
Lake Havasu Intake	Inlet Depth	2-Jun-98	6
Lake Havasu Intake	Inlet Depth	7-Jul-98	8
Lake Havasu Intake	Inlet Depth	11-Aug-98	5
Lake Havasu Intake	Inlet Depth	1-Sep-98	5
Lake Havasu Intake	Inlet Depth	13-Oct-98	6
Lake Havasu Intake	Inlet Depth	3-Nov-98	6
Lake Havasu Intake	Inlet Depth	1-Dec-98	6
Lake Havasu Intake	Inlet Depth	5-Jan-99	5

The Metropolitan Water District of Southern California

Lake Havasu Perchlorate Data

September 1997 to April 2001

Sample Site	Depth	Sample Date	Perchlorate (ppb)
Lake Havasu Intake	Inlet Depth	2-Feb-99	7
Lake Havasu Intake	Inlet Depth	2-Mar-99	8
Lake Havasu Intake	Inlet Depth	6-Apr-99	8
Lake Havasu Intake	Inlet Depth	4-May-99	6
Lake Havasu Intake	Inlet Depth	2-Jun-99	5
Lake Havasu Intake	Inlet Depth	20-Jul-99	8
Lake Havasu Intake	Inlet Depth	3-Aug-99	7
Lake Havasu Intake	Inlet Depth	8-Sep-99	6
Lake Havasu Intake	Inlet Depth	5-Oct-99	5
Lake Havasu Intake	Inlet Depth	2-Nov-99	6
Lake Havasu Intake	Inlet Depth	7-Dec-99	5
Lake Havasu Intake	Inlet Depth	4-Jan-00	6
Lake Havasu Intake	Inlet Depth	31-Jan-00	6
Lake Havasu Intake	Inlet Depth	13-Mar-00	7
Lake Havasu Intake	Inlet Depth	3-Apr-00	7
Lake Havasu Intake	Inlet Depth	2-May-00	7
Lake Havasu Intake	Inlet Depth	6-Jun-00	7
Lake Havasu Intake	Inlet Depth	5-Jul-00	8
Lake Havasu Intake	Inlet Depth	1-Aug-00	6
Lake Havasu Intake	Inlet Depth	11-Sep-00	7
Lake Havasu Intake	Inlet Depth	3-Oct-00	5
Lake Havasu Intake	0.4M	8-Nov-00	6
Lake Havasu Intake	0.4M	5-Dec-00	5
Lake Havasu Intake	0.4M	10-Jan-01	5
Lake Havasu Intake	0.4M	6-Feb-01	7
Lake Havasu Intake	0.4M	12-Mar-01	6
Lake Havasu Intake	0.4M	3-Apr-01	7



The Metropolitan Water District of Southern California  
Monthly Average Coliform Results For Colorado River Aqueduct  
(Intake Pumping Plant Influent)

YEAR	MONTH	Number of Samples	Total Coliform <sup>1</sup>	Number of Samples	Fecal Coliform <sup>1</sup>	Number of Samples	<i>E. Coli</i> <sup>1</sup>
1997	July	5	9	5	<2	5	<2
	August	4	9	4	<2	4	<2
	September	5	26	5	2	5	<2
	October	4	15	4	<2	4	<2
	November	4	3	4	<2	4	<2
	December	5	5	5	<2	5	<2
1998	January	4	4	4	2	4	2
	February	4	10	4	<2	4	<2
	March	5	2	5	<2	5	<2
	April	4	<2	4	<2	4	<2
	May	4	<2	4	<2	4	<2
	June	5	<2	5	<2	5	<2
	July	4	5	4	<2	4	<2
	August	4	5	4	<2	4	<2
	September	5	11	5	<2	5	<2
	October	4	9	4	<2	4	<2
	November	4	5	4	<2	4	<2
	December	5	8	5	<2	5	<2
1999	January	4	11	4	9	4	5
	February	4	7	4	<2	4	<2
	March	4	<2	4	<2	4	<2
	April	5	2	5	<2	5	<2
	May	4	5	4	<2	4	<2
	June	5	12	5	<2	5	<2
	July	4	12	4	<2	4	<2
	August	5	13	5	2	5	<2
	September	4	16	4	2	4	<2
	October	4	17	4	<2	4	<2
	November	5	10	5	<2	5	<2
	December	4	5	4	<2	4	<2

<sup>1</sup>Monthly average coliform results analyzed by Multiple Tube Fermentation method (MPN/100 ml).

The Metropolitan Water District of Southern California  
Monthly Average Coliform Results For Colorado River Aqueduct  
(Intake Pumping Plant Influent)

YEAR	MONTH	Number of Samples	Total Coliform <sup>1</sup>	Number of Samples	Fecal Coliform <sup>1</sup>	Number of Samples	<i>E. Coli</i> <sup>1</sup>
2000	January	4	6	4	<2	4	<2
	February	5	26	5	2	5	2
	March	4	7	4	<2	4	<2
	April	4	11	4	<2	4	<2
	May	5	17	5	<2	5	<2
	June	4	11	4	<2	4	<2
	July	5	21	5	<2	5	<2
	August	5	24	5	<2	5	<2
	September	4	37	4	<2	4	<2
	October	5	6	5	<2	5	<2
	November	4	2	4	<2	4	<2
	December	4	2	4	<2	4	<2
2001	January	5	2	5	<2	5	<2
	February	4	2	4	<2	4	<2
	March	4	13	4	<2	4	<2

<sup>1</sup>Monthly average coliform results analyzed by Multiple Tube Fermentation method (MPN/100 ml).

The Metropolitan Water District of Southern California  
Monthly Average Coliform Results For Colorado River Aqueduct  
(Intake Pumping Plant Influent)

YEAR	MONTH	Number of Samples	Total Coliform <sup>1</sup>	Number of Samples	Fecal Coliform <sup>1</sup>	Number of Samples	<i>E. Coli</i> <sup>1</sup>
1997	July	5	9	5	<2	5	<2
	August	4	9	4	<2	4	<2
	September	5	26	5	2	5	<2
	October	4	15	4	<2	4	<2
	November	4	3	4	<2	4	<2
	December	5	5	5	<2	5	<2
1998	January	4	4	4	2	4	2
	February	4	10	4	<2	4	<2
	March	5	2	5	<2	5	<2
	April	4	<2	4	<2	4	<2
	May	4	<2	4	<2	4	<2
	June	5	<2	5	<2	5	<2
	July	4	5	4	<2	4	<2
	August	4	5	4	<2	4	<2
	September	5	11	5	<2	5	<2
	October	4	9	4	<2	4	<2
	November	4	5	4	<2	4	<2
	December	5	8	5	<2	5	<2
1999	January	4	11	4	9	4	5
	February	4	7	4	<2	4	<2
	March	4	<2	4	<2	4	<2
	April	5	2	5	<2	5	<2
	May	4	5	4	<2	4	<2
	June	5	12	5	<2	5	<2
	July	4	12	4	<2	4	<2
	August	5	13	5	2	5	<2
	September	4	16	4	2	4	<2
	October	4	17	4	<2	4	<2
	November	5	10	5	<2	5	<2
	December	4	5	4	<2	4	<2

<sup>1</sup>Monthly average coliform results analyzed by Multiple Tube Fermentation method (MPN/100 ml).

The Metropolitan Water District of Southern California  
Monthly Average Coliform Results For Colorado River Aqueduct  
(Intake Pumping Plant Influent)

YEAR	MONTH	Number of Samples	Total Coliform <sup>1</sup>	Number of Samples	Fecal Coliform <sup>1</sup>	Number of Samples	E. Coli <sup>1</sup>
2000	January	4	6	4	<2	4	<2
	February	5	26	5	2	5	2
	March	4	7	4	<2	4	<2
	April	4	11	4	<2	4	<2
	May	5	17	5	<2	5	<2
	June	4	11	4	<2	4	<2
	July	5	21	5	<2	5	<2
	August	5	24	5	<2	5	<2
	September	4	37	4	<2	4	<2
	October	5	6	5	<2	5	<2
	November	4	2	4	<2	4	<2
	December	4	2	4	<2	4	<2
2001	January	5	2	5	<2	5	<2
	February	4	2	4	<2	4	<2
	March	4	13	4	<2	4	<2

<sup>1</sup>Monthly average coliform results analyzed by Multiple Tube Fermentation method (MPN/100 ml).

The Metropolitan Water District of Southern California  
Water Quality Laboratory  
Pathogen Monitoring Data for the Colorado River Sanitary Survey  
**Protozoa**

Sample Date	Sample Site (1)	Sample Volume (liters)	% Colorado River Water	Volume of Sample Analyzed (liters)	No. of Giardia sp. Cysts detected	Giardia sp. Detection Limit Per 100 L	No. of Cryptosporidium sp. Oocysts Detected	Cryptosporidium sp. Detection Limit Per 100 L
22-Jul-97	Intake Pump Plant	102.2	100	20.4	0	<5	1	5
25-Aug-97	Intake Pump Plant	102.2	100	25.6	0	<4	0	<4
22-Sep-97	Intake Pump Plant	102.2	100	27.2	0	<4	0	<4
21-Oct-97	Intake Pump Plant	102.2	100	20.4	0	<5	0	<5
17-Nov-97	Intake Pump Plant	102.2	100	27.3	0	<4	0	<4
15-Dec-97	Intake Pump Plant	102.2	100	40.9	0	<2	0	<2
20-Jan-98	Intake Pump Plant	102.2	100	27.3	1	4	0	<4
17-Feb-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3
17-Mar-98	Intake Pump Plant	102.2	100	8.2	0	<6	0	<6
21-Apr-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3
18-May-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3
16-Jun-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3
27-Jul-98	Intake Pump Plant	112.8	100	5.6	0	<18	1	18
24-Aug-98	Intake Pump Plant	102.2	100	25.6	0	<3.9	0	<3.9
28-Sep-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3

(1) Intake Pump Plant Sample collected at the Roto Valve from Lake Havasu - method used = USEPA Method 1623

The Metropolitan Water District of Southern California  
Water Quality Laboratory  
Pathogen Monitoring Data for the Colorado River Sanitary Survey  
**Protozoa**

Sample Date	Sample Site (1)	Sample Volume (liters)	% Colorado River Water	Volume of Sample Analyzed (liters)	No. of Giardia sp. Cysts detected	Giardia sp. Detection Limit Per 100 L	No. of Cryptosporidium sp. Oocysts Detected	Cryptosporidium sp. Detection Limit Per 100 L
22-Jul-97	Intake Pump Plant	102.2	100	20.4	0	<5	1	5
25-Aug-97	Intake Pump Plant	102.2	100	25.6	0	<4	0	<4
22-Sep-97	Intake Pump Plant	102.2	100	27.2	0	<4	0	<4
21-Oct-97	Intake Pump Plant	102.2	100	20.4	0	<5	0	<5
17-Nov-97	Intake Pump Plant	102.2	100	27.3	0	<4	0	<4
15-Dec-97	Intake Pump Plant	102.2	100	40.9	0	<2	0	<2
20-Jan-98	Intake Pump Plant	102.2	100	27.3	1	4	0	<4
17-Feb-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3
17-Mar-98	Intake Pump Plant	102.2	100	8.2	0	<6	0	<6
21-Apr-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3
18-May-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3
16-Jun-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3
27-Jul-98	Intake Pump Plant	112.8	100	5.6	0	<18	1	18
24-Aug-98	Intake Pump Plant	102.2	100	25.6	0	<3.9	0	<3.9
28-Sep-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3

(1) Intake Pump Plant Sample collected at the Roto Valve from Lake Havasu - method used = USEPA Method 1623



**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

**Date:** February 7, 2000  
**To:** Marshall K. Davis, Water Quality Laboratory Manager  
**From:** Bart Koch, Principal Chemist  
**Subject:** Third Quarter 1999 Pesticide, Herbicide, and Semi-Volatile Organic Compounds (SVOC) Monitoring Program

On September 1, 1999, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 1999 third quarter pesticide, herbicide, and SVOC monitoring program. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established reporting levels. **No pesticides, herbicides, or SVOCs were detected at or above the DLRs or the laboratory's reporting levels in Metropolitan's source or finished waters.**

The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides, and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOCs (USEPA Methods 515.2, 508, 507, 504.1, 531.1, 547, 549.1, 632, 548.1, and 525.2 respectively) were performed by Weck Laboratories. Quantarra Environmental Services performed the analysis for dioxin (Method 1613A).

This sampling is part of Metropolitan's annual pesticide, herbicide, and SVOC monitoring program. This was the second of two quarters of monitoring which is required every three years. The next monitoring will be conducted in the third quarter of 2000.

**ORIGINAL SIGNED BY**

Bart Koch

*Kat*  
EWC:smh

*2/8/00*  
h:\reports\bk pest herb svoc 3q99.doc

Attachments (2)

Marshall K. Davis, Water Quality Laboratory Manager  
Page 2  
February 7, 2000

cc w/attachments:

J. T. Wicke  
M. H. Stewart  
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D. G. Sass  
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M. S. Dale  
Water Quality file



**TABLE 1**

**SAMPLE LOCATIONS FOR  
PESTICIDE, HERBICIDE, and SVOC MONITORING  
THIRD QUARTER 1999**

**Source Waters**

Devil Canyon afterbay  
Foothill Pressure Control  
Structure (PCS)  
Lake Havasu near Intake  
Lake Mathews headworks  
Lake Perris  
Lake Skinner outlet conduit  
San Jacinto Tunnel

**Treated Waters**

Diemer plant effluent  
Mills plant effluent  
Skinner plant #1 effluent  
Skinner plant #2 effluent  
Weymouth plant effluent  
Jensen plant effluent

TABLE 2

**PESTICIDE, HERBICIDE, and SVOC DETECTION  
LIMITS AND MAXIMUM CONTAMINANT LEVELS  
THIRD QUARTER 1999**

<u>Analyte</u>	<u>CDHS Action Level<sup>1</sup> (mg/L)</u>	<u>CDHS MCL<sup>2</sup> (mg/L)</u>	<u>USEPA MCL<sup>3</sup> (mg/L)</u>	<u>CDHS DLR<sup>4</sup> (µg/L)</u>	<u>Laboratory Reporting Level (µg/L)</u>	<u>Analytical Results (µg/L)</u>
<b><u>Organochlorine Pesticides<sup>#</sup>:</u></b>						
Aldrin*	0.00005			0.075	0.08	ND
α-BHC	0.0007				0.01	ND
β-BHC	0.0003				0.05	ND
δ-BHC				0.5	0.05	ND
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20	ND
Chlordane		0.0001	0.002	0.1	0.10	ND
Chlorothalonil*				5.0	5.0	ND
4,4'-DDD				0.02	0.02	ND
4,4'-DDE				0.01	0.01	ND
4,4'-DDT				0.02	0.02	ND
Dieldrin*	0.00005			0.02	0.02	ND
Endrin		0.002	0.002	0.1	0.1	ND
Heptachlor		0.00001	0.0004	0.01	0.01	ND
Heptachlor epoxide		0.00001	0.0002	0.01	0.01	ND
Hexachlorobenzene		0.001	0.001	0.5	0.5	ND
Hexachlorocyclo-						ND
Pentadiene		0.05	0.05	1.0	1.0	ND
Methoxychlor		0.04	0.04	10.0	10.0	ND
Propachlor*				0.5	0.5	ND
Toxaphene		0.003	0.003	1.0	1.0	ND
Polychlorinated Biphenyls (PCB)		0.0005	0.0005	0.5	0.5	ND
<b><u>Organophosphorus Pesticides and Triazine Herbicides<sup>#</sup>:</u></b>						
Alachlor		0.002	0.002	1.0	1.0	ND
Atrazine		0.003	0.003	1.0	1.0	ND
Bromacil*				10.0	10.0	ND
Butachlor*				0.38	0.38	ND
Diazinon	0.014			0.25	0.25	ND
Dimethoate*	0.140			10.0	10.0	ND
Malathion	0.160				0.5	ND
Metalochlor*					0.5	ND
Metribuzin*					0.5	ND
Molinate		0.02		2.0	2.0	ND

<u>Analyte</u>	<u>CDHS Action Level<sup>1</sup> (mg/L)</u>	<u>CDHS MCL<sup>2</sup> (mg/L)</u>	<u>USEPA MCL<sup>3</sup> (mg/L)</u>	<u>CDHS DLR<sup>4</sup> (µg/L)</u>	<u>Laboratory Reporting Level (µg/L)</u>	<u>Analytical Results (µg/L)</u>
<b>Organophosphorus Pesticides and Triazine Herbicides<sup>#</sup>:</b>						
Prometryn*				2.0	2.0	ND
Simazine		0.004	0.004	1.0	1.0	ND
Thiobencarb		0.07(0.001**)		1.0	1.0	ND
<b>Organochlorine Herbicides<sup>#</sup>:</b>						
Bentazon		0.018		2.0	2.0	ND
Dalapon		0.2	0.2	10.0	10.0	ND
Dicamba*				1.5	0.081	ND
Dinoseb		0.007	0.007	2.0	2.0	ND
Pentachlorophenol		0.001	0.001	0.2	0.2	ND
Picloram		0.5	0.5	1.0	1.0	ND
2,4-D		0.07	0.07	10.0	10.0	ND
2,4,5-T (Silvex)		0.05	0.05	1.0	1.0	ND
<b>Carbamates Method 632<sup>#</sup></b>						
Diuron*				1.0	1.0	ND
<b>Carbamates Method 531.1<sup>#</sup></b>						
Aldicarb*	0.01		0.003 <sup>+</sup>	3.0	2	ND
Aldicarb sulfone*			0.002 <sup>+</sup>	4.0	2	ND
Aldicarb sulfoxide*			0.004 <sup>+</sup>	3.0	2	ND
Baygon(Propoxur)	0.09				1	ND
Carbofuran		0.018	0.04	5.0	2	ND
Carbaryl*	0.060			5.0	2	ND
3-Hydroxycarbofuran*				3.0	2	ND
Methomyl*				2.0	2	ND
Oxamyl		0.2	0.2	20.0	2	ND
<b>Fumigant Method 504.1<sup>#</sup></b>						
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01	ND
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02	ND

<u>Analyte</u>	<u>CDHS Action Level<sup>1</sup> (mg/L)</u>	<u>CDHS MCL<sup>2</sup> (mg/L)</u>	<u>USEPA MCL<sup>3</sup> (mg/L)</u>	<u>CDHS DLR<sup>4</sup> (µg/L)</u>	<u>Laboratory Reporting Level (µg/L)</u>	<u>Analytical Results (µg/L)</u>
<b>SVOC</b>						
<b><u>Method 525.2<sup>#</sup></u></b>						
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1	ND
Di(2-ethylhexyl)adipate		0.4	0.4	5	5	ND
Di(2-ethylhexyl)phthalate		0.004	0.006	3	3	ND

**Misc.**

Diquat <sup>#</sup>		0.02	0.02	4.0	4.0	ND
Endothall <sup>#</sup>		0.1	0.1	45.0	45	ND
Glyphosate <sup>#</sup>		0.7	0.7	25.0	25	ND
Dioxin (2,3,7,8-TCDD) <sup>##</sup>		3 x 10 <sup>-8</sup>	3 x 10 <sup>-8</sup>	5 x 10 <sup>-6</sup>	1.5 -5 x 10 <sup>-6</sup>	ND

<sup>1</sup> California Department of Health Services (CDHS) action levels ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999).

<sup>2</sup> CDHS maximum contaminant level (MCL) ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999).

<sup>3</sup> U.S. Environmental Protection Agency, MCLs, Federal Registers, January 30, 1991 and July 17, 1992.

<sup>4</sup> CDHS required detection limits for purposes of reporting (DLR). [www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999.

\* CDHS unregulated organic chemicals ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999)

+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

<sup>#</sup> Analysis performed by Weck Laboratories.

<sup>##</sup> Analysis performed by Quantarra Environmental Services.

<sup>\*\*</sup> Secondary CDHS MCL



**MWD**

*METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA*

**Date:** April 12, 1999  
**To:** Marshall K. Davis, Water Quality Laboratory Manager  
**From:** Bart Koch, Principal Chemist  
**Subject:** 1998 Annual Pesticide, Herbicide, and Semi-Volatile (SVOC) Monitoring Program

1. On December 8, 1998, samples from seven of Metropolitan's source waters and five treatment plant effluents (Table 1) were collected for the 1998 annual pesticide, herbicide, and SVOC monitoring program. The Jensen Filtration Plant was out of service at the time of sampling and therefore, an effluent sample could not be collected. However, the influent (source water) to the Jensen plant was collected. Table 2 lists the analyses and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established detection limits. No pesticides, herbicides, or SVOCs were detected at or above the DLRs in Metropolitan's source or finished waters.
2. The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOCs (USEPA Methods 515.2, 508, 507, 504.1, 515.1, 531.1, 547, 549.1, 632, 548.1, and 525.2, respectively) were performed by Weck Laboratories. The analysis for dioxin was performed by Quantarra Environmental Services (Method 1613A).

This represents the 1998 annual monitoring program for pesticides, herbicides, and SVOCs. The next monitoring will be conducted in the first quarter of 1999.

**ORIGINAL SIGNED BY**  
Bart Koch

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EWC:lk

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Attachments (2)

Marshall K. Davis, Water Quality Laboratory Manager  
Page 2  
April 12, 1999

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J. M. Bruno  
M. K. Davis

D. Sass  
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M. S. Dale  
Water Quality file

**TABLE 1**

**SAMPLE LOCATIONS FOR  
PESTICIDE, HERBICIDE, and SVOC MONITORING  
ANNUAL 1998**

**Source Waters**

Devil Canyon afterbay  
Foothill Pressure Control  
Structure (PCS)  
Lake Havasu near Intake  
Lake Mathews headworks  
Lake Perris  
Lake Skinner outlet conduit  
San Jacinto Tunnel

**Treated Waters**

Diemer plant effluent  
Mills plant effluent  
Skinner plant #1 effluent  
Skinner plant #2 effluent  
Weymouth plant effluent

**TABLE 2**

**PESTICIDE, HERBICIDE, and SVOC DETECTION  
LIMITS AND MAXIMUM CONTAMINANT LEVELS  
1998 ANNUAL**

<u>Analyte</u>	<u>CDHS Action Level<sup>1</sup> (mg/L)</u>	<u>CDHS MCL<sup>2</sup> (mg/L)</u>	<u>USEPA MCL<sup>3</sup> (mg/L)</u>	<u>CDHS DLR<sup>4</sup> (µg/L)</u>	<u>Detection Limits (µg/L)</u>
<u>Organochlorine Pesticides #:</u>					
Aldrin*	0.00005			0.075	0.08
α-BHC	0.0007				0.01
β-BHC	0.0003				0.05
δ-BHC				0.5	0.05
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20
Chlordane		0.0001	0.002	0.1	0.10
Chlorothalonil*				5.0	5.0
4,4'-DDD				0.02	0.02
4,4'-DDE				0.01	0.01
4,4'-DDT				0.02	0.02
Dieldrin*	0.00005			0.02	0.02
Endrin		0.002	0.002	0.1	0.1
Heptachlor		0.00001	0.0004	0.01	0.01
Heptachlor epoxide		0.00001	0.0002	0.01	0.01
Hexachlorobenzene		0.001	0.001	0.5	0.5
Hexachlorocyclo- pentadiene		0.05	0.05	1.0	1.0
Methoxychlor		0.04	0.04	10.0	10.0
Propachlor*				0.5	0.5
Toxaphene		0.003	0.003	1.0	1.0
Polychlorinated Biphenyls (PCB)		0.0005	0.0005	0.5	0.1
<u>Organophosphorus Pesticides and Triazine Herbicides #:</u>					
Alachlor		0.002	0.002	1.0	1.0
Atrazine		0.003	0.003	1.0	1.0
Bromacil*				10.0	10.0
Butachlor*				0.38	0.38
Diazinon*	0.014			0.25	0.25
Dimethoate*	0.140			10.0	10.0



**TABLE 2**  
(continued)

<u>Analyte</u>	CDHS Action Level <sup>1</sup> (mg/L)	CDHS MCL <sup>2</sup> (mg/L)	USEPA MCL <sup>3</sup> (mg/L)	CDHS DLR <sup>4</sup> (µg/L)	Detection Limits (µg/L)
<u>Organophosphorus Pesticides and Triazine Herbicides #</u> (continued):					
Metalochlor*					0.5
Metribuzin*					0.5
Molinate		0.02		2.0	2.0
Prometryn*				2.0	2.0
Simazine		0.004	0.004	1.0	1.0
Thiobencarb		0.07(0.001**)		1.0	1.0
<u>Organochlorine Herbicides#:</u>					
Bentazon		0.018		2.0	2.0
Dalapon		0.2	0.2	10.0	10.0
Dicamba*				1.5	0.081
Dinoseb		0.007	0.007	2.0	2.0
Pentachlorophenol		0.001	0.001	0.2	0.2
Picloram		0.5	0.5	1.0	1.0
2,4-D		0.07	0.07	10.0	10.0
2,4,5-TP (Silvex)		0.05	0.05	1.0	1.0
<u>Carbamates - Method 632#</u>					
Diuron*				1.0	1.0
<u>Carbamates - Method 531#</u>					
Aldicarb*	0.01		0.003 <sup>+</sup>	3.0	2
Aldicarb sulfone*			0.002 <sup>+</sup>	4.0	2
Aldicarb sulfoxide*			0.004 <sup>+</sup>	3.0	2
Baygon (Propoxur)	0.090				1
Carbofuran		0.018	0.04	5.0	2
Carbaryl*	0.060			5.0	2
3-Hydroxycarbofuran*				3.0	3
Methomyl*				2.0	2
Oxamyl		0.2	0.2	20.0	2

**TABLE 2**  
(continued)

<u>Analyte</u>	CDHS Action Level <sup>1</sup> ( <u>µg/L</u> )	CDHS MCL <sup>2</sup> ( <u>mg/L</u> )	USEPA MCL <sup>3</sup> ( <u>mg/L</u> )	CDHS DLR <sup>4</sup> ( <u>µg/L</u> )	Detection Limits ( <u>µg/L</u> )
<u>Fumigants- Method 504 #</u>					
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02
<u>SVOC - Method 525.2 #</u>					
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1
Di(2-ethylhexy)adipate		0.4	0.4	5	5
Di(2-ethylhexyl)phthalate		0.004	0.006	3	3
<u>Misc.</u>					
Diquat#		0.02	0.02	4.0	4.0
Endothall#		0.1	0.1	45.0	45
Glyphosate#		0.7	0.7	25.0	25
Dioxin (2,3,7,8-TCDD)##		3 x 10 <sup>-8</sup>	3 x 10 <sup>-8</sup>	5 x 10 <sup>-6</sup>	0.48-1.5 x 10 <sup>-6</sup>

1. California Department of Health Services (CDHS) action levels ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999).

2. CDHS maximum contaminant level (MCL) ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999).

3. Environmental Protection Agency MCLs, Federal Registers, January 30, 1991, and July 17, 1992.

4. CDHS required detection limits for purposes of reporting (DLR). [www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update November 19, 1998.

\* CDHS unregulated organic chemicals ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999)

+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

# Analysis performed by Weck Laboratories.

## Analysis performed by Quantarra Environmental Services.

\*\* Secondary CDHS MCL.



**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

**Date:** February 13 2001  
**To:** Marshall K. Davis, Water Quality Laboratory Manager *MKD*  
**From:** Bart Koch, Principal Chemist  
**Subject:** 2000 Annual Pesticide, Herbicide, and Semi-Volatile Organic Compound (VOC) Monitoring Program

On September 11 and 12, 2000, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 2000 annual pesticide, herbicide and SVOC monitoring program. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established reporting levels. **No pesticides, herbicides, or SVOCs were detected at or above the reporting levels in Metropolitan's source or finished waters.**

The analyses for organochlorine herbicides, organochlorine pesticides, organophosphorous pesticides/triazine herbicides, fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOC's (USEPA Methods 515.2, 508, 507, 504.1, 531.1, 547, 549.1, 632, 548.1 and 525.2, respectively) were performed by Weck Laboratories. The analysis for dioxin was performed by Quantarra Environmental Services (USEPA Method 1613A).

This sampling is part of Metropolitan's annual pesticide, herbicide and SVOC monitoring program. The next monitoring will be conducted in the fourth quarter of 2001.

*Bart Koch*

Bart Koch

BK:mm

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Marshall K. Davis, Water Quality Laboratory Manager  
Page 2  
February 12, 2001

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B. Koch  
D. G. Sass  
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Water Quality file

TABLE 1

Sample Locations for Pesticide, Herbicide, and SVOC Monitoring 2000\*

<u>Source Waters</u>	<u>Treated Waters</u>
Devil Canyon afterbay	Diemer plant effluent
Foothill Pressure Control Structure (PCS)	Jensen plant effluent
Lake Havasu near Intake	Mills plant effluent
Lake Mathews headworks**	Skinner plant #1 effluent
Lake Perris	Skinner plant #2 effluent
Lake Skinner outlet conduit	Weymouth plant effluent
San Jacinto Tunnel	

\* samples collected September 12, 2000 (Lake Havasu was collected on September 11, 2000)

\*\* sample for endotoxin analysis was recollected on December 21, 2000 because of sampling problems.

**TABLE 2**  
**Pesticide, Herbicide, SVOC Drinking Water Standards and Reporting Levels**  
**Annual 2000**

Analyte	CDHS Action Level <sup>1</sup> (mg/L)	CDHS MCL <sup>1</sup> (mg/L)	USEPA MCL <sup>2</sup> (mg/L)	CDHS DLR <sup>3</sup> (µg/L)	Minimum Reporting Levels (µg/L)	Analytical Results (µg/L)
<b>Organochlorine Pesticides<sup>a</sup>:</b>						
Aldrin*	0.000002			0.075	0.075	ND
α-BHC	0.000015				0.05	ND
β-BHC	0.000025				0.05	ND
δ-BHC				0.5	0.5	ND
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20	ND
Chlordane		0.0001	0.002	0.1	0.10	ND
Chlorothalonil*				5.0	5.0	ND
4,4'-DDD				0.02	0.02	ND
4,4'-DDE				0.01	0.01	ND
4,4'-DDT				0.02	0.02	ND
Dieldrin*	0.000002			0.02	0.02	ND
Endosulfan I					0.02	ND
Endosulfan II					0.01	ND
Endosulfan sulfate					0.05	ND
Endrin		0.002	0.002	0.1	0.1	ND
Endrin aldehyde					0.05	ND
Heptachlor		0.00001	0.0004	0.01	0.01	ND
Heptachlor epoxide		0.00001	0.0002	0.01	0.01	ND
Hexachlorobenzene		0.001	0.001	0.5	0.5	ND
Hexachlorocyclo- pentadiene		0.05	0.05	1.0	1.0	ND
Methoxychlor		0.04	0.04	10.0	10.0	ND
Propachlor*				0.5	0.5	ND
Toxaphene		0.003	0.003	1.0	1.0	ND
Polychlorinated biphenyls (PCB)		0.0005	0.0005	0.5	0.5	ND
Trifluralin					0.01	ND
<b>Organophosphorus Pesticides and Triazine Herbicides<sup>b</sup>:</b>						
Alachlor		0.002	0.002	1.0	1.0	ND
Atrazine		0.003	0.003	1.0	1.0	ND
Bromacil*				10.0	10.0	ND
Butachlor*				0.38	0.38	ND
Diazinon	0.006			0.25	0.25	ND
Dimethoate*	0.001			10.0	10.0	ND

Table 2 (cont'd)

Analyte	CDHS Action Level <sup>1</sup> (mg/L)	CDHS MCL <sup>1</sup> (mg/L)	USEPA MCL <sup>2</sup> (mg/L)	CDHS DLR <sup>3</sup> (µg/L)	Minimum Reporting Levels (µg/L)	Analytical Results (µg/L)
Metalochlor*					0.5	ND
Metribuzin*					0.5	ND
Molinate		0.02		2.0	2.0	ND
Prometon					1.0	ND
Prometryn*				2.0	2.0	ND
Simazine		0.004	0.004	1.0	1.0	ND
Thiobencarb		0.07(0.001**)		1.0	1.0	ND
<b>Organochlorine Herbicides<sup>†</sup>:</b>						
Acifluorfen					0.5	ND
Bentazon		0.018		2.0	2.0	ND
2,4-D		0.07	0.07	10.0	10.0	ND
2,4-DB					2.0	ND
3,5-Dichlorobenzoic acid					1.0	ND
Dacthal (DCPA)					0.10	ND
Dalapon		0.2	0.2	10.0	10.0	ND
Dicamba*				1.5	1.5	ND
Dichlorprop					0.3	ND
Dinoseb		0.007	0.007	2.0	2.0	ND
Pentachlorophenol		0.001	0.001	0.2	0.2	ND
Picloram		0.5	0.5	1.0	1.0	ND
2,4,5-TP (Silvex)		0.05	0.05	1.0	1.0	ND
2,4,5-T					0.2	ND
<b><u>Carbamate Pesticides - Method 531<sup>†</sup></u></b>						
Aldicarb*	0.007		0.003 <sup>+</sup>	3.0	2.0	ND
Aldicarb sulfone*			0.002 <sup>+</sup>	4.0	2.0	ND
Aldicarb sulfoxide*			0.004 <sup>+</sup>	3.0	2.0	ND
Baygon (Propoxur)	0.093				5.0	ND
Carbofuran		0.018	0.04	5.0	5.0	ND
Carbaryl*	0.7			5.0	2.0	ND
3-Hydroxycarbofuran*				3.0	2.0	ND
Methiocarb					3.0	ND
Methomyl*				2.0	2.0	ND
Oxamyl		0.2	0.2	20.0	2.0	ND

Table 2 (cont'd)

Analyte	CDHS Action Level <sup>1</sup> (mg/L)	CDHS MCL <sup>1</sup> (mg/L)	USEPA MCL <sup>2</sup> (mg/L)	CDHS DLR <sup>3</sup> (µg/L)	Minimum Reporting Levels (µg/L)	Analytical Results (µg/L)
<b><u>Fumigants- Method 504<sup>#</sup></u></b>						
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01	ND
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02	ND
<b><u>SVOC - Method 525.2<sup>#</sup></u></b>						
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1	ND
Di(2-ethylhexyl)adipate		0.4	0.4	5	5	ND
Di(2-ethylhexyl) phthalate		0.004	0.006	3	3	ND
<b><u>Misc.</u></b>						
Diquat <sup>#</sup>		0.02	0.02	4.0	4.0	ND
Diuron <sup>*</sup>				1.0	1.0	ND
Endothall <sup>#</sup>		0.1	0.1	45.0	45	ND
Glyphosate <sup>#</sup>		0.7	0.7	25.0	25	ND
Dioxin (2,3,7,8- TCDD) <sup>**</sup>		3 x 10 <sup>-8</sup>	3 x 10 <sup>-8</sup>	5 x 10 <sup>-6</sup>	5 x 10 <sup>-6</sup>	ND

1 California Department of Health Services (CDHS) Drinking Water Standards and Action Levels (May 23, 2000 and November 13, 2000, respectively.)  
(<http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/chemindex.htm>)

2 Federal Registers, January 30, 1991 and July 17, 1992.

3 CDHS required detection limits for purposes of reporting (DLR) (February 18, 2000)  
(<http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/chemindex.htm>).

\* CDHS unregulated organic chemicals (May 23, 2000)  
(<http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/chemindex.htm>)

\*\* Secondary CDHS MCL

# Analysis performed by Weck Laboratories.

## Analysis performed by Quantarra Environmental Services.

+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.





**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

**Date:** February 13 2001  
**To:** Marshall K. Davis, Water Quality Laboratory Manager *MKD*  
**From:** Bart Koch, Principal Chemist  
**Subject:** 2000 Annual Pesticide, Herbicide, and Semi-Volatile Organic Compound (VOC) Monitoring Program

On September 11 and 12, 2000, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 2000 annual pesticide, herbicide and SVOC monitoring program. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established reporting levels. **No pesticides, herbicides, or SVOCs were detected at or above the reporting levels in Metropolitan's source or finished waters.**

The analyses for organochlorine herbicides, organochlorine pesticides, organophosphorous pesticides/triazine herbicides, fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOC's (USEPA Methods 515.2, 508, 507, 504.1, 531.1, 547, 549.1, 632, 548.1 and 525.2, respectively) were performed by Weck Laboratories. The analysis for dioxin was performed by Quantarra Environmental Services (USEPA Method 1613A).

This sampling is part of Metropolitan's annual pesticide, herbicide and SVOC monitoring program. The next monitoring will be conducted in the fourth quarter of 2001.

*Bart Koch*

Bart Koch

BK:mm

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Marshall K. Davis, Water Quality Laboratory Manager

Page 2

February 12, 2001

cc w/attachments:

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J. T. Wicke

Water Quality file

TABLE 1

Sample Locations for Pesticide, Herbicide, and SVOC Monitoring 2000\*

<u>Source Waters</u>	<u>Treated Waters</u>
Devil Canyon afterbay	Diemer plant effluent
Foothill Pressure Control Structure (PCS)	Jensen plant effluent
Lake Havasu near Intake	Mills plant effluent
Lake Mathews headworks**	Skinner plant #1 effluent
Lake Perris	Skinner plant #2 effluent
Lake Skinner outlet conduit	Weymouth plant effluent
San Jacinto Tunnel	

\* samples collected September 12, 2000 (Lake Havasu was collected on September 11, 2000)

\*\* sample for endothall analysis was recollected on December 21, 2000 because of sampling problems.

**TABLE 2**  
**Pesticide, Herbicide, SVOC Drinking Water Standards and Reporting Levels**  
**Annual 2000**

Analyte	CDHS Action Level <sup>1</sup> (mg/L)	CDHS MCL <sup>1</sup> (mg/L)	USEPA MCL <sup>2</sup> (mg/L)	CDHS DLR <sup>3</sup> (µg/L)	Minimum Reporting Levels (µg/L)	Analytical Results (µg/L)
<b>Organochlorine Pesticides<sup>#</sup>:</b>						
Aldrin*	0.000002			0.075	0.075	ND
α-BHC	0.000015				0.05	ND
β-BHC	0.000025				0.05	ND
δ-BHC				0.5	0.5	ND
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20	ND
Chlordane		0.0001	0.002	0.1	0.10	ND
Chlorothalonil*				5.0	5.0	ND
4,4'-DDD				0.02	0.02	ND
4,4'-DDE				0.01	0.01	ND
4,4'-DDT				0.02	0.02	ND
Dieldrin*	0.000002			0.02	0.02	ND
Endosulfan I					0.02	ND
Endosulfan II					0.01	ND
Endosulfan sulfate					0.05	ND
Endrin		0.002	0.002	0.1	0.1	ND
Endrin aldehyde					0.05	ND
Heptachlor		0.00001	0.0004	0.01	0.01	ND
Heptachlor epoxide		0.00001	0.0002	0.01	0.01	ND
Hexachlorobenzene		0.001	0.001	0.5	0.5	ND
Hexachlorocyclo- pentadiene		0.05	0.05	1.0	1.0	ND
Methoxychlor		0.04	0.04	10.0	10.0	ND
Propachlor*				0.5	0.5	ND
Toxaphene		0.003	0.003	1.0	1.0	ND
Polychlorinated biphenyls (PCB)		0.0005	0.0005	0.5	0.5	ND
Trifluralin					0.01	ND
<b>Organophosphorus Pesticides and Triazine Herbicides<sup>#</sup>:</b>						
Alachlor		0.002	0.002	1.0	1.0	ND
Atrazine		0.003	0.003	1.0	1.0	ND
Bromacil*				10.0	10.0	ND
Butachlor*				0.38	0.38	ND
Diazinon	0.006			0.25	0.25	ND
Dimethoate*	0.001			10.0	10.0	ND

Table 2 (cont'd)

Analyte	CDHS Action Level <sup>1</sup> (mg/L)	CDHS MCL <sup>1</sup> (mg/L)	USEPA MCL <sup>2</sup> (mg/L)	CDHS DLR <sup>3</sup> (µg/L)	Minimum Reporting Levels (µg/L)	Analytical Results (µg/L)
Metalochlor*					0.5	ND
Metribuzin*					0.5	ND
Molinate		0.02		2.0	2.0	ND
Prometon					1.0	ND
Prometryn*				2.0	2.0	ND
Simazine		0.004	0.004	1.0	1.0	ND
Thiobencarb		0.07(0.001**)		1.0	1.0	ND
<b>Organochlorine Herbicides*:</b>						
Acifluorfen					0.5	ND
Bentazon		0.018		2.0	2.0	ND
2,4-D		0.07	0.07	10.0	10.0	ND
2,4-DB					2.0	ND
3,5-Dichlorobenzoic acid					1.0	ND
Dacthal (DCPA)					0.10	ND
Dalapon		0.2	0.2	10.0	10.0	ND
Dicamba*				1.5	1.5	ND
Dichlorprop					0.3	ND
Dinoseb		0.007	0.007	2.0	2.0	ND
Pentachlorophenol		0.001	0.001	0.2	0.2	ND
Picloram		0.5	0.5	1.0	1.0	ND
2,4,5-TP (Silvex)		0.05	0.05	1.0	1.0	ND
2,4,5-T					0.2	ND
<b><u>Carbamate Pesticides - Method 531<sup>#</sup></u></b>						
Aldicarb*	0.007		0.003 <sup>+</sup>	3.0	2.0	ND
Aldicarb sulfone*			0.002 <sup>+</sup>	4.0	2.0	ND
Aldicarb sulfoxide*			0.004 <sup>+</sup>	3.0	2.0	ND
Baygon (Propoxur)	0.093				5.0	ND
Carbofuran		0.018	0.04	5.0	5.0	ND
Carbaryl*	0.7			5.0	2.0	ND
3-Hydroxycarbofuran*				3.0	2.0	ND
Methiocarb					3.0	ND
Methomyl*				2.0	2.0	ND
Oxamyl		0.2	0.2	20.0	2.0	ND

Table 2 (cont'd)

Analyte	CDHS Action Level <sup>1</sup> (mg/L)	CDHS MCL <sup>1</sup> (mg/L)	USEPA MCL <sup>2</sup> (mg/L)	CDHS DLR <sup>3</sup> (µg/L)	Minimum Reporting Levels (µg/L)	Analytical Results (µg/L)
<b><u>Fumigants- Method 504<sup>#</sup></u></b>						
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01	ND
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02	ND
<b><u>SVOC - Method 525.2<sup>#</sup></u></b>						
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1	ND
Di(2-ethylhexyl)adipate		0.4	0.4	5	5	ND
Di(2-ethylhexyl) phthalate		0.004	0.006	3	3	ND
<b><u>Misc.</u></b>						
Diquat <sup>#</sup>		0.02	0.02	4.0	4.0	ND
Diuron <sup>*</sup>				1.0	1.0	ND
Endothall <sup>#</sup>		0.1	0.1	45.0	45	ND
Glyphosate <sup>#</sup>		0.7	0.7	25.0	25	ND
Dioxin (2,3,7,8- TCDD) <sup>**</sup>		3 x 10 <sup>-8</sup>	3 x 10 <sup>-8</sup>	5 x 10 <sup>-6</sup>	5 x 10 <sup>-6</sup>	ND

1 California Department of Health Services (CDHS) Drinking Water Standards and Action Levels (May 23, 2000 and November 13, 2000, respectively.)  
(<http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/chemindex.htm>)

2 Federal Registers, January 30, 1991 and July 17, 1992.

3 CDHS required detection limits for purposes of reporting (DLR) (February 18, 2000)  
(<http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/chemindex.htm>).

\* CDHS unregulated organic chemicals (May 23, 2000)  
(<http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/chemindex.htm>)

\*\* Secondary CDHS MCL

# Analysis performed by Weck Laboratories.

## Analysis performed by Quantarra Environmental Services.

+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.



**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

**Date:** February 7, 2000  
**To:** Marshall K. Davis, Water Quality Laboratory Manager  
**From:** Bart Koch, Principal Chemist  
**Subject:** First Quarter 1999 Pesticide, Herbicide, and Semi-Volatile Organic Compounds (SVOC) Monitoring Program

On March 22, 1999, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 1999 first quarter pesticide, herbicide, and SVOC monitoring program. On May 26, 1999, all sites were resampled for SVOC's due to quality control problems. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established reporting levels. **No pesticides, herbicides, or SVOCs were detected at or above the DLRs or the laboratory's reporting levels in Metropolitan's source or finished waters.**

The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides, and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOCs (USEPA Methods 515.2, 508, 507, 504.1, 531.1, 547, 549.1, 632, 548.1, and 525.2 respectively) were performed by Weck Laboratories. Quantarra Environmental Services performed the analysis for dioxin (Method 1613A).

This sampling is part of Metropolitan's annual pesticide, herbicide, and SVOC monitoring program. This was the first of two quarters of monitoring that are required every three years. The next monitoring will be conducted in the third quarter of 1999.

**ORIGINAL SIGNED BY**

Bart Koch

EWC:smh

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Attachments

Marshall K. Davis, Water Quality Laboratory Manager

Page 2

February 7, 2000

cc w/attachments:

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M. H. Stewart

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B. Koch

D. G. Sass

E. W. Crofts

M. S. Dale

Water Quality file



**TABLE 1**

**SAMPLE LOCATIONS FOR  
PESTICIDE, HERBICIDE, and SVOC MONITORING  
FIRST QUARTER 1999**

**Source Waters**

Devil Canyon afterbay  
Foothill Pressure Control  
Structure (PCS)  
Lake Havasu near Intake  
Lake Mathews headworks  
Lake Perris  
Lake Skinner outlet conduit  
San Jacinto Tunnel

**Treated Waters**

Diemer plant effluent  
Mills plant effluent  
Skinner plant #1 effluent  
Skinner plant #2 effluent  
Weymouth plant effluent  
Jensen plant effluent

TABLE 2

**PESTICIDE, HERBICIDE, and SVOC DETECTION  
LIMITS AND MAXIMUM CONTAMINANT LEVELS  
FIRST QUARTER 1999**

<b><u>Analyte</u></b>	<b><u>CDHS Action Level<sup>1</sup> (mg/L)</u></b>	<b><u>CDHS MCL<sup>2</sup> (mg/L)</u></b>	<b><u>USEPA MCL<sup>3</sup> (mg/L)</u></b>	<b><u>CDHS DLR<sup>4</sup> (ug/L)</u></b>	<b><u>Laboratory Reporting Level (ug/L)</u></b>	<b><u>Analytical Results (ug/L)</u></b>
<b><u>Organochlorine Pesticides<sup>5</sup>:</u></b>						
Aldrin*	0.00005			0.075	0.08	ND
α-BHC	0.0007				0.01	ND
β-BHC	0.0003				0.05	ND
δ-BHC				0.5	0.05	ND
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20	ND
Chlordane		0.0001	0.002	0.1	0.10	ND
Chlorothalonil*				5.0	5.0	ND
4,4'-DDD				0.02	0.02	ND
4,4'-DDE				0.01	0.01	ND
4,4'-DDT				0.02	0.02	ND
Dieldrin*	0.00005			0.02	0.02	ND
Endrin		0.002	0.002	0.1	0.1	ND
Heptachlor		0.00001	0.0004	0.01	0.01	ND
Heptachlor epoxide		0.00001	0.0002	0.01	0.01	ND
Hexachlorobenzene		0.001	0.001	0.5	0.5	ND
Hexachlorocyclo-						ND
Pentadiene		0.05	0.05	1.0	1.0	ND
Methoxychlor		0.04	0.04	10.0	10.0	ND
Propachlor*				0.5	0.5	ND
Toxaphene		0.003	0.003	1.0	1.0	ND
Polychlorinated Biphenyls (PCB)		0.0005	0.0005	0.5	0.5	ND
<b><u>Organophosphorus Pesticides and Triazine Herbicides<sup>6</sup>:</u></b>						
Alachlor		0.002	0.002	1.0	1.0	ND
Atrazine		0.003	0.003	1.0	1.0	ND
Bromacil*				10.0	10.0	ND
Butachlor*				0.38	0.38	ND
Diazinon	0.014			0.25	0.25	ND
Dimethoate*	0.140			10.0	10.0	ND
Malathion	0.160				0.5	ND
Metalochlor*					0.5	ND
Metribuzin*					0.5	ND

<u>Analyte</u>	<u>CDHS Action Level<sup>1</sup> (mg/L)</u>	<u>CDHS MCL<sup>2</sup> (mg/L)</u>	<u>USEPA MCL<sup>3</sup> (mg/L)</u>	<u>CDHS DLR<sup>4</sup> (ug/L)</u>	<u>Laboratory Reporting Level (ug/L)</u>	<u>Analytical Results (ug/L)</u>
<b><u>Organophosphorus Pesticides and Triazine Herbicides<sup>#</sup>:</u></b>						
Molinate		0.02		2.0	2.0	ND
Prometryn*				2.0	2.0	ND
Simazine		0.004	0.004	1.0	1.0	ND
Thiobencarb		0.07 (0.001**)		1.0	1.0	ND
<b><u>Organochlorine Herbicides<sup>#</sup>:</u></b>						
Bentazon		0.018		2.0	2.0	ND
Dalapon		0.2	0.2	10.0	10.0	ND
Dicamba*				1.5	0.081	ND
Dinoseb		0.007	0.007	2.0	2.0	ND
Pentachlorophenol		0.001	0.001	0.2	0.2	ND
Picloram		0.5	0.5	1.0	1.0	ND
2,4-D		0.07	0.07	10.0	10.0	ND
2,4,5-T (Silvex)		0.05	0.05	1.0	1.0	ND
<b><u>Carbamates Method 632<sup>#</sup>:</u></b>						
Diuron*				1.0	1.0	ND
<b><u>Carbamates Method 531.1<sup>#</sup>:</u></b>						
Aldicarb*	0.01		0.003 <sup>+</sup>	3.0	2	ND
Aldicarb sulfone*			0.002 <sup>+</sup>	4.0	2	ND
Aldicarb sulfoxide*			0.004 <sup>+</sup>	3.0	2	ND
Baygon(Propoxur)	0.09				1	ND
Carbofuran		0.018	0.04	5.0	2	ND
Carbaryl*	0.060			5.0	2	ND
3-Hydroxycarbofuran*				3.0	2	ND
Methomyl*				2.0	2	ND
Oxamyl		0.2	0.2	20.0	2	ND

<u>Analyte</u>	<u>CDHS Action Level<sup>1</sup> (mg/L)</u>	<u>CDHS MCL<sup>2</sup> (mg/L)</u>	<u>USEPA MCL<sup>3</sup> (mg/L)</u>	<u>CDHS DLR<sup>4</sup> (ug/L)</u>	<u>Laboratory Reporting Level (ug/L)</u>	<u>Analytical Results (ug/L)</u>
<b><u>Fumigant</u></b>						
<b><u>Method 504.1<sup>#</sup>:</u></b>						
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01	ND
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02	ND
<b><u>SVOC</u></b>						
<b><u>Method 525.2<sup>#</sup>:</u></b>						
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1	ND
Di(2-ethylhexyl)adipate		0.4	0.4	5	5	ND
Di(2-ethylhexyl)phthalate		0.004	0.006	3	3	ND
<b><u>Miscellaneous</u></b>						
Diquat <sup>#</sup>		0.02	0.02	4.0	4.0	ND
Endothall <sup>#</sup>		0.1	0.1	45.0	45	ND
Glyphosate <sup>#</sup>		0.7	0.7	25.0	25	ND
Dioxin (2,3,7,8-TCDD) <sup>##</sup>		3 x 10 <sup>-8</sup>	3 x 10 <sup>-8</sup>	5 x 10 <sup>-6</sup>	5 x 10 <sup>-6</sup>	ND

<sup>1</sup> California Department of Health Services (CDHS) action levels ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999).

<sup>2</sup> CDHS maximum contaminant level (MCL) ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999).

<sup>3</sup> U.S. Environmental Protection Agency, MCLs, Federal Registers, January 30, 1991 and July 17, 1992.

<sup>4</sup> CDHS required detection limits for purposes of reporting (DLR).  
[www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999.

\* CDHS unregulated organic chemicals ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999)

+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

# Analysis performed by Weck Laboratories.

## Analysis performed by Quantarra Environmental Services.

\*\* Secondary CDHS MCL.



**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

**Date:** February 7, 2000  
**To:** Marshall K. Davis, Water Quality Laboratory Manager  
**From:** Bart Koch, Principal Chemist  
**Subject:** **Third Quarter 1999 Pesticide, Herbicide, and Semi-Volatile Organic Compounds (SVOC) Monitoring Program**

On September 1, 1999, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 1999 third quarter pesticide, herbicide, and SVOC monitoring program. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established reporting levels. **No pesticides, herbicides, or SVOCs were detected at or above the DLRs or the laboratory's reporting levels in Metropolitan's source or finished waters.**

The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides, and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOCs (USEPA Methods 515.2, 508, 507, 504.1, 531.1, 547, 549.1, 632, 548.1, and 525.2 respectively) were performed by Weck Laboratories. Quantarra Environmental Services performed the analysis for dioxin (Method 1613A).

This sampling is part of Metropolitan's annual pesticide, herbicide, and SVOC monitoring program. This was the second of two quarters of monitoring which is required every three years. The next monitoring will be conducted in the third quarter of 2000.

**ORIGINAL SIGNED BY**

Bart Koch

*Koch*  
EWC:smh

*2/8/00*  
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Attachments (2)

Marshall K. Davis, Water Quality Laboratory Manager  
Page 2  
February 7, 2000

cc w/attachments:

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M. K. Davis  
D. G. Sass  
B. Koch  
E. W. Crofts  
M. S. Dale  
Water Quality file

**TABLE 1**

**SAMPLE LOCATIONS FOR  
PESTICIDE, HERBICIDE, and SVOC MONITORING  
THIRD QUARTER 1999**

**Source Waters**

Devil Canyon afterbay  
Foothill Pressure Control  
Structure (PCS)  
Lake Havasu near Intake  
Lake Mathews headworks  
Lake Perris  
Lake Skinner outlet conduit  
San Jacinto Tunnel

**Treated Waters**

Diemer plant effluent  
Mills plant effluent  
Skinner plant #1 effluent  
Skinner plant #2 effluent  
Weymouth plant effluent  
Jensen plant effluent

TABLE 2

**PESTICIDE, HERBICIDE, and SVOC DETECTION  
LIMITS AND MAXIMUM CONTAMINANT LEVELS  
THIRD QUARTER 1999**

<b>Analyte</b>	<b>CDHS Action Level<sup>1</sup> (mg/L)</b>	<b>CDHS MCL<sup>2</sup> (mg/L)</b>	<b>USEPA MCL<sup>3</sup> (mg/L)</b>	<b>CDHS DLR<sup>4</sup> (µg/L)</b>	<b>Laboratory Reporting Level (µg/L)</b>	<b>Analytical Results (µg/L)</b>
<b><u>Organochlorine Pesticides<sup>#</sup>:</u></b>						
Aldrin*	0.00005			0.075	0.08	ND
α-BHC	0.0007				0.01	ND
β-BHC	0.0003				0.05	ND
δ-BHC				0.5	0.05	ND
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20	ND
Chlordane		0.0001	0.002	0.1	0.10	ND
Chlorothalonil*				5.0	5.0	ND
4,4'-DDD				0.02	0.02	ND
4,4'-DDE				0.01	0.01	ND
4,4'-DDT				0.02	0.02	ND
Dieldrin*	0.00005			0.02	0.02	ND
Endrin		0.002	0.002	0.1	0.1	ND
Heptachlor		0.00001	0.0004	0.01	0.01	ND
Heptachlor epoxide		0.00001	0.0002	0.01	0.01	ND
Hexachlorobenzene		0.001	0.001	0.5	0.5	ND
Hexachlorocyclo-						ND
Pentadiene		0.05	0.05	1.0	1.0	ND
Methoxychlor		0.04	0.04	10.0	10.0	ND
Propachlor*				0.5	0.5	ND
Toxaphene		0.003	0.003	1.0	1.0	ND
Polychlorinated Biphenyls (PCB)		0.0005	0.0005	0.5	0.5	ND
<b><u>Organophosphorus Pesticides and Triazine Herbicides<sup>#</sup>:</u></b>						
Alachlor		0.002	0.002	1.0	1.0	ND
Atrazine		0.003	0.003	1.0	1.0	ND
Bromacil*				10.0	10.0	ND
Butachlor*				0.38	0.38	ND
Diazinon	0.014			0.25	0.25	ND
Dimethoate*	0.140			10.0	10.0	ND
Malathion	0.160				0.5	ND
Metalochlor*					0.5	ND
Metribuzin*					0.5	ND
Molinate		0.02		2.0	2.0	ND



<u>Analyte</u>	<u>CDHS Action Level<sup>1</sup> (mg/L)</u>	<u>CDHS MCL<sup>2</sup> (mg/L)</u>	<u>USEPA MCL<sup>3</sup> (mg/L)</u>	<u>CDHS DLR<sup>4</sup> (µg/L)</u>	<u>Laboratory Reporting Level (µg/L)</u>	<u>Analytical Results (µg/L)</u>
<b><u>Organophosphorus Pesticides and Triazine Herbicides<sup>#</sup>:</u></b>						
Prometryn*				2.0	2.0	ND
Simazine		0.004	0.004	1.0	1.0	ND
Thiobencarb		0.07(0.001**)		1.0	1.0	ND
<b><u>Organochlorine Herbicides<sup>#</sup>:</u></b>						
Bentazon		0.018		2.0	2.0	ND
Dalapon		0.2	0.2	10.0	10.0	ND
Dicamba*				1.5	0.081	ND
Dinoseb		0.007	0.007	2.0	2.0	ND
Pentachlorophenol		0.001	0.001	0.2	0.2	ND
Picloram		0.5	0.5	1.0	1.0	ND
2,4-D		0.07	0.07	10.0	10.0	ND
2,4,5-T (Silvex)		0.05	0.05	1.0	1.0	ND
<b><u>Carbamates Method 632<sup>#</sup></u></b>						
Diuron*				1.0	1.0	ND
<b><u>Carbamates Method 531.1<sup>#</sup></u></b>						
Aldicarb*	0.01		0.003 <sup>+</sup>	3.0	2	ND
Aldicarb sulfone*			0.002 <sup>+</sup>	4.0	2	ND
Aldicarb sulfoxide*			0.004 <sup>+</sup>	3.0	2	ND
Baygon(Propoxur)	0.09				1	ND
Carbofuran		0.018	0.04	5.0	2	ND
Carbaryl*	0.060			5.0	2	ND
3-Hydroxycarbofuran*				3.0	2	ND
Methomyl*				2.0	2	ND
Oxamyl		0.2	0.2	20.0	2	ND
<b><u>Fumigant Method 504.1<sup>#</sup></u></b>						
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01	ND
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02	ND

Analyte	CDHS Action Level <sup>1</sup> (mg/L)	CDHS MCL <sup>2</sup> (mg/L)	USEPA MCL <sup>3</sup> (mg/L)	CDHS DLR <sup>4</sup> (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
<b>SVOC</b>						
<b><u>Method 525.2<sup>#</sup></u></b>						
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1	ND
Di(2-ethylhexyl)adipate		0.4	0.4	5	5	ND
Di(2-ethylhexyl)phthalate		0.004	0.006	3	3	ND
<b><u>Misc.</u></b>						
Diquat <sup>#</sup>		0.02	0.02	4.0	4.0	ND
Endothall <sup>#</sup>		0.1	0.1	45.0	45	ND
Glyphosate <sup>#</sup>		0.7	0.7	25.0	25	ND
Dioxin (2,3,7,8-TCDD) <sup>##</sup>		3 x 10 <sup>-8</sup>	3 x 10 <sup>-8</sup>	5 x 10 <sup>-6</sup>	1.5 - 5 x 10 <sup>-6</sup>	ND

<sup>1</sup> California Department of Health Services (CDHS) action levels ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7, 1999).

<sup>2</sup> CDHS maximum contaminant level (MCL) ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7, 1999).

<sup>3</sup> U.S. Environmental Protection Agency, MCLs, Federal Registers, January 30, 1991 and July 17, 1992.

<sup>4</sup> CDHS required detection limits for purposes of reporting (DLR). [www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7, 1999.

\* CDHS unregulated organic chemicals ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7, 1999)

\* Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

<sup>#</sup> Analysis performed by Weck Laboratories.

<sup>##</sup> Analysis performed by Quantarra Environmental Services.

<sup>\*\*</sup> Secondary CDHS MCL



**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

**Date:** February 7, 2000  
**To:** Marshall K. Davis, Water Quality Laboratory Manager  
**From:** Bart Koch, Principal Chemist  
**Subject:** First Quarter 1999 Pesticide, Herbicide, and Semi-Volatile Organic Compounds (SVOC) Monitoring Program

On March 22, 1999, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 1999 first quarter pesticide, herbicide, and SVOC monitoring program. On May 26, 1999, all sites were resampled for SVOC's due to quality control problems. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established reporting levels. **No pesticides, herbicides, or SVOCs were detected at or above the DLRs or the laboratory's reporting levels in Metropolitan's source or finished waters.**

The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides, and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOCs (USEPA Methods 515.2, 508, 507, 504.1, 531.1, 547, 549.1, 632, 548.1, and 525.2 respectively) were performed by Weck Laboratories. Quantarra Environmental Services performed the analysis for dioxin (Method 1613A).

This sampling is part of Metropolitan's annual pesticide, herbicide, and SVOC monitoring program. This was the first of two quarters of monitoring that are required every three years. The next monitoring will be conducted in the third quarter of 1999.

**ORIGINAL SIGNED BY**

Bart Koch

*Koch*  
EWC:smh

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Attachments

Marshall K. Davis, Water Quality Laboratory Manager

Page 2

February 7, 2000

cc w/attachments:

J. T. Wicke

M. H. Stewart

M. K. Davis

B. Koch

D. G. Sass

E. W. Crofts

M. S. Dale

Water Quality file

**TABLE 1**

SAMPLE LOCATIONS FOR  
PESTICIDE, HERBICIDE, and SVOC MONITORING  
FIRST QUARTER 1999

<b><u>Source Waters</u></b>	<b><u>Treated Waters</u></b>
Devil Canyon afterbay	Diemer plant effluent
Foothill Pressure Control Structure (PCS)	Mills plant effluent
Lake Havasu near Intake	Skinner plant #1 effluent
Lake Mathews headworks	Skinner plant #2 effluent
Lake Perris	Weymouth plant effluent
Lake Skinner outlet conduit	Jensen plant effluent
San Jacinto Tunnel	

TABLE 2

**PESTICIDE, HERBICIDE, and SVOC DETECTION  
LIMITS AND MAXIMUM CONTAMINANT LEVELS  
FIRST QUARTER 1999**

<u>Analyte</u>	<u>CDHS Action Level<sup>1</sup> (mg/L)</u>	<u>CDHS MCL<sup>2</sup> (mg/L)</u>	<u>USEPA MCL<sup>3</sup> (mg/L)</u>	<u>CDHS DLR<sup>4</sup> (ug/L)</u>	<u>Laboratory Reporting Level (ug/L)</u>	<u>Analytical Results (ug/L)</u>
<b><u>Organochlorine Pesticides<sup>#</sup>:</u></b>						
Aldrin*	0.00005			0.075	0.08	ND
α-BHC	0.0007				0.01	ND
β-BHC	0.0003				0.05	ND
δ-BHC				0.5	0.05	ND
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20	ND
Chlordane		0.0001	0.002	0.1	0.10	ND
Chlorothalonil*				5.0	5.0	ND
4,4'-DDD				0.02	0.02	ND
4,4'-DDE				0.01	0.01	ND
4,4'-DDT				0.02	0.02	ND
Dieldrin*	0.00005			0.02	0.02	ND
Endrin		0.002	0.002	0.1	0.1	ND
Heptachlor		0.00001	0.0004	0.01	0.01	ND
Heptachlor epoxide		0.00001	0.0002	0.01	0.01	ND
Hexachlorobenzene		0.001	0.001	0.5	0.5	ND
Hexachlorocyclo-						ND
Pentadiene		0.05	0.05	1.0	1.0	ND
Methoxychlor		0.04	0.04	10.0	10.0	ND
Propachlor*				0.5	0.5	ND
Toxaphene		0.003	0.003	1.0	1.0	ND
Polychlorinated Biphenyls (PCB)		0.0005	0.0005	0.5	0.5	ND
<b><u>Organophosphorus Pesticides and Triazine Herbicides<sup>#</sup>:</u></b>						
Alachlor		0.002	0.002	1.0	1.0	ND
Atrazine		0.003	0.003	1.0	1.0	ND
Bromacil*				10.0	10.0	ND
Butachlor*				0.38	0.38	ND
Diazinon	0.014			0.25	0.25	ND
Dimethoate*	0.140			10.0	10.0	ND
Malathion	0.160				0.5	ND
Metalochlor*					0.5	ND
Metribuzin*					0.5	ND

<u>Analyte</u>	<u>CDHS Action Level<sup>1</sup> (mg/L)</u>	<u>CDHS MCL<sup>2</sup> (mg/L)</u>	<u>USEPA MCL<sup>3</sup> (mg/L)</u>	<u>CDHS DLR<sup>4</sup> (ug/L)</u>	<u>Laboratory Reporting Level (ug/L)</u>	<u>Analytical Results (ug/L)</u>
<b>Organophosphorus Pesticides and <u>Triazine Herbicides<sup>#</sup>:</u></b>						
Molinate		0.02		2.0	2.0	ND
Prometryn*				2.0	2.0	ND
Simazine		0.004	0.004	1.0	1.0	ND
Thiobencarb		0.07 (0.001**)		1.0	1.0	ND
<b>Organochlorine <u>Herbicides<sup>#</sup>:</u></b>						
Bentazon		0.018		2.0	2.0	ND
Dalapon		0.2	0.2	10.0	10.0	ND
Dicamba*				1.5	0.081	ND
Dinoseb		0.007	0.007	2.0	2.0	ND
Pentachlorophenol		0.001	0.001	0.2	0.2	ND
Picloram		0.5	0.5	1.0	1.0	ND
2,4-D		0.07	0.07	10.0	10.0	ND
2,4,5-T (Silvex)		0.05	0.05	1.0	1.0	ND
<b>Carbamates <u>Method 632<sup>#</sup>:</u></b>						
Diuron*				1.0	1.0	ND
<b>Carbamates <u>Method 531.1<sup>#</sup>:</u></b>						
Aldicarb*	0.01		0.003 <sup>+</sup>	3.0	2	ND
Aldicarb sulfone*			0.002 <sup>+</sup>	4.0	2	ND
Aldicarb sulfoxide*			0.004 <sup>+</sup>	3.0	2	ND
Baygon(Propoxur)	0.09				1	ND
Carbofuran		0.018	0.04	5.0	2	ND
Carbaryl*	0.060			5.0	2	ND
3-Hydroxycarbofuran*				3.0	2	ND
Methomyl*				2.0	2	ND
Oxamyl		0.2	0.2	20.0	2	ND

<u>Analyte</u>	<u>CDHS Action Level<sup>1</sup> (mg/L)</u>	<u>CDHS MCL<sup>2</sup> (mg/L)</u>	<u>USEPA MCL<sup>3</sup> (mg/L)</u>	<u>CDHS DLR<sup>4</sup> (µg/L)</u>	<u>Laboratory Reporting Level (µg/L)</u>	<u>Analytical Results (µg/L)</u>
<b><u>Fumigant</u></b>						
<b><u>Method 504.1<sup>#</sup>:</u></b>						
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01	ND
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02	ND
<b><u>SVOC</u></b>						
<b><u>Method 525.2<sup>#</sup>:</u></b>						
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1	ND
Di(2-ethylhexyl)adipate		0.4	0.4	5	5	ND
Di(2-ethylhexyl)phthalate		0.004	0.006	3	3	ND
<b><u>Miscellaneous</u></b>						
Diquat <sup>#</sup>		0.02	0.02	4.0	4.0	ND
Endothall <sup>#</sup>		0.1	0.1	45.0	45	ND
Glyphosate <sup>#</sup>		0.7	0.7	25.0	25	ND
Dioxin (2,3,7,8-TCDD) <sup>##</sup>		3 x 10 <sup>-8</sup>	3 x 10 <sup>-8</sup>	5 x 10 <sup>-6</sup>	5 x 10 <sup>-6</sup>	ND

<sup>1</sup> California Department of Health Services (CDHS) action levels ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999).

<sup>2</sup> CDHS maximum contaminant level (MCL) ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999).

<sup>3</sup> U.S. Environmental Protection Agency, MCLs, Federal Registers, January 30, 1991 and July 17, 1992.

<sup>4</sup> CDHS required detection limits for purposes of reporting (DLR).  
[www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999.

\* CDHS unregulated organic chemicals ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999)

+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

# Analysis performed by Weck Laboratories.

## Analysis performed by Quantarra Environmental Services.

\*\* Secondary CDHS MCL.





**MWD**

**METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA**

**Date:** April 12, 1999  
**To:** Marshall K. Davis, Water Quality Laboratory Manager  
**From:** Bart Koch, Principal Chemist  
**Subject:** 1998 Annual Pesticide, Herbicide, and Semi-Volatile (SVOC) Monitoring Program

1. On December 8, 1998, samples from seven of Metropolitan's source waters and five treatment plant effluents (Table 1) were collected for the 1998 annual pesticide, herbicide, and SVOC monitoring program. The Jensen Filtration Plant was out of service at the time of sampling and therefore, an effluent sample could not be collected. However, the influent (source water) to the Jensen plant was collected. Table 2 lists the analyses and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established detection limits. No pesticides, herbicides, or SVOCs were detected at or above the DLRs in Metropolitan's source or finished waters.
2. The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOCs (USEPA Methods 515.2, 508, 507, 504.1, 515.1, 531.1, 547, 549.1, 632, 548.1, and 525.2, respectively) were performed by Weck Laboratories. The analysis for dioxin was performed by Quantarra Environmental Services (Method 1613A).

This represents the 1998 annual monitoring program for pesticides, herbicides, and SVOCs. The next monitoring will be conducted in the first quarter of 1999.

**ORIGINAL SIGNED BY**  
Bart Koch

EWC:lk

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Attachments (2)

Marshall K. Davis, Water Quality Laboratory Manager  
Page 2  
April 12, 1999

cc w/attachments:

J. W. Malinowski  
M. D. Beuhler  
R. L. Wolfe  
J. M. Bruno  
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D. Sass  
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M. S. Dale  
Water Quality file

**TABLE 1**

**SAMPLE LOCATIONS FOR  
PESTICIDE, HERBICIDE, and SVOC MONITORING  
ANNUAL 1998**

**Source Waters**

Devil Canyon afterbay  
Foothill Pressure Control  
Structure (PCS)  
Lake Havasu near Intake  
Lake Mathews headworks  
Lake Perris  
Lake Skinner outlet conduit  
San Jacinto Tunnel

**Treated Waters**

Diemer plant effluent  
Mills plant effluent  
Skinner plant #1 effluent  
Skinner plant #2 effluent  
Weymouth plant effluent

**TABLE 2**

**PESTICIDE, HERBICIDE, and SVOC DETECTION  
LIMITS AND MAXIMUM CONTAMINANT LEVELS  
1998 ANNUAL**

<u>Analyte</u>	<u>CDHS Action Level<sup>1</sup> (mg/L)</u>	<u>CDHS MCL<sup>2</sup> (mg/L)</u>	<u>USEPA MCL<sup>3</sup> (mg/L)</u>	<u>CDHS DLR<sup>4</sup> (µg/L)</u>	<u>Detection Limits (µg/L)</u>
<u>Organochlorine Pesticides #:</u>					
Aldrin*	0.00005			0.075	0.08
α-BHC	0.0007				0.01
β-BHC	0.0003				0.05
δ-BHC				0.5	0.05
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20
Chlordane		0.0001	0.002	0.1	0.10
Chlorothalonil*				5.0	5.0
4,4'-DDD				0.02	0.02
4,4'-DDE				0.01	0.01
4,4'-DDT				0.02	0.02
Dieldrin*	0.00005			0.02	0.02
Endrin		0.002	0.002	0.1	0.1
Heptachlor		0.00001	0.0004	0.01	0.01
Heptachlor epoxide		0.00001	0.0002	0.01	0.01
Hexachlorobenzene		0.001	0.001	0.5	0.5
Hexachlorocyclo- pentadiene		0.05	0.05	1.0	1.0
Methoxychlor		0.04	0.04	10.0	10.0
Propachlor*				0.5	0.5
Toxaphene		0.003	0.003	1.0	1.0
Polychlorinated Biphenyls (PCB)		0.0005	0.0005	0.5	0.1
<u>Organophosphorus Pesticides and Triazine Herbicides #:</u>					
Alachlor		0.002	0.002	1.0	1.0
Atrazine		0.003	0.003	1.0	1.0
Bromacil*				10.0	10.0
Butachlor*				0.38	0.38
Diazinon*	0.014			0.25	0.25
Dimethoate*	0.140			10.0	10.0

**TABLE 2**  
(continued)

<u>Analyte</u>	CDHS Action Level <sup>1</sup> (mg/L)	CDHS MCL <sup>2</sup> (mg/L)	USEPA MCL <sup>3</sup> (mg/L)	CDHS DLR <sup>4</sup> (µg/L)	Detection Limits (µg/L)
<u>Organophosphorus Pesticides and Triazine Herbicides #</u> (continued):					
Metalochlor*					0.5
Metribuzin*					0.5
Molinate		0.02		2.0	2.0
Prometryn*				2.0	2.0
Simazine		0.004	0.004	1.0	1.0
Thiobencarb		0.07(0.001**)		1.0	1.0
<u>Organochlorine Herbicides#:</u>					
Bentazon		0.018		2.0	2.0
Dalapon		0.2	0.2	10.0	10.0
Dicamba*				1.5	0.081
Dinoseb		0.007	0.007	2.0	2.0
Pentachlorophenol		0.001	0.001	0.2	0.2
Picloram		0.5	0.5	1.0	1.0
2,4-D		0.07	0.07	10.0	10.0
2,4,5-TP (Silvex)		0.05	0.05	1.0	1.0
<u>Carbamates - Method 632#</u>					
Diuron*				1.0	1.0
<u>Carbamates - Method 531#</u>					
Aldicarb*	0.01		0.003 <sup>+</sup>	3.0	2
Aldicarb sulfone*			0.002 <sup>+</sup>	4.0	2
Aldicarb sulfoxide*			0.004 <sup>+</sup>	3.0	2
Baygon (Propoxur)	0.090				1
Carbofuran		0.018	0.04	5.0	2
Carbaryl*	0.060			5.0	2
3-Hydroxycarbofuran*				3.0	3
Methomyl*				2.0	2
Oxamyl		0.2	0.2	20.0	2

**TABLE 2**  
(continued)

<u>Analyte</u>	CDHS Action Level <sup>1</sup> ( <u>µg/L</u> )	CDHS MCL <sup>2</sup> ( <u>mg/L</u> )	USEPA MCL <sup>3</sup> ( <u>mg/L</u> )	CDHS DLR <sup>4</sup> ( <u>µg/L</u> )	Detection Limits ( <u>µg/L</u> )
<u>Fumigants- Method 504 #</u>					
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02
<u>SVOC - Method 525.2 #</u>					
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1
Di(2-ethylhexy)adipate		0.4	0.4	5	5
Di(2-ethylhexyl)phthalate		0.004	0.006	3	3
<u>Misc.</u>					
Diquat#		0.02	0.02	4.0	4.0
Endothall#		0.1	0.1	45.0	45
Glyphosate#		0.7	0.7	25.0	25
Dioxin (2,3,7,8-TCDD)##		$3 \times 10^{-8}$	$3 \times 10^{-8}$	$5 \times 10^{-6}$	$0.48-1.5 \times 10^{-6}$

1. California Department of Health Services (CDHS) action levels ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999).

2. CDHS maximum contaminant level (MCL) ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999).

3. Environmental Protection Agency MCLs, Federal Registers, January 30, 1991, and July 17, 1992.

4. CDHS required detection limits for purposes of reporting (DLR). [www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update November 19, 1998.

\* CDHS unregulated organic chemicals ([www.dhs.cahwnet.gov](http://www.dhs.cahwnet.gov) update January 7,1999)

+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

# Analysis performed by Weck Laboratories.

## Analysis performed by Quantarra Environmental Services.

\*\* Secondary CDHS MCL.



**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

February 27, 1998

To: Water Quality Laboratory Manager M. K. Davis *MKL*  
From: Principal Chemist Bart Koch  
Subject: Annual Pesticide, Herbicide, and Semi-Volatile  
Organic Compound (SVOC) Monitoring Program -  
Third Quarter 1997

1. On September 17 and 18, 1997, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 1997 annual pesticide and herbicide and semi-volatile organic compound (SVOC) monitoring program. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established detection limits. **No pesticides, herbicides, or SVOCs were detected at or above the DLRs in Metropolitan's source or finished waters.**

2. The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOC (USEPA Methods 515.2, 508, 507, 504.1, 515.1, 531.1, 547, 549.1, 632, 548.1, and 525.2, respectively) were performed by Weck Laboratories. The analysis for dioxin was performed by Quantarra Environmental Services (Method 1613A).

3. This annual sampling was the only sampling for pesticides, herbicides, and SVOCs conducted in 1997. The next annual monitoring will be conducted in the fourth quarter of 1998.

*Bart Koch*

Bart Koch

BK/EC/saj

TABLE 1

SAMPLE LOCATIONS FOR  
PESTICIDE, HERBICIDE, and SVOC MONITORING  
THIRD QUARTER 1997

Source Waters

Devil Canyon afterbay  
Foothill Pressure Control  
Structure (PCS)  
Lake Havasu near Intake  
Lake Mathews headworks  
Lake Perris  
Lake Skinner outlet conduit  
San Jacinto Tunnel

Treated Waters

Diemer plant effluent  
Jensen plant effluent  
Mills plant effluent  
Skinner plant #1 effluent  
Skinner plant #2 effluent  
Weymouth plant effluent



Table 2  
(continued)

Analyte	CDHS Action Level <sup>1</sup> (mg/L)	CDHS MCL <sup>2</sup> (mg/L)	USEPA MCL <sup>3</sup> (mg/L)	CDHS DLR <sup>4</sup> (µg/L)	Detection Limits (µg/L)
<u>Organophosphorus Pesticides and Triazine Herbicides # (continued):</u>					
Malathion	0.160				0.5
Metalochlor*					0.5
Metribuzin*					0.5
Molinate		0.02		2.0	2.0
Prometryn*				2.0	2.0
Simazine		0.004	0.004	1.0	1.0
Thiobencarb		0.07 (0.001)**		1.0	1.0
<u>Organochlorine Herbicides#:</u>					
Bentazon		0.018		2.0	2.0
Dalapon		0.2	0.2	10.0	10.0
Dicamba*				1.5	0.081
Dinoseb		0.007	0.007	2.0	2.0
Pentachlorophenol		0.001	0.001	0.2	0.2
Picloram		0.5	0.5	1.0	1.0
2,4-D		0.07	0.07	10.0	10.0
2,4,5-TP (Silvex)		0.05	0.05	1.0	1.0
<u>Carbamates - Method 632#</u>					
Diuron*				1.0	1.0
<u>Carbamates - Method 531#</u>					
Aldicarb*	10		0.003 <sup>+</sup>	3.0	2
Aldicarb sulfone*			0.002 <sup>+</sup>	4.0	2
Aldicarb sulfoxide*			0.004 <sup>+</sup>	3.0	2
Baygon (Propoxur) 0.090 →			1	→	→
Carbofuran		0.018	0.04	5.0	2
Carbaryl* 0.060				5.0	2
3-Hydroxycarbofuran*				3.0	2
Methomyl*				2.0	2
Oxamyl		0.2	0.2	20.0	2



**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

February 27, 1998

To: Water Quality Laboratory Manager M. K. Davis *MDL*  
From: Principal Chemist Bart Koch  
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2. The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOC (USEPA Methods 515.2, 508, 507, 504.1, 515.1, 531.1, 547, 549.1, 632, 548.1, and 525.2, respectively) were performed by Weck Laboratories. The analysis for dioxin was performed by Quantarra Environmental Services (Method 1613A).

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Aldicarb sulfone*			0.002 <sup>+</sup>	4.0	2
Aldicarb sulfoxide*			0.004 <sup>+</sup>	3.0	2
Baygon (Propoxur) (0.090) →				1	2
Carbofuran		0.018	0.04	5.0	2
Carbaryl*	0.060			5.0	2
3-Hydroxycarbofuran*				3.0	2
Methomyl*				2.0	2
Oxamyl		0.2	0.2	20.0	2

**From:** "George Bernath" <viceroygold5@earthlink.net>  
**To:** "Teresa Newkirk" <newkt@rb7.swrcb.ca.gov>  
**Date:** 4/3/01 4:11PM  
**Subject:** Piute Spring data

Teresa,

Attached are two Excel files, one is the Piute Spring flow measurements as well as water level measurements from several monitor wells in the Lanfair Valley and the other is the water analysis results from Piute Spring. If you need the locations of the monitor wells, we can send you a map. Also, if you need any other information concerning this data, contact us.

I will be leaving Viceroy Gold on April 11 to take a job at Molycorp, Mountain Pass so if you need more information contact Al Johnson who will be taking over my duties. His email address is [ajohnson@viceroygold.com](mailto:ajohnson@viceroygold.com).

George Bernath

Viceroy Gold Corp.

--- George Bernath

--- viceroygold5@earthlink.net

--- EarthLink: It's your Internet.

# Summary of Piute Spring flow and water levels in monitor wells in Lanfair Valley

Date	Spring Outlet Flow (gpm)	Flow Upstream of Concrete Dam (gpm)	Depth to Water in PS-2 (feet) (e)	Depth to Water in W-3 (feet) (f)	Depth to Water in W-19 (feet) (h)	Depth to Water in W-37 (feet) (h)	Depth to Water in W-38 (feet) (h)
#####	41	(l)	(l)				
#####	37	21	431.57				
#####	41	37	431.14				
#####	45	(l)	431.05				
#####	45	90	430.79				
#####	45	121	430.49				
#####	41	121	430.44				
#####	45	73	430.21				
#####	41	84	430.16				
#####	37	84	430.33				
#####	45	37	430.33				
#####	41	21	434.4 (g)				
#####	37	37	434.39				
#####	41	95	433.95				
#####	37	135	432.67				
#####	45	114	432.18				
#####	45	84	432.15				
#####	37	102	431.79				
#####	45	105	431.50				
#####	45	84	431.27				
#####	34(a)	63(a)	(b)				
#####	42	84	431.10				
#####	47	74	430.73				
#####	41	45	430.76				
#####	37	41	430.72				
#####	41	41	430.69				
#####	41	54	430.44				
#####	30	73	430.44				
#####	41	92	430.26				
#####	45	90(c)	430.14				
#####	45	92	430.16	489.70			
#####	45	95	430.09	489.82			

#####	49	108	429.79	488.32			
#####	47	114	429.82	488.61			
#####	45	105	429.87	488.51			
#####	34	56	429.36	488.54	365.06(i)		
#####	34	78(j)	429.30	488.56	365.13		
#####	37	45	428.59	488.53	365.02		757.57(d)
#####	41	78	428.77	488.19	364.92	(k)	756.48
#####	37	63	428.90	488.41	365.03	616.35	756.87
#####	(l)	(l)	(l)	(l)	(l)	615.36	757.16
#####	45(a)	45(a)	428.93	488.68	365.13	614.86	756.73
#####	(l)	(l)	(l)	(l)	(l)	614.04	756.95
#####	45	75	429.25	488.64	365.11	613.62	756.94
#####	(l)	(l)	(l)	(l)	(l)	613.42	757.24
#####	45	81	429.30	488.93	365.45	613.17	757.12
#####	(l)	(l)	(l)	(l)	(l)	612.81	756.77
#####	45	81	429.34	488.37	364.98	612.19	756.86
#####	(l)	(l)	(l)	(l)	(l)	(l)	757.28
#####	45	189	428.24	488.87	365.32	612.07	757.19
#####	37	68	428.42	488.76	365.27	611.52	757.11
#####	30	40	428.68	488.71	(l)	611.01	757.21
#####	30	40	428.55	488.66	(l)	610.43	757.22
#####	30	40	428.81	488.76	365.73	610.34	757.16
#####	27	37	428.92	488.75	365.88	610.11	757.25
#####	37	37	428.95	488.80	366.00	609.57	756.89
#####	21	30	429.21	488.70	366.09	608.84	755.81
#####	39	24	428.33	488.27	365.76	607.58	755.89
#####	37	21	428.36	488.10	365.95	607.35	755.95
#####	37	29	428.37	488.16	365.91	607.08	756.13
#####	41	47	428.44	488.33	366.13	606.60	756.00
#####	39	56	427.65	488.38	366.31	606.24	755.72
#####	37	45	426.85	488.40	366.41	606.11	755.84
#####	35	27	427.12	488.54	366.83	605.20	755.10
#####	41	21(m)	427.37	488.30	367.03	609.20	756.80
#####	37	29(n)	428.32	489.63	368.12	608.51	756.57
#####	37	28(n)	428.46	489.67	368.60	606.86	756.90
#####	34	30(n)	428.55	489.96	367.94	605.59	757.07
#####	37	34(o)	428.68	490.29	369.58	604.61	

#####	41	37(o)	428.70	489.89	369.48	603.64	756.53
#####	41	37(o)	428.74	490.09	369.81	603.29	756.72
#####	49	58(o)	428.75	490.33	370.04	602.83	756.89
#####	54	49	428.21	490.24	369.98	601.48	756.57
#####	54	45	428.24	490.12	370.18	601.70	756.37
#####	45	54	428.24	490.31	370.43	600.42	756.57
#####	54	54	428.25	490.21	370.51	600.28	756.44
#####	45	111(n)	428.23	490.35	370.91	600.35	756.52
#####	45	108(n)	428.24	490.55	371.22	599.42	756.72
#####	49	129(n)	428.26	490.60	371.58	599.08	756.73
#####	45	148(n)	428.26	490.80	371.86	599.11	756.82
#####	49	144(n)	428.26	490.51	371.99	598.16	756.67
#####	45	145(n)	428.27	490.61	372.50	597.23	756.71
#####	58	155(n)	428.30	490.04	373.09	597.93	757.10
#####	54	125	428.29	490.80	373.43	597.39	756.64
#####	54	145	428.28	491.21	374.04	596.59	756.95
#####	49	163	428.28	491.35	374.38	595.78	757.13
4/28-29/94	30	78(p)	428.23	491.50	374.87	595.32	756.97
#####	45	121(p)	428.28	491.40	375.18	595.16	756.93
#####	49	101(p)	428.27	491.53	375.55	595.03	757.02
#####	49	128(p)	428.27	491.61	375.93	595.18	757.05
#####	41	84(p)	428.26	491.71	376.42	595.23	757.00
#####	41	95(p)	428.27	491.83	376.72	593.83	757.05
#####	54	180(p)	428.30	492.12	377.20	595.80	757.33
#####	45	215(p)	428.31	492.24	377.55	593.36	757.41
#####	54	233(p)	426.52	492.33	377.95	593.36	757.27
#####	49	314(p)	(q)	492.48	378.25	592.80	757.44
#####	41	282(p)	426.80	492.46	378.62	595.38	757.25
#####	45	303(p)	426.53	492.62	378.88	592.70	757.27
#####	49	314(p)	426.70	492.70	379.22	592.85	757.25
#####	37	262(p)	426.90	492.95	379.61	591.89	757.49
#####	37	224(p)	427.02	493.00	377.89	591.73	757.40
#####	41	142(p)	427.14	493.08	380.22	590.87	757.31
#####	41	149(p)	427.25	493.18	380.47	590.20	757.34
#####	37	164(p)	427.36	493.31	380.82	591.23	757.30
#####	45	172(p)	427.49	493.42	381.10	589.53	757.24
#####	41	164(P)	427.60	493.67	381.42	590.20	757.50



#####	49	215(p)	427.65	493.59	381.47	589.51	757.31
#####	45	224(p)	427.76	493.81	381.86	588.44	757.24
#####	45	197(p)	427.87	494.13	382.30	587.89	757.55
#####	45	172(p)	427.91	494.21	382.54	588.67	757.56
#####	49	142(p)	427.94	494.22	382.61	588.67	757.63
#####	37	149(p)	427.98	494.40	382.98	588.00	757.58
#####	37	164(p)	428.05	494.48	383.22	587.69	757.55
#####	41	180(p)	428.08	494.61	383.46	588.44	757.65
#####	27	149(p)	428.13	494.85	383.84	587.67	757.75
#####	37	164(p)	428.17	494.82	383.85	586.68	757.70
#####	45	197(p)	428.23	494.89	384.10	585.99	757.72
#####	49	233(p)	428.28	495.33	384.47	586.29	757.97
#####	45	262(p)	428.28	495.32	384.63	586.27	757.90
#####	37	324(p)	428.31	495.72	385.02	585.65	758.02
#####	41	314(p)	428.34	495.15	384.79	584.56	757.54
#####	49	233(p)	428.35	496.05	385.43	584.66	757.97
#####	37	197(p)	428.35	496.31	385.64	584.35	757.86
#####	41	149(p)	428.36	496.51	385.72	585.58	757.86
#####	41	189(p)	428.37	496.83	386.03	585.72	757.90
#####	41	172(p)	428.38	497.15	386.24	584.96	757.91
#####	41	206(p)	428.41	497.53	386.45	584.04	757.99
#####	45	197(p)	428.41	497.88	386.57	584.97	757.91
#####	45	215(p)	428.53	497.76	387.04	584.65	758.18
#####	54	197(p)	428.50	498.40	387.28	584.35	758.15
#####	114	224(p)	428.52	498.67	387.44	583.81	758.16
#####	84	242(p)	428.51	498.62	387.39	582.80	758.03
#####	78	242(p)	428.52	498.96	387.65	582.53	757.96
#####	41	206(p)	428.54	499.17	387.81	582.41	757.91
#####	49	189(p)	428.51	499.56	388.17	581.54	757.99
#####	30	149(p)	428.53	500.19	388.81	580.43	757.97
#####	30	206(p)	428.56	500.42	389.23	579.85	757.96
#####	45	189(p)	428.56	500.52	389.49	579.52	757.82
#####	49	149(p)	428.55	501.08	390.08	579.28	757.76
#####	37	180(p)	428.58	501.63	390.78	578.97	757.58
#####	63	224(p)	428.60	502.15	390.88	581.46	756.90
#####	58	262(p)	428.61	502.38	391.08	577.54	756.83
#####	90	189(p)	428.60	502.54	391.63	575.41	756.80

#####	73	189(p)	428.38	503.86	392.03	573.40	756.98
#####	90	262(p)	428.43	504.12	392.24	574.72	757.07
#####	90	303(p)	428.33	504.20	392.88	573.80	756.85

- (a) Flow measurement probably too low due to leakage around flume.
- (b) The probe became stuck and no measurement was obtained.
- (c) A light rain was falling during gauging (at this site only).
- (d) Measured prior to well development. Temporary reference point.
- (e) Reference point is the top of the 2-inch PVC casing. TOC is 0.3 feet below land surface. Measured with a calibrated Solinst Probe. Readings prior to 1990 were made with an Olympic well probe.
- (f) Reference point is the bottom of a torch-cut slot near the top of the steel casing. Measured with a calibrated Solinst Probe
- (g) Previous reports used a land surface datum for the measurement on this date. This value has been corrected to top of casing. Measured with a calibrated Solinst Probe.
- (h) Reference point is the top of casing on the side opposite the lock. Measured with a calibrated Solinst Probe.
- (i) Measured 6/30/90.
- (k) A measurement of 345.48 feet was made on this date. This measurement was made prior to complete removal of drilling mud and does not represent static water level of the aquifer.
- (l) Not Measured
- (m) Stream channel split, measurement taken at usual sampling point, secondary flow not measured.
- (n) Combined stream flow, channel split into two channels, two measurement locations; 1) at the usual measurement station, and 2) at the northmost channel, adjacent to usual measurement station.
- (o) Some secondary flow outside the usual stream channel not measured because thick tule grasses, very slow flow and 20 to 25 foot width
- (p) Spring measured approximately 20 feet upstream of where the stream splits into two channels.
- (q) Not able to measure because probe became stuck at about 300 feet due to an apparent cave in or shifting of well casing.

Table 2 - Piute Spring Summary of Water Quality Data

	12/31/1987 Results (2)	03/28/1988 Results (2)	06/11/1988 Results (2)(3)	10/06/1988 Results (2)	12/27/1988 Results (2)	04/27/1988 Results (4)	08/30/1989 Results (4)	03/29/1990 Results (2)(5)
Arsenic	0.005	0.006	0.007	0.008	0.007	0.008	0.006	0.010
Calcium	26.0	25.0	30.0	24.5	26.0	32.0	29.0	25.3
Magnesium	12.1	13.8	14.3	12.0	12.8	13.0	13.0	13.4
Potassium	5.80	7.30	7.60	5.80	6.00	6.00	6.00	6.50
Sodium	31.2	32.1	34.1	29.7	33.8	31	36	28.5
Copper	---	---	---	---	---	<0.02	<0.02	<0.02
Iron	---	---	---	---	---	<0.05	<0.05	<0.01
Manganese	---	---	---	---	---	<0.01	<0.01	<0.01
Zinc	---	---	---	---	---	<0.01	<0.01	<0.01
Chloride	17	16.2	16.9	18.5	16.7	23	19	17.5
Fluoride	0.6	<0.5	0.5	2.7	0.6	0.52	0.04	0.5
Nitrate (NO <sub>3</sub> )	1.6	3.2	1.9	0.16	2.8	3.5	2.4	2.9
Sulfate (SO <sub>4</sub> )	20.2	19.4	17.7	18.6	18.4	17	18	17.9
Silica	---	---	29.4	31.3	62.5	59	36	---
Carbonate (as CaCO <sub>3</sub> )	---	---	<5	<5	0	3	<5	<5
Bicarbonate (as CaCO <sub>3</sub> )	---	---	153	154	155	186	174	147.5
Total Alkalinity (as CaCO <sub>3</sub> )	---	---	153	154	155	153	148	147.5
Hydroxide	---	---	<5	<5	<5	---	---	<5
pH (pH Units)	7.85	7.6	7.96	7.67	7.81	8.06	8.24	7.98
Conductivity (umhos)	400	400	375	375	384	372	391	379
Total Dissolved Solids	252	271	306	270	240	251	263	256
Total Hardness (as CaCO <sub>3</sub> )	---	---	---	---	---	135	128	118.5

(1) All units mg/l, unless noted.

(2) Analysis by Analytical Technologies, Inc. of San Diego, California

(3) Sample was filtered during collection.

(4) Analysis by Atlas Chemical Laboratories, Inc. of Las Vegas.

(5) The following individual results are the average of the reported values from two samples taken

(6) Analysis by Lockheed Analytical Laboratory, Las Vegas, Nevada.

(7) Sample taken approximately 150 feet downstream from the washed out concrete dam.

(8) Analysis by NIET Pacific, Inc. of Burbank, California.

Table 2 - Piute Spring Summary of Water Quality Data

	01/03/1991 Results (2)(5)	04/04/1991 Results (2)(5)	07/02/1991 Results (2)(5)	09/25/1991 Results (2)(5)	01/02/1992 Results (6)	01/02/1992 Results (6)(7)	03/30/1992 Results (8)	07/01/1992 Results (5)(8)
Arsenic	0.007	0.007	0.006	0.008	<0.010	<0.010	0.006	0.005
Calcium	26.8	26.4	25	26.9	27	44	29.8	28.4
Magnesium	14.1	13.9	14.4	14.2	12	16	14.8	14.15
Potassium	7	6.9	6.2	6.7	5.8	6	6.91	6.05
Sodium	28	31.9	28.6	33.3	29	36	38	33.6
Copper	—	<0.02	<0.02	<0.02	<0.025	<0.025	<0.02	<0.02
Iron	—	<0.01	0.05	<0.01	<0.010	<0.10	0.02	<0.01
Manganese	—	<0.01	<0.01	<0.01	<0.015	<0.015	0.04	<0.01
Zinc	—	<0.01	<0.05	<0.05	<0.020	<0.020	<0.02	<0.05
Chloride	16.9	13.1	20.5	17	15	18	18.2	17.5
Fluoride	0.6	0.6	0.05	0.25	0.54	0.059	0.66	0.67
Nitrate (NO <sub>3</sub> )	2.8	3.5	209	3.9	2.7	1	2.7	2
Sulfate (SO <sub>4</sub> )	22.1	20	18.5	10.6	16	14	20	18.6
Silica	57.9	62.1	66.1	84.4	74	77	54.5	84.4
Carbonate (as CaCO <sub>3</sub> )	<5	<5	<5	<5	<30	<30	<10	<5
Bicarbonate (as CaCO <sub>3</sub> )	142	139	172	148.5	150	230	156	145
Total Alkalinity (as CaCO <sub>3</sub> )	142	139	148	148.5	150	230	156	145
Hydroxide	<5	<5	<5	<5	<30	<30	<10	<5
pH (pH Units)	7.83	8.16	8.69	7.92	8.4	8.5	7.8	7.7
Conductivity (umhos)	405	404	440	399	400	520	420	400
Total Dissolved Solids	282	251	298	290	280	350	286	337
Total Hardness (as CaCO <sub>3</sub> )	—	—	122	125.5	120	180	137	129

- (1) All units mg/L unless noted.
- (2) Analysis by Analytical Technologies, Inc. of San Diego, California
- (3) Sample was filtered during collection.
- (4) Analysis by Atlas Chemical Laboratories, Inc. of Las Vegas.
- (5) The following individual results are the average of the reported values from two samples taken
- (6) Analysis by Lockheed Analytical Laboratory, Las Vegas, Nevada.
- (7) Sample taken approximately 150 feet downstream from the washed out concrete dam.
- (8) Analysis by NET Pacific, Inc. of Burbank, California.

**Table 2 - Piute Spring Summary of Water Quality Data**

	12/04/1992 Results (5)(8)	03/30/1993 Results (5)(8)	06/30/1993 Results (5)(8)	09/30/1993 Results (5)(8)	12/29/1993 Results (5)(8)	03/30/1994 Results (8)	06/29/1994 Results (5)(8)	09/27/1994 Results (5) (8)
Arsenic	0.007	0.006	ND	0.009	ND	0.007	0.006	0.007
Calcium	26.4	29.8	26.7	29.3	30.7	27.1	28	28
Magnesium	13.6	14.9	13.9	13.4	14.4	13.2	13.7	13.3
Potassium	6.16	6.93	6.56	6.15	6.99	6.07	6.5	6.88
Sodium	32.4	38.1	33.5	31.1	33.1	32.4	35.9	34.1
Copper	ND	ND	ND	ND	ND	ND	ND	ND
Iron	0.04	0.02	0.09	0.06	0.07	ND	ND	ND
Manganese	ND	0.05	ND	ND	ND	ND	ND	ND
Zinc	ND	ND	ND	ND	0.08	ND	ND	ND
Chloride	19.5	18.3	17.5	16.5	22	18.9	18.5	17
Fluoride	0.62	0.67	0.53	0.51	0.58	0.47	0.56	0.5
Nitrate (NO <sub>3</sub> )	2.5	2.8	2	2.3	3	2.8	2.8	2.9
Sulfate (SO <sub>4</sub> )	18.2	20	17.6	12.3	24	17.8	18.5	17
Silica	52	54.6	58.4	63.9	67.9	65.2	63.4	48.9
Carbonate (as CaCO <sub>3</sub> )	0	0	0	0.4	0	0	0	0
Bicarbonate (as CaCO <sub>3</sub> )	145	156	138	136.5	163	150	162.5	150
Total Alkalinity (as CaCO <sub>3</sub> )	145	156	138	137	163	150	162.5	150
Hydroxide	0	0	0	0	0	0	0	0
pH (pH Units)	7	7.8	7.2	8	7.5	7.7	7	7.8
Conductivity (umhos)	372	420	363	349	365	379	363.5	375
Total Dissolved Solids	282	286	386	337	276	312	285	225
Total Hardness (as CaCO <sub>3</sub> )	123	137	157	129	123	118	130	115

- (1) All units mg/L, unless noted.  
(2) Analysis by Analytical Technologies, Inc. of San Diego, California  
(3) Sample was filtered during collection.  
(4) Analysis by Atlas Chemical Laboratories, Inc. of Las Vegas.  
(5) The following individual results are the average of the reported values from two samples taken  
(6) Analysis by Lockheed Analytical Laboratory, Las Vegas, Nevada.  
(7) Sample taken approximately 150 feet downstream from the washed out concrete dam.  
(8) Analysis by NET Pacific, Inc. of Burbank, California.

**Table 2 - Piute Spring Summary of Water Quality Data**

	03/28/1995 Results (5)(8)	06/28/1995 Results (5)(9)	09/27/1995 Results (5)(9)	12/20/1995 Results (5)(9)	03/26/1996 Results (5)(9)	06/26/1996 Results (5)(9)	09/25/1996 Results (5)(9)	01/28/1997 Results (5)(9)
Arsenic	0.008		0.015	0.001	0.018	0.004	0.009	0.007
Calcium	29.45	33.5	30.3	22	26.8	24.55	29.6	35.15
Magnesium	14.5	17	14.05	12.05	14	14.6	15.6	14.7
Potassium	6.86	9.72	7.69	5.21	6.13	5.56	6.79	5.94
Sodium	33.85	43.15	36.2	28.6	30.8	24.75	35.6	34.55
Copper	ND	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Iron	ND	0.218	0.025	0.008	0.007	0.016	0.038	0.012
Manganese	0.05	0.008	<0.002	0.003	<0.002	<0.004	0.087	0.015
Zinc	ND	0.0045	0.106	<0.005	0.014	0.395	0.004	<0.005
Chloride	16.5	24.8	19.6	21.65	17.55	20.95	21.75	17.7
Fluoride	0.56	0.705	0.6	0.46	0.51	0.52	0.43	0.46
Nitrate (NO <sub>3</sub> )	4.65	2.375	2.55	0.9	2.12	1.25	2.4	1.94
Sulfate (SO <sub>4</sub> )	18	21.25	17.7	5.12	17.95	19.7	21.25	16.65
Silica	63.25	29.65	61.6	58.3	50.05	50.4	53.2	62.9
Carbonate (as CaCO <sub>3</sub> )	0	0	0	0	0	0	ND	ND
Bicarbonate (as CaCO <sub>3</sub> )	160	235.4	241	177.5	181	188	173	242.5
Total Alkalinity (as CaCO <sub>3</sub> )	160	235.4	241	177.5	181	188	173	242.5
Hydroxide	0	0	0	0	0	0	ND	ND
pH (pH Units)	7.6	7.775	7.9	7.16	7.46	8.1	7.89	7.79
Conductivity (umhos)	383	447.5	398	398.5	397.5	396	406	457
Total Dissolved Solids	279.5	286.5	387.5	255	272	276	268	292
Total Hardness (as CaCO <sub>3</sub> )	140	170	144	113	128	130	143	148

ND=not detected at method detection limit

- (1) All units mg/L unless noted.
- (2) Analysis by Analytical Technologies, Inc. of San Diego, California
- (3) Sample was filtered during collection.
- (4) Analysis by Atlas Chemical Laboratories, Inc. of Las Vegas.
- (5) The following individual results are the average of the reported values from two samples taken
- (6) Analysis by Lockheed Analytical Laboratory, Las Vegas, Nevada.
- (7) Sample taken approximately 150 feet downstream from the washed out concrete dam.
- (8) Analysis by NET Pacific, Inc. of Burbank, California.
- (9) Analysis by American Assay Laboratories, Inc. of Sparks, NV.

**Table 2 - Piute Spring Summary of Water Quality Data**

	06/30/1997 Results (5X9)	09/14/1997 Results (5X9)	01/06/1998 Results (5X9)	03/31/1998 Results (5X9)	06/23/1998 Results (5X9)	09/22/1998 Results (5X9)	12/15/1998 Results (5X9)	03/30/1999 Results (5X9)
Arsenic	0.007	0.007	<0.005	0.006	<0.005	0.008	0.012	0.022
Calcium	26.8	23.3	27.1	29.8	25.4	28.0	28.2	28.0
Magnesium	14.0	12.0	14.6	15.6	12.2	12.6	14.2	13.8
Potassium	5.50	5.12	6.32	6.22	5.42	5.91	7.75	6.33
Sodium	29.2	26.3	30.1	34.0	26.7	28.1	31.8	30.9
Copper	<0.020	<0.020	<0.010	<0.010	0.026	<0.010	<0.010	<0.010
Iron	0.058	0.11	0.031	0.067	0.086	1.406	0.09	0.068
Manganese	0.065	0.056	0.007	0.022	0.034	0.165	0.027	0.021
Zinc	<0.020	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	18.8	16.3	18.3	17.3	14.6	16.9	16.9	17.6
Fluoride	0.48	0.634	0.40	0.40	0.75	1.15	0.6	0.5
Nitrate (NO <sub>3</sub> )	0.35	4.40	1.58	1.2	2.6	1.8	2.0	2.8
Sulfate (SO <sub>4</sub> )	19.6	17.0	18.4	16.7	15.6	16.2	17.1	17.0
Silica	59.8	71.9	63.5	58.9	66.6	70.3	65.4	60.7
Carbonate (as CaCO <sub>3</sub> )	ND	ND	ND	ND	3.4	ND	ND	ND
Bicarbonate (as CaCO <sub>3</sub> )	183	158	156	151	142	151	149	146
Total Alkalinity (as CaCO <sub>3</sub> )	183	158	156	151	144	151	149	146
Hydroxide	ND	ND	ND	ND	ND	ND	ND	ND
pH (pH Units)	8.06	8.12	7.96	7.79	8.41	8.23	8.07	8.11
Conductivity (umhos)	401	395	403	405	393	400	398	397
Total Dissolved Solids	214	272	240	222	304	246	258	155
Total Hardness (as CaCO <sub>3</sub> )	188	120	122	140	115	123	141	127

ND=not detected at method detection limit

- (1) All units mg/l, unless noted.
- (2) Analysis by Analytical Technologies, Inc. of San Diego, California
- (3) Sample was filtered during collection.
- (4) Analysis by Atlas Chemical Laboratories, Inc. of Las Vegas.
- (5) The following individual results are the average of the reported values from two samples taken
- (6) Analysis by Lockheed Analytical Laboratory, Las Vegas, Nevada.
- (7) Sample taken approximately 150 feet downstream from the washed out concrete dam.
- (8) Analysis by NEF Pacific, Inc. of Burbank, California.
- (9) Analysis by American Assay Laboratories, Inc. of Sparks, NV.

**Table 2 - Piute Spring Summary of Water Quality Data**

	09/28/1999 Results (5X9)	12/14/1999 Results (5X9)	03/28/2000 Results (5X9)	06/27/2000 Results (5X9)	09/26/2000 Results (5X9)	12/19/2000 Results (5X9)
Arsenic	0.007	0.007	0.0045	0.007	0.008	0.008
Calcium	27.9	28.7	29.2	26.65	28.6	26.35
Magnesium	14.0	14.5	14.4	13.7	14.35	13.2
Potassium	6.40	6.09	5.71	5.71	7.52	5.845
Sodium	31.9	33.0	28.8	31.55	33.95	28.7
Copper	<0.010	0.011	<0.010	<0.010	<0.010	<0.010
Iron	0.033	<0.020	0.035	0.299	0.0545	<0.020
Manganese	0.018	0.013	0.0135	0.0565	0.017	0.006
Zinc	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	17.8	16.3	17.55	19.2	25.6	24.25
Fluoride	0.6	0.5	0.5	0.55	0.55	0.7
Nitrate (NO <sub>3</sub> )	2.9	3.1	2.8	3.6	1.75	3.5
Sulfate (SO <sub>4</sub> )	17.5	16.0	16.35	17.9	22.1	20.3
Silica	65.7	66.5	54.4	75.45	74.15	78.1
Carbonate (as CaCO <sub>3</sub> )	ND	ND	ND	ND	ND	ND
Bicarbonate (as CaCO <sub>3</sub> )	147	153	147	160	146.5	149.5
Total Alkalinity (as CaCO <sub>3</sub> )	147	153	147	160	156.5	149.5
Hydroxide	ND	ND	ND	ND	ND	ND
pH (pH Units)	7.94	8.00	8.08	7.76	7.92	7.88
Conductivity (umhos)	392	394	411	403	377	404
Total Dissolved Solids	246	258	264	264	295	265
Total Hardness (as CaCO <sub>3</sub> )	128	132	132	123	131	120

ND=not detected at method detection limit

- (1) All units mg/L unless noted.
- (2) Analysis by Analytical Technologies, Inc. of San Diego, California
- (3) Sample was filtered during collection.
- (4) Analysis by Atlas Chemical Laboratories, Inc. of Las Vegas.
- (5) The following individual results are the average of the reported values from two samples taken
- (6) Analysis by Lockheed Analytical Laboratory, Las Vegas, Nevada.
- (7) Sample taken approximately 150 feet downstream from the washed out concrete dam.
- (8) Analysis by NET Pacific, Inc. of Burbank, California.
- (9) Analysis by American Assay Laboratories, Inc. of Sparks, NV.



06/28/1990
Result (2)
0.007
29.0
14.6
6.80
32.9
<0.02
<0.01
<0.08
<0.01
15
0.6
2
18.5
---
<5
85.7
85.7
<5
7.82
392
258
133

09/03/1992
Results (5)(9)
0.009
27.4
13.4
6.2
33.6
0.04
ND
0.02
ND
20.5
0.55
2.7
18.6
51.2
0
137
137
0
8.1
381
269
126

12/27/1994
Results (5) (8)
0.007
31.8
15
18.2
34.9
ND
0.14
0.04
ND
18.5
0.6
1.9
20.2
57.9
ND
165
165
ND
7.5
386
284.5
137.5

03/25/1997
Results (5/9)
0.012
36.3
17.0
7.20
39.0
<0.020
0.165
0.141
<0.020
17.4
0.52
2.96
19.6
69.2
ND
175
175
ND
7.99
404
220
360

06/29/1999
Results (5X9)
0.012
27.4
13.6
6.49
32.3
<0.010
0.049
0.017
<0.050
17.2
0.5
2.5
17.1
74.7
ND
143
143
ND
8.09
392
295
124



**STATE OF CALIFORNIA  
REGIONAL WATER QUALITY CONTROL BOARD  
COLORADO RIVER BASIN REGION**

**COPIES OF IN-HOUSE DATA/INFORMATION USED  
FOR UPDATING THE 2002 303(d) LIST OF IMPAIRED WATER BODIES  
WITHIN THE COLORADO RIVER BASIN**

# Salton Sea Authority (SSEA)

	Date	Ortho-P		Total P	NH3-N		NO3/NO2-N		Total P	
		mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	>0.05 mg/l	>10 mg/l
Alamo River	01/21/1999 0:00	1	0.365	0.82	1	1.09	6.71	0.82	0	
Alamo River	02/17/1999 0:00	2	0.969	0.85	2	2.83	8.81	0.85	0	
Alamo River	03/15/1999 0:00	3	0.484	1.05	3	2.30	8.15	1.05	0	
Alamo River	04/15/1999 0:00	4	0.378	0.86	4	1.54	6.55	0.86	0	
Alamo River	04/29/1999 0:00	4	0.535	1.03	4	0.538	6.28	1.025	0	
Alamo River	05/13/1999 0:00	5	0.424	1.21	5	2.31	5.90	1.21	0	
Alamo River	05/26/1999 0:00	5	0.419	0.933	5	2.82	6.44	0.933	0	
Alamo River	06/10/1999 0:00	6	0.390	0.846	6	1.15	4.79	0.846	0	
Alamo River	06/24/1999 0:00	6	0.234	0.648	6	0.672	5.20	0.648	0	
Alamo River	07/08/1999 0:00	7	0.163	0.581	7	1.05	4.83	0.581	0	
Alamo River	07/22/1999 0:00	7	0.190	0.449	7	0.680	4.46	0.449	0	
Alamo River	08/11/1999 0:00	8	0.193	0.460	8	1.11	4.81	0.46	0	
Alamo River	08/25/1999 0:00	8	0.209	0.194	8	0.687	5.88	0.194	0	
Alamo River	09/09/1999 0:00	9	0.320	0.299	9	0.989	6.10	0.299	0	
Alamo River	09/22/1999 0:00	9	0.713	0.874	9	1.16	6.00	0.874	0	
Alamo River	10/21/1999 0:00	10	0.583	0.658	10	0.505	7.19	0.658	0	
Alamo River	11/17/1999 0:00	11	0.269	0.505	11	0.307	7.28	0.505	0	
Alamo River	12/15/1999 0:00	12	0.142	0.561	12	0.781	7.31	0.561	0	
			0.388	0.712		1.25	6.15			
			0.969	1.21		2.83	8.15			
			0.142	0.194		0.307	4.46			
			Ortho-P	Total P		NH3-N	NO3/NO2-N			
			mg/L	mg/L		mg/L	mg/L			
New River	01/21/1999 0:00	1	0.991	1.43	1	3.77	3.86	1.43	0	
New River	02/18/1999 0:00	2	1.03	1.16	2	4.04	4.94	1.16	0	
New River	03/15/1999 0:00	3	0.441	1.04	3	2.96	4.32	1.04	0	
New River	04/15/1999 0:00	4	0.633	1.21	4	2.32	4.47	1.21	0	
New River	04/28/1999 0:00	4	0.558	1.16	4	2.44	4.18	1.1585	0	
New River	05/13/1999 0:00	5	0.509	1.13	5	2.57	4.80	1.13	0	
New River	05/26/1999 0:00	5	0.637	1.34	5	3.19	3.18	1.34	0	
New River	06/10/1999 0:00	6	0.572	1.17	6	3.37	2.88	1.172	0	
New River	06/24/1999 0:00	6	0.545	1.09	6	3.35	2.09	1.09	0	
New River	07/08/1999 0:00	7	0.552	1.15	7	2.56	1.98	1.15	0	
New River	07/22/1999 0:00	7	0.493	1.03	7	2.58	2.47	1.03	0	
New River	08/11/1999 0:00	8	0.471	0.950	8	13.9	3.14	0.95	0	
New River	08/25/1999 0:00	8	0.654	0.662	8	5.59	2.43	0.662	0	
New River	09/09/1999 0:00	9	0.831	0.809	9	3.73	2.23	0.809	0	
New River	09/22/1999 0:00	9	0.995	1.20	9	2.73	3.06	1.2	0	
New River	10/21/1999 0:00	10	0.762	0.868	10	3.06	4.30	0.868	0	
New River	11/17/1999 0:00	11	1.11	1.47	11	3.78	3.29	1.47	0	
New River	12/15/1999 0:00	12	0.299	0.903	12	2.83	3.43	0.903	0	
			0.671	1.10		3.82	3.39			
			1.110	1.47		13.90	4.94			
			0.299	0.662		2.32	1.98			
			Ortho-P	Total P		NH3-N	NO3/NO2-N			
			mg/L	mg/L		mg/L	mg/L			
Whitewater River	01/21/1999 0:00	1	0.769	0.848	1	1.32	11.3	0.848	11.3	
Whitewater River	02/18/1999 0:00	2	1.17	0.880	2	2.29	11.8	0.88	11.8	
Whitewater River	03/16/1999 0:00	3	0.581	0.840	3	0.618	13.7	0.84	13.7	
Whitewater River	04/15/1999 0:00	4	0.736	0.940	4	0.195	12.7	0.94	12.7	
Whitewater River	04/28/1999 0:00	4	0.710	0.921	4	0.361	13.5	0.921	13.5	
Whitewater River	05/12/1999 0:00	5	0.838	0.799	5	0.445	14.3	0.799	14.29	
Whitewater River	05/26/1999 0:00	5	0.601	0.993	5	1.07	15.5	0.993	15.526	
Whitewater River	06/09/1999 0:00	6	0.702	0.682	6	0.354	13.4	0.682	13.42	
Whitewater River	06/23/1999 0:00	6	0.699	0.862	6	0.465	12.5	0.862	12.5	
Whitewater River	07/07/1999 0:00	7	0.856	1.01	7	0.469	14.9	1.01	14.9	
Whitewater River	07/21/1999 0:00	7	0.682	0.884	7	0.286	19.0	0.884	19	
Whitewater River	08/10/1999 0:00	8	0.374	0.550	8	0.381	18.4	0.55	18.4	
Whitewater River	08/24/1999 0:00	8	0.481	0.529	8	0.742	16.7	0.529	16.7	
Whitewater River	09/08/1999 0:00	9	0.695	0.658	9	0.144	19.7	0.658	19.7	
Whitewater River	09/22/1999 0:00	9	0.881	1.17	9	0.512	16.0	1.17	16	
Whitewater River	10/21/1999 0:00	10	0.830	0.997	10	0.507	14.3	0.997	14.3	
Whitewater River	11/17/1999 0:00	11	0.510	0.848	11	0.352	14.1	0.848	14.1	
Whitewater River	12/15/1999 0:00	12	0.530	0.970	12	0.943	13.6	0.97	13.6	
			0.703	0.855		0.636	14.7			
			1.170	1.17		2.29	19.7			
			0.374	0.529		0.144	11.3			
			Ortho-P	Total P		NH3-N	NO3/NO2-N			
			mg/L	mg/L		mg/L	mg/L			
SS-1 (Surface)	01/22/1999 0:00	1	0.0025	0.063	1	0.822	0.155	0.063	0	
SS-1 (Surface)	02/18/1999 0:00	2	0.033	0.155	2	0.629	0.197	0.155	0	
SS-1 (Surface)	03/16/1999 0:00	3	0.019	0.190	3	0.579	0.130	0.19	0	
SS-1 (Surface)	04/14/1999 0:00	4	0.008	0.140	4	0.019	0.283	0.14	0	



SS-1 (Surface)	04/29/1999 0:00	4	0.0025	0.018	4	0.063	0.131	0	0
SS-1 (Surface)	05/12/1999 0:00	5	0.010	0.066	5	2.50	0.162	0.066	0
SS-1 (Surface)	05/27/1999 0:00	5	0.014	0.091	5	1.51	0.339	0.091	0
SS-1 (Surface)	06/09/1999 0:00	6	0.005	0.054	6	1.83	0.105	0.054	0
SS-1 (Surface)	06/23/1999 0:00	6	0.014	0.033	6	2.98	0.348	0	0
SS-1 (Surface)	07/07/1999 0:00	7	0.0025	0.050	7	2.27	0.075	0	0
SS-1 (Surface)	07/21/1999 0:00	7	0.0025	0.152	7	0.115	0.035	0.152	0
SS-1 (Surface)	08/10/1999 0:00	8	0.046	0.110	8	1.39	0.015	0.11	0
SS-1 (Surface)	08/24/1999 0:00	8	0.007	0.005	8	1.07	0.250	0	0
SS-1 (Surface)	09/08/1999 0:00	9	0.0025	0.012	9	0.740	0.272	0	0
SS-1 (Surface)	09/23/1999 0:00	9	0.045	0.060	9	1.03	0.015	0.06	0
SS-1 (Surface)	10/20/1999 0:00	10	0.048	0.044	10	1.82	0.040	0	0
SS-1 (Surface)	11/18/1999 0:00	11	0.025	0.050	11	1.04	0.100	0	0
SS-1 (Surface)	12/15/1999 0:00	12	0.084	0.143	12	2.95	0.110	0.143	0

0.020 0.080 1.28 0.153  
0.084 0.190 2.98 0.348  
<0.005 0.005 0.019 <0.030

			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L		
SS-1 (Bottom Epi)	04/29/1999 0:00	4	0.0025	0.013	4	0.118	0.149	0	0
SS-1 (Bottom Epi)	05/12/1999 0:00	5	0.006	0.061	5	1.75	0.110	0.061	0
SS-1 (Bottom Epi)	05/27/1999 0:00	5	0.011	0.050	5	1.41	0.076	0	0
SS-1 (Bottom Epi)	06/09/1999 0:00	6	0.0025	0.042	6	2.22	0.100	0	0
SS-1 (Bottom Epi)	06/23/1999 0:00	6	0.015	0.027	6	1.81	0.053	0	0
SS-1 (Bottom Epi)	07/07/1999 0:00	7	0.0025	0.009	7	1.98	0.055	0	0
SS-1 (Bottom Epi)	07/21/1999 0:00	7	0.0025	0.109	7	0.264	0.049	0.109	0
SS-1 (Bottom Epi)	08/10/1999 0:00	8	0.010	0.100	8	1.41	0.036	0.1	0
SS-1 (Bottom Epi)	08/24/1999 0:00	8	0.0025	0.0025	8	0.748	0.015	0	0
SS-1 (Bottom Epi)	09/08/1999 0:00	9	0.0025	0.0035	9	0.809	0.015	0	0
SS-1 (Bottom Epi)	09/23/1999 0:00	9	0.037	0.036	9	0.973	0.015	0	0

0.009 0.041 1.23 0.061  
0.037 0.109 2.22 0.149  
<0.005 <0.005 0.118 <0.030

			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L		
SS-1 (Top Hypo)	04/29/1999 0:00	4	0.0025	0.010	4	0.295	0.217	0	0
SS-1 (Top Hypo)	05/12/1999 0:00	5	0.0025	0.069	5	1.57	0.053	0.069	0
SS-1 (Top Hypo)	05/27/1999 0:00	5	0.011	0.069	5	1.81	0.041	0.069	0
SS-1 (Top Hypo)	06/09/1999 0:00	6	0.0025	0.034	6	1.90	0.041	0	0
SS-1 (Top Hypo)	06/23/1999 0:00	6	0.0025	0.030	6	2.63	0.015	0	0
SS-1 (Top Hypo)	07/07/1999 0:00	7	0.0025	0.019	7	2.63	0.051	0	0
SS-1 (Top Hypo)	07/21/1999 0:00	7	0.0025	0.124	7	1.48	0.015	0.124	0
SS-1 (Top Hypo)	08/10/1999 0:00	8	0.0025	0.098	8	1.48	0.015	0.098	0
SS-1 (Top Hypo)	08/24/1999 0:00	8	0.0025	0.0025	8	2.13	0.015	0	0
SS-1 (Top Hypo)	09/08/1999 0:00	9	0.0025	0.0035	9	0.750	0.015	0	0
SS-1 (Top Hypo)	09/23/1999 0:00	9	0.035	0.037	9	0.975	0.015	0	0

0.006 0.045 1.60 0.045  
0.035 0.124 2.63 0.217  
<0.005 <0.005 0.295 <0.030

			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L		
SS-1 (Bottom)	01/22/1999 0:00	1	0.0025	0.060	1	1.05	0.108	0.06	0
SS-1 (Bottom)	02/18/1999 0:00	2	0.032	0.063	2	1.04	0.140	0.063	0
SS-1 (Bottom)	03/16/1999 0:00	3	0.020	0.110	3	0.606	0.099	0.11	0
SS-1 (Bottom)	04/14/1999 0:00	4	0.0025	0.100	4	0.218	0.131	0.1	0
SS-1 (Bottom)	04/29/1999 0:00	4	0.0025	0.011	4	0.504	0.039	0	0
SS-1 (Bottom)	05/12/1999 0:00	5	0.005	0.097	5	1.68	0.015	0.097	0
SS-1 (Bottom)	05/27/1999 0:00	5	0.013	0.070	5	1.98	0.015	0.07	0
SS-1 (Bottom)	06/09/1999 0:00	6	0.0025	0.034	6	1.96	0.044	0	0
SS-1 (Bottom)	06/23/1999 0:00	6	0.005	0.033	6	3.08	0.154	0	0
SS-1 (Bottom)	07/07/1999 0:00	7	0.005	0.027	7	3.25	0.050	0	0
SS-1 (Bottom)	07/21/1999 0:00	7	0.0025	0.131	7	2.37	0.015	0.131	0
SS-1 (Bottom)	08/10/1999 0:00	8	0.0025	0.110	8	1.37	0.031	0.11	0
SS-1 (Bottom)	08/24/1999 0:00	8	0.0025	0.0025	8	3.09	0.015	0	0
SS-1 (Bottom)	09/08/1999 0:00	9	0.0025	0.006	9	0.901	0.108	0	0
SS-1 (Bottom)	09/23/1999 0:00	9	0.031	0.034	9	1.08	0.015	0	0
SS-1 (Bottom)	10/20/1999 0:00	10	0.011	0.013	10	1.82	0.030	0	0
SS-1 (Bottom)	11/18/1999 0:00	11	0.017	0.049	11	1.25	0.050	0	0
SS-1 (Bottom)	12/15/1999 0:00	12	0.076	0.115	12	2.45	0.120	0.115	0

0.013 0.059 1.65 0.066  
0.076 0.131 3.25 0.154  
<0.005 <0.005 0.218 <0.030

			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L		
SS-2 (Surface)	01/22/1999 0:00	1	0.0025	0.095	1	0.729	0.262	0.095	0
SS-2 (Surface)	02/18/1999 0:00	2	0.034	0.113	2	0.400	0.228	0.113	0

SS-2 (Surface)	03/16/1999 0:00	3	0.022	0.130	3	0.664	0.162	0.13	0
SS-2 (Surface)	04/14/1999 0:00	4	0.0025	0.150	4	<0.010	0.212	0.15	0
SS-2 (Surface)	04/29/1999 0:00	4	0.0025	0.006	4	0.063	0.156	0	0
SS-2 (Surface)	05/12/1999 0:00	5	0.0025	0.058	5	1.24	0.126	0.058	0
SS-2 (Surface)	05/27/1999 0:00	5	0.005	0.070	5	0.915	0.303	0.07	0
SS-2 (Surface)	06/09/1999 0:00	6	0.0025	0.050	6	1.35	0.116	0	0
SS-2 (Surface)	06/23/1999 0:00	6	0.0025	0.094	6	1.12	0.074	0.094	0
SS-2 (Surface)	07/07/1999 0:00	7	0.0025	0.013	7	1.13	0.072	0	0
SS-2 (Surface)	07/21/1999 0:00	7	0.0025	0.115	7	0.218	0.048	0.115	0
SS-2 (Surface)	08/10/1999 0:00	8	0.036	0.120	8	1.16	0.145	0.12	0
SS-2 (Surface)	08/24/1999 0:00	8	0.0025	0.0025	8	0.614	0.015	0	0
SS-2 (Surface)	09/08/1999 0:00	9	0.0025	0.0035	9	0.398	0.154	0	0
SS-2 (Surface)	09/23/1999 0:00	9	0.033	0.033	9	0.825	0.030	0	0
SS-2 (Surface)	10/20/1999 0:00	10	0.016	0.019	10	1.77	0.040	0	0
SS-2 (Surface)	11/16/1999 0:00	11	0.012	0.036	11	1.07	0.160	0	0
SS-2 (Surface)	12/15/1999 0:00	12	0.100	0.131	12	1.83	0.380	0.131	0

0.016 0.069 0.912 0.149  
0.100 0.150 1.83 0.380  
<0.005 <0.005 <0.010 <0.030

Ortho-P Total P NH3-N NO3/NO2-N  
mg/L mg/L mg/L mg/L

SS-2 (Bottom Epi)	04/29/1999 0:00	4	0.0025	0.006	4	0.080	0.228	0	0
SS-2 (Bottom Epi)	05/12/1999 0:00	5	0.0025	0.059	5	1.43	0.123	0.059	0
SS-2 (Bottom Epi)	05/27/1999 0:00	5	0.009	0.058	5	1.51	0.086	0.058	0
SS-2 (Bottom Epi)	06/09/1999 0:00	6	0.0025	0.038	6	1.80	0.083	0	0
SS-2 (Bottom Epi)	06/23/1999 0:00	6	0.0025	0.024	6	1.13	0.355	0	0
SS-2 (Bottom Epi)	07/07/1999 0:00	7	0.0025	0.020	7	1.15	0.207	0	0
SS-2 (Bottom Epi)	07/21/1999 0:00	7	0.0025	0.117	7	0.263	0.015	0.117	0
SS-2 (Bottom Epi)	08/10/1999 0:00	8	0.022	0.100	8	1.14	0.043	0.1	0
SS-2 (Bottom Epi)	08/24/1999 0:00	8	0.0025	0.0025	8	0.121	0.142	0	0
SS-2 (Bottom Epi)	09/08/1999 0:00	9	0.0025	0.0035	9	0.701	0.015	0	0
SS-2 (Bottom Epi)	09/23/1999 0:00	9	0.033	0.033	9	1.02	0.015	0	0

0.008 0.042 0.940 0.119  
0.033 0.117 1.80 0.355  
<0.005 <0.005 0.080 <0.030

Ortho-P Total P NH3-N NO3/NO2-N  
mg/L mg/L mg/L mg/L

SS-2 (Top Hypo)	04/29/1999 0:00	4	0.0025	0.008	4	0.129	0.200	0	0
SS-2 (Top Hypo)	05/12/1999 0:00	5	0.0025	0.054	5	1.40	0.119	0.054	0
SS-2 (Top Hypo)	05/27/1999 0:00	5	0.010	0.058	5	1.64	0.117	0.058	0
SS-2 (Top Hypo)	06/09/1999 0:00	6	0.005	0.030	6	1.70	0.159	0	0
SS-2 (Top Hypo)	06/23/1999 0:00	6	0.0025	0.035	6	1.96	0.329	0	0
SS-2 (Top Hypo)	07/07/1999 0:00	7	0.0025	0.032	7	2.83	0.102	0	0
SS-2 (Top Hypo)	07/21/1999 0:00	7	0.0025	0.109	7	0.295	0.049	0.109	0
SS-2 (Top Hypo)	08/10/1999 0:00	8	0.025	0.098	8	1.17	0.547	0.098	0
SS-2 (Top Hypo)	08/24/1999 0:00	8	0.0025	0.0025	8	1.02	0.015	0	0
SS-2 (Top Hypo)	09/08/1999 0:00	9	0.0025	0.0035	9	0.809	0.015	0	0
SS-2 (Top Hypo)	09/23/1999 0:00	9	0.034	0.035	9	1.07	0.015	0	0

0.008 0.042 1.27 0.152  
0.034 0.109 2.83 0.547  
<0.005 <0.005 0.129 <0.030

Ortho-P Total P NH3-N NO3/NO2-N  
mg/L mg/L mg/L mg/L

SS-2 (Bottom)	01/22/1999 0:00	1	0.0025	0.064	1	0.935	0.136	0.064	0
SS-2 (Bottom)	02/18/1999 0:00	2	0.035	0.068	2	1.02	0.101	0.068	0
SS-2 (Bottom)	03/16/1999 0:00	3	0.026	0.105	3	0.541	0.149	0.105	0
SS-2 (Bottom)	04/14/1999 0:00	4	0.0025	0.110	4	0.317	0.158	0.11	0
SS-2 (Bottom)	04/29/1999 0:00	4	0.0025	0.014	4	0.328	0.170	0	0
SS-2 (Bottom)	05/12/1999 0:00	5	0.007	0.055	5	1.49	0.215	0.0545	0
SS-2 (Bottom)	05/27/1999 0:00	5	0.015	0.079	5	1.85	0.015	0.079	0
SS-2 (Bottom)	06/09/1999 0:00	6	0.008	0.034	6	1.84	0.121	0	0
SS-2 (Bottom)	06/23/1999 0:00	6	0.0025	0.023	6	2.33	0.088	0	0
SS-2 (Bottom)	07/07/1999 0:00	7	0.0025	0.035	7	2.94	0.015	0	0
SS-2 (Bottom)	07/21/1999 0:00	7	0.014	0.129	7	1.92	0.015	0.129	0
SS-2 (Bottom)	08/10/1999 0:00	8	0.030	0.098	8	1.04	0.015	0.098	0
SS-2 (Bottom)	08/24/1999 0:00	8	0.0025	0.0025	8	1.10	0.605	0	0
SS-2 (Bottom)	09/08/1999 0:00	9	0.009	0.0035	9	1.03	0.065	0	0
SS-2 (Bottom)	09/23/1999 0:00	9	0.038	0.029	9	1.28	0.015	0	0
SS-2 (Bottom)	10/20/1999 0:00	10	0.012	0.012	10	1.82	0.015	0	0
SS-2 (Bottom)	11/16/1999 0:00	11	0.055	0.028	11	1.67	0.040	0	0
SS-2 (Bottom)	12/15/1999 0:00	12	0.087	0.119	12	1.83	0.280	0.119	0

0.019 0.056 1.39 0.123  
0.087 0.129 2.94 0.605  
<0.005 <0.005 0.317 <0.030

Ortho-P Total P NH3-N NO3/NO2-N  
mg/L mg/L mg/L mg/L

SS-3 (Surface)	01/22/1999 0:00	1	0.0025	0.071	1	0.860	0.171	0.071	0
SS-3 (Surface)	02/18/1999 0:00	2	0.034	0.115	2	0.380	0.192	0.115	0
SS-3 (Surface)	03/16/1999 0:00	3	0.028	0.110	3	0.691	0.128	0.11	0
SS-3 (Surface)	04/14/1999 0:00	4	0.0025	0.130	4	0.096	0.136	0.13	0
SS-3 (Surface)	04/29/1999 0:00	4	0.0025	0.025	4	0.151	0.152	0	0
SS-3 (Surface)	05/12/1999 0:00	5	0.0025	0.054	5	1.26	0.129	0.054	0
SS-3 (Surface)	05/27/1999 0:00	5	0.011	0.058	5	1.01	0.210	0.058	0
SS-3 (Surface)	06/09/1999 0:00	6	0.007	0.047	6	1.79	0.126	0	0
SS-3 (Surface)	06/23/1999 0:00	6	0.008	0.027	6	0.941	0.557	0	0
SS-3 (Surface)	07/07/1999 0:00	7	0.0025	0.022	7	1.05	0.062	0	0
SS-3 (Surface)	07/21/1999 0:00	7	0.0025	0.109	7	0.310	0.030	0.109	0
SS-3 (Surface)	08/10/1999 0:00	8	0.098	0.095	8	1.52	0.044	0.095	0
SS-3 (Surface)	08/24/1999 0:00	8	0.0025	0.0025	8	1.57	0.015	0	0
SS-3 (Surface)	09/08/1999 0:00	9	0.008	0.006	9	0.462	0.015	0	0
SS-3 (Surface)	09/23/1999 0:00	9	0.029	0.032	9	0.844	0.015	0	0
SS-3 (Surface)	10/20/1999 0:00	10	0.016	0.017	10	1.71	0.015	0	0
SS-3 (Surface)	11/16/1999 0:00	11	0.017	0.023	11	1.21	0.030	0	0
SS-3 (Surface)	12/15/1999 0:00	12	0.087	0.222	12	1.32	0.210	0.2215	0

0.020 0.065 0.95 0.124  
0.098 0.222 1.79 0.557  
<0.005 <0.005 0.096 <0.030

			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L		
SS-3 (Bottom Epi)	04/29/1999 0:00	4	0.0025	0.035	4	0.129	0.151	0	0
SS-3 (Bottom Epi)	05/12/1999 0:00	5	0.0025	0.071	5	1.26	0.165	0.0705	0
SS-3 (Bottom Epi)	05/27/1999 0:00	5	0.008	0.058	5	1.51	0.130	0.058	0
SS-3 (Bottom Epi)	06/09/1999 0:00	6	0.0025	0.036	6	1.72	0.273	0	0
SS-3 (Bottom Epi)	06/23/1999 0:00	6	0.0025	0.020	6	1.03	0.258	0	0
SS-3 (Bottom Epi)	07/07/1999 0:00	7	0.0025	0.019	7	1.15	0.047	0	0
SS-3 (Bottom Epi)	07/21/1999 0:00	7	0.022	0.114	7	0.287	0.015	0.114	0
SS-3 (Bottom Epi)	08/10/1999 0:00	8	0.075	0.11	8	1.38	0.015	0.11	0
SS-3 (Bottom Epi)	08/24/1999 0:00	8	0.0025	0.0025	8	0.286	0.015	0	0
SS-3 (Bottom Epi)	09/08/1999 0:00	9	0.005	0.006	9	0.496	0.015	0	0
SS-3 (Bottom Epi)	09/23/1999 0:00	9	0.028	0.037	9	0.882	0.015	0	0

0.014 0.046 0.92 0.100  
0.075 0.114 1.72 0.273  
<0.005 <0.005 0.129 <0.030

			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L		
SS-3 (Top Hypo)	04/29/1999 0:00	4	0.0025	0.050	4	0.173	0.168	0	0
SS-3 (Top Hypo)	05/12/1999 0:00	5	0.012	0.063	5	1.38	0.174	0.063	0
SS-3 (Top Hypo)	05/27/1999 0:00	5	0.009	0.055	5	1.83	0.105	0.055	0
SS-3 (Top Hypo)	06/09/1999 0:00	6	0.0025	0.038	6	1.81	0.079	0	0
SS-3 (Top Hypo)	06/23/1999 0:00	6	0.0025	0.028	6	2.10	0.015	0	0
SS-3 (Top Hypo)	07/07/1999 0:00	7	0.0025	0.022	7	2.70	0.015	0	0
SS-3 (Top Hypo)	07/21/1999 0:00	7	0.0025	0.131	7	1.94	0.131	0.131	0
SS-3 (Top Hypo)	08/10/1999 0:00	8	0.093	0.100	8	1.31	0.015	0.1	0
SS-3 (Top Hypo)	08/24/1999 0:00	8	0.0025	0.0025	8	1.04	0.015	0	0
SS-3 (Top Hypo)	09/08/1999 0:00	9	0.0025	0.006	9	0.745	0.085	0	0
SS-3 (Top Hypo)	09/23/1999 0:00	9	0.028	0.029	9	0.902	0.015	0	0

0.015 0.048 1.45 0.074  
0.093 0.131 2.70 0.174  
<0.005 <0.005 0.173 <0.030

			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L		
SS-3 (Bottom)	01/22/1999 0:00	1	0.0025	0.054	1	0.846	0.173	0.054	0
SS-3 (Bottom)	02/18/1999 0:00	2	0.035	0.067	2	1.02	0.121	0.067	0
SS-3 (Bottom)	03/16/1999 0:00	3	0.029	0.11	3	0.642	0.126	0.11	0
SS-3 (Bottom)	04/14/1999 0:00	4	0.0025	0.11	4	0.251	0.894	0.11	0
SS-3 (Bottom)	04/29/1999 0:00	4	0.0025	0.054	4	0.184	0.826	0.054	0
SS-3 (Bottom)	05/12/1999 0:00	5	0.005	0.060	5	1.46	0.082	0.06	0
SS-3 (Bottom)	05/27/1999 0:00	5	0.010	0.056	5	1.76	0.015	0.056	0
SS-3 (Bottom)	06/09/1999 0:00	6	0.0025	0.053	6	2.10	0.543	0.053	0
SS-3 (Bottom)	06/23/1999 0:00	6	0.0025	0.034	6	2.37	0.015	0	0
SS-3 (Bottom)	07/07/1999 0:00	7	0.0025	0.026	7	2.95	0.035	0	0
SS-3 (Bottom)	07/21/1999 0:00	7	0.0025	0.138	7	2.51	0.180	0.138	0
SS-3 (Bottom)	08/10/1999 0:00	8	0.041	0.11	8	3.44	0.015	0.11	0
SS-3 (Bottom)	08/24/1999 0:00	8	0.0025	0.0025	8	3.40	0.015	0	0
SS-3 (Bottom)	09/08/1999 0:00	9	0.005	0.0035	9	0.926	0.111	0	0
SS-3 (Bottom)	09/23/1999 0:00	9	0.029	0.039	9	0.907	0.015	0	0
SS-3 (Bottom)	10/20/1999 0:00	10	0.014	0.015	10	1.793	0.015	0	0
SS-3 (Bottom)	11/16/1999 0:00	11	0.011	0.024	11	1.201	0.065	0	0
SS-3 (Bottom)	12/15/1999 0:00	12	0.100	0.134	12	1.455	0.110	0.134	0

0.017 0.061 1.62 0.186  
0.100 0.138 3.44 0.894  
<0.005 <0.005 0.184 <0.030

		Ortho-P mg/L	Total P mg/L	NH3-N mg/L	NO3/NO2-N mg/L
Alamo River	Mean	0.388	0.712	1.25	6.15
	Maximum	0.969	1.21	2.83	8.15
	Minimum	0.142	0.194	0.307	4.46
New River	Mean	0.671	1.098	3.82	3.39
	Maximum	1.11	1.47	13.9	4.94
	Minimum	0.299	0.662	2.32	1.98
Whitewater River	Mean	0.703	0.855	0.636	14.7
	Maximum	1.17	1.17	2.29	19.7
	Minimum	0.374	0.529	0.144	11.3
SS-1 (Surface)	Mean	0.020	0.080	1.28	0.153
	Maximum	0.084	0.190	2.98	0.348
	Minimum	<0.005	0.005	0.019	<0.030
SS-1 (Bottom)	Mean	0.013	0.059	1.65	0.066
	Maximum	0.076	0.131	3.25	0.154
	Minimum	<0.005	<0.005	0.218	<0.030
SS-2 (Surface)	Mean	0.016	0.069	0.912	0.149
	Maximum	0.100	0.150	1.83	0.380
	Minimum	<0.005	<0.005	<0.010	<0.030
SS-2 (Bottom)	Mean	0.019	0.056	1.39	0.123
	Maximum	0.087	0.129	2.94	0.605
	Minimum	<0.005	<0.005	0.317	<0.030
SS-3 (Surface)	Mean	0.020	0.065	0.954	0.124
	Maximum	0.098	0.222	1.79	0.557
	Minimum	<0.005	<0.005	0.10	<0.030
SS-3 (Bottom)	Mean	0.017	0.061	1.62	0.186
	Maximum	0.100	0.138	3.44	0.894
	Minimum	<0.005	<0.005	0.18	<0.030