ANNUAL YIELD AND SELECTED HYDROLOGIC DATA FOR THE ARKANSAS RIVER BASIN COMPACT ARKANSAS-OKLAHOMA 1991 WATER YEAR

By C.S. Barks, R.L. Blazs, and T.E. Lamb

U.S. GEOLOGICAL SURVEY

Open-File Report 92-29

Prepared in cooperation with the
ARKANSAS RIVER COMPACT COMMISSION ARKANSAS-OKLAHOMA

Little Rock, Arkansas
1992

U.S. DEPARTMENT OF THE INTERIOR

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CONVERSION FACTORS

Multiply	By	To obtain
inch (in.)	25.4	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
acre	4,047	square meter
	0.004047	square kilometer
square mile (mi^2)	2.590	square kilometer
cubic foot (ft^3)	0.02832	cubic meter
acre-foot (acre-ft)	1,233	cubic meter
	1.233×10^{-6}	cubic kilometer
cubic foot per second (ft^3/s)	28.32	liter per second
	0.02832	cubic meter per second
ton per day (ton/d)	0.9072	megagram per day

Temperature in degrees Fahrenheit (°F) as follows:

$$°F = 1.8 \times °C + 32$$

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ABSTRACT

The computed annual yield and deficiency of the subbasins as defined in the Arkansas River Basin Compact, Arkansas-Oklahoma, are given in tables. Actual runoff from the subbasins and depletion caused by major reservoirs in the compact area also are given in tabular form. Monthly maximum, minimum, and mean discharges are shown for the 14 streamflow stations used in computing annual yield. Water-quality data are shown for the Arkansas River at James W. Trimble Lock and Dam near Van Buren, Arkansas, the Illinois River near Watts, Oklahoma, and the Neosho River below Fort Gibson Lake near Fort Gibson, Oklahoma.

INTRODUCTION

The computed annual yields, during the 1991 water year, for subbasins in the Arkansas River basin as defined in the Arkansas River Basin Compact, Arkansas-Oklahoma, 1972, are presented in this report. The area included in the Compact is shown in figure 1. Water-quality data for the Arkansas River at James W. Trimble Lock and Dam near Van Buren, Arkansas, and the Neosho River below Fort Gibson Lake near Fort Gibson, Oklahoma, also are included in the report.

This report was prepared by the U.S. Geological Survey in cooperation with the Arkansas River Basin Compact, Arkansas-Oklahoma, Commission. Streamflow data and water-quality data were furnished by the U.S. Geological Survey. The U.S. Army Corps of Engineers, Tulsa District furnished data from the Webbers Falls, Tenkiller Ferry, Robert S. Kerr, Wister, and Fort Gibson Lakes.

DEFINITION OF TERMS

The following terms used in this report are taken from Article II of the Arkansas River Basin Compact, Arkansas-Oklahoma, 1972.

The term "Arkansas River Basin" means all of the drainage basin of the Arkansas River and its tributaries from a point immediately downstream from the confluence of the Neosho River with the Arkansas River (fig. 1) to a

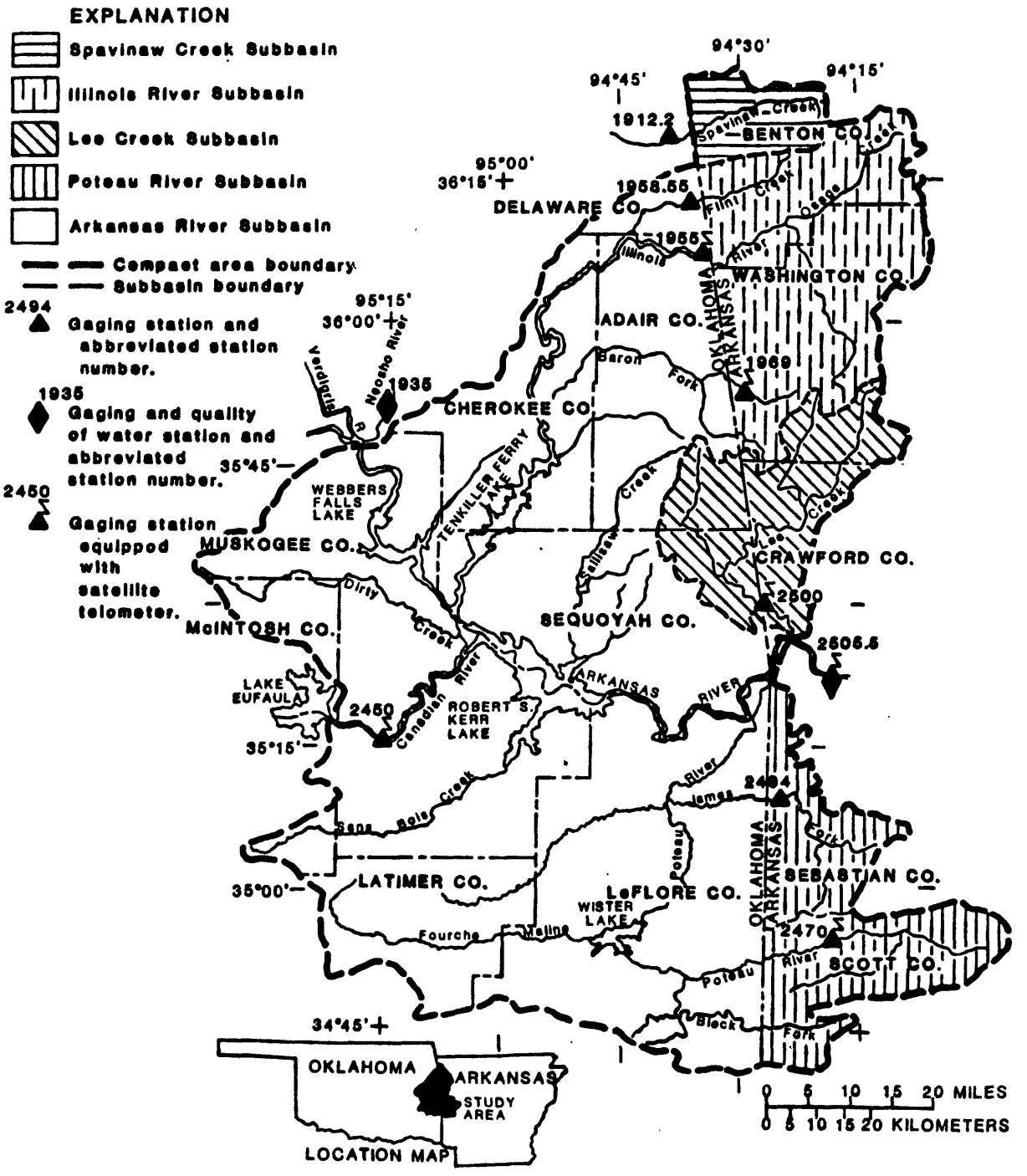

Figure 1.--Arkansas-Oklahoma Arkansas River Basin Compact area and subbasins.

point immediately downstream from the confluence of Lee Creek with the Arkansas River, together with the drainage basin of Spavinaw Creek in Arkansas (fig. 1), but excludes that part of the drainage basin of the Canadian River upstream from Lake Eufaula Dam.

The term "Spavinaw Creek Subbasin" means the drainage area of Spavinaw Creek in the State of Arkansas.

The term "Illinois River Subbasin" means the drainage area of the Illinois River in the State of Arkansas.

The term "Lee Creek Subbasin" means the drainage area of Lee Creek in the State of Arkansas and in the State of Oklahoma.

The term "Poteau River Subbasin" means the drainage area of the Poteau River in the State of Arkansas.

The term "Arkansas River Subbasin" means all areas of the Arkansas River Basin except the four subbasins described previously.

The term "water year" means a 12-month period beginning on October 1 and ending September 30.

The term "annual yield" means the computed annual gross runoff from any specified subbasin. The runoff would have passed any certain point on a stream and would have originated within any specified area under natural conditions, without any manmade depletion or accretion during the water year.

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below.

Acre-foot is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet.

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

Fecal coliform bacteria 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 the 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 milliliters (mL) of sample.

Fecal streptococcal bacteria also are present in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, coccoid bacteria that are capable of growth in brain-heart infusion

broth. These bacteria also are defined as all the organisms that produce red or pink colonies within 48 hours at 35°C ± 0.5°C on KF-streptococcus agar (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Code numbers have been assigned for agencies collecting and analyzing samples, and are listed in water-quality tables of this report as follows:

1028 Oklahoma District, WRD, U.S. Geological Survey,
80513 Arkansas District, WRD, U.S. Geological Survey, and
80020 National Water Quality Laboratory, WRD, U.S. Geological Survey.

Contents are 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.

Cubic foot per second is the rate of discharge representing a volume of 1 cubic foot passing a specified point during 1 second.

Discharge is the volume of water that passes a given point within a given period of time.

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

Mean discharge is the arithmetic average of individual daily mean discharges during a specific period.

Dissolved refers to the 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 oxygen content of water in equilibrium with air is a function of atmospheric pressure and temperature and the dissolved-solids concentration of the water. The ability of water to retain oxygen decreases with increasing temperature or dissolved solids, with small temperature changes having the more significant effect. Photosynthesis and respiration may cause diurnal variations in dissolved-oxygen concentration in water of some streams.

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

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of gage height or discharge are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

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.

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 foot above the bed), expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge by milligrams per liter by 0.0027.

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

Sodium-absorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. Water varies, in respect to sodium hazard, from that which can be used for irrigation on almost all soils to that which generally is unsatisfactory for irrigation.

Specific conductance is a measure of the ability of 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 solution and can be used for approximating the dissolved-solids concentration of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and may vary in the same source with changes in the composition of the water.

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

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 ánalytical 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 determines all of the constituent in the sample.)

COMPUTATION OF ANNUAL YIELD

The annual yield and deficiency (table 1) for each subbasin were computed as described in Appendix I to the Arkansas River Basin Compact Arkansas-Oklahoma, 1972, supplement No. 1. Actual runoff for the subbasins (table 2) was computed as described in the Compact except for the stations Arkansas River at Muskogee, which has been discontinued, and Arkansas River at Van Buren, which has been moved 7.9 miles downstream.

Annual depletion caused by major reservoirs (table 3) was computed for the four major reservoirs in the basin as described in Appendix I to the Compact. Depletions caused by small reservoirs and minor diversion for municipal and agricultural use are considered insignificant at this time and data are not included in tables 1 and 3.

A compilation of the areas and capacities of lakes and ponds in Arkansas, updated in 1981, conducted by the Arkansas Soil and Water Conservation Commission was used to evaluate depletions caused by small reservoirs in the Poteau River, Lee Creek, Spavinaw Creek, and Illinois River subbasins. Analysis indicated that their impact on the depletions in any subbasin, except Illinois River, was probably insignificant. We are presently gathering information on depletions in order to reevaluate their present impact.

Streamflow data used in the computations are given in hydrologic station records (p. 11 to 31). The station description under "Remarks" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the actual discharge, "good" means within 10 percent, and "fair" means within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Table 1.--Annual yield and deficiency for the subbasins for the 1991 water year, as defined in the Arkansas River Basin Compact Arkansas-Oklahoma

[Flow in cubic feet per second]

Subbasin	Actual runoff from the subbasins	Total depletions(+) or accretions(-)	Annual yield	Percent depletion allowed	Minimum required flow	Deficiency
Spavinaw Creek	90	0	90	50	45	0
Illinois River	695	0	695	60	278	0
Lee Creek	506	0	506	100	0	0
Poteau River	588	0	588	60	235	0
Arkansas River	3,884	+150	4,034	60	1,614	0

Table 2.--Actual runoff from the subbasins for the 1991 water year

[In cubic feet per second; D.A. = drainage area]

Month	Spavinaw Creek D.A.=135 square miles[a]	Illinois River D.A.=744 square miles[b]	Lee Creek D.A.=464 square miles[c]	Poteau River D.A.=536 square miles[d]	Arkansas River D.A.=4,553 square miles[e]
October	46	479	54	272	1,995
November	60	465	142	130	1,125
December	157	1,161	770	475	5,874
January	290	1,980	1,160	1,760	13,088
February	92	520	363	294	2,658
March	69	679	1,070	798	4,448
April	165	1,600	1,810	2,540	11,394
May	97	762	529	629	8,472[f]
June	38	229	98	85	-2,553[f]
July	18	125	5	17	-186[f]
August	15	128	1	11	187[f]
September	26	180	45	42	-232[f]
1991 water year	90	695	506	588	3,884
1991 water year (acre-feet)	65,200	503,000	366,000	426,000	2,812,000

[a] Includes 31 square miles ungaged.
[b] Includes 63 square miles ungaged.
[c] Includes 38 square miles ungaged.
[d] Includes 125 square miles ungaged.
[e] Computed by subtracting drainage area at Arkansas River at Muskogee, Canadian River near Whitefield, Illinois River Subbasin, Lee Creek Subbasin, and Poteau River Subbasin from drainage area at Arkansas River at Dam No. 13, near Van Buren, Ark.
[f] Negative discharge caused by storage in reservoirs, seepage into ground water, and evaporation from reservoirs.

Table 3.--Annual depletion caused by major reservoirs for the 1991 water year

Reservoir	Year-end contents (acre-feet)	Change in contents in water year (acre-feet)	Precipitation on reservoir surface (inches)[a]	Evaporation from reservoir (inches)[b]	Diversions (acre-feet)[a]	Depletion (acre-feet)	Depletion (cubic feet per second)
Webbers Falls-----	161,600	-5,000	36.68	52.15	0	+16,000	+22
Tenkiller Ferry---	629,300	-11,300	39.21	40.05	6,040	+5,000	+6.9
Robert S. Kerr----	517,100	+900	33.48	47.37	0	+70,600	+97.4
Wister-----------	49,720	+8,130	45.65	37.67	5,990	+17,200	+23.7

[a] From U.S. Corps of Engineers, Tulsa Disrict.
[b] Adjusted for pan coefficient of 0.70 (from Wisler and Brater, 1949).

SELECTED REFERENCES

Arkansas River Compact Committee, 1972, Arkansas River Basin Compact Arkansas-Oklahoma, 1972, with Supplemental Interpretive Comments, Supplement No. 1: Austin, Texas, 31 p.

Arkansas Soil and Water Conservation Commission, 1981, Arkansas State Water Plan - Lakes of Arkansas, 157 p.

Wisler, C.D., and Brater, E.F., 1949, Hydrology: New York, John Wiley & Sons, Inc., 150 p.

HYDROLOGIC STATION RECORDS

07165570 Arkansas River near Haskell, Oklahoma

LOCATION.--Lat 35°49'15", long 95°38'19", in SW¼ NW¼ sec.32, T.16 N., R.16 E., Wagoner County, near left downstream abutment of old bridge downstream from State Highway 104, 2.0 mi east of Haskell, 23.5 mi upstream from Verdigris River, and at mile 483.7.

DRAINAGE AREA.--75,473 mi^2, of which 12,541 mi^2 probably is noncontributing.

AVERAGE DISCHARGE.--19 years, 9,483 ft^3/s.

EXTREMES.--June 1972 to current year: Maximum discharge, 259,000 ft^3/s Oct. 6, 1986; minimum daily, 87 ft^3/s Sept. 13, 1988.

REMARKS.--Records fair, except for 858 mi^2 intervening area. Flow regulated by Keystone Lake, 55.1 mi upstream. Satellite telemeter at station.

Monthly and yearly discharge

Month	Total (ft^3/s)	Maximum daily (ft^3/s)	Minimum daily (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	36,451	2,450	550	1,176	72,300
November	33,590	2,070	600	1,120	66,630
December	31,923	2,020	600	1,030	63,320
January	51,402	3,930	646	1,658	102,000
February	37,153	2,330	504	1,327	73,690
March	26,392	1,690	465	851	52,350
April	58,453	3,750	359	1,948	115,900
May	156,710	7,840	2,300	5,055	310,800
June	190,370	16,700	1,640	6,346	377,600
July	51,796	3,060	757	1,671	102,700
August	38,269	3,380	630	1,234	75,910
September	92,170	5,950	1,030	3,072	182,800
Water Year 1991	804,679	16,700	359	2,205	1,596,000

07176000 Verdigris River near Claremore, Oklahoma

LOCATION.--Lat 36°18'26", long 95°41'52", in NE¼NW¼ sec.15, T.21 N., R.15 E., Rogers County, on left bank on downstream side of bridge on State Highway 20, 2.3 mi downstream from Caney River, 4.5 mi west of Claremore, 12.4 mi upstream from Bird Creek, and at mile 76.0.

DRAINAGE AREA.--6,534 mi^2.

AVERAGE DISCHARGE.--27 years (water years 1936-62), 3,723 ft^3/s; 27 years (water years 1965-91), 4,347 ft^3/s.

EXTREMES.--October 1935 to current year: Maximum discharge, 182,000 ft^3/s May 21, 1943; no flow at times in 1936, 1939-40, 1956.

REMARKS.--Records fair. Flow regulated since May 1963 by Oologah Lake 14.3 mi upstream; some regulation by dams in Kansas since 1949 and by Hulah Lake since 1950. Satellite telemeter at station.

Monthly and yearly discharge

Month	Total (ft^3/s)	Maximum daily (ft^3/s)	Minimum daily (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	4,023	429	62	130	7,980
November	4,852	751	62	162	9,620
December	4,965	827	67	160	9,850
January	14,017	1,800	150	452	27,800
February	9,604	474	267	343	19,050
March	7,470	392	171	241	14,820
April	30,275	5,280	200	1,009	60,050
May	132,640	10,400	711	4,279	263,100
June	122,037	9,890	200	4,068	242,100
July	4,447	195	81	143	8,820
August	2,590	120	71	83.5	5,140
September	3,854	439	53	128	7,640
Water Year 1991	340,774	10,400	53	934	675,900

07178200 Bird Creek at State Highway 266 near Catoosa, Oklahoma

LOCATION.--Lat 36°13'23", long 95°49'09", in SE¼ SE¼ sec.9, T.20 N., R.14 E., Tulsa County,, near left on downstream abutment of bridge, 2.3 mi downstream from Elm Creek, 5 mi northwest of Catoosa High School, and at mile 9.5.

DRAINAGE AREA.--1,103 mi^2.

AVERAGE DISCHARGE.--3 years, 1,292 ft^3/s.

EXTREMES.--August 1988 to current year: Maximum discharge, 18,500 ft^3/s Mar. 14, 1990, gage height, 28.39 ft; minimum daily discharge, 92 ft^3/s, Feb. 9, 1989.

REMARKS.--Records good. Some regulation by Skiatook Lake (station 07177400). Satellite telemeter at station.

Monthly and yearly discharge

Month	Total (ft^3/s)	Maximum daily (ft^3/s)	Minimum daily (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	7,091	975	93	229	14,060
November	6,788	1,630	93	226	13,460
December	6,175	1,060	99	199	12,250
January	11,381	1,210	123	367	22,570
February	4,046	215	126	144	8,030
March	4,673	265	111	151	9,270
April	19,231	2,330	171	641	38,140
May	22,852	2,550	199	737	45,330
June	47,231	10,600	254	1,574	93,680
July	6,627	255	183	214	13,140
August	6,456	342	179	208	12,810
September	10,057	1,230	184	335	19,950
Water Year 1991	152,608	10,600	93	418	302,700

07191220 Spavinaw Creek near Sycamore, Oklahoma

LOCATION.--Lat 36°20′07", long 94°38′24", in NE¼ NW¼ sec.4, T.21 N., R.25 E., Delaware County, on right bank 1.8 mi upstream from Cherokee Creek, 4.8 mi northeast of Row, 6.5 mi southeast of Sycamore, and at mile 35.0.

DRAINAGE AREA.--133 mi^2

AVERAGE DISCHARGE.--30 years, 110 ft^3/s.

EXTREMES.--October 1961 to current year: Maximum discharge, 39,800 ft^3/s July 27, 1975; minimum, 1.2 ft^3/s Aug. 9, 1964.

REMARKS.--Records fair. Satellite telemeter at station.

Monthly and yearly discharge

Month	Total (ft^3/s)	Maximum daily (ft^3/s)	Minimum daily (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	1,412	70	31	45.5	2,800
November	1,780	347	31	59.3	3,530
December	4,771	469	72	154	9,460
January	8,878	729	130	286	17,610
February	2,533	124	70	90.5	5,020
March	2,098	72	61	67.7	4,160
April	4,847	827	56	162	9,610
May	2,970	437	46	95.8	5,890
June	1,123	72	23	37.4	2,230
July	558	23	15	18.0	1,110
August	454	16	14	14.6	901
September	776	46	15	25.9	1,540
Water Year 1991	32,200	827	14	88.2	63,870

07193000 Fort Gibson Lake near Fort Gibson, Oklahoma

LOCATION.--Lat 35°51'15", long 95°13'45", in sec.19, T.16 N., R.19 E., Cherokee County, at Fort Gibson Dam, 5 mi north of Fort Gibson, and at mile 7.7.

DRAINAGE AREA.--12,492 mi^2.

REMARKS.--Flow furnished by U.S. Army Corps of Engineers, Tulsa District.

Monthly and yearly discharge

Month	Total (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	47,664	1,537	94,500
November	25,945	864	51,460
December	105,626	3,407	209,500
January	381,108	12,293	755,900
February	137,874	4,924	273,500
March	57,834	1,865	114,700
April	202,245	6,741	401,200
May	215,232	6,942	426,900
June	47,173	1,572	93,570
July	23,571	760	46,750
August	15,051	485	29,850
September	4,613	153	9,150
Water Year 1991	1,263,936	3,463	2,507,000

ARKANSAS RIVER BASIN
07193500 NEOSHO RIVER BELOW FORT GIBSON LAKE NEAR FORT GIBSON, OKLAHOMA
(National stream-quality accounting network station)

WATER QUALITY RECORDS

LOCATION.--Lat 35°51'10", long 95°13'44", in NW 1/4 NW 1/4 sec.19, T.16 N., R.20 E., Cherokee County, Hydrologic Unit 11070209, on left bank 1.1 mi downstream from Fort Gibson Dam, 3.5 mi north of Fort Gibson, and at mile 6.6.

DRAINAGE AREA.--12,495 mi^2.

PERIOD OF RECORD.--Water years 1952 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1951 to September 1963, October 1973 to January 1982.
WATER TEMPERATURE: October 1951 to September 1963, October 1973 to January 1982.

REMARKS.--Samples were collected bimonthly and specific conductance, pH, water temperature, dissolved oxygen, and alkalinity were determined in the field.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[Five-digit numbers in parentheses are STORET parameter codes used for computer storage of data; US/CM = microsiemens per centimeter at 25 degrees Celsius; NTU = nephelometric units; MG/L = milligrams per liter; MM = millimeters; UM-MF = micrometer membrane filter; AC-FT = acre-feet, UG/L = micrograms per liter; T/DAY = tons per day]

DATE	TIME	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	DISCHARGE INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DISSOLVED (MG/L AS CA) (00915)
NOV													
19...	1415	1028	80020	12900	260	8.1	9.0	5.6	750	10.7	94	110	37
DEC													
10...	1045	1028	80020	15	276	8.2	10.5	4.4	755	11.3	102	110	35
FEB													
05...	1530	1028	80020	13000	260	8.2	7.0	5.1	750	11.7	98	110	36
APR													
17...	1330	1028	80020	13100	276	8.3	18.5	3.5	745	8.6	94	120	39
JUN													
24...	1215	1028	80020	15	328	8.2	29.0	4.4	750	8.3	110	110	37
AUG													
06...	1400	1028	80020	6600	252	8.5	30.0	2.5	750	6.8	92	110	35

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CARBONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKALINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (00418)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
NOV												
19...	4.8	7.5	12	0.3	3.6	108	0	89	29	8.6	<0.10	3.0
DEC												
10...	4.6	7.4	13	.3	3.8	108	0	89	26	9.7	.20	1.7
FEB												
05...	4.5	6.5	11	.3	2.9	105	0	86	26	7.1	<.10	4.5
APR												
17...	4.7	7.3	12	.3	3.4	118	0	97	26	9.6	.10	0.96
JUN												
24...	5.2	19	26	.8	3.2	106	0	87	34	31	.20	2.6
AUG												
06...	4.7	8.2	14	.3	3.2	97	3	85	27	10	.10	3.7

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	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)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	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,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (000666)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)
NOV												
19...	152	148	0.21	5290	0.300	0.060	0.54	0.60	0.90	0.040	0.040	0.030
DEC												
10...	144	143	.20	5.83	.200	.060	.33	.40	.60	.070	.080	.060
FEB												
05...	142	142	.19	4980	.500	.030	.48	.50	1.0	.040	.040	.030
APR												
17...	147	149	.20	5200	<.050	.040	.47	.50	.55	.020	<.010	<.010
JUN												
24...	211	184	.29	8.55	<.050	.030	.75	.80	--	.030	0.020	<.010
AUG												
06...	158	143	.21	2820	<.050	.030	--	1.1	--	<.010	<.010	<.010

DATE	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)	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)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)
NOV												
19...	<1	58	0.5	<1.0	<1	<3	1	6	1	<4	2	<10
DEC												
10...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
05...	<1	47	<.5	<1.0	<1	<3	1	30	<1	<4	5	<10
APR												
17...	<1	48	<.5	<1.0	<1	<3	1	8	1	<4	3	<10
JUN												
24...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
06...	1	45	.6	<1.0	<1	<3	4	<3	<1	<4	<1	<10

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)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV											
19...	2	<1	<1.0	160	<6	3	K22	K10	26	906	71
DEC											
10...	--	--	--	--	--	--	K27	K8	2	0.08	44
FEB											
05...	<1	<4	<1.0	140	<6	6	K4	K4	8	281	64
APR											
17...	1	<1	<1.0	160	<6	<3	K5	K7	5	177	85
JUN											
24...	--	--	--	--	--	--	250	97	7	.28	73
AUG											
06...	2	<1	<1.0	130	<6	<3	K24	K12	8	143	7

07194500 Arkansas River near Muskogee, Oklahoma

LOCATION.--Lat 35°46'10", long 95°17'55", in NW¼ sec.21, T.15 N., R.19 E., Muskogee County, at bridge on U.S. Highway 62, 1.7 mi downstream from Neosho River, 3.5 mi northeast of Muskogee.

DRAINAGE AREA.--96,674 mi^2 of which 12,541 mi^2 probably is noncontributing.

REMARKS.--Gaging station discontinued Sept. 30, 1970, due to backwater conditions. Streamflow computed by combining flow at station 07165570 Arkansas River near Haskell, station 07176000 Verdigris River near Claremore, station 07178200 Bird Creek at State Highway 266 near Catoosa, station 07193000 Fort Gibson Lake Discharge near Fort Gibson, and estimating the flow for the ungaged intervening drainage area.

Monthly and yearly discharge

Month	Mean (ft^3/s)	Runoff in acre-feet
October	3,294	202,500
November	2,592	154,200
December	4,989	306,800
January	15,127	930,100
February	6,877	381,900
March	3,255	200,100
April	10,962	652,300
May	17,729	1,090,000
June	15,090	897,900
July	2,996	184,200
August	2,212	136,000
September	4,014	238,800
Water Year 1991	7,426	5,376,000

07195500 Illinois River near Watts, Oklahoma

LOCATION.--Lat 36°07'48", long 94°34'12", in NW¼ NE¼ sec.18, T.19 N., R.26 E., Adair County, near right bank on downstream side of bridge on U.S. Highway 59, 1.5 mi north of Watts, 4.5 mi downstream from Cincinnati Creek, and at mile 106.2.

DRAINAGE AREA.--635 mi^2.

AVERAGE DISCHARGE.--36 years, 602 ft^3/s.

EXTREMES.--August 1955 to current year: Maximum discharge, 68,000 ft^3/s July 25, 1960; minimum, 8.6 ft^3/s Oct. 26, 1955, Sept. 19, Oct. 14, 1956.

REMARKS.--Records good. Some regulation at low flow by Lake Frances Dam, 0.8 mi above station. Since July 2, 1957, small diversion above station for municipal water supply for city of Siloam Springs, Arkansas. Satellite telemeter at station.

Monthly and yearly discharge

Month	Total (ft^3/s)	Maximum daily (ft^3/s)	Minimum daily (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	12,191	1,930	192	393	24,180
November	10,705	2,220	183	357	21,230
December	27,835	3,940	341	898	55,210
January	50,785	3,520	681	1,638	100,700
February	12,721	645	342	454	25,230
March	17,462	2,370	284	563	34,640
April	40,809	7,760	446	1,360	80,940
May	17,266	1,480	311	557	34,250
June	6,256	316	150	209	12,410
July	3,795	157	98	122	7,530
August	3,553	166	92	115	7,050
September	5,144	421	100	171	10,200
Water Year 1991	208,522	7,760	92	571	413,600

ARKANSAS RIVER BASIN

07195500 ILLINOIS RIVER NEAR WATTS, OKLAHOMA

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1989 to current year.

REMARKS.--Samples were collected bi-monthly and specific conductance, pH, water temperature, dissolved oxygen, and alkalinity were determined in the field.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[Five-digit numbers in parentheses are STORET parameter codes used for computer storage of data; US/CM = microsiemens per centimeter at 25 degrees Celsius; NTU = nephelometric units; MG/L = milligrams per liter; MM = millimeters; UM-MF = micrometer membrane filter; AC-FT = acre-feet, UG/L = micrograms per liter; T/DAY = tons per day]

DATE	TIME	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DISSOLVED (MG/L AS CA) (00915)
DEC													
05...	1015	1028	80020	998	219	7.8	8.5	8.0	750	11.5	100	92	34
JAN													
30...	1600	1028	80020	731	250	8.1	6.5	--	752	13.8	114	100	39
MAR													
27...	0845	1028	1028	712	229	8.0	16.5	--	730	9.4	101	--	--
MAY													
14...	1500	1028	80020	360	265	8.0	23.5	15	732	8.5	104	120	43
JUL													
16...	1400	1028	80020	113	307	8.1	27.5	--	748	7.8	101	120	47
SEP													
10...	0945	1028	80020	119	309	7.8	25.5	14	747	7.2	90	120	46

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CARBONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKALINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (00418)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
DEC												
05...	1.8	5.8	12	0.3	3.1	94	0	77	8.7	8.1	<0.10	7.5
JAN												
30...	1.7	6.8	--	.3	--	94	0	77	--	--	--	6.5
MAR												
27...	--	--	--	--	--	98	0	80	--	--	--	--
MAY												
14...	1.9	7.3	12	.3	2.9	128	0	105	6.8	6.9	<.10	5.2
JUL												
16...	1.8	12	--	.5	--	146	0	120	--	--	--	10
SEP												
10...	1.6	13	18	.5	3.5	137	0	112	12	15	.10	9.6

DATE	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOSPHORUS ORTHO, DISSOLVED (MG/L AS P) (00671)
DEC												
05...	143	127	0.19	385	2.40	0.050	0.34	0.40	2.6	0.140	0.140	0.110
JAN												
30...	--	--	--	--	3.30	.030	.18	.20	3.5	.050	.070	.060
MAR												
27...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
14...	147	146	.20	143	2.00	<.010	.54	.60	2.7	.050	.080	.020
JUL												
16...	--	--	--	--	.990	.080	.45	.50	1.4	.210	.190	.180
SEP												
10...	172	174	.23	55.3	1.10	.080	.33	.40	1.5	.140	.130	.110

07195500 ILLINOIS RIVER NEAR WATTS, OKLAHOMA--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	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)	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) (01045)	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)
DEC 05...	<1	52	<0.5	<1.0	<5	<3	20	160	<10	<4	64	<10
JAN 30...	<1	39	<.5	<1.0	<5	<3	<10	17	<10	<4	47	<10
MAR 27...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 14...	<1	50	<.5	<1.0	<5	<3	<10	14	<10	<4	62	<10
JUL 16...	1	50	<.5	<1.0	<5	<3	<10	21	<10	5	51	<10
SEP 10...	<1	53	<.5	<1.0	<5	<3	10	<3	<10	<4	63	<10

DATE	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)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP SIEVE DIAM. % FINER THAN .062 MM (70331)
DEC 05...	<10	<1.0	41	<6	23	--	--	--	--	--
JAN 30...	<10	<1.0	46	<6	8	--	--	--	--	--
MAR 27...	--	--	--	--	--	--	--	--	--	--
MAY 14...	<10	<1.0	51	<6	9	--	--	--	--	--
JUL 16...	<10	<1.0	51	<6	6	--	--	--	--	--
SEP 10...	<10	<1.0	50	<6	5	--	--	--	--	--

07195855 Flint Creek near West Siloam Springs, Oklahoma

LOCATION.--Lat 36°12'58", long 94°36'15", in NE¼ NE¼ sec.14, T.20 N., R.25 E., Delaware County, on left bank 180 ft downstream from county bridge, 2.5 mi from Arkansas-Oklahoma State line, northwest of Siloam Springs, Okla.

DRAINAGE AREA.--59.8 mi^2.

AVERAGE DISCHARGE.--12 years, 45.6 ft^3/s.

EXTREMES.--June 1979 to current year: Maximum discharge, 5,590 ft^3/s Dec. 21, 1984; minimum daily, 0.40 ft^3/s Aug. 7, 1980.

REMARKS.--Records good.

Monthly and yearly discharge

Month	Total (ft^3/s)	Maximum daily (ft^3/s)	Minimum daily (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	509	26	14	16.4	1,010
November	910	136	15	30.3	1,800
December	1,507	173	25	48.6	2,990
January	3,200	246	49	103.0	6,350
February	1,006	48	29	35.9	2,000
March	961	36	27	31.0	1,910
April	2,248	386	28	74.9	4,460
May	1,985	253	25	64.0	3,940
June	693	36	17	23.1	1,370
July	413	17	10	13.3	819
August	415	18	12	13.4	823
September	459	60	8.3	15.3	911
Water Year 1991	14,306	386	8.3	39.2	28,380

07196900 Baron Fork at Dutch Mills, Arkansas

LOCATION.--Lat 35°52'48", long 94°29'11", on line between secs.21 and 22, T.14 N., R.33 W., Washington County, near right bank on downstream side of bridge on State Highway 59 at Dutch Mills, 2.2 mi downstream from Fly Creek, and 2.9 mi upstream from Arkansas-Oklahoma State line.

DRAINAGE AREA.--40.6 mi^2.

AVERAGE DISCHARGE.--33 years, 42.7 ft^3/s.

EXTREMES.--April 1958 to current year: Maximum discharge, 20,900 ft^3/s Nov. 18, 1985; no flow at times.

REMARKS.--Records good.

Monthly and yearly discharge

Month	Total (ft^3/s)	Maximum daily (ft^3/s)	Minimum daily (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	1,162	397	3.4	37.5	2,310
November	1,196	307	11	39.9	2,370
December	3,287	552	37	106	6,520
January	4,327	471	36	140	8,580
February	750	62	12	26.8	1,490
March	1,512	417	10	48.8	3,000
April	3,123	478	24	104	6,190
May	2,168	796	10	69.9	4,300
June	211.9	20	1.6	7.06	420
July	43.2	6.4	.62	1.39	86
August	139	79	.79	4.48	275
September	117	20	.84	3.90	232
Water Year 1991	18,035	796	0.62	49.4	35,780

07245000 Canadian River near Whitefield, Oklahoma

LOCATION.--Lat 35°15'45", long 95°14'19", in SE¼ SE¼ sec.12, T.9 N., R.19 E., Haskell County, on left downstream bank at end of bridge, on State Highway 2, 0.8 mi north of Whitefield, 5.5 mi upstream from Taleka (Snake) Creek, 8.2 mi downstream from Eufaula Dam, and at mile 18.8.

DRAINAGE AREA.--47,576 mi^2, of which 9,700 mi^2 is probably noncontributing.

AVERAGE DISCHARGE.--25 years (water years 1939-63), 6,005 ft^3/s; 24 years (water years 1968-91), 6,200 ft^3/s.

EXTREMES.--July 1938 to current year: Maximum discharge, 281,000 ft^3/s May 10, 1943; minimum daily, 0.4 ft^3/s Oct. 8, 1956.

REMARKS.--Records poor. Prior to February 1964, occasional slight regulation by Conchas Lake in New Mexico and except for 54 mi^2 of intervening area, completely regulated thereafter by Eufaula Lake.

Monthly and yearly discharge

Month	Total (ft^3/s)	Maximum daily (ft^3/s)	Minimum daily (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	79,074	6,060	176	2,551	156,800
November	79,326	5,900	156	2,644	157,300
December	126,828	8,090	332	4,091	251,600
January	209,108	12,900	283	6,745	414,800
February	69,114	6,940	447	2,468	137,100
March	51,783	4,790	156	1,670	102,700
April	125,215	8,620	345	4,174	248,400
May	225,030	12,000	3,110	7,259	446,300
June	417,496	127,000	286	13,920	828,100
July	84,582	5,540	211	2,728	167,800
August	56,983	5,060	175	1,838	113,000
September	37,862	4,250	167	1,262	75,100
Water Year 1991	1,562,401	127,000	156	4,281	3,099,000

07247000 Poteau River at Cauthron, Arkansas

LOCATION.--Lat 34°55'08", long 94°17'55", in NW¼ SW¼ sec.16, T.3 N., R.31 W., Scott County, on right bank at downstream side of highway bridge at Cauthron, 2.9 mi downstream from Cross Creek, 7.8 mi downstream from Jones Creek, and at mile 109.0.

DRAINAGE AREA.--203 mi^2.

AVERAGE DISCHARGE.--52 years, 224 ft^3/s.

EXTREMES.--February 1939 to current year: Maximum discharge, 32,200 ft^3/s May 20, 1960; no flow at times in most years.

REMARKS.--Records good. As of September 1974, flow from 92.2 mi^2 above this station is controlled by 16 floodwater-detention reservoirs with a total combined capacity of 39,082 acre-ft below the flood spillway crests, of which 33,524 acre-ft is flood-detention capacity, 2,100 acre-ft is water-supply storage, and 3,458 acre-ft is sediment-storage capacity.

Monthly and yearly discharge

Month	Total (ft^3/s)	Maximum daily (ft^3/s)	Minimum daily (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	4,720	1,170	3.0	152	9,360
November	1,491	279	2.0	49.7	2,960
December	5,857	1,370	19	189	11,620
January	22,726	2,700	112	733	45,080
February	3,390	564	43	121	6,720
March	11,230	3,860	23	362	22,270
April	32,748	6,510	75	1,092	64,960
May	9,617	3,170	29	310	19,080
June	1,227	400	4.2	40.9	2,430
July	214	53	1.6	6.91	425
August	138	21	1.4	4.45	274
September	215	34	1.2	7.18	427
Water Year 1991	93,573	6,510	1.2	256	185,600

07249400 James Fork near Hackett, Arkansas

LOCATION.--Lat 35°9'45", long 94°4'25", in NW¼ NW¼ sec.34, T.6 N., R.32 W., Sebastian County, near left bank on downstream side of bridge on State Highway 45, 1.7 mi south of Hackett, 2.0 mi downstream from Elder Branch, 2.0 mi upstream from small tributary, and 3.6 mi upstream from Arkansas-Oklahoma State line.

DRAINAGE AREA.--147 mi^2

AVERAGE DISCHARGE.--33 years, 140 ft^3/s.

EXTREMES.--April 1958 to current year: Maximum discharge, 30,000 ft^3/s May 14, 1968; no flow at times.

REMARKS.--Records good.

Monthly and yearly discharge

Month	Total (ft^3/s)	Maximum daily (ft^3/s)	Minimum daily (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	346	99	3.3	11.2	687
November	1,057	131	3.0	35.2	2,100
December	3,688	497	15	119	7,320
January	12,384	1,540	69	399	24,560
February	1,932	263	31	69	3,830
March	4,444	657	33	143	8,810
April	16,031	3,050	81	534	31,800
May	2,448	226	24	79	4,860
June	374	23	5.8	12.5	743
July	132	14	1.8	4.25	262
August	93.2	7.2	1.8	3.01	185
September	678	165	5.5	22.6	1,350
Water Year 1991	43,607	3,050	1.8	119	86,500

07250000 Lee Creek near Van Buren, Arkansas

LOCATION.--Lat 35°29'40", long 94°26'58", in SE¼ sec.21, T.12 N., R.27 E., Indian Meridian, Sequoyah County, Okla., on right bank 300 ft west of Arkansas-Oklahoma State line, 3.2 mi downstream from Webbers Creek, 6.8 mi northwest of Van Buren, and at mile 7.8.

DRAINAGE AREA.--426 mi^2.

AVERAGE DISCHARGE.--47 years (1930-36, 1950-91), 520 ft^3/s.

EXTREMES.--September 1930 to June 1937, October 1950 to current year: Maximum discharge, 80,600 ft^3/s May 6, 1960; no flow at times.

REMARKS.--Records good. Satellite telemeter at station.

Monthly and yearly discharge

Month	Total (ft^3/s)	Maximum daily (ft^3/s)	Minimum daily (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	1,551	349	0.32	50	3,080
November	3,886	1,150	15	130	7,710
December	21,984	3,670	211	709	43,610
January	33,165	2,420	404	1,070	65,780
February	9,321	518	241	333	18,490
March	30,337	4,280	316	979	60,170
April	49,875	6,950	452	1,662	98,930
May	15,119	1,930	139	488	29,990
June	2,709	190	19	90.3	5,370
July	135	16	.65	4.36	268
August	37.8	3.7	.12	1.22	75
September	1,244	118	.60	41.5	2,470
Water Year 1991	169,363	6,950	.12	464	335,900

07250550 Arkansas River at James W. Trimble Lock and Dam near Van Buren, Arkansas

LOCATION.--Lat 35°20'56", long 94°17'54", in sec.28, T.8 N., R.31 W., Sebastian County, in Dam No. 13 control house on right bank, and at mile 308.9.

DRAINAGE AREA.--150,547 mi^2, of which 22,241 mi^2 is probably noncontributing.

AVERAGE DISCHARGE.--64 years, 32,580 ft^3/s.

EXTREMES.--October 1927 to current year: Maximum discharge, 850,000 ft^3/s May 12, 1943; no flow Nov. 2, 1975, Feb. 1, 1981, Oct. 17, 1987

REMARKS.--Records good. Prior to October 1969, published as 07250500 Arkansas River at Van Buren. Beginning Apr. 26, 1970, daily discharge computed from relation between discharge, head, and gate openings. Flow regulated by many locks, dams, and reservoirs upstream. Satellite telemeter at station.

Monthly and yearly discharge

Month	Total (ft^3/s)	Maximum daily (ft^3/s)	Minimum daily (ft^3/s)	Mean (ft^3/s)	Runoff in acre-feet
October	268,003	31,900	293	8,645	531,600
November	212,944	17,500	654	7,098	422,400
December	538,170	44,400	4,550	17,360	1,067,000
January	1,235,700	65,000	15,400	39,860	2,451,000
February	369,108	27,800	48	13,180	732,100
March	369,666	35,600	466	11,920	733,200
April	974,400	59,800	10,400	32,480	1,933,000
May	1,096,700	58,900	14,100	35,380	2,175,000
June	806,160	54,400	6,680	26,870	1,599,000
July	176,236	9,850	195	5,685	349,600
August	135,730	14,800	133	4,378	269,200
September	159,337	16,900	133	5,311	316,000
Water Year 1991	6,342,154	65,000	48	17,380	12,580,000

07250550 ARKANSAS RIVER AT JAMES W. TRIMBLE LOCK AND DAM NEAR VAN BUREN, ARKANSAS
(National tritium station)
(National stream-quality accounting network station)

WATER QUALITY RECORDS

PERIOD OF RECORD.--Oct. 1969 to current water year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Oct. 1969 to Sept. 1981.
WATER TEMPERATURES: Oct. 1969 to Sept. 1972, Mar. 1974 to Sept. 1981.
SUSPENDED SEDIMENT DISCHARGE: Oct. 1970 to Sept. 1981.

INSTRUMENTATION.--Water-quality monitor Dec. 1969 to Sept. 1981.

REMARKS.--Samples were collected bimonthly and specific conductance, pH, water temperature, dissolved oxygen, and alkalinity were determined in the field.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[Five-digit numbers in parentheses are STORET parameter codes used for computer storage of data; US/CM = microsiemens per centimeter at 25 degrees Celsius; NTU = nephelometric units; MG/L = milligrams per liter; MM = millimeters; UM-MF = micrometer membrane filter; AC-FT = acre-feet, UG/L = micrograms per liter; T/DAY = tons per day]

DATE	TIME	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DISSOLVED (MG/L AS CA) (00915)
OCT													
16...	1000	80513	80020	14900	485	7.7	18.0	12	754	8.90	95	110	30
DEC													
19...	1030	80513	80020	18000	435	7.9	9.0	15	752	11.4	100	120	32
FEB													
27...	1100	80513	80020	23300	395	8.2	8.0	10	757	12.0	102	120	35
APR													
16...	1000	80513	80020	44700	350	8.0	18.0	43	754	8.00	86	91	26
JUL													
24...	0800	80513	80020	494	739	8.2	31.5	3.4	754	6.20	85	160	43
AUG													
19...	0930	80513	80020	464	820	7.9	28.0	10	754	7.40	96	170	46

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE WATER DIS IT FIELD (MG/L AS HCO3 (00453)	CARBONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKALINITY WAT DIS TOT FET FIELD MG/L AS CACO3 (00418)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
OCT												
16...	8.4	48	48	2	3.2	107	0	84	37	70	0.20	4.6
DEC												
19...	8.5	43	44	2	2.9	116	0	94	35	62	.10	4.0
FEB												
27...	7.1	35	39	1	2.6	122	0	98	35	49	.10	1.6
APR												
16...	6.4	35	45	2	2.4	82	0	66	30	46	.20	3.3
JUL												
24...	12	93	56	3	3.7	139	0	114	58	150	.30	0.35
AUG												
19...	13	110	58	4	3.6	139	0	113	58	150	.30	0.37

07250550 ARKANSAS RIVER AT JAMES W. TRIMBLE LOCK AND DAM
NEAR VAN BUREN, ARKANSAS--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN TOTAL (MG/L AS N) (00600)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS DISSOLVED (MG/L AS P) (70507)	PHOSPHORUS ORTHO, DISSOLVED (MG/L AS P) (00671)
OCT 16...	261	255	0.35	10500	0.20	0.01	0.37	0.40	0.60	0.04	0.04	0.02
DEC 19...	274	246	.37	13300	.20	.07	.35	.40	.60	.04	.03	.02
FEB 27...	218	227	.30	13700	.25	.04	.67	.70	.94	.02	<.01	.02
APR 16...	194	191	.26	23400	.18	.07	.54	.60	.76	.02	.05	<.01
JUL 24...	425	429	.58	567	<.05	.06	.76	.80	--	.02	.02	.02
AUG 19...	460	450	.63	576	<.05	.02	.37	.40	--	<.01	.05	.04

DATE	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MANGANESE, DISSOLVED (UG/L AS MN) 01056)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)
OCT 16...	--	--	--	--	--	--	--	--	--	--	--	--
DEC 19...	1	70	<0.5	<1.0	<1	<3	3	98	1	4	3	<10
FEB 27...	<1	61	<0.5	1.0	<1	<3	4	38	1	<4	1	<10
APR 16...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 24...	2	99	<0.5	<1.0	<1	<3	2	10	<1	6	3	<10
AUG 19...	2	110	<0.5	<1.0	<1	<3	2	90	<1	5	5	<10

DATE	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	COLIFORM, FECAL, 0.7 (UM-MF COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML (31673)	SEDIMENT, SUSPENDED) (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 16...	--	--	--	--	--	--	K1900	1200	23	925	78
DEC 19...	1	<1	<1.0	240	<6	28	K180	>8000	26	1260	92
FEB 27...	1	<1	<1.0	210	<6	8	3	0	15	944	87
APR 16...	--	--	--	--	--	--	440	680	62	7480	89
JUL 24...	<1	<1	<1.0	390	<6	15	10	31	11	15	66
AUG 19...	<1	<1	<1.0	440	<6	32	180	310	23	29	93