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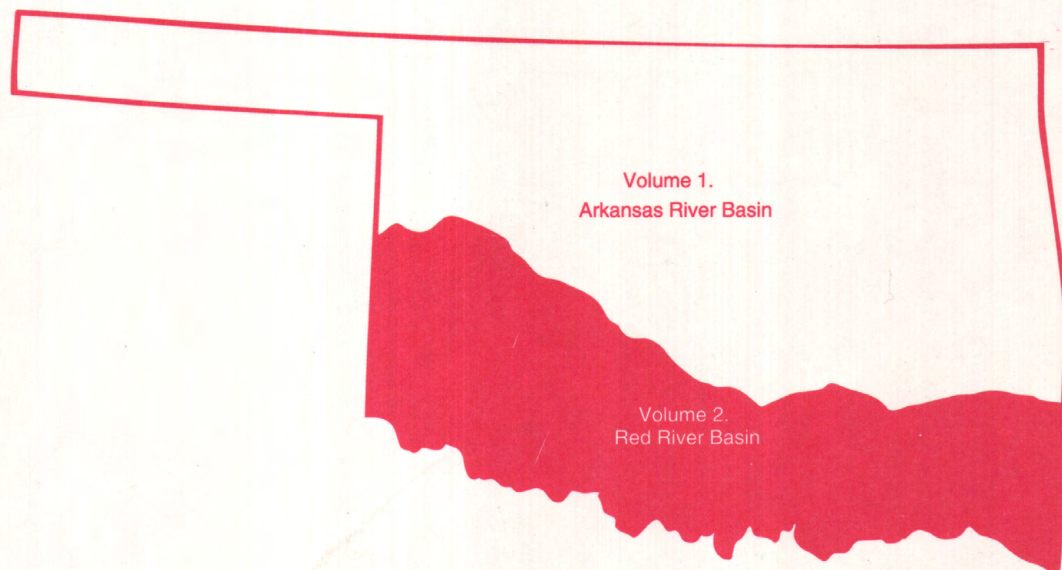
Water Resources Data Oklahoma Water Year 1992

Volume 2. Red River Basin

U.S. GEOLOGICAL SURVEY
RESTON, VA.

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U.S. GEOLOGICAL SURVEY WATER-DATA REPORT OK-92-2
Prepared in cooperation with the State of Oklahoma and
with other agencies

CALENDAR FOR WATER YEAR 1992

1991

OCTOBER

S	M	T	W	T	F	S
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Water Resources Data Oklahoma Water Year 1992

Volume 2. Red River Basin

by R.L. Blazs, D.M. Walters, T.E. Coffey, D.K. White, D.L. Boyle,
and J.F. Kerestes



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT OK-92-2
Prepared in cooperation with the State of Oklahoma and
with other agencies

U.S. DEPARTMENT OF THE INTERIOR

BRUCE BABBITT, *Secretary*

U.S. GEOLOGICAL SURVEY

Dallas L. Peck, Director

For information on the water program in Oklahoma write to
District Chief, Water Resources Division
U.S. Geological Survey
202 N.W. 66 St., Building 7
Oklahoma City, Oklahoma 73116

PREFACE

This hydrologic-data report for Oklahoma is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface-water and ground-water data-collection networks in each state, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and water quality 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 data were collected, computed, and processed by the following personnel:

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P.A. Carpenter	R.E. Johnson	T.A. Parvin	D.M. Walters
R.W. Chadd	C.Z. Jones	M.L. Phillips	D.K. White

L.K. Carpenter typed the text of the report.

This report was prepared in cooperation with the State of Oklahoma and with other agencies under the general supervision of Robert L. Blazs, Hydrologic Records Section Chief, and Kathy D. Peter, District Chief.

Data for Oklahoma are in two volumes as follows:

Volume 1. Arkansas River Basin

Volume 2. Red River Basin and Ground-Water Records

REPORT DOCUMENTATION PAGE	1. REPORT NO. USGS/WRD/HD-93/279	2.	3. Recipient's Accession No.
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9. Performing Organization Name and Address U.S. Geological Survey Water Resources Division 202 N.W. 66 St., Bldg. 7 Oklahoma City, OK 73116		10. Project/Task/Work Unit No.	
12. Sponsoring Organization Name and Address		11. Contract(C) or Grant(G) No. (C) (G)	
		13. Type of Report & Period Covered Annual - Oct. 1, 1991 to Sept. 30, 1992	
15. Supplementary Notes Prepared in cooperation with the State of Oklahoma and with other agencies.		14.	
16. Abstract (Limit: 200 words) Volumes 1 and 2 of the water resources data for the 1992 water year for Oklahoma consists of record of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes or reservoirs; and water levels of ground-water well. This report contains discharge records for 136 gaging stations; stage and contents for 31 lakes or reservoirs; water quality for 50 gaging stations.. Also included are 61 partial-record or miscellaneous streamflow stations and 28 ground-water sites. These data represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Oklahoma.			
17. Document Analysis a. Descriptors *Oklahoma, *Hydrologic data, *Surface water, *Water quality, Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediment, Water temperature, Sampling sites, Water analyses, Ground water. b. Identifiers/Open-Ended Terms c. COSATI Field/Group			
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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: (d) discharge, (c) chemical, (b) biological, (e) contents, (m) microbiological, (t) water temperature, (s) sediment]

	Station number	Page
LOWER MISSISSIPPI RIVER BASIN		
MISSISSIPPI RIVER		
RED RIVER BASIN		
Red River:		
Salt Fork Red River at Mangum (d).....	07300500	46
Salt Fork Red River near Elmer (dcms).....	07301110	48
North Fork Red River:		
Sweetwater Creek near Sweetwater (d).....	07301420	54
North Fork Red River near Carter (d).....	07301500	56
Lake Altus at Lugert (e).....	07302500	58
North Fork Red River below Altus Dam near Lugert (d).....	07303000	60
Elk Creek near Hobart (d).....	07304500	62
North Fork Red River near Headrick (dcmts).....	07305000	64
Otter Creek:		
West Otter Creek at Snyder Lake near Mountain Park (d).....	07305500	70
North Fork Red River near Tipton (d).....	07307028	72
Red River near Burkburnett, TX (dc).....	07308500	74
Cache Creek:		
East Cache Creek near Walters (dc).....	07311000	78
West Cache Creek:		
Blue Beaver Creek near Cache (dcms).....	07311200	82
Deep Red Run near Randlett (d).....	07311500	88
Beaver Creek:		
Waurika Lake near Waurika (e).....	07313400	90
Beaver Creek near Waurika (d).....	07313500	92
Red River near Terral (dc).....	07315500	94
Mud Creek near Courtney (d).....	07315700	100
Red River near Gainesville, TX (d).....	07316000	102
Washita River near Cheyenne (d).....	07316500	104
Washita River near Hammon (d).....	07324200	106
Foss Reservoir near Foss (e).....	07324300	108
Washita River near Foss (d).....	07324400	110
Washita River near Clinton (d).....	07325000	112
Washita River at Carnegie (d).....	07325500	114
Cobb Creek near Eakly (d).....	07325800	116
Fort Cobb Reservoir near Fort Cobb (e).....	07325900	118
Cobb Creek near Fort Cobb (d).....	07326000	120
Washita River at Anadarko (d).....	07326500	122
Spring Creek near Gracemont (d).....	07327050	124
Little Washita River near Cement (d).....	07327447	128

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

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	Station number	Page
LOWER MISSISSIPPI RIVER BASIN		
MISSISSIPPI RIVER		
RED RIVER BASIN		
Red River:		
Washita River --Continued		
Little Washita East of East Ninnekah (d)	07327550	130
Washita River at Alex (d)	07328100	132
Criner Creek:		
North Criner Creek near Criner (d)	07328180	134
Washita River near Pauls Valley (d)	07328500	136
Washington Creek near Pauls Valley (d)	07328550	138
Rush Creek at Purdy (d)	07329000	142
Wildhorse Creek near Hoover (d)	07329700	144
Rock Creek at Sulphur (dc)	07329852	146
Washita River near Dickson (dcmst)	07331000	150
Lake Texoma near Denison, TX (e)	07331500	156
Blue River near Blue (d)	07332500	158
Muddy Boggy Creek near Farris (d)	07334000	160
Clear Boggy Creek:		
Big Springs Creek:		
Byrds Mill Spring near Fittstown (dc)	07334200	162
Muddy Boggy Creek near Unger (d)	07335300	166
Red River at Arthur City, TX (d)	07335500	168
Kiamichi River near Big Cedar (dcms)	07335700	170
Jackfork Creek:		
Sardis Lake near Clayton (e)	07335775	176
Kiamichi River at Clayton (d)	07335790	178
Kiamichi River near Antlers (d)	07336200	180
Hugo Lake near Hugo (e)	07336600	182
Red River near De Kalb, TX (dct)	07336820	184
Little River:		
Pine Creek Lake near Wright City (e)	07337300	188
Glover River near Glover (d)	07337900	190
Little River below Lukfata Creek near Idabel (d)	07338500	192
Mountain Fork at Smithville (d)	07338750	194
Broken Bow Lake near Broken Bow (e)	07338900	196
Mountain Fork near Eagletown (d)	07339000	198

GROUND-WATER WELLS, BY COUNTIES, FOR WHICH RECORDS ARE
PUBLISHED IN THIS VOLUME

	Station number	Page
BEAVER COUNTY		
Elmwood	363853100311001	209
CADDO COUNTY		
Alfalfa	351308098341601	210
Eakly	352423098341701	211
CANADIAN COUNTY		
Yukon	353107097453701	212
CIMARRON COUNTY		
Keys	364450102190001	213
COMMANCHE COUNTY		
Cache	343540098342001	214
CUSTER COUNTY		
Thomas	354112098430601	215
DELAWARE COUNTY		
Kansas	361415094452501	216
DEWEY COUNTY		
Taloga	355850098522701	217
ELLIS COUNTY		
Gage	361536099464601	218
Catesby	363224099584601	219
GRADY COUNTY		
Rush Springs	344656098031401	220
HARMON COUNTY		
Hollis	344143099560601	221
JOHNSTON COUNTY		
Mannsville	341243096534501	222
LINCOLN COUNTY		
Stroud	354442096400801	223
LOGAN COUNTY		
Waterloo	354525097242201	224
MAJOR COUNTY		
Ames	361442098092801	225
MCCURTAIN COUNTY		
Idabel	335337094451101	226
MURRAY COUNTY		
Sulphur West	343022096565701	227
OSAGE COUNTY		
Waynona	362935096291501	228
OTTAWA COUNTY		
Miami	365229094520201	229
Bluegoose, Picher	365732094513201	230
PONTOTOC COUNTY		
Fittstown	343457096404501	231
ROGER MILLS COUNTY		
Roll	354527099470501	232
TEXAS COUNTY		
Texhoma	363033101440701	233
WASHITA COUNTY		
Burns Flat	352142099122501	234
WOODS COUNTY		
Alva	365143098404201	235
WOODWARD COUNTY		
Sharon	361714099315101	236

WATER RESOURCES DATA - OKLAHOMA, 1992
DISCONTINUED SURFACE-WATER DISCHARGE STATIONS

ix

The following continuous-record surface-water discharge stations (gaging stations) in Oklahoma have been discontinued. Daily streamflow records were collected and published for the period of record, expressed in water years, shown for each station. Discontinued project stations with less than 2 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page of this report.

Discontinued surface-water discharge stations

Station name	Station number	Drainage area (mi ²)	Period of record
RED RIVER BASIN			
Sandy Creek near Eldorado, OK	07299710	280	1960-63
Turkey Creek at Olustee, OK	07301100	317	1960-63
North Fork Red River near Sayre, OK	07301481	2,159	1978-87
North Fork Red River near Granite, OK	07302000	2,494	1904-08 1938-44
Elm Fork of North Fork Red River near Carl, OK	07303400	416	1960-79
Elm Fork of North Fork Red River near Reed, OK	07303420	579	1965-67
Elm Fork of North Fork Red River near Mangum, OK	07303500	838	1905-08 1930-31 1938-47 1965-67 1968-76
Otter Creek at Mountain Park, OK	07306500	164	1946-51
East Cache Creek near Elgin, OK	07309000	248	1956-58
Little Medicine Bluff Creek near Lawton, OK	07310000	7.00	1913-19
Medicine Bluff Creek near Lawton, OK	07310500	101	1913-19
Little Beaver Creek near Duncan, OK	07313000	158	1949-64
Cow Creek at Waurika, OK	07313600	193	1966-70
Walnut Bayou near Burneyville, OK	07315900	314	1961-63 1969-71
Sandstone Creek subwater shed 16A near Cheyenne, OK	07317500	8.78	1952-71
Sandstone Creek subwater shed 16 near Cheyenne, OK	07318000	20.3	1953-69
Sandstone Creek subwater shed 14 near Cheyenne, OK	07318500	1.02	1953-70
Sandstone Creek subwater shed 17 near Cheyenne, OK	07319000	10.1	1953-70
Sandstone Creek near Berlin, OK	07319500	44.9	1953-72
Sandstone Creek subwater shed 10A near Elk City, OK	07320000	2.87	1952-70
Sandstone Creek subwater shed 6 near Elk City, OK	07320500	6.46	1953-70
Sandstone Creek subwater shed 5 near Elk City, OK	07321000	3.89	1953-70
Sandstone Creek subwater shed 3 near Elk City, OK	07321500	0.62	1953-70
Sandstone Creek subwater shed 9 near Elk City, OK	07322000	3.50	1952-70
East Branch Sandstone Creek near Elk City, OK	07322500	23.0	1951-72
Sandstone Creek near Cheyenne, OK	07323000	87.1	1952-74
Sandstone Creek subwater shed 1 near Cheyenne, OK	07324000	5.33	1952-70
Barnitz Creek near Arapaho, OK	07324500	243	1946-63
Lake Creek near Eakly, OK	07325850	52.0	1970-78

DISCONTINUED SURFACE-WATER DISCHARGE STATIONS--Continued

Station name	Station number	Drainage area (mi ²)	Period of record
RED RIVER BASIN			
Willow Creek near Albert, OK	07325860	28.0	1971-78
Sugar Creek near Gracemont, OK	07327000	208	1956-74
Chetonia Creek Tributary below Cyril, OK	07327445	3.35	1990-91
Little Washita River near Ninnekah, OK	07327490	208	1964-85
Little Washita River at Ninnekah, OK	07327500	227	1952-63
Washita River near Tabler, OK	07328000	4,706	1940-52
Winter Creek near Alex, OK	07328070	33.0	1965-87
Rush Creek near Maysville, OK	07329500	206	1955-76
Antelope Spring at Sulphur, OK	07329849	0	1986-89
Outflow from Vendome Well at Sulphur, OK	07329851	0	1986-89
Rock Creek at Dougherty, OK	07329900	138	1957-67
Washita River near Berwyn, OK	07330000	6,815	1924-26
Caddo Creek near Ardmore, OK	07330500	298	1937-50
Mill Creek near Ravia, OK	07331250	89.2	1969-71
Red River at Denison Dam near Denison, TX	07331600	39,720	1959-89
Red River near Colbert, OK	07332000	39,777	1924-59
Blue River near Connerville, OK	07332390	162	1977-79
Blue River at Milburn, OK	07332400	203	1966-87
Coal Creek near Lehigh, OK	07332900	8.10	1978-81
Muddy Boggy Creek at Atoka, OK	07332950	445	1979-81
North Boggy Creek near Stringtown, OK	07333000	136	1956-59
Chickasaw Creek near Stringtown, OK	07333500	32.7	1956-68
McGee Creek near Stringtown, OK	07333800	86.6	1956-68
McGee Creek near Farris, OK	07333910	176	1978-82
Clear Boggy Creek near Caney, OK	07335000	720	1943-89
Clear Boggy Creek near Wapanucka, OK	07334500	516	1940-43
Tenmile Creek near Miller, OK	07336000	68	1956-70
Kiamichi River near Belzoni, OK	07336500	1,423	1926-72
Little River near Wright City, OK	07337500	645	1930-31 1945-89
Little River near Idabel, OK	07338000	1,173	1930-46

WATER RESOURCES DATA - OKLAHOMA, 1992
DISCONTINUED SURFACE-WATER-QUALITY STATIONS

xi

The following stations are discontinued surface-water-quality stations. Stations with one year's record or less are not included. Information regarding these stations may be obtained from the District Office at address given on back of title page of this report.

Discontinued surface-water-quality stations

Station name	Station number	Drainage area (mi ²)	Period of record
RED RIVER BASIN			
Prairie Dog Town Fork Red River near Childress, TX	07299540	7725	1987-88
Red River near Hollis, OK	07299565	8154	1986-88
Red River near Quanah, TX	07299570	8321	1986-88
Bitter Creek near Hollis, OK	07299705	10.4	1986-88
Sandy Creek near Eldorado, OK	07299710	280	1986-88
Gypsum Creek at Creta, OK	07299770	34.6	1987-88
Gypsum Creek near Olustee, OK	07299780	99.2	1986-88
Salt Fork Red River near Wellington, TX	07300000	1222	1987-88
Bear Creek near Vinson, OK	07300150	7.24	1987-88
Salt Fork Red River near Vinson, OK	07300400	14.21	1959-63, 1976-78, 1987-88
Salt Fork Red River at Mangum, OK	07300500	1566	1938-51, 1953-56, 1959-70, 1972, 1974-79, 1986-89
Turkey Creek at Olustee, OK	07301100	317	1986-88
North Fork Red River near Texola, OK	07301315	1284	1976-77
Sweetwater Creek near Sweetwater, OK	07301420	424	1986-90
North Fork Red River near Erick, OK	07301450		1960-63
North Fork Red River near Sayre, OK	07301481	2159	1987-90
North Fork Red River near Carter, OK	07301500	2337	1948-53, 1959-63, 1968-80, 1985-90
North Fork Red River near Granite, OK	07302000	2494	1938-44
Altus Canal Blw Lake Altus near Lugert, OK	07302510		1949-50
North Fork Red River Blw Altus Dam near Lugert, OK	07303000	2515	1962-63, 1975-80, 1987-88
Elm Fork North Fork Red R at Salton Crossing, OK	07303395		1959-61, 1973-79
Elm Fork of North Fork Red River near Carl, OK	07303400	416	1959-63, 1968-82
Fish Creek near Vinson, OK	07303402	31.5	1978-79
Salt Creek near Vinson, OK	07303404	5.64	1978-79
Elm Fork N Fork Red Rvr near Vinson, OK	07303406	428	1978-81

WATER RESOURCES DATA - OKLAHOMA, 1992
Discontinued surface-water-quality stations

Station name	Station number	Drainage area (mi ²)	Period of record
RED RIVER BASIN			
Elm Fork of North Fork Red River near Reed, OK	07303420	579	1978, 1981-82
Elm Fork of North Fork Red River near Mangum, OK	07303500	838	1938-47, 1951, 1960-65, 1968-80
Elk Creek near Hobart, OK	07304500	549	1949-51, 1955, 1958-63, 1969-90
West Otter Creek at Snyder Lk near Mt. Park, OK	07305500	132	1947, 1960, 1988
Otter Creek near Snyder, OK	07307010	217	1959-63, 1987-89
North Fork Red River near Tipton, OK	07307028	4691	1960, 1985-89
East Cache Creek near Elgin, OK	07309000	248	1975-80
Deep Red Run near Randlett, OK	07311500	617	1987-90
Beaver Creek near Lawton, OK	07312900		1947-48, 1961
Little Beaver Creek near Duncan, OK	07313000	158	1947-51, 1955, 1960, 1962-63
Beaver Creek near Waurika, OK	07313500	563	1986-90
Mud Creek near Courtney, OK	07315700	572	1985-90
Washita River near Reydon, OK	07316350	498	1949, 1977
Washita River near Cheyenne, OK	07316500	794	1938-40, 1942-47, 1950, 1960-61, 1969-73, 1985-90
Sandstone Creek SWS 17 near Cheyenne, OK	07319000	10.1	1968-70
Sandstone Creek SWS 10a near Elk City, OK	07320000	2.87	1975, 1979
Sandstone Creek SWS 1 near Cheyenne, OK	07324000	5.33	1968-70, 1979
Washita River near Moorewood, OK	07324150		1969-71
Quartermaster Creek near Hammon, OK	07324190		1969-71
Washita River near Hammon, OK	07324200	1387	1969-87, 1989-90

WATER RESOURCES DATA - OKLAHOMA, 1992
Discontinued surface-water-quality stations

xiii

Station name	Station number	Drainage area (mi ²)	Period of record
RED RIVER BASIN			
Washita River near Foss, OK	07324400	1551	1928, 1946-48, 1950-51, 1956-57, 1969-87, 1989-90
Barnitz Creek near Arapaho, OK	07324500	243	1947-49, 1951-52, 1955
Washita River near Clinton, OK	07325000	1977	1938-45, 1947-50, 1959-63, 1975, 1987-90
Washita River at Carnegie, OK	07325500	3129	1942-51, 1955-90
Spring Creek near Eakly, OK	07325753		1960-61
Cobb Creek near Eakly, OK	07325800	132	1987-90
Cobb Creek near Fort Cobb, OK	07326000	313	1943-48, 1950-51, 1959-60, 1962-63, 1986-90
Washita River at Anadarko, OK	07326500	3656	1954, 1962-80, 1987-90
Tonkawa Creek near Anadarko, OK	07326720	26	1967-71
Sugar Creek near Gracemont, OK	07327000	208	1949-50, 1960, 1962-74
Delaware Creek near Anadarko, OK No. 131	07327040	40.1	1962-77
Salt Creek near Chickasha, OK	07327150	23.8	1967-77
Washita River near Chickasha, OK	07327300		1959-61
West Salt Creek near Chickasha, OK	07327320	22	1967-71
West Bitter Creek near Tabler, OK	07327420	59.4	1960-61, 1964-71
Spring Creek near Blanchard, OK	07327432	1	1968-71
Spring Creek near Tabler, OK	07327435	2	1967-71
Spring Creek Trib near Middleberg, OK	07327437		1968-71
East Bitter Creek near Tabler, OK	07327440	35.2	1960-61, 1964-77
Little Washita River near Ninnekah, OK	07327490	208	1948-52, 1954-55, 1963-78
Little Washita River at Ninnekah, OK	07327500	227	1960-63
Washita River near Tabler, OK	07328000	4706	1942-53

WATER RESOURCES DATA - OKLAHOMA, 1992
Discontinued surface-water-quality stations

Station name	Station number	Drainage area (mi ²)	Period of record
RED RIVER BASIN			
Winter Creek near Alex, OK	07328070	33	1985-87
Washita River at Alex, OK	07328100	4787	1962-80, 1986, 1989-90
Finn Creek near Payne, OK	07328250		1960-61
Rush Creek at Purdy, OK	07329000	145	1938-53, 1985-90
Rush Creek near Maysville, OK	07329500	206	1938-39, 1944, 1953-75, 1977
Wildhorse Creek near Hennepin, OK	07329660		1949-50
Wildhorse Creek near Hoover, OK	07329700	604	1954-55, 1962-63, 1969-71, 1985-90
Honey Creek near Turner Falls, OK	07329790		1949, 1951
Honey Creek near Davis, OK	07329810	18.7	1953, 1955-56
Rock Creek N of Sulphur, OK	07329843		1958-60
Outflow from Vendome Well at Sulphur, OK	07329851		1985-90
Rock Creek S of Platt Natl Pk near Sulphur, OK	07329853		1959-60
Rock Creek at Dougherty, OK	07329900	138	1951-57, 1960-63
Caddo Creek near Ardmore, OK	07330500	298	1936-40, 1942, 1944-50
Mill Creek near Ravia, OK	07331250	89.2	1968-69
Washita River near Tishomingo, OK	07331290		1953-55
Pennington Creek near Reagan, OK	07331300	65.7	1951-55, 1957-59
Butcher Pen Creek near Tishomingo, OK	07331450		1960-61
Red River at Denison Dam near Denison, TX	07331600	39720	1942-43, 1945-49, 1959-85
Red River near Colbert, OK	07332000	39777	1930-31, 1936-62
Blue River at Connerville, OK	07332350		1951-56, 1961-62, 1977-79
Blue River near Connerville, OK	07332390	162	1977-79
Blue River at Armstrong, OK	07332450	224	1976-77

WATER RESOURCES DATA - OKLAHOMA, 1992
Discontinued surface-water-quality stations

xv

Station name	Station number	Drainage area (mi ²)	Period of record
RED RIVER BASIN			
Blue River near Blue, OK	07332500	476	1936, 1938-42, 1944-50, 1953-80
Muddy Boggy Creek near Coalgate, OK	07332850		1961-62
Coal Creek near Lehigh, OK	07332900	8.1	1905, 1977-81
Muddy Boggy Creek at Atoka, OK	07332950	445	1978-81
Chickasaw Creek near Stringtown, OK	07333500	32.7	1955-58, 1960
Mcgee Creek near Farris, OK	07333910	176	1908, 1976-82
Muddy Boggy Creek near Farris, OK	07334000	1087	1938-81
Clear Boggy Creek near Tupelo, OK	07334400	248	1957-58, 1960-62, 1983
Leader Creek at Tupelo, OK	07334420	64.3	1958, 1960
Clear Boggy Creek near Wapanucka, OK	07334500	516	1940-42
Clear Boggy Creek Abv Caney Creek near Caney, OK	07334800		1976-77
Clear Boggy Creek near Caney, OK	07335000	720	1943-80
Muddy Boggy Creek near Unger, OK	07335300	2273	1961-62, 1985-90
Red River at Arthur City, TX	07335500	44531	1938-80, 1982
Kiamichi River near Clayton, OK	07335790	708	1976-77
Kiamichi River near Antlers, OK	07336200	1138	1962, 1972-81
Kiamichi River near Belzoni, OK	07336500	1423	1938-40, 1943-72
Kiamichi River near Sawyer, OK	07336700		1961-62, 1975, 1977-80
Red River near Valliant, OK	07336730		1921, 1923, 1970-76
Red River near Millerton, OK	07336760		1970-76
Little River near Cloudy, OK	07337100	324	1976-80
Little River near Ringold, OK	07337200		1961-62
Little River near Wright City, OK	07337500	645	1945-47, 1949, 1961-73, 1975-77
Glover River near Glover, OK	07337900	315	1961-80

WATER RESOURCES DATA - OKLAHOMA, 1992
Discontinued surface-water-quality stations

Station name	Station number	Drainage area (mi ²)	Period of record
RED RIVER BASIN			
Little River Blw Lukfata Creek, near Idabel, OK	07338500	1226	1930-31, 1938-40, 1944-54, 1960-80
Mountain Fork near Smithville, OK	07338840		1976-80
Mountain Fork near Eagletown, OK	07339000	787	1938-40, 1944-45, 1947-48, 1960-70, 1973, 1975-80
Mountain Fork Blw Eagletown, OK	07339010		1960-63
Little River near Cerro Gordo, Ar	07339100		1976, 1978
Blue R at Pexton Ranch near Milburn, OK	341835096342901		1976, 1978
Wanderers Creek near Odell, TX	341837099262801	156	1986, 1988
Groesbeck Creek near Quanah,tx	342036099384301	322	1986-88
Sandy Creek near Oklahoma-Texas State-line	342436099371701	320	1986-88
Sandy Creek in Eldorado Township, OK	342535099381801	312	1987-88
Red River near Elmer, OK	342555099203001	16459	1986-88
Coal Ck Trib near Lehigh	342652096152202		1977-81
Sandy Creek at Eldorado, OK	342710099392101	297	1987-88
Coal Ck Tributary	342743096154701		1977-81
Little Blue Creek at Pontotoc, OK	342914096370701	11.6	1977-78
Sandy Creek near Lincoln, OK	342932099433301	255	1987-88
Sandy Creek at Lincoln, OK	343030099453501		1986-88
Gypsum Creek near Creta, OK	343056099302801	56.1	1987-88
Tributary to Salt Fork Red River near Elmer, OK	343135099220301		1986-88
Gypsum Creek near Prairie Hill, OK	343208099343201	28.1	1987-88
Tributary to Gypsum Creek near Eldorado, OK	343221099364601	4.53	1986-88
Tributary to Sandy Creek near Lincoln, OK	343227099451101	6.32	1987-88
Sandy Creek near Louis, OK	343307099455101	224	1987-88
Gypsum Creek near Duke, OK	343313099364601	14	1986-88
Tributary to Gypsum Creek near Jackson Co Line, OK	343313099375001	2.12	1986-88
Prairie Dog Town Fork Red River near Lakeview, TX	343412100444701	6794	1987-88
Prairie Dog Town Fork Red River at Estelline, TX	343421100260901	7293	1987-88
Bitter Creek near Altus, OK	343537099230601		1986-88
Blue River at Ford, OK	343554096250801		1976-77
Jonah Creek near Estelline, TX	343604100223401	57.1	1987-88
Buck Creek near Childress, TX	343642100063801	222	1987-88
Salt Creek near Childress, TX	343651100164501	113	1987-88

WATER RESOURCES DATA - OKLAHOMA, 1992
Discontinued surface-water-quality stations

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Station name	Station number	Drainage area (mi ²)	Period of record
RED RIVER BASIN			
Sandy Creek near Gould, OK	343715099493201	169	1987-88
Tributary to Turkey Creek near Prairie Hill, OK	343721099310701	13.7	1987-88
Turkey Creek near Altus, OK	343735099271801	309	1986-88
Turkey Creek near Prairie Hill, OK	343814099305901	238	1987-88
Jonah Creek near Newlin, TX	343824100235801	46.3	1987-88
Tributary to Horse Branch at Victory, OK	343906099275001	0.23	1986, 1988
Cottonwood Creek near Duke, OK	343906099355101	54.5	1986-88
Spring Branch at Duke, OK	343926099330601	14	1986-88
Turkey Creek at U.S. Highway 62 near Duke, OK	344005099360701	148	1986-88
Buck Creek near Loco, TX	344009100092401	205	1987-88
Horse Branch near Victory, OK	344050099273401	25.3	1986-88
Trib to Horse Branch in Duke Twnp near Victory, OK	344050099282101	8.39	1986-88
Turkey Creek near Duke, OK	344104099375001	84.8	1986-88
Turkey Creek at Jackson-Harmon County-line, OK	344104099395601	76.9	1987-88
Tributary to Turkey Creek near Duke, OK	344123099365401	56.5	1987-88
Buck Creek at Loco, TX	344208100110701	175	1987-88
Turkey Creek near McQueen, OK	344215099421001	51.5	1987-88
Mulberry Creek near Mangum, OK	345032099374201	9.3	1986-88
Tributary to Salt Fork Red River near Madge, OK	345051099585201	4.79	1986-88
Salt Fork Red River near Madge, OK	345145099582601	1388	1986-88
Cave Creek near Reed, OK	345158099425101	46.7	1986-88
Fish Creek near Mangum, OK	345208099342101	5.3	1987-88
Salt Fork Red River near Dodson, TX	345315100030301	1297	1987-88
Panther Creek near Wellington, TX	345833100100901	4.61	1987-88

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with State agencies, obtains a large amount of data pertaining to the water resources of Oklahoma each water year (Oct. 1 to Sept. 30). 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 Geological Survey, the data are published annually in this report series entitled "Water Resources Data - Oklahoma."

Volumes 1 and 2 of this report includes records on both surface water and ground water in the State. Specifically, it contains: (1) Discharge records for 136 streamflow-gaging stations, and 61 partial-record or miscellaneous streamflow stations, (2) stage and content records for 31 lakes and reservoirs, (3) water-quality records for 50 streamflow-gaging stations; (4) water-level records for 28 observation wells.

This series of annual reports for Oklahoma began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format was changed to include, in one volume, data on quantity and quality of surface water levels. Data on ground-water levels were added to this format from 1975-79 and 1990 to present.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for Oklahoma were published in U.S. Geological Survey Water-Supply Papers. 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, Parts 7A and 7B." 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." Records of ground-water levels were published from 1935 to 1974 under the title "Ground-Water Levels in the United States," and 1980 to 1989 under the title "Ground-Water Levels in Observation Wells in Oklahoma." The above mentioned Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, CO 80225.

Publications similar to this report are published annually by the Geological Survey for all States. These official Survey 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 "U.S. Geological Survey Water-Data Report OK-92-1." 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. Beginning with the 1990 water year, all water-data reports also will 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.

A limited number of CD-ROM discs will be available for sale by the Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225.

COOPERATION

The U.S. Geological Survey and organizations of the State of Oklahoma have had cooperative agreements for the systematic collection of streamflow and ground-water records since 1935, and for water-quality records since 1941. Organizations that assisted in collecting the data through cooperative agreement with the Survey are:

**Oklahoma Water Resources Board,
Patty Eaton, Executive Director.**

**Oklahoma Geological Survey,
Charles J. Mankin, Director.**

**Oklahoma State Department of
Health, Environmental Health
Services, Mark S. Coleman, Deputy
Commissioner.**

**Oklahoma City Water Department,
James D. Couch, Director of
Water Services.**

The following Federal agencies assisted in the data collection program by providing funds or services:

Corps of Engineers, U.S. Army

**Bureau of Reclamation, U.S.
Department of Interior**

**Bureau of Land Management, U.S.
Department of Interior**

Assistance in the form of funds or services was rendered by the following organizations through the Oklahoma Water Resources Board: **Grand River Dam Authority; Central Oklahoma Master Conservancy District; Fort Cobb Reservoir Master Conservancy District; Lugert-Altus Irrigation District; Foss Reservoir Master Conservancy District; Mountain Park Master Conservancy District; Oklahoma Gas and Electric Company; the cities of Ada, Lawton, Norman, Oklahoma City, and Tulsa.**

Organizations that supplied data are acknowledged in the station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONSStreamflow

Large variations in streamflow characterize hydrologic conditions in Oklahoma. In the extreme southeastern part of the State, mean annual precipitation exceeds 52 inches and mean annual runoff exceeds 20 inches. In the southeast, stream channels are deeply incised in mountainous terrain, and streamflow generally is perennial. In the extreme northwestern part of the Panhandle, mean annual precipitation is less than 16 inches and mean annual runoff is less than 0.1 inch. In northwestern Oklahoma, streams generally have shallow, poorly-defined channels and ephemeral flow.

Precipitation data from monthly reports of the Oklahoma Climatological Survey, averaged over the State, indicated that monthly precipitation was below normal during February and March of the water year. Totals were above normal during October, December, June, July, and August. The December total was the third wettest and the summer total (June-August) was the fifth wettest in the last 100 years. November, January, April, May, and September totals were about average.

However, precipitation was not spread uniformly across the State. Western Oklahoma had dry conditions during September; the Panhandle of the State averaged only 0.14 inch of precipitation. In October, heavy rains fell across southeastern Oklahoma with three times normal rainfall being reported. The entire State had a very wet December with over five times normal precipitation reported in southwestern Oklahoma. Although April had normal rainfall, local heavy rains caused flooding which took the lives of three children, two in Oklahoma City and one in Lawton. During the summer months significantly above-average precipitation fell over the entire State.

A comparison of daily, monthly and annual streamflow for the 1992 water year with the period of record at eight selected stations (fig. 1-8) reflected unusually dry conditions for the entire year in western Oklahoma; average streamflow for the year in north-central and northeastern Oklahoma; and above-average streamflow for the year in southwestern, central, southern, and southeastern Oklahoma, caused by high flows in December and in June through September. These stations were selected at representative locations within Oklahoma. Three locations are affected to some degree by regulation: Arkansas River at Ralston, the Washita

River near Dickson, and North Canadian River at Woodward.

Drought effects during the 1992 water year varied throughout the State. Streamflow was below normal in streams during the water year in northwestern Oklahoma (fig. 1) and about normal in streams during the water year in north-central and northeastern Oklahoma, with high flows in December and the summer months (fig. 2-4). In central Oklahoma, streamflow was far above normal during December, and during April through August (fig. 5). In southwestern Oklahoma, streamflow was far above normal throughout the water year, with the most significant rises occurring in December and in June through September (fig. 6). Streamflow was far above normal throughout the year with the highest peaks in December and in June and July in the south-central part of the State (fig. 7) and in October, December, and September in the southeast (fig. 8). Overall the year's streamflow was below normal in the northwest; about normal in the north-central and northeast; and far above normal in central, southwestern, south-central, and southeastern Oklahoma, with annual peak flows in the medium to high flow range.

The worst flooding occurred during December across the entire State and during June through August in large parts of the State, except northwestern Oklahoma. For several days in late December, rainfall totals over 2 inches were reported at several locations, with 3.20 inches at Anadarko and 3.47 inches at Bartlesville. Thunderstorms buffeted Oklahoma throughout June. Rainfall totals exceeded 3 inches in Oneta, Boynton, and Tahlequah in early June, and Muskogee reported 6.03 inches in June. Heavy rains and major-flooding stopped the wheat harvest in many parts of the State. Flash flooding hit Carter, Bryan, and Creek Counties at the end of June.

The following table presents a comparison of streamflow for the 1992 water year with streamflow for the period of record at the eight selected stations:

WATER RESOURCES DATA - OKLAHOMA, 1992
RED RIVER BASIN

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STATION IDENTIFICATION		Statistics of discharge during period of record (cubic feet per second)			Statistics of discharge during 1992 water year (cubic feet per second)		
		Maximum Instan- taneous	Minimum Mean Daily	Average	Maximum Instan- taneous	Minimum Mean Daily	Average
ARKANSAS RIVER BASIN							
07152500	Arkansas River at Ralston	35,100	87	4,453	211,000	14	4,826
				(Prior to regulation 1926-75)			
					174,000	52	5,097
				(Since regulation by Kaw Lake 1977-92)			
07185000	Neosho River near Commerce	39,600	9.5	3,598	267,000	0	3,609
					(1940-92)		
07197000	Baron Fork at Eldon	7,580	30	435	57,600	1.8	314
					(1949-92)		
07231500	Canadian River at Calvin	62,100	280	3,303	174,000	0	1,734
					(1906, 1939-42, 1945-1992)		
07237500	North Canadian River at Woodward	214	1.2	33.8	42,000	0	194
				(Prior to regulation 1939-78)			
					3.090	0	103
				(Since regulation by Optima Lake 1979-92)			
RED RIVER BASIN							
07304500	Elk Creek near Hobart	2,710	10	122	28,000	0	86.3
					(1950-92)		
07331000	Washita River near Dickson	47,900	380	3,402	98,000	0	1,573
				(Prior to regulation 1929-58)			
					118,000	0.10	1,645
				(Since regulation by Fort Cobb Reservoir 1962-92)			
07332500	Blue River near Blue	13,700	77	575	65,200	0	317
					(1937-92)		

The average discharge streamflow statistic for the 1992 water year also illustrates below-normal runoff conditions in western Oklahoma, average runoff conditions for northern and northeastern Okla-

WATER RESOURCES DATA - OKLAHOMA, 1992
RED RIVER BASIN

homa, and above-normal runoff conditions in the rest of the State.

Conservation storage in six selected reservoirs in the State, with a combined conservation storage capacity of 8,014,000 acre-feet, remained about the same. Conservation storage increased slightly from 95 percent at the start of the water year to 98 percent at the end of the water year.

The following table presents a comparison of conservation storage capacity for the start and end of the 1992 water year for the six selected reservoirs:

STATION IDENTIFICATION		Conservation Storage Capacity			
		Start of 1992 WY		End of 1992 WY	
		(acre-feet)	(percent)	(acre-feet)	(percent)
ARKANSAS RIVER BASIN					
07164200	Keystone Lake near Sand Springs	523,600	79	553,200	84
07190000	Lake O' the Cherokees at Langely	1,504,000	101	1,639,000	110
07197500	Tenkiller Ferry Lake near Gore	629,300	100	647,600	103
07244800	Eufaula Lake near Brooken	2,218,000	93	2,337,000	101
RED RIVER BASIN					
07302500	Lake Altus at Lugert	69,010	52	105,200	79
07331500	Lake Texoma near Denison	2,654,000	97	2,569,000	94
Total/Average		7,597,910	95	7,850,800	98

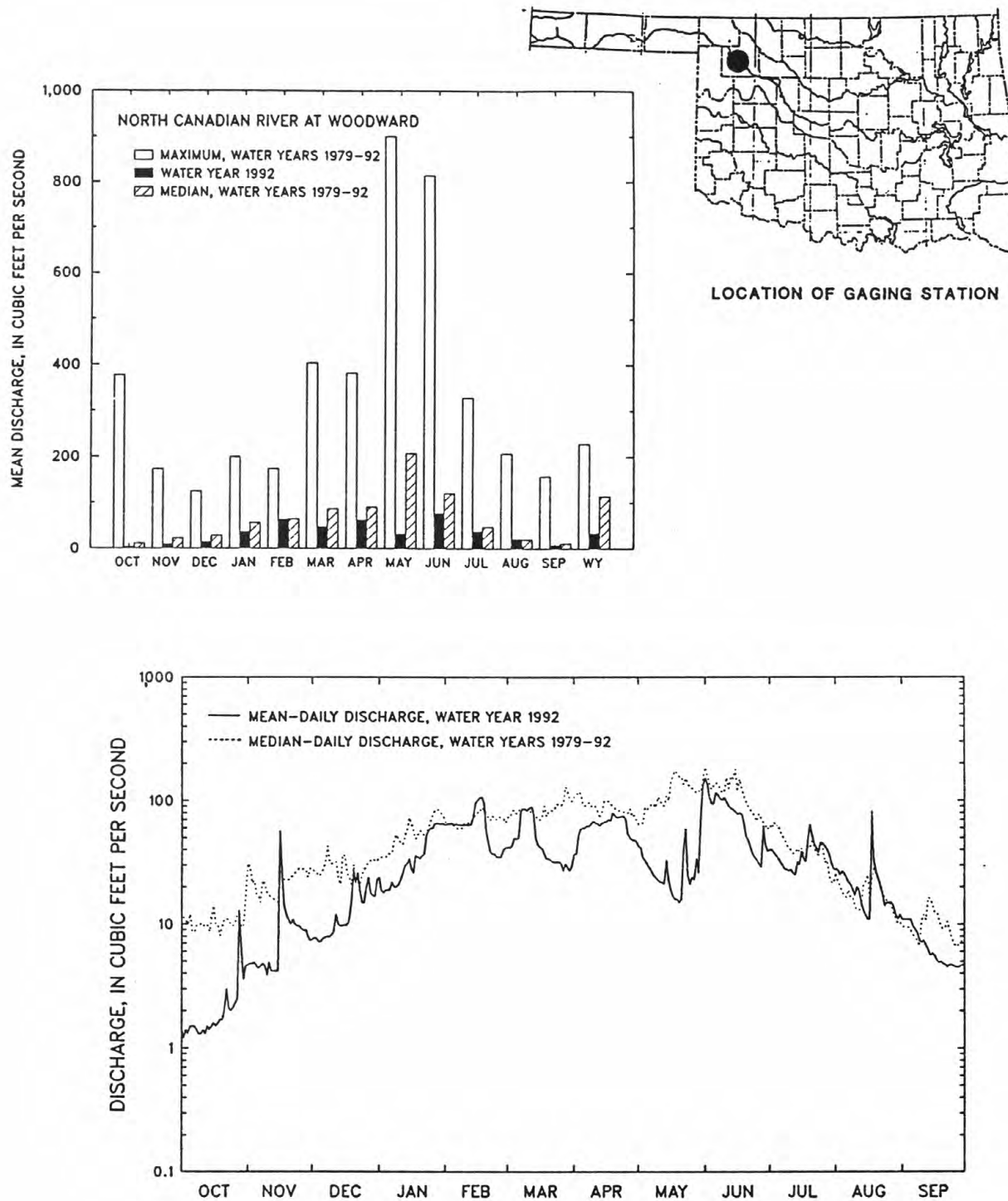


Figure 1.—Comparison of daily, monthly, and annual discharges for water year 1992 and period of record for North Canadian River at Woodward, Oklahoma.

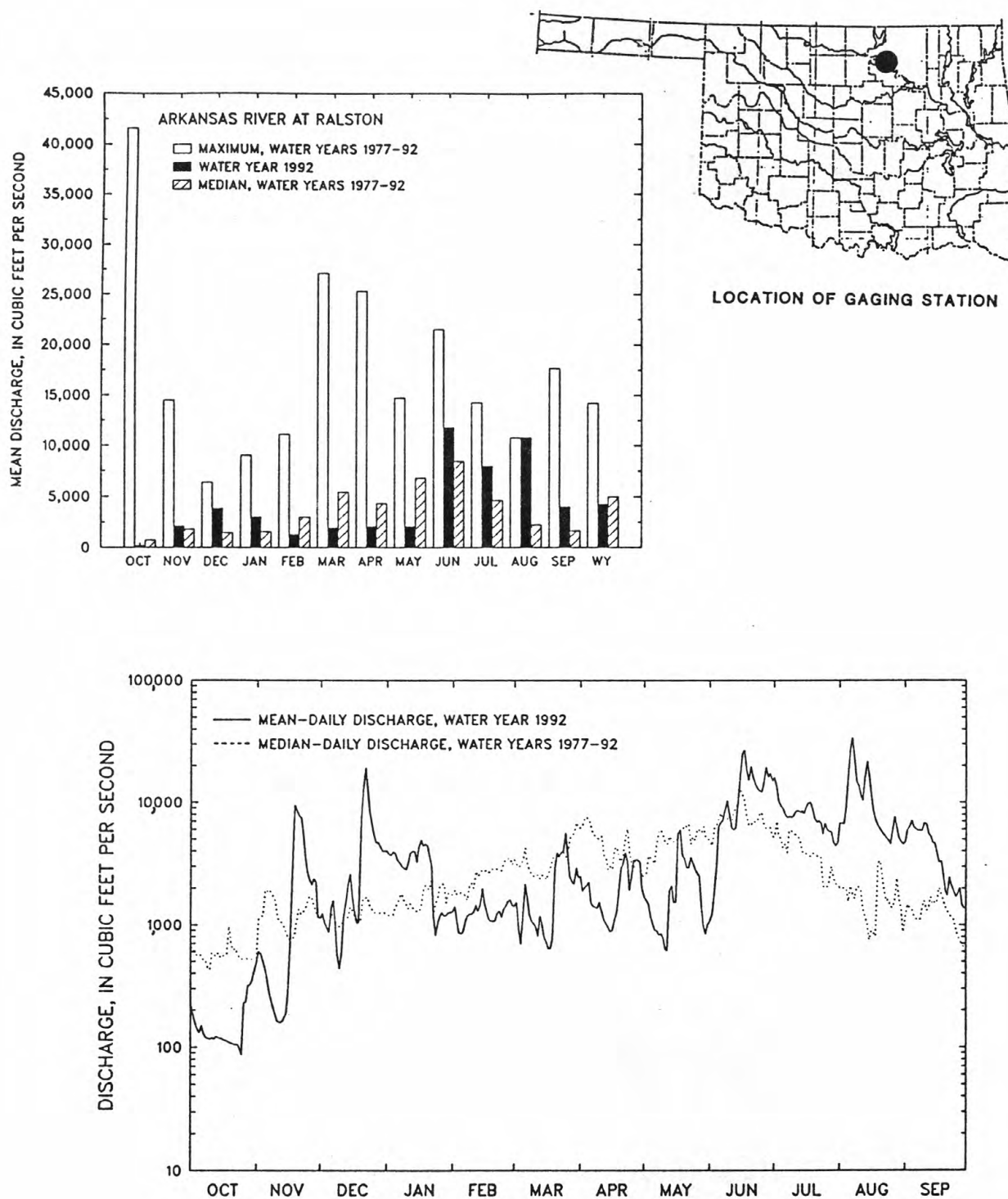
WATER RESOURCES DATA - OKLAHOMA, 1992
RED RIVER BASIN

Figure 2.—Comparison of daily, monthly, and annual discharges for water year 1992 and period of record for Arkansas River at Ralston, Oklahoma.

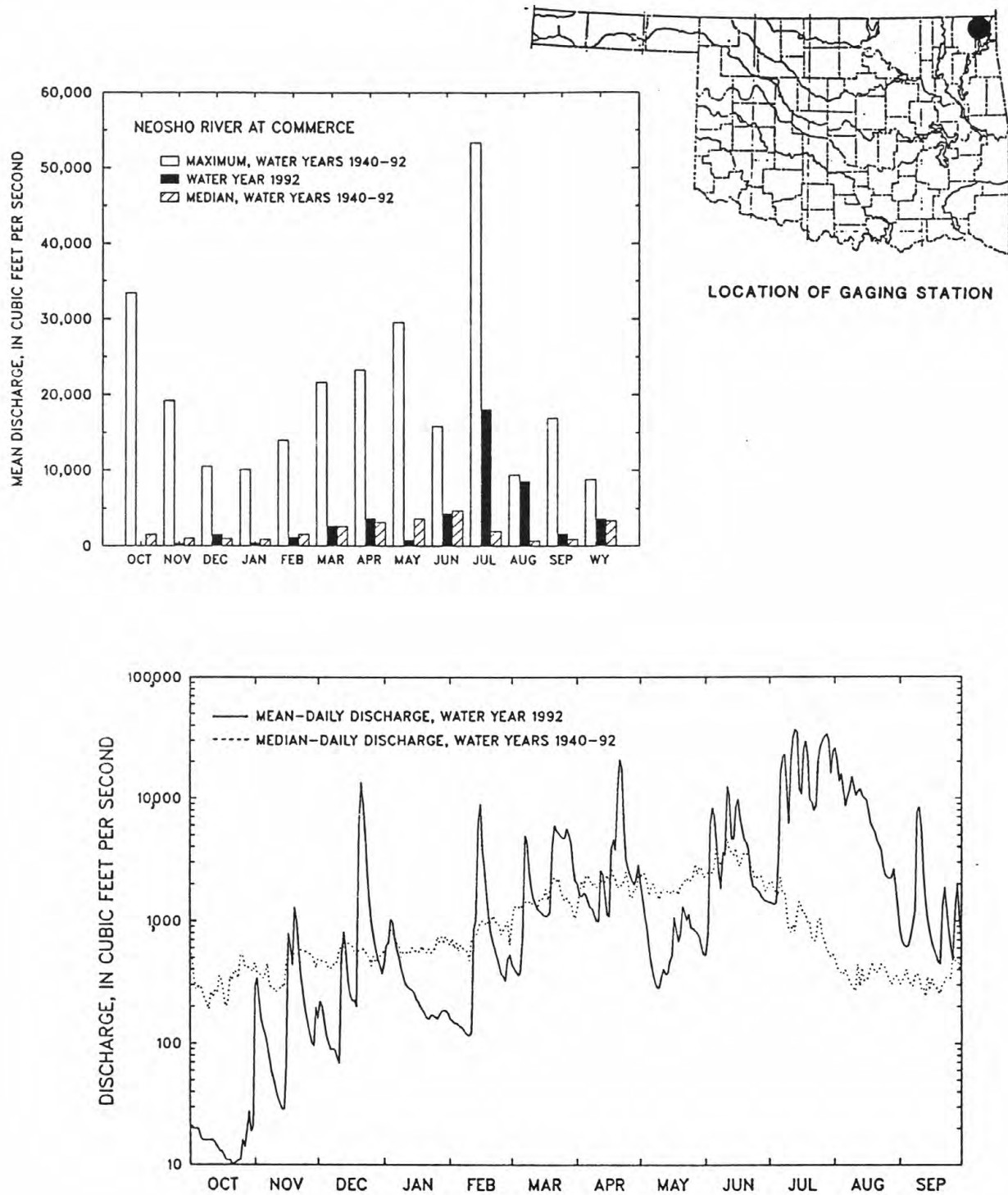


Figure 3.—Comparison of daily, monthly, and annual discharges for water year 1992 and period of record for Neosho River near Commerce, Oklahoma.

WATER RESOURCES DATA - OKLAHOMA, 1992
RED RIVER BASIN

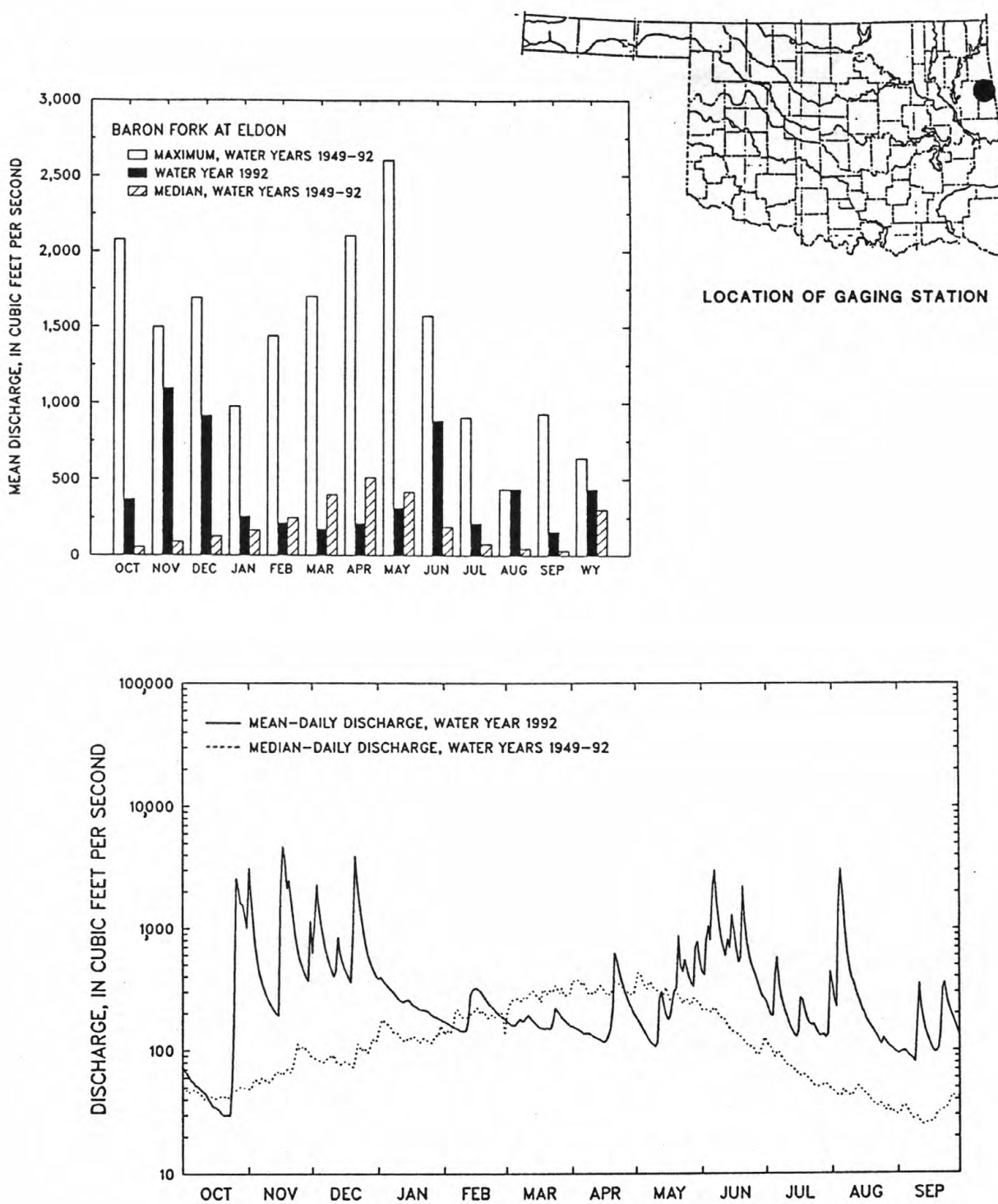


Figure 4.—Comparison of daily, monthly, and annual discharges for water year 1992 and period of record for Baron Fork at Eldon, Oklahoma.

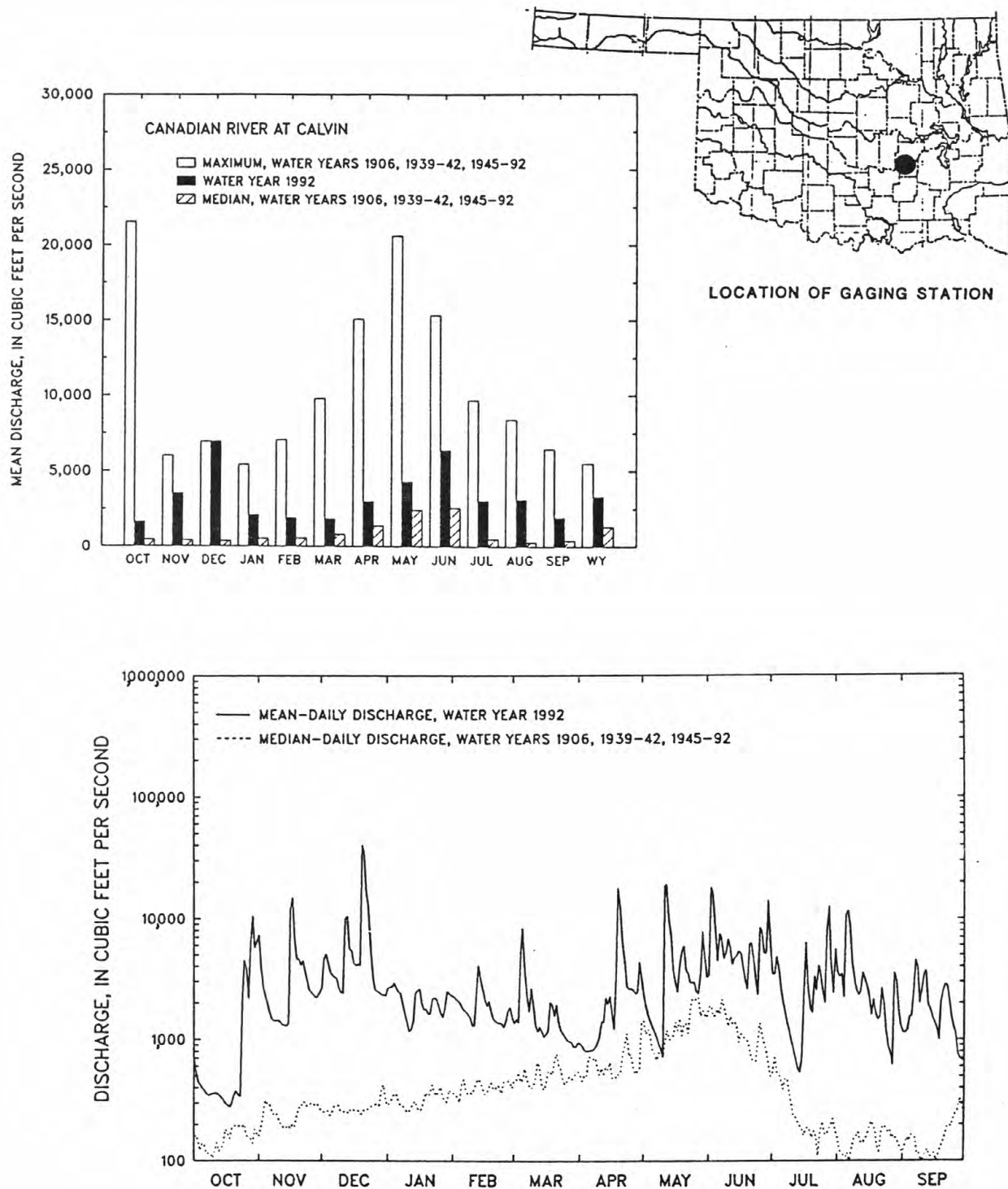


Figure 5.—Comparison of daily, monthly, and annual discharges for water year 1992 and period of record for Canadian River at Calvin, Oklahoma.

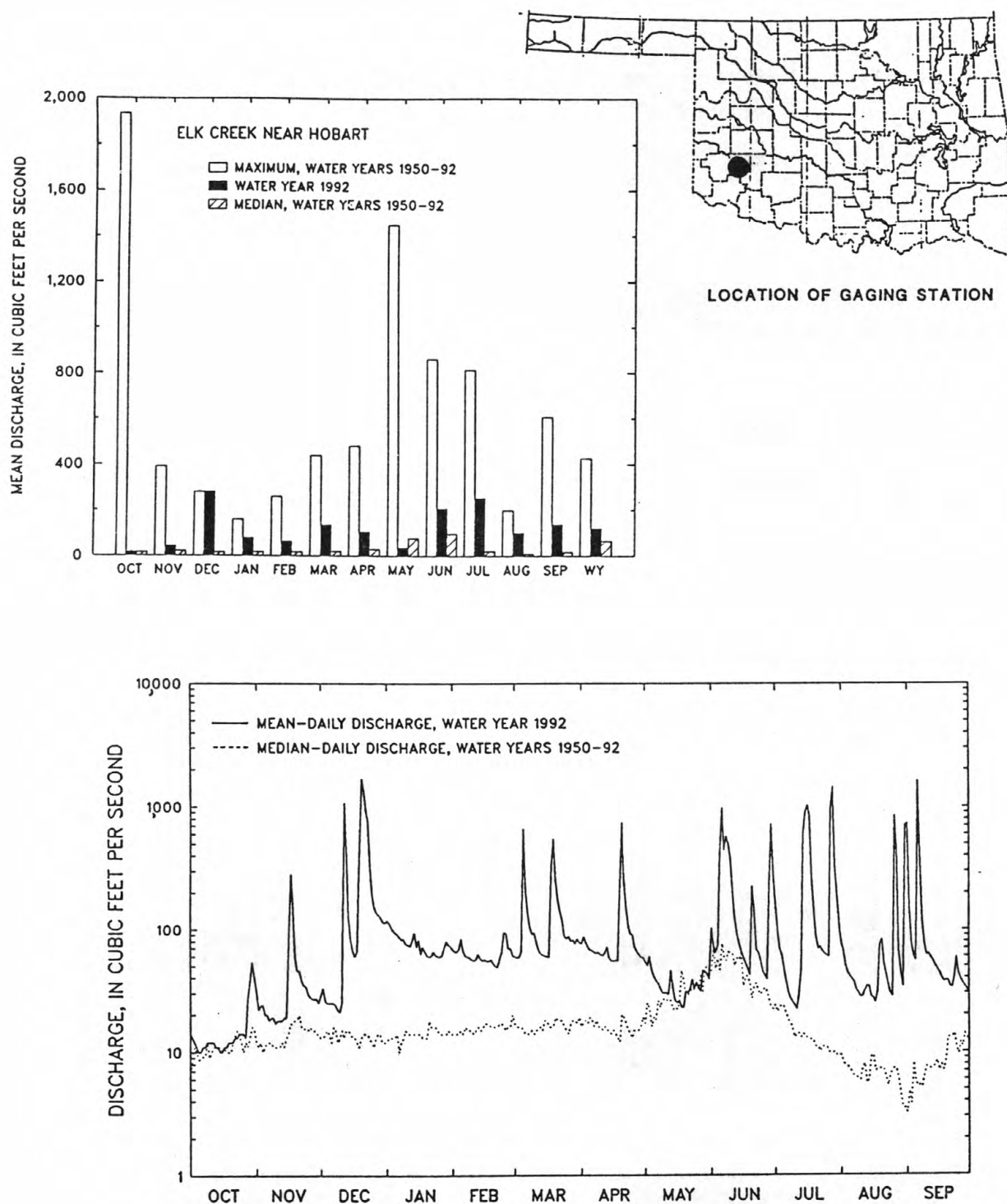
WATER RESOURCES DATA - OKLAHOMA, 1992
RED RIVER BASIN

Figure 6.—Comparison of daily, monthly, and annual discharges for water year 1992 and period of record for Elk Creek near Hobart, Oklahoma.

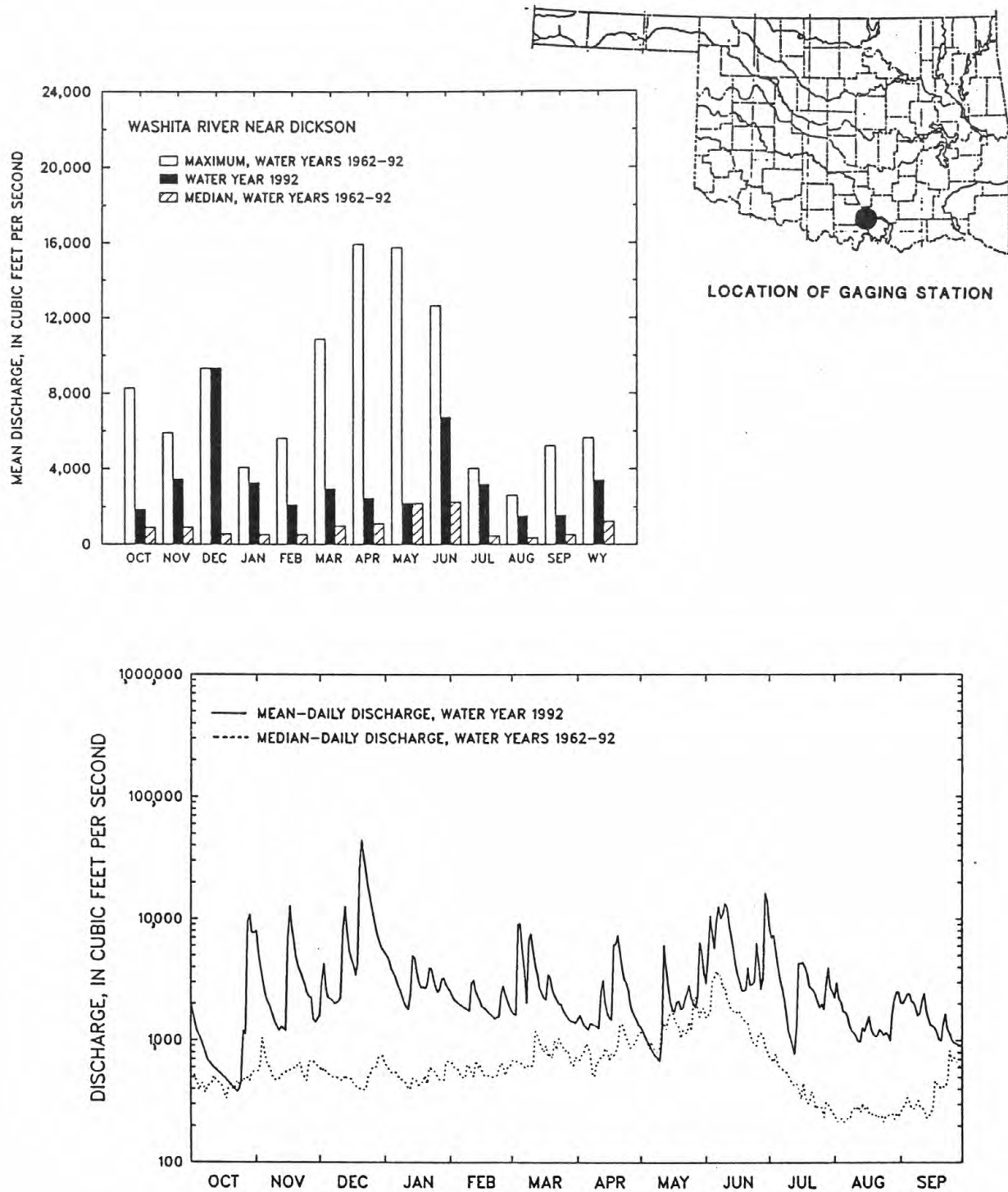


Figure 7.—Comparison of daily, monthly, and annual discharges for water year 1992 and period of record for Washita River near Dickson, Oklahoma.

WATER RESOURCES DATA - OKLAHOMA, 1992
RED RIVER BASIN

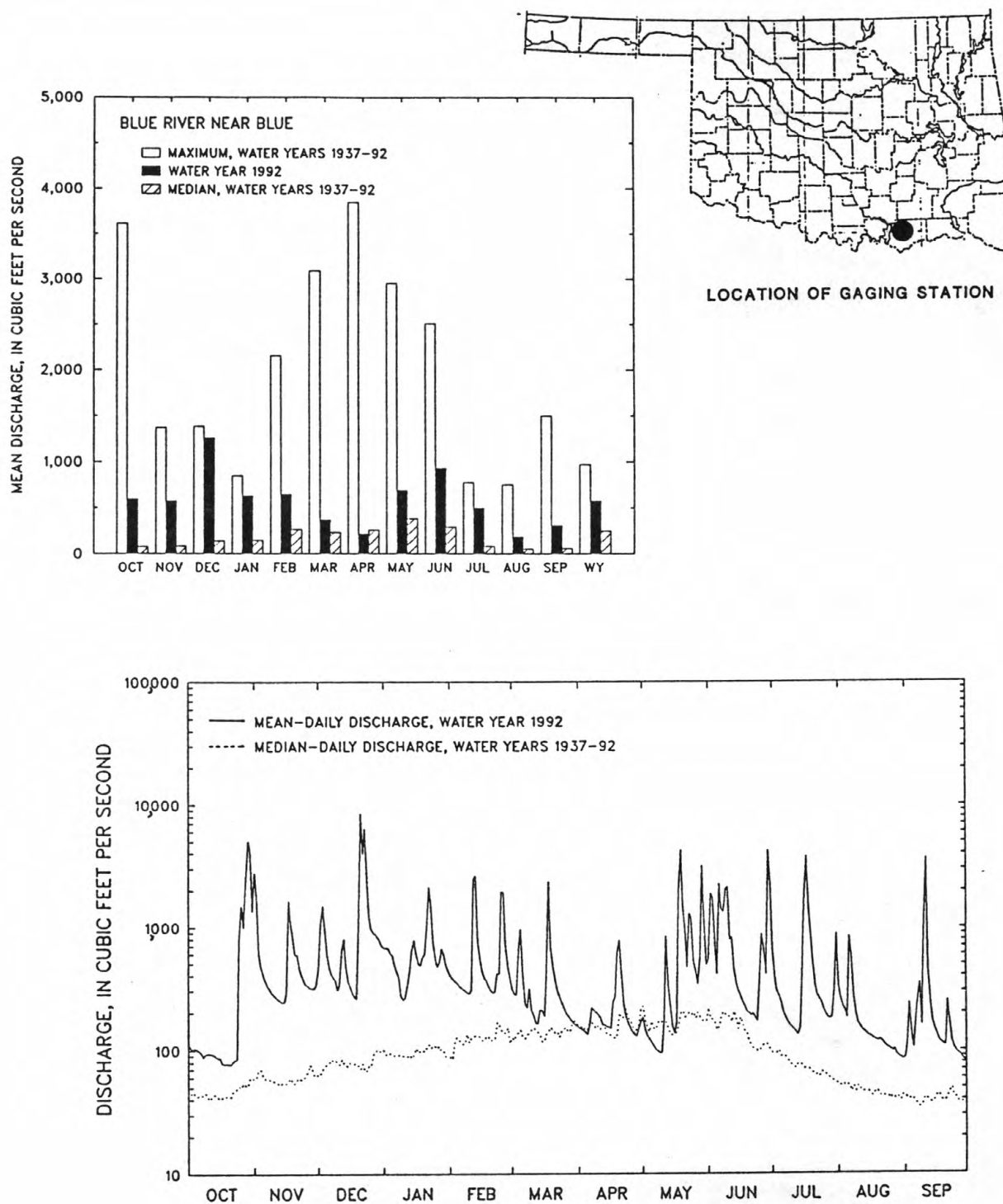


Figure 8.—Comparison of daily, monthly, and annual discharges for water year 1992 and period of record for Blue River near Blue, Oklahoma.

Chemical Quality of Streamflow

The concentrations of selected dissolved chemical constituents measured at surface-water sampling stations in the State during the 1992 water year were generally within the ranges measured during previous years. The minimum values for the selected constituents for most stations were larger for the 1992 water year than the minimum values for the 1970 through 1990 water years. The maximum values for these same constituents were smaller for most sta-

tions for the 1992 water year than the maximum values for the 1970 through 1990 water years. Concentrations of dissolved solids, chloride, sulfate, and suspended sediment are shown in the following graphs for sampling sites on selected principal streams (fig. 9) in the State. Maximum and minimum concentrations of these constituents for the 1992 water year are compared to maximum and minimum concentrations for the 1970 through 1990 water years.

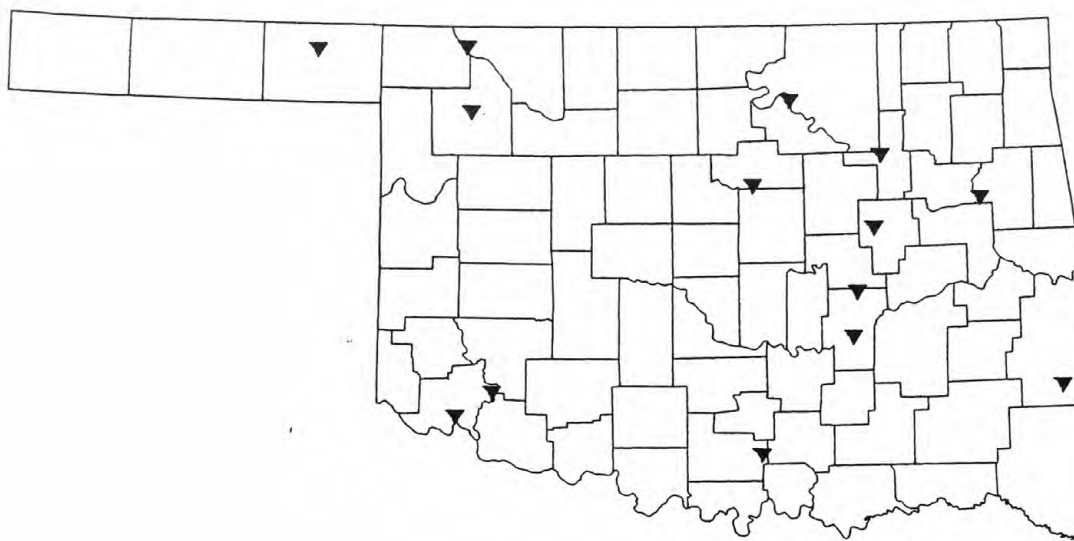


Figure 9.—Location of water-quality stations on selected principal streams.

WATER RESOURCES DATA - OKLAHOMA, 1992
RED RIVER BASIN

The maximum dissolved-solids concentration measured in these streams in 1992 was 22,400 milligrams per liter (mg/L) in

the Cimarron River near Buffalo. Dissolved-solids concentrations, in mg/L, are shown in the following graphs:

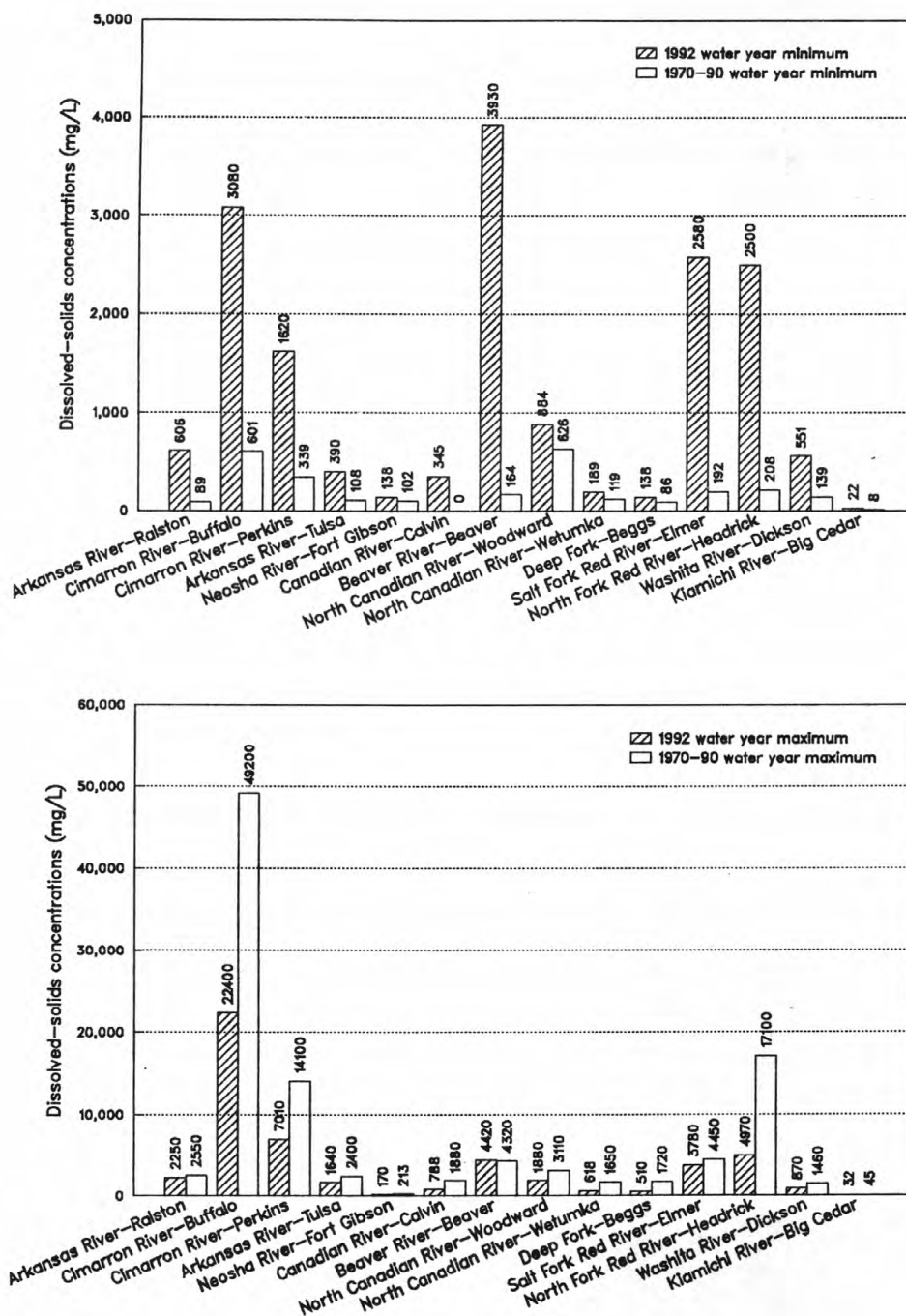


Figure 10.—Comparisons of minimum and maximum dissolved-solids concentrations, in milligrams per liter (mg/L), for water year 1992 and water years 1970-90.

The maximum dissolved-chloride concentration measured at the selected stations in 1992 was 11,000 mg/L in the Cimarron River near Buffalo.

Dissolved-chloride concentrations, in mg/L, are shown in the following graphs:

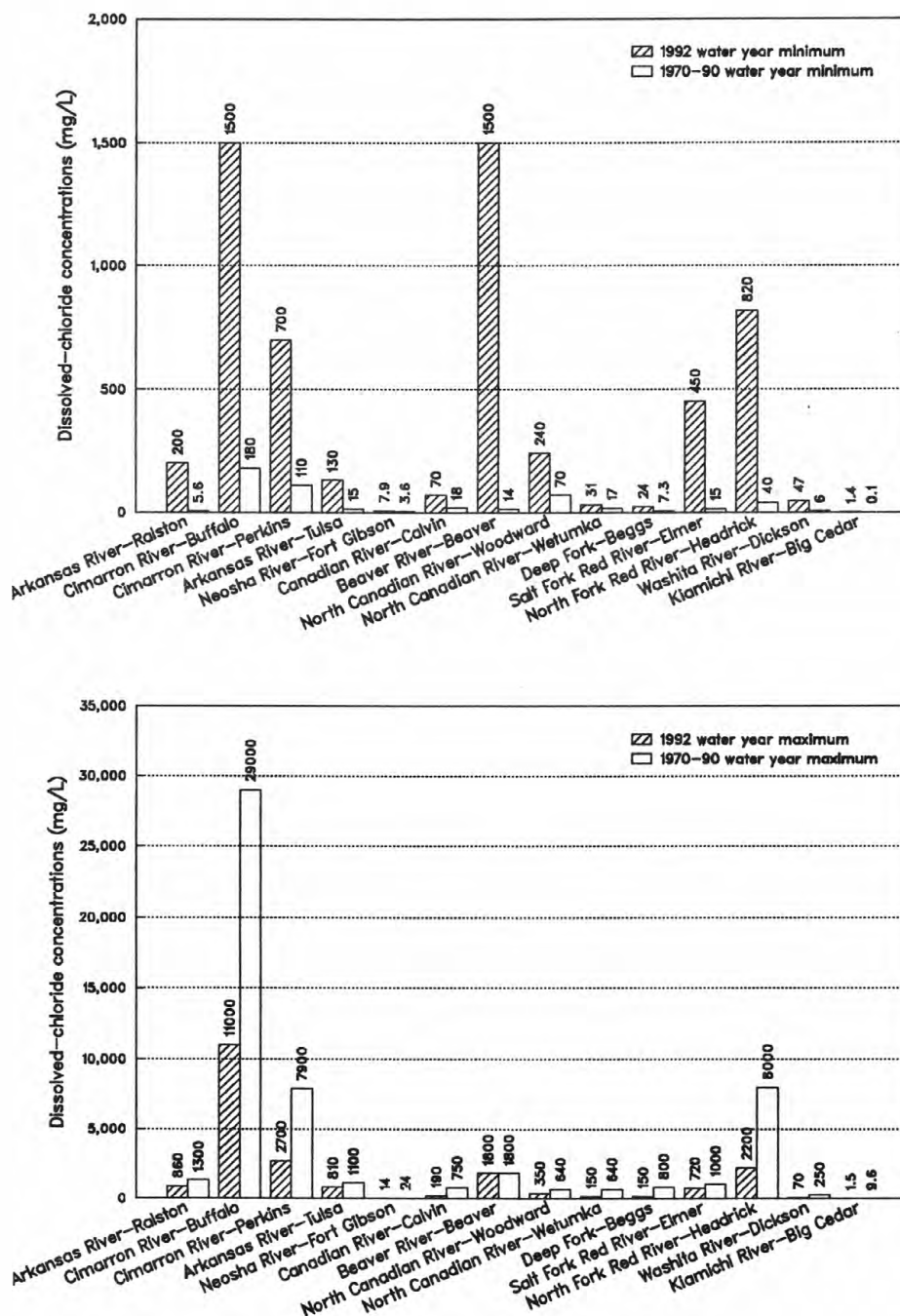


Figure 11.—Comparisons of minimum and maximum dissolved-chloride concentrations, in milligrams per liter (mg/L), for water year 1992 and water years 1970-90.

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The maximum dissolved-sulfate concentration measured at the selected stations in 1992 was 1,600 mg/L in the Salt Fork

Red River near Elmer. Dissolved-sulfate concentrations, in mg/L, are shown in the following graphs:

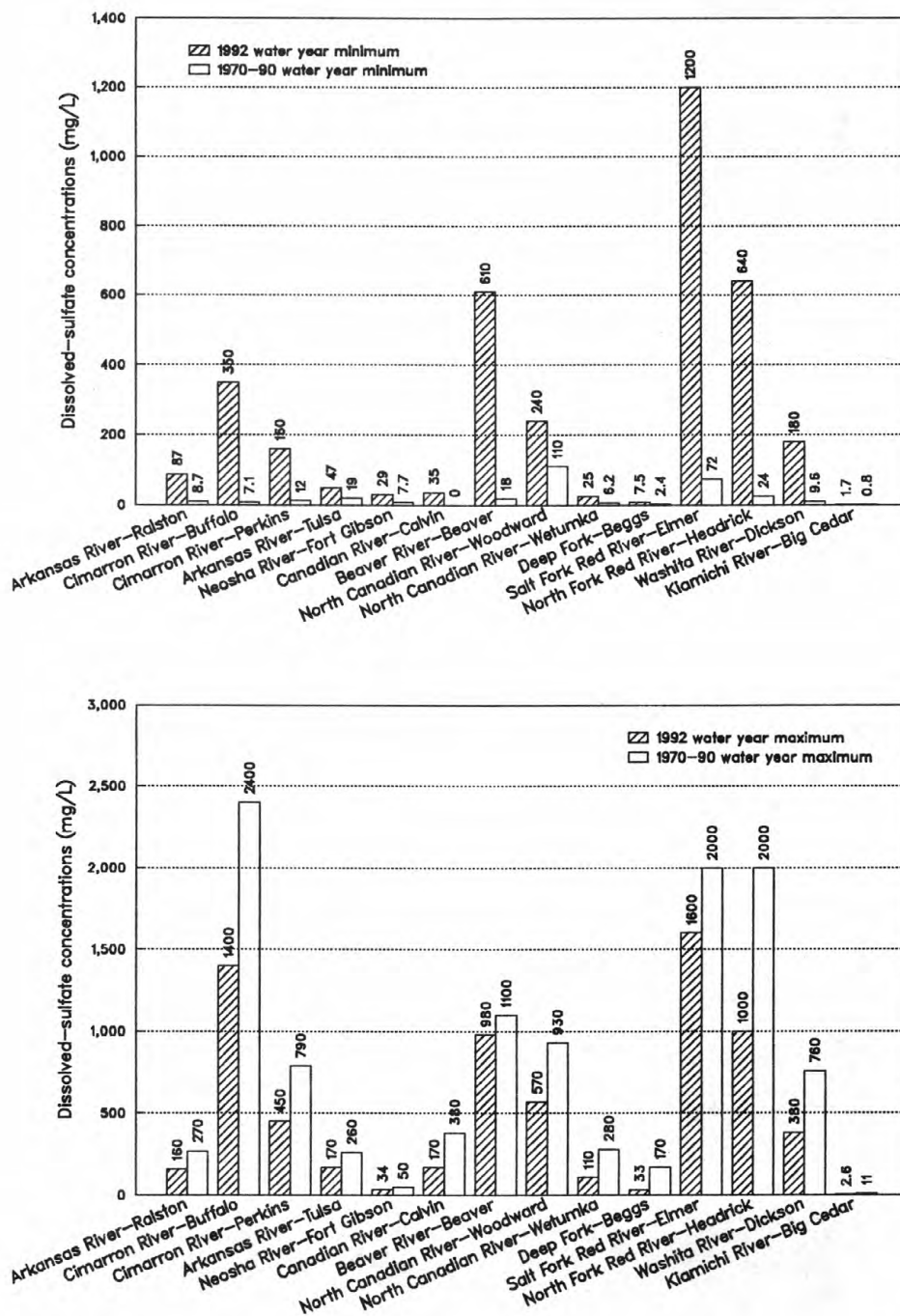


Figure 12.—Comparisons of minimum and maximum dissolved-sulfate concentrations, in milligrams per liter (mg/L), for water year 1992 and water years 1970-90.

The maximum suspended-sediment concentration measured at the selected stations in 1992 was 1,700 mg/L in the North Canadian River near

Wetumka. Suspended-sediment concentrations in mg/L, are shown in the following graphs:

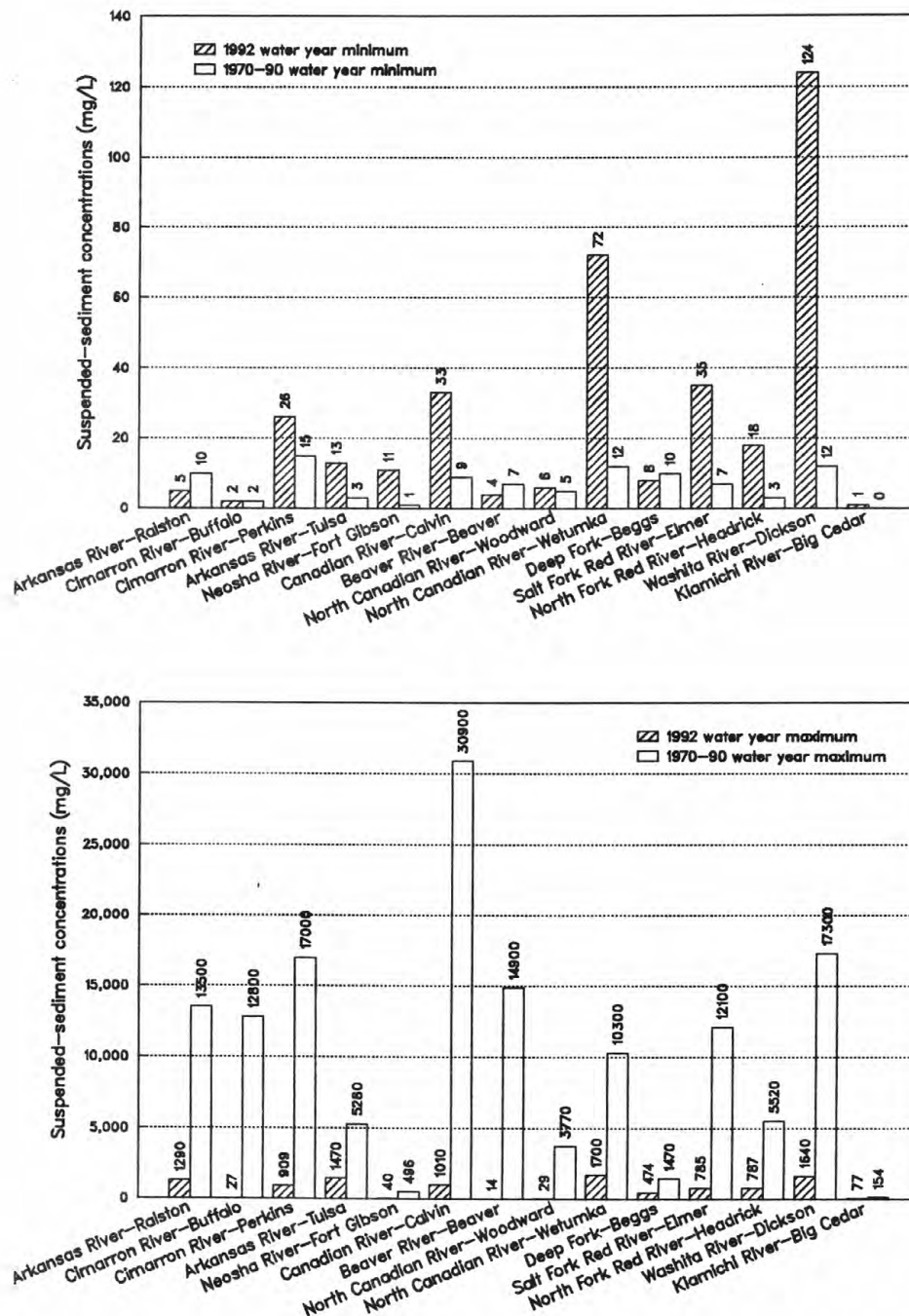


Figure 13.—Comparisons of minimum and maximum suspended-sediment concentrations, in milligrams per liter (mg/L), for water year 1992 and water years 1970-90.

Ground Water

Ground-water levels are measured annually at more than 900 sites statewide during January to March. An additional 28 sites are part of a network of sites visited quarterly, monthly, or that have continuous recorders.

Figures 14-18 show 3-year hydrographs for five of the continuous recorder sites throughout the State. The hydrograph of the Idabel GW Well (McCurtain County) (fig. 14) is representative of seasonal variations in water levels in a shallow well in an irrigated area.

The hydrographs of the Texhoma GW Well (Texas County) (fig. 15) and the Sharon GW well (Woodward County) (fig. 16) are indicative of the long-term decline of water levels in the

Ogallala aquifer. The Texhoma well recorded a new low water level of record. The Sharon well has averaged a water-level decline of nearly one foot per year for the last three years.

Conversely, the Taloga GW well (Dewey County) (fig. 17) hydrograph shows recovering water levels in the Rush Springs aquifer at the rate of nearly one foot per year for the last three years. The Taloga well recorded a new highest water level of record.

The hydrograph for the Fittstown GW well (Pontotoc County) (fig. 18) indicates water levels that respond rapidly to precipitation and slowly recede. Water levels are elevated after above-normal precipitation in this area for the past two years

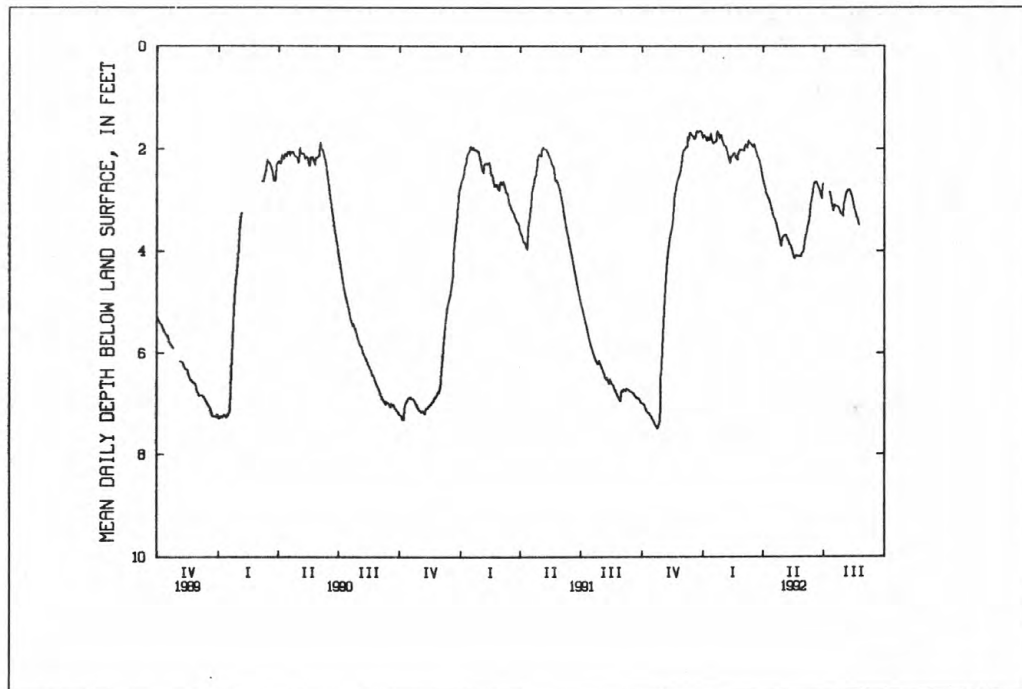


Figure 14.—Hydrograph for well 08S-24E-01 BBD 1 (Idabel GW Well, 335337094451101) for water year 1990-92.

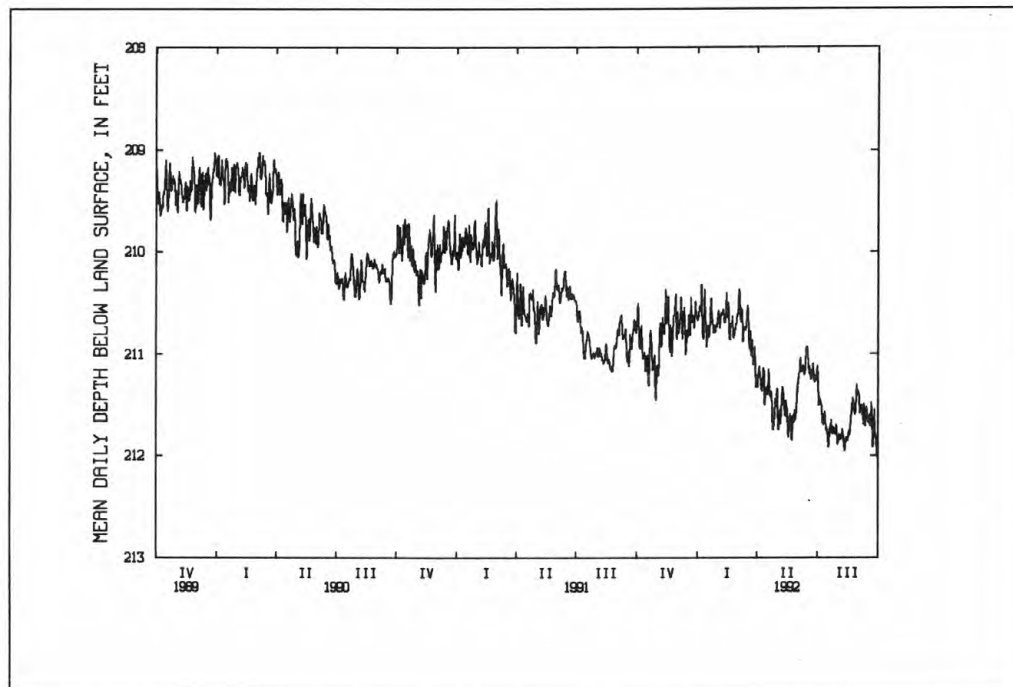


Figure 15.—Hydrograph for well 01N-12E-35 BDD 1 (Texhoma GW Well, 363033101440701) for water years 1990-91.

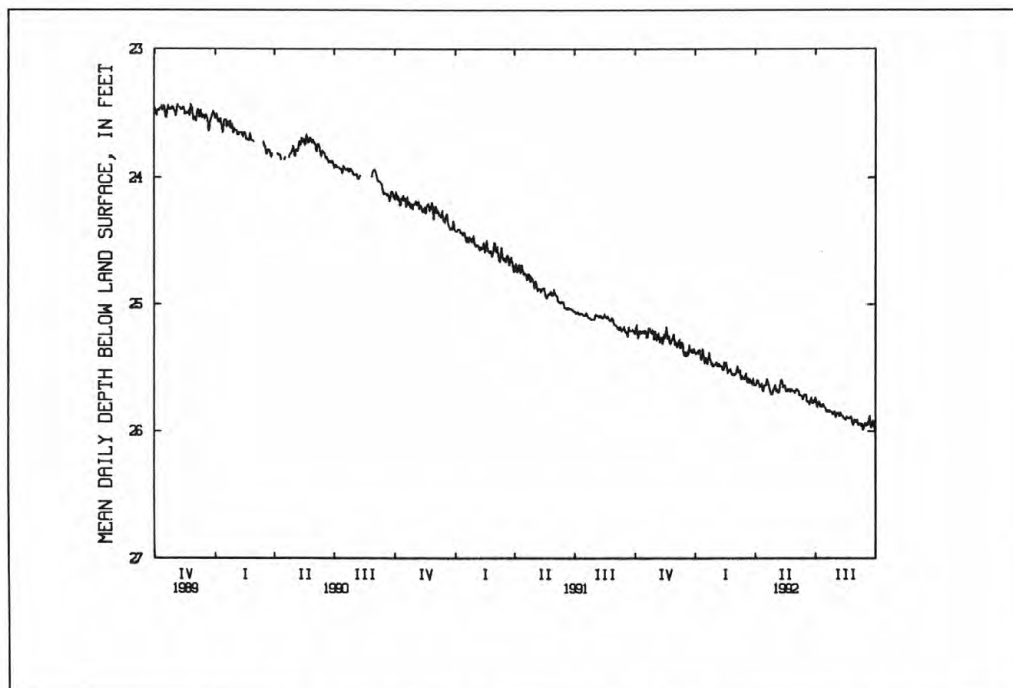


Figure 16.—Hydrograph for well 21N-22W-23 BBB 1 (Sharon GW Well, 361714099315101) for water years 1990-92.

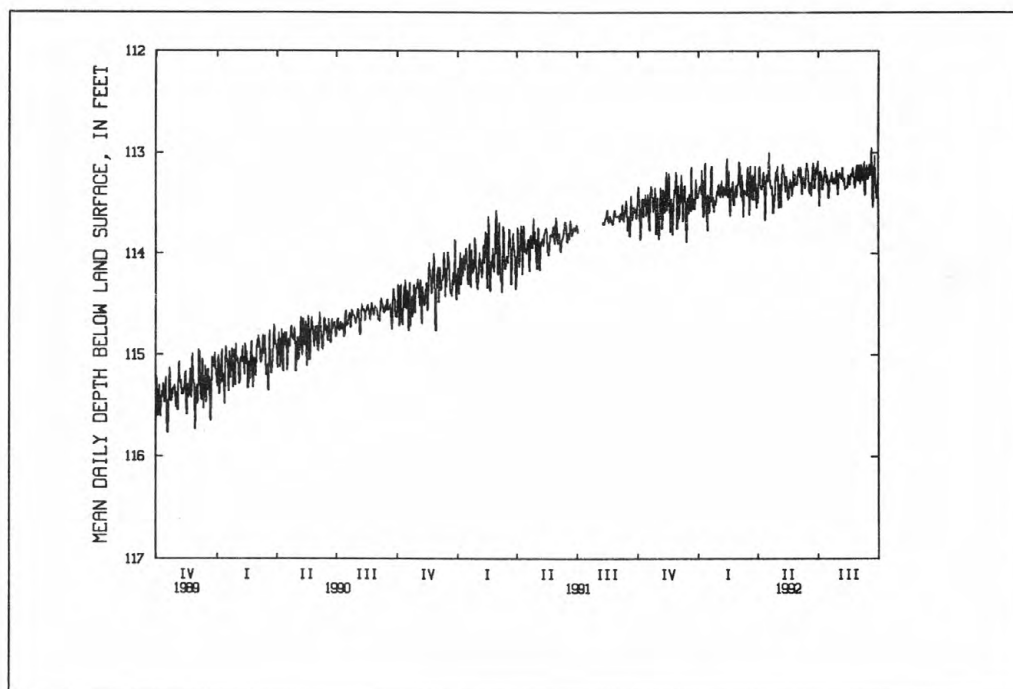
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Figure 17.—Hydrograph for well 17N-16W-02 ACB 1 (Taloga GW Well, 355850098522701) for water years 1990-92.

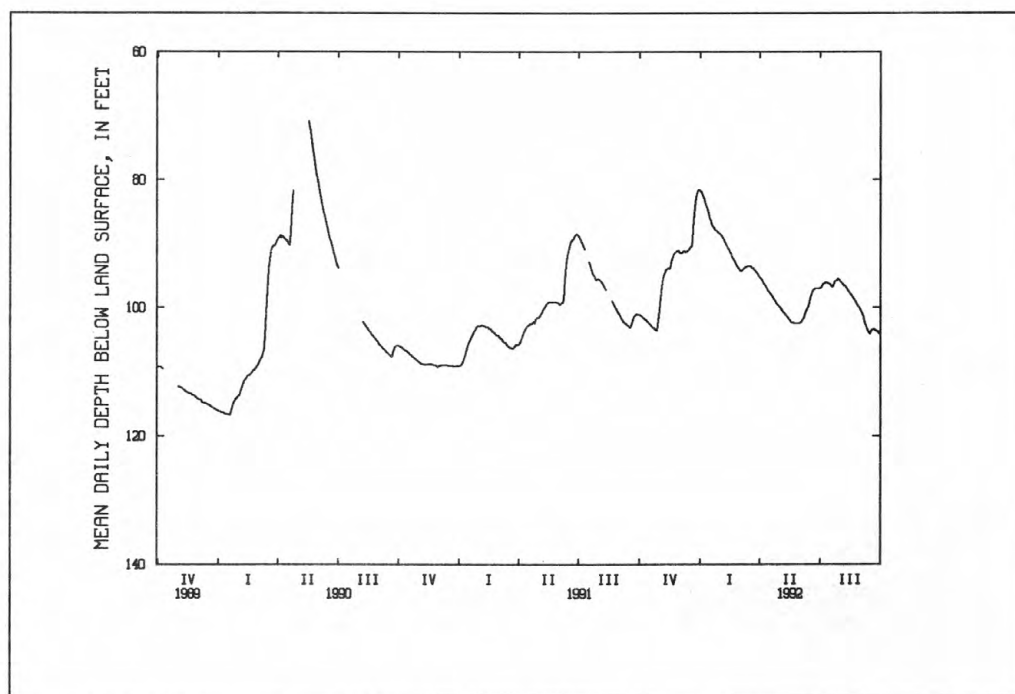


Figure 18.—Hydrograph for well 01N-06E-04 CAD 1 (Fittstown GW Well, 343457096404501) for water years 1990-92.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 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.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for the 1992 water year that began Oct. 1, 1991, and ended Sept. 30, 1992. 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 water levels for ground water. The locations of the stations where the data were collected are shown in figures 19-22. 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

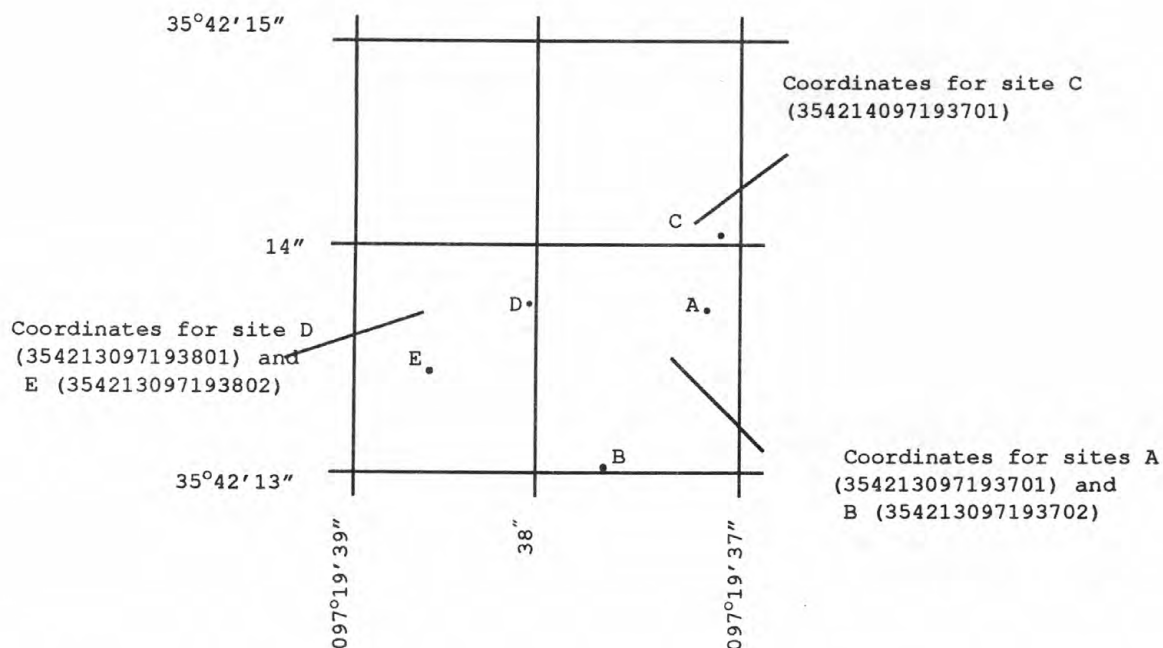
Each data station in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water wells 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 Oklahoma, for surface-water stations where only miscellaneous measurements are made.

Downstream Order System

Since Oct. 1, 1950, the order of listing hydrologic-station records in Survey 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 indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation 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

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System for numbering miscellaneous and ground-water sites (latitude and longitude)

consecutive. The complete eight-digit number for each station, such as 07152500, which appears just to the left of the station name, includes the two-digit Part number "07" plus the six-digit downstream-order number "152500." The Part number designates the major river basin; for example, part "07" is the Lower Mississippi 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 sites within a 1-second grid. This site-identification number, once assigned, is a pure number, and has no locational significance. In instances 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. (See figure above.)

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 discharge may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content 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." Location of all complete-record, crest-stage partial-record, and low-flow partial-record stations for which data are given in this report are shown in figures 19, 21.

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 relationships between stage and discharge. These data, together with supple-

mental 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 relationship between stage and lake content. 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 or with electronic data loggers. Measurements of discharge are made with current meters using methods adapted by the Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. It is necessary to define extremes of discharge outside the range of the 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-dams 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 the 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 relations that daily mean discharges must be estimated

from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations the stage-discharge relation is affected by the 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 from surveys, curves or tables defining the relationship of stage and content. 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 relationship changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relationship. Even when this is done, the contents computed may become increasingly in error as time since the last survey increases. Discharges over lake or reservoir spillways are computed from stage-discharge relationships much 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 happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various 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 basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information.

Data Presentation

Streamflow data in this report are presented in a new format that is considerably different from the format in data reports prior to the 1992 water year. The major changes are that statistical charac-

teristics 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 program to reformat the annual water-data report to most current user needs and data preferences.

The records published for each continuous-record surface-water discharge station (gaging station) now consist of five 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; 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; and a hydrograph

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. River mileages, given for only a few stations, were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

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.--This indicates 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 that the present station was not, 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 National Geodetic Vertical Datum of 1929 (see glossary), 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 will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily discharge table. (See next section, "Identifying Estimated Discharge.") If a REMARKS paragraph 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, and to conditions that affect natural flow at the station. In addition, information may be presented pertaining to average discharge data for the period of record; to extremes data for the period or record and the current year; 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 Geological Survey by a cooperating organization are identified here.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning 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 U.S. Geological Survey.

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 District Office 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 stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

Headings for AVERAGE DISCHARGE, EXTREMES FOR PERIOD OF RECORD, AND EXTREMES FOR CURRENT YEAR have been deleted and the information contained in these paragraphs, except for the listing of secondary instantaneous peak discharges in the PEAK DISCHARGES FOR CURRENT YEAR paragraph, is now presented in the tabular summaries following the discharge table or in the REMARKS paragraph, as appropriate. No changes have been made to the data presentations of lake contents.

Data Table of Daily Mean Values

The daily table of discharge records for stream-gaging stations gives mean discharge for each day of the water year. In the monthly summary for the table, the line headed "TOTAL" gives the sum of the daily figures for each month; the line headed "MEAN" gives the average flow in cubic feet per second for the month; and the lines headed "MAX" and "MIN" give the maximum and minimum daily mean discharges, respectively, for each 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 or in acre-feet may be omitted if there is extensive regulation or diversion or if

the drainage area includes large noncontributing areas. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversion data 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. It will consist of all of 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.

Summary Statistics

A table titled "SUMMARY STATISTICS" follows the statistics of monthly mean data tabulation. This table consists of four columns with the first column containing 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 year, 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.

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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. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because 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 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 to 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 footnote.

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. Note that most low-flow frequency analysis

of annual 7-day minimum flows use a climatic year (April 1-March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

INSTANTANEOUS PEAK FLOW.--The maximum instantaneous discharge occurring for the water year or for the designated period. Note that secondary instantaneous peak discharges above a selected base discharge are stored in District computer files for stations meeting certain criteria. Those discharge values may be obtained by writing to the District Office. (See address on back of title page of this report.)

INSTANTANEOUS PEAK STAGE.--The maximum instantaneous stage occurring for the water year or for the designated period. If the dates of occurrence for the instantaneous peak flow and instantaneous peak stage differ, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.--The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF (AC-FT).--Indicates the depth, in acre-feet, to which the drainage area would be covered if all the runoff for the year were uniformly distributed on it.

ANNUAL RUNOFF (CFSM).--Indicates 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.

ANNUAL RUNOFF (INCHES).--Indicates the depth to which the drainage area would be covered if all the runoff for the year were uniformly distributed on it.

10 PERCENT EXCEEDS.--The discharge that is exceeded by 10 percent of the flow for the designated period.

50 PERCENT EXCEEDS.--The discharge that is exceeded by 50 percent of the flow for the designated period.

90 PERCENT EXCEEDS.--The discharge that is exceeded by 90 percent of the flow for the designated period.

Hydrograph

A hydrograph for the current year follows the table for most stations. Stream-

flow hydrographs are semi-log plot of mean daily values with no flow days showing as blanks. Lake hydrographs are rectangular plot of 2400-hour readings.

Data collected at partial-record stations follow the information for continuous-record sites. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. 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 miscellaneous sites.

Identifying Estimated 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 a 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 for values less than 1 ft³/s; to the nearest tenth between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures for more than 1,000 ft³/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 (NAW-DEX), U.S. Geological Survey, Reston, VA 22092, maintains an index of these sites as well as an index of records of discharge collected by other agencies but not published by the Geological Survey. Information on records at specific sites can be obtained from that office upon request.

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables are on file in the Oklahoma District office. Also, most of the daily mean discharges are in computer-readable form.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly 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 continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be once 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 figure 20.

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 sequence. 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.

On-site Measurements and Sample Collection

In obtaining water-quality data, a major concern needs to be assuring 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, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be 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 given in publications on "Techniques of Water-Resources Investigations," Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. All of these references are listed in this report. Also, detailed information on collecting, treating, and shipping samples may be obtained from the Geological Survey District Office.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water dis-

charge, depending on the source of material and the 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 which must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, 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, minimum, and mean values for each constituent measured and are based upon 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 U.S. Geological Survey District Office whose address is given on the back of the title page of this report.

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements 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 follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

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 a coefficient applied to determine the mean concentration in the cross sections.

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 observations, 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.

Laboratory Measurements

Sediment samples, samples for biochemical-oxygen (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the Geological Survey laboratories in Arvada, Colo. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey laboratories are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

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. Sulfate values in this report have not been corrected for this bias.

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 so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, and water temperature then follow in sequence.

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 parameters individually.

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 Geological Survey 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 both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's 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 U.S. Geological Survey 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	REMARK
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (nonideal colony count)
L	Biological organism count less than 0.5 percent (organisms may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

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 and 100's of nanograms per liter (ng/L). Present 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 U.S. Geological Survey will begin using new trace-element protocols in the near future.

Records of Ground-Water Levels

Only water-level data from a national network of observation wells are given in this report. These data are intended to provide a sampling and historical record of water-level changes in the Nation's most important aquifers. Locations of the observation wells in this network in Oklahoma are shown in figure 22.

Although, in this report, records of water levels are presented for fewer than 100 wells, records are obtained through cooperative efforts of many Federal, State, and local agencies for several hundred observation wells throughout Oklahoma and are placed in computer storage. Information about the availability of the data in the water-level file may be obtained from the District chief, Oklahoma District. (See address on back of front page.)

Data Collection and Computation

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability. Tables of water-level data are presented by counties arranged in alphabetical order. The prime identification number for a given well is the 15-digit number that appears in the upper left corner of the table. The secondary identification number is the local well number, an alphanumeric number, derived from the township-range location of the well.

Water-level records are obtained from direct measurements with a steel tape or punched tape of the water-stage recorder. The 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. If known, the elevation of the land-surface datum is given in each well description.

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error of determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reported to a

hundredth of a foot, but some are given to a tenth of a foot or a larger unit.

Data Presentation

Each well record consists of two parts, the station description and the data table of mean daily water levels observed during the water year. The description of the well is presented first through use of descriptive headings preceding the tabular data. The comments to follow clarify information presented under the various headings.

LOCATION.--This paragraph follows the well-identification number and reports the latitude and longitude (given in degrees, minutes, and seconds); the hydrologic-unit number; the distance and direction from a geographic point of reference.

AQUIFER.--This entry designates by name the aquifer(s) open to the well.

WELL CHARACTERISTICS.--This entry describes the well in terms of depth, diameter, method of construction, use, and additional information such as casing breaks, collapsed screen, and other changes since construction.

DATUM.--This entry describes both the measuring point and the land-surface elevation at the well. The measuring point is described physically (such as top of collar, notch in top of casing, plug in pump base and so on), and in relation to land surface (such as 1.3 ft above land-surface datum). The elevation of the land-surface datum is described in feet above (or below) National Geodetic Vertical Datum of 1929 (NGVD of 1929); it is reported with a precision depending on the method determination.

REMARKS.--This entry describes factors that may influence the water level in a well or the measurement of the water level. It is used to acknowledge the assistance of local (non-Survey) observers.

PERIOD OF RECORD.--This entry indicates the period for which there are published records for the well. It reports the year of the start of publication of water-level records by the U.S. Geological Survey and the words "to current year" if the records are to be continued into the following year. Periods for which water-level records are available, but are not published by the Geological Survey, may be noted.

EXTREMES FOR PERIOD OF RECORD.--This entry contains the highest and lowest levels of the period of published record, with respect to land-surface datum, and the dates of their occurrence.

An abbreviated table of mean daily water levels follows the station description for each well equipped with a digital recorder. For wells with no recorder, actual measurements are listed. Water levels are reported in feet below land-surface datum. A rectangular hydrograph of mean daily water levels for the last three years follows the table for recorder wells. Because all values are not published for wells with recorders, the extremes may be values that are not listed in the table. Missing records are indicated by blanks in place of the water level.

ACCESS TO WATSTORE DATA

The U.S. Geological Survey 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 Geological Survey'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 U.S. Geological Survey 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 U.S. Geological Survey 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 U.S. Geological Survey collects or has collected data.
- * Daily Values 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 radio-chemical characteristics of both surface 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 include site location, geohydrologic characteristics, well-construction history, and one-time field measurements such as water temperature.

In 1976, the U.S. Geological Survey 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 requestor will be expected to pay all computer costs he/she incurs. Direct access may be obtained by contacting:

U.S. Geological Survey
National Water Data Exchange
421 USGS National Center
Reston, Virginia 22092

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 disc; and as noted in the introduction, on CD-ROM discs. Beginning with the 1990 water year, all water-data reports also will 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 the back of the title page.) A limited number of CD-ROM discs will be available for sale by the Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225.

DEFINITIONS OF TERMS

Terms related to streamflow, water-

quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English 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 equal 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.

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.

Aroclor is the registered trade mark for a group of polychlorinated biphenyls which were manufactured by the Monsanto Company prior to 1976. Aroclors are assigned specific four-digit reference numbers dependent upon molecular type and degree of substitution of the biphenyl ring hydrogen atoms by chlorine atoms. The first two digits of a numbered aroclor represent the molecular type and the last two digits represent the weight percent of the hydrogen substituted chlorine.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by the 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, often clumped into colonies. Some bacteria cause disease, while 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.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. 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 intestine 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 $44.5^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$ 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 also in the intestine of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as Gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at $35^{\circ}\text{C} \pm 1.0^{\circ}\text{C}$ on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number 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 microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area of 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 (g/m^3), and periphyton and benthic organisms in grams per square meter (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 sedi-

ment, 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 and dry mass.

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

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually 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 natural water color 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 green pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloro-platinate 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.

Cubic foot per second (ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic feet per second per square mile

[$\text{ft}^3/\text{s}/\text{mi}^2$] or 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.

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.

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 which passes through a 0.45 μm 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 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.

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 herein 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 a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

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 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 (CaCO_3).

HWM is a high-water mark or flood mark.

Hydrologic Benchmark Network is a network of 57 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 of 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 ($\mu\text{g/g}$) 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 ($\mu\text{g/L}$, $\mu\text{g/L}$) 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.

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. Concentrations of suspended sediment also is expressed in mg/L and is based on the mass of dry sediment per liter of water-sediment mixture.

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 both 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 or Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per unit area habitat, usually square meter (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 enumer-

ated 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 U.S. Geological Survey computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The 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:

<u>Classifi-</u> <u>cation</u>	<u>Size (mm)</u>	<u>Method of</u> <u>analysis</u>
Clay.....	0.00024 - 0.004	Sedimentation
Silt.....	.004 - .062	Sedimentation
Sand.....	.062 - 2.0	Sedimenta- tion or sieve
Gravel....	2.0 - 64.0	Sieve

The particle-size distribution 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 native-water analysis.

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 upon submerged solid surfaces. While primarily consisting of algae, they 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.

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

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 are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent 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 upon 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 algae 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.

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 release (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [mg C/(m².time)] for periphyton and macrophytes and [mg C/(m³.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 [mg O/(m².time)] for periphyton and macrophytes and [mg O/(m³.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.

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 are likely to produce different analytical results.

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also 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.

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 and very close to it. 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 (mg/L).

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 (mg/L) x discharge (ft^3/s) x 0.0027.

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

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 which 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 which can be used for irrigation on almost all soils to those which are generally 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 solution and can be used for approximating the dissolved-solids content 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 it may vary in the same source with changes in the composition of the water.

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 or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which 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 U.S. Geological Survey 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 planimetered. All areas shown are those for the stage when the planimetered 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. It is associated with the 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 μ m 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 μ m 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.....	<u>Hexagenia</u>
Species.....	<u>hexagenia limbata</u>

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-foot 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 both that the sample consists of a water-suspended sediment mixture and that the analytical method determines 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 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.

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period, Oct. 1 through Sept. 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending Sept. 30, 1986, is called the "1986 water year."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used as an abbreviation for "Water-Resources Data" in reports published

prior to 1976).

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations 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 references to previously published reports.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey 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. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by 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 "U.S. Geological Survey Techniques of Water-Resources Investigations."

- 1-D1. *Water temperature-influential factors, field measurement, and data presentation*, by H.H. Stevens, Jr., J.F. Ficken, and G.F. Smoot: USGS-TWRI Book 1, Chapter 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, Chapter D2. 1976. 24 pages.
- 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, Chapter D1. 1974. 116 pages.

- 2-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F.P. Haeni: USGS-TWRI Book 2, Chapter D2. 1988. 86 pages.
- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W.S. Keys and L.M. McCary: USGS-TWRI Book 2, Chapter E1. 1971. 126 pages.
- 2-E2. *Borehole geophysics applied to ground-water investigations*, by W.S. Keys: USGS-TWRI Book 2, Chapter E2. 1990. 150 pages.
- 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, Chapter F1. 1989. 97 pages.
- 3-A1. *General field and office procedures for indirect discharge measurements*, by M.A. Benson and Tate Dalrymple: USGS-TWRI Book 3, Chapter 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, Chapter A2. 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G.L. Bodhaine: USGS-TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H.F. Matthai: USGS-TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS-TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. *General procedure for gaging streams*, by R.W. Carter and Jacob Davidian: USGS-TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. *Stage measurements at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS-TWRI Book 3, Chapter A7. 1968. 28 pages.
- 3-A8. *Discharge measurements at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS-TWRI Book 3, Chapter 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, Chapter A9. 1989. 27 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E.J. Kennedy: USGS-TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. *Measurement of discharge by moving-boat method*, by G.F. Smoot and C.E. Novak: USGS-TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A12. *Fluorometric procedures for dye tracing*, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS-TWRI Book 3, Chapter A12. 1986. 41 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E.J. Kennedy: USGS-TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. *Use of flumes in measuring discharge*, by F.A. Kilpatrick and V.R. Schneider: USGS-TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS-TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-A16. *Measurement of discharge using tracers*, by F.A. Kilpatrick and E.D. Cobb: USGS-TWRI Book 3, Chapter A16. 1985. 52 pages.
- 3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS-TWRI Book 3, Chapter A17. 1985. 38 pages.
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- 3-A19. *Levels of streamflow gaging stations*, by E.J. Kennedy: USGS-TWRI Book 3, Chapter A19. 1990. 27 pages.
- 3-B1. *Aquifer-test design, observation, and data analysis*, by R.W. Stallman: USGS-TWRI Book 3, Chapter 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, Chapter 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, Chapter B3. 1980. 106 pages.
- 3-B4. *Regression modeling of ground-water flow*, by R.L. Cooley and R.L. Naff: USGS-TWRI Book 3, Chapter B4. 1990. 232 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, Chapter 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, Chapter 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, Chapter B7. 1992. 90 pages.
- 3-C1. *Fluvial sediment concepts*, by H.P. Guy: USGS-TWRI Book 3, Chapter 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, Chapter C2. 1970. 59 pages.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS-TWRI Book 3, Chapter C3. 1972. 66 pages.
- 4-A1. *Some statistical tools in hydrology*, by H.C. Riggs: USGS-TWRI Book 4, Chapter A1. 1968. 39 pages.
- 4-A2. *Frequency curves*, by H.C. Riggs: USGS-TWRI Book 4, Chapter A2. 1968. 15 pages.
- 4-B1. *Low-flow investigations*, by H.C. Riggs: USGS-TWRI Book 4, Chapter B1. 1972. 18 pages.
- 4-B2. *Storage analyses for water supply*, by H.C. Riggs and C.H. Hardison: USGS-TWRI Book 4, Chapter B2. 1973. 20 pages.
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- 5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M.J. Fishman and L.C. Friedman: USGS-TWRI Book 5, Chapter 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, Chapter 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, Chapter A3. 1987. 80 pages.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, by L.J. Britton and P.E. Greeson, editors: USGS-TWRI Book 5, Chapter 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, Chapter 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, Chapter A6. 1982. 181 pages.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H.P. Guy: USGS-TWRI Book 5, Chapter C1. 1969. 58 pages.
- 6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M.G. McDonald and A.W. Harbaugh: USGS-TWRI Book 6, Chapter 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, Chapter A2. 1991. 68 pages.
- 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, Chapter 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, Chapter 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, Chapter C3. 1981. 110 pages.
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- 8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J.D. Craig: USGS-TWRI Book 8, Chapter A2. 1983. 57 pages.
- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G.F. Smoot and C.E. Novak: USGS-TWRI Book 8, Chapter B2. 1968. 15 pages.

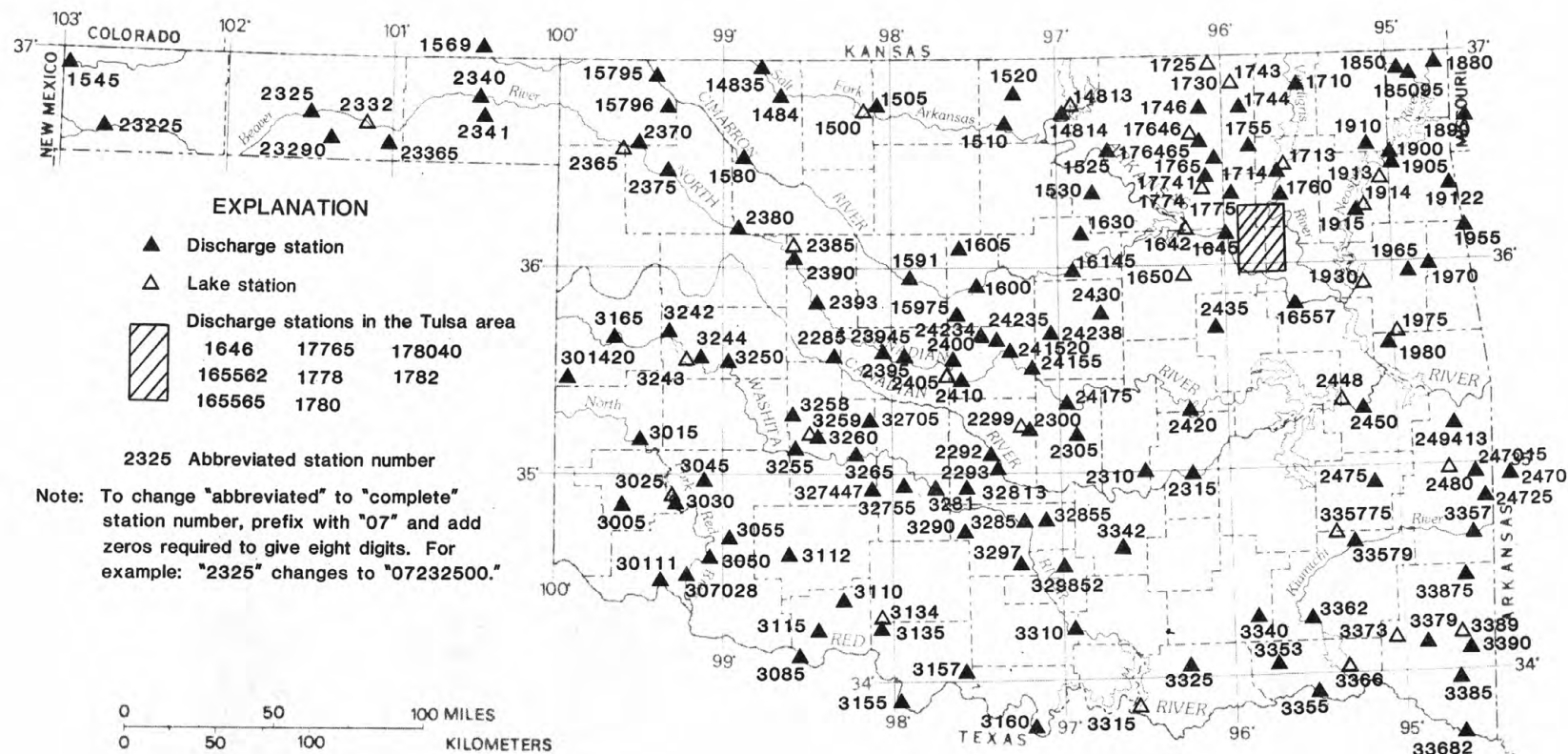


Figure 19.--Locations of continuous-record surface-water stations, water year 1992.

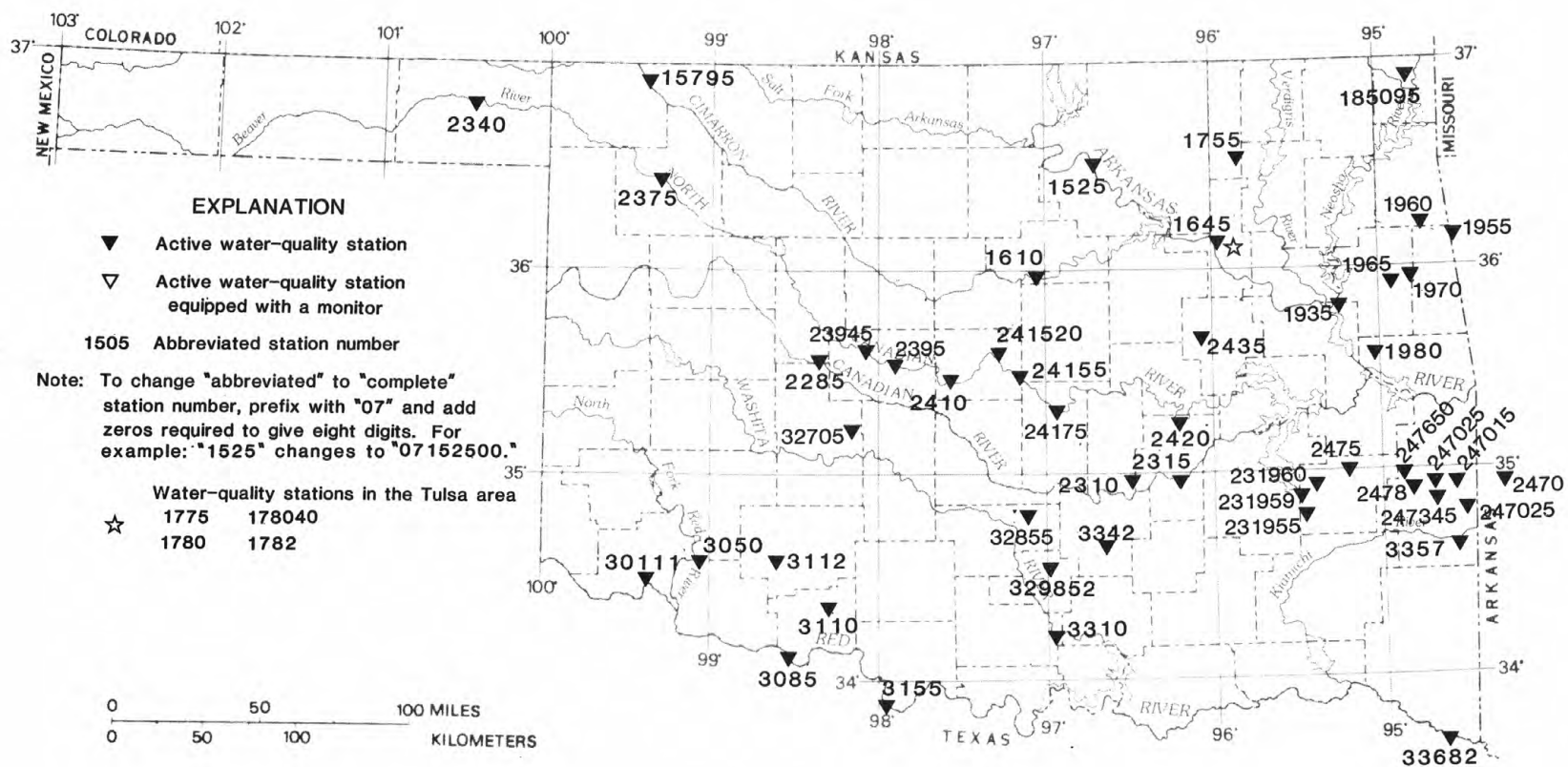


Figure 20.—Locations of water-quality stations, water year 1992.

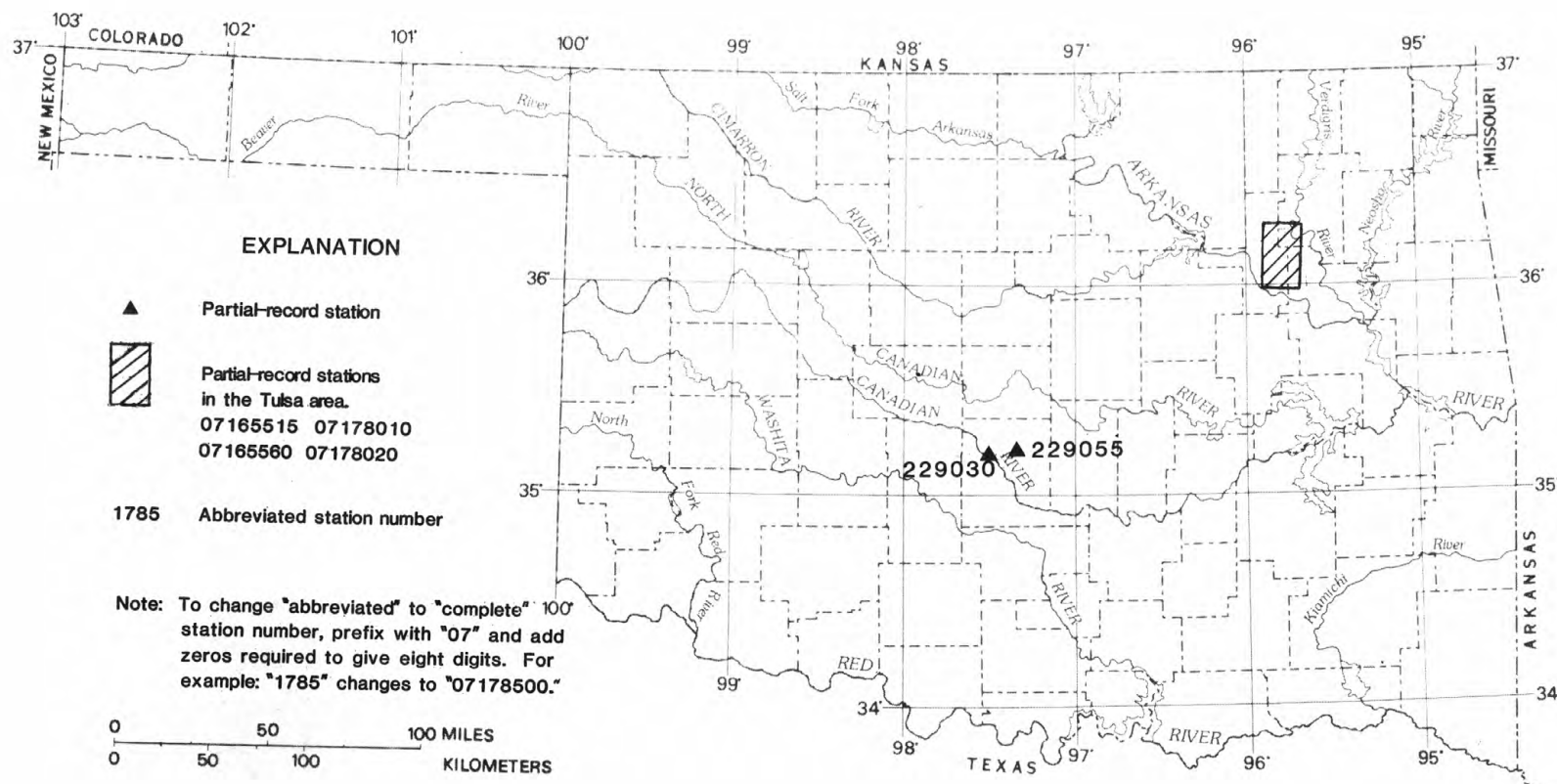


Figure 21.—Locations of partial-record stations, water year 1992.

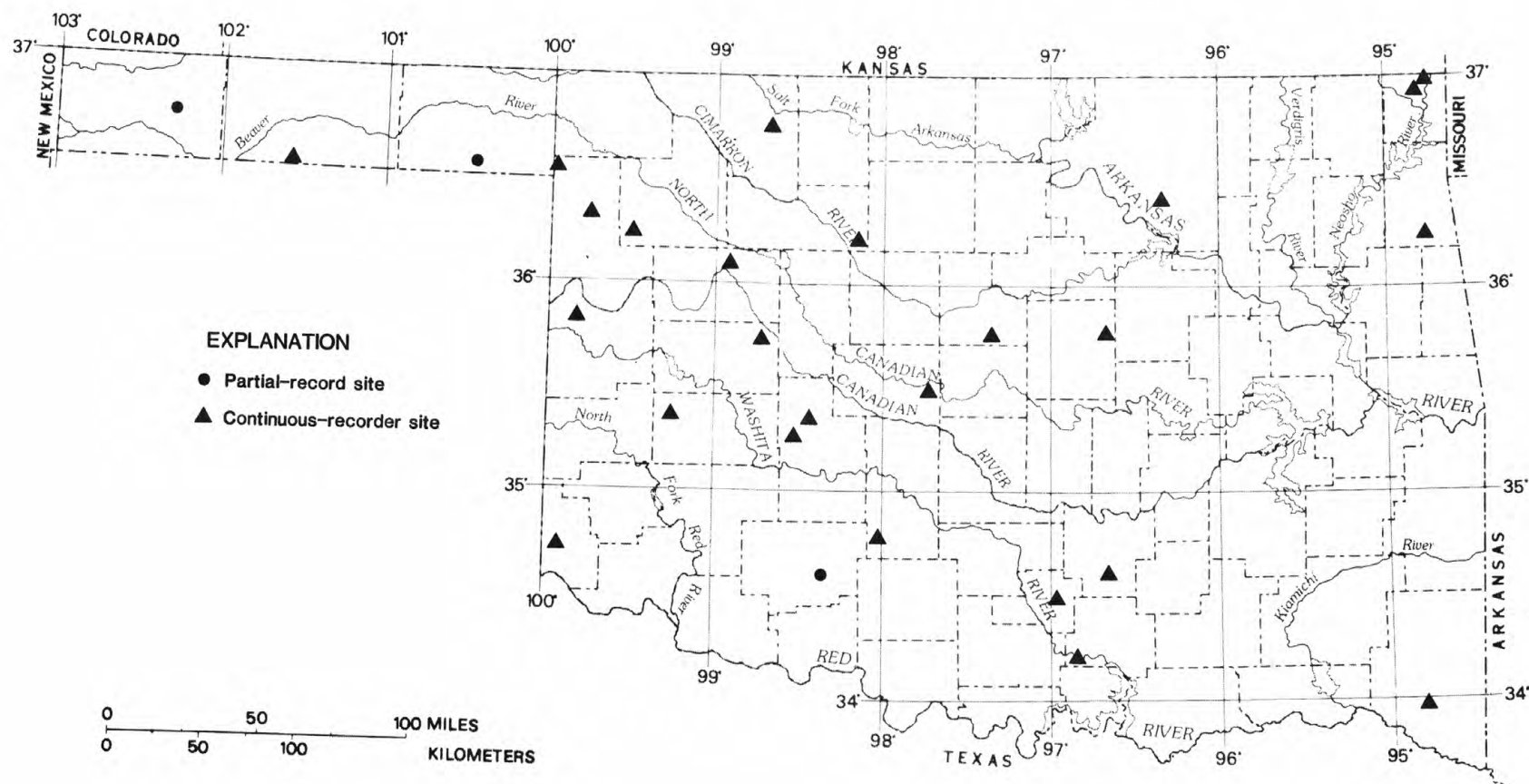


Figure 22.—Locations of network ground-water wells, water year 1992.

RED RIVER BASIN
07300500 SALT FORK RED RIVER AT MANGUM, OK

LOCATION.--Lat 34°51'30", long 99°30'30", in SW 1/4 SE 1/4 sec.34. T.5 N, R.22 W., Greer County, Hydrologic Unit 11120202, near left bank on downstream side of pier of bridge on State Highway 34, 0.5 mi south of Mangum, 13.0 mi downstream from Fish Creek, and at mile 35.5.

DRAINAGE AREA.--1,566 mi², of which 209 mi² is probably noncontributing.

PERIOD OF RECORD.--April 1905 to June 1906, October 1937 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area. WSP 1241: 1938.

GAGE.--Water-stage recorder. Datum of gage is 1,490.87 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Apr. 11, 1905 to June 30, 1906, nonrecording gage at site 0.2 mi upstream at different datum. Oct. 1, 1937 to Nov. 8, 1938, nonrecording gage at present site and datum.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
------	------	-----------------------------------	---------------------	------	------	-----------------------------------	---------------------

No peaks greater than base discharge.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	63	71	135	100	77	86	44	506	175	16	15
2	28	67	69	117	100	69	84	40	692	102	19	16
3	26	71	66	121	101	67	89	37	275	146	16	15
4	23	76	64	121	124	100	96	36	96	77	13	12
5	21	65	64	110	180	108	80	34	1380	50	11	10
6	20	60	65	103	160	134	73	32	2530	44	9.7	6.8
7	19	58	64	101	123	110	69	30	617	39	8.5	5.3
8	18	56	62	97	106	97	64	30	475	33	6.8	4.5
9	17	55	62	106	97	82	61	29	407	29	5.7	4.0
10	17	53	62	105	87	66	60	29	294	27	5.0	3.8
11	16	52	72	97	94	64	54	31	228	27	6.0	4.5
12	16	53	300	100	97	64	54	35	180	26	6.7	4.7
13	16	54	192	119	94	63	59	35	153	26	5.7	5.0
14	14	55	164	138	86	63	55	35	139	25	5.5	4.3
15	14	56	130	110	83	60	50	34	120	23	5.9	3.6
16	14	86	117	99	82	60	68	36	107	24	6.2	3.1
17	13	165	109	90	78	60	95	28	92	21	6.4	2.6
18	12	223	111	82	78	179	88	28	84	18	9.7	2.2
19	11	133	259	85	76	207	349	29	70	16	10	2.0
20	12	119	450	102	70	156	201	38	94	15	10	2.0
21	13	100	296	96	67	96	170	36	344	23	11	2.0
22	13	78	254	91	64	75	134	274	486	16	9.2	1.8
23	14	72	233	92	64	69	99	895	473	13	6.8	1.7
24	13	71	138	90	88	67	72	253	300	12	5.1	1.6
25	12	73	147	83	100	69	62	234	200	11	4.9	1.5
26	13	75	131	80	97	72	56	82	146	9.8	6.4	1.3
27	16	75	134	100	97	74	50	47	117	23	5.9	1.2
28	48	78	197	125	91	75	50	516	359	19	4.7	1.3
29	62	77	186	174	84	75	50	475	670	27	4.0	1.3
30	56	71	157	146	---	97	48	164	434	21	3.6	1.3
31	73	---	148	117	---	87	---	114	---	19	8.8	---
TOTAL	691	2390	4574	3332	2768	2742	2626	3760	12068	1136.8	253.2	141.4
MEAN	22.3	79.7	148	107	95.4	88.5	87.5	121	402	36.7	8.17	4.71
MAX	73	223	450	174	180	207	349	895	2530	175	19	16
MIN	11	52	62	80	64	60	48	28	70	9.8	3.6	1.2
AC-FT	1370	4740	9070	6610	5490	5440	5210	7460	23940	2250	502	280

RED RIVER BASIN
07300500 SALT FORK RED RIVER AT MANGUM, OK--Continued

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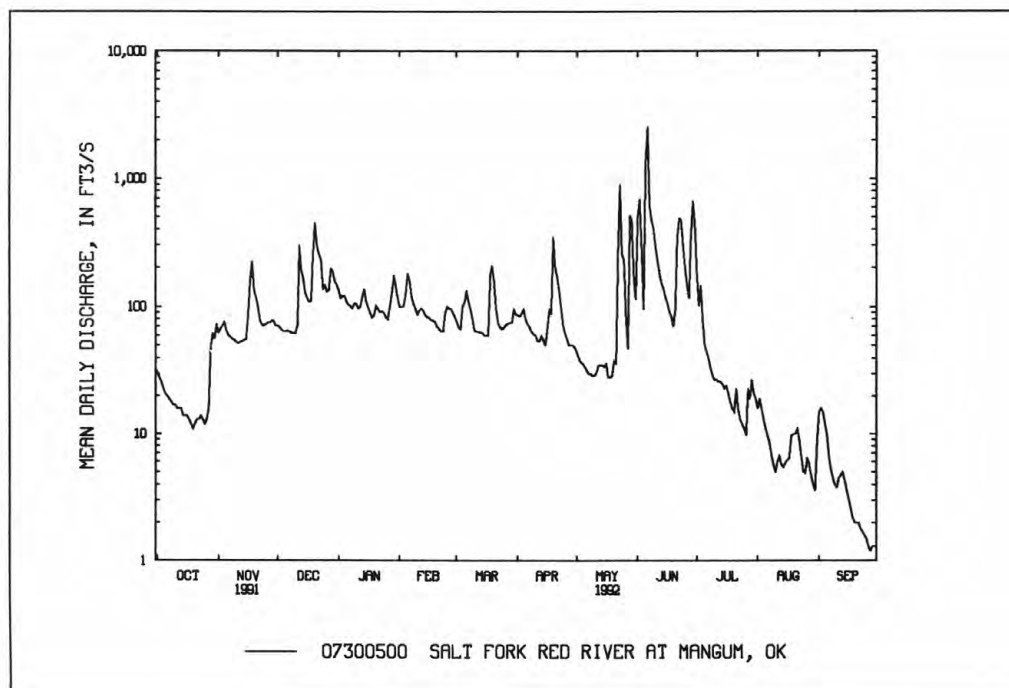
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	81.8	27.7	34.5	44.5	50.9	47.5	85.3	275	241	57.0	31.9	45.6
MAX	919	196	148	199	196	183	490	1389	1602	575	301	315
(WY)	1961	1987	1992	1960	1949	1969	1973	1957	1941	1953	1968	1986
MIN	.000	.000	.000	.000	.000	.12	.000	.000	.000	.000	.000	.000
(WY)	1941	1940	1940	1940	1953	1971	1955	1953	1952	1963	1943	1939

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1938-92

ANNUAL TOTAL	28432.01	36482.4	
ANNUAL MEAN	77.9	99.7	85.3
HIGHEST ANNUAL MEAN			277 1941
LOWEST ANNUAL MEAN			12.3 1940
HIGHEST DAILY MEAN	2800	Jun 7	2530 Jun 6 22600 May 28 1978
LOWEST DAILY MEAN	.26	Aug 28	1.2 Sep 27 ^a .00 Oct 2 1937
ANNUAL SEVEN-DAY MINIMUM	.34	Aug 27	1.4 Sep 24 .00 Aug 14 1938
INSTANTANEOUS PEAK FLOW			4280 Jun 5 72000 May 16 1957
INSTANTANEOUS PEAK STAGE			8.09 Jun 5 14.70 Jun 16 1938
ANNUAL RUNOFF (AC-FT)	56390	72360	61780
10 PERCENT EXCEEDS	163	188	118
50 PERCENT EXCEEDS	34	66	15
90 PERCENT EXCEEDS	4.3	6.1	.00

^aNo flow at times in most years.



RED RIVER BASIN
07301110 SALT FORK RED RIVER NEAR ELMER, OK

LOCATION.--Lat 34°28'44", long 99°22'55", in NW 1/4 NE 1/4 sec.15, T.1 S., R.21 W., Jackson County, Hydrologic Unit

11120202, on right bank at bridge on State Highway 5, 1.7 mi west of Elmer, and at mile 3.5.

DRAINAGE AREA.--1,878 mi², of which 209 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,258.55 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Low flows sustained at times by cotton irrigation.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
------	------	-----------------------------------	---------------------	------	------	-----------------------------------	---------------------

No peaks above base discharge.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	218	136	317	288	e210	234	89	1490	744	200	523
2	71	132	136	296	261	e180	209	80	2890	455	280	475
3	67	103	138	269	272	e250	208	60	1250	302	157	231
4	65	101	136	257	657	e200	202	64	823	312	89	151
5	60	119	136	246	491	185	210	64	650	311	75	115
6	58	118	153	231	e300	241	188	61	4690	173	68	104
7	57	105	162	220	e250	245	164	59	4250	120	89	98
8	58	93	148	212	e220	208	139	55	2120	108	103	88
9	59	87	144	190	e202	155	128	50	2810	76	102	78
10	53	85	142	193	e188	124	123	48	1220	63	98	75
11	49	82	164	208	178	104	118	213	524	58	170	102
12	46	82	611	198	e166	96	102	203	313	75	285	93
13	46	86	987	309	e170	89	103	82	231	110	165	74
14	41	98	455	462	e168	86	101	76	185	175	94	66
15	42	104	338	e250	e170	86	106	95	154	189	76	71
16	40	147	280	203	e160	86	120	74	148	281	101	73
17	40	275	234	192	e150	93	1930	64	141	327	86	48
18	42	327	212	171	e146	148	774	69	115	203	108	64
19	34	365	1000	148	e148	451	778	64	228	213	134	94
20	35	267	3820	143	e150	375	1040	82	320	131	132	100
21	38	226	4320	170	e140	324	760	119	415	95	97	93
22	40	190	1970	167	e133	215	595	133	388	433	100	73
23	44	163	2080	151	e170	149	505	534	635	140	88	78
24	44	148	1010	141	e250	127	e450	829	561	114	89	79
25	40	136	524	134	e280	115	e300	621	430	105	92	45
26	47	136	400	129	e275	113	e200	545	292	115	1940	49
27	49	133	365	159	e270	121	e120	387	202	141	1880	46
28	452	132	369	225	e278	132	105	1220	1060	203	596	47
29	229	136	420	279	e240	136	96	2490	3100	226	151	66
30	91	136	391	334	---	141	92	923	1280	181	104	45
31	151	---	339	320	---	176	---	559	---	234	153	---
TOTAL	2259	4530	21720	6924	6771	5361	10200	10012	32915	6413	7902	3344
MEAN	72.9	151	701	223	233	173	340	323	1097	207	255	111
MAX	452	365	4320	462	657	451	1930	2490	4690	744	1940	523
MIN	34	82	136	129	133	86	92	48	115	58	68	45
AC-FT	4480	8990	43080	13730	13430	10630	20230	19860	65290	12720	15670	6630

e Estimated

RED RIVER BASIN

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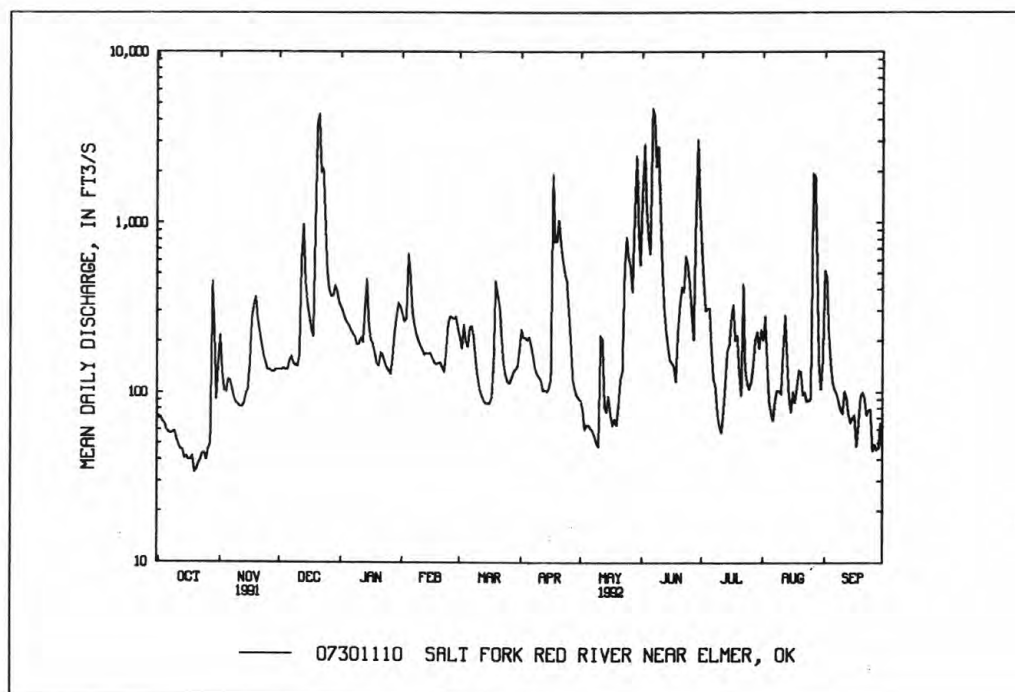
07301110 SALT FORK RED RIVER NEAR ELMER, OK--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	332	118	124	116	125	162	179	606	700	119	132	167
MAX	1828	680	701	314	520	423	454	2566	2391	297	413	950
(WY)	1987	1987	1992	1987	1987	1988	1985	1980	1991	1990	1990	1986
MIN	3.79	4.72	16.5	13.3	13.7	21.1	13.9	7.51	117	9.25	4.19	7.90
(WY)	1985	1985	1983	1981	1981	1982	1982	1984	1988	1981	1981	1981

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1980-92

ANNUAL TOTAL	151838	118351	
ANNUAL MEAN	416	323	240
HIGHEST ANNUAL MEAN			591 1987
LOWEST ANNUAL MEAN			71.2 1983
HIGHEST DAILY MEAN	16600	Jun 3 4690	Jun 6 21100 Oct 20 1983
LOWEST DAILY MEAN	20	Apr 21 34	Oct 19 .08 Sep 4 1981
ANNUAL SEVEN-DAY MINIMUM	23	Apr 17 38	Oct 16 .12 Aug 30 1981
INSTANTANEOUS PEAK FLOW		5530	Jun 7 44900 Oct 20 1983
INSTANTANEOUS PEAK STAGE		7.18	Jun 7 ^a 16.06 May 29 1987
ANNUAL RUNOFF (AC-FT)	301200	234700	174100
10 PERCENT EXCEEDS	500	600	415
50 PERCENT EXCEEDS	90	151	71
90 PERCENT EXCEEDS	45	62	9.6

^aFrom high water mark.

RED RIVER BASIN

07301110 SALT FORK RED RIVER NEAR ELMER, OK--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1978 to January 1982.

WATER TEMPERATURE: October 1978 to January 1982.

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

MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. (CUBIC FEET PER SECOND) (00061)	GAGE HEIGHT (FEET) (00065)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)
AUG											
04...	1700	10.0	32.5	730	1028	1028	89	3.10	3880	7.9	8.1
04...	1705	20.0	32.5	730	1028	1028	89	3.10	3900	8.1	8.2
04...	1710	30.0	33.0	730	1028	1028	89	3.10	3910	8.2	8.3
04...	1715	40.0	33.0	730	1028	1028	89	3.10	3910	8.3	8.3
04...	1720	50.0	33.0	730	1028	1028	89	3.10	3920	8.3	8.3
04...	1725	60.0	33.0	730	1028	1028	89	3.10	3910	8.4	8.3
04...	1730	70.0	33.0	730	1028	1028	89	3.10	3900	8.2	8.3

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	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, (PER- CENT SATUR- ATION) (00301)
OCT												
08...	1700	1028	80020	58	4880	8.2	29.0	23.0	9.0	730	9.9	123
DEC												
04...	1530	1028	80020	136	4260	8.2	15.5	6.0	21	740	7.0	59
FEB												
11...	1630	1028	80020	178	4160	8.2	16.5	12.0	32	730	10.6	104
JUN												
15...	1600	1028	80020	156	3390	8.2	28.5	26.0	57	730	8.5	111
AUG												
04...	1630	1028	80020	89	3910	8.3	35.0	33.0	8.0	730	8.3	122

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	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 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 (00932)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	

RED RIVER BASIN

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07301110 SALT FORK RED RIVER NEAR ELMER, OK--Continued--Continued

WATER-QUALITY RECORDS

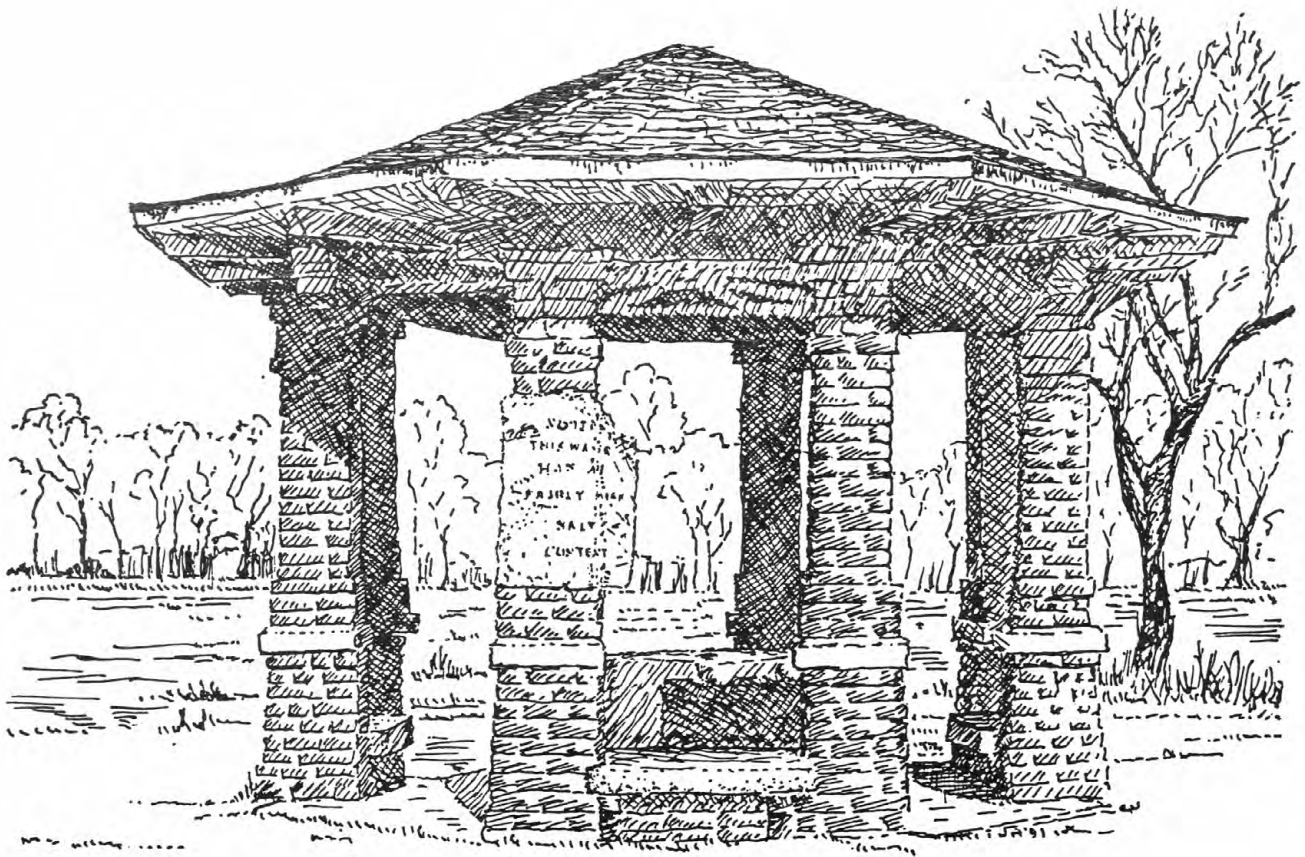
DATE	CAR- BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA- LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE 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)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)
OCT 08...	0	169	1600	720	0.60	11	3780	3600	5.14	592	2.27
DEC 04...	0	197	1400	550	1.1	14	3690	3080	5.02	1350	2.17
FEB 11...	0	182	1400	580	0.40	12	3170	2990	4.31	1520	1.98
JUN 15...	0	146	1200	450	0.40	17	2580	2510	3.51	1090	0.650
AUG 04...	0	154	1200	670	0.90	11	2970	2810	4.04	712	--
DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS NO2) (71856)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)
OCT 08...	2.26	10	0.030	0.040	0.13	2.30	2.30	0.030	0.030	0.04	0.04
DEC 04...	2.27	10	0.030	0.030	0.10	2.20	2.30	0.110	0.120	0.14	0.15
FEB 11...	1.88	8.3	0.020	0.020	0.07	2.00	1.90	0.070	0.060	0.09	0.08
JUN 15...	0.670	3.0	0.040	0.020	0.07	0.690	0.690	0.050	0.020	0.06	0.03
AUG 04...	1.08	4.8	0.030	0.020	0.07	--	1.10	0.040	0.030	0.05	0.04
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, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHATE, TOTAL (MG/L AS PO4) (00650)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTH TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTH DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTH DIS- SOLVED (MG/L AS PO4) (00660)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
OCT 08...	0.57	0.60	2.9	13	0.040	0.06	<0.010	0.020	<0.010	--	20
DEC 04...	0.29	0.40	2.6	12	0.040	--	0.020	--	0.010	0.03	--
FEB 11...	0.63	0.70	2.7	12	0.060	--	<0.010	<0.010	<0.010	--	10
JUN 15...	0.75	0.80	1.5	6.6	0.060	0.21	<0.010	0.070	<0.010	--	70
AUG 04...	0.86	0.90	--	--	0.090	0.12	<0.010	0.040	0.010	0.03	20

RED RIVER BASIN

07301110 SALT FORK RED RIVER NEAR ELMER, OK--Continued--Continued

WATER-QUALITY RECORDS

DATE	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENIUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (US/L) AS NI) (01065)
OCT 08...	67	<9	<9	140	27	<30	<1
DEC 04...	--	--	--	--	--	--	--
FEB 11...	38	<9	<9	110	23	<30	<1
JUN 15...	100	<1	20	70	20	3	2
AUG 04...	<100	<1	<10	80	10	4	2
DATE	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)	SEDI- MENT, DIS- SOLVED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 08...	10	<1.0	6000	<18	68	11	25
DEC 04...	--	--	--	--	42	15	89
FEB 11...	6	<1.0	4600	<18	131	63	87
JUN 15...	5	<1.0	4400	<18	785	331	82
AUG 04...	5	<1.0	4700	23	35	8.4	87



Pavilion at Mineral Wells Park, Guthrie, Oklahoma

RED RIVER BASIN
07301420 SWEETWATER CREEK NEAR SWEETWATER, OK

LOCATION.--Lat 35°25'20", long 99°58'08", in NW 1/4 NE 1/4 sec.20, T.11 N, R.26 W., Roger Mills-Beckham County line, Hydrologic Unit 11120302, on right bank downstream bridge piling of State Highway 152, 0.4 mi downstream from Freezeout Creek, 3.3 mi west of Sweetwater, and at mile 16.0.

DRAINAGE AREA.--424 mi², of which 20 mi² is probably noncontributing.

PERIOD OF RECORD.--April 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,087.76 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good, except for ice effected winter periods, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	e12	21	36	35	27	38	18	55	21	5.1	2.7
2	6.1	e11	21	34	34	27	48	17	68	18	4.6	2.6
3	5.8	e9.0	22	33	35	28	43	16	62	16	4.2	2.2
4	5.4	e12	22	32	39	33	38	15	51	15	3.5	1.7
5	5.5	e14	22	31	38	39	34	15	45	14	3.5	1.5
6	5.6	16	22	30	37	37	31	15	60	12	3.7	1.2
7	5.8	16	22	31	35	33	30	14	57	11	3.1	1.1
8	5.8	15	22	32	33	32	28	14	52	9.9	2.9	.98
9	5.8	15	21	31	32	32	28	14	51	9.1	2.4	1.0
10	5.5	14	21	30	32	29	28	13	44	9.3	2.3	.96
11	5.4	14	22	29	33	28	27	14	38	11	2.6	1.0
12	5.3	14	27	30	33	28	26	14	36	11	3.1	1.1
13	5.0	14	31	30	32	28	25	14	33	10	3.4	1.1
14	4.8	14	26	28	32	28	25	13	31	19	3.2	.93
15	4.7	14	24	e26	32	28	25	13	28	20	3.1	.86
16	4.8	20	24	e20	31	27	26	12	25	17	2.9	.76
17	5.2	43	22	e25	30	27	28	11	22	15	3.0	.61
18	5.2	36	21	28	29	31	28	11	20	14	4.5	.47
19	5.5	25	27	27	28	29	31	11	19	13	6.4	.47
20	5.6	21	52	27	28	27	37	11	21	11	7.3	.48
21	6.1	20	67	28	28	26	35	15	28	10	6.5	.39
22	6.5	20	59	30	30	25	31	42	26	9.7	5.3	.28
23	6.8	19	61	32	31	23	27	70	23	8.8	3.9	.28
24	6.8	20	49	31	31	25	25	75	20	7.9	2.8	.37
25	6.9	20	39	30	31	26	23	44	18	7.1	2.5	.26
26	6.8	20	36	30	30	26	22	37	17	6.3	2.8	.23
27	8.7	20	39	35	29	25	22	46	17	6.3	3.3	.23
28	12	20	45	45	28	30	21	55	20	6.0	3.1	.24
29	15	20	42	44	28	45	20	83	28	5.7	2.6	.25
30	14	22	38	41	---	40	19	69	27	5.1	2.2	.25
31	e13	---	35	37	---	34	---	55	---	4.9	2.3	---
TOTAL	211.5	550.0	1002	973	924	923	869	866	1042	354.1	112.1	26.50
MEAN	6.82	18.3	32.3	31.4	31.9	29.8	29.0	27.9	34.7	11.4	3.62	.88
MAX	15	43	67	45	39	45	48	83	68	21	7.3	2.7
MIN	4.7	9.0	21	20	28	23	19	11	17	4.9	2.2	.23
AC-FT	420	1090	1990	1930	1830	1830	1720	1720	2070	702	222	53

e Estimated

RED RIVER BASIN

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07301420 SWEETWATER CREEK NEAR SWEETWATER, OK--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	21.0	25.0	26.7	30.6	32.3	39.7	32.4	31.7	33.3	11.2	4.81	13.6
MAX	72.2	61.1	37.9	41.1	51.3	73.0	45.0	47.9	65.6	17.4	18.2	51.6
(WY)	1987	1987	1987	1987	1987	1987	1988	1987	1989	1989	1989	1988
MIN	6.82	15.2	15.2	19.9	18.6	17.9	16.2	18.1	19.4	3.72	.61	.88
(WY)	1992	1991	1991	1991	1991	1991	1991	1991	1990	1990	1986	1992

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1986-92

ANNUAL TOTAL	5881.19	7853.20	
ANNUAL MEAN	16.1	21.5	25.5
HIGHEST ANNUAL MEAN			41.4 1987
LOWEST ANNUAL MEAN			14.5 1991
HIGHEST DAILY MEAN	77	Jun 23	83 May 29 310 Jun 14 1989
LOWEST DAILY MEAN	.73	Aug 7	.23 Sep 26, 27 .17 Aug 22 1986
ANNUAL SEVEN-DAY MINIMUM	.82	Aug 4	.26 Sep 24 .24 Aug 20 1986
INSTANTANEOUS PEAK FLOW			101 May 24 545 Jun 14 1989
INSTANTANEOUS PEAK STAGE			9.53 May 24 12.80 Jun 14 1989
ANNUAL RUNOFF (AC-FT)	11670	15580	18450
10 PERCENT EXCEEDS	27	39	46
50 PERCENT EXCEEDS	16	21	20
90 PERCENT EXCEEDS	4.4	2.7	3.1



RED RIVER BASIN
07301500 NORTH FORK RED RIVER NEAR CARTER, OK

LOCATION.--Lat 35°10'05", long 99°30'25", in NW 1/4 SE 1/4 sec.15, T.8 N., R.22 W., Beckham County, Hydrologic Unit 11120302, on left bank on downstream side of roadway on State Highway 34, 3.0 mi south of Carter, 10.8 mi downstream from Timber Creek, and at mile 110.5.

DRAINAGE AREA.--2,337 mi², of which 399 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1944 to September 1962. Annual maximum and occasional low-flow measurements, water years 1963-64. August 1964 to current year.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,673.71 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. U.S. Army Corps of Engineers' satellite telemeter at station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,200 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
No peak greater than base discharge.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	76	82	199	216	e115	159	67	202	44	45	12
2	27	74	80	212	210	112	162	58	225	34	37	9.5
3	25	83	79	203	199	127	185	49	386	25	33	8.8
4	22	80	77	195	196	280	176	43	213	18	27	7.4
5	19	78	76	192	219	222	160	40	165	15	24	7.2
6	18	82	79	195	231	216	151	35	207	12	22	18
7	17	88	81	190	217	184	140	33	373	9.1	19	11
8	16	81	84	180	212	170	130	30	357	7.3	16	6.7
9	16	77	84	190	205	153	119	28	335	6.1	13	5.9
10	16	77	84	189	189	128	106	33	230	5.2	11	5.5
11	16	76	94	174	181	120	98	40	223	153	14	7.8
12	14	74	140	180	181	114	99	35	159	200	16	19
13	13	74	190	180	181	106	92	33	116	113	14	14
14	11	77	173	164	187	105	87	30	93	353	12	9.8
15	11	80	140	166	190	103	86	34	78	583	11	7.5
16	11	119	118	160	189	101	93	31	59	251	9.9	5.9
17	11	237	110	151	189	107	106	28	46	127	10	4.6
18	11	180	105	147	179	295	114	27	35	91	20	4.4
19	9.4	171	145	160	170	266	152	29	27	73	27	4.0
20	9.1	142	431	176	161	170	202	33	39	60	20	3.9
21	9.5	118	481	156	148	144	214	36	53	57	18	3.8
22	9.8	102	348	160	e139	133	187	125	87	55	14	3.6
23	11	95	387	157	e135	125	158	241	115	41	11	3.1
24	10	91	294	149	e134	120	131	237	76	32	8.6	2.9
25	11	86	219	142	e137	118	112	212	59	27	7.8	2.8
26	11	82	188	137	e135	113	99	164	46	23	9.4	2.5
27	32	82	202	161	e131	115	87	158	38	168	9.8	2.4
28	79	85	270	222	e126	119	80	162	44	475	8.8	2.3
29	205	88	269	286	e118	132	79	306	44	148	7.3	2.2
30	86	84	234	258	---	182	75	262	44	78	6.8	2.1
31	87	---	205	225	---	171	---	213	---	57	11	---
TOTAL	873.8	2939	5549	5656	5105	4666	3839	2852	4174	3340.7	513.4	200.6
MEAN	28.2	98.0	179	182	176	151	128	92.0	139	108	16.6	6.69
MAX	205	237	481	286	231	295	214	306	386	583	45	19
MIN	9.1	74	76	137	118	101	75	27	27	5.2	6.8	2.1
AC-FT	1730	5830	11010	11220	10130	9260	7610	5660	8280	6630	1020	398

e Estimated

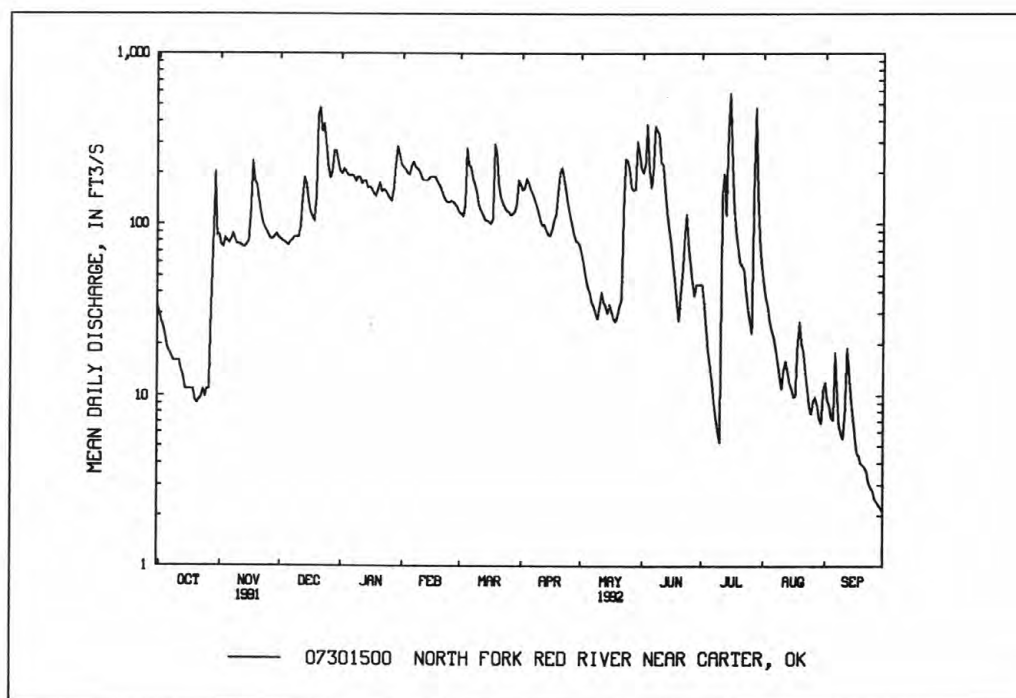
RED RIVER BASIN
07301500 NORTH FORK RED RIVER NEAR CARTER, OK--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1992, BY WATER YEAR (WY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	96.8	52.0	57.7	70.3	93.5	98.6	126	420	271	73.2	37.1	50.6
MAX	1195	360	271	319	365	465	683	2713	1246	828	431	368
(WY)	1987	1987	1960	1960	1960	1987	1973	1977	1951	1950	1950	1962
MIN	.000	.000	.000	.000	.000	.000	.079	.000	.60	.000	.000	.000
(WY)	1946	1946	1953	1953	1953	1955	1971	1971	1966	1954	1952	1945

SUMMARY STATISTICS	1991 CALENDAR YEAR		1992 WATER YEAR		WATER YEARS 1945-92	
ANNUAL TOTAL	34018.4		39708.5			
ANNUAL MEAN	93.2		108		121	
HIGHEST ANNUAL MEAN					356	
LOWEST ANNUAL MEAN					12.9	
HIGHEST DAILY MEAN	1030	Jun 6	583	Jul 15	20700	May 26 1959
LOWEST DAILY MEAN	2.6	Aug 11	2.1	Sep 30	.00	most years
ANNUAL SEVEN-DAY MINIMUM	4.8	Aug 5	2.5	Sep 24	.00	most years
INSTANTANEOUS PEAK FLOW			793	Jul 15	53400	May 26 1959
INSTANTANEOUS PEAK STAGE			5.51	Jul 15	14.98	May 17 1977
ANNUAL RUNOFF (AC-FT)	67480		78760		87610	
10 PERCENT EXCEEDS	191		216		201	
50 PERCENT EXCEEDS	66		88		32	
90 PERCENT EXCEEDS	11		9.5		.00	



RED RIVER BASIN
07302500 LAKE ALTUS AT LUGERT, OK

LOCATION.--Lat 34°53'08", long 99°17'43", in SW 1/4 SE 1/4 sec.22, T.5 N., R.20 W., Kiowa County, Hydrologic Unit 11120302, on upstream face of Altus Dam on North Fork Red River, 1.0 mi west of Lugert, 2.6 mi upstream from Elm Fork of North Fork, and at mile 73.5.

DRAINAGE AREA.--2,515 mi², of which 399 mi² is probably noncontributing.

PERIOD OF RECORD.--December 1943 to September 1950 (monthly records only), October 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to Nov. 19, 1948, nonrecording or float gage at same site and datum.

REMARKS.--Reservoir is formed by concrete and coursed masonry dam. Storage began in December 1943. Capacity, 134,500 acre-ft at elevation 1,559.0 ft, crest of uncontrolled spillway, and 72,400 acre-ft at elevation 1,547.0 ft, crest of controlled spillway. Dead storage, 1,660 acre-ft below elevation 1,517.5 ft, sill of headgate at irrigation canal. Figures given herein represent total contents. Reservoir is used for flood control, municipal water supply for city of Altus, and irrigation of about 48,000 acres. Revised capacity table used since Jan. 1, 1969. From 1927 to 1943, a dam to form reservoir for municipal water supply was at same site. Elevation of crest was 1,514.31 ft. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 170,600 ft³/s, May 19, 1951, elevation 1,562.10 ft; minimum after initial storage, 4,690 acre-ft, Aug. 25, 1944, elevation, 1,520.2 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 138,200 acre-ft, June 20, elevation 1,559.58 ft; minimum, 68,330 acre-ft, Oct. 22, 23, 24, elevation, 1,546.01 ft.

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

1520	3,844	1540	46,780
1525	10,710	1548	76,580
1529	18,130	1559	134,500
1534	29,620	1563	161,000

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69250	70100	76280	95070	106400	115300	125900	132900	136800	136800	124400	108500
2	69210	70100	76320	95470	106800	115600	126100	133300	136300	136400	123300	108600
3	69210	70140	76490	95930	107500	115600	126500	133300	136000	135900	122500	108500
4	69330	70180	76450	96330	107800	116800	126900	133300	135800	135400	121900	108100
5	69290	70460	76790	96780	108200	117500	127200	133300	136700	135300	121000	109000
6	69170	70710	76790	96930	108500	117900	127500	133300	137100	134900	119700	108700
7	68890	70670	77050	97690	108700	118100	127900	133000	137200	134600	118700	108700
8	68970	70750	77230	98000	109100	118800	128000	132800	137300	134700	117500	108500
9	68970	70830	77450	98360	109200	119400	127800	132600	136900	134200	116400	108800
10	68970	71120	77490	98720	109900	119100	128100	132900	136300	134100	115300	108700
11	68970	71160	78580	98970	110100	119300	128900	133000	135600	133300	114900	108300
12	68890	71240	79190	99690	110400	119500	128900	133000	135600	132800	114700	108000
13	68810	71280	79550	100000	110600	119600	128900	132900	135700	133300	114000	108100
14	68810	71650	79850	100300	111000	120200	129200	133200	135500	132900	113500	107800
15	68650	72020	80160	100600	111200	120300	129400	133000	135800	132800	113200	107400
16	68570	72350	80470	101000	111600	120300	129700	133300	135800	133300	112500	107000
17	68490	72940	80700	101300	111700	121400	130100	133300	136300	133100	112400	106600
18	68730	73570	81050	101300	112000	121600	130300	133300	136100	132700	112200	106800
19	68690	73940	82400	101700	112000	122200	131400	133400	136700	131800	111500	106500
20	68690	74190	84860	102000	112100	122300	131600	133500	136400	131400	110900	106400
21	68370	74570	86350	102200	112600	123100	131800	133900	135100	130600	110100	106300
22	68570	74830	88030	102600	113000	123100	131900	134100	134900	129900	109600	106200
23	68530	74910	89410	102900	113300	122900	132400	134300	135300	129100	108700	106100
24	68530	75080	90130	103000	113900	123600	132600	134600	135600	128100	107900	105900
25	68570	75250	90950	103400	114200	123800	132900	135300	135700	127400	108500	105700
26	68530	75510	91630	103900	114400	124100	133200	135500	135700	127200	108500	105700
27	69090	75640	92160	104300	114600	124000	132900	135700	136200	127200	108700	105500
28	69090	75720	92650	104600	115100	124600	133200	135600	137400	126700	108300	105400
29	69330	76110	93390	105100	115200	124900	133100	135500	137600	126200	108000	105400
30	69700	76190	94030	105600	---	125000	132900	136100	137300	125600	108400	105200
31	70200	---	94430	106000	---	125800	---	136700	---	125000	108400	---

RED RIVER BASIN

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07302500 LAKE ALTUS AT LUGERT, OK--Continued

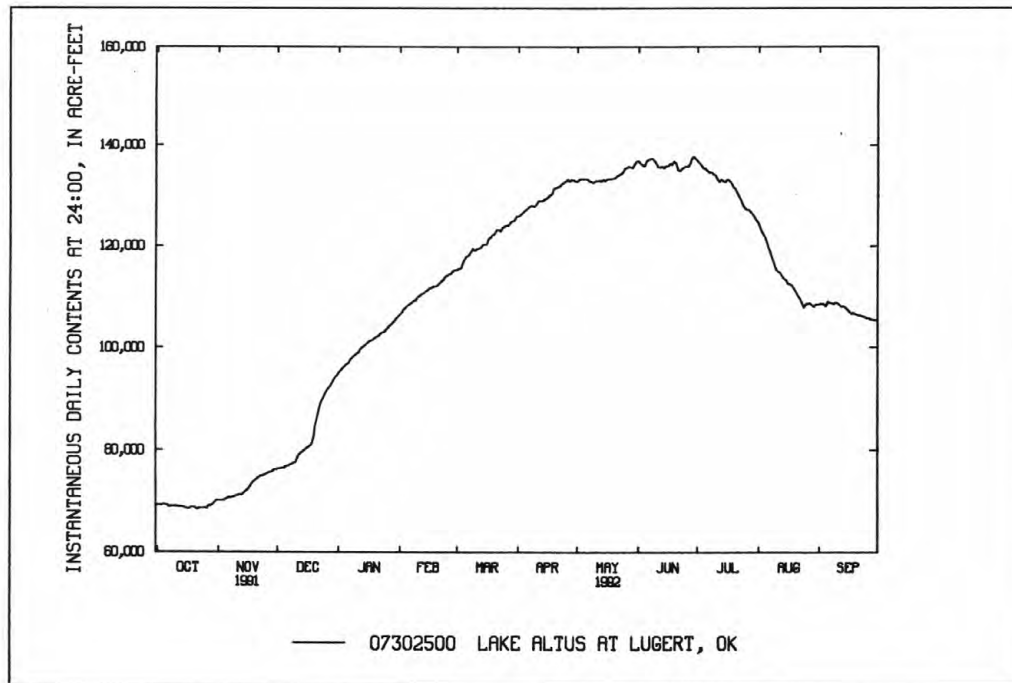
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MAX	70200	76190	94430	106000	115200	125800	133200	136700	137600	136800	124400	109000
MIN	68370	70100	76280	95070	106400	115300	125900	132600	134900	125000	107900	105200
(+)	1546.47	1547.91	1551.86	1554.10	1555.76	1557.58	1558.75	1559.35	1559.45	1557.44	1554.54	1553.94
(++)	+1,190	+5,990	+18,240	+11,570	+9,200	+10,600	+7,100	+3,800	+600	-12,300	-16,600	-3,200

CAL YR 1991 MAX 126000 MIN 64770 (++) +12,030

WTR YR 1992 MAX 137600 MIN 68370 (++) +36,190

(+) ELEVATION, IN FEET, AT END OF MONTH

(++) CHANGE IN CONTENTS, IN ACRE-FeET



RED RIVER BASIN

07303000 NORTH FORK RED RIVER BELOW ALTUS DAM, NEAR LUGERT, OK

LOCATION.--Lat 34°53'26", long 99°18'22", in SW 1/4 sec.22, T.5 N., R.20 W., Greer County, Hydrologic Unit 11120303, on right bank at State Highway 44A bridge, 3,500 ft downstream from Altus Dam, 1.9 mi upstream from Elm Fork of North Fork, 2.0 mi west of Lugert, and at mile 72.8.

DRAINAGE AREA.--2,515 mi², of which 399 mi² is probably noncontributing.

PERIOD OF RECORD.--March 1930 to December 1932 (published as "at Lugert Dam"), December 1943 to September 1950 (published as spill from Lake Altus), October 1950 to September 1962, August 1964 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1311: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,471.81 ft above National Geodetic Vertical Datum of 1929. Mar. 19, 1930 to Dec. 21, 1932, nonrecording gage at former Lugert Dam, 0.7 mi upstream at datum 1,504.31 ft National Geodetic Vertical Datum of 1929, unadjusted.

REMARKS.--Records good. Some regulation at low flow by Lugert Lake prior to December 1943, capacity 13,500 acre-ft and completely regulated thereafter by Lake Altus (station 07302500). Diversions at Lake Altus bypass most of streamflow. Seepage from Altus Dam not included for period February 1953 to September 1977.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,100 ft³/s, May 18, 1951, gage height, 12.70 ft, maximum gage height, 16.37 ft, May 21, 1977 (backwater from Elm Fork of the North Fork Red River); no flow at times in most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 16, 1928, reached a stage of 14.5 ft, site and datum in use 1930-32, discharge, 14,300 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,800 ft³/s, June 20, gage height, 8.39 ft; no flow Sept. 28-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.92	.81	.67	1.6	2.2	2.3	2.8	2.4	286	205	1.9	2.2
2	.89	.74	.75	1.5	2.4	2.5	2.4	8.8	428	376	1.9	1.9
3	.83	.72	.77	1.6	2.6	2.4	2.1	3.3	412	263	1.8	1.6
4	.86	.71	.79	1.7	2.5	2.6	2.0	2.1	403	162	1.7	1.5
5	.82	.70	.81	1.7	2.3	2.4	2.0	2.2	434	25	1.5	1.4
6	.74	.67	.84	1.7	2.3	2.3	2.1	4.7	444	20	1.4	2.3
7	.75	.62	.85	1.7	2.3	2.3	2.1	2.2	446	12	1.5	1.7
8	.72	.62	.87	1.7	2.3	2.2	2.0	1.8	455	8.4	1.6	1.8
9	.89	.65	.87	1.8	2.2	2.2	2.0	2.0	553	6.3	1.8	1.9
10	.97	.60	.86	1.9	2.3	2.2	2.0	2.2	603	4.5	2.0	2.0
11	.78	.57	1.4	1.9	2.4	2.3	2.0	2.3	574	3.4	2.3	2.0
12	.71	.60	1.6	1.9	2.3	2.4	2.1	2.1	198	2.8	2.0	2.0
13	.78	.61	1.1	2.2	2.4	2.3	1.6	3.3	31	2.5	1.8	1.6
14	.66	.72	1.0	2.1	2.5	2.3	1.6	2.8	33	3.9	1.6	1.3
15	.63	.71	1.0	2.1	2.4	2.3	1.6	2.1	38	2.5	1.5	1.1
16	.62	.83	1.0	2.0	2.4	2.2	1.7	2.4	41	3.9	1.4	.95
17	.59	.69	1.0	2.0	2.2	2.4	1.9	4.1	52	3.1	1.5	.85
18	.45	.68	1.1	2.0	2.1	2.8	1.7	3.9	54	2.6	1.7	.70
19	.50	.72	2.0	2.1	2.4	2.5	2.3	2.9	53	2.3	1.7	.53
20	.59	.72	2.0	2.0	2.3	2.4	2.2	3.3	861	2.1	1.6	.46
21	.58	.65	1.5	2.1	2.2	2.4	2.0	3.8	878	2.2	1.5	.52
22	.61	.61	1.8	2.2	2.3	2.3	1.8	3.4	82	1.9	1.4	.57
23	.60	.66	1.6	2.2	2.3	2.2	1.6	4.9	19	2.0	1.2	.44
24	.58	.73	1.5	2.2	2.8	2.2	3.4	6.0	27	2.1	1.1	.37
25	.52	.72	1.5	2.2	2.4	2.3	2.3	9.1	38	2.2	1.1	.23
26	.48	.72	1.6	2.2	2.3	2.2	2.0	23	36	2.5	2.5	.14
27	.70	.72	1.7	2.4	2.3	2.1	2.4	62	35	3.9	2.1	.04
28	3.8	.74	1.5	2.2	2.3	2.3	3.0	423	105	2.3	1.6	.00
29	4.3	.70	1.5	2.1	2.3	2.3	3.0	168	149	2.1	1.3	.00
30	.84	.49	1.6	2.1	---	2.3	2.0	28	139	2.1	1.4	.00
31	1.1	---	1.6	2.1	---	2.3	---	55	---	2.1	2.2	---

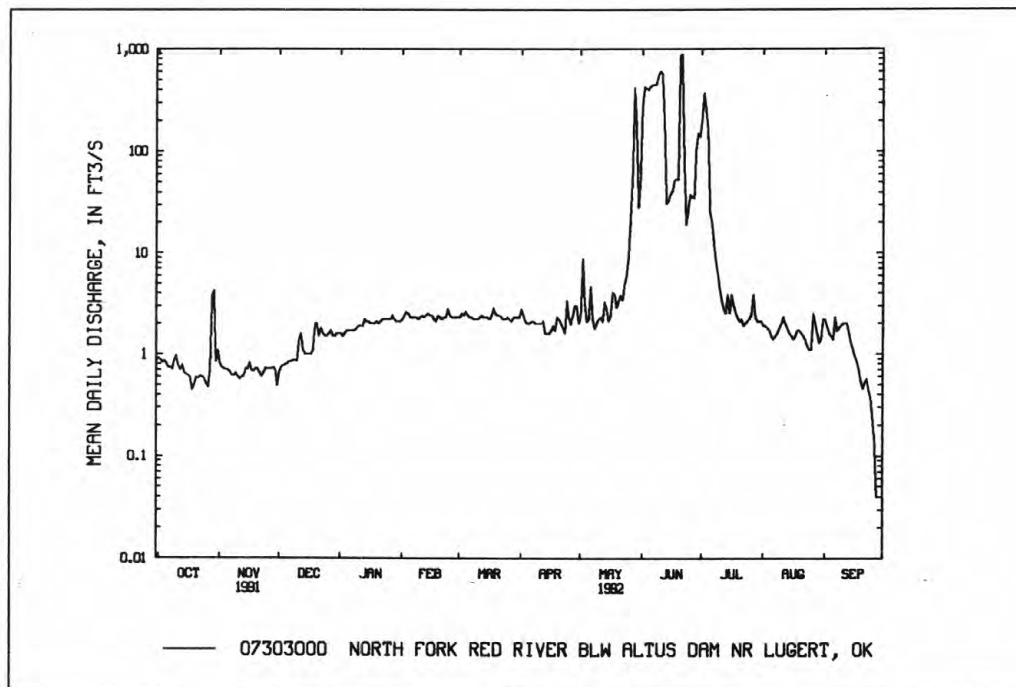
RED RIVER BASIN

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07303000 NORTH FORK RED RIVER BELOW ALTUS DAM, NEAR LUGERT, OK--Continued

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	28.81	20.43	38.68	61.2	68.0	72.2	63.7	847.1	7907	1136.7	51.6	32.10
MEAN	.93	.68	1.25	1.97	2.34	2.33	2.12	27.3	264	36.7	1.66	1.07
MAX	4.3	.83	2.0	2.4	2.8	2.8	3.4	423	878	376	2.5	2.3
MIN	.45	.49	.67	1.5	2.1	2.1	1.6	1.8	19	1.9	1.1	.00
AC-FT	57	41	77	121	135	143	126	1680	15680	2250	102	64

CAL YR 1991	TOTAL 452.81	MEAN 1.24	MAX 6.8	MIN .00	AC-FT 898
WTR YR 1992	TOTAL 10327.52	MEAN 28.2	MAX 878	MIN .00	AC-FT 20480



RED RIVER BASIN
07304500 ELK CREEK NEAR HOBART, OK

LOCATION.--Lat 34°54'51", long 99°06'49", in NE 1/4 NE 1/4 sec.17, T.5 N., R.18 W., Kiowa County, Hydrologic Unit 11120303, near right bank on downstream side of pier of county road bridge, 7.0 mi downstream from Little Elk Creek, 7.5 mi south of Hobart, and at mile 10.9.

DRAINAGE AREA.--549 mi².

PERIOD OF RECORD.--September 1904 to March 1908, October 1949 to current year.

REVISED RECORDS.--WSP 1211: Drainage area. WSP 1241: 1905. WDR OK-86-1: 1984 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,429.4 ft above National Geodetic Vertical Datum of 1929. See WSP 1920 for history of changes prior to Apr. 28, 1954.

REMARKS.--Records good. Part of high flows are diverted 1.0 mi upstream from station, by means of a breach canal (U.S. Bureau of Reclamation), into Tom Steed Reservoir.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,200 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
Dec. 21	0300	2,710	17.90	Sept. 6	0930	2,680	17.77
July 27	2230	2,250	15.73				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e14	30	29	119	69	60	76	54	103	167	76	734
2	13	22	33	115	66	59	87	50	70	94	67	154
3	12	24	26	105	66	59	79	60	64	69	50	76
4	11	24	25	99	69	66	72	46	74	61	e44	60
5	10	20	25	94	84	662	68	41	421	46	e41	55
6	10	20	25	92	67	206	67	38	976	37	39	1630
7	11	18	25	87	61	135	65	36	439	30	37	415
8	11	19	24	83	60	105	64	33	571	27	32	118
9	12	19	22	84	59	92	65	30	491	25	30	79
10	12	17	21	76	57	94	62	30	374	24	28	62
11	12	18	25	75	56	80	61	30	193	22	28	63
12	12	18	1080	73	57	68	64	29	122	29	31	59
13	11	18	388	82	63	64	72	46	90	47	34	55
14	11	19	129	94	58	62	59	32	75	599	34	51
15	10	19	82	72	56	61	55	26	65	904	28	47
16	10	63	67	82	57	60	55	25	58	1020	27	44
17	11	283	60	63	55	59	56	26	52	834	25	40
18	11	164	66	72	55	334	55	23	47	259	31	37
19	12	60	381	66	57	553	196	23	42	131	75	38
20	12	46	1700	61	53	253	739	31	227	86	82	38
21	12	46	1410	60	50	171	263	30	146	69	52	34
22	13	38	924	61	49	142	153	32	68	72	43	33
23	13	35	780	66	57	120	107	39	64	66	35	39
24	14	34	332	62	66	89	92	33	56	63	30	59
25	14	30	194	60	94	84	91	37	45	61	28	43
26	14	28	155	60	93	88	72	33	42	59	844	39
27	13	27	139	61	70	80	66	31	39	943	459	36
28	26	27	134	70	70	82	62	46	225	1440	67	34
29	38	27	127	80	61	76	59	45	717	329	43	32
30	54	25	117	75	---	84	59	43	278	178	34	30
31	40	---	113	73	---	78	---	39	---	102	708	---
TOTAL	479	1238	8658	2422	1835	4226	3141	1117	6234	7893	3182	4234
MEAN	15.5	41.3	279	78.1	63.3	136	105	36.0	208	255	103	141
MAX	54	283	1700	119	94	662	739	60	976	1440	844	1630
MIN	10	17	21	60	49	59	55	23	39	22	25	30
AC-FT	950	2460	17170	4800	3640	8380	6230	2220	12370	15660	6310	8400

e Estimated

RED RIVER BASIN
07304500 ELK CREEK NEAR HOBART, OK--Continued

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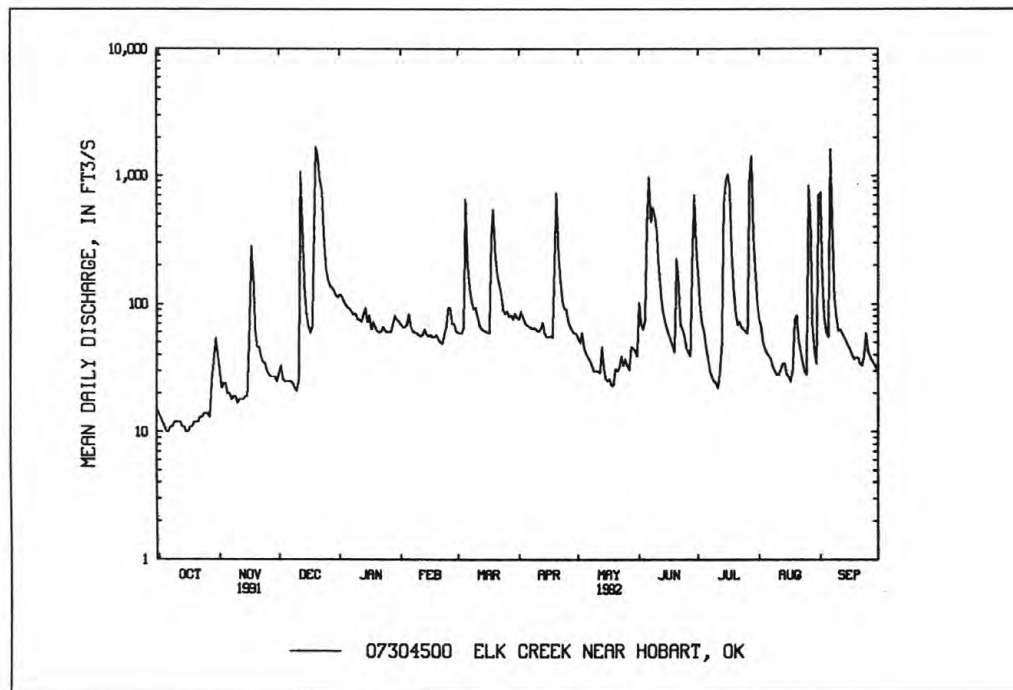
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	153	44.2	33.2	32.4	37.7	57.2	63.7	246	174	71.9	32.4	92.6
MAX	1935	390	279	165	259	438	480	1446	860	813	199	607
(WY)	1987	1962	1992	1907	1960	1988	1957	1977	1989	1975	1977	1965
MIN	.000	.000	.000	.000	.69	.55	.51	.026	2.26	.000	.000	.000
(WY)	1953	1955	1955	1955	1957	1954	1971	1953	1956	1954	1952	1952

SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1905-92
ANNUAL TOTAL	32167.9	44659	
ANNUAL MEAN	88.1	122	86.3
HIGHEST ANNUAL MEAN			427 1987
LOWEST ANNUAL MEAN			13.9 1967
HIGHEST DAILY MEAN	1700 Dec 20	1700 Dec 20	21100 Oct 20 1983
LOWEST DAILY MEAN	7.4 Aug 11	^a 10 Oct 5	^b .00 Jul 25 1952
ANNUAL SEVEN-DAY MINIMUM	8.8 Jul 31	11 Oct 12	.00 Jul 25 1952
INSTANTANEOUS PEAK FLOW		2710 Dec 21	28000 Oct 3 1986
INSTANTANEOUS PEAK STAGE		17.90 Dec 21	31.53 Oct 3 1986
ANNUAL RUNOFF (AC-FT)	63810	88580	62560
10 PERCENT EXCEEDS	136	255	117
50 PERCENT EXCEEDS	24	59	15
90 PERCENT EXCEEDS	12	20	.76

^aAlso occurred Oct. 6, 15-16.

^bNo flow at times many years.



RED RIVER BASIN
07305000 NORTH FORK RED RIVER NEAR HEADRICK, OK

LOCATION.--Lat 34°38'04", long 99°05'47", in NW 1/4 NE 1/4 sec.21, T.2 N., R.18 W., Tillman County, Hydrologic Unit 11120303, near left bank on downstream side of pier of bridge on old U.S. Highway 62, 2.5 mi east of Headrick, 12.9 mi upstream from Otter Creek, and at mile 33.0.
DRAINAGE AREA.--4,244 mi², of which 399 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1905 to March 1908, October 1937 to current year. Monthly discharge only for some periods, published in WSP 1311. Prior to July 1905, published as near Snyder.

REVISED RECORDS.--WSP 1211: Drainage area. WSP 1241: 1905-07.

GAGE.--Water-stage recorder. Datum of gage is 1,294.83 ft above National Geodetic Vertical Datum of 1929. Prior to July 18, 1905, nonrecording gage at site 0.2 mi downstream at different datum. July 18, 1905, to Mar. 30, 1908, nonrecording gage at Navajo damsite 10.4 mi upstream at different datum. Oct. 1, 1937, to Jan. 29, 1969, water-stage recorder at present site at datum 5.0 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since December 1943 by storage and diversion at Lake Altus, 39.5 mi upstream from station (station 07302500). Diversions for irrigation of about 48,000 acres upstream from station; some return flow may re-enter at Stinking Creek, 16 mi downstream from station. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 21.1 ft, present datum, occurred sometime prior to 1927, from information provided by Oklahoma State Highway Department.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92	237	138	426	238	186	205	143	295	1150	293	2210
2	84	184	143	409	229	180	193	136	681	825	304	1020
3	79	156	145	393	227	177	196	132	724	837	201	482
4	74	148	137	363	235	210	186	134	699	631	152	309
5	72	145	132	340	239	365	177	130	931	510	129	231
6	73	136	133	317	251	910	171	117	3190	312	116	1070
7	72	124	133	310	235	443	161	112	2260	247	101	2510
8	70	120	130	295	223	322	156	110	1980	205	91	780
9	69	122	128	286	218	266	152	106	1790	174	82	415
10	68	120	125	281	213	231	149	104	1730	149	78	294
11	68	119	140	271	208	222	142	122	1350	134	77	237
12	67	121	352	263	204	205	137	112	1190	121	87	206
13	67	121	1550	290	202	187	137	103	727	110	82	177
14	65	127	923	315	207	178	146	111	420	143	75	158
15	64	127	514	294	199	171	129	105	338	918	75	142
16	65	189	380	265	196	167	131	97	290	942	73	131
17	64	331	314	260	193	165	171	99	254	1450	71	122
18	63	560	278	240	188	163	148	99	236	791	74	112
19	60	477	970	243	184	491	148	103	225	430	78	104
20	62	291	3730	239	184	658	446	99	1120	288	84	104
21	64	228	4300	230	180	440	776	109	2780	235	117	101
22	64	201	2340	227	178	313	454	112	1820	194	85	92
23	66	183	2470	225	175	273	320	111	926	175	77	89
24	65	178	1720	226	189	245	250	115	631	152	70	89
25	66	171	1140	219	215	214	215	229	612	127	66	110
26	75	167	798	215	273	204	201	188	612	148	289	95
27	82	162	640	220	269	207	173	148	604	183	1940	88
28	240	157	568	228	218	201	157	265	1010	1350	603	83
29	193	148	546	246	202	189	149	559	2260	1210	275	80
30	302	138	498	263	---	183	147	468	2060	588	184	76
31	338	---	456	249	---	199	---	297	---	352	190	---

RED RIVER BASIN

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07305000 NORTH FORK RED RIVER NEAR HEADRICK, OK--Continued

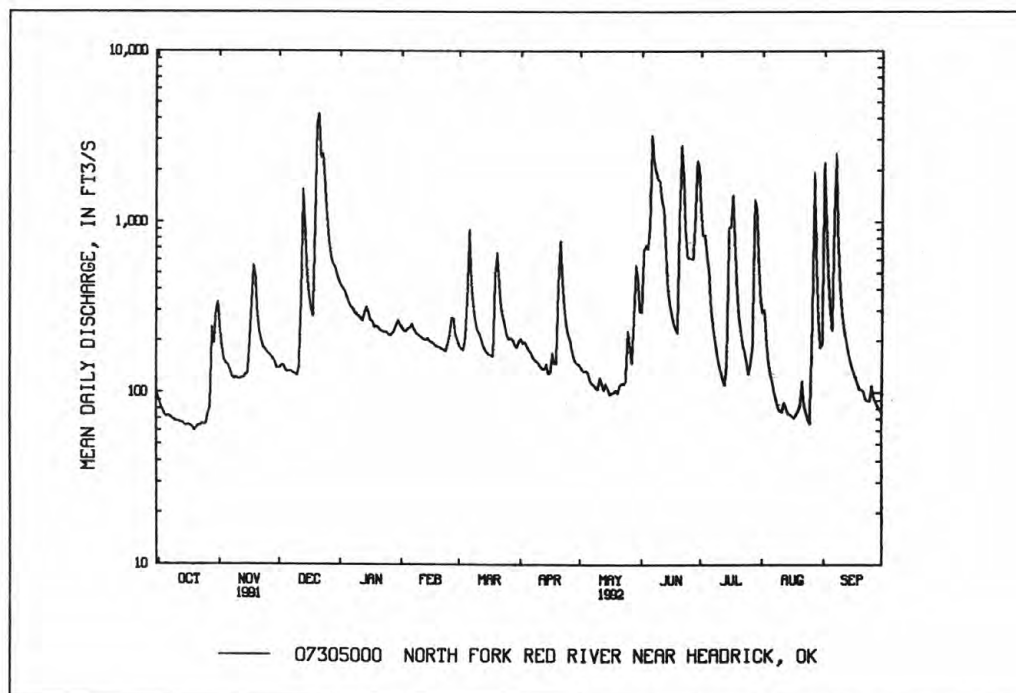
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	2953	5688	25971	8648	6172	8565	6323	4875	33745	15081	6219	11717
MEAN	95.3	190	838	279	213	276	211	157	1125	486	201	391
MAX	338	560	4300	426	273	910	776	559	3190	1450	1940	2510
MIN	60	119	125	215	175	163	129	97	225	110	66	76
AC-FT	5860	11280	51510	17150	12240	16990	12540	9670	66930	29910	12340	23240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1992, BY WATER YEAR (WY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	386	132	101	92.6	129	183	231	959	770	238	103	240
MAX	5608	1743	838	792	1162	1634	1448	6104	3194	2016	706	1675
(WY)	1987	1987	1992	1987	1960	1987	1973	1977	1989	1950	1950	1965
MIN	.000	.000	.20	.84	4.06	4.27	.64	.31	10.3	.25	.000	.000
(WY)	1953	1953	1955	1953	1953	1955	1971	1953	1966	1970	1952	1952

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1945-92

ANNUAL TOTAL	130251	135957	
ANNUAL MEAN	357	371	^a 298
HIGHEST ANNUAL MEAN			1562 1987
LOWEST ANNUAL MEAN			50.0 1970
HIGHEST DAILY MEAN	8070	Jun 2 4300	Dec 21 32500 May 30 1987
LOWEST DAILY MEAN	44	Mar 27 60	Oct 19 .00 Aug 2 1946
ANNUAL SEVEN-DAY MINIMUM	46	Apr 17 63	Oct 15 .00 Aug 2 1946
INSTANTANEOUS PEAK FLOW		5350	Dec 20 59000 Oct 4 1986
INSTANTANEOUS PEAK STAGE		11.62	Dec 20 ^b 19.07 Oct 4 1986
ANNUAL RUNOFF (AC-FT)	258400	269700	215700
10 PERCENT EXCEEDS	564	859	477
50 PERCENT EXCEEDS	105	196	54
90 PERCENT EXCEEDS	55	80	5.2

^aPrior to regulation water years 1906-07, 1938-43 455 ft³/s.^bNo flow at times in most years.

RED RIVER BASIN

07305000 NORTH FORK RED RIVER NEAR HEADRICK, OK--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951-52, 1954-63, 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1959 to September 1963, July 1968 to March 1989.

WATER TEMPERATURE: November 1959 to September 1963, July 1968 to March 1989.

INSTRUMENTATION.--Water-quality monitor from August 1969 to September 1981.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 23,300 microsiemens, June 8, 1974; minimum daily, 302 microsiemens, Oct. 20, 1983.

WATER TEMPERATURE: Maximum daily, 38.0°C, July 19, 1969, Aug. 4, 1977, July 19, 1988; minimum daily, 0.0°C on many days during winter periods.

MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM HG) (00025)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. (CUBIC FEET PER SECOND) (00061)	GAGE HEIGHT (FEET) (00065)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)
AUG											
04...	1240	20.0	26.5	730	1028	1028	168	6.64	3980	8.1	8.1
04...	1243	40.0	26.5	730	1028	1028	168	6.64	3970	8.1	8.2
04...	1246	60.0	26.5	730	1028	1028	168	6.64	3960	8.2	8.2
04...	1249	80.0	26.5	730	1028	1028	168	6.64	3960	8.1	8.2
04...	1254	113	27.0	730	1028	1028	168	6.64	3990	8.3	8.2
04...	1257	123	27.0	730	1028	1028	168	6.64	3980	8.2	8.2
04...	1301	147	26.5	730	1028	1028	168	6.64	3970	8.1	8.0
04...	1303	157	26.0	730	1028	1028	168	6.64	3980	8.0	8.1
04...	1304	167	26.0	730	1028	1028	168	6.64	3970	8.0	8.1
04...	1307	177	26.0	730	1028	1028	168	6.64	3950	8.0	8.1
04...	1312	216	27.0	730	1028	1028	168	6.64	3960	8.3	8.2
04...	1315	226	27.0	730	1028	1028	168	6.64	3960	8.3	8.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	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, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
OCT												
08...	1430	1028	80020	73	8030	8.2	27.5	19.5	4.6	730	11.0	129
FEB												
11...	1300	1028	80020	206	5960	8.0	12.0	10.5	15	740	10.9	103
JUN												
15...	1200	1028	80020	362	4210	8.2	25.5	25.0	27	730	7.8	100
AUG												
04...	1300	1028	80020	168	3960	8.2	33.0	26.5	93	730	8.2	108

RED RIVER BASIN

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07305000 NORTH FORK RED RIVER NEAR HEADRICK, OK--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

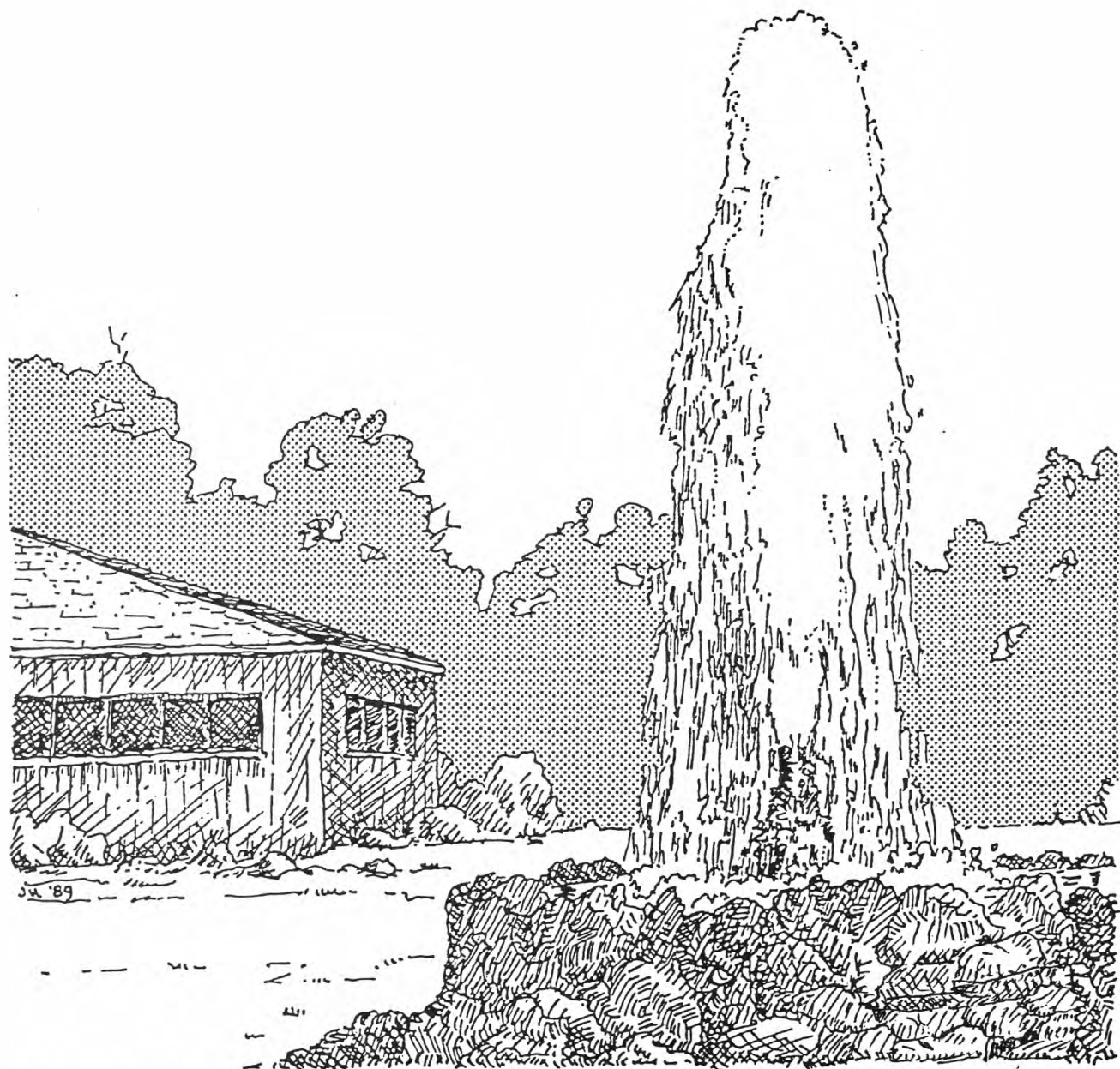
DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00932)	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)		
	OCT 08...	140	170	--	--	--	1400	--	--	9.7	176	0	
	FEB 11...	K17	K31	1300	1100	330	110	890	60	11	7.3	253	0
	JUN 15...	120	85	860	700	220	74	580	58	9	39	189	0
AUG 04...	--	130	740	560	200	57	560	62	9	1.5	211	0	
DATE	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)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00620)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	
	OCT 08...	144	910	2200	0.90	2.8	4970	--	--	--	0.048	0.21	
	FEB 11...	207	1000	1300	0.80	6.3	3820	3780	5.20	2120	1.49	1.48	6.6
	JUN 15...	155	770	910	0.20	12	2730	2700	3.71	2670	--	--	--
AUG 04...	173	640	820	0.70	10	2500	2400	3.40	1130	0.290	0.290	1.3	
DATE	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS NO2) (71856)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71845)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, AM- MONIA + 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)	
	OCT 08...	--	0.020	0.07	0.088	0.068	0.020	0.010	0.03	0.01	0.38	0.40	0.49
	FEB 11...	0.010	0.020	0.07	1.50	1.50	0.020	<0.010	0.03	--	0.38	0.40	1.9
	JUN 15...	0.020	<0.010	--	<0.050	<0.050	0.020	0.010	0.03	0.01	0.68	0.70	--
AUG 04...	0.020	0.010	0.03	0.310	0.300	0.030	0.020	0.04	0.03	0.67	0.70	1.0	
DATE	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHATE, TOTAL (MG/L AS PO4) (00650)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTH TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTH DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTH DIS- SOLVED (MG/L AS PO4) (00660)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)		
	OCT 08...	2.2	0.030	0.03	0.030	0.010	0.010	0.03	20	<100	<1	<10	
	FEB 11...	8.4	0.020	--	<0.010	<0.010	<0.010	--	20	76	<9	<9	
	JUN 15...	--	0.070	0.18	0.050	0.060	<0.010	--	40	100	<1	<10	
AUG 04...	4.5	0.120	0.03	0.030	0.010	<0.010	--	10	200	<1	<10		

RED RIVER BASIN

07305000 NORTH FORK RED RIVER NEAR HEADRICK, OK--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	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)	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)	SEDI- MENT, DIS- SUS- CHARGE, SUS- PENDEDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN (T/DAY) (80155) .062 MM (70331)	
OCT 08...	60	20	4	<1	--	<1.0	3600	51	18	3.5	66
FEB 11...	87	7	<30	<1	4	<1.0	4000	<18	74	41	84
JUN 15...	<10	10	3	2	2	<1.0	2900	25	787	769	99
AUG 04...	30	<10	3	1	2	<1.0	2300	25	682	309	99



Vendome Well, Chickasaw National Recreation Area, in the 1930's

07305500 WEST OTTER CREEK AT SNYDER LAKE, NEAR MOUNTAIN PARK, OK

LOCATION.--Lat 34°44'02", long 98°59'10", in SE 1/4 sec.16, T.3 N., R.17 W., Kiowa County, Hydrologic Unit 11120303, near east end of Snyder Dam, 0.8 mi upstream from small tributary, 3 mi northwest of Mountain Park, and at mile 26.0.

DRAINAGE AREA.--132 mi².

PERIOD OF RECORD.--April 1903 to March 1908, October 1951 to September 1971, July 1972 to current year. Published as Otter Creek near Mountain Park 1903-8 and as Otter Creek at Snyder Lake, near Mountain Park 1951-60. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1731: 1960 (M). WSP 1920: 1959-60. WDR OK-78-2: 1977.

GAGE.--Water-stage recorder and broad-crested masonry spillway. Datum of gage is 1,361.06 ft above National Geodetic Vertical Datum of 1929. April 1903 to March 1908, nonrecording gage at site 1.8 mi downstream at different datum. October 1951 to September 1971 at intake tower at same site and datum. July 1972 to August 1976, 700 ft downstream at datum 1,344.00 ft.

REMARKS.--No estimated daily discharges. Records good. The city of Snyder diverted about 130 acre-ft annually prior to October 1958 and none thereafter. Flow completely regulated since June 1975 by Tom Steed Reservoir.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

[illegible]

RED RIVER BASIN

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07305500 WEST OTTER CREEK AT SNYDER LAKE, NEAR MOUNTAIN PARK, OK--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1992, BY WATER YEAR (WY)

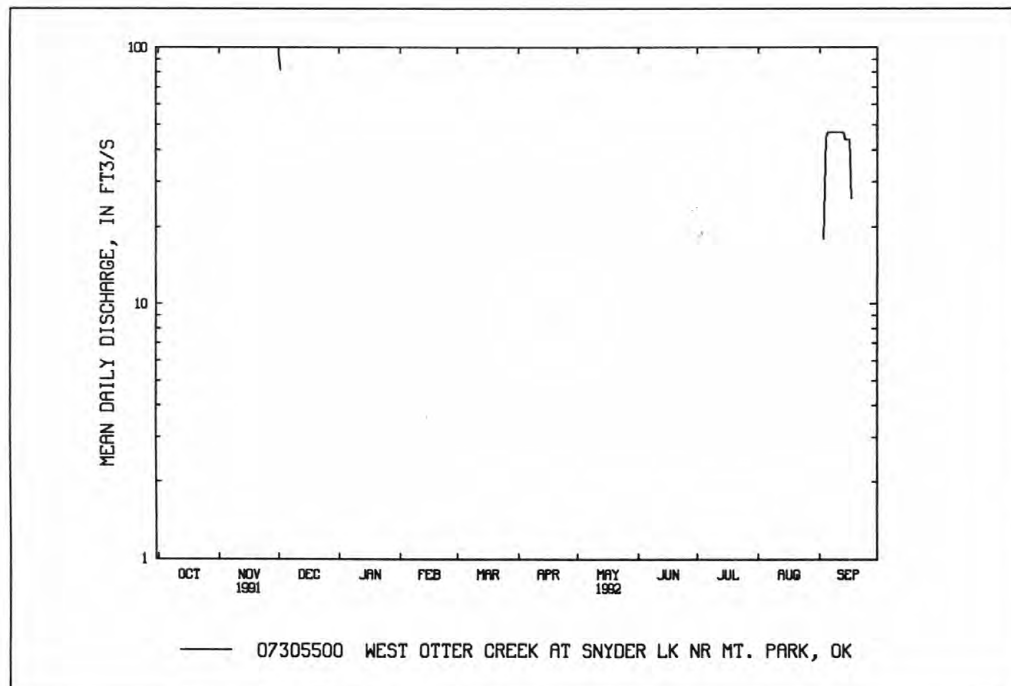
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	8.04	21.1	5.97	.69	10.8	13.9	3.47	34.2	54.6	6.68	.30	1.74
MAX	105	252	88.2	11.3	180	165	29.5	384	421	71.6	1.64	21.5
(WY)	1987	1987	1987	1982	1987	1988	1988	1987	1987	1982	1984	1992
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1976	1976	1976	1976	1977	1977	1977	1979	1988	1976	1976	1976

SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1976-92
ANNUAL TOTAL	5358.33	822.90	
ANNUAL MEAN	14.7	2.25	^a 13.4
HIGHEST ANNUAL MEAN			125 1987
LOWEST ANNUAL MEAN			.025 1977
HIGHEST DAILY MEAN	310	Jul 1 95	Dec 1 3480 May 28 1987
LOWEST DAILY MEAN	.00	at times	.00 at times
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00 Oct 1 1975
INSTANTANEOUS PEAK FLOW		207	Dec 2 ^b 4300 May 29 1987
INSTANTANEOUS PEAK STAGE		12.74	Dec 2 ^c 15.44 May 29 1987
ANNUAL RUNOFF (AC-FT)	10630	1630	9710
10 PERCENT EXCEEDS	.00	.00	2.5
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

^aPrior to regulation water years 1904-07, 1951-71, 1973-74, 23.0 ft³/s.

^bMaximum discharge for period of record, 14,200 ft³/s, June 6, 1953, from rating curve extended above 1,600 ft³/s on basis of contracted opening and flow over dam measurements of peak flow.

^cMaximum gage height for period of record, 19.50 ft, from flood marks, June 6, 1953.



RED RIVER BASIN

07307028 NORTH FORK RED RIVER NEAR TIPTON, OK

LOCATION.--Lat 34°30'25", long 99°12'28", in NW 1/4 NE 1/4 sec.5. T.1 S, R.19 W., Tillman County, Hydrologic Unit 11120303, near left bank on downstream side of bridge pier on State Highway 5, 3.8 mi west of intersection of State Highways 5 and 5C in Tipton, 4.8 mi downstream from Otter Creek, and at mile 15.3.

DRAINAGE AREA.--4,691 mi², of which 399 mi² is probably noncontributing.

PERIOD OF RECORD.--June 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,234.45 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor. Flow regulated since December 1943 by storage and diversion at Lake Altus 54.2 mi upstream (station 07302500). Diversions for irrigation of about 48,000 acres upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e139	328	192	e480	316	294	299	208	676	1190	e375	1730
2	e121	240	200	e450	306	289	303	196	724	859	e340	1880
3	106	208	200	e425	303	293	301	185	858	813	e300	815
4	101	193	199	e405	428	507	298	180	718	e705	e240	592
5	96	186	194	e385	367	333	e288	178	919	e590	218	488
6	96	180	193	e370	339	770	e280	171	4570	e420	e199	433
7	97	165	191	e360	330	594	e265	165	3790	284	e182	2690
8	96	159	192	e355	313	423	e245	159	2420	256	e172	936
9	95	160	e188	e350	305	363	e248	157	3160	235	e160	e560
10	93	155	e185	e340	302	328	e249	154	1810	217	e154	e445
11	91	153	e180	e331	e290	310	e229	216	1510	208	e161	e350
12	89	153	437	e330	e282	e300	e225	180	1040	195	e189	e295
13	87	155	1450	e355	e278	e280	e229	161	838	182	e172	e255
14	85	157	1060	e385	e280	e261	e245	178	e520	204	e160	e229
15	82	161	581	e400	e270	e258	e233	167	e450	299	e155	214
16	81	231	421	378	e265	e251	e290	159	e415	930	e150	207
17	79	305	358	362	e259	e249	339	164	e392	843	e154	206
18	79	429	337	339	e252	e243	403	161	e380	1030	e155	204
19	78	476	1890	324	e249	298	397	160	373	452	e140	168
20	76	355	6010	322	e248	669	305	170	616	e300	e145	153
21	e77	288	7620	317	e241	549	775	179	2920	e280	e158	146
22	e78	254	5480	309	e233	406	546	177	2580	e255	e155	139
23	e80	238	3680	304	e232	348	384	170	1080	e228	e182	128
24	e79	227	2330	299	e230	334	316	167	835	e215	e160	122
25	e80	221	e1500	299	e270	310	e270	207	785	e205	e140	121
26	e81	217	e1250	296	290	304	e250	257	738	229	1300	127
27	e96	212	e920	299	328	301	e225	214	697	335	1920	123
28	930	207	e740	310	311	299	214	1810	1340	508	1110	117
29	304	202	e640	314	298	296	210	962	2160	1430	512	113
30	231	196	e560	329	---	293	213	725	2760	e560	380	110
31	470	---	e515	332	---	290	---	455	---	e450	363	---
TOTAL	4373	6811	39893	10854	8415	11043	9074	8792	42074	14907	10301	14096
MEAN	141	227	1287	350	290	356	302	284	1402	481	332	470
MAX	930	476	7620	480	428	770	775	1810	4570	1430	1920	2690
MIN	76	153	180	296	230	243	210	154	373	182	140	110
AC-FT	8670	13510	79130	21530	16690	21900	18000	17440	83450	29570	20430	27960

e Estimated

RED RIVER BASIN

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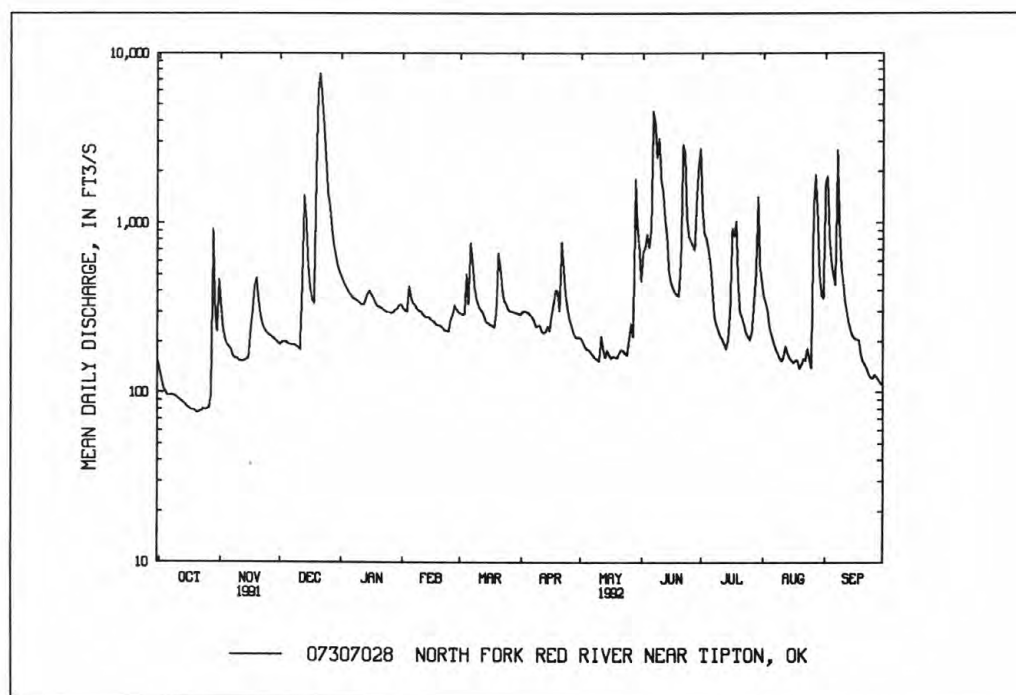
07307028 NORTH FORK RED RIVER NEAR TIPTON, OK--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1117	424	337	260	300	694	374	1058	1704	278	186	570
MAX	5784	2276	1287	742	1500	2401	855	4819	3435	699	361	1740
(WY)	1987	1987	1992	1987	1987	1987	1988	1987	1989	1987	1990	1986
MIN	15.1	30.8	84.6	68.2	71.9	54.8	49.3	62.6	118	49.3	39.5	13.5
(WY)	1985	1985	1986	1986	1986	1986	1986	1984	1984	1984	1985	1984

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1984-92

ANNUAL TOTAL	231024	180633	
ANNUAL MEAN	633	494	609
HIGHEST ANNUAL MEAN			1987 1987
LOWEST ANNUAL MEAN			156 1985
HIGHEST DAILY MEAN	17500	Jun 3 7620	Dec 21 39100 May 30 1987
LOWEST DAILY MEAN	54	Mar 27 76	Oct 20 3.7 Sep 7 1985
ANNUAL SEVEN-DAY MINIMUM	60	Mar 22 78	Oct 17 4.7 Sep 6 1985
INSTANTANEOUS PEAK FLOW		8120	Dec 21 57200 Oct 5 1986
INSTANTANEOUS PEAK STAGE		14.78	Dec 21 ^a 19.15 Oct 5 1986
ANNUAL RUNOFF (AC-FT)	458200	358300	441300
10 PERCENT EXCEEDS	1030	930	1190
50 PERCENT EXCEEDS	163	289	156
90 PERCENT EXCEEDS	76	140	49

^aFrom high-water mark.

RED RIVER BASIN
07308500 RED RIVER NEAR BURKBURNETT, TX

LOCATION.--Lat 34°06'36", long 98°31'53", Cotton County, Hydrologic Unit 11130102, on left bank at downstream side of bridge on U.S. Highways 277 and 281, 2.5 mi northeast of Burkburnett, and at mile 933.

DRAINAGE AREA.--20,570 mi², of which 5,936 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1924 to August 1925 (monthly discharge only), December 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 952.57 ft above National Geodetic Vertical Datum of 1929. July 11, 1924, to Aug. 31, 1925, nonrecording gage at site 1,000 ft downstream at same datum. Dec. 16, 1959, to Jan. 11, 1960, nonrecording gage at present site and datum.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. There are many small diversions upstream from station for irrigation, but total amounts are unknown.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 3, 1957, reached a stage of 13.54 ft, from levels to floodmarks. According to local residents, higher stages occurred in 1891 and June 1941.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 20	2400	31,300	10.88	June 8	1800	27,200	10.46
Apr. 18	0400	9,070	8.80				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	688	1130	722	2900	1670	1310	942	471	2710	4430	1800	4320
2	e689	e1180	731	2600	1620	1160	1100	409	2880	3720	1430	3030
3	e639	1010	722	2390	1520	1080	1040	356	7100	3880	903	4020
4	e583	995	708	2320	2310	1820	928	343	4020	3410	805	2360
5	e530	931	688	2340	5470	2550	899	305	3930	2620	755	1570
6	e496	854	685	2290	4270	2580	886	251	5530	2080	585	1270
7	480	826	680	2240	3740	1820	849	229	12600	1410	460	1630
8	466	774	676	2040	2950	2120	816	215	23000	1030	397	1530
9	453	695	693	1910	2360	4470	784	199	16800	811	352	2820
10	467	660	694	1810	2010	3000	731	205	9230	719	322	1400
11	482	655	741	1730	1880	2110	674	555	4720	682	322	940
12	476	647	1070	1650	1810	1820	735	292	4300	689	346	742
13	467	648	1290	1970	1720	1670	801	216	2800	649	393	639
14	461	667	2460	2720	1580	1610	648	244	1950	1120	497	563
15	448	695	2330	3200	1430	1550	581	202	1470	1080	565	493
16	430	755	2070	2870	1430	1520	647	220	1330	881	377	438
17	418	844	1700	2450	1370	1440	1180	418	1140	917	294	408
18	397	967	1610	2230	1260	1470	8100	327	1020	1630	285	389
19	381	1200	2130	1990	1110	1420	5620	319	928	1650	288	360
20	366	1370	19500	1800	1010	1310	4500	578	1100	1860	282	369
21	371	1520	23200	1800	890	1430	2960	567	1200	1260	308	374
22	372	1300	14800	1840	876	1740	2730	403	e1380	969	306	320
23	369	1110	12200	1760	886	1550	2860	394	3540	796	305	300
24	364	965	10000	1590	975	1170	2050	1080	2150	772	319	288
25	364	878	7440	1430	2040	1020	1430	1980	1700	686	286	285
26	392	822	5630	1380	2930	991	1120	1410	1420	618	272	262
27	372	784	5640	1480	2010	987	902	1510	1240	635	555	253
28	1470	773	5230	1490	1780	1120	701	1910	1330	608	2710	257
29	e4640	751	4440	1620	1500	1130	610	3530	1560	639	2580	261
30	2060	724	3720	1720	---	1020	541	4200	5860	991	1640	251
31	1360	---	3280	1680	---	961	---	3280	---	2340	1220	---

e Estimated

RED RIVER BASIN

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07308500 RED RIVER NEAR BURKBURNETT, TX--Continued

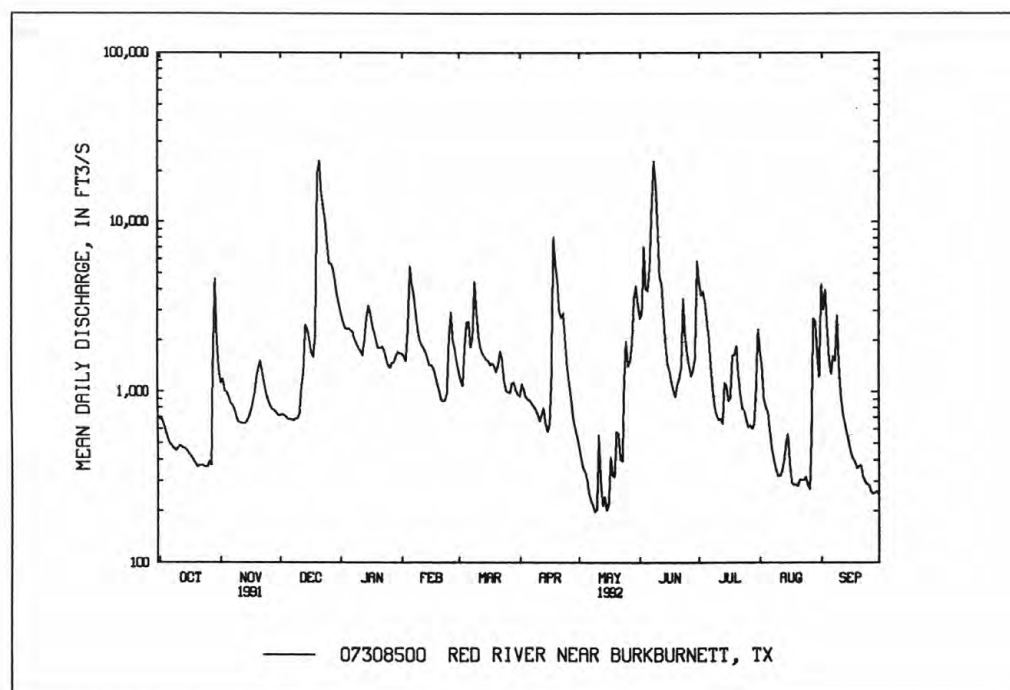
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	21951	27130	137480	63240	56407	50949	48365	26618	129938	45582	21959	32142
MEAN	708	904	4435	2040	1945	1644	1612	859	4331	1470	708	1071
MAX	4640	1520	23200	3200	5470	4470	8100	4200	23000	4430	2710	4320
MIN	364	647	676	1380	876	961	541	199	928	608	272	251
AC-FT	43540	53810	272700	125400	111900	101100	95930	52800	257700	90410	43560	63750

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1712	630	474	418	469	650	774	2173	3130	784	532	1238
MAX	14900	4960	4435	2040	3024	3552	5987	12470	13480	5947	2107	4244
(WY)	1987	1987	1992	1992	1987	1987	1973	1977	1991	1975	1979	1965
MIN	21.9	.96	2.98	5.53	8.37	7.97	.15	11.4	148	.058	1.29	32.2
(WY)	1971	1971	1971	1971	1971	1971	1971	1971	1970	1970	1964	1983

SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1961-92
ANNUAL TOTAL	876711	661761	
ANNUAL MEAN	2402	1808	1083
HIGHEST ANNUAL MEAN			4424 1987
LOWEST ANNUAL MEAN			178 1964
HIGHEST DAILY MEAN	91800	June 4 23200	Dec 21 121000 Oct 22 1983
LOWEST DAILY MEAN	164	Apr 16 199	May 9 .00 Jul 19 1964
ANNUAL SEVEN-DAY MINIMUM	175	Apr 16 250	May 4 .00 Jul 19 1964
INSTANTANEOUS PEAK FLOW		31300	Dec 20 166000 Oct 21 1983
INSTANTANEOUS PEAK STAGE		^a 10.88	Dec 20 16.90 Oct 21 1983
INSTANTANEOUS LOW FLOW		165	May 15 .00 at times
ANNUAL RUNOFF (AC-FT)	1739000	1313000	784400
10 PERCENT EXCEEDS	3820	3590	2080
50 PERCENT EXCEEDS	676	1100	269
90 PERCENT EXCEEDS	231	350	46

aFrom high-water mark.



07308500 RED RIVER NEAR BURKBURNETT, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: May 1968 to September 1974. Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: October 1973 to September 1982.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1968 to September 1981.

WATER TEMPERATURE: July 1968 to September 1981.

INSTRUMENTATION.--From December 1968 to September 1979, specific conductance was continuously recorded at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 17,400 microsiemens July 30, 1972; minimum daily, 889 microsiemens Sept. 24, 1970.

WATER TEMPERATURE: Maximum daily, 35.5°C June 29, 1980; minimum daily, 0.0°C on many days during winter months.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	AGENCY	AGENCY	DIS-		PH			BARO-		OXYGEN,	OXYGEN	
		COL-	ANA-	CHARGE,	SPE-	WATER			METRIC		DIS-	DEMAND,	
		LECTING	LYZING	INST.	CIFIC	WHOLE	TEMPER-	TUR-	PRES-	OXYGEN,	SOLVED	BIO-	
		SAMPLE	SAMPLE	(CUBIC	CON-	FIELD	ATURE	BID-	SURE	DIS-	(PER-	CHEM-	
		(CODE	(CODE	FEET	DUCT-	(STAND-	WATER		(MM	SOLVED	CENT	ICAL,	
		(00027)	(00028)	PER	ANCE	ARD	(DEG C)	(00010)	(00076)	(00025)	(00300)	(00301)	(00310)
		NUMBER)	NUMBER)	SECOND)	(US/CM)	UNITS)				HG)	(MG/L)	SATUR-	5 DAY
												ATION)	(MG/L)
JAN													
24...	0930	1028	80020	1590	7490	8.3	6.0	59	739	12.1	103	1.0	
MAR													
19...	0900	1028	80020	1440	7200	8.2	11.0	26	744	11.4	109	3.7	
MAY													
08...	0930	1028	80020	227	8220	8.2	17.5	32	739	11.2	124	7.7	
AUG													
07...	0800	1028	80020	903	6210	7.6	24.0	48	738	9.8	123	4.5	
		COLI-	STREP-										
		FORM,	TOCOCCHI	HARD-		MAGNE-					BICAR-	CAR-	
		FECAL,	FECAL,	NESS	NONCARB	CALCIUM	SIUM,	SODIUM,		SODIUM	POTAS-	BONATE	BONATE
		0.7	KF AGAR	NESS	DISSOLV	DIS-	DIS-	DIS-		AD-	SIUM,	WATER	WATER
		UM-MF	TOTAL	DIS	AS	SOLVED	SOLVED	SOLVED		SORP-	DIS-	DIS IT	DIS IT
DATE	(COLS./	(COLS.	(MG/L	FLD. AS	DIS-	(MG/L	(MG/L	(MG/L	SODIUM	TION	SOLVED	FIELD	FIELD
	100 ML)	PER	AS	CACO3	(MG/L	AS CA)	AS MG)	AS NA)	PERCENT	RATIO	(MG/L	(MG/L AS	(MG/L AS
	(31625)	(31673)	(00900)	(00904)	(00915)	(00925)	(00930)	(00932)	(00931)	(00935)	(00453)	(00452)	
JAN													
24...	40	390	1600	1400	390	150	1100	60	12	8.8	285	0	
MAR													
19...	K55	K45	1500	1300	360	140	1100	62	12	3.7	200	0	
MAY													
08...	K14	K36	1500	1400	370	130	1300	66	15	10	119	0	
AUG													
07...	K50	K2100	1000	970	250	99	950	66	13	11	76	0	
		ALKA-					SOLIDS,	SOLIDS,				NITRO-	NITRO-
		LINITY					RESIDUE	SUM OF				GEN,	GEN,
		WAT DIS	SULFATE	CHLO-	FLUO-	SILICA,	AT 180	CONSTI-	SOLIDS,	SOLIDS,	NITRO-	NITRATE	NITRATE
		TOT IT	DIS-	RIDE,	RIDE,	DIS-	DEG. C	TUENTS,	DIS-	DIS-	GEN,	DIS-	DIS-
		FIELD	SOLVED	DIS-	DIS-	SOLVED	DIS-	DIS-	(TONS	(TONS	NITRATE	SOLVED	SOLVED
DATE	(MG/L AS	(MG/L	(MG/L	(MG/L	(MG/L	(MG/L	SOLVED	SOLVED	PER	PER	TOTAL	(MG/L	(MG/L
	CAC03)	AS SO4)	AS CL)	AS F)	AS F)	AS F)	(MG/L)	(MG/L)	AC-FT)	DAY)	AS N)	AS N)	AS NO3)
	(39086)	(00945)	(00940)	(00950)	(00955)	(70300)	(70301)	(70303)	(70302)	(00620)	(00618)	(71851)	
JAN													
24...	234	1100	1800	0.80	10	5130	4710	6.98	22000	1.57	1.57	6.9	
MAR													
19...	164	1200	1700	0.30	5.2	4590	4610	6.24	17800	0.330	0.350	1.5	
MAY													
08...	98	1400	2000	0.80	5.9	5600	5280	7.62	3430	--	--	--	
AUG													
07...	62	1000	1500	0.50	7.6	4350	3860	5.92	10600	--	--	--	

RED RIVER BASIN

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07308500 RED RIVER NEAR BURKBURNETT, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS NO2) (71856)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, AM- MONIA + TOTAL (MG/L AS N) (00605)	NITRO- GEN, AM- MONIA + TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	
	JAN 24...	0.030	0.030	0.10	1.60	1.60	0.070	0.080	0.09	0.10	0.53	0.60	2.2
	MAR 19...	0.040	0.010	0.03	0.370	0.360	0.030	0.020	0.04	0.03	0.97	1.0	1.4
	MAY 08...	0.030	<0.010	--	<0.050	0.075	0.030	0.010	0.04	0.01	0.57	0.60	--
	AUG 07...	<0.010	<0.010	--	<0.050	<0.050	0.020	0.010	0.03	0.01	0.88	0.90	--
DATE	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHATE, TOTAL (MG/L AS PO4) (00650)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO DIS- SOLVED (MG/L AS PO4) (00660)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)		
	JAN 24...	9.7	0.130	0.09	0.040	0.030	0.030	0.09	--	--	--	--	
	MAR 19...	6.1	0.080	0.09	<0.010	0.030	<0.010	--	<10	100	<1	<10	
	MAY 08...	--	0.060	0.28	<0.010	0.090	<0.010	--	<10	200	<1	<10	
	AUG 07...	--	0.100	0.09	<0.010	0.030	<0.010	--	<10	200	<1	20	
DATE	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)	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)	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)		
	JAN 24...	--	--	--	--	--	--	--	171	734	96		
	MAR 19...	80	20	4	<1	3	<1.0	4600	38	97	377	98	
	MAY 08...	90	20	4	2	3	<1.0	4900	45	85	52	95	
	AUG 07...	70	10	4	2	4	<1.0	4000	39	112	273	100	

RED RIVER BASIN
07311000 EAST CACHE CREEK NEAR WALTERS, OK

LOCATION.--Lat 34°21'44", long 98°16'56", on south line of SE 1/4 SE 1/4 sec.19, T.2 S., R.10 W., Cotton County, Hydrologic Unit 11130202, at right bank on downstream side of bridge on State Highway 53, 1.8 mi east of Walters, 12.2 mi upstream from West Cache Creek, and at mile 19.7.
DRAINAGE AREA.--675 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1938 to December 1963; October 1969 to current year. Prior to October 1969, published as Cache Creek near Walters.

GAGE.--Water-stage recorder. Datum of gage is 938.2 ft above National Geodetic Vertical Datum of 1929 (Oklahoma State Highway Department). Prior to Jan. 8, 1939, nonrecording gage at same site and datum.

REMARKS.--Records good. Flow partly regulated by Lake Lawtonka, capacity, 42,300 acre-ft on Medicine Creek prior to late 1953, and 63,000 acre-ft thereafter by Lake Thomas, capacity 8,300 acre-ft on Little Medicine Creek; and since March 1961 by Lake Ellsworth, capacity 94,500 acre-ft on East Cache Creek. Low flow sustained by sewage effluent from cities of Lawton and Walters.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1906 reached an approximate stage of 29.7 ft, information from local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DAY	DAILY MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	232	187	67	901	256	318	157	382	702	552	397	237
2	246	160	98	929	266	306	341	213	1730	253	284	317
3	140	119	128	492	337	325	205	160	2950	356	119	335
4	120	105	98	340	352	918	153	144	1170	442	98	209
5	151	98	77	422	432	2280	135	132	670	237	89	198
6	150	89	71	428	442	1250	125	115	2480	142	165	316
7	113	81	70	432	245	1020	124	105	4520	129	144	327
8	100	76	66	468	201	978	216	102	7050	129	95	325
9	94	71	63	335	191	2380	248	100	9320	119	87	321
10	89	71	54	317	181	739	153	99	8030	112	83	328
11	86	71	56	272	183	389	117	104	3770	109	79	343
12	84	68	398	259	191	316	110	351	1250	104	88	185
13	81	67	1510	406	187	406	111	577	732	87	194	69
14	78	66	989	1280	214	819	106	242	534	87	201	56
15	76	66	375	1040	218	769	187	128	450	689	204	50
16	74	123	229	399	189	740	229	116	351	930	203	162
17	68	372	314	317	180	360	1330	121	264	335	202	297
18	66	512	727	254	170	212	8090	171	229	539	211	153
19	65	230	1290	474	165	226	5010	245	202	243	234	178
20	58	140	9850	382	164	265	678	278	257	127	230	257
21	57	116	12700	307	147	333	529	509	638	112	223	126
22	58	109	9750	272	141	344	742	1660	329	348	218	56
23	68	89	5940	379	141	345	771	1390	227	274	207	47
24	67	97	3050	436	145	325	753	771	229	112	206	41
25	84	104	1510	383	490	188	738	343	209	193	213	38
26	74	83	1220	306	599	132	718	656	183	175	227	37
27	81	75	1140	375	452	120	478	996	163	105	412	37
28	613	73	1090	639	387	111	303	939	420	923	203	35
29	3100	72	941	472	369	139	212	4110	1500	1120	128	e33
30	1050	68	906	402	---	170	234	5320	1720	320	201	e31
31	215	---	891	367	---	135	---	969	---	330	200	---
TOTAL	7638	3658	55668	14485	7635	17358	23303	21548	52279	9733	5845	5144
MEAN	246	122	1796	467	263	560	777	695	1743	314	189	171
MAX	3100	512	12700	1280	599	2380	8090	5320	9320	1120	412	343
MIN	57	66	54	254	141	111	106	99	163	87	79	31
AC-FT	15150	7260	110400	28730	15140	34430	46220	42740	103700	19310	11590	10200

e Estimated

RED RIVER BASIN
07311000 EAST CACHE CREEK NEAR WALTERS, OK--Continued

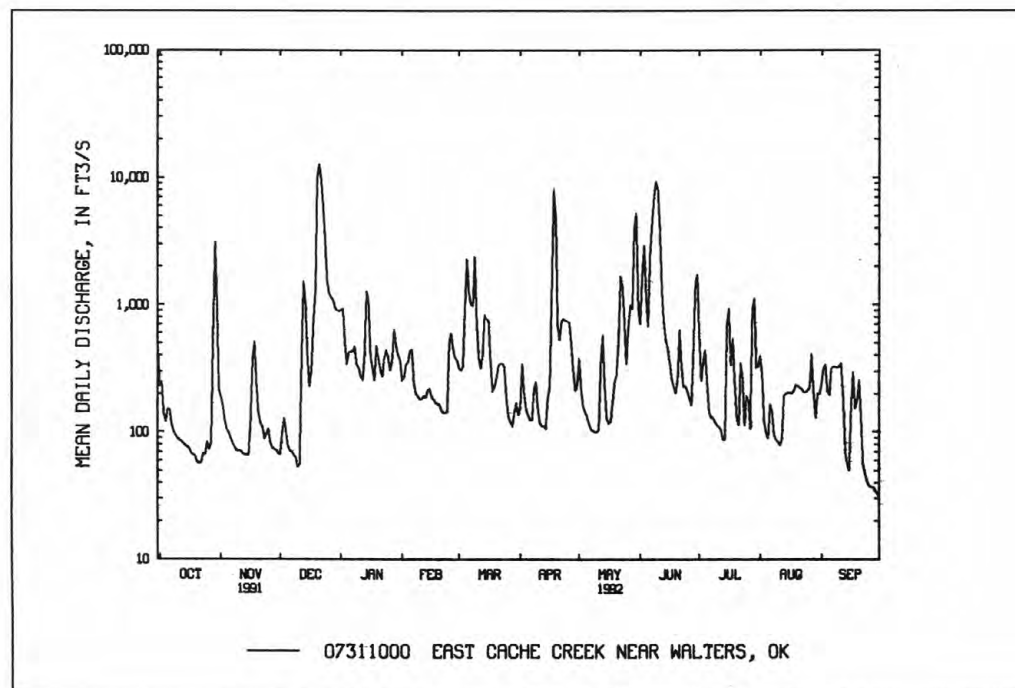
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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	254	93.1	113	84.1	126	225	216	576	461	103	55.9	147
MAX	2738	898	1796	640	1356	1538	1243	2654	2619	483	285	1637
(WY)	1984	1987	1992	1987	1987	1990	1990	1987	1962	1975	1971	1986
MIN	.000	.15	.15	.63	2.20	2.09	7.81	5.13	12.6	9.25	3.75	.000
(WY)	1940	1940	1940	1940	1940	1940	1939	1939	1939	1954	1954	1939

SUMMARY STATISTICS	1991 CALENDAR YEAR		1992 WATER YEAR		WATER YEARS 1938-92	
ANNUAL TOTAL	128277.3		224294			
ANNUAL MEAN	351		613		206	
HIGHEST ANNUAL MEAN					911	
LOWEST ANNUAL MEAN					12.6	
HIGHEST DAILY MEAN	12700	Dec 21	12700	Dec 21	34600	Oct 21 1983
LOWEST DAILY MEAN	4.2	Mar 10	31	Sep 30	.00	^a Jul 24 1939
ANNUAL SEVEN-DAY MINIMUM	4.8	Mar 8	36	Sep 24	.00	Aug 1 1939
INSTANTANEOUS PEAK FLOW			14200	Dec 20	50900	Oct 21 1983
INSTANTANEOUS PEAK STAGE			28.02	Dec 20	30.66	Oct 21 1983
ANNUAL RUNOFF (AC-FT)	254400		444900		149400	
10 PERCENT EXCEEDS	857		1060		352	
50 PERCENT EXCEEDS	59		228		34	
90 PERCENT EXCEEDS	18		73		10	

^aNo flow at times in 1939-40.



RED RIVER BASIN

07311000 EAST CACHE CREEK NEAR WALTERS, OK--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1947, 1948, 1951-55, 1958-63, 1970 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1951 to September 1953, October 1969 to March 1977.

WATER TEMPERATURE: October 1951 to September 1953, October 1969 to March 1977.

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

MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM HG) (00025)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. (CUBIC FEET PER SECOND) (00061)	GAGE HEIGHT (FEET) (00065)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)
AUG											
05...	1200	5.00	26.5	740	1028	1028	89	5.78	750	6.2	8.0
05...	1205	10.0	26.5	740	1028	1028	89	5.78	748	6.1	8.0
05...	1210	15.0	26.5	740	1028	1028	89	5.78	747	6.1	8.0
05...	1215	20.0	26.5	740	1028	1028	89	5.78	747	6.0	8.0
05...	1220	25.0	26.0	740	1028	1028	89	5.78	746	5.9	8.0

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	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 HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT										
09...	1100	1028	80020	94	759	7.9	24.0	16.5	740	7.6
DEC										
04...	1100	1028	80020	99	671	8.1	8.5	5.0	750	5.8
MAR										
03...	1130	1028	80020	299	661	8.1	17.5	14.0	740	8.9
APR										
29...	1100	1028	80020	204	693	7.9	16.5	17.5	740	6.5
JUN										
16...	1100	1028	80020	352	673	7.9	27.5	24.5	740	6.9
AUG										
05...	1130	1028	80020	89	747	8.0	28.0	26.5	740	6.0

RED RIVER BASIN

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07311000 EAST CACHE CREEK NEAR WALTERS, OK--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	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 (00932)	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 09...	80	240	12	70	15	69	38	2	5.3	274
DEC 04...	46	220	0	67	12	65	39	2	3.6	267
MAR 03...	89	240	--	72	15	50	31	1	4.0	--
APR 29...	70	240	0	72	14	55	33	2	3.4	295
JUN 16...	86	240	14	76	13	53	32	1	3.0	280
AUG 05...	77	250	39	74	17	60	33	2	4.5	263
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)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
OCT 09...	0	225	78	66	0.30	466	452	0.63	118	3.20
DEC 04...	0	219	34	35	0.30	385	357	0.52	103	2.00
MAR 03...	--	*195	89	46	0.30	402	364	0.55	325	1.70
APR 29...	0	242	66	50	0.20	421	408	0.57	232	0.580
JUN 16...	0	229	59	46	0.30	426	393	0.58	405	1.10
AUG 05...	0	215	98	52	0.30	455	437	0.62	109	0.480

*ALKALINITY, LAB, MG/L AS CaCO_3

RED RIVER BASIN
07311200 BLUE BEAVER CREEK NEAR CACHE, OK
(Hydrologic benchmark station)

LOCATION.--Lat 34°37'24", long 98°33'48", in NE 1/4 NE 1/4 sec.28, T.2 N., R.13 W., Comanche County, Hydrologic Unit 11130203, on downstream side of right bank pier on old U.S. Highway 62, 3,000 ft upstream from St. Louis-San Francisco Railway Co. bridge, 4.0 mi east of Cache, and at mile 12.0.

DRAINAGE AREA.--24.6 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,215.26 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Minor regulation by Lake Rush, Lake Jed Johnson, and Lake Ketch, combined surface-area 132 acres.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since about 1907, that of Aug. 28, 1977, according to local resident.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s.

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
Dec. 20	0600	2,880	12.67	May 28	0930	1,800	11.73
Apr. 16	2100	2,050	11.98	June 1	1700	888	10.53
Apr. 17	0645	2,540	12.43	June 8	0530	542	9.86

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	10	11	25	13	4.0	14	9.4	262	12	1.8	.79
2	7.2	8.6	10	24	12	3.6	11	8.3	131	9.6	1.7	.49
3	6.4	7.6	9.2	19	12	34	9.3	7.6	62	8.3	1.7	.36
4	5.6	7.6	7.9	17	14	241	8.4	7.4	42	7.3	1.3	.28
5	5.1	7.1	9.5	17	13	60	7.9	6.9	70	6.0	1.2	.32
6	5.0	6.5	9.0	15	11	34	8.2	5.9	120	5.2	1.1	.25
7	4.0	5.9	8.7	15	10	25	8.4	5.6	86	4.3	.93	.24
8	3.5	5.7	7.1	14	10	22	8.1	5.2	288	3.5	.93	.24
9	3.2	5.7	7.1	13	9.3	33	7.7	4.8	146	2.9	.76	.22
10	2.9	5.4	7.8	11	9.5	22	7.3	4.5	87	2.4	.67	.28
11	2.6	5.0	15	10	8.6	17	6.8	7.5	54	2.1	.79	.37
12	2.3	4.8	281	10	8.3	14	6.7	6.0	38	1.8	.99	.32
13	2.2	4.5	83	34	8.1	13	7.1	4.6	29	1.4	.62	.28
14	1.9	5.8	45	32	7.7	12	6.7	4.1	24	6.5	.43	.19
15	1.8	9.4	32	24	7.2	11	6.0	3.8	20	4.0	.52	.15
16	1.8	99	27	18	7.0	10	277	3.4	18	2.7	.34	.08
17	1.8	98	24	17	6.7	9.4	854	4.0	15	2.5	.29	.13
18	1.5	50	20	18	6.0	9.4	132	3.9	14	2.1	.88	.10
19	1.2	34	488	16	6.2	8.9	70	3.9	12	1.7	.68	.00
20	1.3	27	1520	15	5.8	8.4	46	7.2	21	1.5	.44	.03
21	1.4	22	195	16	5.3	7.5	33	13	18	7.6	.32	.03
22	1.3	19	163	17	5.0	6.9	26	16	14	12	.24	.00
23	1.2	17	96	15	4.6	8.4	22	14	12	7.1	.13	.00
24	1.2	15	58	13	5.9	6.8	18	12	22	4.6	.06	.00
25	.95	13	41	12	8.8	6.2	16	21	17	3.0	.11	.00
26	1.3	12	34	12	8.2	5.7	14	28	12	2.2	.74	.00
27	1.1	11	34	17	6.0	5.3	13	19	9.9	4.8	.41	.00
28	37	11	27	19	5.0	5.3	11	515	20	3.6	.25	.00
29	11	11	23	16	4.5	5.2	12	126	19	2.6	.20	.00
30	7.5	9.6	23	15	---	8.0	10	58	14	2.2	.19	.03
31	8.0	---	20	14	---	5.5	---	52	---	2.0	.84	---

RED RIVER BASIN

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07311200 BLUE BEAVER CREEK NEAR CACHE, OK--Continued

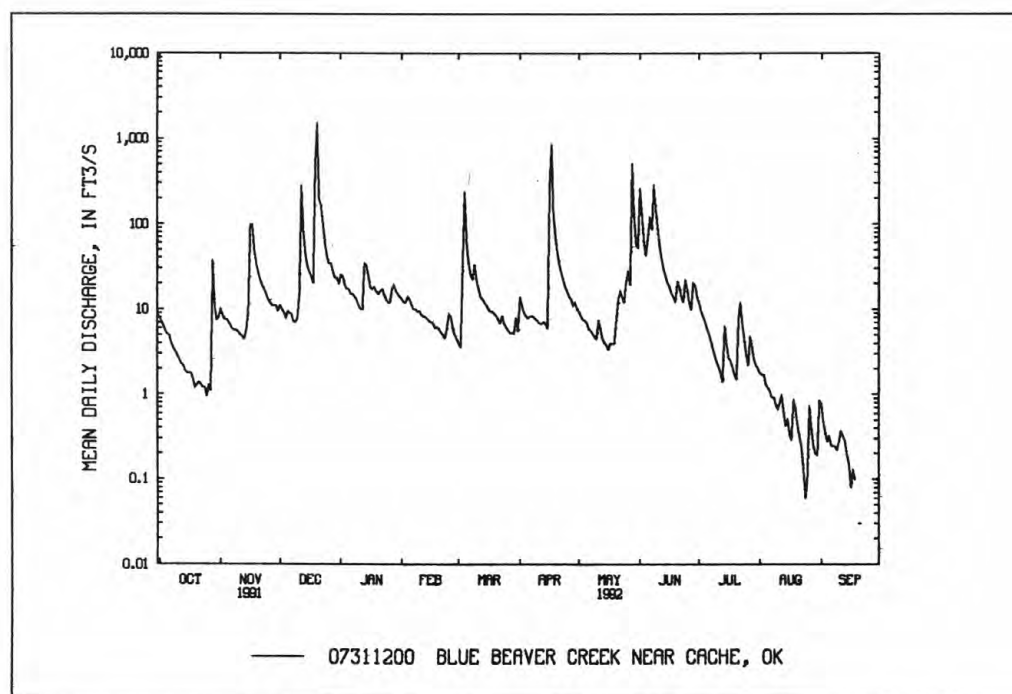
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	141.35	548.2	3336.3	530	238.7	662.5	1677.6	988.0	1696.9	139.5	21.56	5.18
MEAN	4.56	18.3	108	17.1	8.23	21.4	55.9	31.9	56.6	4.50	.70	.17
MAX	37	99	1520	34	14	241	854	515	288	12	1.8	.79
MIN	.95	4.5	7.1	10	4.5	3.6	6.0	3.4	9.9	1.4	.06	.00
AC-FT	280	1090	6620	1050	473	1310	3330	1960	3370	277	43	10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	17.3	7.97	8.61	7.89	12.0	20.9	18.1	37.0	21.2	1.36	1.23	6.17
MAX	193	61.1	108	53.2	67.1	95.0	88.0	176	125	12.6	27.5	50.9
(WY)	1987	1987	1992	1973	1987	1990	1990	1982	1989	1975	1977	1991
MIN	.000	.000	.000	.000	.000	.000	.017	.026	.012	.000	.000	.000
(WY)	1965	1966	1966	1966	1966	1966	1971	1971	1971	1964	1964	1964

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1964 - 92

ANNUAL TOTAL	8592.29	9985.79	
ANNUAL MEAN	23.5	27.3	13.3
HIGHEST ANNUAL MEAN			47.8 1987
LOWEST ANNUAL MEAN			.48 1966
HIGHEST DAILY MEAN	1520	Dec 20 1520	Dec 20 2600 Oct 20 1983
LOWEST DAILY MEAN	.00	at times	.00 at times .00 each year
ANNUAL SEVEN-DAY MINIMUM	.01	Aug 23	.00 Sep 22 .00 Jul 1 1964
INSTANTANEOUS PEAK FLOW			2880 Dec 20 ^a 13600 Oct 28 1977
INSTANTANEOUS PEAK STAGE			12.67 Dec 20 ^b 18.02 Oct 28 1977
ANNUAL RUNOFF (AC-FT)	17040	19810	9670
10 PERCENT EXCEEDS	41	37	23
50 PERCENT EXCEEDS	2.9	8.0	.94
90 PERCENT EXCEEDS	.15	.35	.00

^aFrom rating curve extended above 4,000 ft³/s on basis of contracted opening.^bFrom high-water mark.

RED RIVER BASIN

07311200 BLUE BEAVER CREEK NEAR CACHE, OK--Continued
(Hydrologic benchmark station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965 to current year.

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. (CUBIC FEET PER SECOND) (00061)	GAGE HEIGHT (FEET) (00065)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)
AUG											
04...	1115	1.00	25.0	730	1028	1028	1.5	6.77	250	7.2	8.1
04...	1118	2.00	25.0	730	1028	1028	1.5	6.77	249	7.3	8.1
04...	1120	3.00	25.0	730	1028	1028	1.5	6.77	252	7.3	8.1

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	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, (PER- CENT SATUR- ATION) (00301)
OCT												
08...	1130	1028	80020	3.6	176	7.6	26.0	17.0	2.6	730	8.3	90
FEB												
11...	1000	1028	80020	8.6	149	8.1	12.5	10.0	6.5	740	10.1	92
JUN												
15...	1000	1028	80020	20	150	7.9	25.5	21.0	4.0	730	6.4	75
AUG												
04...	1100	1028	80020	1.5	249	8.1	29.0	25.0	2.2	730	7.3	92

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL DISSOLV (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV (MG/L AS CACO3) (00904)	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 PERCENT (00932)	SODIUM 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)
OCT												
08...	44	64	66	0	19	4.4	11	26	0.6	1.5	98	0
FEB												
11...	46	140	49	0	14	3.5	11	32	0.7	1.0	66	0
JUN												
15...	110	160	56	0	16	3.8	9.3	26	0.5	1.1	78	0
AUG												
04...	K150	>200	88	0	25	6.1	16	28	0.7	1.5	131	0

RED RIVER BASIN

85

07311200 BLUE BEAVER CREEK NEAR CACHE, OK--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

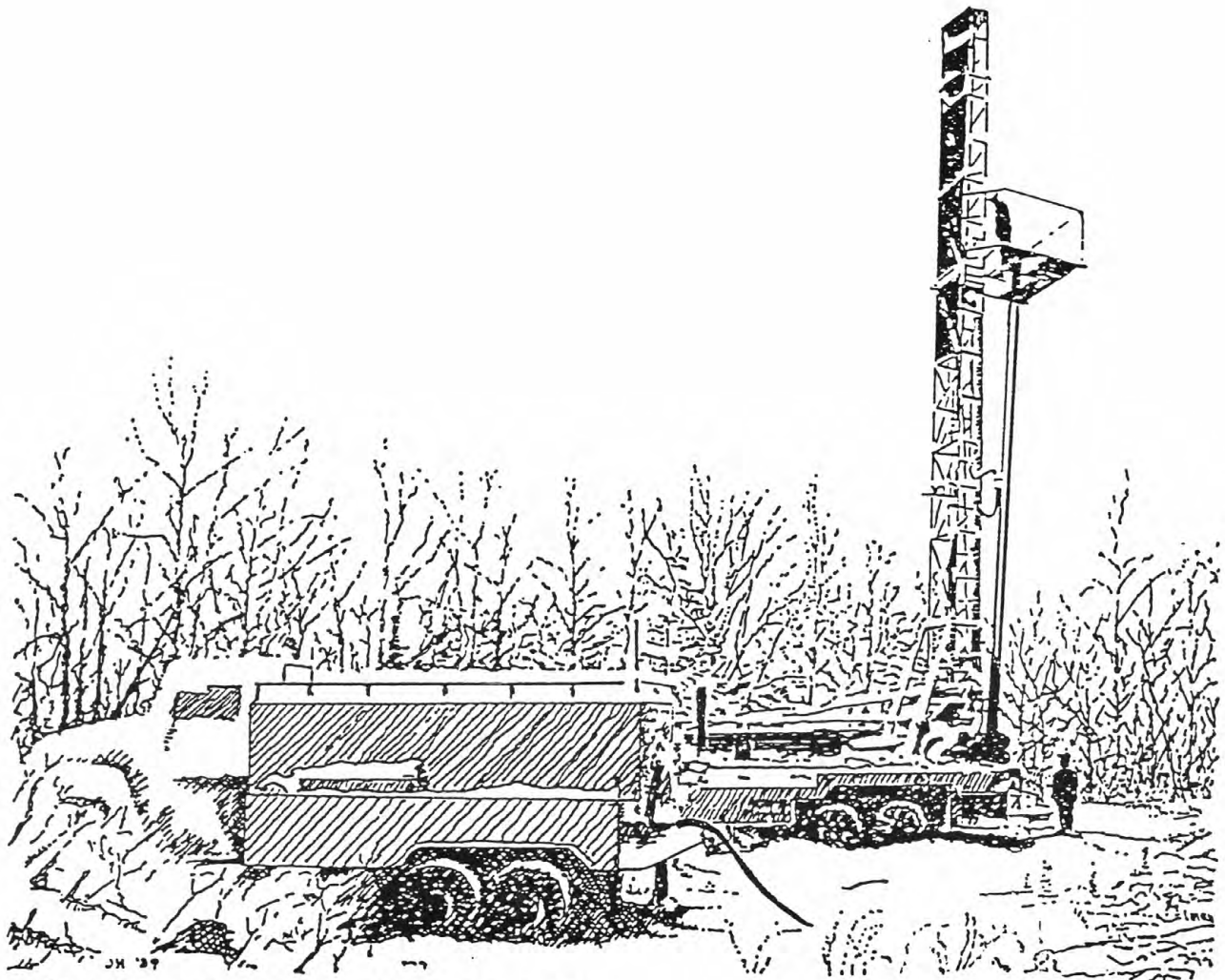
DATE	ALKA- LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 08...	80	9.6	5.8	0.40	16	110	116	0.15	1.07	<0.010	0.020
FEB 11...	54	11	7.5	0.30	12	93	93	0.13	2.16	<0.010	<0.010
JUN 15...	64	6.9	4.2	0.30	15	98	96	0.13	5.29	<0.010	<0.010
AUG 04...	107	11	9.3	0.40	18	144	152	0.20	0.58	<0.010	<0.010
DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS NO2) (71856)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTH TOTAL (MG/L AS P) (70507)
OCT 08...	0.07	<0.050	<0.050	<0.010	<0.010	--	--	<0.20	0.160	0.060	<0.010
FEB 11...	--	<0.050	<0.050	0.010	<0.010	0.01	--	<0.20	<0.010	<0.010	<0.010
JUN 15...	--	<0.050	<0.050	0.020	0.010	0.03	0.01	<0.20	<0.010	<0.010	<0.010
AUG 04...	--	<0.050	<0.050	0.020	0.010	0.03	0.01	<0.20	<0.010	<0.010	<0.010
DATE	PHOS- PHORUS ORTH DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTH DIS- SOLVED (MG/L AS PO4) (00660)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	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)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
OCT 08...	0.010	0.03	20	59	<3	43	<4	17	<10	<1	<1
FEB 11...	<0.010	--	30	42	<3	35	<4	15	<10	<1	<1
JUN 15...	<0.010	--	210	57	<3	220	5	15	<10	<1	<1
AUG 04...	<0.010	--	10	71	<3	43	<4	31	<10	<1	<1
DATE	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)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	ALPHA, COUNT, 2 SIGMA WAT DIS AS NAT U (UG/L) (75986)	ALPHA COUNT, 2 SIGMA WAT DIS AS TH-230 (PCI/L) (75987)	ALPHA, 2 SIGMA SED SUS TOT DRY AS TH-230 (PCI/L) (76004)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	BETA, 2 SIGMA WATER, DISS, AS CS-137 (PCI/L) (75989)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)
OCT 08...	<1.0	75	<6	<0.6	<0.6	0.50	<0.60	0.20	2.1	0.70	<0.6
FEB 11...	<1.0	60	<6	--	--	--	--	--	--	--	--
JUN 15...	<1.0	67	<6	<0.6	<0.6	0.55	0.39	0.24	2.0	0.66	<0.6
AUG 04...	<1.0	110	<6	--	--	--	--	--	--	--	--

RED RIVER BASIN

07311200 BLUE BEAVER CREEK NEAR CACHE, OK--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	BETA, 2 SIGMA WATER, DISS, AS SR90 (PCI/L /Y90 (PCI/L 75988)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	BETA, 2 SIGMA SED, SUSP, TOT DRY SR90Y90 (PCI/L (76005)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L (09511)	RA-226 2 SIGMA WATER, DISS, (PCI/L (76001)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	URANIUM NATURAL 2 SIGMA WATER, DISS, (UG/L (75990)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (MG/L (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 08...	1.8	0.60	<0.6	0.50	0.09	0.020	0.09	<1.0	13	0.13	52
FEB 11...	--	--	--	--	--	--	--	--	25	0.58	59
JUN 15...	1.7	0.56	<0.6	0.49	0.05	0.010	0.10	<1.0	8	0.43	54
AUG 04...	--	--	--	--	--	--	--	--	9	0.04	67



Cleaning and plugging wells, winter 1984

RED RIVER BASIN
07311500 DEEP RED RUN NEAR RANDLETT, OK

LOCATION.--Lat 34°13'15", long 98°27'10", in SW 1/4 SW 1/4 sec.10, T.4 S., R.12 W., Cotton County, Hydrologic Unit 11130203, near right bank on downstream side of pier of bridge on U.S. Highway 277, 2.8 mi north of Randlett, and at mile 4.8.

DRAINAGE AREA.--617 mi².

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1211: Drainage area. WSP 1631: 1956. WSP 1920: 1951.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 924.49 ft above National Geodetic Vertical Datum of 1929 (Oklahoma State Highway Department). Prior to Nov. 10, 1949, nonrecording gage at same site and datum.

REMARKS.--Records poor. Some regulation by numerous flood-retarding structures.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1908 reached a stage somewhat exceeding 27 ft, from information provided by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
Oct. 29	0745	3,870	21.31	Apr. 19	1000	3,230	20.26
Dec. 20	1715	21,500	25.62	May 31	0245	4,540	22.22
Mar. 5	0930	2,970	19.74	June 3	1915	3,720	21.18
Mar. 9	1930	5,580	23.17	June 9	1700	12,900	24.83

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DAY	DAILY MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	81	22	141	108	73	47	34	846	e800	e41	e250
2	41	81	22	145	99	71	173	31	1540	e310	e31	e190
3	38	62	23	147	100	72	114	29	3290	e160	e25	e80
4	33	41	25	113	195	885	72	26	1690	e87	e21	e40
5	25	34	24	102	386	2690	48	24	e420	e69	e18	e30
6	24	31	25	103	228	716	39	23	2030	e59	e17	e23
7	22	27	26	93	144	218	e35	23	4190	e51	e15	e18
8	21	25	26	89	107	158	e33	23	7950	45	e14	e15
9	21	23	25	84	91	3590	e31	25	11500	e41	e13	e13
10	22	23	24	79	81	3610	e29	24	8300	e37	e12	e11
11	22	22	25	76	75	462	e28	31	3920	e34	e12	e9.2
12	22	21	293	76	72	204	e26	26	1170	e31	e11	e8.0
13	21	19	952	160	72	162	e24	23	480	e30	e10	e7.2
14	17	18	383	742	76	139	e22	21	e400	e28	e9.6	e6.8
15	18	19	131	727	74	117	e21	21	e340	e560	e9.0	e6.2
16	17	32	85	297	70	102	25	22	e280	e250	e8.4	e5.8
17	18	157	73	184	72	90	728	118	e260	e69	e8.0	e5.6
18	18	157	70	149	64	96	2620	580	e235	e41	e7.8	e5.3
19	16	90	589	140	57	108	2770	195	e215	e33	e7.6	e5.0
20	16	60	13800	126	52	84	490	213	668	e28	e7.2	e4.7
21	20	44	13100	130	53	67	243	358	1870	e24	e6.9	e4.5
22	25	37	6880	167	52	55	175	186	1740	e21	e6.7	e4.3
23	30	36	4140	148	49	46	129	86	633	e710	e6.4	e4.0
24	35	33	2550	127	50	41	97	51	279	e420	6.2	e3.8
25	37	31	925	105	257	41	74	40	e1700	e260	e5.9	e3.7
26	39	31	616	88	540	39	60	42	e840	e150	e16	e3.5
27	41	32	467	112	203	38	49	45	e640	e120	e140	e3.3
28	948	32	353	276	116	37	49	159	e560	e250	e110	e3.1
29	3150	29	254	214	85	40	41	2850	e1600	e94	e70	e2.9
30	527	24	192	160	---	39	36	4370	e1750	e67	e46	e2.8
31	95	---	156	131	---	37	---	3460	---	e55	e35	---
TOTAL	5427	1352	46276	5431	3628	14127	8328	13159	61336	4934	746.7	769.7
MEAN	175	45.1	1493	175	125	456	278	424	2045	159	24.1	25.7
MAX	3150	157	13800	742	540	3610	2770	4370	11500	800	140	250
MIN	16	18	22	76	49	37	21	21	215	21	5.9	2.8
AC-FT	10760	2680	91790	10770	7200	28020	16520	26100	121700	9790	1480	1530

e Estimated

RED RIVER BASIN
07311500 DEEP RED RUN NEAR RANDLETT, OK--Continued

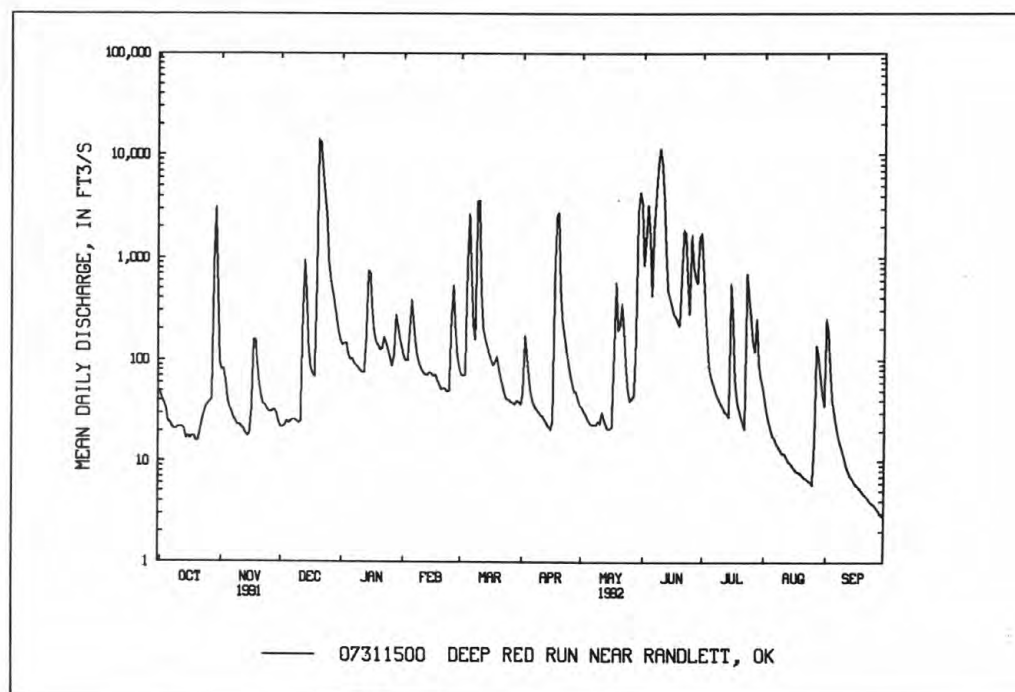
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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	294	76.6	63.7	50.4	73.2	116	125	492	390	67.4	47.8	194
MAX	3345	994	1493	563	1020	1134	1398	2800	2163	795	506	1453
(WY)	1984	1987	1992	1985	1987	1990	1990	1987	1989	1991	1966	1969
MIN	.000	.000	.000	.000	.022	.10	.003	.061	.000	.000	.000	.000
(WY)	1953	1955	1955	1953	1981	1980	1955	1971	1966	1964	1952	1952

SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1950-92
ANNUAL TOTAL	174651.0	165514.4	
ANNUAL MEAN	478	452	166
HIGHEST ANNUAL MEAN			904 1987
LOWEST ANNUAL MEAN			15.8 1953
HIGHEST DAILY MEAN	14400 Jul 28	13800 Dec 20	46300 Oct 20 1983
LOWEST DAILY MEAN	1.6 Jul 23	2.8 Sep 30	.00 at times
ANNUAL SEVEN-DAY MINIMUM	2.1 Jul 18	3.3 Sep 24	.00 Oct 3 1951
INSTANTANEOUS PEAK FLOW		21500 Dec 20	72300 Oct 20 1983
INSTANTANEOUS PEAK STAGE		25.62 Dec 20	^a 29.58 May 29 1987
ANNUAL RUNOFF (AC-FT)	346400	328300	120300
10 PERCENT EXCEEDS	856	759	174
50 PERCENT EXCEEDS	23	58	4.1
90 PERCENT EXCEEDS	2.9	12	.00

^aDue to backwater from West Cache Creek.



RED RIVER BASIN
07313400 WAURIKA LAKE NEAR WAURIKA, OK

LOCATION.--Lat 34°13'57", long 98°02'51", in SW 1/4 SW 1/4 sec.4, T.4 S., R.8 W., Jefferson County, Hydrologic Unit 11130208, 3,050 ft east of outlet works on Beaver Creek, 5.5 mi north of Waurika and at mile 27.0.

DRAINAGE AREA.--562 mi².

PERIOD OF RECORD.--August 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Aug. 26, 1977, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by an earth dam with a concrete outlet structure and emergency spillway. Storage began Aug. 1, 1977. Capacity 451,100 acre-ft at elevation 970.0 ft, crest of uncontrolled spillway and 191,200 acre-ft at elevation 951.4 ft, top of conservation pool. Dead storage, 4,370 acre-ft below elevation 910.0 ft. Reservoir is used for flood control, irrigation, water supply, water quality, fish and wildlife, and recreation. Revised capacity table, based on 1991 survey, used since Oct. 1, 1991. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 368,600 acre-ft, May 30, 1987, elevation, 964.14 ft; minimum since first major filling, 59,170 acre-ft, Dec. 4-5, 1978, elevation, 931.56 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 260,100 acre-ft, Dec. 24, elevation, 957.69 ft; minimum, 188,400 acre-ft, May 10, elevation, 951.22 ft.

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

949	167,200	959	276,300
951	186,100	961	303,100
953	206,800	963	333,400
956	240,000	965	365,700

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY OBSERVATION AT 24:00 VALUES

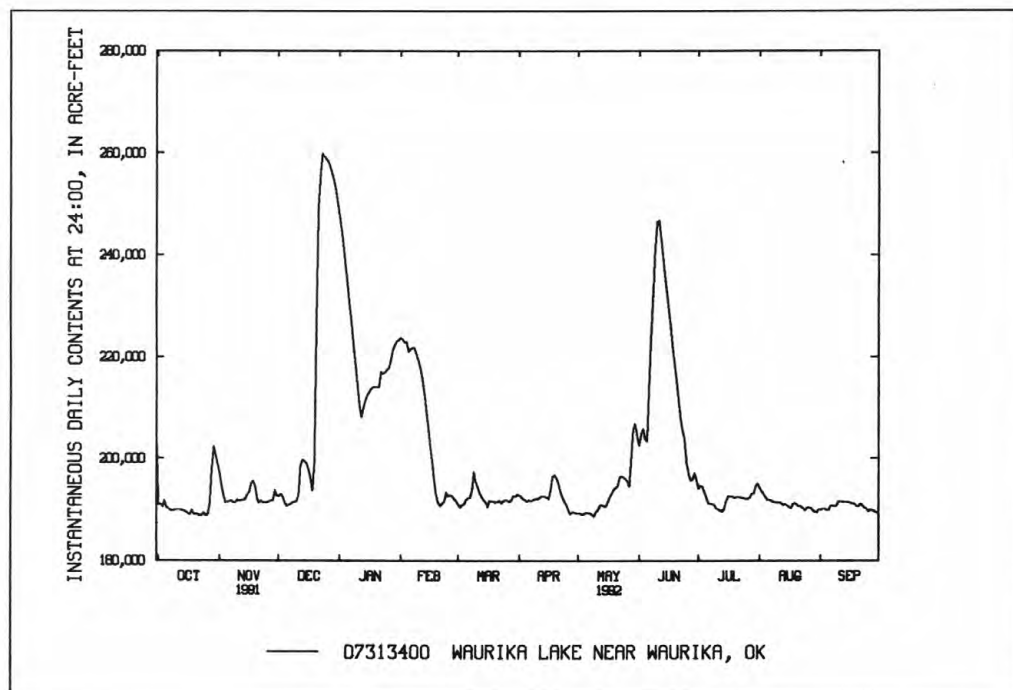
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	190900	197200	192500	247500	223700	190900	192700	189200	202500	194100	194300	189900
2	190900	194600	192900	244600	223400	190400	192400	189200	204800	194600	193500	190100
3	190500	192600	192400	241200	222800	190800	192000	189000	205700	194500	193000	190100
4	191600	191300	191200	237700	222900	190900	191800	189100	203800	193400	192300	189800
5	190400	191400	190600	234000	221100	191800	191500	189400	203400	192200	191800	189800
6	190100	191500	190800	230100	221500	192100	191700	189300	213600	191200	191800	190700
7	189800	191600	190900	226500	221700	192200	191600	189200	224200	191000	191600	190700
8	189700	191300	191300	222600	221700	193600	191700	189000	232000	190900	191400	190500
9	189800	191300	191400	218700	220500	197300	192000	188700	241400	190800	191300	190700
10	189900	191800	191500	214800	219200	195400	192000	189500	246500	190200	191200	191500
11	189900	191600	192700	210600	217700	194400	192100	189900	246700	190000	191200	191500
12	189900	191700	198600	208100	215700	193200	192400	190700	243200	189700	191200	191400
13	189800	191700	199700	209800	212900	192400	192400	190800	239700	189600	190800	191400
14	189700	192000	199400	211300	209500	191800	192400	190600	235800	190000	190900	191400
15	189500	192800	199000	212400	206000	191400	192300	190500	232600	191500	190700	191300
16	189200	193400	197900	213000	202100	190500	192000	191400	229100	192400	190400	191200
17	189000	195100	196200	213700	199100	191600	193800	192300	225700	192400	190200	191000
18	189800	195500	193600	214000	195500	191500	196400	193100	221900	192400	191000	191000
19	189000	194500	199100	214000	192500	191500	196700	193800	218600	192200	191100	190600
20	189100	192000	224200	214000	191100	191300	196100	194200	215300	192300	190800	190500
21	189000	191200	249200	214100	190600	191400	195000	194500	211400	192300	190500	191000
22	188800	191600	255400	217000	191100	191700	193400	196200	207800	192300	190500	190700
23	188900	191300	259800	216700	191500	191200	192300	196500	205500	192200	190200	190300
24	189300	191300	259300	216900	193200	191600	191500	196200	203800	192100	189800	190100
25	188800	191300	258900	217400	192500	191700	190800	196000	199100	192000	190300	189600
26	189000	191500	258400	217700	192700	191700	189900	195500	197000	192000	190300	189900
27	191000	191600	257400	219300	192500	191400	189100	194400	195700	192200	190200	189700
28	198000	191700	256000	221300	192000	191700	189500	200200	195800	193000	189800	189600
29	202300	193600	254500	222200	191600	192500	189400	205600	197000	193000	189500	189400
30	200700	192600	252700	223000	---	192400	189200	206900	195800	194500	189400	189200
31	198900	---	250000	223300	---	192900	---	204500	---	195000	190000	---

RED RIVER BASIN
07313400 WAURIKA LAKE NEAR WAURIKA, OK--Continued

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	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MAX	202300	197200	259800	247500	223700	197300	196700	206900	246700	195000	194300	191500
MIN	188800	191200	190600	208100	190600	190400	189100	188700	195700	189600	189400	189200
+	952.25	951.64	956.85	954.52	951.54	951.66	951.30	952.78	951.95	951.87	951.38	951.30
++	-5,400	-6,300	+57,400	-26,700	-31,700	+1,200	-3,600	+15,300	-8,700	-800	-5,000	-800
CAL YR 1991	MAX 259800 MIN 188800 ++ +55,200											
WTR YR 1992	MAX 259800 MIN 188700 ++ -15,100											

+ELEVATION, IN FEET, AT END OF MONTH
++CHANGE IN CONTENTS, IN ACRE-FEET



RED RIVER BASIN
07313500 BEAVER CREEK NEAR WAURIKA, OK

LOCATION.--Lat 34°13'00", long 98°02'57", on north line of NW 1/4 NW 1/4 sec.16, T.4 S., R.8 W., Jefferson County, Hydrologic Unit 11130208, on left bank on downstream side of bridge on State Highway 5, 4.5 mi northwest of Waurika, 6.2 mi upstream from Cow Creek, and at mile 25.8.

DRAINAGE AREA.--563 mi².

PERIOD OF RECORD.--June 1953 to current year.

REVISED RECORDS.--WSP 1731: 1954 (M).

GAGE.--Water-stage recorder. Datum of gage is 874.17 ft, Oklahoma State Highway Department datum. Prior to Apr. 5, 1966, water-stage recorder at same site at datum 5.00 ft higher.

REMARKS.--Records fair. Flow regulated by Waurika Lake (07313400) 1.2 mi upstream beginning August 1977. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 18, 1951, reached a stage of 27.7 ft, present datum, from floodmark, discharge 65,300 ft³/s by contracted-opening measurement of peak flow. A similar stage was reached prior to 1889, from information provided by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	321	e1250	10	1680	13	427	166	16	1540	932	389	7.4
2	174	e754	11	1760	290	427	347	5.1	1510	790	389	7.4
3	122	e753	263	2110	668	241	311	4.9	1520	595	388	7.4
4	82	519	734	2150	715	29	244	4.8	1300	507	389	7.2
5	29	186	429	2130	643	25	244	4.7	665	517	192	7.2
6	28	29	28	2090	11	24	36	4.6	39	268	25	7.4
7	28	28	28	2180	5.8	24	28	4.5	126	31	26	7.3
8	20	28	27	2330	5.0	24	28	4.5	702	29	26	7.2
9	9.3	28	27	2330	474	24	28	4.5	655	29	25	7.2
10	9.3	28	27	2330	1030	296	28	4.6	989	24	17	7.3
11	9.2	27	28	2310	1020	700	28	5.6	1780	8.0	7.4	7.4
12	9.1	27	197	1970	1220	700	28	4.6	2100	8.6	7.6	7.4
13	9.0	27	381	64	1640	582	28	4.5	2100	8.4	7.4	7.4
14	9.1	28	377	24	1890	345	28	4.4	2080	8.4	7.4	7.4
15	9.2	28	377	20	2050	346	261	4.4	2080	8.4	7.4	7.4
16	9.1	30	657	20	2000	347	444	5.8	2050	8.4	7.4	7.2
17	9.1	30	1020	19	2000	207	445	6.0	2040	8.4	7.4	7.2
18	9.2	356	1020	19	2040	30	446	5.0	2050	8.2	7.4	7.2
19	9.2	930	1100	18	1780	29	447	4.8	2040	8.2	7.4	7.3
20	9.3	1080	881	17	931	29	447	105	2030	8.2	7.4	7.4
21	9.3	700	13	18	350	29	652	316	2030	8.2	7.4	7.4
22	8.3	30	9.6	18	13	28	832	317	2040	8.2	7.4	7.2
23	5.1	30	177	15	11	28	842	316	2010	8.2	7.4	7.2
24	3.9	31	702	15	8.1	28	624	315	2000	8.2	7.4	7.2
25	3.5	24	703	14	7.5	28	429	315	1910	8.2	7.3	7.2
26	3.6	12	700	15	6.5	28	428	510	1100	8.2	7.3	7.4
27	3.8	12	783	19	177	28	205	704	507	8.2	7.3	7.4
28	85	11	963	15	426	28	28	720	517	8.2	7.2	7.4
29	882	11	947	14	427	28	27	713	514	8.2	7.2	7.4
30	1210	10	1190	13	---	28	27	1110	744	8.2	7.2	7.4
31	e1730	---	1650	13	---	28	---	1590	---	99	7.3	---
TOTAL	4858.6	7037	15459.6	25740	21851.9	5165	8156	7134.3	42768	3986.2	2020.6	219.5
MEAN	157	235	499	830	754	167	272	230	1426	129	65.2	7.32
MAX	1730	1250	1650	2330	2050	700	842	1590	2100	932	389	7.4
MIN	3.5	10	9.6	13	5.0	24	27	4.4	39	8.0	7.2	7.2
AC-FT	9640	13960	30660	51060	43340	10240	16180	14150	84830	7910	4010	435

e Estimated

RED RIVER BASIN
07313500 BEAVER CREEK NEAR WAURIKA, OK--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1992, BY WATER YEAR (WY)

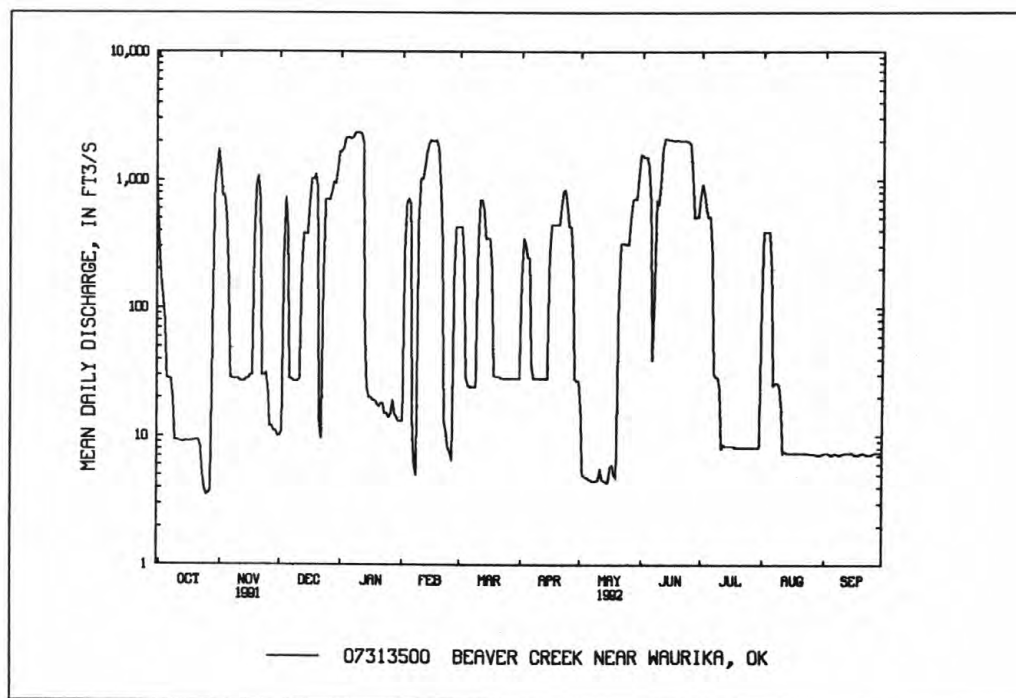
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	121	186	95.7	162	117	290	184	288	543	115	9.42	91.8
MAX	959	1639	499	830	754	1677	898	2123	2501	708	65.2	958
(WY)	1987	1984	1992	1992	1992	1985	1988	1990	1987	1987	1992	1991
MIN	.000	.000	.000	.000	.000	.014	.000	.000	.000	.000	.000	.000
(WY)	1979	1979	1979	1980	1979	1980	1980	1984	1984	1978	1978	1978

SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1978-92
ANNUAL TOTAL	73926.38	144396.7	
ANNUAL MEAN	203	395	^a 183
HIGHEST ANNUAL MEAN			631 1987
LOWEST ANNUAL MEAN			.018 1979
HIGHEST DAILY MEAN	1930	Sep 25 2330	Jan 8 2690 Jun 9 1987
LOWEST DAILY MEAN	.06	Apr 23 3.5	Oct 25 .00 at times
ANNUAL SEVEN-DAY MINIMUM	.10	Apr 17 4.6	May 4 .00 Oct 1 1977
INSTANTANEOUS PEAK FLOW		2370	Jan 7 ^b 2710 Jun 9 1987
INSTANTANEOUS PEAK STAGE		20.58	Jan 7 ^c 23.04 Jun 9 1987
ANNUAL RUNOFF (AC-FT)	146600	286400	132900
10 PERCENT EXCEEDS	744	1600	654
50 PERCENT EXCEEDS	9.2	28	.87
90 PERCENT EXCEEDS	.32	7.2	.00

^aPrior to regulation, water years 1954-76, 107 ft³/s.

^bMaximum discharge for period of record 32,200 ft³/s, May 20, 1955.

^cMaximum gage height for period of record, 27.42 ft, present datum, May 20, 1955.



RED RIVER BASIN
07315500 RED RIVER NEAR TERRAL, OK

LOCATION.--Lat 33°52'43", long 97°56'03", Jefferson County, Texas, Hydrologic Unit 11130201, on left bank at downstream side of bridge abutment on U.S. Highway 81, 0.5 mi downstream from Chicago, Rock Island, and Railroad Co. bridge, 1.2 mi south of Terral, 3.6 mi downstream from Little Wichita River, and at mile 872.

DRAINAGE AREA.--28,723 mi², of which 5,936 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1938 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 770.31 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 12, 1939, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. There are many small diversions upstream from station for irrigation, oil field and municipal uses. Gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 19, 1935, reached a stage of 27.2 ft, although floods in 1891 and on May 1, 1908, are reported to have reached about the same stage.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 21,000 ft³/s.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 21	2300	107,000	22.48	June 3	2400	23,700	15.98
May 30	1100	25,800	16.05	June 9	1900	71,700	19.95

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3220	4660	1060	6670	4060	3810	1770	1850	11500	14200	1860	2120
2	2310	3440	1080	6310	3760	3520	1770	1750	7660	9730	3350	3860
3	1900	2820	1100	6720	3780	3450	2060	1780	12500	12400	2900	5430
4	1740	2600	1370	6440	3810	3870	2380	1610	19100	11100	2380	5910
5	1540	2170	1860	6000	4970	7640	2190	1720	11300	9580	2070	5040
6	1420	1840	1530	5760	9070	10800	2080	1830	12200	8200	1710	3330
7	1380	1600	1100	5680	7470	7680	1860	1710	28400	6930	1320	2760
8	1360	1500	1040	5690	7120	5330	1720	1620	50300	6220	1200	2750
9	1300	1400	1010	5700	6670	6990	1630	1570	65500	5850	1170	2810
10	1230	1260	991	5570	6200	17300	1640	1530	55600	5440	1050	3080
11	1080	1170	1030	5370	5750	12500	1620	1530	39300	4480	973	3100
12	909	1120	1900	5250	5420	6600	1520	1710	27900	3710	938	2570
13	842	1100	7550	4730	5340	4950	1460	2080	25000	3040	903	1940
14	809	1080	6970	4970	5530	4030	1610	2120	21700	2560	876	1490
15	771	1100	5810	7880	5590	3730	1530	2210	17100	2280	962	1210
16	756	1370	4920	7870	5610	3670	1520	1900	12500	2660	1070	1080
17	748	1580	3780	5680	5310	3420	1750	1740	10700	3230	1160	995
18	728	1870	3360	4340	5100	5510	4760	2320	9860	2980	1090	955
19	701	2640	4810	3760	4800	4600	15800	2880	8810	2490	1030	1070
20	691	3050	28300	3650	4340	4070	14900	2380	8050	2790	1000	1040
21	682	2940	83800	3840	3510	3090	8140	1740	9150	2470	1010	1120
22	684	2540	73100	5570	2980	2580	5610	2910	9170	2210	1000	1090
23	678	1860	32900	5390	2580	2540	5000	6450	9310	1760	982	1080
24	654	1610	23000	4420	2470	2540	4870	8050	12800	1970	948	826
25	641	1370	16900	4000	2570	2380	4400	6810	9230	1630	918	760
26	682	1280	14500	3670	3540	2180	3650	4560	7740	1390	898	701
27	687	1240	11600	3670	6010	1890	3280	3470	6480	1270	924	650
28	1220	1180	8590	4680	4440	1750	2870	4780	5890	1250	909	615
29	9170	1150	7530	5710	4210	1700	2290	10500	7520	1150	1820	592
30	14500	1090	6870	5020	---	1770	2030	22600	9740	1680	3020	580
31	7260	---	6670	4490	---	1740	---	16500	---	2100	2470	---

RED RIVER BASIN
07315500 RED RIVER NEAR TERRAL, OK--Continued

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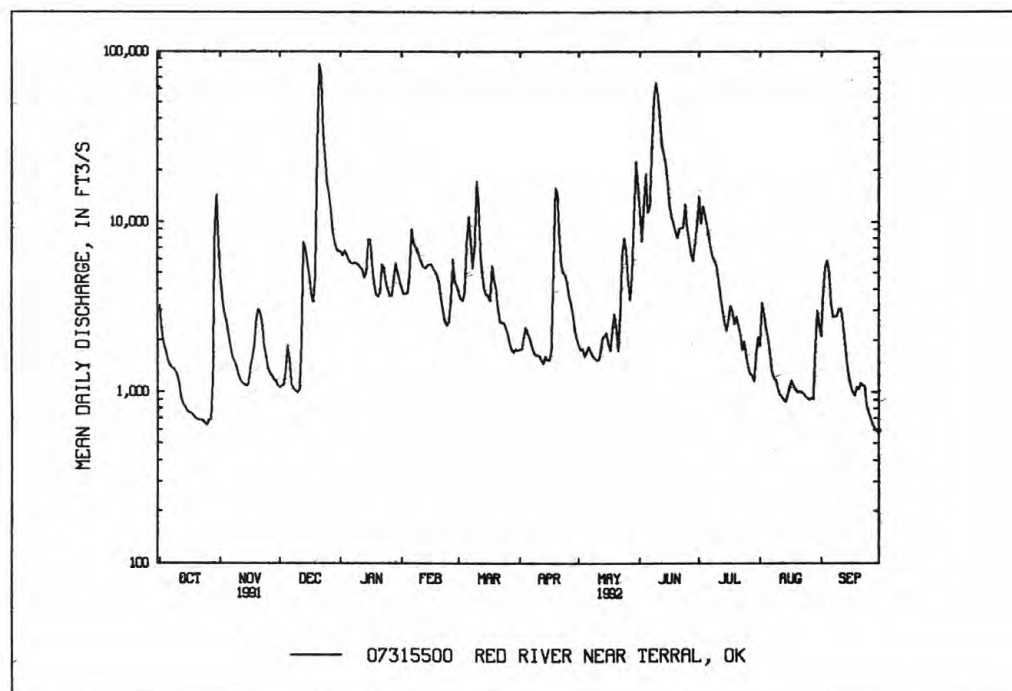
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	62293	55630	366031	164500	142010	147630	107710	126210	542010	138750	43911	60554
MEAN	2009	1854	11810	5306	4897	4762	3590	4071	18070	4476	1416	2018
MAX	14500	4660	83800	7880	9070	17300	15800	22600	65500	14200	3350	5910
MIN	641	1080	991	3650	2470	1700	1460	1530	5890	1150	876	580
AC-FT	123600	110300	726000	326300	281700	292800	213600	250300	1075000	275200	87100	120100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3236	1422	1039	860	1144	1681	2428	6504	6098	1680	1113	2041
MAX	23900	9713	11810	5306	9320	12560	18080	43580	37460	8077	9267	9653
(WY)	1987	1987	1992	1992	1987	1990	1990	1957	1941	1950	1950	1986
MIN	108	102	91.2	76.5	136	66.1	142	134	517	158	155	109
(WY)	1953	1940	1939	1940	1953	1940	1971	1971	1966	1964	1970	1956

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1939-92

ANNUAL TOTAL	1521773	1957239	
ANNUAL MEAN	4169	5348	2441
HIGHEST ANNUAL MEAN			8925 1987
LOWEST ANNUAL MEAN			523 1953
HIGHEST DAILY MEAN	83800	Dec 21 83800	Dec 21 211000 May 30 1987
LOWEST DAILYMEAN	280	Mar 13 580	Sep 30 46 Mar 20 1940
ANNUAL SEVEN-DAY MINIMUM	317	Mar 12 673	Oct 21 47 Mar 18 1940
INSTANTANEOUS PEAK FLOW		107000	Dec 21 225000 May 30 1987
INSTANTANEOUS PEAK STAGE		22.48	Dec 21 33.60 Oct 22 1983
INSTANTANEOUS LOW FLOW		574	Sep 30 43 Mar 15 1939
ANNUAL RUNOFF (AC-FT)	3018000	3882000	1768000
10 PERCENT EXCEEDS	9790	10600	5200
50 PERCENT EXCEEDS	1260	2810	561
90 PERCENT EXCEEDS	386	994	169



RED RIVER BASIN

07315500 RED RIVER NEAR TERRAL, OK--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURE: October 1967 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 13,000 microsiemens June 15, 1984; minimum daily, 255 microsiemens Jan. 1, 1985.

WATER TEMPERATURE: Maximum daily, 35.0°C Aug. 13, 16, 17, 1983; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 7,100 microsiemens May 27; minimum daily, 747 microsiemens Dec. 21.

WATER TEMPERATURE: Maximum daily, 29.0°C July 24-26, 28, 30, Aug. 4, 10-11, 14 : minimum daily, 6.0°C Jan. 19.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	AGENCY	AGENCY	DIS-	SPE-	TEMPER-	HARD-	HARD-	MAGNE-	SODIUM,						
		COL-	ANA-	CHARGE,							CIFIC	NESS	NESS			
		LECTING	LYZING	INST.							CON-	NONCARB	CALCIUM			
		SAMPLE	SAMPLE	(CUBIC							DUCT-	FLD. AS	DIS-			
(CODE	(CODE	PER	ANCE	WATER	AS	CACO3	(MG/L	(MG/L	(MG/L	(MG/L						
NUMBER)	NUMBER)	SECOND)	(US/CM)	(DEG C)	CACO3)	(MG/L	(MG/L	AS CA)	AS MG)	(MG/L						
(00027)	(00028)	(00061)	(00095)	(00010)	(00900)	(00904)	(00915)	(00925)	(00930)	(00930)						
JAN 07...	1150	1028	80020	5680	3240	10.5	610	440	160	52	430					
MAR 10...	1340	1028	80020	20500	1720	12.0	340	220	88	28	210					
JUN 09...	1450	1028	80020	68900	1000	23.0	220	120	65	15	120					
DATE	SODIUM PERCENT	SODIUM	POTAS-	SULFATE	CHLO-	FLUO-	SILICA,	SOLIDS,	SOLIDS,	SOLIDS,						
		AD-	SIUM,								SOLVE	RIDE,	DIS-	SUM OF	DIS-	DIS-
		SORP-	DIS-								SOLVE	DIS-	SOLVE	CONSTI-	SOLVE	DIS-
		TION	SOLVE								SOLVE	SOLVE	TUENTS,	DIS-	(TONS	(TONS
(MG/L	(MG/L	(MG/L	(MG/L	(MG/L	(MG/L	(MG/L	(MG/L	(MG/L	(MG/L	(MG/L						
AS K)	AS SO4)	AS CL)	AS F)	AS F)	SIO2)	(MG/L)	AC-FT)	(70302)	(70302)	(70302)						
(00932)	(00931)	(00935)	(00945)	(00940)	(00950)	(00955)	(70301)	(70303)	(70303)	(70302)						
JAN 07...	60	8	7.0	420	640	0.50	8.7	1820	2.48	27900						
MAR 10...	57	5	5.4	230	330	0.20	7.2	968	1.32	53600						
JUN 09...	53	3	6.1	120	170	<0.10	9.6	570	0.78	106000						

RED RIVER BASIN

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07315500 RED RIVER NEAR TERRAL, OK--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1991 TO SEPTEMBER 1992

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNES (CA, MG) (MG/L)
OCT.	1991	62293	3070	1780	299000	660	111200	430	72300	530
NOV.	1991	55630	4090	2430	366000	930	139200	590	88000	710
DEC.	1991	366031	1460	802	793000	280	280100	200	192900	250
JAN.	1992	164500	3360	1910	848000	700	310400	460	205400	570
FEB.	1992	142010	3890	2250	863000	840	320900	540	208400	670
MAR.	1992	147630	2830	1600	637000	580	231400	390	154300	480
APR.	1992	107710	3670	2130	619000	790	230800	510	149500	630
MAY	1992	126210	2840	1620	554000	600	203900	390	133900	480
JUNE	1992	536570	1760	958	1388000	340	487300	230	338200	290
JULY	1992	138750	2920	1650	617000	600	223900	400	149500	500
AUG.	1992	43911	3500	2000	238000	740	87400	480	57500	600
SEPT	1992	60554	2260	1250	204000	440	72600	300	49600	380
TOTAL		1951799	**	**	7424000	**	2699000	**	1799000	**
WTD.AVG.		5333	2500	1410	**	510	**	340	**	420

RED RIVER BASIN

07315500 RED RIVER NEAR TERRAL, OK--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2810	1180	e6150	3290	4110	3180	4780	4520	1410	3000	3280	1960
2	3370	1380	6130	3220	4490	3530	5020	4710	2540	3050	3230	2160
3	4050	e2140	5930	3110	5020	3880	4060	4490	2050	2510	2780	e1700
4	4160	2910	5730	2930	4670	3770	4070	4570	2750	2270	3160	1250
5	4410	3110	4030	3060	4620	3570	6250	4880	2130	e2120	3430	1420
6	4720	3550	4030	3130	4330	2110	5510	4830	2460	1980	3350	1820
7	4780	e4380	5520	3130	3470	2710	5460	4800	e2140	2220	3980	2240
8	4730	5220	5860	3070	3210	3060	5520	4800	1820	2500	3970	2260
9	4810	5670	5800	3070	4080	2630	5680	4980	1160	2740	3720	2370
10	4830	5890	5570	3010	4210	1630	5780	e4970	968	2850	4220	2520
11	4830	6010	e5380	3080	3770	1440	5260	4960	933	2720	4290	2260
12	4870	5770	5200	2970	3630	1970	5260	4670	923	2910	4000	1790
13	e5020	5850	1790	e3300	3610	2600	e5300	4660	1250	3310	4060	1970
14	5160	5840	1630	3630	3340	3020	e5450	4640	1550	3510	4210	2200
15	5250	5900	2070	e3460	3270	4800	5550	3820	1920	3740	4350	2700
16	5250	4780	4180	3280	3220	3240	6380	4370	1870	4250	4100	3220
17	5300	4170	3040	3270	3270	3260	4980	e3860	1800	6250	4120	3370
18	e5360	4110	2850	e3860	3210	1900	4250	3360	1880	3950	4120	e3350
19	5360	3650	e1960	e4060	3200	3050	2430	3270	2060	4010	3660	3330
20	5360	2730	1080	e4250	3330	2750	2260	3290	2050	4800	3560	3070
21	5430	3270	747	4440	3960	e3320	2920	3560	e2080	3260	3770	2640
22	5490	4470	803	3300	4340	3900	3710	3090	2120	3360	3600	3460
23	5610	6970	954	3190	4890	4130	3500	1490	2180	2890	e3660	3280
24	5710	6780	1250	3620	4900	4730	3270	e1460	2990	3230	3760	3600
25	5550	6210	1570	3910	4510	3920	3730	1420	3450	2640	3810	3520
26	5210	5840	1920	e4000	4080	3710	3150	3540	3550	3170	3810	3690
27	5290	5910	2170	4080	4880	4030	3110	7100	3720	3760	3920	4020
28	5010	5960	2310	3190	3700	4300	3470	4200	e3380	3600	3790	4210
29	1410	e6060	2410	3060	3590	e4380	3920	2570	2990	3660	3850	4320
30	1820	6170	2650	3280	---	4460	4380	1480	2470	4040	2550	4370
31	1170	---	3040	3800	---	4810	---	1600	---	2080	2440	---
MEAN	4580	4730	3350	3420	3960	3350	4480	3870	2150	3240	3700	2800
MAX	5710	6970	6150	4440	5020	4810	6380	7100	3720	6250	4350	4370
MIN	1170	1180	747	2930	3200	1440	2260	1420	923	1980	2440	1250

e Estimated

RED RIVER BASIN

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07315500 RED RIVER NEAR TERRAL, OK--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.0	e8.0	e10.0	12.0	13.0	16.0	13.0	20.0	19.0	27.0	28.0	24.0
2	23.0	8.0	7.0	11.0	13.0	18.0	13.0	21.0	20.0	28.0	27.0	e24.0
3	23.0	8.0	9.0	10.0	12.0	19.0	16.0	24.0	25.0	26.0	27.0	e25.0
4	22.0	8.0	9.0	11.0	12.0	18.0	15.0	23.0	22.0	27.0	29.0	26.0
5	18.0	8.0	10.0	10.0	11.0	16.0	16.0	23.0	23.0	e27.0	27.0	26.0
6	19.0	9.0	11.0	10.0	10.0	19.0	18.0	21.0	23.0	27.0	28.0	26.0
7	18.0	e8.5	13.0	12.0	9.0	19.0	17.0	20.0	e20.0	25.0	26.0	25.0
8	18.0	8.0	16.0	12.0	9.0	20.0	18.0	19.0	17.0	27.0	28.0	26.0
9	20.0	e9.0	17.0	10.0	12.0	17.0	21.0	21.0	21.0	28.0	28.0	25.0
10	22.0	10.0	13.0	10.0	10.0	13.0	21.0	e22.0	23.0	28.0	29.0	26.0
11	21.0	10.0	e14.5	8.0	10.0	12.0	22.0	23.0	24.0	28.0	29.0	e24.0
12	22.0	12.0	16.0	9.0	14.0	13.0	21.0	25.0	24.0	27.0	25.0	23.0
13	e21.0	14.0	16.0	e8.5	11.0	13.0	e21.0	25.0	25.0	27.0	25.0	24.0
14	20.0	15.0	13.0	8.0	13.0	16.0	e22.0	25.0	26.0	27.0	29.0	25.0
15	18.0	17.0	12.0	e8.0	14.0	17.0	22.0	26.0	22.0	27.0	28.0	25.0
16	18.0	17.0	12.0	8.0	12.0	18.0	23.0	24.0	24.0	26.0	25.0	24.0
17	18.0	17.0	12.0	7.0	15.0	18.0	20.0	e24.0	23.0	26.0	24.0	25.0
18	e17.5	15.0	10.0	e7.0	13.0	16.0	25.0	23.0	24.0	26.0	24.0	e24.0
19	17.0	14.0	e9.0	e6.0	13.0	16.0	20.0	23.0	25.0	26.0	23.0	24.0
20	18.0	12.0	8.0	e7.0	12.0	15.0	18.0	24.0	24.0	27.0	23.0	27.0
21	18.0	10.0	9.0	7.0	14.0	e15.0	17.0	23.0	e24.0	28.0	26.0	26.0
22	19.0	12.0	10.0	8.0	15.0	15.0	18.0	22.0	25.0	27.0	e26.0	24.0
23	18.0	7.0	10.0	9.0	15.0	15.0	20.0	22.0	25.0	28.0	e25.0	22.0
24	22.0	9.0	24.0	10.0	13.0	15.0	21.0	e22.0	26.0	29.0	24.0	24.0
25	20.0	9.0	9.0	8.0	10.0	14.0	19.0	22.0	27.0	29.0	25.0	22.0
26	20.0	12.0	10.0	e8.0	10.0	16.0	20.0	20.0	27.0	29.0	26.0	23.0
27	20.0	12.0	e10.0	8.0	15.0	17.0	20.0	20.0	27.0	28.0	23.0	22.0
28	20.0	15.0	10.0	10.0	15.0	17.0	20.0	19.0	e26.0	29.0	22.0	20.0
29	17.0	e13.5	9.0	11.0	15.0	e16.0	19.0	17.0	25.0	28.0	25.0	20.0
30	14.0	12.0	12.0	11.0	---	15.0	20.0	16.0	26.0	29.0	e25.0	21.0
31	12.0	---	10.0	12.0	---	17.0	---	17.0	---	28.0	24.0	---
MEAN	19.2	11.3	11.6	9.2	12.4	16.2	19.2	21.8	23.7	27.4	25.9	24.1
MAX	23.0	17.0	24.0	12.0	15.0	20.0	25.0	26.0	27.0	29.0	29.0	27.0
MIN	12.0	7.0	7.0	6.0	9.0	12.0	13.0	16.0	17.0	25.0	22.0	20.0

e Estimated

RED RIVER BASIN
07315700 MUD CREEK NEAR COURTNEY, OK

LOCATION.--Lat 34°00'15", long 97°34'00", in NW 1/4 SE 1/4 sec.25, T.6 S., R.4 W., Jefferson County, Hydrologic Unit, 11130201, on downstream side of bridge on State Highway 89, 4.0 mi downstream from North Mud Creek, 6.0 mi northwest of Courtney, and at mile 11.5.

DRAINAGE AREA.--572 mi².

PERIOD OF RECORD.--October 1960 to current year.

REVISED RECORDS.--WDR OK-78-2: Maximum gage height.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 727.72 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1968, auxiliary water-stage recorder 2.0 mi downstream from base gage.

REMARKS.--Records poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 1957, reached a stage of 30.6 ft.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
Nov. 18	0100	2,530	23.48	Mar. 5	0400	1,330	20.74
Dec. 15	1300	2,680	23.73	Mar. 12	0300	1,890	22.24
Dec. 21	1100	22,200	29.63	Mar. 18	2300	3,500	24.65
Jan. 14	2300	1,940	22.37	Apr. 13	1600	2,950	24.11
Jan. 23	0600	2,030	22.56	June 30	1600	3,200	24.36
Jan. 29	2100	1,540	21.39				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DAY	DAILY MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	319	62	215	280	141	97	44	e428	2150	88	16
2	35	269	252	286	230	123	154	40	e1230	547	749	16
3	35	157	561	214	205	115	151	37	e1350	235	401	20
4	30	86	488	176	194	605	117	35	e801	536	226	34
5	27	59	266	156	184	977	102	34	e543	551	77	27
6	26	49	143	144	168	453	92	33	e3690	178	43	e16
7	24	44	104	134	151	231	86	32	e2140	108	32	e23
8	23	41	86	125	140	162	83	31	e2730	76	27	e16
9	22	39	76	116	131	899	81	31	e2870	63	24	e13
10	22	36	69	104	124	1490	79	30	e2390	58	22	e38
11	21	35	83	96	160	1480	75	32	e1830	53	21	e183
12	21	34	782	94	301	1230	473	76	e1070	50	20	e44
13	20	33	1440	298	194	251	2380	143	e803	50	19	e29
14	18	32	1520	1480	155	187	1920	e82	e654	49	19	e22
15	18	68	2410	1730	137	158	1390	e56	e523	52	19	e18
16	18	995	850	743	125	133	245	e47	e412	85	18	e16
17	18	2210	197	276	115	145	165	e127	e320	95	18	e14
18	17	2450	152	234	109	1960	322	e348	e257	60	19	e13
19	16	2070	584	276	102	2670	263	e156	e217	e50	20	e12
20	15	631	4740	317	94	581	146	e114	e200	40	18	e13
21	15	208	19200	471	87	209	114	e103	e178	39	18	e260
22	15	139	7360	1370	87	170	91	e168	e150	35	18	e68
23	14	103	4730	1910	96	145	77	e589	e134	33	18	e38
24	14	80	3440	1080	106	128	65	e256	e120	29	18	e29
25	17	66	2810	343	584	119	56	e246	195	28	18	e22
26	21	58	948	239	1140	112	50	e307	111	29	17	e18
27	39	55	385	387	560	107	45	e173	130	27	15	e16
28	304	54	318	1120	257	103	43	e273	129	26	13	e14
29	665	52	259	1450	176	102	42	e2110	1150	29	13	e13
30	790	50	223	1020	---	98	42	e878	2810	35	13	e12
31	773	---	198	387	---	90	---	e516	---	30	15	---
TOTAL	3132	10522	54736	16991	6392	15374	9046	7147	29565	5426	2056	1073
MEAN	101	351	1766	548	220	496	302	231	985	175	66.3	35.8
MAX	790	2450	19200	1910	1140	2670	2380	2110	3690	2150	749	260
MIN	14	32	62	94	87	90	42	30	111	26	13	12
AC-FT	6210	20870	108600	33700	12680	30490	17940	14180	58640	10760	4080	2130

e Estimated

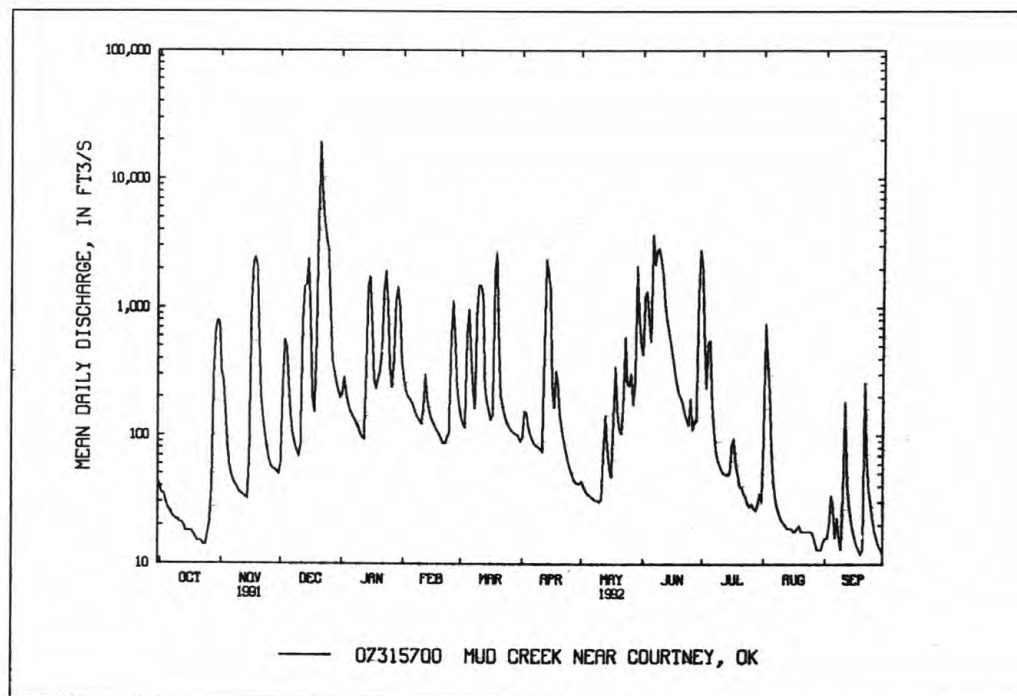
RED RIVER BASIN
07315700 MUD CREEK NEAR COURTNEY, OK--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	112	110	150	95.5	134	263	292	496	379	42.7	25.0	120
MAX	1216	854	1766	898	1122	1468	3075	3670	1859	279	293	571
(WY)	1982	1974	1992	1985	1987	1990	1990	1982	1989	1975	1964	1989
MIN	.000	.000	.009	.000	.16	.001	.16	3.44	.021	.000	.000	.000
(WY)	1964	1978	1979	1964	1967	1980	1980	1971	1972	1964	1980	1963

SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1961-92
ANNUAL TOTAL	124033.2	161460	
ANNUAL MEAN	340	441	185
HIGHEST ANNUAL MEAN			614 1990
LOWEST ANNUAL MEAN			19.1 1971
HIGHEST DAILY MEAN	19200	Dec 21 19200	Dec 21 37800 May 3 1990
LOWEST DAILY MEAN	3.6	Jul 13 12	Sep 19, 30 .00 many years
ANNUAL SEVEN-DAY MINIMUM	4.1	Jul 7 14	Aug 27 .00 Jul 28 1961
INSTANTANEOUS PEAK FLOW		22200	Dec 21 49600 May 3 1990
INSTANTANEOUS PEAK STAGE		29.63	Dec 21 33.14 May 29 1987
ANNUAL RUNOFF (AC-FT)	246000	320300	134000
10 PERCENT EXCEEDS	845	1170	247
50 PERCENT EXCEEDS	41	111	6.6
90 PERCENT EXCEEDS	13	18	.00



RED RIVER BASIN
07316000 RED RIVER NEAR GAINESVILLE, TX

LOCATION.--Lat 33°43'40", long 97°09'35", in SW 1/4 sec.36, T.9 S., R.1 E., Love County, OK, Hydrologic Unit 11130201, on downstream right bank at end of bridge on Interstate 35, 0.2 mi downstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, 5.0 mi downstream from Fish Creek, 4.5 mi southwest of Thackerville, OK, 7.0 mi north of Gainesville, and at mile 791.5.

DRAINAGE AREA.--30,782 mi² of which 5,936 mi² probably is noncontributing.

PERIOD OF RECORD.--May 1936 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 627.91 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 17, 1939, and Feb. 13, 1965 to Nov. 14, 1966, nonrecording gage at same site and datum.

REMARKS.--Records fair. Flow slightly regulated by Lake Kemp (station 07312000 in Texas), since 1943 by Lake Altus (station 07302500 in Oklahoma), since 1946 by Lake Kickapoo (station 07314000 in Texas), since 1967 by Lake Arrowhead (station 07314800 in Texas) and Moss Lake (station 07315950 in Texas). U.S. Army Corps of Engineers' satellite telemeter at station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 24,000 ft³/s.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 23	0700	94,100	28.69	June 10	1800	65,800	25.23
June 5	0200	28,100	19.04				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5020	9970	e2000	6870	5370	4660	e2300	e2740	17200	15800	1890	2480
2	4420	7170	2450	6910	4580	4190	e2300	e2630	17200	20100	2700	2240
3	3460	5570	3280	6750	4100	3790	e2680	e2660	16400	15000	3470	2400
4	2770	4340	3250	6750	3760	4560	e3090	e2440	21900	16800	3940	4740
5	2430	3890	2630	6850	3790	7740	e2850	e2600	25200	16900	2870	5610
6	2210	3440	2430	6280	3870	7530	e2700	e2730	20100	13800	2290	6370
7	2020	2940	2540	5890	7270	10900	e2420	e2600	23300	11100	1970	4490
8	1870	2570	2190	5700	7850	9840	e2240	e2470	37400	9130	1670	3090
9	1820	2350	1840	5580	7020	6690	e2430	e2380	53200	7710	1400	2590
10	1770	2190	1710	5620	6660	7570	e2460	e2330	63400	e6100	1280	2470
11	1710	2010	1710	5520	6170	15800	e2460	e2330	56000	e5050	1230	2440
12	1640	1840	3180	5330	6280	14400	3940	e2290	35700	e4500	1140	312
13	1480	1740	5370	6070	6520	9770	4130	e2100	24100	e3950	1060	3200
14	1310	1690	8430	7930	5550	6660	4260	2050	19700	e3500	1030	2370
15	1210	1650	10000	8630	5440	5350	4110	2200	17400	e3200	999	1720
16	1180	1750	8720	10400	5380	4630	3640	e2250	16300	e3050	956	1410
17	1110	4750	7450	9610	5470	4630	2700	e2400	14800	e2900	970	1210
18	1080	e6000	4950	7330	5290	4580	e2550	e5000	13400	e2700	1050	1080
19	1030	e3430	5270	5520	5050	7360	3100	e4000	12800	e2600	1140	988
20	1000	e3960	19700	4550	4860	9110	14800	3460	11600	2500	1090	932
21	988	e3820	49300	4430	4550	7110	15600	3360	10500	2730	1010	1040
22	965	e3300	78400	6290	3940	4700	10600	2820	10800	2700	971	1110
23	952	e2420	89200	8480	3400	3660	7000	e2550	11100	2490	964	1110
24	941	e2180	53400	8430	3110	3310	5850	7160	11100	2170	959	996
25	971	e1780	28500	6410	4530	3170	5420	11400	14200	1910	933	978
26	1150	e1660	18800	4560	7780	3040	5280	10500	12900	1940	903	814
27	1220	e1610	13900	4250	7780	e2800	4490	7140	10300	1690	881	733
28	6220	e1530	10700	4950	6430	e2850	3930	5480	8740	1530	875	692
29	8490	e1600	8470	6880	5830	e2600	3580	6390	9100	1440	867	651
30	12600	e1700	7730	7950	---	e2300	2950	16000	14800	1420	848	610
31	15400	---	7200	7080	---	e2260	---	19900	---	1570	1320	---

e Estimated

RED RIVER BASIN

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07316000 RED RIVER NEAR GAINESVILLE, TX--Continued

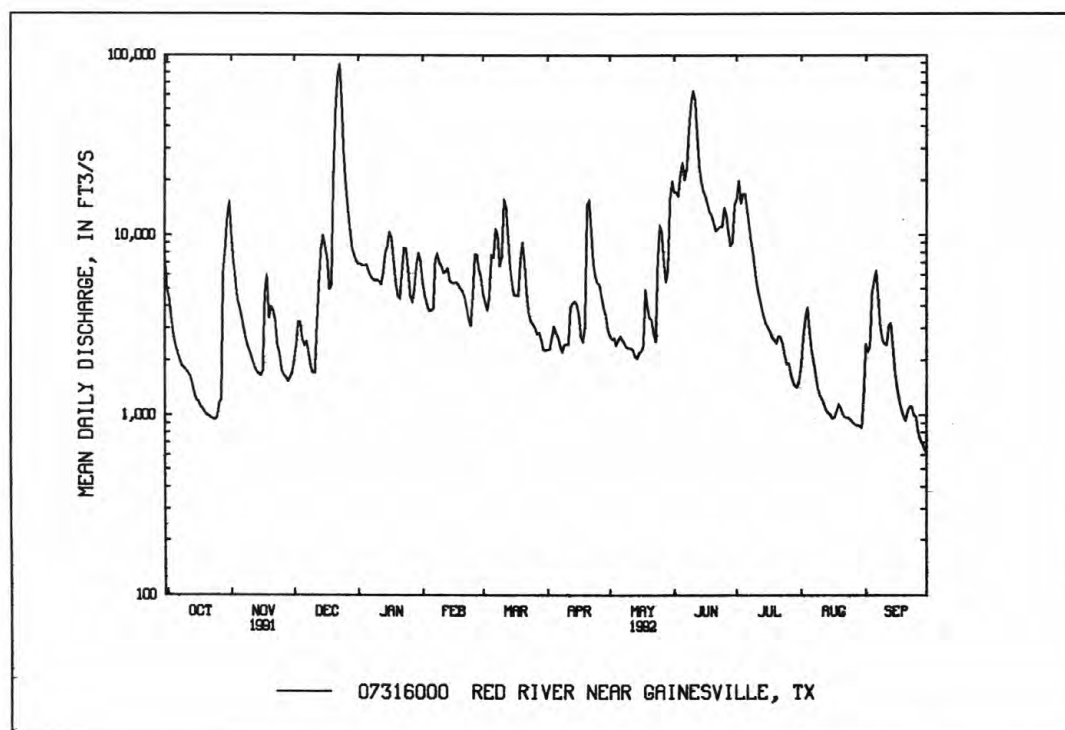
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	90437	94850	464700	203800	157630	187560	135860	146360	630640	187980	44676	63684
MEAN	2917	3162	14990	6574	5436	6050	4529	4721	21020	6064	1441	2123
MAX	15400	9970	89200	10400	7850	15800	15600	19900	63400	20100	3940	6370
MIN	941	1530	1710	4250	3110	2260	2240	2050	8740	1420	848	610
AC-FT	179400	188100	921700	404200	312700	372000	269500	290300	1251000	372900	88610	126300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	4043	1908	1495	1159	1587	2504	3358	7944	8233	2125	1294	2353
MAX	31080	14020	14990	7152	9984	14690	27400	47780	43510	9857	12940	12880
(WY)	1942	1942	1992	1985	1987	1987	1990	1957	1941	1950	1950	1986
MIN	119	137	125	82.4	151	90.5	153	204	640	166	163	108
(WY)	1953	1955	1940	1940	1953	1940	1971	1971	1966	1964	1970	1956

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1937 - 92

ANNUAL TOTAL	1896407	2408177	
ANNUAL MEAN	5196	6580	3170
HIGHEST ANNUAL MEAN			11890 1987
LOWEST ANNUAL MEAN			651 1953
HIGHEST DAILY MEAN	89200	Dec 23 89200	Dec 23 232000 May 31 1987
LOWEST DAILY MEAN	390	Mar 14 610	Sep 30 48 Jan 18-28 1940
ANNUAL SEVEN-DAY MINIMUM	415	Mar 10 782	Sep 24 48 Jan 18 1940
INSTANTANEOUS PEAK FLOW		94100	Dec 23 265000 May 31 1987
INSTANTANEOUS PEAK STAGE		28.69	Dec 23 40.08 May 31 1987
ANNUAL RUNOFF (AC-FT)	3762000	4777000	2296000
10 PERCENT EXCEEDS	12600	14500	6920
50 PERCENT EXCEEDS	1870	3790	780
90 PERCENT EXCEEDS	664	1100	210



RED RIVER BASIN

07316500 WASHITA RIVER NEAR CHEYENNE, OK

LOCATION.--Lat 35°37'35", long 99°40'05", in SE 1/4 sec.5, T.13 N., R.23 W., Roger Mills County, Hydrologic Unit 11130301, on left bank on downstream side of bridge on U.S. Highway 283, 0.5 mi downstream from Sergeant Major Creek, 1.0 mi north of Cheyenne, 5.2 mi upstream from Dead Indian Creek, and at mile 543.9.

DRAINAGE AREA.--794 mi².

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,900.98 ft above National Geodetic Vertical Datum of 1929. May 1, 1938, to Nov. 16, 1946, and Oct. 1, 1947, to Jan. 11, 1948, nonrecording gage at site 50 ft upstream and datum 5.00 ft higher. Jan. 12, 1948 to Dec. 31, 1976, at site 50 ft upstream and datum 5.00 ft higher. Jan. 1, 1977, to Dec. 20, 1979, at site 50 ft upstream at same datum.

REMARKS.--Records fair. Flow regulated since 1961 by numerous flood-retarding structures. U.S. Army Corps of Engineers' satellite telemeter at site.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 3, 1934, reached a stage of 1.0 ft lower than that in 1954, at site on upstream side of highway fill (at old bridge site).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

	DAILY MEAN VALUES											
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	6.5	6.4	24	19	16	26	12	32	18	2.3	.43
2	2.2	5.8	6.7	25	19	16	34	11	36	23	1.9	.20
3	2.1	5.5	6.7	23	19	16	32	9.8	42	15	1.7	.26
4	2.0	6.3	6.6	23	19	23	30	10	36	13	1.5	.24
5	1.9	6.6	6.8	22	19	25	27	8.6	33	11	1.5	.19
6	1.8	6.3	7.2	21	20	24	26	7.7	29	9.4	1.3	.14
7	1.6	5.5	7.1	22	18	22	26	7.8	26	7.5	.90	.13
8	1.3	5.4	7.1	22	18	21	22	7.3	31	5.9	.60	.17
9	1.2	5.5	6.8	22	17	20	22	6.8	33	5.2	.21	.45
10	1.2	5.3	6.9	22	18	18	22	7.5	31	4.7	.11	.56
11	.97	5.1	8.1	20	18	17	21	8.7	32	5.6	.68	.27
12	1.1	4.9	12	21	17	17	18	6.6	31	4.8	.60	.17
13	.70	5.2	11	20	16	17	19	5.6	29	4.3	.39	.12
14	.62	5.7	10	19	16	17	19	5.0	47	5.1	.32	.05
15	.62	5.4	8.5	18	16	16	17	4.1	32	4.8	.24	.00
16	.62	16	8.7	e17	16	17	16	3.4	25	43	.17	.00
17	.69	21	9.5	19	15	17	16	3.0	21	18	.45	.00
18	.59	14	8.4	22	15	19	16	3.2	18	10	6.2	.00
19	.54	12	14	20	15	19	22	2.8	16	7.8	2.9	.00
20	.88	10	24	21	14	18	23	3.0	15	6.9	2.5	.00
21	1.3	8.6	26	23	15	18	22	3.4	17	6.9	1.8	.00
22	1.6	7.7	27	22	15	17	18	15	18	7.3	1.6	.00
23	1.4	7.1	27	21	15	17	15	82	14	7.3	1.2	.10
24	1.5	6.9	24	20	17	17	15	30	12	6.6	.86	.00
25	1.5	7.2	23	20	18	16	15	26	10	5.4	.84	.00
26	1.9	7.4	22	19	16	15	15	22	9.4	4.6	1.1	.00
27	2.3	7.3	23	23	16	15	15	18	9.3	4.4	.84	.00
28	4.6	7.2	25	23	15	16	15	27	13	4.0	.30	.00
29	4.6	7.2	24	22	16	20	14	30	17	3.4	.12	.00
30	4.4	6.5	24	21	---	22	14	28	14	2.9	.18	.00
31	6.6	---	22	20	---	18	---	29	---	2.4	.44	---
TOTAL	56.63	231.1	449.5	657	487	566	612	444.3	728.7	278.2	35.75	3.48
MEAN	1.83	7.70	14.5	21.2	16.8	18.3	20.4	14.3	24.3	8.97	1.15	.12
MAX	6.6	21	27	25	20	25	34	82	47	43	6.2	.56
MIN	.54	4.9	6.4	17	14	15	14	2.8	9.3	2.4	.11	.00
AC-FT	112	458	892	1300	966	1120	1210	881	1450	552	71	6.9

e Estimated

RED RIVER BASIN
07316500 WASHITA RIVER NEAR CHEYENNE, OK--Continued

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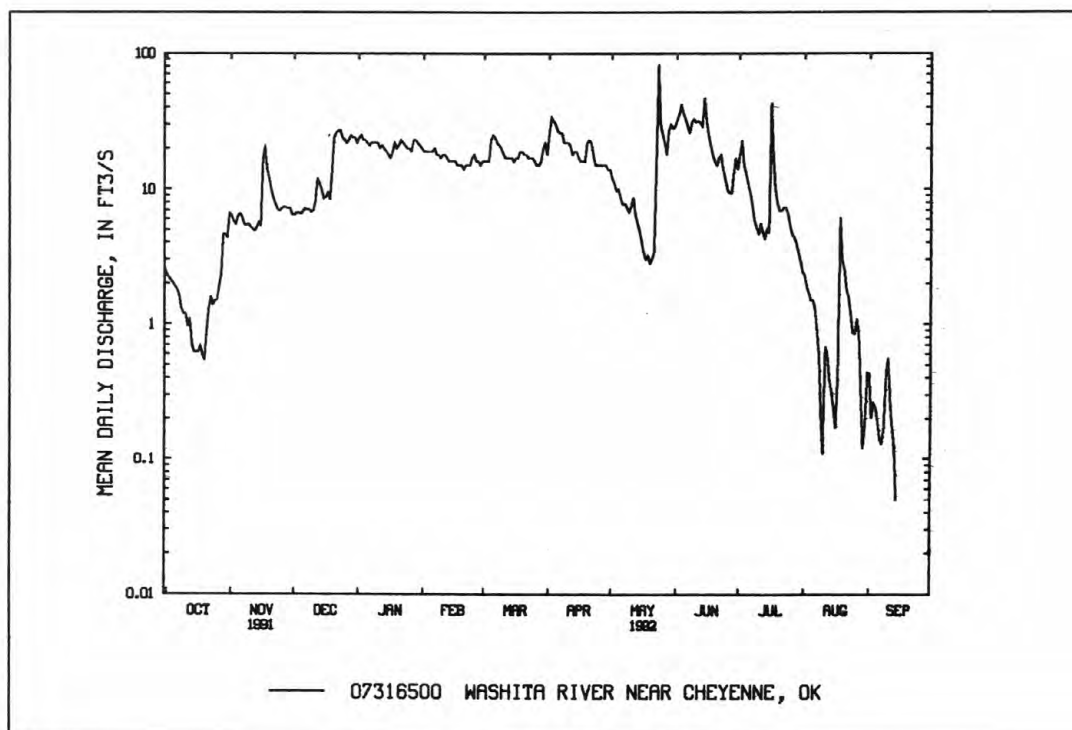
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	7.65	7.93	9.23	12.1	16.4	21.6	27.0	45.6	36.6	6.74	2.86	4.19
MAX	72.9	64.3	33.8	46.8	46.5	74.8	131	348	203	61.7	14.8	35.3
(WY)	1987	1987	1987	1987	1987	1987	1990	1977	1982	1982	1977	1962
MIN	.000	.000	.000	.026	1.50	2.22	1.08	.000	.005	.000	.000	.000
(WY)	1964	1964	1964	1973	1973	1967	1971	1971	1970	1964	1963	1964

SUMMARY STATISTICS	1991 CALENDAR YEAR		1992 WATER YEAR		WATER YEARS 1962-92	
ANNUAL TOTAL	3301.24		4549.66			
ANNUAL MEAN	9.04		12.4		^a 16.5	
HIGHEST ANNUAL MEAN					57.1	
LOWEST ANNUAL MEAN					2.60	
HIGHEST DAILY MEAN	70	May 30	82	May 23	1560	Apr 23 1990
LOWEST DAILY MEAN	.00	at times	.00	at times	.00	most years
ANNUAL SEVEN-DAY MINIMUM	.00	Aug 9	.00	Sep 15	.00	Oct 1 1961
INSTANTANEOUS PEAK FLOW			219	May 23	^b 7250	Apr 22 1990
INSTANTANEOUS PEAK STAGE			8.79	May 23	16.60	Apr 22 1990
ANNUAL RUNOFF (AC-FT)	6550		9020		11930	
10 PERCENT EXCEEDS	18		25		33	
50 PERCENT EXCEEDS	7.3		11		5.6	
90 PERCENT EXCEEDS	.31		.42		.00	

^aPrior to regulation, water years 1938-60, 41.7 ft³/s.

^bMaximum discharge for period of record 69,800 ft³/s, Apr. 29, 1954, from rating curve extended above 27,000 ft³/s on basis of contracted opening.



RED RIVER BASIN
07324200 WASHITA RIVER NEAR HAMMON, OK

LOCATION.--Lat 35°39'23", long 99°18'21", on west line of sec.26, T.14 N., R.20 W., Custer County, Hydrologic Unit 11130301, on right bank near county road bridge, 2.2 mi downstream from Quartermaster Creek, 4.7 mi northeast of Hammon, and at mile 494.5.

DRAINAGE AREA.--1,387 mi².

PERIOD OF RECORD.--October 1969 to September 1987, October 1989 to current year.

REVISED RECORD.--OK-92-1: 1987.

GAGE.--Water-stage recorder. Datum of gage is 1,643.22 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated since 1961 by numerous flood-retarding structures.

REVISION.--Revised daily discharge for water year 1987. This figure supersedes that published in the report for 1987. Discharge for Feb. 28, 460 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	14	21	55	58	42	42	28	75	38	21	18
2	11	15	21	57	57	42	45	27	98	32	20	14
3	10	15	21	57	57	41	48	26	78	30	19	12
4	9.9	16	21	57	56	52	51	25	75	30	18	10
5	9.0	16	21	56	58	59	49	25	68	27	17	10
6	9.0	17	21	57	56	54	47	23	66	24	16	16
7	9.1	17	22	56	54	51	45	21	62	22	16	13
8	9.2	16	22	56	52	48	43	20	60	20	15	10
9	9.3	16	21	56	51	46	43	20	59	18	13	33
10	8.9	16	21	55	50	43	41	19	58	17	13	65
11	8.8	15	22	54	50	42	39	40	56	27	13	148
12	8.3	16	30	54	52	42	38	42	52	20	15	45
13	7.9	15	35	53	50	41	37	26	50	17	13	32
14	7.1	16	31	52	50	40	36	22	48	175	13	26
15	7.0	16	29	50	49	39	36	19	46	159	13	23
16	7.0	33	28	e45	49	39	35	17	52	380	12	20
17	7.0	94	26	e46	48	38	35	17	46	221	14	18
18	7.6	53	26	48	47	39	35	17	41	107	15	16
19	7.9	40	29	46	45	42	96	17	37	75	21	15
20	7.4	32	49	50	44	41	69	17	34	59	18	15
21	7.3	31	75	49	44	39	56	15	34	51	15	14
22	7.9	28	65	50	43	38	51	31	35	46	14	13
23	8.5	25	66	50	43	37	46	102	34	42	12	14
24	7.2	24	62	49	45	36	41	116	33	35	12	13
25	8.1	23	58	48	44	37	37	71	29	32	11	15
26	7.9	23	56	47	44	36	35	56	28	29	13	15
27	8.8	23	56	52	44	35	33	49	26	28	13	14
28	12	23	57	59	44	34	32	51	81	26	12	13
29	14	23	57	62	43	35	32	61	72	24	11	12
30	12	21	57	60	---	34	30	58	45	23	9.7	10
31	12	---	55	59	---	35	---	58	---	22	9.6	---
TOTAL	278.1	732	1181	1645	1427	1277	1303	1136	1578	1856	447.3	692
MEAN	8.97	24.4	38.1	53.1	49.2	41.2	43.4	36.6	52.6	59.9	14.4	23.1
MAX	14	94	75	62	58	59	96	116	98	380	21	148
MIN	7.0	14	21	45	43	34	30	15	26	17	9.6	10
AC-FT	552	1450	2340	3260	2830	2530	2580	2250	3130	3680	887	1370

e Estimated

RED RIVER BASIN
07324200 WASHITA RIVER NEAR HAMMON, OK--Continued

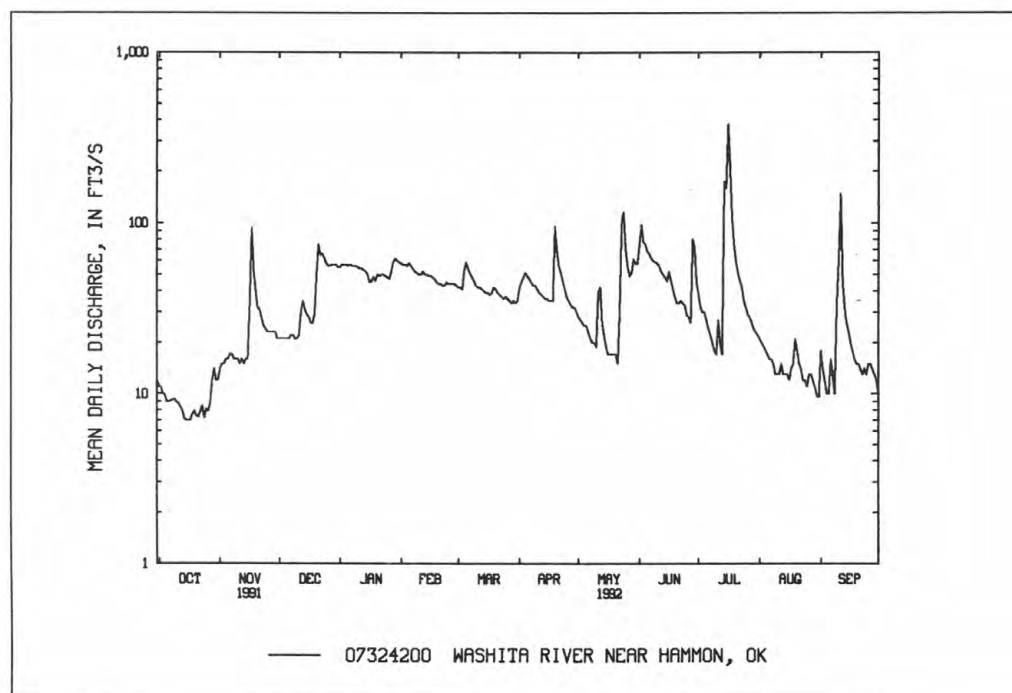
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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	26.9	25.8	18.7	23.7	31.0	46.7	59.9	134	105	27.6	14.3	11.5
MAX	384	253	114	130	175	364	292	755	327	138	61.4	39.6
(WY)	1987	1987	1987	1987	1987	1987	1990	1982	1982	1987	1990	1987
MIN	.000	.000	.000	.000	.000	.000	.000	.012	.001	.028	.000	.001
(WY)	1973	1972	1973	1973	1972	1972	1972	1971	1972	1970	1972	1976

SUMMARY STATISTICS	1991 CALENDAR YEAR		1992 WATER YEAR		WATER YEARS 1970-92	
ANNUAL TOTAL	11734.1		13552.4			
ANNUAL MEAN	32.1		37.0		43.8	
HIGHEST ANNUAL MEAN					212	
LOWEST ANNUAL MEAN					.49	
HIGHEST DAILY MEAN	412	May 30	380	Jul 16	4340	May 17 1982
LOWEST DAILY MEAN	3.3	Aug 12	7.0	Oct 15-17	.00	at times
ANNUAL SEVEN-DAY MINIMUM	4.0	Aug 7	7.3	Oct 14	.00	Jul 13 1970
INSTANTANEOUS PEAK FLOW			600	Jul 16	^a 6000	May 17 1982
INSTANTANEOUS PEAK STAGE			11.41	Jul 16	23.44	May 17 1982
ANNUAL RUNOFF (AC-FT)	23270		26880		31740	
10 PERCENT EXCEEDS	56		58		88	
50 PERCENT EXCEEDS	27		34		14	
90 PERCENT EXCEEDS	7.5		12		.00	

^aFrom rating curve extended above 2,500 ft³/s on basis of slope-area measurement.



RED RIVER BASIN
07324300 FOSS RESERVOIR NEAR FOSS, OK

LOCATION.--Lat 35°32'20", long 99°11'09", in S 1/2 sec.2, T.12 N., R.19 W., Custer County, Hydrologic Unit 11130301, near right end of dam on Washita River, 0.5 mi upstream from Oak Creek, 3.5 mi west of Stafford, 6.0 mi north of Foss, and at mile 474.4.

DRAINAGE AREA.--1,496 mi².

PERIOD OF RECORD.--February 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to October, 1961, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earth dam. Outlet consists of four 6- by 7-foot, 6-inch high pressure gates and one uncontrolled spillway. Storage began Feb. 13, 1961. Capacity, 436,500 acre-ft, at elevation 1,668.6 ft, crest of drop inlet and 256,100 acre-ft, at elevation 1,652.0 ft, conservation pool. Dead storage, 12,420 acre-ft below elevation 1,597.2 ft, sill of gated outlet. Figures given herein represent total contents. Reservoir is designed for flood control, municipal water supply, and irrigation release. Revised capacity table used after Sept. 30, 1964. U.S. Army Corps of Engineers' telemeter at station.

COOPERATION.--Elevations and data on diversions provided by Foss Reservoir Master Conservancy District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 217,300 acre-ft, June 18, 1989, elevation, 1,647.35 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 176,200 acre-ft, Jan. 12, 13, 15, elevation, 1,641.74 ft; minimum, 167,700 acre-ft, Sept. 30, elevation, 1,640.46 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

Date	Elevation (feet)*	Contents (acre-feet)	Change in contents (acre-feet)	Diversions (acre-feet)
Sept. 30.....	1641.09	171,800	-	-
Oct. 31.....	1641.01	171,300	-500	187
Nov. 30.....	1640.99	171,200	-100	179
Dec. 31.....	1641.56	175,000	+3,800	167
CAL YR 91	-	-	-3,600	2,407
Jan. 31.....	1641.30	178,200	-1,800	194
Feb. 29.....	1640.89	170,500	-2,700	162
Mar. 31.....	1640.94	170,800	+300	174
Apr. 30.....	1641.16	172,300	+1,500	183
May 31.....	1641.22	172,700	+400	243
June 30.....	1641.13	172,100	-600	255
July 31.....	1641.12	172,000	-100	222
Aug. 31.....	1640.73	169,500	-2,500	213
Sept. 30.....	1640.49	167,900	-1,600	182
WTR YR 92	-	-	-3,900	2,361

* Elevation at 0800 on the following day.



RED RIVER BASIN
07324400 WASHITA RIVER NEAR FOSS, OK

LOCATION.--Lat 35°32'20", long 99°10'10", in SW 1/4 SW 1/4 sec.1, T.12 N., R.19 W., Custer County, Hydrologic Unit 11130302, on right bank at downstream side county road bridge, 0.4 mi downstream from Oak Creek, 0.9 mi downstream from Foss Dam, 2.5 mi west of Stafford, 6.0 mi north of Foss, and at mile 473.5.

DRAINAGE AREA.--1,551 mi².

PERIOD OF RECORD.--March 1956 to April 1957, February to December 1958, July 1961 to September 1987, October 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,560 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated since 1961 by Foss Reservoir (station 07324300), except for 55 mi² intervening area.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1959 reached a stage of 23.4 ft, from floodmark and Oct. 3, 1986, discharge 1,350 ft³/s, gage height 21.56 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	6.7	5.1	13	274	13	74	69	15	7.6	126	14
2	4.6	6.6	5.1	12	274	13	39	69	20	7.0	127	15
3	4.7	6.5	5.1	12	274	13	10	70	19	7.0	127	11
4	4.5	6.5	5.0	12	272	37	10	70	90	6.9	55	9.6
5	4.5	6.5	5.1	12	273	38	10	70	143	7.3	7.7	8.2
6	4.6	6.3	5.0	11	199	25	10	44	143	6.0	6.6	7.8
7	4.7	6.0	5.2	11	70	19	10	8.5	144	5.9	6.6	7.1
8	4.8	6.4	5.1	11	11	17	10	8.6	146	5.9	6.3	7.2
9	4.8	6.3	5.2	10	11	15	10	8.6	147	5.9	6.4	6.8
10	4.8	6.1	5.1	10	11	14	10	8.6	146	26	6.8	6.6
11	4.8	6.2	6.4	9.9	85	49	10	8.8	143	64	8.0	6.5
12	4.5	6.2	18	10	145	39	10	8.6	142	33	7.1	6.5
13	4.8	6.0	8.3	10	145	12	10	8.2	141	24	6.5	6.3
14	4.7	6.1	7.4	9.8	146	12	9.6	8.1	140	44	6.4	6.3
15	4.8	6.3	7.1	9.5	146	11	9.1	8.3	139	43	6.4	6.2
16	4.6	48	6.7	84	145	48	8.7	7.9	140	92	6.2	6.0
17	3.9	18	6.2	151	146	75	8.6	7.4	139	50	7.3	5.9
18	5.3	7.6	5.9	149	145	76	9.8	7.7	62	31	7.7	6.2
19	5.1	6.6	9.1	150	146	76	168	8.2	7.4	20	7.1	5.8
20	5.1	7.1	45	150	71	75	69	8.0	8.1	85	6.5	6.2
21	4.9	6.6	50	150	11	75	45	9.0	8.4	137	6.3	6.2
22	4.7	5.7	38	151	10	75	27	8.9	8.3	136	6.2	6.1
23	4.7	5.4	32	150	10	74	19	8.4	7.6	135	6.0	6.2
24	4.7	5.6	22	150	10	74	15	8.2	7.6	135	6.0	6.5
25	4.7	5.3	17	150	9.8	74	14	9.1	7.6	134	5.3	6.0
26	4.9	5.3	16	149	10	74	13	9.1	7.3	133	5.7	5.5
27	5.2	5.3	15	150	10	74	11	8.8	7.1	133	5.8	5.6
28	7.3	5.3	14	216	10	74	11	11	20	132	5.6	5.4
29	6.4	5.2	13	278	12	75	43	10	12	131	5.4	5.5
30	5.7	5.0	13	276	---	75	73	9.1	8.5	129	5.2	5.5
31	6.3	---	12	275	---	74	---	10	---	127	7.8	---
TOTAL	153.2	236.7	413.1	2942.2	3081.8	1495	776.8	609.1	2168.9	2033.5	609.9	213.7
MEAN	4.94	7.89	13.3	94.9	106	48.2	25.9	19.6	72.3	65.6	19.7	7.12
MAX	7.3	48	50	278	274	76	168	70	147	137	127	15
MIN	3.9	5.0	5.0	9.5	9.8	11	8.6	7.4	7.1	5.9	5.2	5.4
AC-FT	304	469	819	5840	6110	2970	1540	1210	4300	4030	1210	424

RED RIVER BASIN
07324400 WASHITA RIVER NEAR FOSS, OK--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1992, BY WATER YEAR (WY)

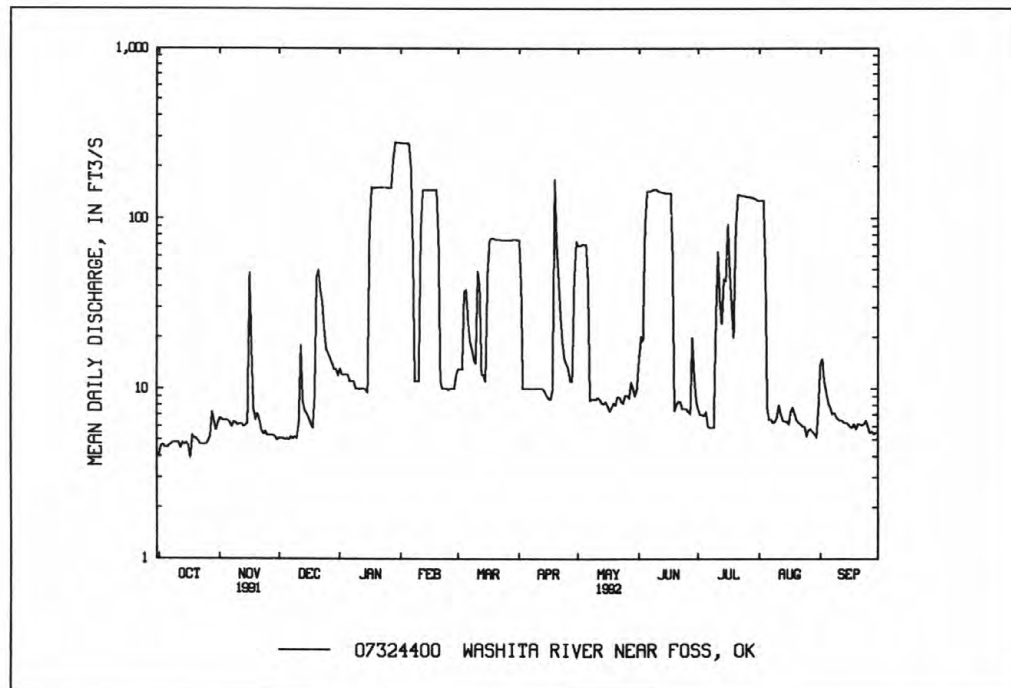
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	27.4	16.9	8.83	18.2	15.6	20.3	32.1	63.3	117	45.6	27.4	10.0
MAX	309	218	75.3	215	106	236	316	447	763	343	261	56.8
(WY)	1978	1987	1987	1987	1992	1987	1987	1982	1982	1987	1987	1986
MIN	.15	.28	.36	.56	.60	.57	1.62	1.08	1.28	2.27	3.12	.46
(WY)	1968	1968	1968	1968	1968	1968	1967	1967	1966	1967	1973	1966

SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1962-92
ANNUAL TOTAL	13413.5	14733.9	
ANNUAL MEAN	36.7	40.3	33.6
HIGHEST ANNUAL MEAN			233 1987
LOWEST ANNUAL MEAN			3.87 1963
HIGHEST DAILY MEAN	350 Jun 8	278 Jan 29	1300 Jun 11 1983
LOWEST DAILY MEAN	3.2 Aug 15	3.9 Oct 17	^a 0.06 Oct 2 1967
ANNUAL SEVEN-DAY MINIMUM	3.5 Aug 14	4.5 Oct 1	.08 Sep 28 1967, 1974
INSTANTANEOUS PEAK FLOW		324 Apr 19	^b 3010 Aug 26 1969
INSTANTANEOUS PEAK STAGE		12.10 Apr 19	^c 19.74 Aug. 26 1969
ANNUAL RUNOFF (AC-FT)	26610	29220	24310
10 PERCENT EXCEEDS	142	143	46
50 PERCENT EXCEEDS	5.3	10	6.7
90 PERCENT EXCEEDS	4.0	5.2	1.5

^aMinimum daily discharge for period of record no flow at times in 1956.

^bMaximum discharge for period of record 14,000 ft³/s, Apr. 19, 1957 from rating curve extended above 3,600 ft³/s, on basis of velocity-area study.

^cMaximum gage height for period of record 20.40 ft, Apr. 19, 1957.



RED RIVER BASIN
07325000 WASHITA RIVER NEAR CLINTON, OK

LOCATION.--Lat 35°31'51", long 98°58'00", in SW 1/4 NE 1/4 sec.11, T.12 N., R.17 W., Custer County, Hydrologic Unit 11130302, on downstream side of pier of bridge on U.S. Highway 183, 0.5 mi north of Clinton, 0.8 mi upstream from Beaver Creek, 4.8 mi downstream from Barnitz Creek, and at mile 447.4.

DRAINAGE AREA.--1,977 mi².

PERIOD OF RECORD.--October 1935 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1221: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,467.44 ft above National Geodetic Vertical Datum of 1929. See WSP 1920 for history of changes prior to Mar. 19, 1941.

REMARKS.--Records good. Flow regulated since February 1961 by Foss Reservoir (station 07324300) and by numerous flood-retarding structures. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 3-4, 1934, reached a stage of 33.9 ft, from floodmarks.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	35	42	108	323	79	131	117	77	68	145	90
2	31	34	39	104	325	80	134	115	81	55	145	59
3	38	33	39	95	328	82	97	106	76	47	148	50
4	26	32	38	91	329	91	80	104	66	40	143	39
5	26	31	39	95	326	125	73	106	146	39	70	38
6	25	32	40	93	321	114	70	105	171	39	47	40
7	25	31	39	88	221	90	68	80	183	34	41	32
8	25	31	39	101	122	e78	67	55	186	35	37	33
9	26	31	39	84	94	e73	66	52	184	32	34	28
10	25	31	36	78	94	e72	68	53	196	78	35	31
11	24	31	45	77	91	e98	66	53	186	360	36	26
12	24	30	165	80	164	127	63	52	179	202	38	28
13	23	31	107	82	192	88	63	49	173	133	36	26
14	22	31	72	77	197	75	63	46	171	140	32	25
15	23	32	59	74	211	73	63	46	171	192	33	24
16	22	166	55	67	195	72	63	43	169	328	31	22
17	22	384	52	152	197	156	61	40	169	292	29	22
18	26	115	48	179	202	387	59	39	162	159	38	21
19	31	79	60	179	192	304	458	38	75	110	42	22
20	26	62	212	184	190	217	502	41	48	88	38	24
21	26	58	323	184	117	186	239	43	46	164	33	23
22	24	55	222	189	92	157	165	51	51	187	30	21
23	23	50	221	188	90	139	129	59	44	173	30	22
24	22	50	154	187	89	140	102	48	40	164	28	21
25	22	47	128	189	89	140	86	48	37	162	26	20
26	22	44	114	184	88	133	78	49	36	158	28	19
27	23	46	109	193	85	133	72	47	36	159	29	18
28	35	44	107	210	83	132	69	56	182	155	27	18
29	40	50	103	304	81	139	67	64	190	151	26	18
30	30	55	99	323	---	129	99	59	94	148	25	18
31	35	---	96	322	---	125	---	55	---	146	28	---
TOTAL	819	1781	2941	4561	5128	4034	3421	1919	3625	4238	1508	878
MEAN	26.4	59.4	94.9	147	177	130	114	61.9	121	137	48.6	29.3
MAX	40	384	323	323	329	387	502	117	196	360	148	90
MIN	22	30	36	67	81	72	59	38	36	32	25	18
AC-FT	1620	3530	5830	9050	10170	8000	6790	3810	7190	8410	2990	1740

e Estimated

RED RIVER BASIN
07325000 WASHITA RIVER NEAR CLINTON, OK--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	87.6	60.5	36.4	48.9	53.5	69.6	78.1	175	220	98.8	65.8	75.1
MAX	1477	494	212	300	335	418	406	1175	1169	705	342	326
(WY)	1987	1987	1987	1987	1988	1987	1987	1982	1989	1989	1987	1988
MIN	3.30	4.23	5.68	4.78	7.00	6.24	9.64	4.10	4.44	6.42	6.01	5.87
(WY)	1967	1964	1964	1971	1967	1968	1971	1967	1966	1966	1965	1964

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1962-92

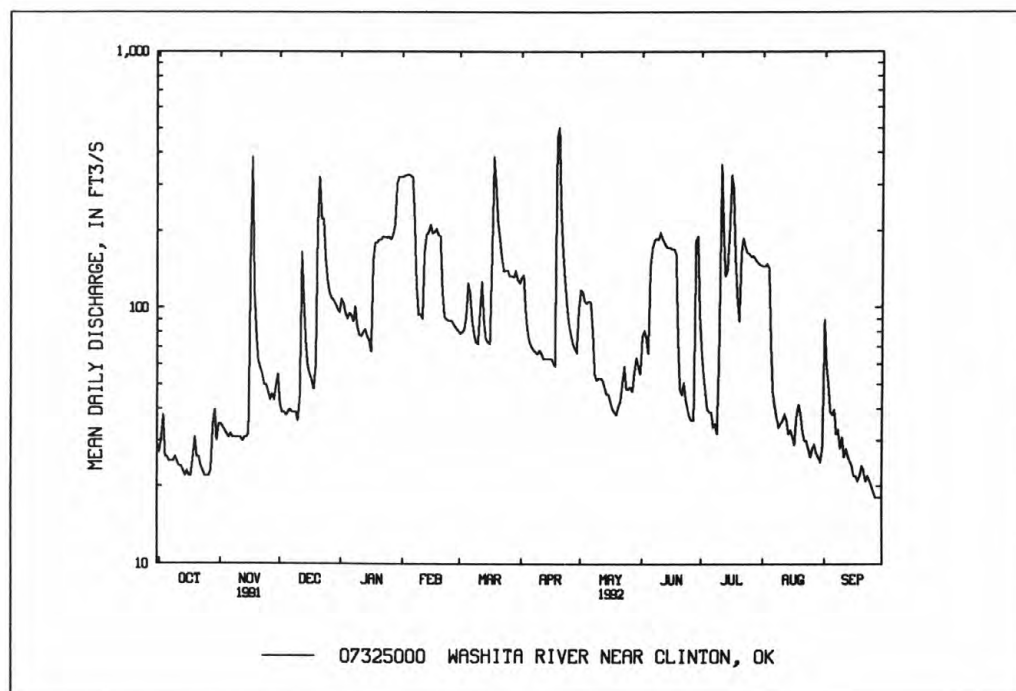
ANNUAL TOTAL	30049	34853	
ANNUAL MEAN	82.3	95.2	^a 89.2
HIGHEST ANNUAL MEAN			504 1987
LOWEST ANNUAL MEAN			13.8 1967
HIGHEST DAILY MEAN	980	Sep 16 502	Apr 20 7710 Oct 3 1986
LOWEST DAILY MEAN	11	Aug 17, 19-20 18	Sep 27-30 ^b .00 Jul 26 1964
ANNUAL SEVEN-DAY MINIMUM	13	Aug 14 19	Sep 24 .04 Jul 23 1964
INSTANTANEOUS PEAK FLOW		804	Apr 19 ^c 10600 Oct 3 1986
INSTANTANEOUS PEAK STAGE		12.52	Apr 19 ^d 25.93 Oct 3 1986
ANNUAL RUNOFF (AC-FT)	59600	69130	64600
10 PERCENT EXCEEDS	188	191	200
50 PERCENT EXCEEDS	42	68	26
90 PERCENT EXCEEDS	20	26	7.1

^aPrior to regulation, water years 1936-60, 146 ft³/s.

^bAlso occurred at times in 1952-56, 1964, 1966.

^cMaximum discharge for period of record, 66,800 ft³/s, May 16, 1951, from rating curve extended above 7,900 ft³/s, by contracted-opening measurement of peak flow.

^dMaximum gage height for period of record, 31.09 ft, May 16, 1951.



RED RIVER BASIN
07325500 WASHITA RIVER AT CARNEGIE, OK

LOCATION.--Lat 35°07'02", long 98°33'49", in NW 1/4 NW 1/4 sec.3, T.7 N., R.13 W., Caddo County, Hydrologic Unit 11130302, on downstream side of right pier of bridge on State Highway 9, 1,300 ft upstream from Running Creek, 2.7 mi east of Carnegie, and at mile 353.9. Records include flow of Running Creek.

DRAINAGE AREA.--3,129 mi², includes that of Running Creek.

PERIOD OF RECORD.--October 1937 to current year.

REVISED RECORDS.--WSP 1087: 1938. WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,244.23 ft above National Geodetic Vertical Datum of 1929. Prior to October 1942, water-stage recorder at site 8.0 mi upstream at datum 24.57 ft higher. Prior to Aug. 7, 1985, datum 5.00 ft higher.

REMARKS.--Records fair. Some diversion for irrigation upstream from station. October 1942 to May 1949, occasional fluctuation caused by powerplant at Carnegie, 7.5 mi upstream from station. Flow regulated by Foss Reservoir since February 1961 (station 07324300), and by numerous flood-retarding structures. U.S. Army Corps of Engineers' satellite telemeter at site.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 23, 1903, reached a stage of about 29 ft, at former site and datum, from information provided by local resident; flood of May 18, 1949, reached a stage of 20.9 ft, from floodmark, at that site and datum.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e155	e134	e127	456	531	e228	249	219	651	884	762	1860
2	e135	e118	e142	452	523	222	261	211	682	527	1010	1850
3	e118	e107	e132	458	527	e229	263	237	471	369	829	1220
4	145	e101	e126	411	530	e334	258	228	343	292	409	825
5	e128	e95	e121	395	531	e278	233	213	298	243	361	626
6	e104	e92	e118	368	524	e260	200	201	1020	207	329	716
7	e94	e90	e117	354	514	e243	193	192	1700	184	275	974
8	e86	e89	e116	338	493	e232	182	190	1550	165	214	606
9	e80	e90	e115	310	401	e228	178	185	1830	153	187	444
10	e77	e90	e114	309	310	224	174	153	1440	140	166	376
11	e73	e89	e230	299	266	219	169	147	1050	135	156	370
12	e71	e88	460	281	258	207	164	144	817	690	272	334
13	e69	e87	1290	269	256	202	162	142	649	595	295	293
14	e68	e88	854	263	305	203	158	138	529	788	196	266
15	e66	e88	514	202	359	219	156	132	458	1140	177	246
16	e65	e141	361	227	365	206	164	122	417	1020	168	225
17	e65	e262	294	242	373	186	604	386	384	1940	150	211
18	e64	490	267	222	352	184	1260	345	358	1610	202	198
19	e64	575	441	223	347	e535	649	226	337	1030	244	187
20	e75	362	2690	279	354	646	1060	346	370	717	251	184
21	e68	271	3960	324	340	520	1260	399	478	521	202	178
22	e65	e218	2870	361	333	403	948	321	290	1390	167	178
23	e64	e184	2170	364	294	346	603	236	242	815	146	209
24	e63	e165	1800	359	254	304	450	212	219	538	134	206
25	e94	e155	1380	350	274	281	366	209	199	433	129	170
26	e85	e148	1090	347	262	280	309	234	179	375	527	158
27	e79	e141	928	357	252	271	274	210	166	716	2690	152
28	e95	e138	803	383	e241	258	251	252	489	1190	1810	146
29	e121	e135	695	410	e235	250	245	369	1650	876	938	140
30	e113	e131	580	421	---	246	238	320	1720	562	620	136
31	e97	---	504	510	---	249	---	328	---	882	666	---
TOTAL	2746	4962	25409	10544	10604	8693	11681	7247	20986	21127	14682	13684
MEAN	88.6	165	820	340	366	280	389	234	700	682	474	456
MAX	155	575	3960	510	531	646	1260	399	1830	1940	2690	1860
MIN	63	87	114	202	235	184	156	122	166	135	129	136
AC-FT	5450	9840	50400	20910	21030	17240	23170	14370	41630	41910	29120	27140

e Estimated

RED RIVER BASIN
07325500 WASHITA RIVER AT CARNEGIE, OK--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1992, BY WATER YEAR (WY)

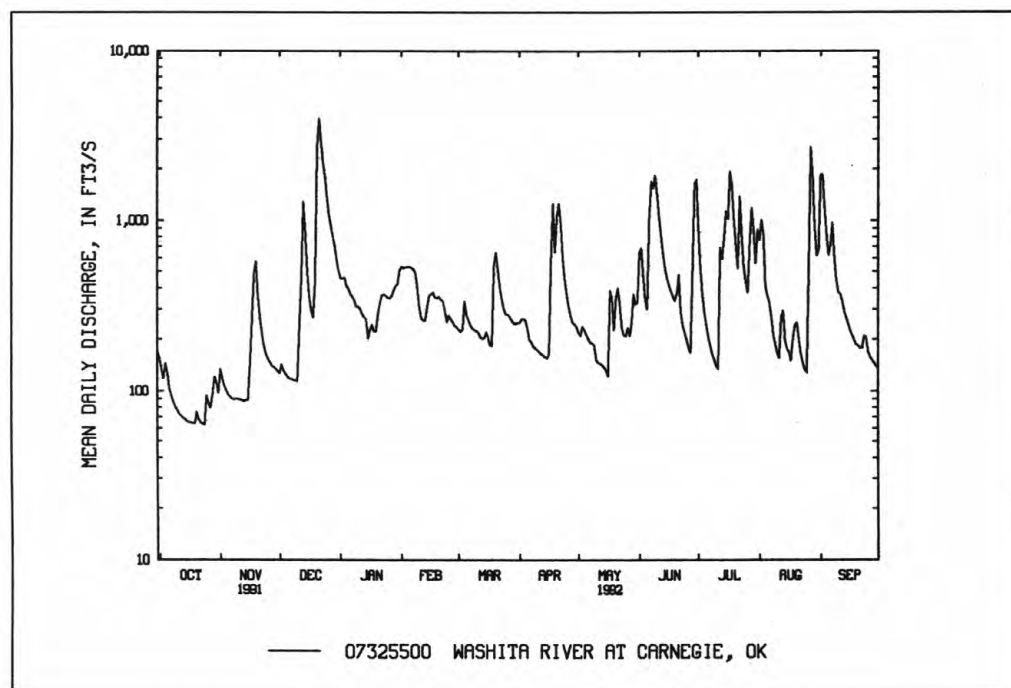
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	431	247	161	165	174	295	268	660	721	250	173	313
MAX	5311	1471	820	713	853	1680	1270	2992	3638	1150	557	1588
(WY)	1987	1987	1992	1988	1987	1988	1973	1982	1989	1975	1975	1965
MIN	21.8	27.3	33.6	36.0	36.6	34.2	11.1	10.0	94.0	7.10	14.6	15.6
(WY)	1973	1971	1964	1971	1971	1971	1971	1971	1984	1964	1972	1984

SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1962-92
ANNUAL TOTAL	126683	152365	
ANNUAL MEAN	347	416	^a 322
HIGHEST ANNUAL MEAN			1432 1987
LOWEST ANNUAL MEAN			72.8 1967
HIGHEST DAILY MEAN	5000 Jun 3	3960 Dec 21	22600 Oct 21 1983
LOWEST DAILY MEAN	43 Aug 5	63 Oct 24	^b .00 Jul 20 1964
ANNUAL SEVEN-DAY MINIMUM	46 Aug 3	66 Oct 13	.00 Jul 20 1964
INSTANTANEOUS PEAK FLOW		4060 Dec 21	^c 40600 Oct 20 1983
INSTANTANEOUS PEAK STAGE		19.08 Dec 21	26.70 Oct 20 1983
ANNUAL RUNOFF (AC-FT)	251300	302200	233200
10 PERCENT EXCEEDS	843	897	675
50 PERCENT EXCEEDS	144	261	117
90 PERCENT EXCEEDS	69	106	32

^aPrior to regulation, water years 1938-60, 314 ft³/s.

^bAlso occurred at times 1956 and 1964.

^cMaximum discharge for period of record, 50,000 ft³/s, May 18, 1949, from rating curve extended above 35,000 ft³/s on basis of contracted-opening measurement.



RED RIVER BASIN
07325800 COBB CREEK NEAR EAKLY, OK

LOCATION.--Lat 35°17'26", long 98°35'38", in NW 1/4 NE 1/4 sec.5, T.9 N., R.13 W., Caddo County, Hydrologic Unit 11130302, near left downstream abutment of bridge, on State Highway 152, 0.5 mi downstream from Fivemile Creek, 2.4 mi southwest of Eakly, 3.0 mi upstream from Fort Cobb Reservoir, and at mile 22.9.

DRAINAGE AREA.--132 mi².

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,369.70 ft above National Geodetic Vertical Datum of 1929. Oct. 29, 1980, to Aug. 11, 1982, gage at site 0.5 mi downstream at same datum.

REMARKS.--Records fair.. Flow regulated since 1957 by numerous floodwater-retarding structures. U.S. Army Corps of Engineers' satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	30	22	27	22	23	23	17	108	30	25	30
2	12	25	23	24	22	22	22	17	60	24	23	25
3	12	23	23	22	22	22	21	16	37	20	19	22
4	12	23	22	22	22	27	20	16	28	18	27	19
5	12	23	23	23	22	28	20	15	25	16	22	18
6	12	23	23	22	21	25	20	14	29	14	18	17
7	12	23	24	22	20	24	20	14	26	14	16	16
8	11	23	24	21	20	23	20	14	108	12	15	14
9	11	23	24	21	20	21	20	14	74	13	14	14
10	12	23	24	20	20	21	20	14	28	12	13	e51
11	12	23	27	21	20	19	19	15	23	12	17	15
12	11	23	259	21	20	19	20	14	21	12	23	14
13	11	24	54	24	20	19	20	14	20	11	19	14
14	11	26	33	26	21	19	19	14	19	20	30	14
15	12	29	26	23	21	19	19	13	19	16	23	14
16	12	113	23	21	21	20	19	12	18	34	18	13
17	12	67	22	22	20	20	19	23	17	32	e101	13
18	12	36	21	22	20	30	19	21	16	23	32	15
19	12	29	89	21	20	29	28	19	16	20	32	13
20	12	27	417	22	20	25	24	21	58	18	22	13
21	13	25	116	22	20	23	22	26	21	425	20	13
22	12	24	84	22	26	21	20	28	19	191	18	15
23	15	24	52	21	25	20	18	21	18	116	17	15
24	13	23	33	21	38	20	17	19	17	46	16	14
25	13	22	28	20	33	20	17	19	16	30	15	14
26	21	22	25	20	28	20	17	19	16	23	272	14
27	16	23	25	27	25	20	17	17	16	25	115	13
28	57	23	24	26	24	20	17	e57	190	22	46	14
29	28	23	23	25	23	20	18	24	105	19	31	13
30	24	22	22	24	---	20	18	19	45	22	24	13
31	36	---	23	23	---	19	---	76	---	73	27	---
TOTAL	484	867	1658	698	656	678	593	642	1213	1363	1110	502
MEAN	15.6	28.9	53.5	22.5	22.6	21.9	19.8	20.7	40.4	44.0	35.8	16.7
MAX	57	113	417	27	38	30	28	76	190	425	272	51
MIN	11	22	21	20	20	19	17	12	16	11	13	13
AC-FT	960	1720	3290	1380	1300	1340	1180	1270	2410	2700	2200	996

e Estimated

RED RIVER BASIN
07325800 COBB CREEK NEAR EAKLY, OK--Continued

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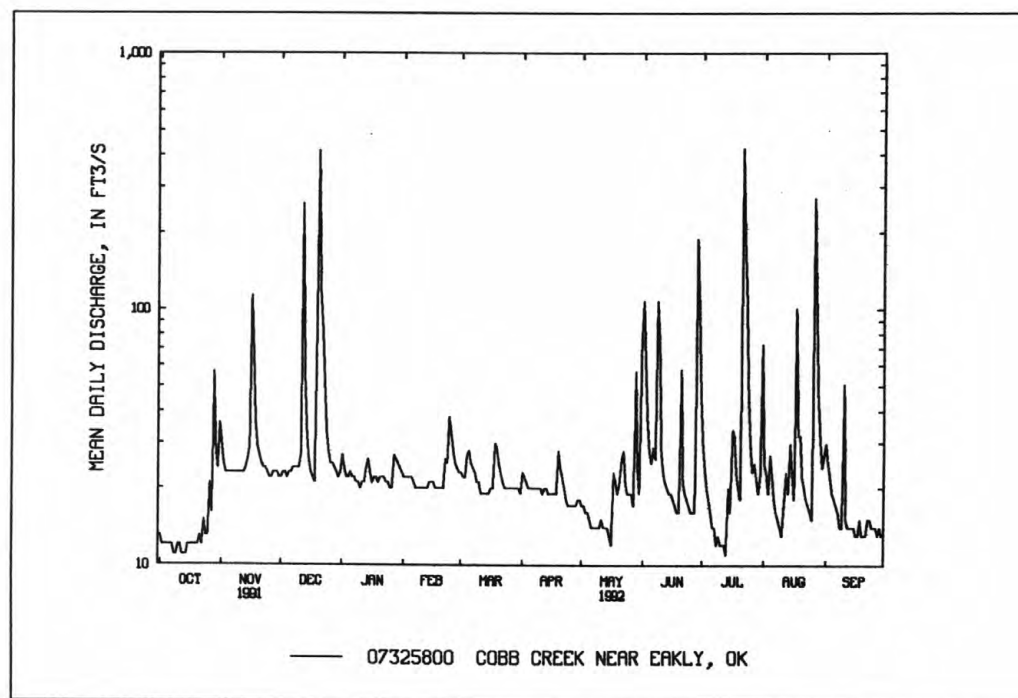
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	30.8	20.5	18.6	17.7	17.2	26.2	21.2	53.3	43.4	14.3	14.5	21.3
MAX	317	86.1	53.5	41.8	36.6	112	84.2	260	186	85.1	86.0	161
(WY)	1987	1975	1992	1988	1975	1973	1973	1987	1989	1975	1974	1986
MIN	4.34	6.11	4.88	8.78	8.99	8.38	5.27	2.79	7.84	1.01	.90	2.15
(WY)	1973	1979	1979	1981	1981	1971	1971	1971	1984	1974	1972	1972

SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1969-92
ANNUAL TOTAL	8166.8	10464	
ANNUAL MEAN	22.4	28.6	25.0
HIGHEST ANNUAL MEAN			91.0 1987
LOWEST ANNUAL MEAN			10.1 1979
HIGHEST DAILY MEAN	417 Dec 20	425 Jul 21	3750 Sep 29 1986
LOWEST DAILY MEAN	4.4 Aug 1	^a 11 Oct 8	^b .00 Aug 18 1970
ANNUAL SEVEN-DAY MINIMUM	4.9 Jul 29	11 Oct 8	.04 May 24 1971
INSTANTANEOUS PEAK FLOW		969 Jul 21	10000 Sep 29 1986
INSTANTANEOUS PEAK STAGE		12.87 Jul 21	24.38 Sep 29 1986
ANNUAL RUNOFF (AC-FT)	16200	20760	18080
10 PERCENT EXCEEDS	29	33	31
50 PERCENT EXCEEDS	17	21	12
90 PERCENT EXCEEDS	6.9	13	4.1

^aAlso occurred Oct. 9, 12-14, July 13.

^bNo flow at times in most years.



RED RIVER BASIN

07325900 FORT COBB RESERVOIR NEAR FORT COBB, OK

LOCATION.--Lat 35°09'58", long 98°27'23", in SE 1/4 NW 1/4 sec.22, T.8 N., R.12 W., Caddo County, Hydrologic Unit 11130382, in control house at right center of dam on Cobb Creek, 4.0 mi northwest of Fort Cobb, and at mile 7.5.

DRAINAGE AREA.--304 mi².

PERIOD OF RECORD.--March 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to October, 1961, nonrecording gage at same datum.

REMARKS.--Reservoir is formed by earth dam. Outlet consists of two sets of controlled 5- by 5-foot steel gates and an uncontrolled concrete spillway. Storage began Mar. 30, 1959. Conservation pool was first filled in June 1962. Capacity, 143,700 acre-ft at elevation 1,354.8 ft, crest of drop inlet, 80,010 acre-ft at elevation 1,342.0 ft, conservation pool, and 1,664 acre-ft at elevation 1,300.0 ft, crest of gated outlet. Figures given herein represent total contents. Reservoir is used for flood control, for municipal and industrial water supply, and for irrigation releases. Revised capacity table used since May 1, 1964. U.S. Army Corps of Engineers' satellite telemeter at station.

COOPERATION.--Elevations and data on diversions provided by Fort Cobb Reservoir Master Conservancy District.

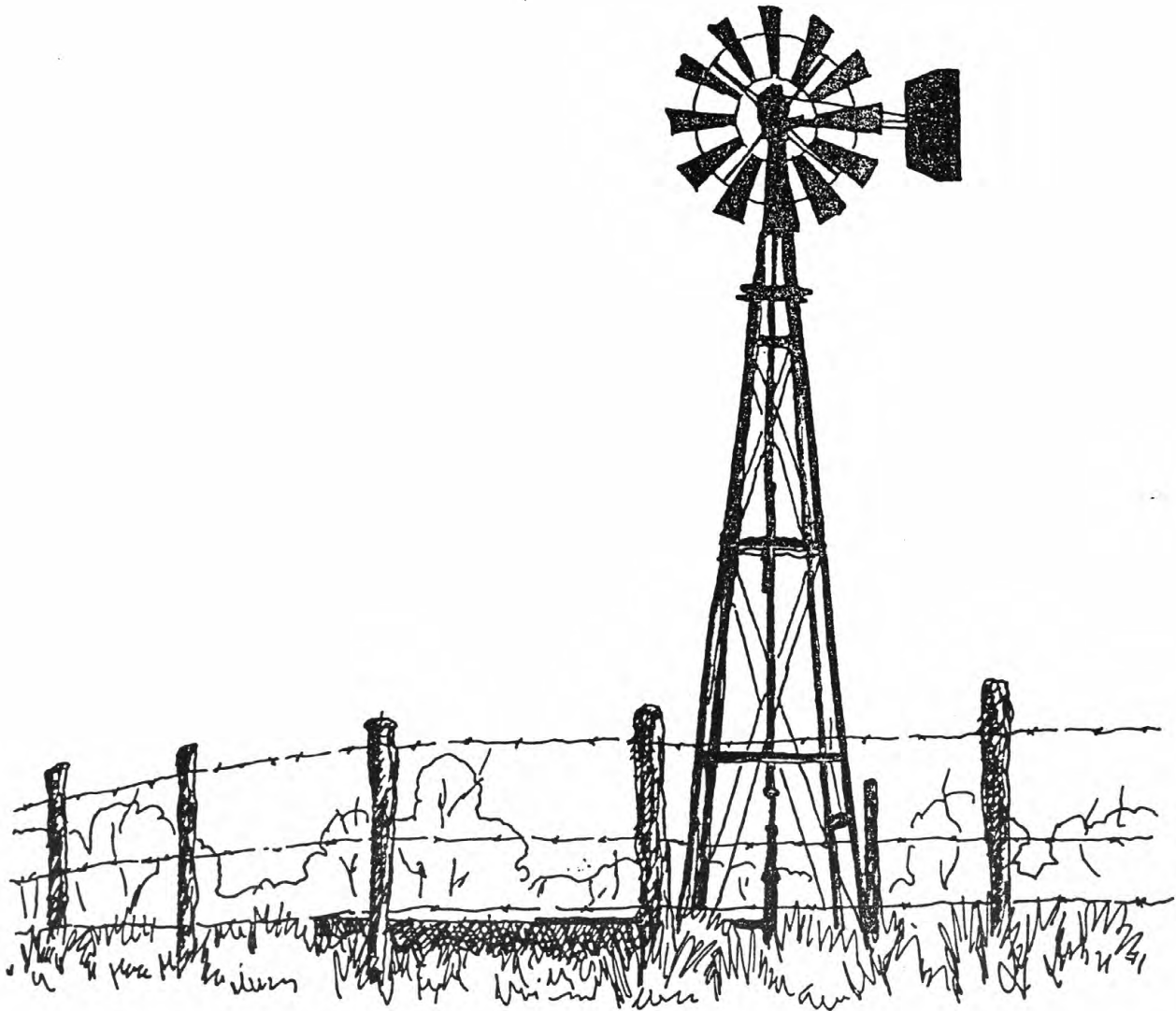
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 116,500 acre-ft, June 18, 1989, elevation, 1,349.89 ft; minimum since conservation pool was first filled, 54,650 acre-ft, Oct. 19, 1972, elevation 1,335.06 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 85,720 acre-ft, Dec. 23, elevation, 1,343.36 ft; minimum, 79,040 acre-ft, Sept. 30, elevation 1,341.76 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

Date	Elevation (feet)*	Contents (acre-feet)	Change in contents (acre-feet)	Diversions (acre-feet)
Sept. 30.....	1,342.16	80,680	-	-
Oct. 31.....	1,342.27	81,130	+450	688
Nov. 30.....	1,342.12	80,510	-620	653
Dec. 31.....	1,342.36	81,510	+1,000	573
CAL YR 91	-	-	+910	9,020
Jan. 31.....	1,342.05	80,220	-1,290	543
Feb. 28.....	1,342.21	80,880	+660	532
Mar. 31.....	1,342.06	80,260	-620	591
Apr. 30.....	1,341.97	79,890	-370	722
May 31.....	1,342.33	81,380	+1,490	605
June 30.....	1,342.48	82,010	+630	660
July 31.....	1,342.18	80,760	-1,250	760
Aug. 31.....	1,342.33	81,380	+620	720
Sept. 30.....	1,341.76	79,040	+2,340	653
WTR YR 92	-	-	-1,640	7,700

* Elevation at 2400



RED RIVER BASIN
07326000 COBB CREEK NEAR FORT COBB, OK

LOCATION.--Lat 35°08'37", long 98°26'33", in NE 1/4 NE 1/4 sec.27, T.8 N., R.12 W., Caddo County, Hydrologic Unit 11130302, on left bank 10 ft upstream from county road bridge, 0.3 mi upstream from Punjo Creek, 1.2 mi downstream from Fort Cobb Dam, 3.0 mi north of Fort Cobb, and at mile 5.8.

DRAINAGE AREA.--313 mi². Area at site used prior to Oct. 1, 1969, 319 mi².

PERIOD OF RECORD.--October 1939 to current year. Monthly discharge only for some periods, published in WSP 1311. Prior to October 1960, published as Pond Creek near Fort Cobb.

REVISED RECORDS.--WSP 1087: 1938. WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,254.49 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Oct. 1, 1969, to Sept. 30, 1982, gage at same site and datum 5.00 ft higher. Oct. 1, 1939, to Aug. 29, 1940, nonrecording gage and Aug. 30, 1940, to Sept. 30, 1969, water-stage recorder at site 0.8 mi downstream at datum 1.92 ft lower.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated since March 1959 by Fort Cobb Reservoir (station 07325900).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 15, 1937, reached a stage of 19.3 ft, site and datum used in 1939, from information by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	2.2	2.6	318	86	34	3.8	4.2	84	3.8	101	309
2	2.9	2.2	2.6	318	53	54	3.6	4.0	83	53	101	228
3	2.8	2.3	2.6	250	53	75	3.6	3.9	83	104	50	156
4	3.4	2.3	2.6	96	53	75	3.6	3.9	103	105	3.7	80
5	2.9	2.3	2.6	7.3	53	74	3.6	3.9	118	106	3.5	4.5
6	2.3	2.3	2.5	6.4	53	74	20	3.7	120	106	3.4	5.9
7	2.3	40	2.5	6.1	53	74	39	3.5	120	50	3.2	4.3
8	2.5	89	2.5	7.2	42	75	40	3.5	126	3.5	3.1	3.9
9	2.5	89	75	7.4	30	74	40	3.5	121	3.4	3.1	3.9
10	2.6	89	151	7.8	18	74	40	3.5	119	3.4	3.1	4.3
11	2.1	88	152	8.0	3.6	62	40	3.9	119	3.4	3.1	23
12	2.0	88	154	8.0	3.6	49	40	3.7	119	3.2	3.1	44
13	1.8	42	152	9.2	3.5	50	40	3.7	119	3.2	3.1	45
14	2.5	2.4	152	75	3.5	50	40	3.5	118	4.6	3.3	45
15	2.7	2.0	152	141	3.3	50	40	3.5	118	3.3	3.0	45
16	2.4	2.3	151	142	3.3	27	41	3.5	118	3.8	3.0	45
17	2.6	2.2	151	142	3.2	4.2	41	5.2	117	3.4	3.0	26
18	2.9	97	68	122	17	3.7	40	3.7	117	3.3	4.3	3.4
19	2.7	194	3.1	5.8	34	3.7	40	4.0	116	3.2	52	3.3
20	2.7	194	19	5.3	34	3.7	39	7.1	117	3.1	102	3.2
21	2.7	173	2.5	5.1	34	3.7	39	41	64	3.1	103	3.1
22	3.0	12	2.5	4.8	35	3.6	39	80	4.5	103	104	3.1
23	3.1	2.7	27	4.7	34	3.5	39	80	4.4	213	105	3.0
24	2.6	2.7	229	4.7	34	3.7	39	80	4.3	158	105	3.0
25	2.8	2.4	317	4.7	34	3.7	22	82	4.1	101	86	3.0
26	3.5	2.5	316	4.7	34	3.6	4.5	83	3.7	101	7.8	3.0
27	2.4	2.5	316	64	34	3.6	4.4	82	3.7	104	3.3	2.9
28	12	2.5	316	123	34	3.6	4.3	87	5.4	101	158	2.9
29	2.2	2.5	318	123	34	3.6	4.3	82	4.6	101	307	2.9
30	1.9	2.6	318	123	---	3.6	4.3	82	4.0	101	309	2.9
31	2.2	---	318	123	---	3.5	---	86	---	101	313	---
TOTAL	89.8	1237.9	3880.6	2267.2	910.0	1026.0	798.0	944.4	2357.7	1759.7	2056.1	1112.5
MEAN	2.90	41.3	125	73.1	31.4	33.1	26.6	30.5	78.6	56.8	66.3	37.1
MAX	12	194	318	318	86	75	41	87	126	213	313	309
MIN	1.8	2.0	2.5	4.7	3.2	3.5	3.6	3.5	3.7	3.1	3.0	2.9
AC-FT	178	2460	7700	4500	1800	2040	1580	1870	4680	3490	4080	2210

RED RIVER BASIN
07326000 COBB CREEK NEAR FORT COBB, OK--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	27.7	32.0	14.0	22.0	18.9	30.2	21.5	29.3	107	28.5	16.3	18.8
MAX	345	538	125	139	131	312	169	143	779	256	211	157
(WY)	1987	1987	1992	1969	1975	1990	1990	1969	1987	1989	1975	1965
MIN	1.41	1.62	1.57	1.99	2.14	2.12	2.01	1.50	1.90	.78	1.48	1.60
(WY)	1985	1973	1973	1977	1981	1977	1985	1985	1972	1985	1981	1978

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1963-92

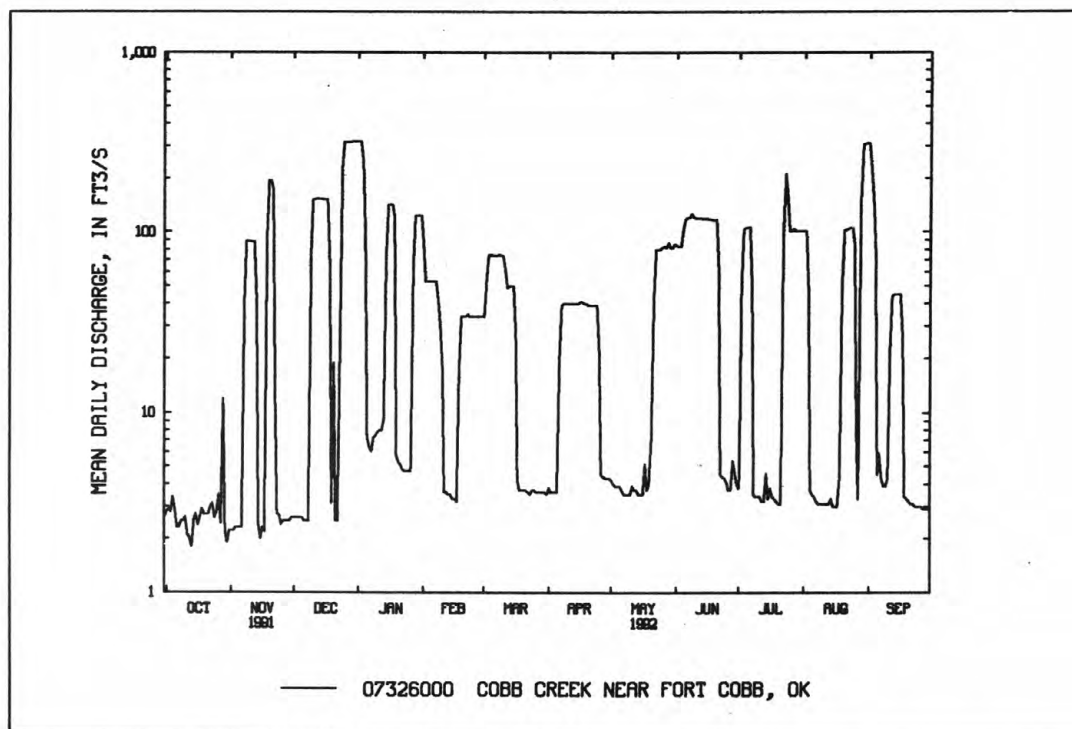
ANNUAL TOTAL	15084.4	18439.9	
ANNUAL MEAN	41.3	50.4	^a 30.5
HIGHEST ANNUAL MEAN			176 1987
LOWEST ANNUAL MEAN			2.34 1981
HIGHEST DAILY MEAN	318 Dec 29	318 Dec 29	1270 Jun 23 1987
LOWEST DAILY MEAN	1.8 Oct 13	1.8 Oct 13	^b .20 Jul 20 1981
ANNUAL SEVEN-DAY MINIMUM	2.2 Oct 29	2.2 Oct 29	.20 Jul 20 1981
INSTANTANEOUS PEAK FLOW		325 Dec 25	^c 1280 Jun 23 1987
INSTANTANEOUS PEAK STAGE		10.25 Dec 25	^d 18.44 May 17 1986
ANNUAL RUNOFF (AC-FT)	29920	36580	22090
10 PERCENT EXCEEDS	153	123	41
50 PERCENT EXCEEDS	2.9	7.6	2.8
90 PERCENT EXCEEDS	2.4	2.6	1.9

^aPrior to regulation by Fort Cobb Reservoir, water years 1940-58, 50.2 ft³/s.

^bMinimum daily discharge, also occurred Sept. 20, 24-28, 1956.

^cMaximum discharge for period of record, 35,000 ft³/s, May 17, 1949, from rating curve extended above 4,300 ft³/s on basis of contracted opening measurement.

^dMaximum gage height for period of record, 18.72 ft, May 17, 1949, from high-water mark, at former site and datum.



RED RIVER BASIN
07326500 WASHITA RIVER AT ANADARKO, OK

LOCATION.--Lat 35°05'03", long 98°14'35", in NW 1/4 sec.15, T.7 N., R.10 W., Caddo County, Hydrologic Unit 11130302 on right downstream bank at bridge on U.S. Highway 281 at north edge of Anadarko, 8.1 mi upstream from Sugar Creek, and at mile 305.2.

DRAINAGE AREA.--3,656 mi².

PERIOD OF RECORD.--October 1902 to September 1908; June 1924 to June 1925, published as "near Anadarko", October 1935 to February 1938; October 1963 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1311: 1903, 1907-08, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,150.00 ft above National Geodetic Vertical Datum of 1929. October 26, 1902, to June 30, 1908, nonrecording gage at former bridge 125 ft downstream at datum estimated to be 2.8 ft higher. May 25, 1924, to June 30, 1925, nonrecording gage at county road bridge 14 mi downstream at different datum. Jan. 10, 1936, to Mar. 7, 1938, non-recording gage on upstream side of bridge on U.S. Highway 281 at datum 1.88 ft higher. October 1963 to March 1989 gage located 100 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated by low-water dams upstream and since March 1959, by Fort Cobb Reservoir (station 07325900), since February 1961, by Foss Reservoir (station 07324300), and by numerous flood-retarding structures. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 1949, reached an elevation of 1,176.7 ft, from floodmark, at right bank on downstream side of bridge on U.S. Highway 281.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	633	216	259	784	670	326	316	306	538	1500	999	1530
2	476	211	260	750	647	320	316	289	763	877	855	2460
3	352	231	260	744	618	336	320	277	735	655	1020	1940
4	287	222	237	672	620	558	323	292	570	582	634	1310
5	240	209	231	529	618	441	321	290	501	519	512	912
6	210	201	224	456	616	415	308	279	652	461	481	714
7	203	198	220	438	607	413	291	268	1480	412	446	850
8	189	214	218	423	601	408	298	262	1830	327	386	1010
9	181	266	219	410	573	407	290	258	2000	250	316	659
10	176	264	284	409	486	376	285	252	2080	230	283	506
11	173	261	373	421	407	356	281	246	1540	215	269	445
12	170	259	487	422	350	338	277	234	1160	203	252	458
13	167	255	753	416	337	319	270	226	919	575	302	451
14	165	236	1180	420	332	315	268	219	784	740	441	406
15	161	192	880	480	353	313	263	211	687	1020	304	365
16	159	202	642	537	399	330	270	204	634	1150	269	344
17	155	227	544	516	399	295	1140	215	596	1250	249	323
18	153	550	516	498	406	266	1000	420	564	2020	261	290
19	153	683	495	470	400	263	1180	406	538	1470	369	247
20	151	742	1510	393	413	588	744	380	535	972	381	234
21	151	567	3880	437	416	666	1070	769	579	712	433	224
22	147	494	4070	445	425	535	1210	661	598	605	378	216
23	150	353	2800	450	419	461	877	517	397	1500	343	211
24	154	305	2310	449	409	408	629	377	333	980	319	221
25	152	290	1970	445	373	372	516	358	299	717	304	236
26	163	280	1540	438	367	352	446	357	271	594	520	207
27	170	271	1270	442	357	348	381	366	247	823	1260	196
28	223	265	1080	511	347	339	342	366	322	1200	2530	191
29	308	262	978	583	337	326	321	550	1110	1280	1690	187
30	242	260	896	597	---	318	320	508	1900	948	1170	182
31	237	---	831	608	---	312	---	449	---	764	1040	---
TOTAL	6651	9186	31417	15593	13302	11820	14873	10812	25162	25551	19016	17525
MEAN	215	306	1013	503	459	381	496	349	839	824	613	584
MAX	633	742	4070	784	670	666	1210	769	2080	2020	2530	2460
MIN	147	192	218	393	332	263	263	204	247	203	249	182
AC-FT	13190	18220	62320	30930	26380	23440	29500	21450	49910	50680	37720	34760

RED RIVER BASIN
07326500 WASHITA RIVER AT ANADARKO, OK--Continued

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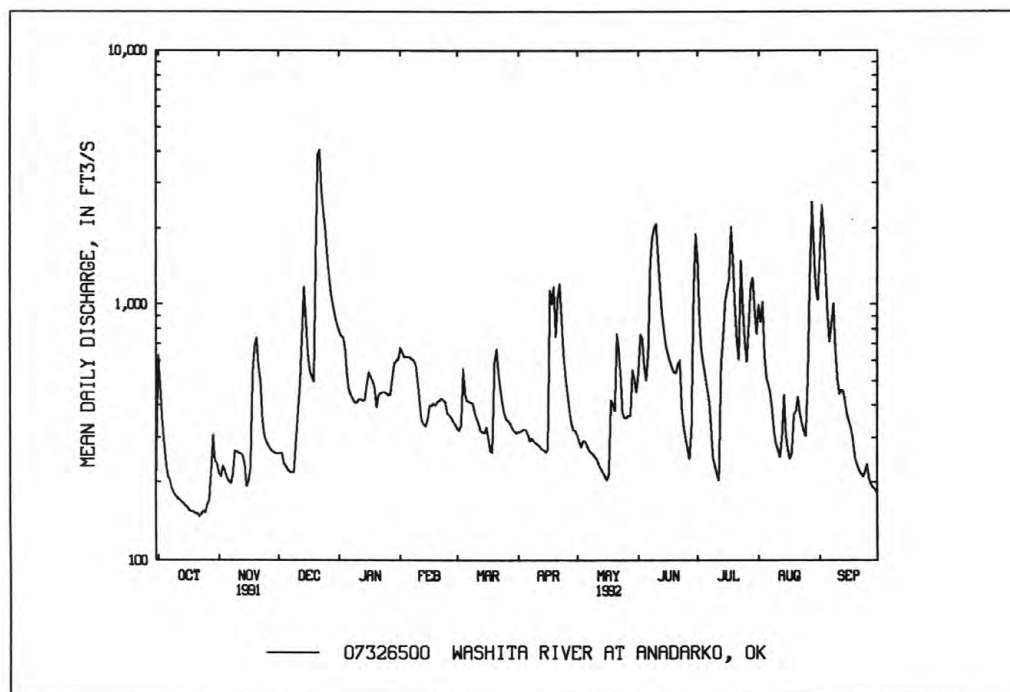
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	503	314	212	222	227	367	348	742	942	339	224	340
MAX	5480	2205	1013	955	1089	1903	1471	2591	4498	1459	961	1450
(WY)	1987	1987	1992	1988	1987	1990	1973	1982	1989	1989	1975	1965
MIN	21.2	37.0	41.6	52.0	55.4	50.6	16.7	9.57	85.7	12.6	19.7	32.2
(WY)	1973	1971	1971	1971	1971	1971	1971	1971	1967	1964	1972	1984

SUMMARY STATISTICS	1991 CALENDAR YEAR		1992 WATER YEAR		WATER YEARS 1964-92	
ANNUAL TOTAL	166556		200908			
ANNUAL MEAN	456		549		^a 399	
HIGHEST ANNUAL MEAN					1788	
LOWEST ANNUAL MEAN					72.7	
HIGHEST DAILY MEAN	5200	Jun 4	4070	Dec 22	37700	Oct 21 1983
LOWEST DAILY MEAN	68	Aug 10	147	Oct 22	.00	Aug 1 1964
ANNUAL SEVEN-DAY MINIMUM	71	Aug 7	151	Oct 19	.77	Jul 19 1964
INSTANTANEOUS PEAK FLOW			4310	Dec 22	44700	Oct 21 1983
INSTANTANEOUS PEAK STAGE			16.44	Dec 22	^b 25.20	Oct 21 1983
ANNUAL RUNOFF (AC-FT)	330400		398500		288800	
10 PERCENT EXCEEDS	999		1090		898	
50 PERCENT EXCEEDS	246		399		151	
90 PERCENT EXCEEDS	106		211		46	

^aPrior to regulations, water years 1903-08, 1936-37, 595 ft³/s.

^bFrom high-water mark.



RED RIVER BASIN
07327050 SPRING CREEK NEAR GRACEMONT, OK

LOCATION.--Lat 35°11'21", long 98°10'34", in NW 1/4 NW 1/4 sec.8, T.8 N., R.9 W., Caddo County, Hydrologic Unit 11130302, near main channel on downstream side of county road bridge, 6.8 mi east of Gracemont, and at mile 8.4.

DRAINAGE AREA.--34.4 mi².

PERIOD OF RECORD.--June 1991 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,198.00 ft.

REMARKS.--Records poor.

EXTREMES FOR CURRENT PERIOD.--Period June 24 to Sept. 30, 1991: Maximum discharge, 205 ft³/s, July 3, gage height, 7.39 ft; minimum daily discharge, 0.02 ft³/s, Aug. 9, 10. Water year 1992, maximum discharge 537 ft³/s, Aug. 26, 1992, gage height 10.90 ft; minimum daily discharge, .96 ft³/s, Oct. 19, 1991.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	.16	e.19	12
2	---	---	---	---	---	---	---	---	---	.12	e.16	23
3	---	---	---	---	---	---	---	---	---	55	e.13	7.8
4	---	---	---	---	---	---	---	---	---	8.2	e.10	4.4
5	---	---	---	---	---	---	---	---	---	3.0	e.08	2.9
6	---	---	---	---	---	---	---	---	---	1.8	e.07	2.4
7	---	---	---	---	---	---	---	---	---	1.3	e.06	21
8	---	---	---	---	---	---	---	---	---	.94	.05	9.3
9	---	---	---	---	---	---	---	---	---	.77	.02	4.9
10	---	---	---	---	---	---	---	---	---	.56	.02	e4.5
11	---	---	---	---	---	---	---	---	---	.43	.03	e4.1
12	---	---	---	---	---	---	---	---	---	.39	.05	e3.9
13	---	---	---	---	---	---	---	---	---	.39	.13	e3.7
14	---	---	---	---	---	---	---	---	---	3.9	.14	4.6
15	---	---	---	---	---	---	---	---	---	.78	.07	e4.3
16	---	---	---	---	---	---	---	---	---	.63	.06	4.6
17	---	---	---	---	---	---	---	---	---	.43	.24	e4.2
18	---	---	---	---	---	---	---	---	---	.36	.07	82
19	---	---	---	---	---	---	---	---	---	.32	.04	27
20	---	---	---	---	---	---	---	---	---	.31	.05	e17
21	---	---	---	---	---	---	---	---	---	.31	.42	e12
22	---	---	---	---	---	---	---	---	---	.27	.23	e10
23	---	---	---	---	---	---	---	---	---	.27	.20	e8.9
24	---	---	---	---	---	---	---	---	---	.27	.19	36
25	---	---	---	---	---	---	---	---	.97	.28	.14	8.2
26	---	---	---	---	---	---	---	---	.79	.27	.10	e6.6
27	---	---	---	---	---	---	---	---	.69	.30	.07	e5.1
28	---	---	---	---	---	---	---	---	.55	.27	.05	e4.5
29	---	---	---	---	---	---	---	---	.34	.27	.87	e3.8
30	---	---	---	---	---	---	---	---	.19	.24	15	e3.3
31	---	---	---	---	---	---	---	---	---	.23	18	---
TOTAL	---	---	---	---	---	---	---	---	---	82.77	37.03	346.0
MEAN	---	---	---	---	---	---	---	---	---	2.67	1.19	11.5
MAX	---	---	---	---	---	---	---	---	---	55	18	82
MIN	---	---	---	---	---	---	---	---	---	.12	.02	2.4
AC-FT	---	---	---	---	---	---	---	---	---	164	73	686

e Estimated

RED RIVER BASIN
07327050 SPRING CREEK NEAR GRACEMONT, OK--Continued

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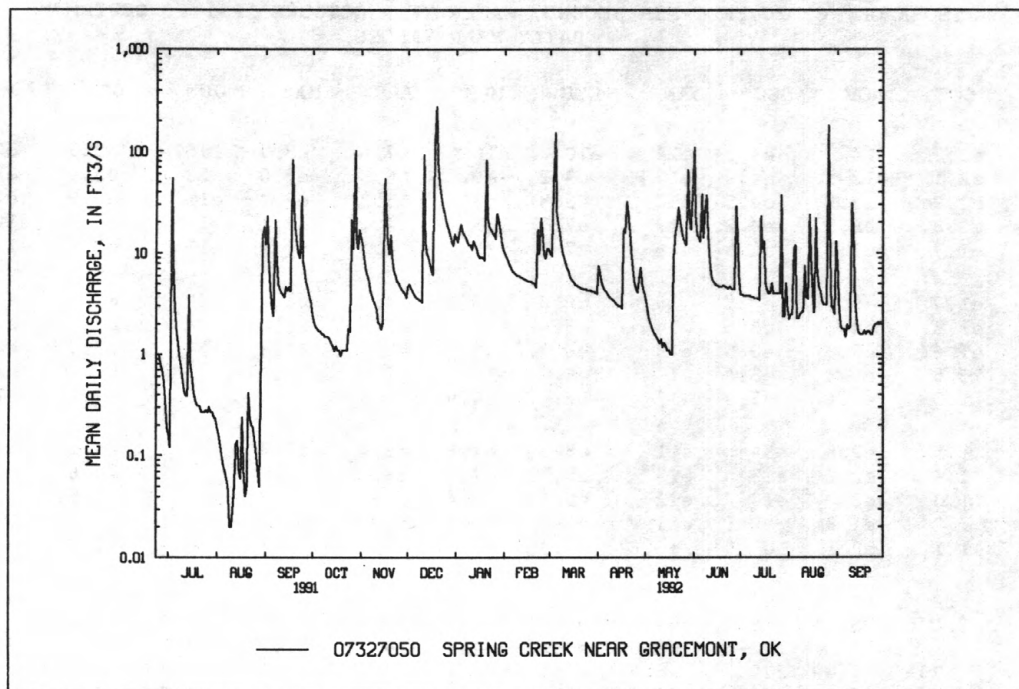
DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

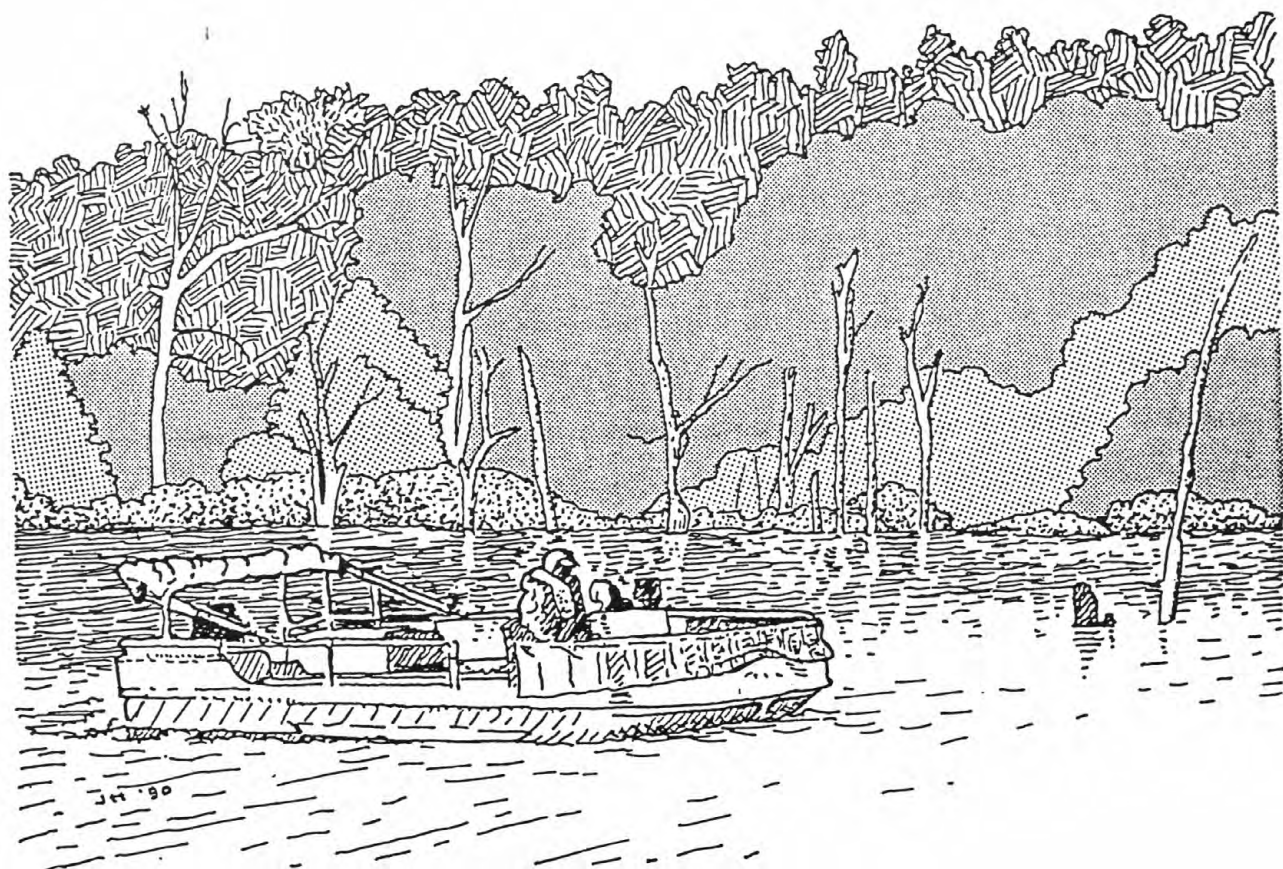
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2.5	14	e4.7	e14	e10	e10	7.6	e3.7	110	3.9	e2.3	e7.5
2	e2.1	e12	e4.9	e13	e9.2	e9.5	6.3	e3.0	23	e3.9	e2.5	e2.8
3	e1.9	e9.1	e4.5	e16	e8.5	53	5.2	e2.4	e15	e3.8	e2.5	e1.9
4	e1.8	e6.9	e4.2	e19	e7.7	153	4.7	e2.1	e14	e3.8	e11	e1.8
5	e1.7	e6.1	e3.9	e16	e7.2	25	4.3	e1.9	e13	e3.8	e12	e1.8
6	e1.7	e5.4	e3.7	15	e6.6	e19	4.2	e1.7	38	e3.8	e2.3	e1.5
7	e1.6	e4.3	e3.6	e14	e6.4	e16	e3.9	e1.6	e14	e3.8	e2.3	e2.0
8	e1.6	e3.8	e3.5	e13	e6.2	e12	e3.7	e1.5	27	e3.7	e2.5	e1.8
9	1.5	e3.4	e3.4	e12	e6.0	e10	e3.6	e1.4	37	e3.7	e2.6	e1.9
10	1.5	e3.1	e3.3	e12	e6.0	e8.9	e3.5	e1.3	15	e3.6	e2.7	31
11	1.5	e2.8	e94	e11	e5.8	e7.8	e3.4	e1.4	e9.0	e3.6	e7.6	e18
12	1.4	e2.1	e13	e13	e5.7	e7.1	e3.2	e1.2	e6.2	e3.6	e3.7	e3.8
13	1.3	e2.0	e10	e12	e5.6	e6.4	e3.1	e1.3	e5.4	e3.5	e3.6	e2.3
14	1.2	e1.8	e9.1	e11	e5.5	e5.7	e3.0	e1.2	e5.1	23	24	e1.7
15	1.1	e2.1	e7.9	e9.6	e5.4	e5.4	e3.0	1.1	e4.9	e11	e8.4	e1.6
16	1.2	54	e6.8	e9.0	e5.3	e5.2	2.9	e1.1	e4.8	13	e4.1	e1.6
17	1.1	25	e6.1	e9.1	e5.3	e4.9	17	e1.0	e4.7	e5.0	2.6	e1.6
18	1.1	13	131	e9.0	e5.2	e4.8	16	e1.0	e4.7	e4.3	22	e1.7
19	.96	9.8	279	e8.6	e5.1	e4.7	32	9.1	e4.7	e4.0	e6.6	e1.6
20	1.1	15	e76	e82	5.0	e4.6	24	16	e4.8	e4.1	e4.7	e1.7
21	1.1	8.5	e50	e22	4.6	e4.5	e16	19	e4.7	e5.1	e4.2	e1.7
22	1.1	6.7	e38	18	17	e4.5	e10	28	e4.6	e4.0	e3.4	e1.6
23	1.1	6.1	e30	e17	9.8	e4.4	e7.0	e21	e4.5	e4.0	e3.1	e1.6
24	1.8	e5.3	e26	e16	22	e4.4	e5.1	e17	e4.7	e4.0	e3.1	e1.9
25	1.7	e5.1	e22	e15	16	e4.3	e4.5	e14	e4.5	e4.0	e3.1	e2.0
26	21	e4.7	e19	e14	e9.9	e4.3	e4.1	e13	e4.4	e4.0	179	e2.0
27	11	e4.4	e17	24	e9.0	e4.3	e5.8	e12	e4.4	37	15	e2.1
28	102	e4.2	e15	21	e11	e4.2	e7.3	66	29	e2.4	e3.0	e2.1
29	14	e4.0	e13	e17	e11	e4.2	e5.0	e23	15	e2.4	e2.9	e2.1
30	e11	e3.7	e12	e13	---	e4.1	e4.2	e17	e5.7	e5.1	e2.5	e2.1
31	17	---	e15	e11	---	4.0	---	39	---	e2.9	13	---
TOTAL	212.66	248.4	929.6	506.3	238.0	420.2	223.6	324.0	441.8	187.8	362.3	108.8
MEAN	6.86	8.28	30.0	16.3	8.21	13.6	7.45	10.5	14.7	6.06	11.7	3.63
MAX	102	54	279	82	22	153	32	66	110	37	179	31
MIN	.96	1.8	3.3	8.6	4.6	4.0	2.9	1.0	4.4	2.4	2.3	1.5
AC-FT422	493	1840	1000	472	833	444	643	876	373	719	216	

WTR YR 1992 TOTAL 4203.46 MEAN 11.5 MAX 279 MIN .96 AC-FT 8340

e Estimated

RED RIVER BASIN
07327050 SPRING CREEK NEAR GRACEMONT, OK--Continued





Sampling on Eufaula Lake

RED RIVER BASIN

07327447 LITTLE WASHITA RIVER NEAR CEMENT, OK

LOCATION.--Lat 34°50'16", long 98°07'27", in NW 1/4 NW 1/4 sec.11, T.4 N., R.9 W., Comanche County, Hydrologic Unit 11130302, on left bank near downstream side of county road bridge, 5 mi south of Cement, 7 mi east northeast of Fletcher, 8 mi northeast of Sterling, and at mile 23.7

DRAINAGE AREA.--61.9 mi².

PERIOD OF RECORD.--February 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,183.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. U.S. Geological Survey's satellite tele-meter at station.

EXTREMES FOR CURRENT PERIOD.--Period Feb. 1 to Sept. 30, 1992, maximum discharge, 994 ft³/s, Apr. 16, gage height, 12.22 ft; minimum daily discharge, .16 ft³/s, July 13.

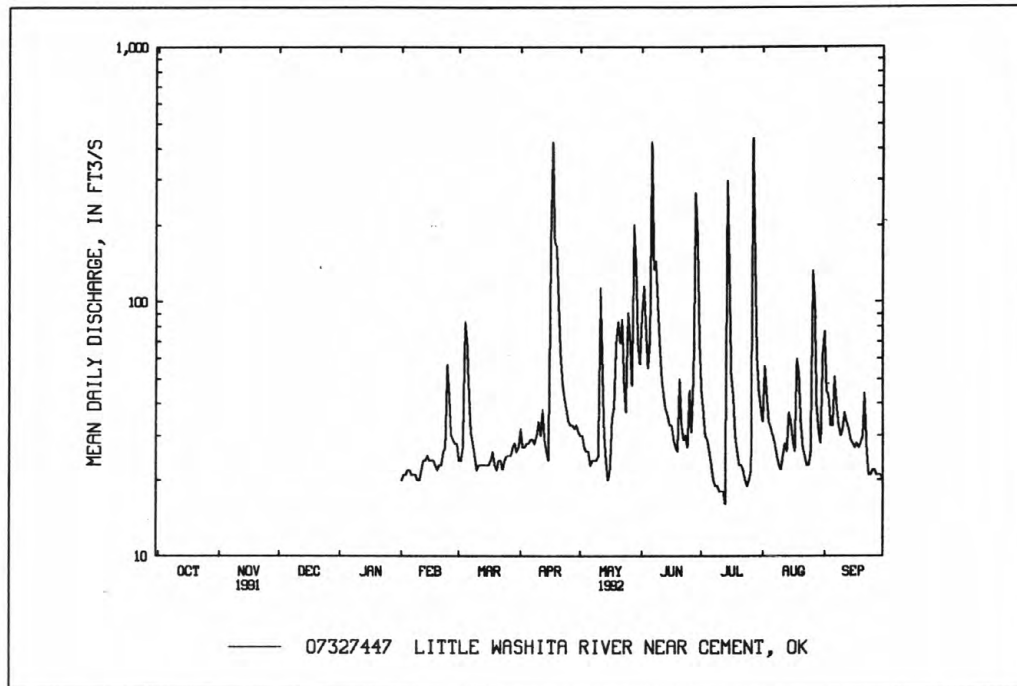
DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	20	24	32	30	89	45	34	77
2	---	---	---	---	21	24	27	30	116	37	56	45
3	---	---	---	---	21	27	27	27	79	30	43	43
4	---	---	---	---	22	84	28	26	55	29	34	33
5	---	---	---	---	22	70	28	26	71	26	32	33
6	---	---	---	---	21	45	29	23	425	23	30	51
7	---	---	---	---	21	31	29	24	134	20	28	40
8	---	---	---	---	21	28	28	24	145	19	25	33
9	---	---	---	---	20	25	30	24	96	19	23	30
10	---	---	---	---	20	22	34	25	67	18	22	32
11	---	---	---	---	22	23	30	114	50	18	25	37
12	---	---	---	---	24	23	38	58	43	18	28	34
13	---	---	---	---	24	23	29	31	38	16	26	32
14	---	---	---	---	25	23	26	24	36	298	37	29
15	---	---	---	---	24	23	24	20	33	127	34	28
16	---	---	---	---	24	23	173	22	33	51	29	27
17	---	---	---	---	24	24	425	35	29	44	26	28
18	---	---	---	---	23	26	173	39	27	30	60	27
19	---	---	---	---	22	23	165	69	26	26	53	28
20	---	---	---	---	23	22	96	84	50	23	34	30
21	---	---	---	---	23	24	61	69	33	23	27	44
22	---	---	---	---	26	24	48	86	29	22	25	27
23	---	---	---	---	27	22	42	48	30	20	23	21
24	---	---	---	---	57	24	38	37	27	19	23	21
25	---	---	---	---	43	25	34	91	45	20	26	22
26	---	---	---	---	30	25	33	73	31	22	133	22
27	---	---	---	---	29	25	33	47	53	440	102	21
28	---	---	---	---	28	27	32	201	268	155	39	21
29	---	---	---	---	28	28	33	140	183	61	31	21
30	---	---	---	---	---	26	31	68	69	45	28	20
31	---	---	---	---	---	27	---	57	---	38	63	---
TOTAL	---	---	---	---	735	890	1856	1672	2410	1782	1199	957
MEAN	---	---	---	---	25.3	28.7	61.9	53.9	80.3	57.5	38.7	31.9
MAX	---	---	---	---	57	84	425	201	425	440	133	77
MIN	---	---	---	---	20	22	24	20	26	16	22	20
AC-FT	---	---	---	---	1460	1770	3680	3320	4780	3530	2380	1900

RED RIVER BASIN

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07327447 LITTLE WASHITA RIVER NEAR CEMENT, OK--Continued



RED RIVER BASIN

07327550 LITTLE WASHITA RIVER EAST OF EAST NINNEKAH, OK

LOCATION.--Lat 34°57'48", long 97°53'57", in NW 1/4 SW 1/4 sec.25, T.6 N., R.7 W., Grady County, Hydrologic Unit 11130302, on downstream right bank at bridge on county road 1.5 mi northeast of Ninnekah.

DRAINAGE AREA.--236 mi².

PERIOD OF RECORD.--February 1992 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,041.16 ft.

REMARKS.--Records poor. Flow regulated by numerous flood retarding structures.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 2,730 ft³/s, Apr. 17, gage height 13.86 ft; minimum daily discharge, 45 ft³/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

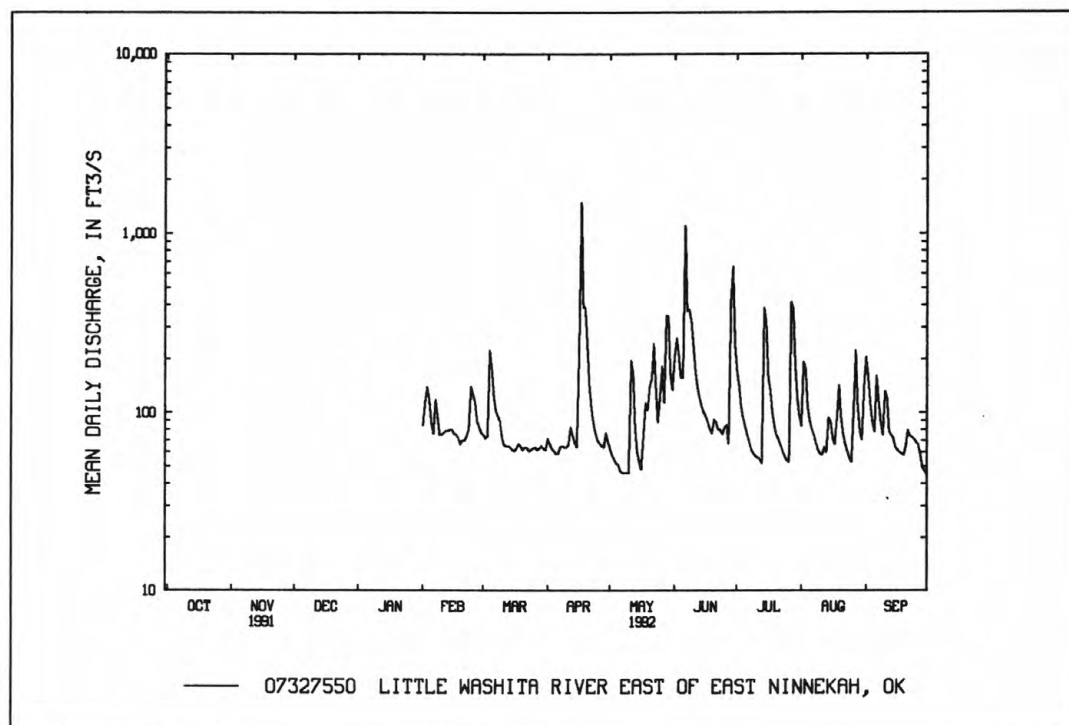
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	85	75	71	63	207	173	84	205
2	---	---	---	---	115	72	67	58	262	141	193	160
3	---	---	---	---	140	74	63	55	210	109	177	112
4	---	---	---	---	118	224	61	52	157	93	108	88
5	---	---	---	---	88	179	59	51	157	83	90	78
6	---	---	---	---	e76	124	59	47	1110	75	81	161
7	---	---	---	---	118	102	64	46	372	68	75	117
8	---	---	---	---	96	95	65	46	376	62	68	88
9	---	---	---	---	75	90	64	46	329	59	62	75
10	---	---	---	---	75	74	64	46	237	57	59	132
11	---	---	---	---	77	66	66	197	171	56	58	122
12	---	---	---	---	79	65	83	165	138	55	64	79
13	---	---	---	---	79	65	75	82	121	52	60	75
14	---	---	---	---	80	64	68	61	109	389	93	72
15	---	---	---	---	80	62	64	53	100	321	90	64
16	---	---	---	---	76	61	223	48	96	159	72	62
17	---	---	---	---	75	63	1500	74	88	135	66	60
18	---	---	---	---	72	67	392	114	81	101	92	59
19	---	---	---	---	67	65	383	103	77	84	143	e58
20	---	---	---	---	70	62	237	140	91	75	94	e65
21	---	---	---	---	70	64	141	155	88	71	76	80
22	---	---	---	---	74	64	106	245	80	66	67	74
23	---	---	---	---	81	61	88	137	80	61	61	73
24	---	---	---	---	141	62	77	88	76	57	56	71
25	---	---	---	---	127	63	70	121	82	54	53	e68
26	---	---	---	---	114	64	67	182	85	53	104	66
27	---	---	---	---	89	62	65	114	67	416	225	58
28	---	---	---	---	e83	63	64	349	427	379	111	49
29	---	---	---	---	e77	65	77	347	660	180	79	e47
30	---	---	---	---	---	63	69	165	240	118	70	e45
31	---	---	---	---	---	62	---	134	---	95	143	---
TOTAL	---	---	---	---	2597	2442	4552	3584	6374	3897	2874	2563
MEAN	---	---	---	---	89.6	78.8	152	116	212	126	92.7	85.4
MAX	---	---	---	---	141	224	1500	349	1110	416	225	205
MIN	---	---	---	---	67	61	59	46	67	52	53	45
AC-FT	---	---	---	---	5150	4840	9030	7110	12640	7730	5700	5080

e Estimated

RED RIVER BASIN

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07327550 LITTLE WASHITA RIVER EAST OF EAST NINNEKAH, OK--Continued



RED RIVER BASIN
07328100 WASHITA RIVER AT ALEX, OK

LOCATION.--Lat 34°55'33", long 97°46'25", in NW 1/4 sec.7, T.5 N., R.5 W., Grady County, Hydrologic Unit 11130303, near right bank on downstream side of county road bridge, 1.0 mi north of Alex, 3.8 mi downstream from Winter Creek, and at mile 226.5.

DRAINAGE AREA.--4,787 mi².

PERIOD OF RECORD.--October 1964 to September 1986, October 1988 to current year.

GAGE.--Water-stage recorder. Datum of gage is 995.00 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1988, datum 5.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Some regulation since March 1959 by Fort Cobb Reservoir (station 07325900), since February 1961 by Foss Reservoir (07324300), and by numerous flood-retarding structures. U.S. Army Corps of Engineers' satellite telecenter at station.

COOPERATION.--Records furnished by Agricultural Research Service prior to January 1978.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	737	922	333	1610	1090	767	640	744	1660	2570	1450	1940
2	647	742	345	1550	1090	745	651	685	2420	2160	1460	2010
3	578	576	368	1460	1130	730	649	627	2280	1510	1470	2600
4	510	499	379	1400	1080	1010	651	578	1840	1190	1400	2300
5	448	487	362	1330	1030	1640	659	543	1520	1040	1290	1770
6	408	440	346	1180	1030	1260	652	530	2800	906	930	1650
7	378	399	340	1030	1050	1090	648	512	2510	817	795	1440
8	355	374	333	940	1040	1010	645	488	2610	724	689	1310
9	339	347	329	857	1010	959	633	465	3070	638	613	1430
10	318	374	316	807	1000	905	626	448	3110	501	508	1430
11	300	431	323	782	993	832	613	858	2820	397	430	1700
12	283	415	976	765	926	791	662	986	2250	352	898	1300
13	272	407	1700	848	825	777	670	693	1860	306	622	1090
14	254	413	1340	1030	777	747	616	531	1580	786	609	983
15	235	436	1680	970	753	713	596	461	1400	1640	1130	897
16	230	762	1500	907	725	696	1050	415	1280	1380	869	818
17	229	1550	1190	964	748	701	5890	440	1170	1670	613	746
18	221	1160	1000	964	758	708	3560	610	1080	1510	524	691
19	200	908	1320	932	743	655	4240	621	1010	1990	747	692
20	191	1080	10000	905	746	619	3150	1050	1030	1740	908	618
21	192	1210	9070	844	749	660	2120	1160	972	1460	858	601
22	195	1010	6640	861	761	1020	1970	1600	937	1230	772	570
23	193	818	6350	901	800	1010	1930	1440	999	1120	714	533
24	194	650	4580	872	890	917	1600	1230	1090	1580	622	502
25	193	497	3600	851	1150	843	1310	1030	823	1310	546	491
26	215	442	3000	832	1060	796	1130	1160	691	1060	620	490
27	283	409	2490	896	891	753	1040	1200	591	1930	2710	492
28	2620	397	2160	1040	830	714	937	1310	1130	2770	2200	443
29	2640	385	1950	1050	788	713	868	1840	3020	2070	2820	412
30	1250	357	1790	1080	---	680	809	1500	2530	1840	2260	398
31	1000	---	1670	1100	---	652	---	1320	---	1710	1890	---
TOTAL	16108	18897	67780	31558	26463	26113	41215	27075	52083	41907	33967	32347
MEAN	520	630	2186	1018	913	842	1374	873	1736	1352	1096	1078
MAX	2640	1550	10000	1610	1150	1640	5890	1840	3110	2770	2820	2600
MIN	191	347	316	765	725	619	596	415	591	306	430	398
AC-FT	31950	37480	134400	62600	52490	51800	81750	53700	103300	83120	67370	64160

RED RIVER BASIN
07328100 WASHITA RIVER AT ALEX, OK--Continued

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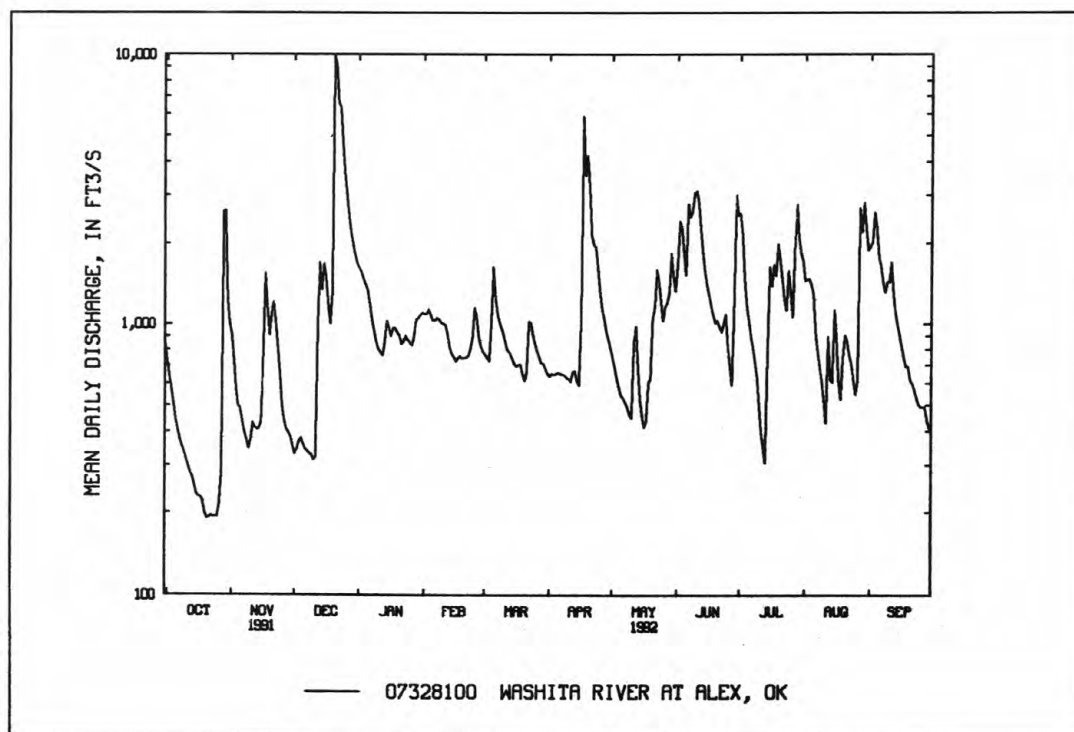
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	520	374	320	298	311	516	527	1025	1290	438	299	462
MAX	4441	1263	2186	1018	913	3362	1944	3406	5408	1678	1465	1638
(WY)	1984	1965	1992	1992	1992	1990	1990	1982	1989	1975	1975	1991
MIN	61.1	52.9	64.5	77.3	86.1	73.8	23.9	22.9	96.9	13.9	3.88	40.0
(WY)	1979	1971	1968	1971	1967	1971	1971	1971	1967	1970	1972	1972

SUMMARY STATISTICS	1991 CALENDAR YEAR		1992 WATER YEAR		WATER YEARS 1965-92	
ANNUAL TOTAL	296049		415513			
ANNUAL MEAN	811		1135		530	
HIGHEST ANNUAL MEAN					1201	
LOWEST ANNUAL MEAN					120	
HIGHEST DAILY MEAN	10000	Dec 20	10000	Dec 20	22500	Oct 21 1983
LOWEST DAILY MEAN	96	Aug 11	191	Oct 20	.00	^a Aug 13 1970
ANNUAL SEVEN-DAY MINIMUM	104	Aug 7	194	Oct 19	.01	Aug 12 1970
INSTANTANEOUS PEAK FLOW			13300	Dec 20	23400	Oct 21 1983
INSTANTANEOUS PEAK STAGE			17.25	Dec 20	^b 28.70	Oct 21 1983
INSTANTANEOUS LOW FLOW			191	Oct 20	.00	Aug 13 1970
ANNUAL RUNOFF (AC-FT)	587200		824200		384000	
10 PERCENT EXCEEDS	1840		2080		1180	
50 PERCENT EXCEEDS	440		881		235	
90 PERCENT EXCEEDS	145		377		64	

^aNo flow Aug. 13, 18, 1970, Aug. 30 to Sept. 1, 1971.

^bPresent datum.



RED RIVER BASIN

07328180 NORTH CRINER CREEK NEAR CRINER, OK

LOCATION.--Lat 34°58'17", long 97°35'04", in SE 1/4 SE 1/4 sec.23, T.6 N., R.4 W., McClain County, Hydrologic Unit 11130303, near left bank on downstream side of county road bridge, 1.2 mi west of Criner, and at mile .83.

DRAINAGE AREA.--7.33 mi²

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

GAGE.--Water-stage recorder. Datum of gage is 1023.66 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records poor. U.S. Geological Survey's satellite tele-meter at station. Flow partially regulated by retention ponds 1.5 mi northwest of gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.63	4.0	3.2	4.3	2.9	3.2	.82	3.9	8.2	6.0	13	2.7
2	.64	3.1	3.8	3.3	2.9	3.2	.84	3.8	31	4.8	22	2.8
3	.60	2.9	3.5	3.0	2.9	3.2	.88	3.8	11	4.0	14	2.6
4	.56	2.9	3.2	3.0	2.8	5.5	.93	3.8	7.5	3.6	5.8	2.4
5	.56	2.9	3.2	2.9	2.7	3.4	.96	3.7	7.0	3.4	4.8	2.2
6	.56	2.9	3.1	2.8	2.7	2.4	.96	3.6	8.8	3.2	4.0	3.6
7	.60	2.8	3.1	2.8	2.7	2.3	.95	3.6	7.8	3.0	3.7	3.3
8	.59	2.9	3.1	2.8	2.7	2.2	1.0	3.6	7.7	2.7	3.2	3.0
9	.59	3.0	3.1	2.8	2.6	2.6	.97	3.6	9.1	2.7	3.0	2.3
10	.54	2.8	3.0	2.8	2.6	2.0	.93	3.6	8.6	2.7	2.8	3.2
11	.56	2.7	6.0	2.9	2.6	1.9	1.0	47	7.8	2.7	3.0	3.4
12	.56	2.7	8.1	2.9	4.3	2.0	1.5	30	7.3	2.6	3.2	2.9
13	.55	2.7	6.3	4.0	3.5	2.0	.87	13	7.1	2.5	3.4	2.5
14	.58	2.8	6.1	3.9	3.4	2.0	.82	7.0	6.8	6.4	3.7	2.1
15	.55	3.0	5.1	3.3	3.2	2.0	.68	5.3	6.5	5.0	3.5	1.9
16	.50	8.4	3.4	2.8	3.1	2.0	41	4.4	6.4	6.9	3.1	1.8
17	.61	7.4	3.4	2.9	3.1	2.0	12	4.3	6.1	5.0	2.8	1.7
18	.58	7.2	3.2	2.8	3.0	2.4	13	4.3	6.0	3.9	3.1	1.6
19	.51	6.7	13	2.7	2.8	1.8	15	4.1	5.7	3.3	3.2	1.8
20	.52	5.3	37	2.7	2.9	1.9	8.0	5.4	5.5	3.0	3.0	2.0
21	.59	3.5	23	2.7	3.0	1.6	6.8	4.8	5.3	2.7	2.7	2.8
22	.59	3.2	12	3.1	2.9	1.4	5.5	8.7	5.2	2.6	2.6	2.1
23	.63	3.0	7.8	2.9	3.1	1.4	4.7	7.8	5.3	2.4	2.5	1.7
24	.65	2.9	6.8	2.8	3.3	1.5	4.2	6.1	5.7	2.4	2.3	1.6
25	.69	3.0	6.5	2.6	3.4	1.5	4.0	6.2	6.9	2.3	2.1	1.5
26	.82	3.0	6.3	2.7	3.2	1.4	3.9	5.8	6.2	2.1	2.7	1.5
27	.82	3.0	6.0	3.7	3.2	1.3	3.8	5.1	5.4	37	3.2	1.4
28	9.4	3.0	5.7	3.9	3.2	1.4	3.8	7.7	39	30	2.8	1.4
29	6.8	3.1	5.2	3.4	3.1	1.5	3.9	7.9	32	14	2.5	1.3
30	6.3	3.3	5.1	3.1	---	1.4	4.0	6.6	15	7.0	2.1	1.3
31	5.2	---	4.7	2.9	---	.79	---	6.4	---	5.4	2.6	---
TOTAL	43.88	110.1	213.0	95.2	87.8	65.19	147.71	234.9	297.9	185.3	136.4	66.4
MEAN	1.42	3.67	6.87	3.07	3.03	2.10	4.92	7.58	9.93	5.98	4.40	2.21
MAX	9.4	8.4	37	4.3	4.3	5.5	41	47	39	37	22	3.6
MIN	.50	2.7	3.0	2.6	2.6	.79	.68	3.6	5.2	2.1	2.1	1.3
AC-FT	87	218	422	189	174	129	293	466	591	368	271	132

RED RIVER BASIN

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07328180 NORTH CRINER CREEK NEAR CRINER, OK--Continued

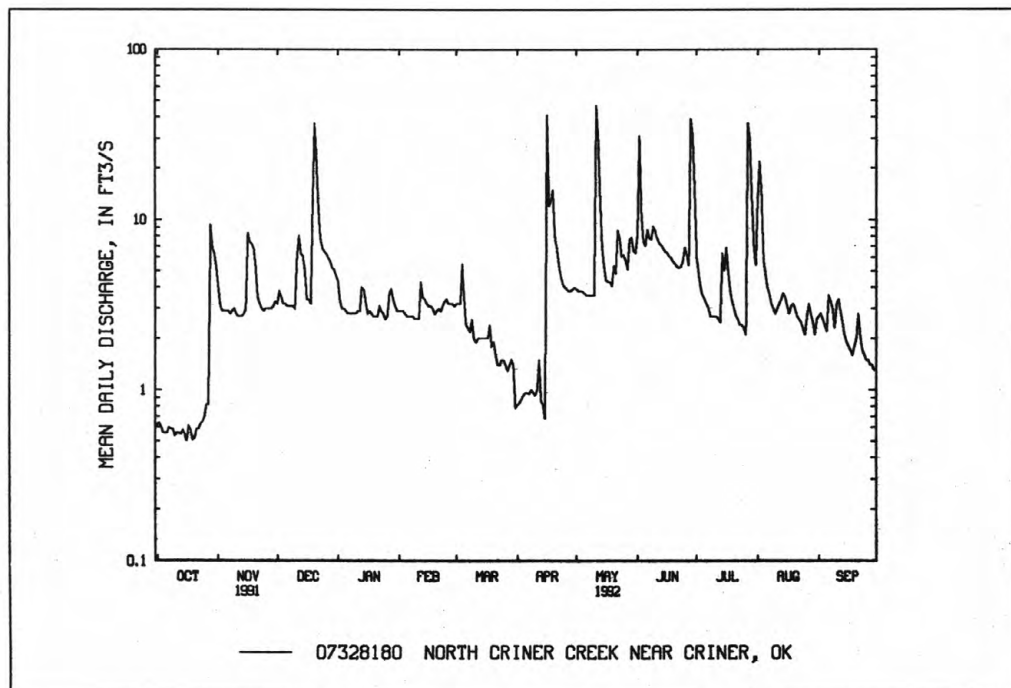
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1.00	1.82	2.78	2.02	1.97	4.31	6.87	9.77	4.29	2.47	2.09	1.51
MAX	1.42	3.67	6.87	3.07	3.03	9.97	14.7	18.7	9.93	5.98	4.40	2.21
(WY)	1992	1992	1992	1992	1992	1990	1990	1990	1992	1992	1992	1992
MIN	.65	.65	.33	1.38	.89	.86	.97	3.03	.89	.44	.82	.58
(WY)	1991	1991	1991	1991	1991	1991	1991	1991	1991	1991	1990	1990

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1990-92

ANNUAL TOTAL	710.21	1683.78	
ANNUAL MEAN	1.95	4.60	3.42
HIGHEST ANNUAL MEAN			4.60 1992
LOWEST ANNUAL MEAN			1.08 1991
HIGHEST DAILY MEAN	37	Dec 20	47 May 11 151 May 2 1990
LOWEST DAILY MEAN	.06	Jan 1	.50 Oct 16 .06 ^a Dec 29 1990
ANNUAL SEVEN-DAY MINIMUM	.07	Jul 20	.55 Oct 10 .07 Dec 26 1990
INSTANTANEOUS PEAK FLOW			542 Apr 16 542 Apr 16 1992
INSTANTANEOUS PEAK STAGE			10.73 Apr 16 10.73 Apr 16 1992
ANNUAL RUNOFF (AC-FT)	1410	3340	2480
10 PERCENT EXCEEDS	4.6	7.7	6.3
50 PERCENT EXCEEDS	1.0	3.1	1.3
90 PERCENT EXCEEDS	.18	.94	.48

^aMinimum daily discharge, .06 ft³/s, also occurred Dec. 30, 1990, to Jan. 1, 1991, July 26, 1991.



RED RIVER BASIN
07328500 WASHITA RIVER NEAR PAULS VALLEY, OK

LOCATION.--Lat 34°45'17", long 97°15'04", in NE 1/4, SE 1/4 sec.1. T.3 N., R.1 W., Garvin County, Hydrologic Unit 11130303, on downstream right bank near end of bridge on U.S. Highway 77, 2.0 mi northwest of Pauls Valley, 6.0 mi downstream from Owl Creek, 7.0 mi upstream from Washington Creek, and at mile 146.5.

DRAINAGE AREA.--5,330 mi².

PERIOD OF RECORD.--May to December 1899 (gage heights only), October 1937 to current year. Monthly discharge only for some periods, published in WSP 1311. Published as "at Pauls Valley, Indian Territory" in 1899.

GAGE.--Water-stage recorder. Datum of gage is 854.61 ft above National Geodetic Vertical Datum of 1929. During 1899, nonrecording gage at site 9 mi downstream, at different datum. Mar. 29, 1938, to Jan. 25, 1939, nonrecording gage and Jan. 26, 1939, to Oct. 6, 1948, water-stage recorder at site 0.7 mi upstream, at datum 1.53 ft higher. Mar. 11, 1975, to Jan. 26, 1981, water-stage recorder at site 200 ft upstream, and at same datum.

REMARKS.--Records good. Some diversion for irrigation upstream from station. Some regulation since March 1959, by Fort Cobb Reservoir (station 07325900); since February 1961, by Foss Reservoir (station 07324300); and by numerous flood-retarding structures. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Stream is reported to have receded to no flow in 1882 and in 1897 (information provided by local resident).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	707	2020	892	2010	1290	953	790	e910	1850	2750	2110	1500
2	663	1570	904	1910	1240	938	779	e860	3070	2700	2060	1500
3	613	1180	955	1800	1240	908	781	e800	4060	2420	1760	1810
4	567	1040	881	1740	1240	1850	777	e750	3110	1760	1550	2040
5	526	938	889	1720	1230	1920	775	e700	2450	1440	1500	1720
6	501	926	868	1660	1220	1900	776	e660	3030	1280	1220	1630
7	477	931	857	1530	1220	1500	765	e640	4110	1160	854	1420
8	462	862	883	1400	1220	1290	755	e600	3220	1080	768	1160
9	457	839	888	1350	1230	1220	749	e560	3880	1020	715	1070
10	456	834	866	1300	1190	1130	722	e700	3970	971	689	1220
11	441	848	855	1270	1220	1020	712	4310	3630	945	699	1510
12	434	872	2450	1240	1160	928	912	5150	3060	873	699	1400
13	418	869	2330	1330	1120	898	790	2590	2520	831	825	1070
14	393	856	2110	1480	1040	834	792	1910	2130	924	686	948
15	376	864	1860	1450	975	812	761	1560	1850	1470	799	907
16	354	1290	1950	1340	932	802	760	1440	1670	1830	1010	874
17	333	2420	1680	1260	910	809	3770	1470	1520	1830	808	827
18	322	2300	1460	1310	902	854	5430	1580	1400	1870	722	811
19	308	1770	1670	1280	905	871	5430	1410	1280	1790	702	795
20	292	1540	11100	1260	888	821	5270	1410	1270	2130	792	844
21	280	1480	16900	1200	860	775	3570	1690	1280	1830	865	882
22	271	1470	10500	1170	872	802	2600	1640	1230	1580	812	832
23	267	1360	9060	1160	905	1010	2400	2630	1230	1390	782	747
24	272	1250	7460	1180	968	944	2180	1990	1240	1280	778	668
25	275	1110	5400	1160	1080	912	1830	1640	1820	1670	748	634
26	298	1030	4220	1110	1240	870	1550	1530	1430	1350	734	608
27	308	999	3520	1150	1120	850	1390	1540	1270	1450	1100	610
28	2300	946	3020	1310	1000	854	1270	1640	1940	2790	2030	610
29	4220	932	2690	1360	968	870	1180	2480	3160	2660	1970	579
30	2770	920	2450	1320	---	856	1140	2420	3480	2080	2080	543
31	2230	---	2190	1310	---	815	---	1910	---	1910	1600	---
TOTAL	22591	36266	103758	43070	31385	31816	51406	51120	71160	51064	34467	31769
MEAN	729	1209	3347	1389	1082	1026	1714	1649	2372	1647	1112	1059
MAX	4220	2420	16900	2010	1290	1920	5430	5150	4110	2790	2110	2040
MIN	267	834	855	1110	860	775	712	560	1230	831	686	543
AC-FT	44810	71930	205800	85430	62250	63110	102000	101400	141100	101300	68370	63010

e Estimated

RED RIVER BASIN
07328500 WASHITA RIVER NEAR PAULS VALLEY, OK--Continued

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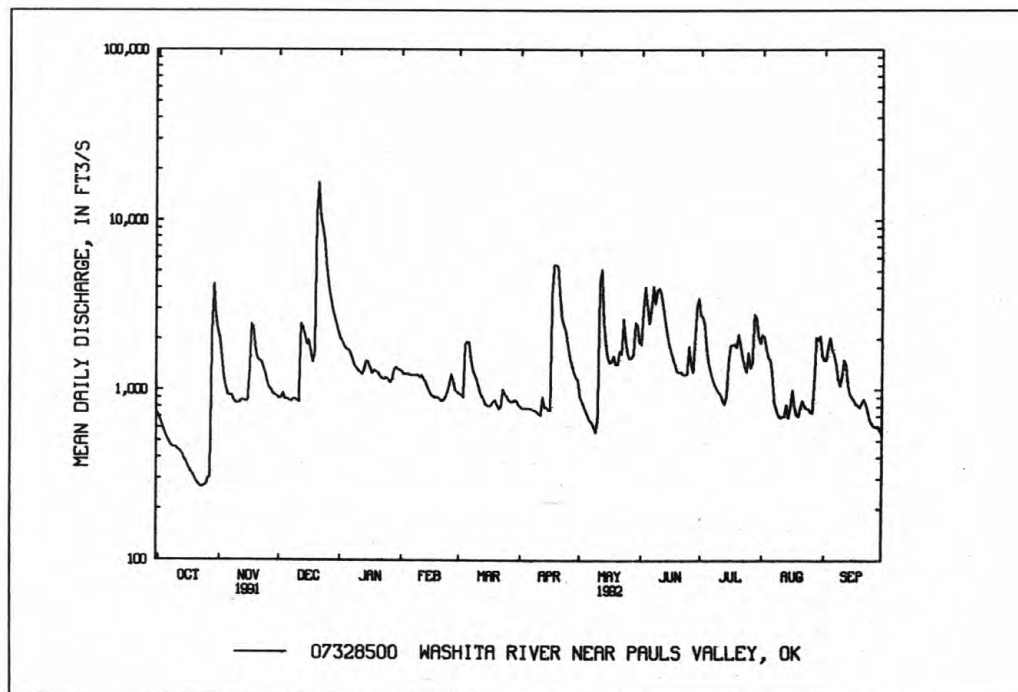
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	902	638	506	498	573	893	842	1539	1803	607	346	540
MAX	7934	3608	3347	1920	3149	4552	3949	6076	7766	3174	1921	1747
(WY)	1987	1987	1992	1985	1987	1990	1990	1987	1987	1987	1975	1991
MIN	35.2	61.7	69.6	91.3	87.8	78.9	58.9	38.1	151	16.3	.28	23.6
(WY)	1964	1968	1968	1967	1967	1967	1982	1971	1966	1964	1972	1972

SUMMARY STATISTICS	1991 CALENDAR YEAR		1992 WATER YEAR		WATER YEARS 1962-92	
ANNUAL TOTAL	387296		559872			
ANNUAL MEAN	1061		1530		^a 807	
HIGHEST ANNUAL MEAN					3661 1987	
LOWEST ANNUAL MEAN					181 1967	
HIGHEST DAILY MEAN	16900	Dec 21	16900	Dec 21	41700	May 29 1987
LOWEST DAILY MEAN	100	Aug 19	267	Oct 23	.00	^b Jul 21 1964
ANNUAL SEVEN-DAY MINIMUM	106	Aug 13	279	Oct 20	.00	Jul 21 1964
INSTANTANEOUS PEAK FLOW			18100	Dec 21	43600	May 29 1987
INSTANTANEOUS PEAK STAGE			16.40	Dec 21	29.88	May 11 1950
ANNUAL RUNOFF (AC-FT)	768200		1111000		584900	
10 PERCENT EXCEEDS	2220		2610		1820	
50 PERCENT EXCEEDS	588		1190		343	
90 PERCENT EXCEEDS	270		666		76	

^aPrior to regulation, water years 1938-50, 829 ft³/s.

^bNo flow in 1956, 1964, 1966, 1967, 1970, 1972.



RED RIVER BASIN

07328550 WASHINGTON CREEK NEAR PAULS VALLEY, OK

LOCATION.--Lat 34°49'33", long 97°12'07", in NW 1/4 NE 1/4 sec.16, T.4 N., R.1 E., Garvin County, Hydrologic Unit 11130303, on downstream right bridge wingwall on county road, 4 mi upstream from Pauls Valley Lake and 7 mi north of Pauls Valley, OK.

DRAINAGE AREA.--7.56 mi².

PERIOD OF RECORD.--June 1991 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 937 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair.

EXTREMES FOR CURRENT PERIODS.--Period June 27-Sept. 30, 1991, maximum discharge, 70 ft³/s, Sept. 16, gage height, 7.14 ft; no flow Aug. 26-Sept. 2. Water year 1992: Maximum discharge 503 ft³/s May 11, 1992, gage height 11.92 ft, minimum daily discharge 0.02 ft³/s Oct. 14

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	e.22	e.05	e.00
2	---	---	---	---	---	---	---	---	---	e.20	e.05	e.00
3	---	---	---	---	---	---	---	---	---	.40	.04	e.00
4	---	---	---	---	---	---	---	---	---	e.22	e.04	1.0
5	---	---	---	---	---	---	---	---	---	e.21	e.04	e.08
6	---	---	---	---	---	---	---	---	---	e.20	e.03	e.06
7	---	---	---	---	---	---	---	---	---	e.20	e.03	1.4
8	---	---	---	---	---	---	---	---	---	e.19	e.03	.30
9	---	---	---	---	---	---	---	---	---	e.18	e.03	e.26
10	---	---	---	---	---	---	---	---	---	e.18	e.02	e.22
11	---	---	---	---	---	---	---	---	---	e.19	e.02	e.20
12	---	---	---	---	---	---	---	---	---	e.18	e.02	e.18
13	---	---	---	---	---	---	---	---	---	.40	e.01	e.16
14	---	---	---	---	---	---	---	---	---	e.24	.25	e.14
15	---	---	---	---	---	---	---	---	---	.42	e.22	e.10
16	---	---	---	---	---	---	---	---	---	e.23	e.20	12
17	---	---	---	---	---	---	---	---	---	e.23	e.18	.56
18	---	---	---	---	---	---	---	---	---	e.22	e.16	2.9
19	---	---	---	---	---	---	---	---	---	e.22	e.14	3.7
20	---	---	---	---	---	---	---	---	---	e.21	e.12	.73
21	---	---	---	---	---	---	---	---	---	e.21	e.10	.26
22	---	---	---	---	---	---	---	---	---	e.22	e.08	.19
23	---	---	---	---	---	---	---	---	---	e.21	e.06	e.17
24	---	---	---	---	---	---	---	---	---	e.21	e.02	e.15
25	---	---	---	---	---	---	---	---	---	e.20	e.01	e.13
26	---	---	---	---	---	---	---	---	---	.28	e.00	e.12
27	---	---	---	---	---	---	---	---	.27	.40	e.00	e.11
28	---	---	---	---	---	---	---	---	e.27	e.22	e.00	e.10
29	---	---	---	---	---	---	---	---	e.22	e.18	.00	e.08
30	---	---	---	---	---	---	---	---	e.22	e.12	e.00	e.07
31	---	---	---	---	---	---	---	---	---	.06	e.00	---
TOTAL	---	---	---	---	---	---	---	---	---	7.05	1.95	25.37
MEAN	---	---	---	---	---	---	---	---	---	.23	.063	.85
MAX	---	---	---	---	---	---	---	---	---	.42	.25	12
MIN	---	---	---	---	---	---	---	---	---	.06	.00	.00
AC-FT	---	---	---	---	---	---	---	---	---	14	3.9	50

e Estimated

RED RIVER BASIN

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07328550 WASHINGTON CREEK NEAR PAULS VALLEY, OK--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

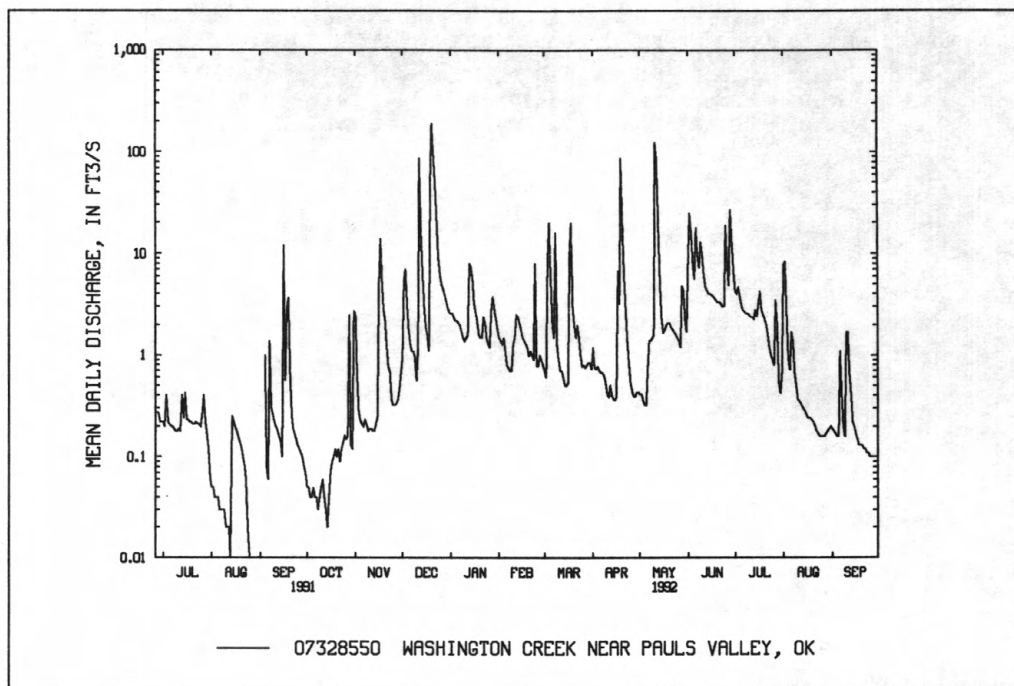
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.05	2.6	.95	2.6	1.5	e.70	1.2	.41	8.8	4.2	7.8	e.19
2	.05	.67	5.6	2.6	1.4	e.60	.75	.41	25	4.0	8.4	e.18
3	e.04	.28	7.1	2.4	1.3	e8.0	.73	.36	16	4.7	2.5	e.17
4	e.04	.23	3.1	2.2	1.5	e20	.77	.32	7.9	3.8	.93	.16
5	e.05	.21	1.8	2.2	1.1	5.9	.71	.32	5.6	3.1	.72	e.16
6	e.04	.20	1.3	2.1	e.80	e2.0	.67	.75	18	2.8	1.7	1.1
7	e.04	.23	1.1	2.0	e.75	e1.5	.67	1.4	9.5	2.7	1.4	e.40
8	e.03	.21	1.1	1.7	e.70	e16	.63	1.4	7.3	2.6	.67	e.20
9	e.04	.18	.95	1.5	e.70	1.2	.54	1.5	13	2.6	.50	.16
10	.05	.19	.56	1.4	1.3	e.90	.42	1.6	9.9	2.5	.37	1.7
11	.06	.19	1.2	1.5	1.5	e.70	.38	125	6.3	2.4	e.35	1.7
12	e.04	.18	87	1.6	2.5	e.70	.51	86	4.7	2.4	e.33	.67
13	e.03	.18	16	8.0	2.4	e.60	.40	18	4.3	2.3	e.31	e.40
14	.02	.21	6.2	7.4	2.1	e.50	.37	4.8	4.0	2.8	e.29	.22
15	.04	.25	3.0	5.7	1.8	e.50	.36	2.3	4.0	2.4	e.27	e.20
16	.07	5.5	1.9	3.3	1.5	.53	.39	1.7	3.9	3.2	e.25	e.17
17	.09	14	1.6	2.7	1.4	e10	6.8	1.8	3.8	4.2	.24	e.15
18	.10	5.1	1.1	2.2	1.3	20	3.2	2.0	3.6	2.8	e.24	.13
19	.12	2.8	48	1.6	1.2	e3.0	87	2.1	3.4	2.5	.23	e.13
20	.10	2.2	189	1.5	e1.0	e2.0	19	2.1	3.3	2.3	e.22	e.13
21	.12	1.2	97	1.5	e1.1	e1.5	5.8	1.9	3.3	e2.0	e.20	e.12
22	.09	.77	54	2.4	e1.0	e2.0	2.8	1.8	3.2	e1.6	e.18	.12
23	.12	.68	21	2.1	e.90	e1.5	1.4	1.7	3.0	e1.2	e.17	e.11
24	e.14	.36	9.4	1.5	e8.0	e1.0	.84	1.6	3.0	e1.0	.16	e.11
25	.16	.32	6.4	1.3	.78	.78	.53	1.5	19	e.90	e.16	.10
26	.15	.32	5.0	1.2	.78	e.80	.44	1.4	8.1	e.80	e.16	e.10
27	.16	.33	4.5	2.8	1.0	e.75	.39	1.2	4.8	3.5	e.16	e.10
28	2.5	.36	4.0	3.8	e.90	e.80	.39	4.8	27	2.1	e.17	.10
29	.13	.45	3.5	2.8	e.80	e.85	.43	4.3	13	.52	e.18	e.10
30	e.12	.67	3.0	2.3	---	.84	.43	2.2	6.7	.42	e.19	e.10
31	2.7	---	2.7	1.8	---	.73	---	1.7	---	.66	.20	---
TOTAL	7.49	41.07	589.06	79.7	43.01	106.88	138.95	278.37	253.4	75.00	29.65	9.38
MEAN	.24	1.37	19.0	2.57	1.48	3.45	4.63	8.98	8.45	2.42	.96	.31
MAX	2.7	14	189	8.0	8.0	20	87	125	27	4.7	8.4	1.7
MIN	.02	.18	.56	1.2	.70	.50	.36	.32	3.0	.42	.16	.10
AC-FT	15	81	1170	158	85	212	276	552	503	149	59	19

WTR YR 1992 TOTAL 1651.96 MEAN 4.51 MAX 189 MIN .02 AC-FT 3280

e Estimated

RED RIVER BASIN

07328550 WASHINGTON CREEK NEAR PAULS VALLEY, OK--Continued





Old gage, Council Creek at Stillwater, Oklahoma

RED RIVER BASIN
07329000 RUSH CREEK AT PURDY, OK

LOCATION.--Lat 34°41'46", long 97°35'55", in SE 1/4 SE 1/4 sec.27, T.3 N., R.4 W., on left downstream bank near end of bridge on State Highway 76, 1.6 mi southwest of Purdy, 9.7 mi south of Lindsay, and at mile 27.3.

DRAINAGE AREA.--145 mi².

PERIOD OF RECORD.--October 1939 to December 1953, February 1982 to current year. Prior to May 1940 monthly discharges only, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,004.12 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1942, nonrecording gage, at site 1.2 mi downstream, at datum 9.42 ft lower. Oct. 1, 1942 to Aug. 22, 1943, and May 11, 1950, to Sept. 18, 1952, nonrecording gage, 1.2 mi downstream, at datum 14.42 ft lower. Aug. 23, 1943, to May 10, 1950, and Sept. 19, 1952, to Dec. 31, 1953, water-stage recorder, at site 1.2 mi downstream, at datum 14.42 ft lower.

REMARKS.--Records poor. Flow partially regulated since 1960 by numerous soil-conservation reservoirs.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	158	66	103	76	51	72	50	97	139	91	42
2	65	113	80	99	73	61	68	47	215	126	81	39
3	56	89	89	97	73	61	64	44	340	120	80	36
4	47	77	78	92	73	108	63	42	201	108	73	33
5	39	71	73	91	70	92	60	41	131	101	68	29
6	32	67	70	87	69	75	60	38	e1450	96	65	31
7	28	64	70	87	67	67	59	37	450	91	63	31
8	27	61	70	86	66	63	58	37	215	87	59	30
9	27	58	69	82	66	69	57	36	289	84	55	28
10	26	56	66	81	66	66	55	36	318	83	52	47
11	26	56	71	81	62	59	55	125	223	82	51	116
12	26	57	375	80	58	57	84	157	160	82	49	78
13	24	58	240	105	e55	55	64	97	132	79	46	53
14	23	60	140	118	51	54	62	69	106	163	74	41
15	22	66	106	96	52	54	59	55	93	253	79	35
16	21	e530	94	86	50	53	68	48	86	202	55	31
17	23	387	88	85	51	54	198	49	78	169	47	28
18	23	184	82	83	49	63	233	58	71	137	47	26
19	22	134	178	80	48	59	163	55	66	115	49	24
20	22	111	1250	77	48	55	114	69	65	103	43	31
21	21	92	989	79	49	54	82	60	64	97	38	108
22	22	83	889	84	49	53	69	117	61	92	36	66
23	24	76	693	81	51	49	61	147	60	88	34	41
24	25	72	418	76	53	51	55	85	60	85	32	32
25	25	70	240	74	60	52	50	89	62	83	30	27
26	26	71	174	72	56	53	48	97	64	80	32	23
27	26	70	143	88	53	54	46	81	61	139	35	21
28	e450	70	127	107	51	54	45	114	85	115	32	19
29	e640	70	117	91	50	64	48	153	124	94	31	18
30	263	67	110	83	---	67	51	103	149	88	28	18
31	182	---	105	79	---	64	---	79	---	120	32	---
TOTAL	2358	3198	7360	2710	1695	1891	2271	2315	5576	3501	1587	1182
MEAN	76.1	107	237	87.4	58.4	61.0	75.7	74.7	186	113	51.2	39.4
MAX	640	530	1250	118	76	108	233	157	1450	253	91	116
MIN	21	56	66	72	48	49	45	36	60	79	28	18
AC-FT	4680	6340	14600	5380	3360	3750	4500	4590	11060	6940	3150	2340

e Estimated

RED RIVER BASIN
07329000 RUSH CREEK AT PURDY, OK--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1992, BY WATER YEAR (WY)

MEAN	118	45.1	60.5	63.9	78.1	123	118	164	151	39.8	14.8	42.0
MAX	572	107	237	224	330	399	342	529	551	166	51.2	209
(WY)	1984	1992	1992	1985	1985	1985	1990	1987	1987	1987	1992	1991
MIN	3.36	8.46	14.3	20.1	18.1	22.6	20.8	8.18	17.3	2.11	.34	.32
(WY)	1983	1983	1990	1984	1984	1991	1983	1984	1988	1984	1984	1984

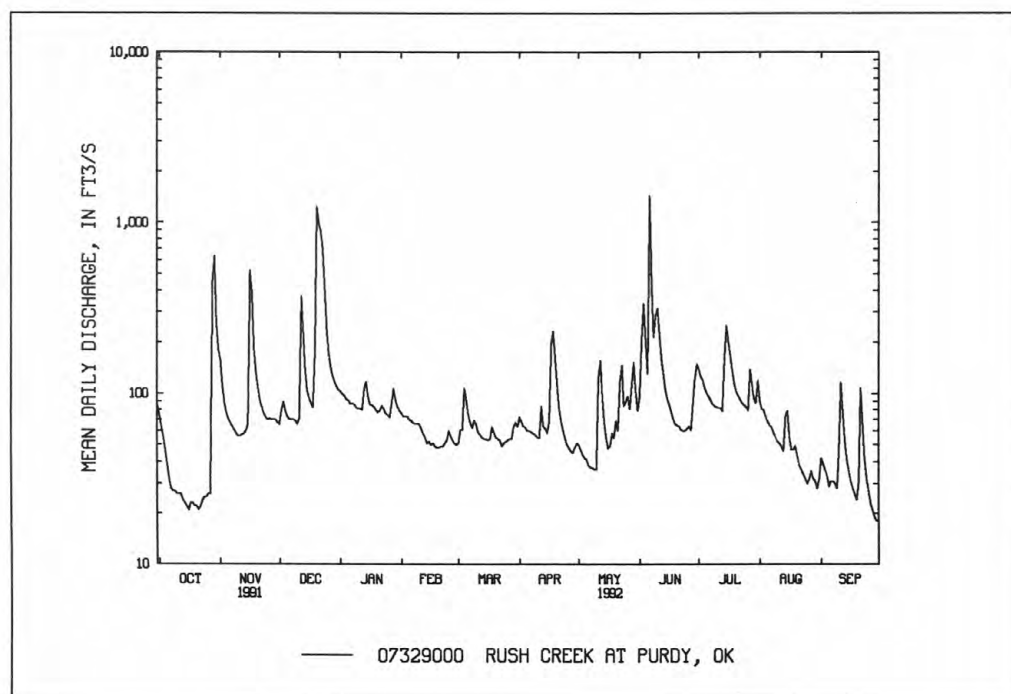
SUMMARY STATISTICS	1991 CALENDAR YEAR		1992 WATER YEAR		WATER YEARS 1983-92	
ANNUAL TOTAL	33070.9		35644			
ANNUAL MEAN	90.6		97.4		^a 84.8	
HIGHEST ANNUAL MEAN					196	
LOWEST ANNUAL MEAN					20.9	
HIGHEST DAILY MEAN	1250	Dec 20	1450	Jun 6	8740	May 28 1987
LOWEST DAILY MEAN	5.4	Aug 19	18	Sep 29, 30	.00	at times
ANNUAL SEVEN-DAY MINIMUM	5.8	Aug 23	22	Oct 15	.00	Aug 18 1984
INSTANTANEOUS PEAK FLOW			2670	Jun 6	^b 17000	May 28 1987
INSTANTANEOUS PEAK STAGE			^c 15.69	Jun 6	^d 33.69	May 28 1987
ANNUAL RUNOFF (AC-FT)	65600		70700		61440	
10 PERCENT EXCEEDS	238		154		149	
50 PERCENT EXCEEDS	31		67		27	
90 PERCENT EXCEEDS	11		31		6.1	

^aPrior to regulation, water years 1940-53, 23.1 ft³/s.

^bMaximum discharge for period of record 30,000 ft³/s, May 10, 1950, from rating extended above 5,000 ft³/s on the basis of a slope-area measurement at peak flow.

^cFrom high-water mark.

^dMaximum gage height for period of record 27.00 ft, from flood mark, May 10, 1950, at site and datum then in use.



RED RIVER BASIN
07329700 WILDHORSE CREEK NEAR HOOVER, OK

LOCATION.--Lat 34°32'29", long 97°14'49", on west line of SW 1/4 sec.19, T.1 N., R.1 E., Garvin County, Hydrologic Unit 11130303, on downstream left bank at bridge on State Highway 19A, 1.5 mi north of Hoover, 1.8 mi downstream from Sandy Creek, and at mile 7.9.

DRAINAGE AREA.--604 mi².

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1944, 1951-69. October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 803.3 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated by Duncan, Clear Creek, Humphries and Fuqua Lakes, combined surface-area, 3,340 acres, and capacity, 44,800 acre-ft, and numerous flood-retarding structures.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
Dec. 12	1115	6,180	13.48	Apr. 12	0515	5,120	12.12
Dec. 20	1445	13,400	19.78	June 6	0800	5,120	12.12
Mar. 9	0400	5,950	13.11	June 29	0345	4,270	11.05

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	297	998	201	858	e340	168	232	96	550	763	133	47
2	246	662	425	764	e295	161	220	89	1430	531	139	53
3	195	505	581	677	286	159	172	83	1460	955	113	54
4	154	394	363	599	275	1060	156	83	949	471	104	49
5	136	309	286	529	282	643	144	76	679	324	95	44
6	125	253	252	470	250	424	137	71	3220	247	89	44
7	99	216	228	430	223	331	137	67	2090	197	83	57
8	89	204	213	396	217	307	133	67	2520	165	75	45
9	80	168	200	367	204	2960	128	65	2640	147	70	40
10	74	151	189	325	196	1120	123	64	2280	133	64	77
11	70	140	193	304	204	750	118	644	1840	133	61	266
12	65	134	3180	e280	369	598	1680	390	1210	139	63	90
13	62	123	2140	e660	257	474	485	222	951	129	63	65
14	56	121	1200	e795	232	355	309	142	797	1050	110	55
15	53	217	892	e730	216	303	216	108	657	783	159	49
16	53	1760	739	e644	201	256	193	94	534	513	77	44
17	50	1870	607	e570	190	236	319	142	425	490	65	42
18	46	1040	511	e530	183	423	308	446	358	323	62	40
19	43	772	1900	e480	178	364	265	237	310	258	68	39
20	44	644	9920	e460	162	286	249	186	293	218	64	40
21	45	497	5630	e425	156	242	200	170	263	192	59	351
22	43	397	3440	e600	156	223	160	249	227	172	55	93
23	43	347	2650	e460	162	226	138	721	208	158	51	52
24	44	299	1980	e435	163	193	118	358	190	146	47	40
25	88	253	1670	e417	283	179	110	346	553	137	45	33
26	163	231	1520	e396	278	172	105	414	378	127	44	28
27	132	211	1400	e822	216	164	98	257	239	176	45	24
28	1530	194	1290	e992	198	156	95	1470	1410	165	48	22
29	1700	186	1190	e695	180	156	101	2050	2880	143	47	21
30	985	175	1080	e400	---	151	107	1020	1140	154	45	19
31	987	---	972	320	---	155	---	649	---	141	44	---
TOTAL	7797	13471	47042	16830	6552	13395	6956	11076	32681	9680	2287	1923
MEAN	252	449	1517	543	226	432	232	357	1089	312	73.8	64.1
MAX	1700	1870	9920	992	369	2960	1680	2050	3220	1050	159	351
MIN	43	121	189	280	156	151	95	64	190	127	44	19
AC-FT	15470	26720	93310	33380	13000	26570	13800	21970	64820	19200	4540	3810

e Estimated

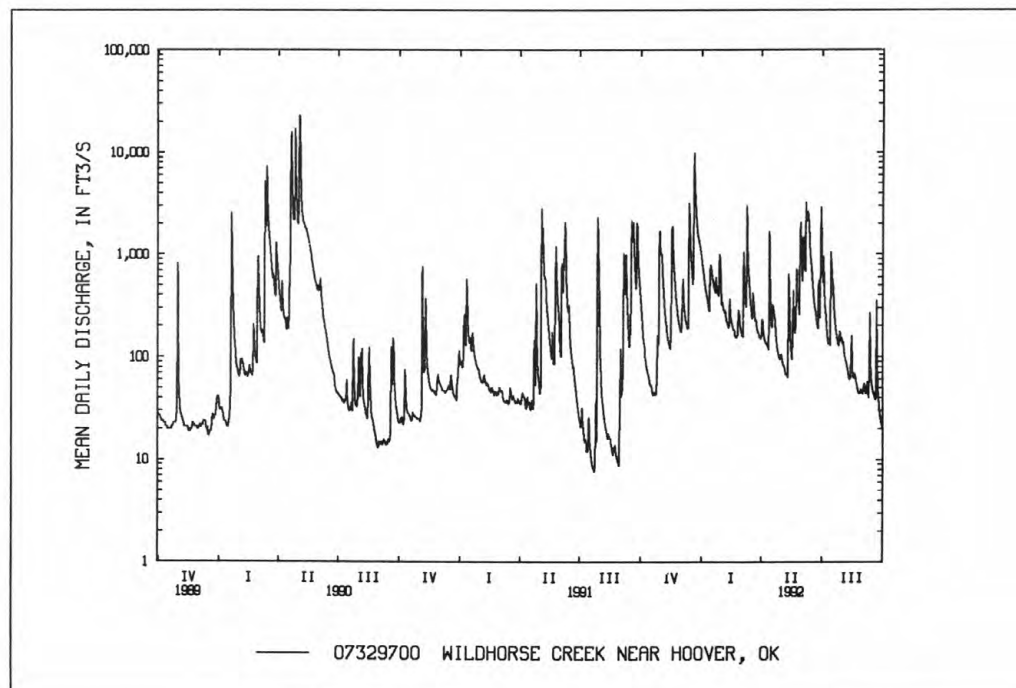
RED RIVER BASIN
07329700 WILDHORSE CREEK NEAR HOOVER, OK--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	196	173	236	186	189	353	372	680	487	112	35.0	123
MAX	647	920	1614	1371	1023	1283	2564	2937	1385	640	249	750
(WY)	1986	1974	1988	1988	1987	1990	1990	1982	1975	1975	1975	1991
MIN	1.14	3.33	2.00	4.88	8.76	8.48	6.73	35.8	16.5	.92	.16	.33
(WY)	1979	1978	1978	1978	1970	1972	1982	1984	1970	1980	1970	1971

SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1970-92
ANNUAL TOTAL	131265.4	169690	
ANNUAL MEAN	360	464	262
HIGHEST ANNUAL MEAN			631 1987
LOWEST ANNUAL MEAN			35.3 1970
HIGHEST DAILY MEAN	9920	Dec 20 9920	Dec 20 27000
LOWEST DAILY MEAN	7.7	Jul 23 19	Sep 30 .00
ANNUAL SEVEN-DAY MINIMUM	9.1	Jul 17 27	Sep 24 .00
INSTANTANEOUS PEAK FLOW		13400	Dec 20 40600
INSTANTANEOUS PEAK STAGE		19.78	Dec 20 26.13
ANNUAL RUNOFF (AC-FT)	260400	336600	190000
10 PERCENT EXCEEDS	1030	1070	550
50 PERCENT EXCEEDS	86	216	45
90 PERCENT EXCEEDS	19	52	3.8



RED RIVER BASIN
07329852 ROCK CREEK AT SULPHUR, OK

LOCATION.--Lat 34°29'43", long 96°59'18", in SE 1/4 SE 1/4 sec.4, T.1 S., R.3 E., Murray County, Hydrologic Unit 11130303, 80 ft west of campsite 69 in Rock Creek Campground, in the Chickasaw National Park at Sulphur, OK, and at mile 11.0.

DRAINAGE AREA.--44.1 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Oct. 1, 1989, to current year.

GAGE.--Water-stage recorder. Datum of gage is 896.97 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated by numerous flood-retarding structures.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	316	83	83	47	34	64	31	35	207	26	14
2	17	119	252	67	44	33	53	29	239	134	52	19
3	17	71	171	56	44	36	49	28	135	113	33	19
4	17	53	112	51	41	1560	47	26	87	71	28	16
5	16	45	82	49	38	415	45	26	54	55	26	15
6	16	41	69	46	36	344	43	24	153	44	26	20
7	16	39	63	45	36	296	40	24	74	38	26	23
8	16	35	60	43	36	249	38	24	51	33	25	17
9	16	33	58	39	35	932	39	23	329	31	25	16
10	17	33	54	37	35	348	39	23	450	29	23	35
11	17	32	84	37	37	301	38	38	288	26	23	25
12	17	31	445	37	43	258	39	50	152	23	23	19
13	17	30	171	99	42	168	38	31	95	22	23	17
14	17	30	104	117	39	136	37	27	67	185	23	15
15	17	30	78	95	39	117	36	25	55	1080	22	15
16	17	86	69	62	51	86	35	24	48	513	20	15
17	17	985	62	59	36	82	35	29	42	291	20	15
18	17	432	57	64	30	448	35	30	38	176	21	15
19	18	299	328	64	30	157	143	31	34	128	21	14
20	18	170	1390	69	30	99	104	29	33	96	20	14
21	18	99	466	108	27	76	59	28	32	79	19	14
22	18	74	651	174	26	68	47	26	31	61	18	14
23	19	60	421	106	28	61	40	25	29	47	18	14
24	22	51	340	74	29	58	36	25	29	41	16	14
25	23	45	239	62	118	55	34	28	576	36	16	14
26	80	41	176	54	78	53	44	26	262	33	16	14
27	44	41	125	60	50	53	33	24	134	33	16	14
28	192	41	92	67	40	52	32	82	403	33	15	14
29	270	41	75	58	36	52	32	83	716	30	15	14
30	89	41	66	53	---	50	32	45	304	30	14	14
31	59	---	59	50	---	50	---	36	---	27	14	---
TOTAL	1171	3444	6502	2085	1201	6727	1386	1000	4975	3745	683	49
MEAN	37.8	115	210	67.3	41.4	217	46.2	32.3	166	121	22.0	16.6
MAX	270	985	1390	174	118	1560	143	83	716	1080	52	35
MIN	16	30	54	37	26	33	32	23	29	22	14	14
AC-FT	2320	6830	12900	4140	2380	13340	2750	1980	9870	7430	1350	988

RED RIVER BASIN
07329852 ROCK CREEK AT SULPHUR, OK--Continued

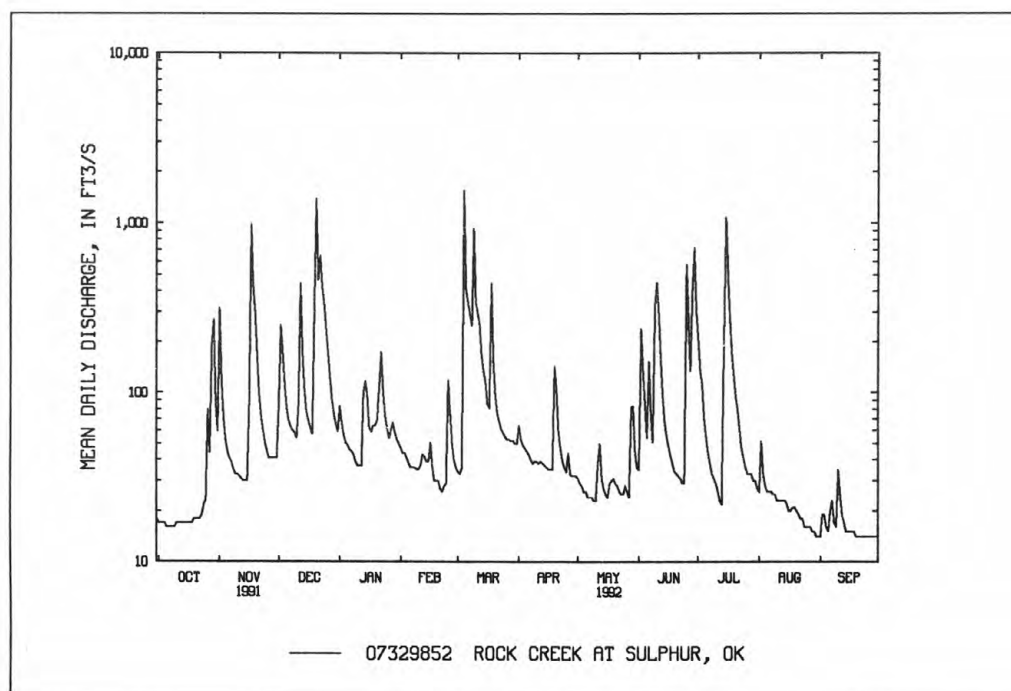
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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	39.1	60.4	81.7	75.5	40.1	169	161	171	138	64.6	19.1	72.2
MAX	64.5	115	210	88.7	48.1	261	390	406	211	121	22.0	169
(WY)	1990	1992	1992	1990	1990	1990	1990	1990	1991	1992	1992	1990
MIN	15.0	28.6	11.9	67.3	30.7	28.0	46.2	32.3	37.4	17.5	16.6	16.6
(WY)	1991	1991	1990	1992	1991	1991	1992	1992	1990	1990	1990	1992

SUMMARY STATISTICS	1991 CALENDAR YEAR		1992 WATER YEAR		WATER YEARS 1990-92	
ANNUAL TOTAL	28279		33417			
ANNUAL MEAN	77.5		91.3		91.1	
HIGHEST ANNUAL MEAN					129	
LOWEST ANNUAL MEAN					52.6	
HIGHEST DAILY MEAN	2120		1560		3450	
LOWEST DAILY MEAN	14		14		6.8	
ANNUAL SEVEN-DAY MINIMUM	16		14		7.4	
INSTANTANEOUS PEAK FLOW			5620		10400	
INSTANTANEOUS PEAK STAGE			15.36		19.65	
ANNUAL RUNOFF (AC-FT)	56090		66280		66010	
10 PERCENT EXCEEDS	165		217		178	
50 PERCENT EXCEEDS	32		39		31	
90 PERCENT EXCEEDS	17		17		15	

^aAlso occurred Aug. 31-Sept. 1, 19-30.



RED RIVER BASIN

07329852 ROCK CREEK AT SULPHUR, OK--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1990 to current year.

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	AGENCY COL-LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA-LYZING SAMPLE (CODE NUMBER) (00028)	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)
NOV 20...	1245	1028	80020	140	434	8.3	15.0	13.0	743	9.9
FEB 06...	1245	1028	80020	36	657	8.6	11.5	10.0	736	10.6
MAY 13...	1530	1028	80020	30	708	8.3	30.0	25.0	740	12.2
AUG 19...	0845	1028	80020	20	818	8.3	18.5	19.0	750	9.1

DATE	HARD-NESS TOTAL (MG/L AS CaCO3) (00900)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L) (00904)	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-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3) (39086)
NOV 20...	180	0	53	11	17	17	0.6	4.5	223	0
FEB 06...	270	0	75	21	33	21	0.9	2.2	316	15
MAY 13...	260	3	64	24	51	30	1	2.8	304	4
AUG 19...	290	13	68	28	59	31	2	2.9	320	6

DATE	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 CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
NOV 20...	11	27	0.20	9.7	253	243	0.34	95.6	0.070	0.020	0.090
FEB 06...	19	43	0.20	8.0	363	372	0.49	35.6	--	<0.010	<0.050
MAY 13...	20	83	0.30	9.1	386	408	0.52	31.2	--	<0.010	0.090
AUG 19...	21	99	<0.10	10	406	451	0.55	22.4	--	--	--

RED RIVER BASIN

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07329852 ROCK CREEK AT SULPHUR, OK--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	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, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHATE, TOTAL (MG/L AS PO4) (00650)	PHOS- PHORUS TOTAL (MG/L AS P) (70507)	ARSENIC TOTAL (UG/L AS AS) (01002)
NOV 20...	0.030	0.04	0.57	0.60	0.69	3.1	0.120	0.21	0.070	<1
FEB 06...	0.030	0.04	--	<0.20	--	--	<0.010	--	<0.010	<1
MAY 13...	0.030	0.04	--	<0.20	--	--	0.020	--	<0.010	<1
AUG 19...	--	--	--	--	--	--	--	--	--	1

DATE	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
NOV 20...	40	<1	3	--	37	2	9	0.30	<1	30
FEB 06...	70	<1	14	3	14	3	17	--	<1	<10
MAY 13...	100	<1	<1	1	39	<1	26	0.30	<1	<10
AUG 19...	120	2	1	5	<3	6	13	<0.10	<1	20

RED RIVER BASIN
07331000 WASHITA RIVER NEAR DICKSON, OK

LOCATION.--Lat 34°14'00", long 96°58'32", in SW 1/4 SE 1/4 sec.3, T.4 S., R.3 E., Carter County, Hydrologic Unit 11130303, on right bank on downstream side of bridge on U.S. Highway 177, 1.3 mi downstream from Caddo Creek, 3.2 mi north of Dickson, 12.0 mi northeast of Ardmore, and at mile 63.4.

DRAINAGE AREA.--7,202 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1928 to current year. Monthly discharge only for some periods, published in WSP 1311. Prior to Oct. 1, 1979, published as Washita River near Durwood.

REVISED RECORDS.--WSP 1211: Drainage area. WSP 1281: 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 650.57 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Feb. 16, 1939, nonrecording gage, at same site and datum. Dec. 15, 1950, to Feb. 19, 1952, nonrecording gage, at site 500 ft upstream, at same datum. Apr. 24, 1975, to May 8, 1986, water-stage recorder, at site 500 ft upstream, at same datum.

REMARKS.--Records fair. Some diversions for irrigation upstream from station. Flow regulated by Fort Cobb Reservoir (station 07325900) since March 1959; by Foss Reservoir (station 07324300) since February 1961; and by numerous flood-retarding structures. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2060	7970	e1600	5240	2560	1740	1490	1280	2930	8640	2240	2060
2	e1680	5400	e3000	4950	2320	1650	1620	1180	5280	6980	3010	2000
3	e1400	4080	e4300	4510	e2140	1620	1460	1080	10700	7350	2240	2180
4	e1200	3340	2640	3890	e2100	9120	1330	983	7660	5530	2050	2420
5	e1100	2610	2260	3590	e2000	9120	1280	924	5680	4030	1730	2440
6	e990	e2200	e2200	3340	e1950	e5390	1220	846	9700	3210	1710	2090
7	889	e2000	e2150	2890	e1900	e3490	1370	783	12700	2690	1590	2070
8	e800	e1800	e2000	2640	e1850	e2030	1360	747	10000	2250	1300	1840
9	e700	e1600	e2050	2370	e1800	e6850	1330	716	11100	1670	1200	1600
10	664	e1400	e2100	e2070	e1750	7580	1300	677	13500	1220	1160	1670
11	628	e1300	e2250	e1900	2970	5350	1250	1050	e12500	1050	1080	2160
12	e600	e1200	8170	e1800	3150	4050	2470	6080	e9310	906	988	2460
13	e580	e1300	12700	2490	2540	3450	3140	4040	e7210	774	972	1730
14	e560	e1250	7800	5010	e2300	2720	2040	2780	e5580	1370	1270	1510
15	e540	e1200	5410	4760	e2100	2450	1670	2080	e4280	4330	1180	1340
16	e520	6870	4670	3720	e1900	2220	1520	1780	3450	4330	1380	1310
17	e500	12900	4170	3030	e1850	2160	1460	1710	e3090	4420	1590	1260
18	e480	8400	3440	2740	e1800	3510	6170	2070	e2580	4010	1250	1150
19	e460	6270	4290	2780	e1700	3300	6150	2130	e2580	3560	1140	1020
20	e440	4770	30400	2670	e1650	2610	7320	1810	e2650	e2800	1080	995
21	e420	4040	44400	2880	1590	2340	5530	1860	e4000	e2700	1100	1350
22	e400	3630	31100	3990	1510	2170	4030	2150	e2860	e2600	1230	1650
23	e380	3250	25000	3890	1560	1990	3180	2500	e2910	e2400	1180	1250
24	e400	2920	18400	3190	1570	1990	3000	2850	e3060	e2100	1100	1140
25	450	e2500	14800	2730	2420	1770	2580	2230	e6380	e1850	1160	1010
26	1200	e2300	11900	2490	2830	1650	1980	2020	4660	e2000	1110	959
27	1110	e2250	9560	2640	2420	1570	1710	1860	2650	e1800	994	943
28	9460	e1500	7970	3230	2130	1460	1570	2310	3270	2890	1650	924
29	10900	e1400	6750	3280	1880	1430	1470	6430	16500	3990	2170	908
30	7670	e1500	5960	2890	---	1420	1340	5290	14100	2750	2520	889
31	7670	---	5600	2710	---	1380	---	3680	---	2480	2530	---
TOTAL	56851	103150	289040	100310	60240	99580	73340	67926	202870	98680	46904	46328
MEAN	1834	3438	9324	3236	2077	3212	2445	2191	6762	3183	1513	1544
MAX	10900	12900	44400	5240	3150	9120	7320	6430	16500	8640	3010	2460
MIN	380	1200	1600	1800	1510	1380	1220	677	2580	774	972	889
AC-FT	112800	204600	573300	199000	119500	197500	145500	134700	402400	195700	93030	91890

e Estimated

RED RIVER BASIN
07331000 WASHITA RIVER NEAR DICKSON, OK--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1992, BY WATER YEAR (WY)

MEAN	1565	1415	1180	999	1179	2057	2112	3495	3355	902	482	996
MAX	8274	5879	9324	4081	5630	10890	15940	15750	12660	4042	2611	5236
(WY)	1987	1987	1992	1985	1987	1990	1990	1990	1987	1987	1975	1991
MIN	30.4	73.5	103	103	93.6	78.4	210	249	158	31.4	12.8	42.1
(WY)	1964	1964	1967	1967	1967	1967	1971	1971	1966	1964	1972	1972

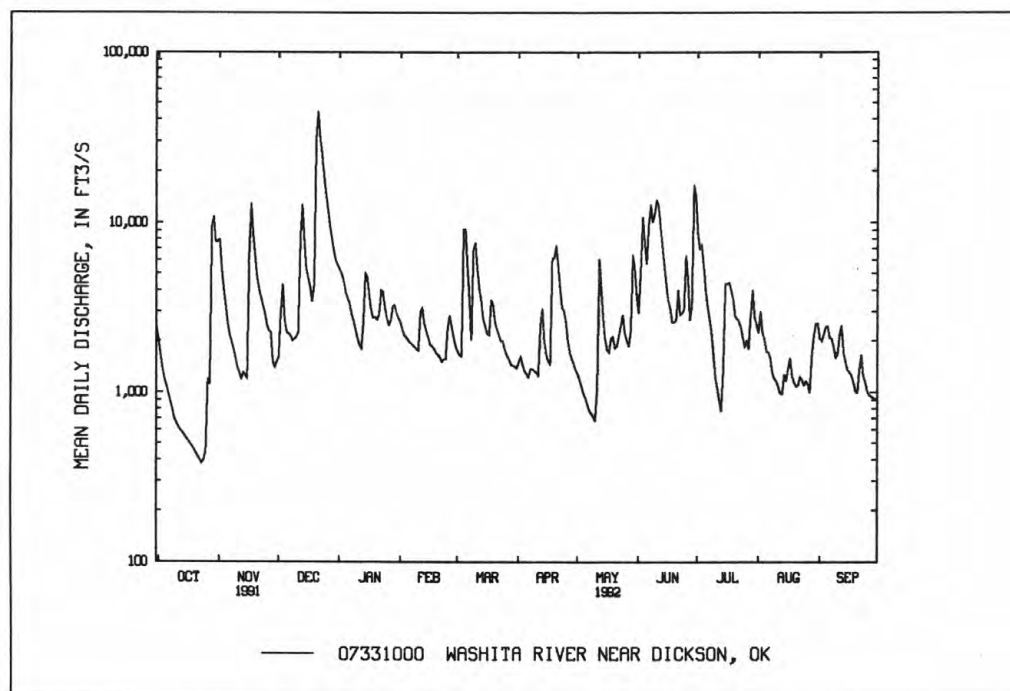
SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1962-92

ANNUAL TOTAL	1016148		1245219			
ANNUAL MEAN	2784		3402		^a 1645	
HIGHEST ANNUAL MEAN					5644	1987
LOWEST ANNUAL MEAN					340	1964
HIGHEST DAILY MEAN	44400	Dec 21	44400	Dec 21	94400	May 3 1990
LOWEST DAILY MEAN	228	Aug 29	380	Oct 23	^b .10	Aug 11 1964
ANNUAL SEVEN-DAY MINIMUM	251	Aug 23	421	Oct 19	.30	Aug 8 1964
INSTANTANEOUS PEAK FLOW			47900	Dec 21	^c 118000	May 3 1990
INSTANTANEOUS PEAK STAGE			28.45	Dec 21	45.24	May 30 1987
ANNUAL RUNOFF (AC-FT)	2016000		2470000		1191000	
10 PERCENT EXCEEDS	7020		7240		3670	
50 PERCENT EXCEEDS	1250		2160		584	
90 PERCENT EXCEEDS	441		993		113	

^aPrior to regulation, water years 1929-58, 1,573 ft³/s.

^bNo flow Aug. 28, Sept. 14, to Oct. 1, 7-12, 1956.

^cGage height was 44.26 ft.



RED RIVER BASIN

07331000 WASHITA RIVER NEAR DICKSON, OK--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1944 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1944 to January 1982, February 1984 to April 1990.

WATER TEMPERATURE: April 1947 to January 1982, February 1984 to April 1990.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,120 microsiemens, Nov. 15, 1963; minimum daily, 95 microsiemens, Nov. 2, 1951.

WATER TEMPERATURE: Maximum daily, 38.0°C, July 16, 1985; minimum daily, 0.0°C on many days during winter periods.

MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	AGENCY COL- LECTING (CODE NUMBER) (00027)	AGENCY ANA- LYZING (CODE NUMBER) (00028)	DIS- CHARGE, INST. (CUBIC FEET PER SECOND) (00061)	GAGE HEIGHT (FEET) (00065)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)
AUG											
24...	1406	40.0	28.0	746	1028	1028	1110	8.89	1290	8.1	8.3
24...	1409	60.0	28.0	746	1028	1028	1110	8.89	1290	8.1	8.3
24...	1412	80.0	28.0	746	1028	1028	1110	8.89	1290	8.2	8.3
24...	1415	100	28.0	746	1028	1028	1110	8.89	1290	8.2	8.3
24...	1418	120	28.0	746	1028	1028	1110	8.89	1290	8.2	8.3
24...	1421	140	28.0	746	1028	1028	1110	8.89	1280	8.2	8.3
24...	1424	160	27.5	746	1028	1028	1110	8.89	1290	7.9	8.3
24...	1427	180	28.0	746	1028	1028	1110	8.89	1280	7.9	8.3
24...	1430	200	28.0	746	1028	1028	1110	8.89	1290	8.0	8.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	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, (PER- CENT SATUR- ATION) (00301)
OCT												
10...	1015	1028	80020	670	1070	8.4	24.0	19.0	4.5	750	8.5	94
DEC												
18...	0930	1028	80020	3530	900	8.4	8.0	8.5	20	758	12.1	104
FEB												
26...	1200	1028	80020	2870	972	8.5	8.5	8.0	100	751	10.9	93
JUN												
16...	0930	1028	80020	3550	845	8.3	28.5	25.0	200	740	7.2	90
AUG												
24...	1200	1028	80020	1110	1270	8.3	33.0	27.0	64	746	7.9	102

RED RIVER BASIN

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07331000 WASHITA RIVER NEAR DICKSON, OK--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS, NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00900)	HARD-NESS, NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	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-SORPTION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, WATER (DIS IT FIELD HCO3) (00453)	CAR-BONATE, WATER (DIS IT FIELD CO3) (00452)
------	---	--	---	---	---	---	---	----------------------------------	--	---	--

OCT											
10...	41	70	480	270	120	43	51	19	1	4.4	252
DEC											
18...	960	1600	420	190	110	35	41	17	0.9	4.2	256
FEB											
26...	4800	2000	440	220	110	41	51	20	1	2.9	259
JUN											
16...	480	1000	370	170	95	32	41	19	0.9	4.3	246
AUG											
24...	K38	K94	570	370	140	54	67	20	1	4.7	232

DATE	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 CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00620)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS NO3) (71851)
------	---	--	--	---	---	---	--	---	---	---	---	---

OCT												
10...	210	320	62	0.40	9.9	764	738	1.04	1380	--	--	--
DEC												
18...	225	230	48	0.40	9.8	688	616	0.94	6560	0.460	0.460	2.0
FEB												
26...	228	250	67	0.30	8.5	678	671	0.92	5250	--	--	--
JUN												
16...	202	180	47	0.30	11	551	535	0.75	5280	0.370	--	--
AUG												
24...	206	380	70	0.40	9.7	870	852	1.18	2610	--	--	--

DATE	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS NO2) (71856)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71845)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00605)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00625)	NITRO-GEN, TOTAL (MG/L AS N) (00600)
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OCT											
10...	0.020	<0.010	--	<0.050	<0.050	0.020	<0.010	0.03	--	0.98	1.0
DEC											
18...	0.020	0.020	0.07	0.480	0.480	0.060	0.040	0.08	0.05	1.1	1.2
FEB											
26...	<0.010	<0.010	--	--	0.390	0.040	0.020	0.05	0.03	0.56	0.60
JUN											
16...	0.010	<0.010	--	0.380	0.380	0.030	0.020	0.04	0.03	1.4	1.4
AUG											
24...	<0.010	<0.010	--	<0.050	<0.050	0.020	0.020	0.03	0.03	0.98	1.0

RED RIVER BASIN

07331000 WASHITA RIVER NEAR DICKSON, OK--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHATE, TOTAL (MG/L AS PO4) (00650)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, TOTAL (MG/L AS P) (70507)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
OCT 10...	--	0.210	0.18	0.050	0.060	0.020	0.06	<10	210	<3	7
DEC 18...	7.4	0.350	0.15	0.110	0.050	0.050	0.15	--	--	--	--
FEB 26...	4.1	0.160	0.06	0.090	0.020	0.020	0.06	<10	140	<3	6
JUN 16...	7.9	0.470	0.18	0.050	0.060	0.060	0.18	<10	160	<3	<3
AUG 24...	--	0.240	0.15	0.080	0.050	0.040	0.12	40	200	<3	<3

DATE	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)	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)	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)
OCT 10...	20	9	<10	<1	1	<1.0	1200	6	124	224	59
DEC 18...	--	--	--	--	--	--	--	--	1060	10100	51
FEB 26...	18	17	<10	1	<1	<1.0	1100	<6	1640	12700	35
JUN 16...	13	<1	<10	2	<1	<1.0	870	7	--	--	--
AUG 24...	19	4	10	2	<1	<1.0	1500	11	675	2020	60



RED RIVER BASIN
07331500 LAKE TEXOMA NEAR DENISON, TX

LOCATION.--Lat 33°49'05", long 96°34'20", in NE 1/4 sec.33, T.8 S., R.7 E., Bryan County, OK, Hydrologic Unit 11130210, in control tower of Denison Dam on Red River, 1.2 mi upstream from Shawnee Creek, 1.8 mi upstream from Sand Creek, 4.0 mi northwest of Denison, 6.0 mi southwest of Colbert, and at mile 725.9.

DRAINAGE AREA.--39,719 mi² of which 5,936 mi² is probably noncontributing.

PERIOD OF RECORD.--July 1942 to current year. Month-end contents only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 30, 1944, nonrecording gage at same site and datum. Prior to Oct. 1, 1948, supplementary nonrecording gage in Cumberland pool at the same datum.

REMARKS.--See next page.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 6,028,000 acre-ft, May 6, 1990, elevation, 644.76 ft. Minimum contents since power pool was first filled, 1,565,100 acre-ft, Sept. 16, 1964; minimum elevation, 599.96 ft, Mar. 1, 2, 1957.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 4,101,000 acre-ft, Dec. 27, elevation, 630.87 ft. Minimum, 2,521,000 acre-ft, Apr. 5, 6, elevation, 615.55 ft.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2646000	2931000	2774000	3820000	2700000	2643000	2547000	2550000	2921000	2965000	2781000	2584000
2	2642000	2945000	2785000	3755000	2693000	2639000	2533000	2554000	2958000	2968000	2780000	2590000
3	2635000	2944000	2783000	3689000	2688000	2631000	2522000	2554000	2954000	2953000	2777000	2602000
4	2630000	2933000	2775000	3620000	2688000	2653000	2523000	2556000	2952000	2937000	2775000	2597000
5	2628000	2908000	2768000	3555000	2678000	2669000	2522000	2553000	2949000	2919000	2775000	2592000
6	2622000	2881000	2759000	3483000	2672000	2679000	2524000	2551000	2958000	2903000	2770000	2587000
7	2619000	2858000	2756000	3412000	2665000	2679000	2524000	2549000	2958000	2892000	2764000	2579000
8	2615000	2841000	2758000	3340000	2657000	2678000	2525000	2547000	2989000	2881000	2758000	2579000
9	2613000	2828000	2756000	3265000	2648000	2696000	2527000	2553000	3086000	2874000	2750000	2580000
10	2611000	2818000	2748000	3187000	2647000	2686000	2525000	2555000	3232000	2870000	2739000	2611000
11	2608000	2804000	2752000	3108000	2648000	2684000	2526000	2572000	3367000	2866000	2731000	2615000
12	2614000	2786000	2767000	3032000	2672000	2682000	2530000	2575000	3431000	2861000	2722000	2614000
13	2618000	2777000	2791000	2987000	2672000	2676000	2538000	2586000	3433000	2854000	2714000	2615000
14	2619000	2773000	2804000	2925000	2669000	2669000	2546000	2595000	3401000	2860000	2706000	2615000
15	2612000	2769000	2821000	2876000	2663000	2653000	2551000	2601000	3366000	2863000	2695000	2613000
16	2604000	2787000	2827000	2844000	2650000	2646000	2556000	2613000	3318000	2896000	2684000	2607000
17	2601000	2810000	2833000	2834000	2643000	2658000	2551000	2631000	3265000	2910000	2675000	2601000
18	2599000	2830000	2813000	2819000	2639000	2658000	2542000	2651000	3213000	2906000	2670000	2597000
19	2595000	2839000	2834000	2795000	2638000	2653000	2544000	2664000	3158000	2902000	2663000	2587000
20	2591000	2837000	2977000	2773000	2636000	2653000	2550000	2676000	3121000	2895000	2654000	2581000
21	2588000	2833000	3157000	2766000	2636000	2652000	2565000	2688000	3068000	2891000	2645000	2580000
22	2585000	2833000	3459000	2766000	2641000	2650000	2576000	2695000	3021000	2883000	2634000	2572000
23	2584000	2828000	3766000	2753000	2637000	2641000	2582000	2714000	2986000	2875000	2625000	2562000
24	2594000	2821000	3971000	2744000	2640000	2632000	2581000	2732000	2956000	2867000	2615000	2555000
25	2609000	2813000	4067000	2738000	2665000	2624000	2575000	2756000	2963000	2854000	2607000	2556000
26	2626000	2802000	4100000	2731000	2664000	2616000	2568000	2779000	2954000	2841000	2602000	2560000
27	2648000	2791000	4086000	2725000	2660000	2601000	2559000	2797000	2946000	2825000	2591000	2564000
28	2720000	2784000	4049000	2715000	2655000	2592000	2546000	2825000	2937000	2811000	2583000	2567000
29	2769000	2782000	4001000	2708000	2651000	2585000	2548000	2834000	2955000	2800000	2582000	2567000
30	2822000	2775000	3944000	2703000	---	2570000	2546000	2845000	2958000	2809000	2585000	2569000
31	2901000	---	3881000	2701000	---	2559000	---	2888000	---	2787000	2583000	---

RED RIVER BASIN

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07331500 LAKE TEXOMA NEAR DENISON, TX--Continued

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MAX	2901000	2945000	4100000	3820000	2700000	2696000	2582000	2888000	3433000	2968000	2781000	2615000
MIN	2584000	2769000	2748000	2701000	2636000	2559000	2522000	2547000	2921000	2787000	2582000	2555000
(+)	619.80	618.46	629.02	617.65	617.09	616.03	615.86	619.66	620.39	618.59	616.30	616.14
(++)	+247	-126	+1,106	-1,180	-50	-92	-13	+342	+70	-171	-204	-14
CAL YR 1991	MAX 4100000		MIN 2584000		++ +1,260							
WTR YR 1992	MAX 4100000		MIN 2522000		++ -85							

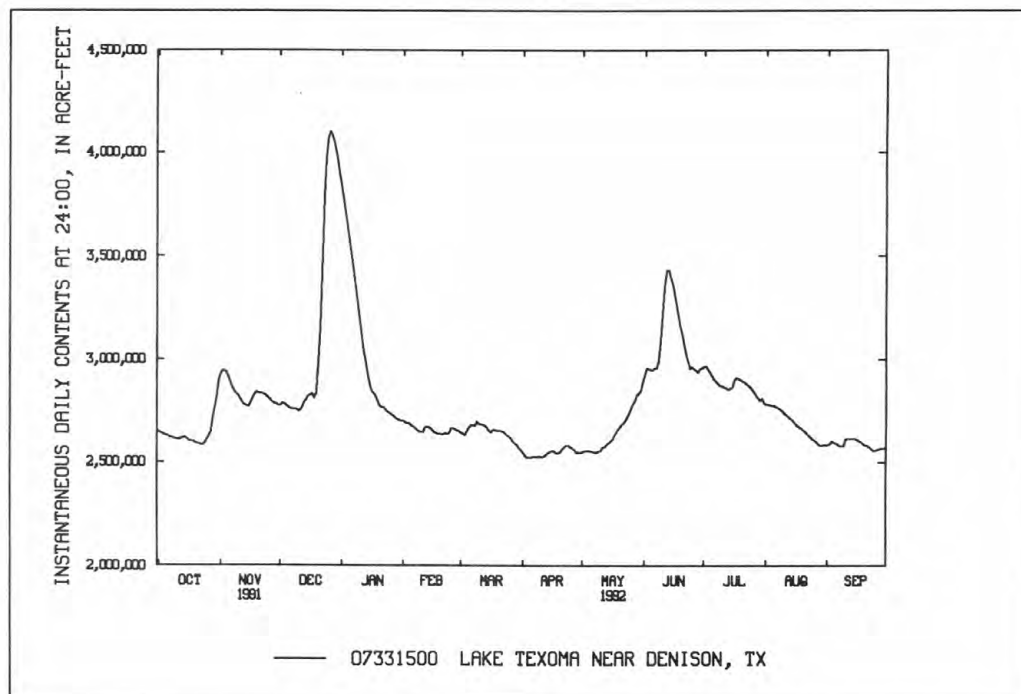
+ ELEVATION, IN FEET, AT END OF MONTH

++ CHANGE IN CONTENTS, IN THOUSANDS OF ACRE-Feet

REMARKS.--Reservoir is formed by a rolled earthfill dam. The controlled outlet consists of eight 20-foot diameter conduits and the uncontrolled outlet is a concrete, ogee-type weir spillway. Flow was diverted through conduits July 27, 1942; regulated storage began Oct. 31, 1943; power pool was first filled March 15, 1945. Capacity, based on 1969 survey, 5,312,000 acre-ft at elevation 640.0 ft, crest of spillway, 2,643,000 acre-ft at elevation 617.0 ft maximum power pool; 1,031,000 acre-ft at elevation 590.0 ft, minimum power pool, in Denison pool. Dead storage, 11,000 acre-ft at elevation 610.0 ft in Cumberland pool. When contents are below 2,105,000 acre-ft, the reservoir is divided into two pools by protective levees around the Cumberland oil field on the Washita River arm with bottom outlet channel for the upper pool (known as Cumberland pool) at elevation 610 ft. At higher elevations the two pools are considered as being at a common level, contents being computed from gage in Denison pool. Figures given represent total contents of both pools. Reservoir is used principally for flood control and power development. Revised capacity table, based on survey in 1969, use since Oct. 1, 1977. U.S. Army Corps of Engineers' satellite telemeter at station.

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

614	2,399,000	632	4,240,000
620	2,920,000	638	5,029,000
626	3,538,000	645	6,066,000



RED RIVER BASIN
07332500 BLUE RIVER NEAR BLUE, OK

LOCATION.--Lat 33°59'49", long 96°14'27", on line between sec.27 and 34, T.6 S., R.10 E., Bryan County, Hydrologic Unit 11140102, on left bank on downstream side near end of bridge on U.S. Highway 70, 1.0 mi west of Blue, 7.0 mi east of Durant, 7.7 mi upstream from Caddo Creek, and at mile 38.8.

DRAINAGE AREA.--476 mi².

PERIOD OF RECORD.--June 1936 to current year. Monthly discharge only for some periods, published in WSP 1311, 1731.

REVISED RECORDS.--WSP 957: 1938. WSP 1241: 1936, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 503.60 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 13, 1945, nonrecording gage and Mar. 13, 1945, to Feb. 2, 1960, water-stage recorder at site 1.2 mi downstream at datum 5.00 ft lower.

REMARKS.--Records fair. Some regulation at low flow by a State fish hatchery, 16.0 mi upstream from station. Small diversion for municipal water supply for city of Durant upstream from station. U.S. Army Corps of Engineers' satellite telemeter at station. No flow also occurred Aug. 4, 1936, result of regulation at fish hatchery, and no flow Sept. 19 to Oct. 16, 1956.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
Oct. 30	0500	6,300	20.00	June 29	1130	6,440	20.18
Dec. 21	--	13,700	26.56 (HWM)	Sept. 11	0630	5,530	18.90
May 19	0030	5,290	18.55				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	2790	457	679	403	310	e152	184	538	676	334	87
2	105	1800	1060	681	379	284	e149	146	1890	388	264	114
3	100	617	1500	675	363	277	e145	132	1740	302	223	239
4	103	479	900	620	351	652	e140	123	733	275	209	133
5	101	409	600	589	336	969	e134	117	414	242	182	105
6	99	367	469	496	322	407	e162	109	2270	204	843	183
7	95	334	416	436	312	235	219	101	1420	185	595	259
8	88	311	388	380	304	219	209	99	1340	171	271	347
9	93	291	368	275	293	316	203	95	2030	160	194	161
10	94	280	306	255	286	213	195	95	2130	153	166	1180
11	94	269	340	265	308	193	183	181	790	146	155	3640
12	93	259	638	338	2480	166	164	843	828	141	147	457
13	92	250	803	440	2640	164	160	334	456	133	141	234
14	89	244	480	660	752	212	156	225	346	150	135	170
15	87	245	e360	790	543	209	153	155	302	403	131	147
16	87	291	e330	610	436	188	150	137	272	1890	129	132
17	79	1650	e290	502	384	450	243	163	247	e3800	124	120
18	78	e1100	e270	485	364	2350	271	1980	226	e1400	122	115
19	78	e800	e260	567	330	690	613	4240	205	e840	119	111
20	78	600	e1000	607	305	e480	785	1490	199	e520	122	109
21	77	594	8500	993	292	e365	427	939	192	336	119	251
22	81	467	e4000	2130	295	e305	234	465	196	281	113	170
23	84	411	6410	1520	418	e270	188	1290	182	259	108	119
24	85	371	2520	762	417	e245	167	1170	172	245	105	106
25	771	343	1230	545	1950	e220	153	526	397	213	102	98
26	1500	331	983	474	1920	e200	141	434	882	195	99	94
27	1000	318	908	513	729	e190	133	343	638	183	102	92
28	2210	315	885	667	475	e180	130	560	412	179	93	87
29	5060	313	840	587	383	e170	149	3160	4210	184	89	83
30	4400	337	775	487	---	e162	169	1080	2240	302	87	80
31	1360	---	715	436	---	e159	---	489	---	883	85	---
TOTAL	18472	17186	39001	19464	18770	11450	6477	21405	27897	15439	5708	9223
MEAN	596	573	1258	628	647	369	216	690	930	498	184	307
MAX	5060	2790	8500	2130	2640	2350	785	4240	4210	3800	843	3640
MIN	77	244	260	255	286	159	130	95	172	133	85	80
AC-FT	36640	34090	77360	38610	37230	22710	12850	42460	55330	30620	11320	18290

e Estimated

RED RIVER BASIN
07332500 BLUE RIVER NEAR BLUE, OK--Continued

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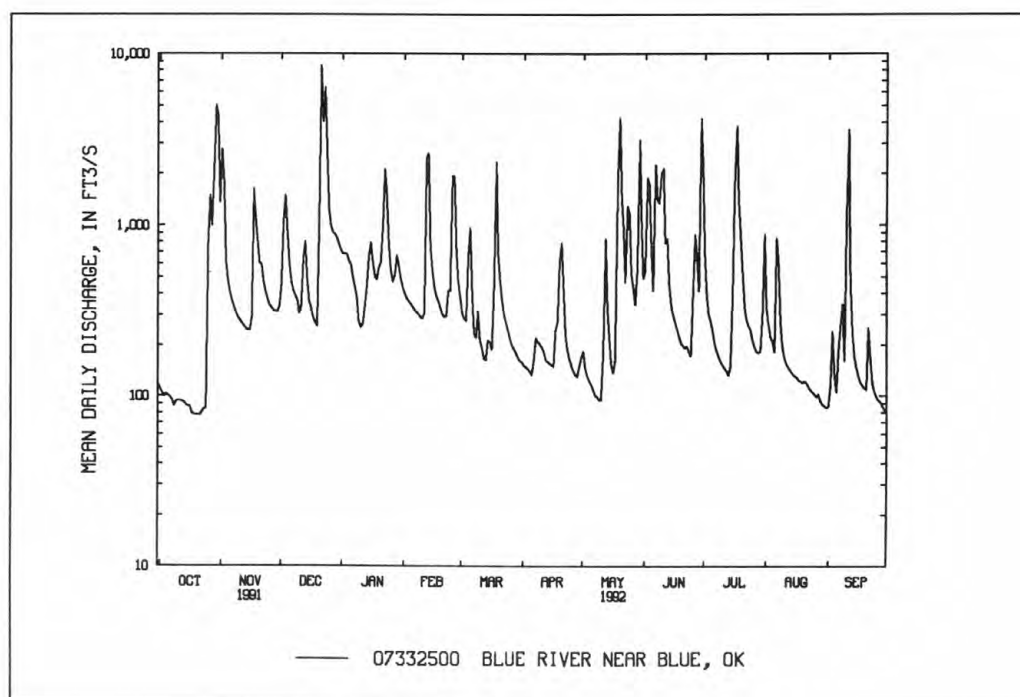
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	251	249	232	219	368	446	585	615	450	155	77.2	163
MAX	3613	1371	1384	849	2156	3089	3846	2953	2510	780	755	1501
(WY)	1982	1975	1972	1968	1938	1945	1990	1990	1945	1950	1950	1957
MIN	4.37	11.3	17.8	18.1	27.0	22.8	51.5	33.2	24.2	5.23	.94	.42
(WY)	1940	1940	1940	1940	1967	1940	1956	1939	1939	1956	1956	1956

SUMMARY STATISTICS	1991 CALENDAR YEAR		1992 WATER YEAR		WATER YEARS 1936-92	
ANNUAL TOTAL	220552		210492			
ANNUAL MEAN	604		575		317	
HIGHEST ANNUAL MEAN					972	
LOWEST ANNUAL MEAN					30.8	
HIGHEST DAILY MEAN	21500	Jun 9	8500	Dec 21	45500	Oct 14 1981
LOWEST DAILY MEAN	69	Aug 29	77	Oct 21	^a .00	Aug 3, 4 1936
ANNUAL SEVEN-DAY MINIMUM	76	Aug 24	79	Oct 17	.00	Sep 19 1956
INSTANTANEOUS PEAK FLOW			13700	Dec 21	65200	Oct 14 1981
INSTANTANEOUS PEAK STAGE			^b 26.56	Dec 21	^b 44.20	Oct 14 1981
ANNUAL RUNOFF (AC-FT)	437500		417500		229900	
10 PERCENT EXCEEDS	1140		1350		529	
50 PERCENT EXCEEDS	222		291		85	
90 PERCENT EXCEEDS	87		101		27	

^aResult of regulation at fish hatchery and no flow Sept. 19 to Oct. 16, 1956.

^bFrom high-water mark.



RED RIVER BASIN

07334000 MUDDY BOGGY CREEK NEAR FARRIS, OK

LOCATION.--Lat 34°16'17", long 95°54'43", in NE 1/4 NW 1/4 sec.26, T.3 S., R.13 E., Atoka County, Hydrologic Unit 11140103, on downstream left bank of bridge on State Highway 3, 1.3 mi downstream from McGee Creek, 2.8 mi northwest of Farris, and at mile 57.7.

DRAINAGE AREA.--1,087 mi².

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 439.58 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 13, 1945, nonrecording gage, and Mar. 13, 1945, to Sept. 30, 1961, water-stage recorder at same site at datum 7 ft higher. Prior to Oct. 1, 1989, water-stage recorder at same site and datum 5 ft higher.

REMARKS.--No estimated daily discharges. Records fair. Some regulation since June 1959 by Atoka Reservoir, drainage area, 176 mi²; pipeline diversions to Oklahoma City since November 1963, and since April 1987 by McGee Creek Lake, drainage area 178 mi². U.S. Army Corps of Engineers' satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	9030	737	2140	355	648	155	2750	2110	5610	2140	44
2	26	6560	4400	2090	301	577	195	1920	1630	2970	1130	364
3	24	4220	7070	2110	264	535	155	1570	2710	2060	656	599
4	21	1610	6010	2010	236	1520	137	1370	3050	2350	771	199
5	19	1830	3250	1910	248	4230	124	966	1910	2000	2070	241
6	17	2340	2070	1740	234	3630	120	561	1640	1440	7680	424
7	16	2370	1690	1400	186	2040	124	341	1850	1280	8700	642
8	17	2450	1500	1100	168	1400	119	126	2340	1190	8170	1760
9	15	2360	1430	771	152	4800	111	98	4790	1010	4190	1250
10	14	2310	1360	445	139	4710	105	80	4780	566	1640	2720
11	14	2250	1270	234	149	3970	99	94	6620	134	1600	6550
12	14	2120	2110	210	4410	2670	93	1450	6400	103	1460	5330
13	14	1580	4020	546	3160	1850	129	4650	3060	85	1360	2150
14	13	838	3420	2420	1940	1080	262	5200	1150	110	1170	1180
15	12	395	1850	2580	1450	945	319	1510	929	423	999	942
16	12	332	1070	2220	1200	790	204	613	1200	2840	956	814
17	12	4400	499	1530	1060	457	240	521	1410	6500	871	729
18	11	6810	394	1020	969	1440	280	2490	1380	7360	553	559
19	11	7300	486	1090	911	1570	1520	5830	1280	6140	320	131
20	11	5990	6790	1190	854	1780	3570	8820	1370	2370	95	110
21	11	2100	14300	1390	638	1110	2530	8780	1510	1570	82	96
22	11	1370	15300	1870	225	803	2120	6640	1580	1230	76	477
23	11	1080	16300	1940	674	748	1880	4860	684	767	74	1030
24	11	891	14300	1700	479	635	1670	5470	301	252	69	630
25	1230	664	7220	1220	767	538	1580	3360	578	194	64	419
26	3880	477	2200	921	1380	252	1490	2290	2470	149	62	408
27	3140	431	1760	819	1210	210	1260	1790	3970	126	105	363
28	5740	295	1940	850	988	189	598	1820	2430	2060	55	337
29	11600	189	1910	750	766	168	1840	4210	4470	2620	55	215
30	10400	483	1970	527	---	162	4380	5650	6860	1170	49	62
31	9790	---	2280	436	---	162	---	4310	---	801	46	---
TOTAL	46147	75075	130906	41179	25513	45619	27409	90140	76462	57480	47268	30775
MEAN	1489	2502	4223	1328	880	1472	914	2908	2549	1854	1525	1026
MAX	11600	9030	16300	2580	4410	4800	4380	8820	6860	7360	8700	6550
MIN	11	189	394	210	139	162	93	80	301	85	46	44
AC-FT	91530	148900	259700	81680	50610	90490	54370	178800	151700	114000	93760	61040

RED RIVER BASIN
07334000 MUDDY BOGGY CREEK NEAR FARRIS, OK--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	367	705	1709	1155	1075	2127	1965	2944	1820	516	383	574
MAX	1489	2502	4223	1563	2157	4541	6622	8384	2764	1854	1525	1026
(WY)	1992	1992	1992	1991	1990	1990	1990	1990	1991	1992	1992	1992
MIN	15.9	27.6	25.5	709	124	1020	484	34.7	25.0	26.8	15.3	13.8
(WY)	1989	1990	1990	1989	1991	1991	1988	1988	1988	1988	1988	1988

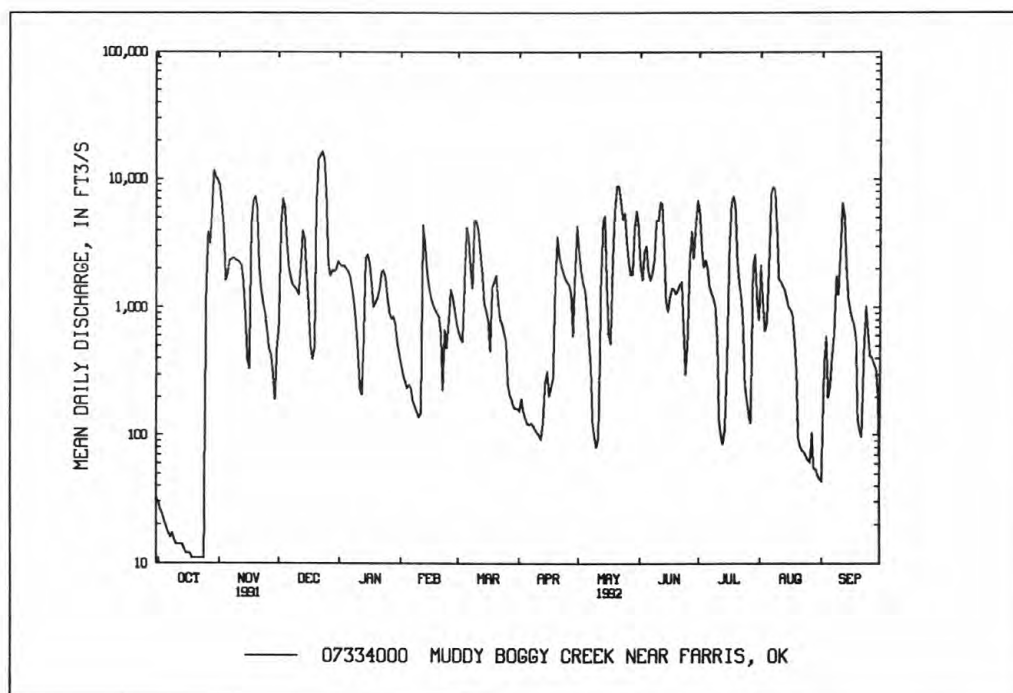
SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1988-92
ANNUAL TOTAL	525125	693973	
ANNUAL MEAN	1439	1896	^a 1280
HIGHEST ANNUAL MEAN			2145 1990
LOWEST ANNUAL MEAN			682 1988
HIGHEST DAILY MEAN	16300	Dec 23 16300	Dec 23 45700 May 5 1990
LOWEST DAILY MEAN	11	Oct 18-24 11	Oct 18-24 ^b 9.9 Nov 9 1988
ANNUAL SEVEN-DAY MINIMUM	11	Oct 18 11	Oct 18 11 Oct 18 1991
INSTANTANEOUS PEAK FLOW		16400	Dec 23 ^c 49800 May 5 1990
INSTANTANEOUS PEAK STAGE		39.28	Dec 23 ^d 48.73 May 5 1990
ANNUAL RUNOFF (AC-FT)	1042000	1376000	927200
10 PERCENT EXCEEDS	3280	4960	3060
50 PERCENT EXCEEDS	455	1160	234
90 PERCENT EXCEEDS	22	81	19

^aPrior to regulation, water years 1938-86, 880 ft³/s.

^bNo flow at times in many years prior to regulation.

^cMaximum discharge for period of record 61,900 ft³/s, June 17, 1945, from rating curve above 37,000 ft³/s.

^dMaximum gage height for period of record 51.94 ft, June 17, 1945, present datum.



RED RIVER BASIN
07334200 BYRDS MILL SPRING NEAR FITTSTOWN, OK

LOCATION.--Lat 34°35'40", long 96°39'55", in SW 1/4 SW 1/4 sec.34, T.2 N., R.6 E., Pontotoc County, Hydrologic Unit 11140104, upstream from weir outlet of spring, 0.5 mi upstream from Big Spring Creek, 2.0 mi west of Fittstown, and 12.0 mi south of Ada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Creek only, April 1959 to current year. Combined flow from December 1989 to current year.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 1,021.17 ft above National Geodetic Vertical Datum of 1929. Flow meters on diversion pipe and wells, to City of Ada.

REMARKS.--Records fair. Prior to December 1989 records do not include diversion of about 6 to 10 ft³/s by City of Ada for municipal water supply, a part of which is discharged as effluent to Sandy Creek, tributary to Canadian River. Records of zero flow do not include seepage of up to 0.10 ft³/s. Satellite telemeter at station.

AVERAGE DISCHARGE.--Creek only: 33 years, 8.43 ft³/s. Combined spring flow: 3 years, 23.55 ft³/s.

EXTREMES FOR PERIOD OF RECORD.--Combined flow: maximum daily discharge, 43 ft³/s, May 4, 5, 1990; minimum daily discharge, 13 ft³/s, several days in 1990.

EXTREMES FOR CURRENT YEAR.--Combined flow: maximum daily discharge, 31 ft³/s, Dec. 25 to Jan. 7; minimum daily discharge, 20 ft³/s, at times.

DISCHARGE, CUBIC FEET PER SECOND, CREEK FLOW, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	17	20	25	21	18	18	15	10	17	17	16
2	16	17	20	25	21	18	17	15	11	17	17	15
3	14	17	20	25	21	18	17	15	13	17	17	15
4	14	17	21	25	21	18	18	15	14	17	14	17
5	13	19	21	25	20	19	18	15	15	17	14	19
6	13	18	21	25	20	19	18	14	14	17	17	21
7	14	18	21	25	21	19	17	14	14	17	17	23
8	14	18	21	24	20	19	17	15	14	17	17	23
9	14	18	22	25	20	19	18	14	15	17	17	23
10	14	19	21	24	20	18	17	14	15	17	18	22
11	14	19	21	24	20	18	17	14	15	17	18	22
12	15	19	22	24	20	18	17	12	15	17	16	22
13	15	19	21	23	19	18	17	12	16	16	16	22
14	15	19	21	23	20	19	17	12	16	17	16	17
15	14	19	21	23	20	19	17	11	16	16	15	13
16	14	20	21	22	19	19	17	10	16	17	15	13
17	14	20	21	22	19	19	16	12	16	17	15	13
18	14	21	21	22	19	19	16	11	16	17	15	13
19	14	21	21	22	19	18	16	12	16	17	15	13
20	14	21	23	22	19	18	16	12	16	17	18	13
21	14	21	23	22	19	19	15	12	16	17	18	13
22	14	21	24	20	19	18	16	12	16	17	16	12
23	14	21	24	20	19	18	16	12	16	17	16	12
24	14	21	24	20	18	18	15	12	16	17	16	12
25	14	21	25	21	18	18	15	11	16	17	16	12
26	14	21	25	21	18	18	15	11	16	17	15	12
27	14	21	25	21	18	18	15	11	16	17	15	12
28	15	21	25	21	18	18	15	11	16	17	15	12
29	15	21	25	21	18	18	15	11	16	17	15	12
30	15	20	25	21	---	18	15	10	17	17	15	12
31	16	---	25	21	---	18	---	10	---	17	17	---

RED RIVER BASIN

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07334200 BYRDS MILL SPRING NEAR FITTSTOWN, OK--Continued

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	441	585	691	704	564	569	493	387	454	525	498	476
MEAN	14.2	19.5	22.3	22.7	19.4	18.4	16.4	12.5	15.1	16.9	16.1	15.9
MAX	16	21	25	25	21	19	18	15	17	17	18	23
MIN	13	17	20	20	18	18	15	10	10	16	14	12
AC-FT	875	1160	1370	1400	1120	1130	978	768	901	1040	988	944

CAL YR 1991 TOTAL 5898 MEAN 16.2 MAX 25 MIN 11 AC-FT 11700

WTR YR 1992 TOTAL 6387 MEAN 17.5 MAX 25 MIN 10 AC-FT 12670

DISCHARGE, CUBIC FEET PER SECOND, COMBINED SPRING FLOW, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	21	26	31	27	24	24	22	21	25	25	21
2	23	23	e26	31	27	24	23	22	21	25	25	22
3	23	23	e26	31	27	24	23	22	22	25	25	22
4	23	23	e27	31	27	24	24	22	22	25	26	22
5	22	e25	e27	31	26	25	24	22	22	25	27	23
6	22	e24	e27	31	26	25	24	21	22	25	25	23
7	21	e24	e27	31	27	25	23	21	22	25	25	23
8	20	e24	e27	30	26	25	23	21	22	25	25	23
9	20	24	e28	30	26	25	24	21	23	25	25	23
10	20	25	27	30	26	24	23	21	23	25	25	22
11	20	25	27	30	26	24	23	23	23	25	25	22
12	21	e25	28	30	26	24	23	24	23	25	24	22
13	21	e25	27	29	25	24	23	23	24	24	24	22
14	21	e25	27	29	26	25	23	22	24	24	24	22
15	20	e25	27	29	26	25	23	23	24	24	23	21
16	20	26	27	28	25	25	23	23	24	25	23	21
17	20	26	27	28	25	25	23	21	24	25	23	21
18	20	e27	27	28	25	25	23	20	24	25	23	21
19	20	e27	27	28	25	24	23	21	24	25	23	21
20	20	e27	29	28	25	24	23	21	24	25	24	21
21	20	e27	29	28	25	25	22	21	24	25	24	21
22	20	e27	30	27	25	24	23	21	24	25	23	20
23	20	e27	30	27	25	24	23	21	24	25	23	20
24	20	e27	30	27	24	24	22	21	24	25	23	20
25	20	e27	31	28	24	24	22	20	24	25	23	20
26	20	e27	31	27	24	24	22	20	24	25	22	20
27	e21	e27	31	27	24	24	22	20	24	25	22	20
28	21	e27	31	27	24	24	22	20	24	25	22	20
29	e21	e27	31	27	24	24	22	21	24	25	22	20
30	21	26	31	27	---	24	22	21	25	25	23	20
31	21	---	31	27	---	24	---	21	---	25	22	---
TOTAL	645	763	877	893	738	755	687	663	699	772	738	639
MEAN	20.8	25.4	28.3	28.8	25.4	24.4	22.9	21.4	23.3	24.9	23.8	21.3
MAX	23	27	31	31	27	25	24	24	25	25	27	23
MIN	20	21	26	27	24	24	22	20	21	24	22	20
AC-FT	1280	1510	1740	1770	1460	1500	1360	1320	1390	1530	1460	1270

CAL YR 1991 TOTAL 8803 MEAN 24.1 MAX 33 MIN 20 AC-FT 17460

WTR YR 1992 TOTAL 8869 MEAN 24.2 MAX 31 MIN 20 AC-FT 17590

e Estimated

RED RIVER BASIN

07334200 BYRDS MILL SPRING NEAR FITTSTOWN, OK--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1953, 1955-56, October 1989 to current year.

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

		AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	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)		
NOV 21...	1200	1028	80020	23	585	7.3	17.0	17.5	738	8.1	87	
MAR 13...	1230	1028	80020	19	595	7.3	17.0	17.0	740	5.9	63	
MAY 13...	1030	1028	80020	11	596	7.2	25.0	17.0	740	6.2	66	
AUG 18...	1130	1028	80020	17	615	7.3	18.0	17.0	740	7.1	76	
DATE		HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	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 (00932) (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)	
NOV 21...	330	0	74	36	4.6	3	0.1	1.5	411	0	337	
MAR 13...	340	41	76	37	4.5	3	0.1	1.4	368	0	302	
MAY 13...	330	0	74	35	4.1	3	0.1	1.4	412	0	338	
AUG 18...	330	1	75	35	3.7	2	0.1	1.4	403	0	330	
DATE		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)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	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)
NOV 21...	7.9	5.1	0.10	11	345	347	0.47	21.8	<0.010	0.950	<0.010	
MAR 13...	7.3	7.4	<0.10	11	327	330	0.44	17.0	<0.010	0.890	<0.010	
MAY 13...	7.4	5.4	0.20	11	328	345	0.45	9.92	<0.010	0.930	0.010	
AUG 18...	7.7	6.7	0.10	11	329	339	0.45	14.9	--	--	--	

RED RIVER BASIN

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07334200 BYRDS MILL SPRING NEAR FITTSTOWN, OK--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	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)	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)
NOV 21...	--	0.010	0.03	<1	51	<0.5	<1.0	6	<3	<10	18
MAR 13...	--	<0.010	--	<1	51	<0.5	<1.0	<5	<3	<10	4
MAY 13...	0.01	0.010	0.03	<1	49	<0.5	<1.0	<5	<3	<10	3
AUG 18...	--	--	--	<1	52	<0.5	<1.0	<5	<3	<10	<3
DATE	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) (71890)	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)
NOV 21...	<10	4	2	<0.1	<10	<10	<1	1.0	150	<6	6
MAR 13...	<10	6	<1	<0.1	<10	<10	<1	<1.0	150	<6	6
MAY 13...	<10	<4	<1	0.4	<10	<10	<1	<1.0	150	<6	5
AUG 18...	<10	4	<1	<0.1	<10	<10	<1	<1.0	150	<6	9

RED RIVER BASIN
07335300 MUDDY BOGGY CREEK NEAR UNGER, OK

LOCATION.--Lat 34°01'36", long 95°45'00", in SE 1/4 SE 1/4 sec.17, T.6 S., R.15 E., Choctaw County, Hydrologic Unit 11140103, at bridge on U.S. Highway 70, 3.5 mi west of Soper, 1.8 mi east of Unger and at mile 18.6.

DRAINAGE AREA.--2,273 mi².

PERIOD OF RECORD.--August 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 392.72 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 19, 1985, gage 500 ft downstream at same datum.

REMARKS.--Records fair. Some regulation by Atoka and McGee Creek Reservoirs. U.S. Army Corp of Engineers' telemeter at site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	195	18400	1910	5690	1510	2130	640	5340	8320	7810	3660	e190
2	173	19800	4430	4960	1320	1770	617	4770	7390	8410	3900	e690
3	159	18800	7060	4540	1190	1570	661	3200	5160	7960	2670	e1010
4	150	16400	8260	4300	1080	2380	644	2430	5770	5240	1570	940
5	139	13200	9450	3960	994	5200	599	2040	6340	3690	2020	571
6	131	10100	9800	3680	956	7390	564	1460	6390	2860	5140	435
7	123	7610	8460	3350	904	7990	580	975	5960	2100	7330	773
8	118	5180	5140	2880	809	7470	583	740	7120	1730	8430	1680
9	112	4100	4450	2450	755	5620	555	475	8920	1500	9610	3480
10	110	3730	3360	2030	713	6910	519	387	10600	1220	9700	2970
11	110	3500	2730	1660	1130	7530	490	368	11300	759	7000	5020
12	108	3290	3280	1450	3850	6990	470	439	11400	368	3250	7150
13	106	2980	4740	1720	7080	5010	458	2500	11500	276	2240	7830
14	104	2300	6450	3580	7630	3180	462	5500	10800	248	1960	6630
15	100	1390	6890	5650	7070	2200	715	6090	7920	809	1630	2950
16	96	959	6220	5840	5190	1880	821	3160	3400	3390	1380	1700
17	94	2940	3830	4840	3100	1640	667	1360	2490	7820	1290	1340
18	91	6270	1830	3460	2490	3150	965	1700	2420	9430	1140	1130
19	91	7680	1530	2960	2170	4680	1220	4860	2220	11600	810	874
20	90	8870	4740	3130	1940	4110	4250	7270	2180	13100	581	464
21	90	10500	8830	3550	1750	3380	6360	8480	2350	12600	360	603
22	89	10400	14400	4910	1410	2340	5140	9830	2490	10600	285	1910
23	89	7960	24400	5790	2150	1790	3670	11100	2360	7790	267	1700
24	91	3660	29700	5560	2270	1580	2900	11000	1360	3100	253	1670
25	6130	1960	30800	4440	3100	1430	2500	10400	1380	1490	242	1090
26	9180	1510	27400	3090	4560	1270	2270	9330	2270	1170	231	731
27	8680	1220	20800	2580	4780	955	2080	7060	3890	953	219	643
28	8440	1100	15500	2430	4080	822	1710	4050	5020	792	235	562
29	11300	948	12100	2330	2890	756	1520	4790	5750	3280	226	509
30	12900	1130	9250	2060	---	703	3410	6750	6920	4540	201	424
31	15400	---	7040	1730	---	656	---	7800	---	3980	192	---
TOTAL	74789	197887	304780	110600	78871	104482	48040	145654	171390	140615	78022	57669
MEAN	2413	6596	9832	3568	2720	3370	1601	4699	5713	4536	2517	1922
MAX	15400	19800	30800	5840	7630	7990	6360	11100	11500	13100	9700	7830
MIN	89	948	1530	1450	713	656	458	368	1360	248	192	190
AC-FT	148300	392500	604500	219400	156400	207200	95290	288900	340000	278900	154800	114400

e Estimated

RED RIVER BASIN
07335300 MUDDY BOGGY CREEK NEAR UNGER, OK--Continued

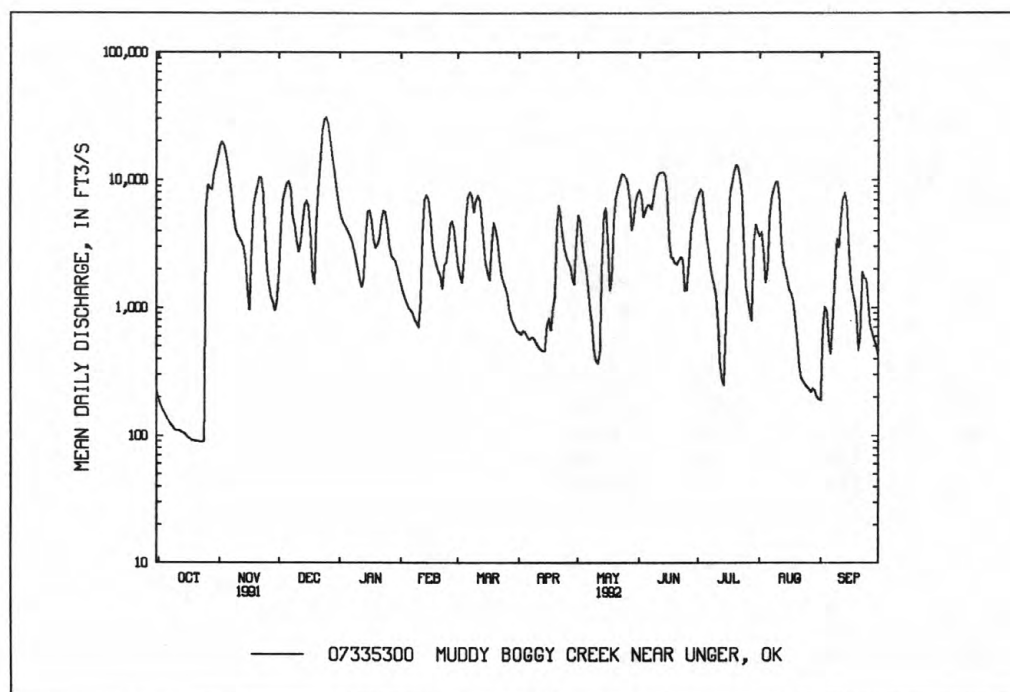
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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	845	1714	2504	2038	2637	3780	3857	5131	3134	789	373	705
MAX	3713	6596	9832	3568	4601	10970	14270	21720	7293	4536	2517	1922
(WY)	1985	1992	1992	1992	1990	1990	1990	1990	1991	1992	1992	1992
MIN	34.0	84.0	76.3	177	451	677	480	92.3	49.8	58.4	28.7	26.6
(WY)	1989	1989	1990	1984	1984	1986	1987	1988	1988	1984	1988	1988

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1983-92

ANNUAL TOTAL	1242920	1512799	
ANNUAL MEAN	3405	4133	2289
HIGHEST ANNUAL MEAN			4951 1990
LOWEST ANNUAL MEAN			520 1984
HIGHEST DAILY MEAN	30800	Dec 25 30800	Dec 25 76000 May 6 1990
LOWEST DAILY MEAN	89	Oct 22-23 89	Oct 22-23 1.8 Sep 8 1984
ANNUAL SEVEN-DAY MINIMUM	90	Oct 18 90	Oct 18 2.6 Sep 3 1984
INSTANTANEOUS PEAK FLOW		31200	Dec 25 76700 May 6 1990
INSTANTANEOUS PEAK STAGE		45.32	Dec 25 55.27 May 6 1990
ANNUAL RUNOFF (AC-FT)	2465000	3001000	1658000
10 PERCENT EXCEEDS	8900	9440	6990
50 PERCENT EXCEEDS	1300	2540	523
90 PERCENT EXCEEDS	150	282	40



RED RIVER BASIN
07335500 RED RIVER AT ARTHUR CITY, TX

LOCATION.--Lat 33°52'30", long 95°30'06", in NW 1/4 sec.11, T.8 S., R.17 E., Choctaw County, OK, Hydrologic Unit 11140101, on right downstream bank of bridge on U.S. Highway 271 at Arthur City, 10.6 mi downstream from Muddy Boggy River, 26.0 mi upstream from Kiamichi River, and at mile 633.1.

DRAINAGE AREA.--44,531 mi², of which 5,936 mi² probably is noncontributing.

PERIOD OF RECORD.--January to September 1905 (gage heights and discharge measurements only), October 1905 to December 1911, July 1936 to current year. Monthly discharge only for some periods, published in WSP 1311. Gage-height records collected at same site since 1891 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1241: Drainage area. WSP 1311: 1906-11.

GAGE.--Water-stage recorder. Datum of gage is 380.07 ft above National Geodetic Vertical Datum of 1929. From 1905-11 nonrecording gage at St. Louis-San Francisco Railway Co. bridge 200 ft upstream at same datum. July 1, 1936, to Mar. 24, 1940, nonrecording gage at present site and datum.

REMARKS.--Records fair. Flow regulated since October 1943 by Lake Texoma (station 07331500), 92.8 mi upstream from station. U.S. Army Corps of Engineers' satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10400	37600	13400	50800	20600	19100	13700	14600	22300	42100	16500	3950
2	10500	35000	18500	50600	18300	18200	13500	14100	23900	36100	14300	5380
3	10900	33500	28900	50200	17600	17500	13500	10100	24400	36000	12000	6080
4	9390	30300	30700	49400	17100	17100	13500	9780	34500	37500	10400	6840
5	8360	28500	25900	49000	15600	24700	12000	e9400	35200	34300	10500	7080
6	7860	31500	24100	48600	15100	32100	9890	e9000	37800	33500	13200	7910
7	5910	30500	23500	48300	14900	29100	9980	e8900	43700	31700	15800	11000
8	5570	27100	19800	47800	14800	27800	9600	e8800	50200	26100	17000	11900
9	5610	22100	23800	47200	16300	26600	e9500	e8600	62800	21400	17800	12200
10	4930	18600	32500	48600	17200	28300	e9000	e8500	57800	19700	17900	9560
11	4770	17300	28800	49400	17200	29700	e8800	e8400	48400	15300	16000	10400
12	4720	16900	22000	e50000	19300	28100	e8500	e8200	44300	13300	12500	15500
13	4680	16600	25000	e51000	21700	29700	e8500	e9000	48700	12200	10000	15200
14	2390	15800	26500	52400	23700	e25000	e8200	11500	54700	12000	9210	13300
15	1170	12900	21900	51500	24500	e23700	e8400	11700	55200	11400	8850	10200
16	1260	11500	19500	46100	22800	e21200	e8500	9960	50800	11900	9090	7920
17	3380	16300	18000	39400	20200	20300	e8300	e9600	48400	28400	8970	7310
18	4020	20400	16400	33300	19200	23600	9730	e9400	48400	40500	8580	7020
19	4040	22300	16700	31500	18300	27200	12900	11800	48000	37400	8430	6820
20	4050	25800	33800	35200	15100	24400	15900	22000	46300	30000	7940	6440
21	2330	26900	56200	32800	13800	19800	20800	23900	43300	26200	7800	6550
22	2820	26100	51200	35000	13500	18000	19300	18200	43500	24400	7840	9120
23	3030	23400	49500	34800	15100	16800	17400	16300	42200	21300	7960	8670
24	2710	18700	44500	34700	15900	16200	16100	17400	37100	16800	8110	7650
25	13600	15000	41800	30600	16700	15900	15400	19200	33500	13600	7160	7000
26	29800	14200	43000	24100	30400	15200	15100	16000	36400	12800	7020	6170
27	24900	14400	47600	22900	28000	14600	14900	13300	35900	12600	6800	3780
28	28300	14500	e51000	23800	23800	14200	14700	10600	32800	12400	6620	2840
29	49000	12900	e46600	24300	21600	14000	14800	9890	36500	13300	6570	2490
30	43200	12200	51700	22900	---	13900	14200	14200	43700	15700	6390	2260
31	36700	---	49700	21700	---	13700	---	21100	---	16200	4580	---
TOTAL	350300	648800	1002500	1237900	548300	665700	374600	393430	1270700	716100	321820	238540
MEAN	11300	21630	32340	39930	18910	21470	12490	12690	42360	23100	10380	7951
MAX	49000	37600	56200	52400	30400	32100	20800	23900	62800	42100	17900	15500
MIN	1170	11500	13400	21700	13500	13700	8200	8200	22300	11400	4580	2260
AC-FT	694800	1287000	1988000	2455000	1088000	1320000	743000	780400	2520000	1420000	638300	473100

e Estimated

RED RIVER BASIN
07335500 RED RIVER AT ARTHUR CITY, TX--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	7223	7130	6513	6339	7944	9662	11130	16370	18350	7795	4571	4680
MAX	40240	37170	32340	39930	24200	38610	55500	103900	83820	27700	34840	19010
(WY)	1982	1975	1992	1992	1946	1987	1990	1990	1957	1989	1950	1950
MIN	263	242	894	1126	1138	1118	1343	2837	2074	1586	1108	859
(WY)	1957	1957	1957	1964	1959	1967	1956	1980	1956	1956	1972	1988

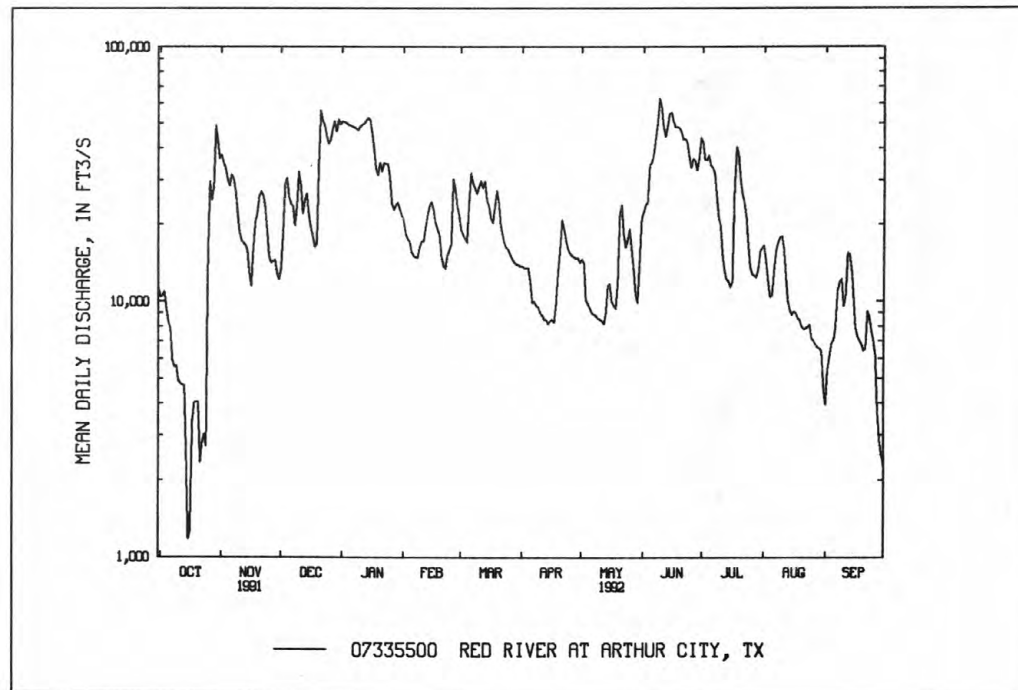
SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1945-92
ANNUAL TOTAL	5394180	7768690	
ANNUAL MEAN	14780	21230	^a 8968
HIGHEST ANNUAL MEAN			23290 1990
LOWEST ANNUAL MEAN			2754 1964
HIGHEST DAILY MEAN	56200	Dec 21 62800	Jun 9 269000 May 4 1990
LOWEST DAILY MEAN	1170	Mar 13 1170	Oct 15 134 ^b Dec 11 1956
ANNUAL SEVEN-DAY MINIMUM	1990	Mar 8 2890	Oct 15 134 Dec 11 1956
INSTANTANEOUS PEAK FLOW		64900	Jun 9 ^c 275000 May 4 1990
INSTANTANEOUS PEAK STAGE		18.38	Jun 9 ^d 34.21 May 4 1990
ANNUAL RUNOFF (AC-FT)	10700000	15410000	6497000
10 PERCENT EXCEEDS	34100	46200	23000
50 PERCENT EXCEEDS	11000	16800	4060
90 PERCENT EXCEEDS	3290	7010	1300

^aPrior to regulation, water years 1906-11, 1937-43, 9,266 ft³/s.

^bAlso occurred Dec. 12, 1956.

^cMaximum discharge for period of record, 400,000 ft³/s, May 28, 1908.

^dMaximum gage-height for period of record, 43.2 ft, May 28, 1908.



RED RIVER BASIN
07335700 KIAMICHI RIVER NEAR BIG CEDAR, OK
(Hydrologic benchmark station)

LOCATION.--Lat 34°38'18", long 94°36'45", in SW 1/4 SE 1/4 sec.18, T.2 N., R.26 E., Le Flore County, Hydrologic Unit 11140105, in Ouachita National Forest, on downstream side of right bank pier of bridge on State Highway 63, 0.2 mi upstream from Rattlesnake Creek, 1.1 mi upstream from Big Branch, 2.1 mi east of Big Cedar, and at mile 157.6.

DRAINAGE AREA.--40.1 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Datum of gage is 886.97 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. U.S. Army Corps of Engineers' satellite telemeter at station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
Oct. 29	0315	6,550	12.81	Sept. 19	1830	9,540	14.27
Nov. 17	1200	2,300	9.25	Sept. 21	2230	4,460	11.54

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DAY	DAILY MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	587	650	86	63	76	45	137	69	34	113	4.4
2	4.2	261	985	77	57	68	40	100	130	28	67	227
3	4.5	173	483	69	52	63	36	77	210	25	45	401
4	5.2	132	273	64	48	105	34	57	137	20	31	123
5	7.6	107	198	61	43	177	31	44	97	15	117	75
6	6.1	88	154	58	40	168	37	35	204	11	148	65
7	5.8	73	128	55	36	136	36	28	147	8.6	102	48
8	5.8	60	126	68	34	115	30	23	112	6.7	70	34
9	5.8	51	925	60	30	136	28	19	233	5.6	48	25
10	5.6	44	378	56	28	119	26	16	183	4.7	35	122
11	5.5	38	252	53	41	106	24	16	129	4.0	27	152
12	5.3	34	619	54	106	97	22	18	93	3.4	20	98
13	5.0	30	419	134	92	85	23	14	72	3.3	14	70
14	4.9	28	255	207	115	75	21	11	261	2.8	10	51
15	4.6	30	189	163	120	66	20	14	413	2.7	7.9	38
16	4.5	142	152	134	106	57	19	11	195	4.0	6.2	28
17	4.4	1250	125	118	100	56	19	9.8	126	17	5.2	22
18	4.4	535	103	112	86	444	21	12	90	8.8	4.3	18
19	4.2	550	94	97	72	231	43	20	66	5.8	4.0	2300
20	4.1	496	142	86	62	166	267	18	165	4.5	3.6	870
21	4.1	283	293	80	56	132	173	14	100	3.8	3.1	1620
22	4.0	199	397	109	53	123	122	12	75	3.6	2.7	1120
23	3.9	147	452	118	163	107	93	108	58	3.7	2.5	328
24	4.0	117	262	111	133	96	81	142	45	3.2	2.3	191
25	125	98	192	103	129	92	67	80	35	2.6	2.1	134
26	336	83	152	91	121	80	52	62	28	2.1	2.3	103
27	132	71	127	104	108	71	43	51	34	5.1	2.2	79
28	226	64	111	89	98	64	40	57	36	6.3	1.8	59
29	1640	64	95	81	86	61	393	89	49	5.5	1.7	45
30	349	91	82	75	---	54	220	78	44	91	1.5	35
31	495	---	71	70	---	49	---	61	---	501	1.4	---
TOTAL	3420.9	5926	8884	2843	2278	3475	2106	1433.8	3636	842.8	901.8	8485.4
MEAN	110	198	287	91.7	78.6	112	70.2	46.3	121	27.2	29.1	283
MAX	1640	1250	985	207	163	444	393	142	413	501	148	2300
MIN	3.9	28	71	53	28	49	19	9.8	28	2.1	1.4	4.4
AC-FT	6790	11750	17620	5640	4520	6890	4180	2840	7210	1670	1790	16830
CFSM	2.75	4.93	7.15	2.29	1.96	2.80	1.75	1.15	3.02	.68	.73	7.05
IN.	3.17	5.50	8.24	2.64	2.11	3.22	1.95	1.33	3.37	.78	.84	7.87

RED RIVER BASIN
07335700 KIAMICHI RIVER NEAR BIG CEDAR, OK--Continued

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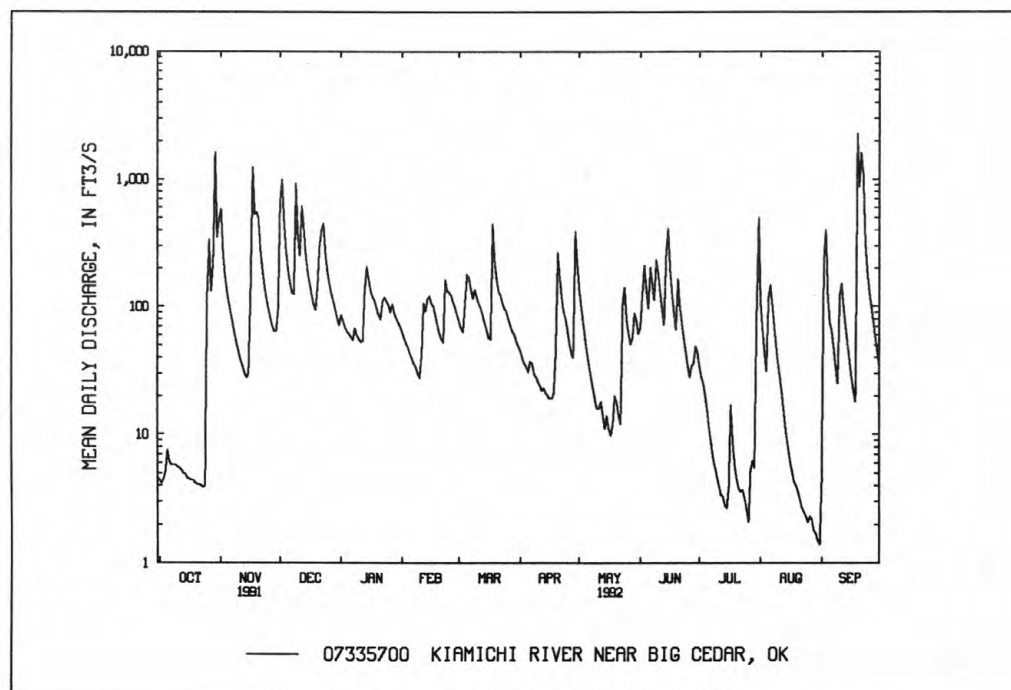
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	59.7	83.4	124	84.0	116	154	132	140	61.5	23.3	8.55	23.5
MAX	514	361	445	209	340	362	362	614	178	128	51.0	283
(WY)	1985	1986	1972	1982	1989	1973	1991	1990	1973	1991	1988	1992
MIN	.000	.000	.92	2.50	6.12	28.8	34.5	6.97	.078	.000	.000	.000
(WY)	1984	1967	1967	1967	1967	1967	1972	1977	1988	1988	1972	1983

SUMMARY STATISTICS	1991 CALENDAR YEAR	1992 WATER YEAR	WATER YEARS 1966-92
ANNUAL TOTAL	49638.53	44232.7	
ANNUAL MEAN	136	121	84.1
HIGHEST ANNUAL MEAN			152 1985
LOWEST ANNUAL MEAN			33.9 1978
HIGHEST DAILY MEAN	3240 Apr 13	2300 Sep 19	5960 May 13 1982
LOWEST DAILY MEAN	.68 Jul 23	1.4 Aug 31	.00 Jul 15 1966
ANNUAL SEVEN-DAY MINIMUM	.89 Jul 17	1.9 Aug 25	^a .00 Oct 16 1966
INSTANTANEOUS PEAK FLOW		9540 Sep 19	^b 27400 May 19 1990
INSTANTANEOUS PEAK STAGE		14.27 Sep 19	19.60 May 19 1990
ANNUAL RUNOFF (AC-FT)	98460	87740	60910
ANNUAL RUNOFF (CFSM)	3.39	3.01	2.10
ANNUAL RUNOFF (INCHES)	46.05	41.03	28.49
10 PERCENT EXCEEDS	295	253	173
50 PERCENT EXCEEDS	42	65	25
90 PERCENT EXCEEDS	3.8	4.4	.15

^aNo flow at times in most years.

^bFrom rating curve extended above 9,000 ft³/s.



RED RIVER BASIN

07335700 KIAMICHI RIVER NEAR BIG CEDAR, OK--Continued
(Hydrologic benchmark station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966 to current year.

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

MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)
AUG											
19...	0905	14.0	19.5	743	1028	1028	4.1	3.17	27	7.8	6.6
19...	0910	24.0	19.5	743	1028	1028	4.1	3.17	26	8.1	6.7
19...	0915	34.0	19.5	743	1028	1028	4.1	3.17	26	8.1	6.7
19...	0920	44.0	19.5	743	1028	1028	4.1	3.17	26	8.0	6.8
19...	0925	54.0	19.5	743	1028	1028	4.1	3.17	26	7.8	6.8

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	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)
NOV												
12...	1430	1028	80020	34	23	7.0	15.5	11.0	8.5	746	11.0	102
MAR												
03...	0945	1028	80020	62	23	6.8	17.0	13.0	6.7	741	9.9	97
MAY												
27...	1500	1028	80020	50	23	6.9	16.5	15.5	8.7	740	9.7	100
AUG												
19...	0830	1028	80020	4.1	27	6.7	17.0	19.5	7.1	743	8.0	90

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	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 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 PERCENT (00932)	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)
NOV												
12...	K12	54	5	0	0.87	0.68	1.7	39	0.3	0.60	7	0
MAR												
03...	30	39	5	0	1.0	0.69	2.1	43	0.4	0.60	7	0
MAY												
27...	24	32	6	0	1.0	0.74	2.4	45	0.4	0.60	10	0
AUG												
19...	35	97	8	0	1.4	0.98	2.4	38	0.4	0.90	11	0

RED RIVER BASIN

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07335700 KIAMICHI RIVER NEAR BIG CEDAR, OK--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	ALKA- LINTY WAT DISSULFATE TOT IT DIS- FIELD SOLVED MG/L AS (MG/L (39086) (00945)		CHLO- RIDE, DIS- SOLVED (MG/L (00940)	FLUO- RIDE, DIS- SOLVED (MG/L (00950)	SILICA, DIS- SOLVED (MG/L AS (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 (70303)	SOLIDS, DIS- SOLVED (TONS PER (70302)	NITRO- GEN, NITRITE TOTAL (MG/L (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L (00613)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
	AS SO4)	AS CL)	AS F)	SIO2)	(MG/L)	(MG/L)	AC-FT)	DAY)	AS N)	AS N)	AS N)	
NOV												
12...	7	2.6	1.5	<0.10	7.6	22	19	0.03	2.02	0.020	<0.010	<0.050
MAR												
03...	6	1.9	1.5	<0.10	8.3	29	20	0.04	4.93	<0.010	<0.010	<0.050
MAY												
27...	8	2.5	1.5	<0.10	10	28	24	0.04	3.86	<0.010	<0.010	<0.050
AUG												
19...	9	1.7	1.4	<0.10	8.8	32	23	0.04	0.35	<0.010	<0.010	<0.050

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED MG/L AS N (00631)	NITRO- GEN, AMMONIA DIS- SOLVED MG/L AS N (00610)	NITRO- GEN, AMMONIA DIS- SOLVED MG/L AS N (00608)	NITRO- GEN, AMMONIA DIS- SOLVED MG/L AS NH4 (71845)	NITRO- GEN, AMMONIA DIS- SOLVED MG/L AS NH4 (71846)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL MG/L AS N (00625)	PHOS- PHORUS TOTAL MG/L AS P (00665)	PHOS- PHATE, TOTAL MG/L AS PO4 (00650)	PHOS- PHORUS DIS- SOLVED MG/L AS P (00666)	PHOS- PHORUS ORTH- TOTAL MG/L AS P (70507)	PHOS- PHORUS ORTH- DIS- SOLVED MG/L AS P (00671)
NOV											
12...	<0.050	--	0.020	--	0.03	<0.20	--	--	0.080	<0.010	<0.010
MAR											
03...	<0.050	0.020	<0.010	0.03	--	<0.20	<0.010	--	<0.010	<0.010	<0.010
MAY											
27...	<0.050	0.020	<0.010	0.03	--	<0.20	0.020	0.06	0.030	0.020	<0.010
AUG											
19...	<0.050	0.060	0.040	0.08	0.05	<0.20	--	0.06	0.020	0.020	0.010

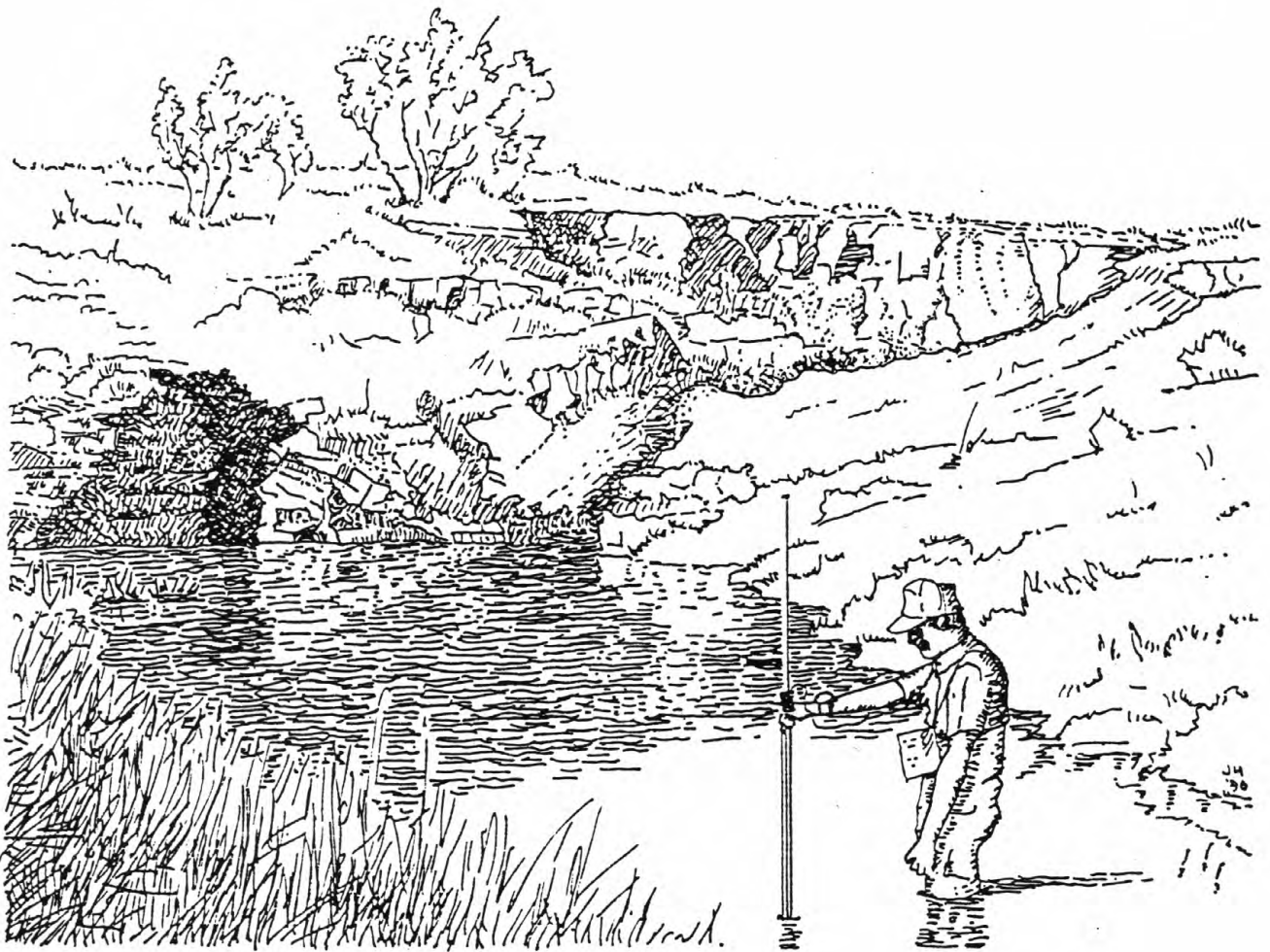
DATE	PHOS- PHATE, ORTH- DIS- SOLVED MG/L AS PO4 (00660)	ALUM- INUM, DIS- SOLVED UG/L AS AL (01106)	BARIUM, DIS- SOLVED UG/L AS BA (01005)	COBALT, DIS- SOLVED UG/L AS CO (01035)	IRON, DIS- SOLVED UG/L AS FE (01046)	LITHIUM DIS- SOLVED UG/L AS LI (01130)	MANGA- NESE, DIS- SOLVED UG/L AS MN (01056)	MERCURY DIS- SOLVED UG/L AS HG (71890)	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)
NOV											
12...	--	30	8	<3	49	<4	4	--	<10	<1	<1
MAR											
03...	--	30	6	<3	56	<4	2	--	<10	<1	<1
MAY											
27...	--	<10	11	<3	26	<4	5	<0.1	<10	<1	<1
AUG											
19...	0.03	20	9	<3	140	<4	9	--	<10	<1	<1

RED RIVER BASIN

07335700 KIAMICHI RIVER NEAR BIG CEDAR, OK--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	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)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	ALPHA, COUNT, 2 SIGMA WAT DIS AS NAT U (UG/L) (75986)	ALPHA COUNT, 2 SIGMA WAT DIS AS TH-230 (PCI/L) (75987)	ALPHA, 2 SIGMA SED SUS AS TH-230 (PCI/L) (76004)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	BETA, 2 SIGMA WATER, DISS, AS CS-137 (PCI/L) (75989)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)
NOV 12...	<1.0	8	<6	<0.6	<0.6	0.30	<0.60	0.20	0.7	0.40	<0.6
MAR 03...	<1.0	10	<6	--	--	--	--	--	--	--	--
MAY 27...	<1.0	11	<6	<0.6	<0.6	0.30	0.20	0.31	<0.6	0.42	0.7
DATE	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	BETA, 2 SIGMA WATER, DISS, AS SR90 /Y90 (PCI/L (75988)	GROSS BETA, SUSP. TOTAL AS SR/ YT-90) (80060)	BETA, 2 SIGMA SED, SUSP, TOT DRY SR90Y90 (PCI/L) (76005)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L) (09511)	URANIUM RA-226 WATER, DISS, (PCI/L) (76001)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	URANIUM NATURAL 2 SIGMA WATER, DISS, (UG/L) (75990)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 12...	0.7	0.40	<0.6	0.50	0.03	<0.00	0.01	<1.0	1	0.09	51
MAR 03...	--	--	--	--	--	--	--	--	4	0.68	83
MAY 27...	<0.6	0.39	0.6	0.56	0.02	<0.00	<0.01	<1.0	--	--	--
AUG 19...	--	--	--	--	--	--	--	--	77	0.83	53



Measuring runoff into a sinkhole in the Blaine aquifer

RED RIVER BASIN
07335775 SARDIS LAKE NEAR CLAYTON, OK

LOCATION.--Lat 34°37'45", long 95°21'03", in NE 1/4 SW 1/4 sec.19. T.2 N, R.19 E., Pushmataha County, Hydrologic Unit 11140105, on the northeast end of parking area on top of dam, 2.5 mi north of Clayton, and at mile 2.8.

DRAINAGE AREA.--275 mi².

PERIOD OF RECORD.--December 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by earth dam. The controlled outlet consists of two sluice gates and the uncontrolled outlet is a concrete spillway. Flow was diverted through control structure May 4, 1981; regulated storage began Dec. 27, 1982; conservation pool first filled Oct. 20, 1984. Capacity, 735,800 acre-ft at elevation 624.0 ft, maximum pool; 468,100 acre-ft, at elevation 611.0 ft, spillway crest; 396,900 acre-ft at elevation 607.0 ft, top of flood pool; 274,300 acre-ft, at elevation 599.0 ft, top of conservation pool. Figures given herein represent total contents. Reservoir is designed for flood control, water supply, water-quality control and conservation. Capacity table used since Oct. 1, 1984. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 489,300 acre-ft, May 3, 4, 1990, elevation, 612.14 ft; minimum since conservation pool was first filled, 219,200 acre-ft, Oct. 9-12, 1985, elevation, 594.65 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 339,400 acre-ft, Nov. 1, elevation, 603.46 ft; minimum contents, 260,600 acre-ft, Oct. 24, elevation, 597.97 ft.

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

595	223,400	601	302,500
597	248,000	603	332,300
599	274,300	605	363,800

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY OBSERVATION AT 24:00 VALUES

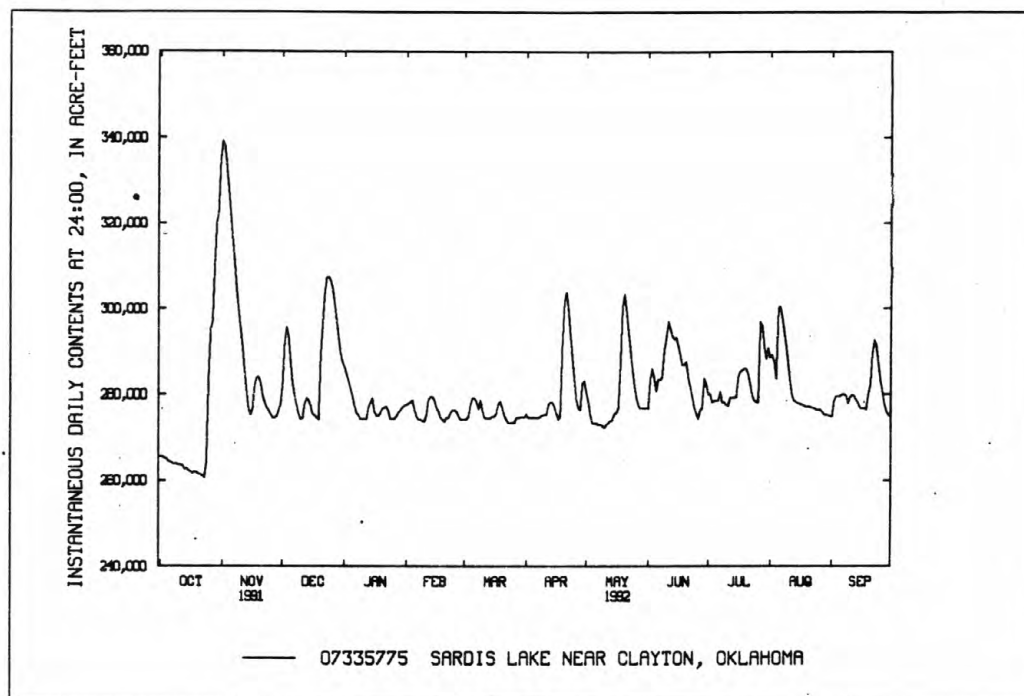
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	265600	339300	282500	286400	277500	274100	275400	280500	276700	280000	288600	274900
2	265600	338000	292300	284700	277800	274300	274600	278200	283600	280100	289100	278500
3	265200	333000	295700	283200	278200	275000	274600	275400	286000	278200	287500	279600
4	265100	328100	293300	281300	278500	277600	274600	273300	283900	278500	283700	279600
5	264500	322300	287600	279600	276500	279100	274600	273300	280700	278600	300200	279600
6	264400	316300	282500	277500	274900	279100	274600	273300	283400	278600	300500	280000
7	264000	310900	279700	275800	274200	278300	274600	273000	283400	280600	297900	280000
8	263900	304400	277500	275200	274200	276500	274900	273000	284000	278200	294500	279700
9	263900	299500	275400	274300	273800	278700	275200	272800	290200	278200	290900	278000
10	263600	295300	274300	274300	273800	276300	275300	272300	293200	277600	287100	279400
11	263600	291000	274500	274300	275300	274600	275300	273000	297000	277400	283100	279800
12	263500	285400	277800	274300	278700	274500	277600	273500	295300	279300	279800	279700
13	262700	280700	279100	276800	279400	274500	278200	273900	293600	279300	278600	278700
14	262800	276400	278600	278200	279400	274500	278200	274100	292800	279300	278300	277900
15	262300	275400	277400	279000	278600	274900	277200	275600	293200	279400	278000	276800
16	262100	276500	275400	276000	276900	274900	275600	275800	291200	283900	277800	276700
17	261700	282000	275200	275000	276100	275700	274300	276800	289200	285300	277600	276700
18	262000	283900	274600	275000	274700	277800	275000	287100	286800	285600	277400	276500
19	261900	284000	274300	275700	274100	278300	292000	300600	286800	286000	277200	280100
20	261600	282700	288800	276700	273700	276900	301800	303400	287400	286000	277200	282100
21	261300	279800	296600	276900	274600	275200	304000	299400	284000	284700	277100	289300
22	261100	278200	303500	277100	274600	274200	299600	294500	281800	282500	276900	292600
23	260700	276900	307500	276100	275700	273400	294000	290300	279700	279800	276800	291200
24	264500	276300	307500	274300	276300	273400	288500	286200	277100	278600	276500	287200
25	283300	275400	306600	274300	276300	273400	283400	282200	275700	278300	276400	283200
26	295200	274600	304700	274300	276100	273400	278700	279400	274500	278200	276500	280700
27	297000	274600	300800	275000	275000	274600	276700	277400	276400	297000	276000	277900
28	309800	274900	297000	275800	274100	274600	276500	276700	276800	296000	275400	276000
29	320100	276400	292800	276300	274100	274700	282700	276800	283700	291200	275300	275300
30	322800	277600	289600	277000	---	274700	282900	276800	282500	288200	275200	275000
31	3 4800	---	287500	277400	---	274700	---	276700	---	290800	275000	---

RED RIVER BASIN
07335775 SARDIS LAKE NEAR CLAYTON, OK--Continued

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	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MAX	334800	339300	307500	286400	279400	279100	304000	303400	297000	297000	300500	292600
MIN	260700	274600	274300	274300	273700	273400	274300	272300	274500	277400	275000	274900
(+)	603.16	599.24	599.95	599.22	598.98	599.03	599.67	599.27	599.75	600.18	599.05	599.05
(++)	+69,200	-57,200	+9,900	-10,100	-3,300	+600	+8,200	-6,200	+5,800	+8,300	-15,800	0
CAL YR 1991	MAX 339300		MIN 260700		(++) +5,300							
WTR YR 1992	MAX 339300		MIN 260700		(++) +9,400							

(+) ELEVATION, IN FEET, AT END OF MONTH
(++) CHANGE IN CONTENTS, IN ACRE-FEET



RED RIVER BASIN
07335790 KIAMICHI RIVER NEAR CLAYTON, OK

LOCATION.--Lat 34°34'32", long 95°20'26", in NE 1/4 SE 1/4 sec.7, T.1 N., R.19 E., Pushmataha County, Hydrologic Unit 11140105, on right bank near downstream bridge abutment on U.S. Highway 271, approximately 1 mi southeast of Clayton, and at mile 101.6.

DRAINAGE AREA.--708 mi².

PERIOD OF RECORD.--November 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is 520.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Some regulation since December 1982 by Sardis Lake (station 07335775), on Jackfork Creek 4.5 mi upstream. U.S. Army Corps of Engineers' satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	7620	3350	1490	385	396	188	2730	1210	2020	3380	39
2	36	4210	7270	1650	345	345	176	2190	2590	1530	2190	1080
3	30	3930	7130	1540	313	310	165	1990	5010	416	2240	4290
4	25	4010	4300	1450	681	948	155	1290	3450	328	2370	1950
5	21	3780	4450	1420	1290	1570	144	417	2580	265	4460	865
6	18	3630	3500	1390	1150	1950	141	331	2910	213	6630	677
7	16	3310	2400	1270	560	1530	143	261	2970	172	3290	692
8	14	2800	2300	985	192	1410	148	217	2220	147	2710	845
9	13	2570	2510	693	177	1550	145	181	2560	110	2470	1300
10	13	2520	2900	290	165	1740	127	156	3360	86	2350	1760
11	13	2470	1320	254	264	1500	115	162	2680	69	2300	3630
12	13	2410	1580	244	1120	699	212	238	2500	57	2070	1720
13	13	2380	2330	810	1140	451	521	198	2050	47	1090	1340
14	12	2220	2120	2630	1530	394	686	171	1890	41	272	1170
15	11	1160	1700	2340	1380	344	927	135	4730	38	210	795
16	10	386	1540	2320	1320	302	1220	129	3000	83	167	413
17	9.7	3430	1290	1630	1270	264	764	172	2210	942	134	325
18	8.8	4860	870	750	1160	678	222	1160	1930	631	109	260
19	7.9	3500	500	931	694	1400	257	5040	1790	335	204	2850
20	6.9	5230	1580	770	305	1470	2430	3530	2430	205	88	10500
21	6.5	3360	4650	828	268	1350	2610	4400	2280	709	82	11500
22	5.8	2340	3040	1540	251	1300	2910	3360	1870	1670	64	11900
23	5.2	1450	4600	2020	616	888	3110	2640	1720	1660	53	8770
24	5.8	1270	2970	1530	984	444	2820	2880	1660	1020	50	3570
25	8680	1140	2220	593	1040	380	2370	2760	1580	97	45	2940
26	7710	842	2090	522	1210	353	2320	2100	940	68	61	2150
27	4350	465	2460	539	1390	313	1950	1470	396	3220	36	1990
28	3340	416	2650	666	927	275	1370	1460	790	2510	49	1640
29	16300	401	2580	560	453	245	5030	1510	1190	2960	60	694
30	17600	793	2180	484	---	224	4650	1340	1560	3170	38	408
31	5580	---	1480	432	---	203	---	1250	---	5670	32	---
TOTAL	63917.6	78903	85860	34571	22580	25226	38026	45868	68056	30489	39304	82063
MEAN	2062	2630	2770	1115	779	814	1268	1480	2269	984	1268	2735
MAX	17600	7620	7270	2630	1530	1950	5030	5040	5010	5670	6630	11900
MIN	5.2	386	500	244	165	203	115	129	396	38	32	39
AC-FT	126800	156500	170300	68570	44790	50040	75420	90980	135000	60470	77960	162800

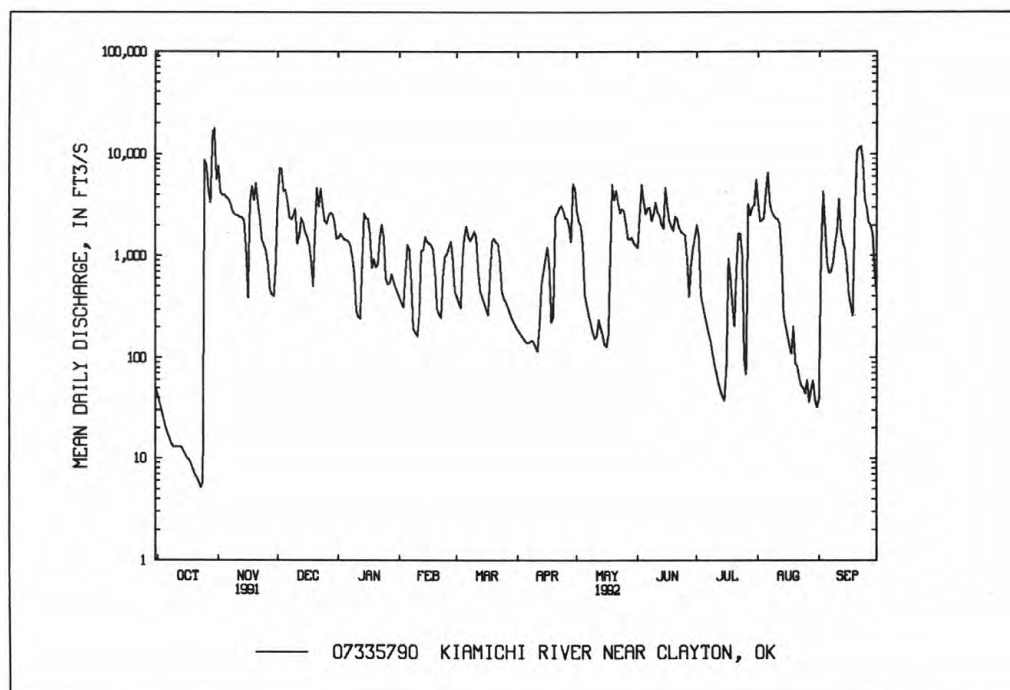
RED RIVER BASIN
07335790 KIAMICHI RIVER NEAR CLAYTON, OK--Continued

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1992, BY WATER YEAR (WY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	896	1374	1416	1059	1679	1610	1544	2209	1075	265	288	379
MAX	4628	4837	3376	1976	4196	3184	2935	7658	2288	984	1268	2735
(WY)	1985	1985	1988	1991	1990	1990	1991	1990	1986	1992	1992	1992
MIN	3.12	6.17	24.5	88.3	231	595	226	53.7	7.33	11.3	5.42	2.35
(WY)	1984	1990	1990	1986	1991	1986	1982	1988	1988	1984	1984	1983

SUMMARY STATISTICS	1991 CALENDAR YEAR		1992 WATER YEAR		WATER YEARS 1982-1992	
ANNUAL TOTAL	482866.2		614863.6			
ANNUAL MEAN	1323		1680		1146	
HIGHEST ANNUAL MEAN					1967	
LOWEST ANNUAL MEAN					547	
HIGHEST DAILY MEAN	17600	Oct 30	17600	Oct 30	36800	May 4 1990
LOWEST DAILY MEAN	1.1	Jul 24	5.2	Oct 23	.00	Oct 3-18 1983
ANNUAL SEVEN-DAY MINIMUM	1.5	Jul 19	6.7	Oct 18	.00	Oct 3 1983
INSTANTANEOUS PEAK FLOW			18700	Oct 30	40200	May 4 1990
INSTANTANEOUS PEAK STAGE			17.32	Oct 30	22.23	May 4 1990
ANNUAL RUNOFF (AC-FT)	957800		1220000		830300	
10 PERCENT EXCEEDS	3340		3540		3260	
50 PERCENT EXCEEDS	375		1200		264	
90 PERCENT EXCEEDS	13		59		5.1	



RED RIVER BASIN
07336200 KIAMICHI RIVER NEAR ANTLERS, OK

LOCATION.--Lat 34°14'55", long 95°36'18", in SW 1/4 sec.35, T.3 S., R.16 E., Pushmataha County, Hydrologic Unit 11140105, on right bank, 50 ft downstream from bridge on U.S. Highway 271 and State Highway 2, 2.0 mi northeast of Antlers, 7.7 mi downstream from Tenmile Creek, 5.4 mi upstream from Cedar Creek and at mile 59.6.

DRAINAGE AREA.--1,138 mi².

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 419.82 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Some regulation since December 1982 by Sardis Lake (station 07335775), located on Jackfork Creek, 42.0 miles upstream from station. Small diversion for municipal water supply for city of Antlers upstream from station. U.S. Army Corps of Engineers' satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	14500	2770	2050	745	788	350	4910	1580	3050	6600	49
2	49	7830	10800	e2100	657	672	330	3460	2090	2830	3150	64
3	42	5210	11200	2100	588	598	303	2830	6330	5020	3490	2490
4	38	5130	7170	1970	533	1310	282	2510	5380	2910	3250	4570
5	34	4820	5740	1850	1040	3190	262	1200	3880	1040	6690	1340
6	28	4570	5270	1710	1490	3460	250	594	4420	635	13100	718
7	25	4360	3720	1700	1230	2670	245	468	5090	440	6550	595
8	21	3740	3140	1430	684	2110	246	384	3920	328	3860	537
9	17	3250	3360	1230	349	3480	248	327	8290	256	3110	819
10	16	3100	4290	804	310	3590	246	287	10000	216	2660	1770
11	15	3030	e3600	482	850	2840	229	271	5170	176	2600	5650
12	15	2940	e3700	441	6290	1850	215	2810	4060	144	2490	3210
13	13	2860	3860	935	3800	1100	549	1520	3150	121	1980	1710
14	12	2810	3580	4210	2650	818	820	728	2510	110	892	1240
15	11	2320	2670	3820	2410	703	882	509	3640	118	326	1030
16	12	1170	2180	3490	2010	605	1230	415	5090	699	246	659
17	12	4500	1950	3110	1800	537	1370	495	3090	3610	205	335
18	12	7460	1500	1850	1660	1410	1600	2680	2430	2060	175	265
19	11	5190	1080	1750	1390	2070	2940	10100	2120	892	154	218
20	10	5780	6500	1850	886	2100	9850	7650	2240	528	138	6180
21	10	e5170	e6000	1600	534	1900	6170	6260	3150	352	163	10600
22	9.2	e3330	e6200	2730	503	1720	4070	5190	2400	837	124	13500
23	9.2	e2170	e4820	3580	1190	1610	4270	3860	2000	1700	105	11700
24	8.9	e1640	e3980	3250	1590	1010	3960	4100	1840	1650	98	6100
25	7310	1450	e3140	1780	2140	683	3280	4050	2080	866	83	4100
26	15700	1320	e2820	1090	2510	590	2970	3470	2390	253	59	2860
27	11200	911	3300	1060	2220	545	2820	2120	1050	2480	53	2340
28	6990	605	3930	1240	1970	485	1960	1770	1650	4640	45	2170
29	19400	554	3800	1220	1190	438	7080	2550	6880	3610	44	1380
30	19600	786	3390	995	---	399	8600	2260	5590	4320	41	616
31	e16900	---	2430	852	---	367	---	1710	---	6930	44	---
TOTAL	97586.3	112506	131890	58279	45219	45648	67627	81488	113510	52821	62525	88815
MEAN	3148	3750	4255	1880	1559	1473	2254	2629	3784	1704	2017	2960
MAX	19600	14500	11200	4210	6290	3590	9850	10100	10000	6930	13100	13500
MIN	8.9	554	1080	441	310	367	215	271	1050	110	41	49
AC-FT	193600	223200	261600	115600	89690	90540	134100	161600	225100	104800	124000	176200
CFSM	2.77	3.30	3.74	1.65	1.37	1.29	1.98	2.31	3.32	1.50	1.77	2.60
IN.	3.19	3.68	4.31	1.91	1.48	1.49	2.21	2.66	3.71	1.73	2.04	2.90

e Estimated

RED RIVER BASIN

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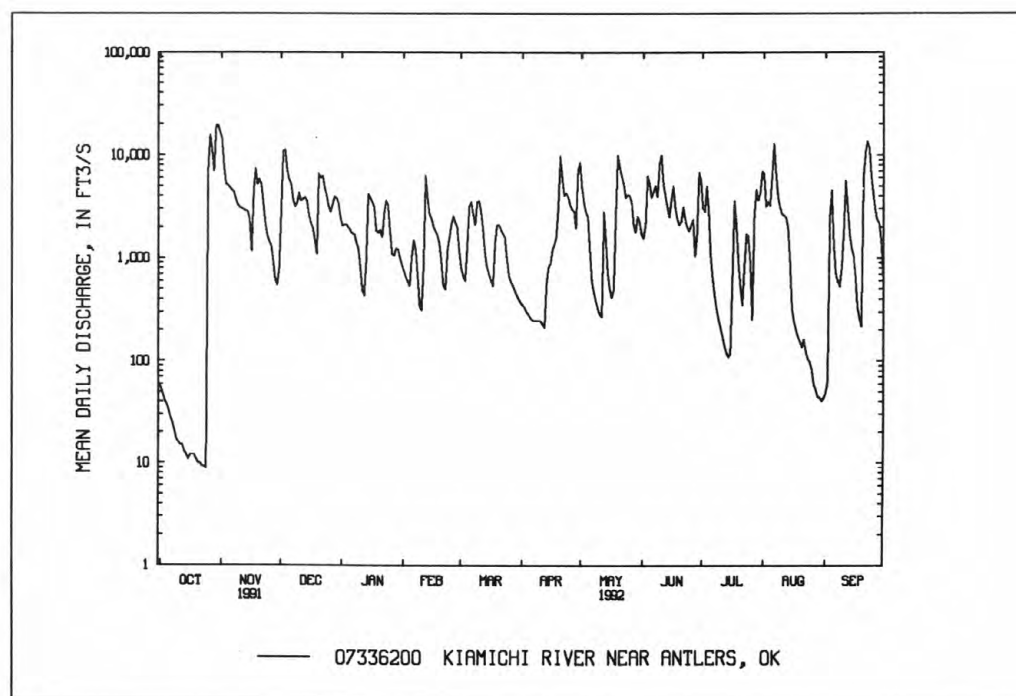
07336200 KIAMICHI RIVER NEAR ANTLERS, OK--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1400	2196	2120	1659	2592	2971	3045	3451	1726	438	441	578
MAX	7763	6872	5252	2891	6316	5601	6400	12700	3784	1704	2017	2960
(WY)	1985	1985	1988	1991	1990	1990	1990	1990	1992	1992	1992	1992
MIN	10.8	5.19	7.84	154	427	1061	456	77.9	21.5	36.0	9.26	11.0
(WY)	1990	1990	1990	1986	1991	1986	1987	1988	1988	1984	1984	1985

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1984-92

ANNUAL TOTAL	780658.3	957914.3		
ANNUAL MEAN	2139	2617		^a 1880
HIGHEST ANNUAL MEAN				3184 1990
LOWEST ANNUAL MEAN				786 1984
HIGHEST DAILY MEAN	22700	Apr 13	19600	Oct 30 57000 May 4 1990
LOWEST DAILY MEAN	8.9	Oct 24	8.9	Oct 24 ^b 5.0 Sep 8 1984
ANNUAL SEVEN-DAY MINIMUM	10	Oct 18	10	Oct 18 1.5 Sep 3 1984
INSTANTANEOUS PEAK FLOW			24100	Oct 29 62300 May 3 1990
INSTANTANEOUS PEAK STAGE			25.80	Oct 29 42.65 May 3 1990
ANNUAL RUNOFF (AC-FT)	1548000		1900000	1362000
ANNUAL RUNOFF (CFSM)	1.88		2.30	1.65
ANNUAL RUNOFF (INCHES)	25.52		31.31	22.44
10 PERCENT EXCEEDS	5180		6120	5070
50 PERCENT EXCEEDS	712		1850	450
90 PERCENT EXCEEDS	34		116	11

^aPrior to regulation by Sardis Lake, 1973-82, 1,484 ft³/s.^bPrior to regulation by Sardis Lake, no flow many years.

RED RIVER BASIN

07336600 HUGO LAKE NEAR HUGO, OK

LOCATION (REVISED).--Lat 34°00'42", long 95°22'49", in NE 1/4 NE 1/4 sec.25, T.6 S., R.18 E., Choctaw County, Hydrologic Unit 11140105, on upstream face of Hugo Dam on Kiamichi River, 700 ft to left of spillway, 7.0 mi east of Hugo, and at mile 17.6.

DRAINAGE AREA.--1,709 mi².

PERIOD OF RECORD.--January 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by rolled earth dam. The outlet works consists of a gate-controlled concrete gravity ogee-type weir with six 40- by 50-foot gates. Regulated storage began Jan. 18, 1974; conservation pool was first filled Mar. 12, 1974. Total capacity, 1,561,500 acre-ft, at elevation 452.5 ft, top of dam, 966,700 acre-ft, at elevation 437.5 ft, top of flood control pool. Dead storage 21,080 acre-ft, at elevation 387.5 ft, crest of gated spillway. Figures given herein represent total contents. Reservoir is used for flood control, water supply, recreation and conservation. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,056,000 acre-ft, May 6, 1990, elevation, 440.05 ft; minimum since conservation pool was first filled, 88,860 acre-ft, Nov. 15, 1978, elevation, 398.47 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 530,800 acre-ft, Nov. 2, elevation, 423.26 ft; minimum, 140,100 acre-ft, Oct. 24-25, elevation, 403.14 ft.

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

401	115,000	415	334,000
407	192,700	420	447,100
410	239,900	425	577,800

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY OBSERVATION AT 24:00 VALUES

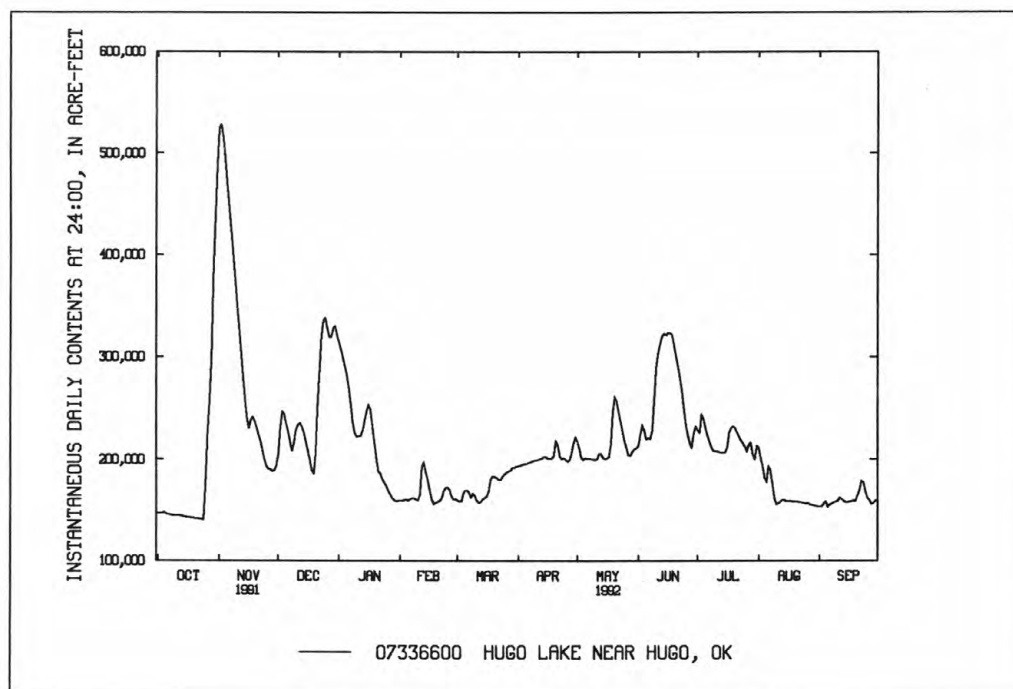
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	146800	525500	204500	314100	159200	159300	193300	217600	213300	228700	211500	153200
2	146700	528100	231300	306800	159300	158300	193900	210700	224000	226000	201700	153100
3	146500	516000	246600	298900	159500	158700	194500	202100	233100	243900	193100	156600
4	147600	495500	244300	290700	160400	165700	195400	199600	228600	240600	181900	158300
5	146000	470000	235200	281700	159300	169500	195500	201200	219700	231200	177900	152800
6	145600	448400	227100	269400	160600	169500	196400	200800	221000	223400	193100	155200
7	145100	426100	217100	253400	161600	167300	197300	200800	220500	217800	189700	156200
8	144700	402300	208100	236200	161600	162400	197900	200300	227300	212000	176500	157200
9	144700	377800	217100	225500	160300	166100	198800	200200	255700	208600	162000	158100
10	144700	353800	228900	222300	159600	163800	199100	199600	289500	207800	155700	158900
11	144600	330900	233900	222400	164800	159200	199700	200000	303500	207500	156600	162000
12	144400	307000	235500	223100	192300	157100	200200	205500	313100	207000	157700	160800
13	143900	282900	232100	227700	196900	158000	200900	205500	320000	206700	159900	158800
14	143500	260000	225800	237300	187700	160400	202700	201800	322900	206700	159700	157600
15	143100	242000	218100	246800	179400	162000	202300	200300	321200	206700	158700	157600
16	142600	229900	208900	253200	169300	163500	200900	200900	323700	212000	158500	158100
17	142400	238300	200200	248500	160300	168500	200600	202600	323300	225800	158400	158500
18	142200	241500	189300	232800	156000	180600	200900	215100	322200	230700	158300	159200
19	141900	237200	186300	216700	156900	183500	203600	246300	312300	232600	158100	158700
20	141500	231500	204300	201200	158000	183100	218400	261300	301800	230700	158100	164700
21	141300	223500	249400	188000	159100	181900	214600	257100	291600	226300	157700	168800
22	141000	217600	284600	186300	161500	180300	203200	247100	280200	222300	157300	178500
23	140800	208200	320200	181000	168200	180100	200300	237300	268700	218900	157100	177600
24	140100	199600	336500	176900	171800	183100	201400	227900	251800	215900	156600	168500
25	173400	193000	338200	174000	172300	185300	199900	218100	235000	212500	156500	161800
26	223200	190600	328800	168800	170000	187100	197900	211200	224200	207800	156800	159900
27	254800	189900	319500	165500	163500	188100	199600	204200	216000	214700	155300	156000
28	295100	188400	319500	161800	160300	189100	205400	203600	211500	216700	154600	156600
29	380400	189400	328400	159500	160800	191500	215900	207200	224800	204600	154100	159100
30	432100	193600	330100	158700	---	191500	221800	209900	232400	200300	153800	159200
31	485800	---	321800	159100	---	193000	---	211000	---	213300	153200	---

RED RIVER BASIN
07336600 HUGO LAKE NEAR HUGO, OK--Continued

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	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MAX	485800	528100	338200	314100	196900	193000	221800	261300	323700	243900	211500	178500
MIN	140100	188400	186300	158700	156000	157100	193300	199600	211500	200300	153200	152800
(+)	421.03	407.06	414.41	404.61	404.74	407.02	408.88	408.21	409.54	408.35	404.18	404.62
(++)	+338,700	-292,200	+128,200	-162,700	+1,700	+32,200	+28,800	-10,800	+21,400	-19,100	-60,100	+6,000
CAL YR 1991		MAX 528100		MIN 140100		(++) +102,100						
WTR YR 1992		MAX 528100		MIN 140100		(++) +12,100						

(+) ELEVATION, IN FEET, AT END OF MONTH
(++) CHANGE IN CONTENTS, IN ACRE-FEET



RED RIVER BASIN
07336820 RED RIVER NEAR DE KALB, TX

LOCATION.--Lat 33°40'59", long 94°41'39", Bowie County, Texas, Hydrologic Unit 11140106, on right bank at downstream side of bridge on U.S. Highway 259, 4.8 mi upstream from North Mill Creek, 13 mi north of De Kalb, and at mile 556.9.

DRAINAGE AREA.--47,348 mi², of which 5,936 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 302.92 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair including those for estimated daily discharges. At times, flood peaks may be affected by Lake Texoma (station 07331500) located approximately 169 mi upstream, and low flows may be affected by releases for the generation of electric power. Storage and/or releases from Lake Hugo on the Kiamichi River, a tributary to the Red River about 45 mi upstream, may also affect flows. Gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since 1957, 205,000 ft³/s June 1957 (gage height, 32.2 ft), from rating curve extended above 186,500 ft³/s. The greatest flood since 1936 occurred in February 1938, stage unknown.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12600	45000	20400	59000	31900	e23900	17300	30300	22500	56400	28100	4980
2	11700	45000	25000	60400	29400	22900	17100	29500	24400	54900	28700	3940
3	11300	44200	35000	59100	23800	21900	17000	27900	24700	46700	25700	4420
4	11700	43100	45200	57800	19500	21900	16800	22400	30900	47100	22300	6830
5	e10600	42600	44800	57200	20300	23600	17000	16700	40700	48800	19700	9970
6	e9880	42700	39600	56900	e19000	31200	14900	12400	41800	45600	19300	11300
7	8930	43100	37000	58300	17800	37800	12700	11300	44400	41200	23300	7810
8	7890	42100	35000	61300	17200	37000	12000	10200	50400	37200	28000	10200
9	6970	39600	45400	60900	17000	36000	11400	9820	63300	31000	28600	11900
10	6830	35900	48400	56800	17800	39300	11000	9470	73600	23800	28300	12700
11	6330	33000	46600	52600	19100	39800	10800	9170	69300	20100	23800	12100
12	6070	31600	42900	51200	24800	41100	10600	8500	54200	15800	18700	14200
13	5920	31500	38200	51100	27000	38500	10500	7310	48800	13200	14600	19900
14	5840	31900	38400	51700	30100	36100	10400	9830	51300	11800	10700	19700
15	5230	31000	38100	56100	33700	32200	10300	15000	61100	11500	9400	16500
16	3700	26400	33600	57200	32400	25900	11200	15600	63200	11900	8560	13000
17	2930	23100	29600	50800	30600	25000	12300	13500	57100	13400	8180	9640
18	3150	28300	27600	48500	27300	30700	12000	10400	53700	30800	8170	8210
19	4550	35400	25500	45700	23800	37500	11600	8880	53200	44500	8010	7800
20	4960	42300	23000	45600	21100	e38900	16300	11600	55900	43400	7620	7570
21	5010	43100	50700	47900	18400	e32500	24800	28100	55800	36100	7010	9220
22	4700	41500	70500	47100	16600	26500	34100	35100	52200	31300	6580	19300
23	3460	36900	65700	47600	19900	26500	34100	32500	52100	28800	6570	26100
24	4070	32700	59600	46200	22300	24000	29000	29200	50800	26000	6800	26000
25	4050	28000	50300	42900	24400	21800	25500	29700	48100	21000	7400	22400
26	14600	22200	49900	37000	27600	20800	24200	31300	45900	16800	6940	16400
27	29700	18600	52800	32000	37600	20000	23300	27600	45100	15300	6290	11800
28	28500	17300	57000	31000	34300	20200	20600	23100	43400	16000	6230	9050
29	42200	17100	57900	34900	e27600	20000	20800	18300	43100	21400	6160	5920
30	57700	16600	56400	35700	---	17900	26500	14400	48400	24300	6120	3830
31	52100	---	56800	34000	---	17500	---	16500	---	27900	5960	---
TOTAL	393170	1011800	1346900	1534500	712300	888900	526100	575580	1469400	914000	441800	362690
MEAN	12680	33730	43450	49500	24560	28670	17540	18570	48980	29480	14250	12090
MAX	57700	45000	70500	61300	37600	41100	34100	35100	73600	56400	28700	26100
MIN	2930	16600	20400	31000	16600	17500	10300	7310	22500	11500	5960	3830
AC-FT	779900	2007000	2672000	3044000	1413000	1763000	1044000	1142000	2915000	1813000	876300	719400

e Estimated

RED RIVER BASIN
07336820 RED RIVER NEAR DE KALB, TX--Continued

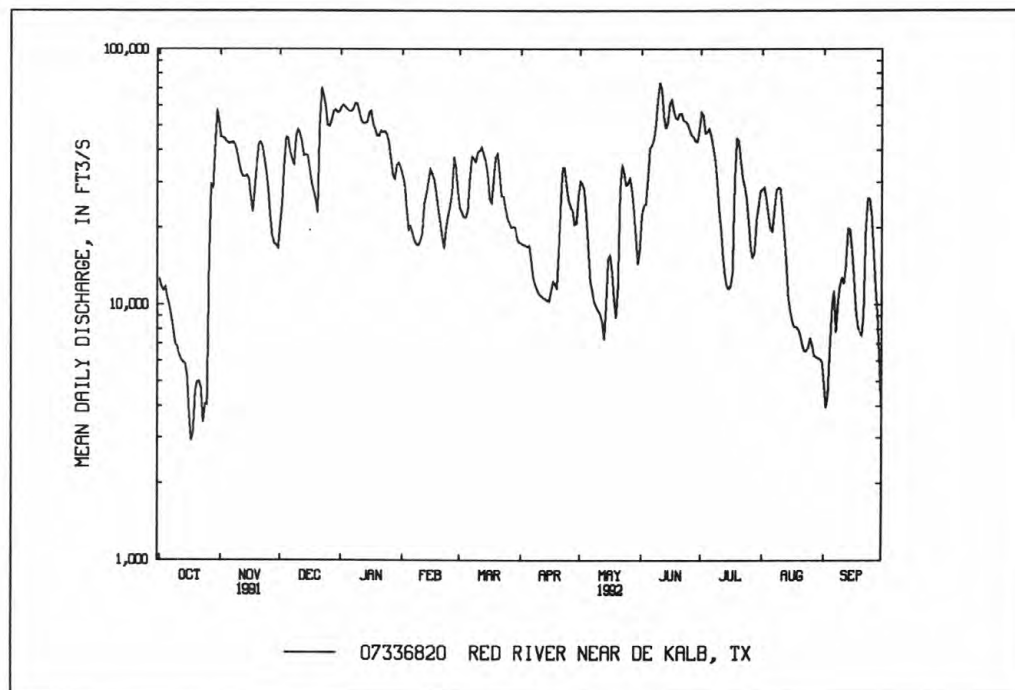
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STATISTICS OF MONTHLY MEANDATA FOR WATER YEARS 1968 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	9454	14240	12840	11020	14200	19120	18590	24140	26780	9510	5049	5644
MAX	39980	53170	45440	49500	31000	48590	62330	125500	67360	35030	14250	24010
(WY)	1982	1975	1972	1992	1969	1987	1990	1990	1987	1982	1992	1974
MIN	1783	2105	1608	1699	2876	2492	3005	4707	2909	2598	1418	1368
(WY)	1979	1980	1978	1981	1976	1980	1981	1972	1988	1972	1972	1988

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1968-92

ANNUAL TOTAL	6783530	10177140	
ANNUAL MEAN	18590	27810	14110
HIGHEST ANNUAL MEAN			30100 1990
LOWEST ANNUAL MEAN			4690 1980
HIGHEST DAILY MEAN	70500	Dec 22	73600 Jun 10 278000 May 7 1990
LOWEST DAILY MEAN	1630	Sep 20	2930 Oct 17 254 Nov 29 1979
ANNUAL SEVEN-DAY MINIMUM	2760	Mar 10	4110 Oct 17 529 Aug 31 1972
INSTANTANEOUS PEAK FLOW			76400 Jun 10 279000 May 6 1990
INSTANTANEOUS PEAK STAGE			25.17 Dec 22 34.42 May 6 1990
INSTANTANEOUS LOW FLOW			2680 Oct 18 213 Nov 30 1979
ANNUAL RUNOFF (AC-FT)	13460000	20190000	10220000
10 PERCENT EXCEEDS	43000	52100	38900
50 PERCENT EXCEEDS	13200	25500	6590
90 PERCENT EXCEEDS	3520	7600	2040



RED RIVER BASIN

07336820 RED RIVER NEAR DE KALB, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: October 1970 to July 1981. Sediment analyses: November 1979 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1968 to September 1991.

WATER TEMPERATURE: January 1968 to September 1991.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,140 microsiemens July 13, 1980; minimum daily, 114 microsiemens Oct. 31, 1984.

WATER TEMPERATURE (1968-89): Maximum daily, 4.0°C on several days during July and August of 1969 and 1970; minimum daily, 0.0°C Jan. 11, 1977.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	TIME	AGENCY	AGENCY	DIS-		PH		BARO-		OXYGEN,	OXYGEN	
		COL-	ANA-	CHARGE,	SPE-	WATER		METRIC		DIS-	DEMAND,	HARD-
		LECTING	LYZING	INST.	CIFIC	WHOLE	TEMPER-	PRES-		SOLVED	BIO-	NESS
		SAMPLE	SAMPLE	(CUBIC	CON-	FIELD	ATURE	SURE	OXYGEN,	(PER-	CHEM-	TOTAL
		(CODE	(CODE	FEET	DUCT-	(STAND-	WATER	(MM	DIS-	CENT	ICAL,	(MG/L
		(00027)	(00028)	PER	ANCE	ARD	(DEG C)	OF	SOLVED	SATUR-	5 DAY	AS
		NUMBER)	NUMBER)	SECOND)	(US/CM)	UNITS)		HG)	(MG/L)	ATION)	(MG/L)	CACO3)
		(00027)	(00028)	(00061)	(00095)	(00400)	(00010)	(00025)	(00300)	(00301)	(00310)	(00900)
JAN												
09...	1625	1028	80020	60900	961	7.8	12.0	760	10.3	96	0.6	220
APR												
22...	1637	1028	80020	34800	685	7.8	25.0	755	8.6	105	0.9	150
JUN												
04...	1640	1028	80020	34000	633	8.0	23.0	750	8.2	97	1.1	160
JUL												
23...	1535	1028	80020	28800	619	7.8	29.0	760	7.2	94	1.2	150
		HARD-										SOLIDS,
		NESS										SUM OF
		NONCARB		MAGNE-		SODIUM	POTAS-					CONSTI-
		CALCIUM		SIUM,		AD-	SIUM,					TUENTS,
		DISSOLV	DIS-	DIS-		SORP-	DIS-	SULFATE	RIDE,	FLUO-	SILICA,	SUM OF
		DIS-				TION	SOLVED	DIS-	DIS-	RIDE,	DIS-	CONSTI-
		FLD. AS	SOLVED	SOLVED				SOLVED	SOLVED	SOLVED	(MG/L	DIS-
DATE		CACO3	(MG/L	(MG/L	SODIUM	RATIO	(MG/L	(MG/L	(MG/L	(MG/L	AS	SOLVED
		(MG/L)	AS CA)	AS MG)	PERCENT		AS K)	AS SO4)	AS CL)	AS F)	SIO2)	(MG/L)
		(00904)	(00915)	(00925)	(00930)	(00932)	(00935)	(00945)	(00940)	(00950)	(00955)	(70301)
JAN												
09...	130	61	17	110	51	3	4.8	130	170	0.20	7.3	557
APR												
22...	67	42	12	63	46	2	3.0	84	100	0.20	4.8	361
JUN												
04...	73	46	12	61	44	2	2.9	81	93	0.20	5.6	356
JUL												
23...	64	41	11	61	47	2	3.4	75	95	0.20	6.6	344

RED RIVER BASIN

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07336820 RED RIVER NEAR DE KALB, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	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, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JAN												
09...	0.76	91600	0.270	0.040	0.310	0.070	0.09	0.33	0.40	0.71	3.1	0.070
APR												
22...	0.49	33900	0.190	0.050	0.240	0.090	0.12	0.31	0.40	0.64	2.8	0.030
JUN												
04...	0.48	32700	0.220	0.040	0.260	0.070	0.09	0.43	0.50	0.76	3.4	0.070
JUL												
23...	0.47	26800	--	<0.010	0.087	0.010	0.01	0.49	0.50	0.59	2.6	0.140
DATE	PHOS- PHATE, TOTAL (MG/L AS PO4) (00650)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P) (70507)	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)
JAN												
09...	0.18	0.060	2	150	<0.5	<1.0	<5	<3	<10	21	<10	12
APR												
22...	--	<0.010	--	--	--	--	--	--	--	--	--	--
JUN												
04...	0.25	0.080	--	--	--	--	--	--	--	--	--	--
JUL												
23...	0.06	0.020	2	82	<0.5	<1.0	<5	<3	<10	100	<10	5
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	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)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
JAN												
09...	8	<0.1	<10	<10	<1	<1.0	610	<6	<3	615	101000	88
APR												
22...	--	--	--	--	--	--	--	--	--	449	42200	89
JUN												
04...	--	--	--	--	--	--	--	--	--	931	85500	66
JUL												
23...	3	<0.1	<10	<10	<1	<1.0	390	<6	7	213	16600	97

07337300 PINE CREEK LAKE NEAR WRIGHT CITY, OK

LOCATION.--Lat 34°06'43", long 95°04'46", in NE 1/4 NW 1/4 sec.23, T.5 S., R.21 E., McCurtain County, Hydrologic Unit 11140107, at left of outlet works of dam on Little River, 4.7 mi upstream from bridge on State Highway 98, 5.0 mi northwest of Wright City, and at mile 145.3.

DRAINAGE AREA.--635 mi².

ERIOD OF RECORD.--June 1969 to current year. Prior to October 1970, published as Pine Creek Reservoir near Wright City.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by rolled earth dam; regulated storage began June 1, 1969; conservation pool was first filled Jan. 7, 1970. Total capacity, 1,136,000 acre-ft at elevation 509.0 ft, top of dam, 465,800 acre-ft at elevation 480.0 ft, crest of spillway, 53,800 acre-ft at elevation 438.0 ft top of conservation pool, 7,140 acre-ft dead storage at elevation 414.0 ft. Figures given herein represent total contents. Reservoir is designed for flood control, municipal and industrial water supply, and recreation. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 356,500 acre-ft, Nov. 4, 1984, elevation, 473.13 ft; minimum since conservation pool was first filled, 28,220 acre-ft, Oct. 21, 1972, elevation, 429.34 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 226,600 acre-ft, Nov. 2, elevation, 462.86 ft; minimum 50,350 acre-ft, Oct. 24, elevation, 437.07 ft.

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

434	40,320	445	85,440
436	46,650	448	102,600
439	57,610	462	217,470
442	70,490	474	369,400

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53860	224900	66420	62870	54620	56040	64410	91940	75770	89980	103100	64280
2	53710	226300	87820	58720	54780	55650	64750	89420	79820	87390	98250	65580
3	53600	220900	100600	56790	54850	55230	65060	86250	87930	100600	93130	78000
4	53490	211600	104200	56280	54810	59350	65410	82590	87610	100500	87170	80680
5	53310	200900	101600	55690	54550	62230	65620	78560	84910	98430	89920	e82850
6	53120	189900	95320	54930	54280	63250	66280	74560	84070	94390	93130	e83430
7	52970	177800	86850	54130	54130	63840	66680	72550	82490	88700	89700	e80990
8	52820	166500	79010	53530	54240	63760	67000	72550	81870	83170	84650	71010
9	52710	155000	93010	53600	54400	65240	67170	72640	94680	79510	78960	66420
10	52600	143600	101100	54240	54620	63950	67490	72640	102400	79360	74370	64410
11	52490	132100	104100	54850	61090	66420	67660	73210	110200	78910	71570	66680
12	52340	120500	108800	55570	76020	65020	68020	74700	111400	78910	69890	67440
13	52160	109200	110900	55770	80990	64840	68200	75280	107300	80790	68750	67440
14	51900	98190	104100	57340	80220	64930	68470	75090	102300	77160	68250	67260
15	51720	88100	97890	57220	76610	64800	68800	74560	105400	76660	68020	66910
16	51610	79920	90260	55730	72270	64620	69160	73840	100200	77950	67800	66280
17	51430	91780	82340	55080	67620	67080	69340	73260	92220	81100	67440	65580
18	51320	94640	73980	55920	62780	78000	69800	76120	83590	82180	67080	64710
19	51110	96080	67530	57020	57610	82390	71430	88640	78910	82750	66680	64190
20	50960	98430	68380	58090	54930	81920	76320	91830	79160	82440	66240	75380
21	50820	96190	82650	57950	54400	79410	77260	89480	79310	81870	65840	93520
22	50680	92110	94040	60330	55310	76660	74940	85070	78510	82590	65540	123200
23	50570	86740	106200	60430	58630	73550	73360	81970	77210	82910	65100	126400
24	50350	81100	109900	58630	60690	70170	73260	78510	75820	82030	64750	122600
25	72220	75130	111500	57370	61220	66730	73210	74890	74560	80430	64360	115300
26	87820	69120	110100	55920	60560	64620	73170	72970	73650	78860	63970	105900
27	94680	64100	103200	54970	57530	63930	73120	72690	74080	87770	63420	105100
28	120500	60490	94330	53900	56280	63970	73980	73410	76020	90920	63420	99850
29	192300	58340	85330	53560	56240	63970	89700	74030	87550	87120	63290	98010
30	200200	58000	76270	53980	---	63760	93240	74560	90920	87390	63250	93240
31	211000	---	68430	54280	---	64020	---	75040	---	103000	63160	---

e Estimated

RED RIVER BASIN

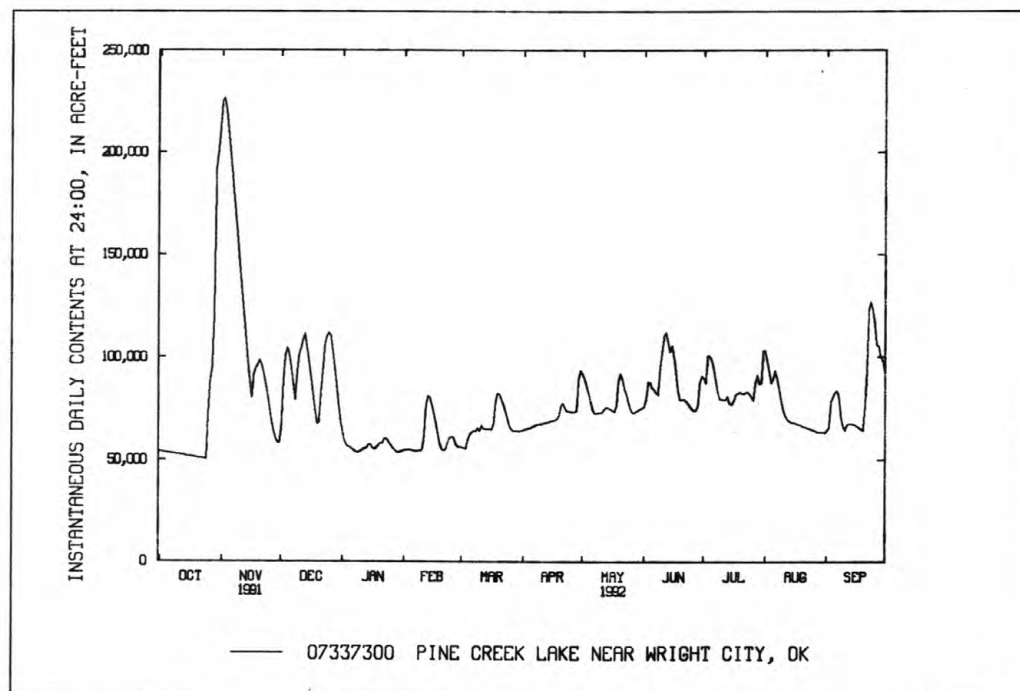
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07337300 PINE CREEK LAKE NEAR WRIGHT CITY, OK--Continued

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MAX	211000	226300	111500	62870	80990	82390	93240	91940	111400	103000	103100	126400
MIN	50350	58000	66420	53530	54130	55230	64410	72550	73650	76660	63160	64190
(+)	461.38	439.08	441.55	438.14	438.65	440.55	446.41	442.96	446.00	448.06	440.35	446.41
(++)	+156,640	-153,000	+10,430	-14,150	+1,960	+7,780	+29,220	-18,200	+15,880	+12,080	-39,840	+30,080
CAL YR 1991	MAX 276700	MIN 50350	(++) -4,310									
WTR YR 1992	MAX 226300	MIN 50350	(++) +38,880									

(+) ELEVATION, IN FEET, AT END OF MONTH

(++) CHANGE IN CONTENTS, IN ACRE-FEET



RED RIVER BASIN
07337900 GLOVER RIVER NEAR GLOVER, OK

LOCATION.--Lat 34°05'51", long 94°54'07", in NW 1/4 NE 1/4 sec.28, T.5 S., R.23 E., McCurtain County, Hydrologic Unit 11140107, on right downstream end of bridge on State Highways 3 and 7, 2.0 mi north of Glover, 11.0 mi northwest of Broken Bow, and at mile 9.2.

DRAINAGE AREA.--315 mi².

PERIOD OF RECORD.--October 1961 to current year. Prior to October 1990, published as Glover Creek near Glover.

GAGE.--Water-stage recorder. Datum of gage is 378.70 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1961 reached a stage of 28.84 ft, from floodmark. Flood in 1908 was higher than in May 1961, from information provided by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,000 ft³/s.

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
Oct. 25	1000	28,600	17.61	Mar. 18	0800	10,800	11.07
Oct. 29	1000	29,300	17.82	Apr. 29	1300	8,340	9.76
Dec. 2	2100	8,370	9.78	Aug. 5	2400	9,500	10.28
Dec. 9	1300	12,900	12.06	Sep. 3	0400	8,880	9.94
Feb. 12	0100	9,500	10.38	Sep. 22	0700	13,700	12.44

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	4870	4700	357	430	342	145	1050	208	937	1430	49
2	23	1870	5340	490	369	289	130	699	269	594	709	3210
3	20	1040	4120	474	323	256	117	520	2240	522	1550	5010
4	17	750	1770	424	282	1550	104	388	1130	481	659	1490
5	21	595	1070	385	243	2300	92	287	692	330	1390	755
6	16	486	784	350	217	1430	88	213	969	227	3680	598
7	13	399	622	318	193	925	90	163	1050	161	1350	568
8	11	333	530	298	173	686	90	128	666	117	823	403
9	9.6	269	7090	269	151	870	86	102	1630	86	585	284
10	9.1	220	3310	241	133	1080	75	82	3180	66	415	310
11	8.2	186	1640	210	1890	744	67	73	2660	52	318	805
12	7.2	159	3220	199	6550	603	62	302	2010	41	247	694
13	6.7	135	3050	222	2790	499	64	318	1260	33	200	461
14	6.5	115	1460	462	1540	413	74	183	892	30	153	327
15	6.5	104	964	564	1120	350	74	132	2980	56	119	246
16	6.5	136	757	479	824	289	62	103	1420	106	95	191
17	4.8	2700	619	413	666	303	55	75	878	1740	78	150
18	4.6	3240	517	413	557	6910	53	70	640	687	66	121
19	4.7	1990	440	502	454	2380	87	714	476	349	56	1030
20	4.6	3330	713	538	372	1160	3300	1050	617	203	49	4670
21	4.0	1570	4050	557	318	804	1610	959	830	130	42	4950
22	4.0	984	3090	1330	284	638	842	587	535	134	38	6970
23	3.9	716	4420	1610	1260	538	577	395	385	382	34	2420
24	3.9	543	1960	1030	990	435	416	502	301	188	30	1080
25	11000	431	1180	783	752	370	312	365	245	115	26	714
26	4990	357	873	631	680	329	236	251	209	77	30	526
27	2470	303	705	634	571	270	181	198	332	67	29	392
28	3370	259	598	742	483	234	147	167	922	716	22	291
29	14900	275	527	639	404	205	5490	185	2790	866	21	205
30	3150	967	452	561	---	183	2230	302	1940	473	19	152
31	2290	---	386	496	---	165	---	234	---	3580	17	---

RED RIVER BASIN

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07337900 GLOVER RIVER NEAR GLOVER, OK--Continued

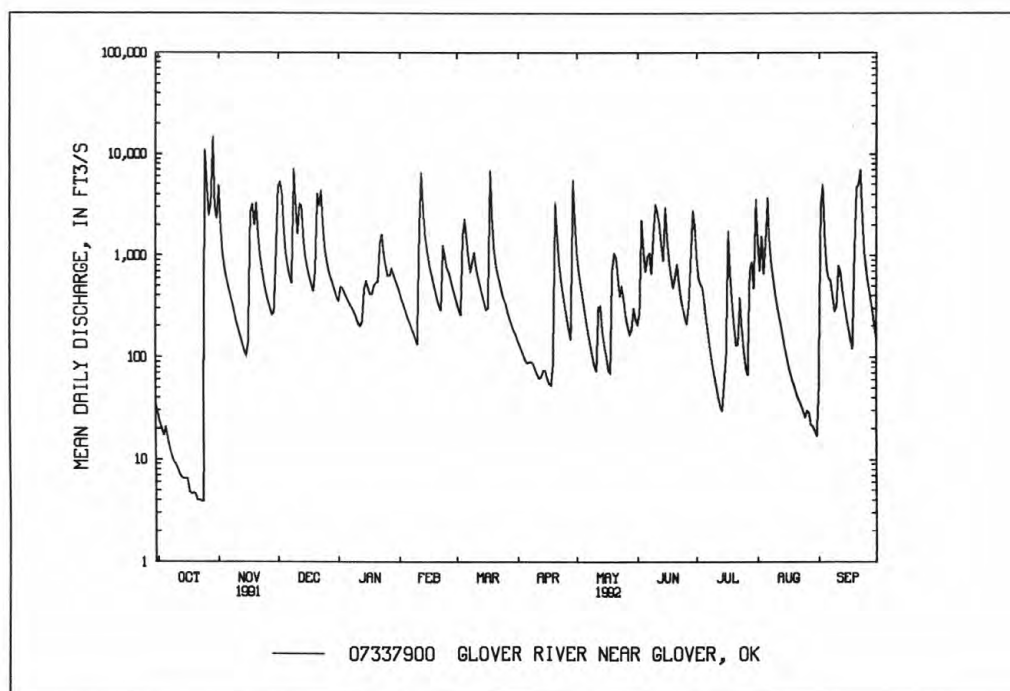
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	42413.8	29332	60957	16621	25019	27550	16956	10797	34356	13546	14280	39072
MEAN	1368	978	1966	536	863	889	565	348	1145	437	461	1302
MAX	14900	4870	7090	1610	6550	6910	5490	1050	3180	3580	3680	6970
MIN	3.9	104	386	199	133	165	53	70	208	30	17	49
AC-FT	84130	58180	120900	32970	49630	54650	33630	21420	68150	26870	28320	77500
CFSM	4.34	3.10	6.24	1.70	2.74	2.82	1.79	1.11	3.64	1.39	1.46	4.13
IN.	5.01	3.46	7.20	1.96	2.95	3.25	2.00	1.28	4.06	1.60	1.69	4.61

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	358	520	683	453	670	855	761	874	370	76.1	79.3	224
MAX	2427	2146	3376	1202	1600	2506	2753	3503	1514	437	461	2690
(WY)	1985	1975	1972	1969	1989	1973	1991	1990	1973	1992	1992	1974
MIN	.000	.33	2.80	1.96	52.5	96.9	125	40.4	4.59	1.06	.000	.000
(WY)	1979	1964	1964	1964	1967	1980	1987	1988	1972	1966	1972	1972

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1962-92

ANNUAL TOTAL	343008.8	330899.8	
ANNUAL MEAN	940	904	493
HIGHEST ANNUAL MEAN			979 1973
LOWEST ANNUAL MEAN			169 1976
HIGHEST DAILY MEAN	17800	Apr 13 14900	Oct 29 53100 Dec 10 1971
LOWEST DAILY MEAN	1.3	Jul 24 3.9	Oct 23, 24 ^a .00 Jul 19 1966
ANNUAL SEVEN-DAY MINIMUM	1.8	Jul 19 4.2	Oct 18 .00 Aug 4 1970
INSTANTANEOUS PEAK FLOW		29300	Oct 29 98600 Dec 10 1971
INSTANTANEOUS PEAK STAGE		17.82	Oct 29 29.72 Dec 10 1971
ANNUAL RUNOFF (AC-FT)	680400	656300	356800
ANNUAL RUNOFF (CFSM)	2.98	2.87	1.56
ANNUAL RUNOFF (INCHES)	40.51	39.08	21.24
10 PERCENT EXCEEDS	2530	2430	1040
50 PERCENT EXCEEDS	259	408	121
90 PERCENT EXCEEDS	9.1	40	3.1

^aNo flow at times in several years.

RED RIVER BASIN

07338500 LITTLE RIVER BELOW LUKFATA CREEK NEAR IDABEL, OK

LOCATION.--Lat 33°56'28", long 94°45'30", in SE 1/4 SE 1/4 sec.14, T.7 S., R.24 E., McCurtain County, Hydrologic Unit 11140107, on left bank at downstream side of bridge on U.S. Highway 70 just downstream from Lukfata Creek, 5.0 mi northeast of Idabel, and at mile 103.4.

DRAINAGE AREA.--1,226 mi².

PERIOD OF RECORD.--October 1946 to current year.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 312.08 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1946, to Oct. 26, 1950, and for stages below 9.0 ft Oct. 26, 1950, to Oct. 10, 1951, nonrecording gage at same site and datum.

REMARKS.--Records good. Flow regulated since June 1969 by Pine Creek Lake (station 07337300), 41.9 mi upstream. Small diversions for municipal use by City of Idabel at station and by Weyerhaeuser 41 miles above station. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in February 1938 reached a stage of 39.7 ft, from information provided by local resident, discharge, 86,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	398	9670	6710	5690	1300	1410	507	5950	617	3230	6590	173
2	378	7950	8980	4970	1090	1270	266	4350	770	3060	5070	1090
3	198	5720	9180	4160	1010	1280	210	3560	1080	3040	5120	4290
4	107	5350	7690	2560	945	3660	188	3220	3530	3030	5350	4830
5	e94	6190	4960	1640	891	5300	170	3010	3910	2690	4900	3080
6	e72	6680	4900	1540	836	4950	177	2830	3700	2420	5810	2390
7	e62	6840	5550	1470	799	3720	238	2700	4190	3030	6570	2350
8	e56	6830	6140	2920	633	2610	248	1360	4050	3420	5760	2240
9	e53	6740	11200	2030	375	3590	199	408	4450	3380	5010	2730
10	e60	6640	14100	932	330	4740	174	233	6040	1970	4580	3050
11	e70	6550	11300	514	516	3210	146	191	8040	549	3750	2280
12	e64	6440	8200	491	6870	2440	124	400	7400	307	2610	1830
13	e58	6330	7890	620	8680	2110	118	563	5990	272	1820	1510
14	e54	6240	7530	1360	6880	1430	109	695	5570	259	1420	1270
15	e50	6170	7150	1850	5520	1110	108	770	5450	348	869	1140
16	e45	6020	6740	2350	5090	1020	107	711	6160	398	571	1070
17	e42	5980	6360	2500	4670	1240	98	665	6080	3140	518	1010
18	e45	7430	6090	1810	4400	7670	87	672	6080	3730	496	951
19	e48	8710	5860	1690	4180	8840	103	1260	5900	1420	489	909
20	e46	10100	5420	1770	3970	6170	1580	2270	4290	819	479	3190
21	e48	9170	6110	1700	2480	4140	4300	3330	2070	701	467	4470
22	e50	7660	6800	3250	1130	3720	3840	4460	1800	675	435	6280
23	e54	6220	7230	4820	3940	3460	3450	4210	1530	677	362	6840
24	e56	5290	6980	4910	3710	3250	2200	3090	1410	807	342	5070
25	2370	4810	4840	4290	2960	3130	1070	3010	1330	945	332	4340
26	9240	4530	3270	3190	3390	2990	707	2820	1280	1110	323	5110
27	9860	4370	3820	3080	3540	1980	612	1620	947	1090	323	5270
28	7910	3940	5330	3330	3580	1110	475	703	1020	1620	304	3120
29	10600	3170	6090	3140	2230	752	3870	564	2280	3910	273	2970
30	13200	3690	6190	2150	---	697	7280	556	4510	4590	181	1620
31	11900	---	6120	1570	---	647	---	554	---	7170	155	---
TOTAL	67288	191430	214730	78297	85945	93646	32761	60735	111474	63807	71279	86473
MEAN	2171	6381	6927	2526	2964	3021	1092	1959	3716	2058	2299	2882
MAX	13200	10100	14100	5690	8680	8840	7280	5950	8040	7170	6590	6840
MIN	42	3170	3270	491	330	647	87	191	617	259	155	173
AC-FT	133500	379700	425900	155300	170500	185700	64980	120500	221100	126600	141400	171500

e Estimated

RED RIVER BASIN

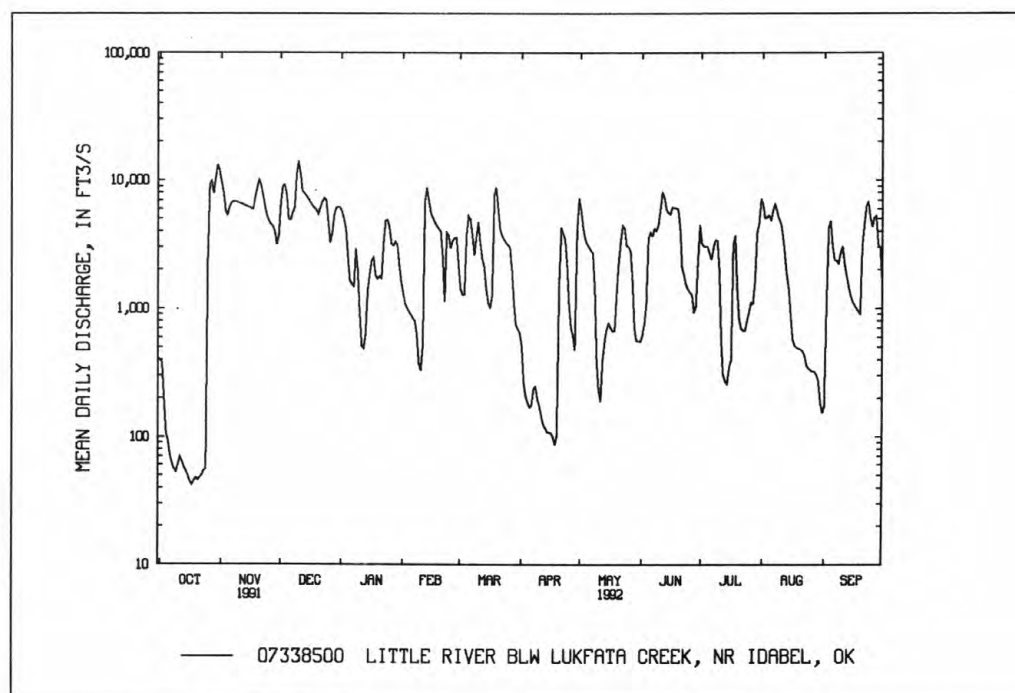
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07338500 LITTLE RIVER BELOW LUKFATA CREEK NEAR IDABEL, OK--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1046	2246	2675	1853	2538	2978	2542	3138	2237	402	332	722
MAX	4453	7887	10320	4902	5355	7730	6187	8976	6044	2058	2299	6992
(WY)	1985	1975	1972	1991	1990	1973	1973	1990	1973	1992	1992	1974
MIN	26.4	38.2	37.3	157	176	304	380	143	46.9	31.0	18.5	25.0
(WY)	1979	1990	1990	1981	1976	1980	1987	1988	1972	1977	1972	1972

SUMMARY STATISTICS	1991 CALENDAR YEAR		1992 WATER YEAR		WATER YEARS 1971-92	
ANNUAL TOTAL	1157976		1157865			
ANNUAL MEAN	3173		3164		^a 1887	
HIGHEST ANNUAL MEAN					3424	
LOWEST ANNUAL MEAN					676	
HIGHEST DAILY MEAN	14100	Dec 10	14100	Dec 10	66800	Dec 11 1971
LOWEST DAILY MEAN	22	Jul 19	42	Oct 17	^b 7.8	Aug 14 1976
ANNUAL SEVEN-DAY MINIMUM	23	Jul 18	46	Oct 15	11	Oct 15 1972
INSTANTANEOUS PEAK FLOW			14300	Dec 10	103000	Dec 10 1971
INSTANTANEOUS PEAK STAGE			28.74	Dec 10	39.39	Dec 10 1971
ANNUAL RUNOFF (AC-FT)	2297000		2297000		1367000	
10 PERCENT EXCEEDS	7560		6830		6030	
50 PERCENT EXCEEDS	2280		2710		584	
90 PERCENT EXCEEDS	51		186		41	

^aPrior to regulation, water years 1947-68, 1,622 ft³/s.^bMinimum daily discharge for period of record, 0.4 ft³/s, Sept. 15-16, 21 to Oct. 1, 1956.

RED RIVER BASIN
07338750 MOUNTAIN FORK AT SMITHVILLE, OK

LOCATION.--Lat 34°27'44", long 94°38'06", in SE 1/4 SW 1/4 sec.13, T.1 S., R.25 E., McCurtain County, Hydrologic Unit 11140108, on right downstream abutment of bridge on Highway 4, .5 mi east of Smithville, and at mi 55.6.

DRAINAGE AREA.--320 mi².

PERIOD OF RECORD.--October 1991 to current year.

GAGE.--Water-stage recorder. Datum of gage is 664.70 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,500 ft³/s, Sept. 21, gage height; 17.51 ft, minimum daily discharge, 7.0 ft³/s, Aug. 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

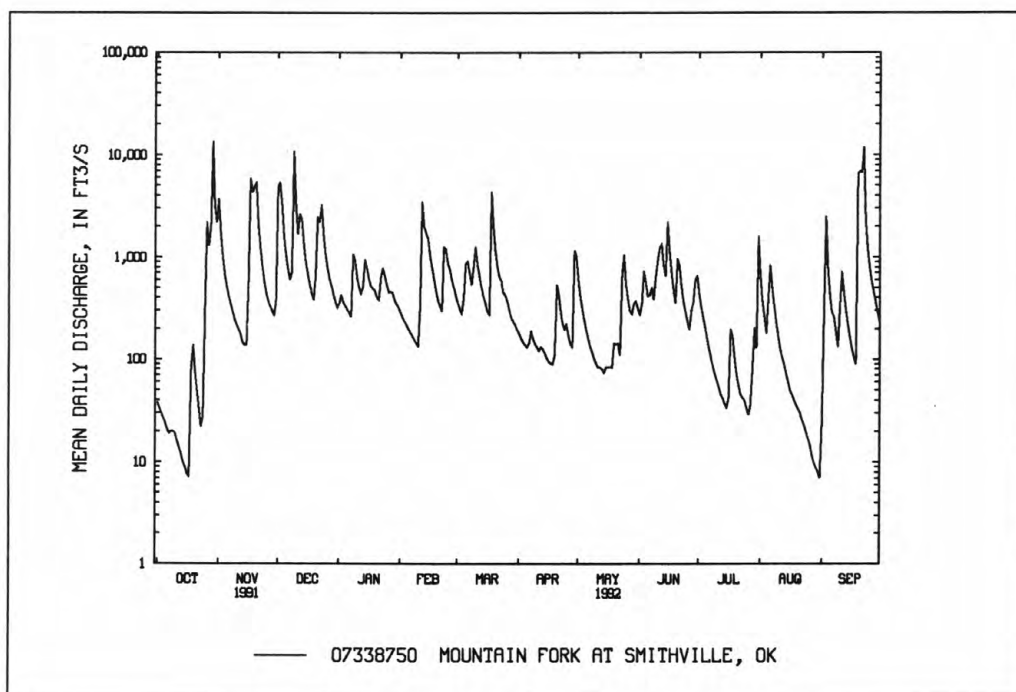
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	3680	4820	355	286	357	180	594	276	440	684	23
2	34	1670	5370	426	260	310	162	408	344	324	379	301
3	30	995	3260	364	237	281	149	314	727	260	260	2500
4	27	679	1630	332	218	392	140	244	564	212	182	771
5	24	519	1080	308	199	859	132	196	412	162	417	412
6	21	416	774	285	183	910	144	161	423	128	837	288
7	19	345	603	262	171	695	190	134	506	103	498	262
8	20	290	714	1070	157	543	163	117	383	86	332	187
9	20	246	10900	936	146	786	143	102	638	73	230	134
10	19	219	3400	639	136	1280	132	91	934	62	168	342
11	16	198	1710	498	336	845	122	83	1240	54	129	715
12	14	177	2630	439	3450	646	133	83	1350	46	105	454
13	12	147	2320	498	1970	503	127	80	826	42	89	298
14	10	138	1360	949	1730	414	115	74	657	37	72	219
15	9.0	139	915	774	1520	349	103	83	2200	34	60	166
16	7.7	594	687	612	1040	294	95	84	1150	42	49	130
17	7.3	5910	545	522	787	273	91	84	693	198	45	105
18	81	4290	443	487	622	4360	89	83	476	172	40	90
19	140	4860	378	468	470	2040	112	144	356	105	36	6610
20	78	5390	642	404	382	1180	541	141	965	72	33	6850
21	50	2030	2460	381	329	806	431	144	830	56	30	6790
22	33	1230	2210	631	296	642	291	110	511	46	26	11900
23	22	806	3200	780	1260	584	225	656	372	42	23	2310
24	28	573	1660	655	1210	448	197	1060	293	40	20	1190
25	306	452	1090	545	871	426	224	537	241	34	17	786
26	2190	376	792	451	760	368	169	391	197	29	15	585
27	1310	328	616	453	598	306	141	297	298	35	12	463
28	1940	297	526	447	506	255	133	278	357	77	10	362
29	13600	271	435	378	423	238	1180	350	590	206	8.9	287
30	3200	370	370	346	---	219	1010	372	658	131	8.1	233
31	2190	---	319	318	---	196	---	311	---	1600	7.0	---
TOTAL	25496.0	37635	57859	16013	20553	21805	7064	7806	19467	4948	4822.0	45763
MEAN	822	1254	1866	517	709	703	235	252	649	160	156	1525
MAX	13600	5910	10900	1070	3450	4360	1180	1060	2200	1600	837	11900
MIN	7.3	138	319	262	136	196	89	74	197	29	7.0	23
AC-FT	50570	74650	114800	31760	40770	43250	14010	15480	38610	9810	9560	90770

WTR YR 1992 TOTAL 269231.0 MEAN 736 MAX 13600 MIN 7.0 AC-FT 534000

RED RIVER BASIN

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07338750 MOUNTAIN FORK AT SMITHVILLE, OK--Continued



LOCATION.--Lat 34°08'35", long 94°41'00", in SW 1/4 sec.3, T.5 S., R.25 E., McCurtain County, Hydrologic Unit 11140108, at intake structure on upstream side of dam on Mountain Fork, 9.0 mi northeast of Broken Bow, and at mile 20.3.

DRAINAGE AREA.--754 mi².

PERIOD OF RECORD.--October 1968 to current year. Prior to October 1970, published as Broken Bow Reservoir near Broken Bow.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by a rolled earth and gravel structure. Outlet works consists of power-generated turbines and a concrete ogee-type weir controlled by eight 40- by 40-foot taintor gates. Regulated storage began Oct. 3, 1968; conservation pool was first filled Jan. 30, 1969. Total capacity, 1,368,000 acre-ft at elevation 627.5 ft, top of flood pool and spillway gages, 918,100 acre-ft at elevation 599.5 ft, top of power pool, and 448,200 acre-ft at elevation 559.0 ft, bottom of power pool. Figures given herein represent total contents. Reservoir is used for flood control, power development and water supply. U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,283,000 acre-ft, May 23, 1990, elevation, 622.64 ft; minimum since conservation pool was first filled, 672,000 acre-ft, Oct. 21, 1972, elevation 580.48 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,088,000 acre-ft, Dec. 14, elevation 610.79 ft; minimum 848,700 acre-ft, Oct. 23, 24, elevation, 594.49 ft.

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

590	789,300	607	1,028,500
594	842,100	615	1,154,600
598	897,000	621	1,254,600

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY OBSERVATION AT 24:00 VALUES

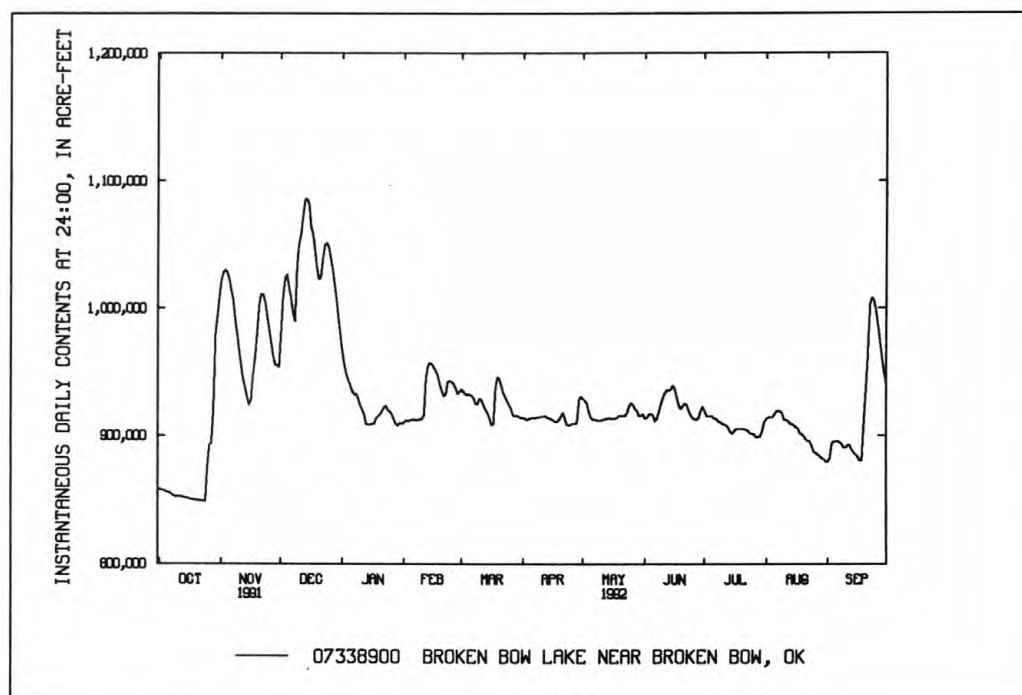
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	858200	1022000	981200	964400	910400	936300	914300	928700	913300	919500	912400	879500
2	857500	1028000	1010000	954600	911900	934200	913100	927300	914000	915400	914100	882400
3	857200	1030000	1024000	947400	911300	932200	912300	925200	916500	915000	914400	893400
4	856400	1028000	1026000	943400	911900	932300	913100	918200	917000	915100	914000	895000
5	855600	1023000	1017000	939300	912100	932000	913600	914100	916300	915100	916100	895100
6	855500	1014000	1008000	934900	912500	931400	914100	912400	911600	913100	918500	895500
7	854200	1006000	996000	932400	911900	929500	913600	912600	913100	912800	919400	894500
8	853000	989800	989500	932700	912300	925200	914300	911700	917800	910900	919000	893400
9	852500	978100	1034000	929300	912700	924800	914700	911700	924100	910400	917400	890400
10	852500	966300	1051000	923900	913000	929200	914800	911700	929000	909300	912300	890500
11	852500	954000	1058000	920700	916300	927800	915100	912600	933200	908400	912000	892100
12	852300	943700	1073000	916500	944300	923900	915400	913100	935300	908000	911400	892800
13	851900	936900	1086000	909300	954700	920200	914500	913300	935500	905900	909400	888900
14	851400	929700	1086000	908700	956900	918000	913600	913800	936000	902500	908600	886600
15	851100	924600	1082000	908700	955900	914100	913100	913300	939200	901400	907900	885100
16	850600	927800	1064000	909200	953300	908400	912100	913300	936900	903600	906200	883400
17	850200	949500	1058000	909200	950500	909300	910900	913400	930300	905300	905500	880400
18	849900	962000	1046000	913500	947100	938300	910900	914000	924100	905300	901700	880400
19	849600	981600	1031000	915300	940500	945700	912300	915700	921200	905300	900800	908900
20	849600	1003000	1023000	916700	935200	944700	915400	915400	923100	905000	899100	935500
21	849200	1011000	1024000	919200	930900	939900	918100	915800	925100	904900	896800	961600
22	849200	1011000	1039000	922500	932400	933600	913000	915700	924100	904300	895700	1003000
23	848700	1005000	1050000	923500	942100	930500	908400	917800	919700	903500	895400	1008000
24	848800	994100	1051000	919900	943100	926900	908200	922900	916300	901500	891500	1006000
25	875000	983700	1048000	918800	942100	924300	908600	925500	913700	901000	887000	998100
26	892600	973200	1039000	916000	940500	920800	909400	924300	912800	901000	886200	987000
27	894000	962600	1030000	912400	937100	916100	909200	920800	912400	898300	885100	974700
28	919500	955600	1018000	908900	933000	915400	910400	919500	913600	899000	884000	961900
29	979000	954800	1005000	908200	934300	915800	928200	915400	919100	899100	882300	950200
30	992900	953700	991500	910000	---	914700	930700	915800	922500	903600	881500	942200
31	1008000	---	977200	909300	---	913800	---	916800	---	910400	879700	---

RED RIVER BASIN
07338900 BROKEN BOW LAKE NEAR BROKEN BOW, OK

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	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MAX	1008000	1030000	1086000	964400	956900	945700	930700	928700	939200	919500	919400	1008000
MIN	848700	924600	977200	908200	910400	908400	908200	911700	911600	898300	879700	879500
(+)	605.64	601.98	603.58	598.88	600.64	599.20	600.39	599.41	599.81	598.96	596.76	601.19
(++)	+149,800	-54,300	+23,500	-67,900	+25,000	-20,500	+16,900	-13,900	+5,700	-12,100	-30,700	+62,500
CAL YR 1991	MAX 1182000		MIN 848700		(++) +30,600							
WTR YR 1992	MAX 1086000		MIN 848700		(++) +84,000							

(+) ELEVATION, IN FEET, AT END OF MONTH
(++) CHANGE IN CONTENTS, IN ACRE-FEET



RED RIVER BASIN
07339000 MOUNTAIN FORK NEAR EAGLETOWN, OK

LOCATION.--Lat 34°02'30", long 94°37'11", in SE 1/4 SE 1/4 sec.7, T.6 S., R.26 E., McCurtain County, Hydrologic Unit 11140108, on right downstream bank on U.S. Highway 70, 2.0 mi west of Eagletown, 10.7 mi downstream from Broken Bow Dam, and at mile 8.9.

DRAINAGE AREA.--787 mi².

PERIOD OF RECORD.--March 1924 to December 1925, October 1929 to current year. Published as Mountain Fork River near Broken Bow 1924-25 and as Mountain Fork River near Eagletown 1929-60. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area. WSP 1241: 1924-26, 1930 (M), 1936-37 (M), 1938, 1939 (M) 1942 (M).

GAGE.--Water-stage recorder. Datum of gage is 333.87 ft above National Geodetic Vertical Datum of 1929. See WSP 1920 for history of changes prior to July 23, 1950.

REMARKS.--Records good. Flow completely regulated except for 33 mi² intervening area, since October 1968 by Broken Bow Lake (station 07338900). U.S. Army Corps of Engineers' satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 18-19, 1915, reached a stage of 26.4 ft, from information provided by local resident, discharge, 92,500 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	605	1570	2800	7770	671	224	796	3490	998	2780	630	388
2	348	1210	934	7140	197	1830	769	2220	2230	3750	497	361
3	500	944	512	4920	387	2080	702	2300	782	1770	214	1030
4	436	2140	2840	3420	774	3190	388	4430	1340	694	426	1160
5	495	4050	6980	2450	333	3850	187	2760	1810	494	539	967
6	515	4500	7120	3320	341	3480	279	2010	2530	857	754	789
7	333	6160	7130	2580	579	3270	538	530	2290	567	802	955
8	448	7730	7130	4760	280	3570	332	567	814	825	933	1160
9	295	6700	2140	3860	166	4210	454	380	1630	575	1210	1380
10	417	6820	633	4600	174	1710	428	199	1310	355	2350	1310
11	331	7390	243	2950	528	3040	504	234	1710	359	1900	633
12	323	6220	1380	3350	1680	3810	196	373	2110	355	1070	613
13	279	4070	993	5160	510	3640	545	254	2600	198	1020	1560
14	266	4010	3060	2940	1640	2290	764	260	2770	365	776	2290
15	268	3650	4480	2000	4210	2730	577	345	3960	705	503	1610
16	262	1280	7550	1310	4050	3660	804	518	4360	553	346	1140
17	269	614	7570	1050	3660	2510	707	264	5640	2100	762	1300
18	265	2150	7600	319	3160	1320	672	234	4920	919	541	954
19	281	4730	7610	229	4340	397	209	407	2560	606	542	568
20	267	3190	7700	548	4250	2480	451	395	1210	286	496	756
21	256	864	6610	305	3570	4830	251	770	352	484	1010	1890
22	265	1550	910	714	1010	4450	3100	255	1270	469	951	1210
23	266	5550	2300	2350	722	4050	3160	337	2580	338	298	1400
24	279	5930	4000	3980	2060	2400	1640	231	2220	694	1080	3500
25	1980	6730	4520	2620	3400	3040	343	214	2470	630	2320	5320
26	1840	6340	6290	2740	2970	2730	177	293	1040	331	1220	7560
27	2930	6560	6100	3620	3420	3220	244	2940	1120	864	383	7570
28	2840	4810	7600	2870	3420	2060	201	1520	584	1440	440	7580
29	4010	3840	7640	1940	893	624	1600	1750	1060	1050	515	7480
30	712	2790	7600	967	---	983	1810	2540	1060	656	500	4560
31	744	---	7700	897	---	911	---	347	---	1340	350	---
TOTAL	23325	124092	147675	87679	53395	82589	22828	33367	61330	27409	25378	68994
MEAN	752	4136	4764	2828	1841	2664	761	1076	2044	884	819	2300
MAX	4010	7730	7700	7770	4340	4830	3160	4430	5640	3750	2350	7580
MIN	256	614	243	229	166	224	177	199	352	198	214	361
AC-FT	46270	246100	292900	173900	105900	163800	45280	66180	121600	54370	50340	136800

RED RIVER BASIN

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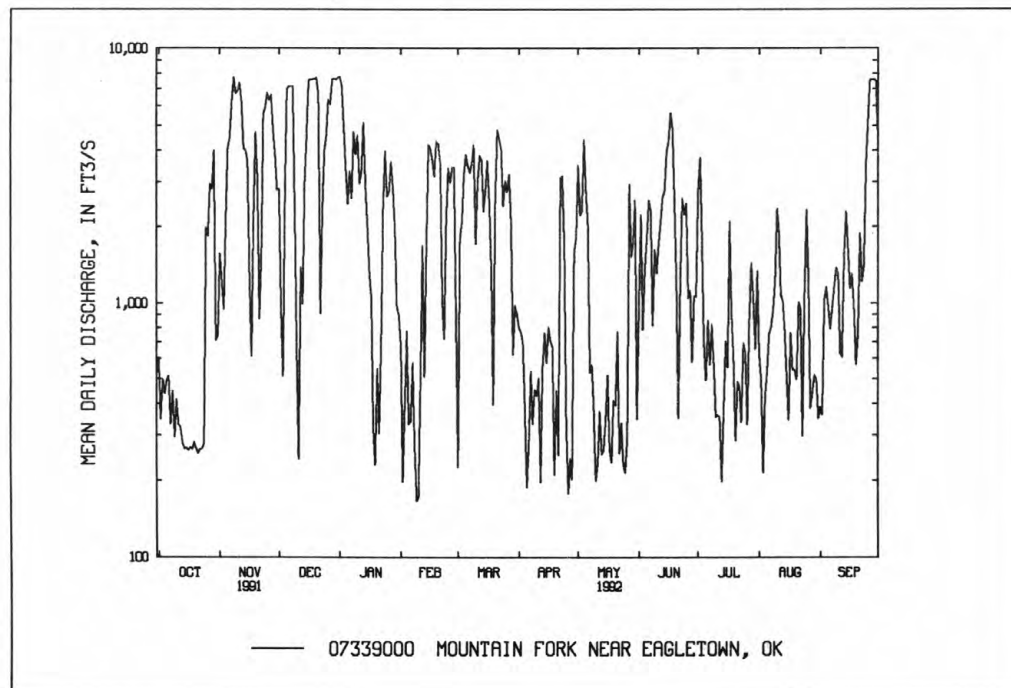
07339000 MOUNTAIN FORK NEAR EAGLETOWN, OK--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1992, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	594	1253	1868	1656	1848	2121	2270	2238	1799	885	712	618
MAX	1965	6897	5203	5121	4159	4123	4976	7264	6061	2645	1515	2300
(WY)	1975	1985	1985	1988	1989	1973	1979	1991	1990	1983	1983	1992
MIN	136	168	154	199	292	423	306	357	219	155	238	155
(WY)	1989	1990	1990	1981	1981	1986	1980	1988	1988	1988	1985	1989

SUMMARY STATISTICS 1991 CALENDAR YEAR 1992 WATER YEAR WATER YEARS 1970 - 92

ANNUAL TOTAL	913499	758061	
ANNUAL MEAN	2503	2071	^a 1486
HIGHEST ANNUAL MEAN			2468 1973
LOWEST ANNUAL MEAN			651 1976
HIGHEST DAILY MEAN	11500	May 19	7770 Jan 1 11500 May 19 1991
LOWEST DAILY MEAN	163	Aug 12	166 Feb 9 ^b 16 Dec 12 1971
ANNUAL SEVEN-DAY MINIMUM	241	Jun 18	266 Oct 16 90 Oct 10 1969
INSTANTANEOUS PEAK FLOW			10000 Nov 19 ^c 18200 Jun 2 1990
INSTANTANEOUS PEAK STAGE			8.51 Nov 19 ^d 11.58 Jun 2 1990
ANNUAL RUNOFF (AC-FT)	1812000	1504000	1076000
10 PERCENT EXCEEDS	7130	4990	4020
50 PERCENT EXCEEDS	1230	1180	676
90 PERCENT EXCEEDS	298	280	161

^aPrior to regulation by Broken Bow Lake, 1925, 1930-68, 1,291 ft³/s.^bNo flow in several years prior to regulation by Broken Bow Lake.^cMaximum discharge for period of record, 101,000 ft³/s May 20, 1960, from rating curve extended above 65,000 ft³/s.^dMaximum gage-height for period of record, 26.73 ft May 20, 1960.

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.

Miscellaneous Sites

Discharge measurements in the following table were made at special study and miscellaneous sites throughout the state.

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
RED RIVER BASIN						
07308970	Boxelder Creek near Apache, OK.	Lat 34°54'55", long 098°21'49", in SE 1/4 SW 1/4 SW 1/4 sec.9, T.5 N., R.11 W., Caddo County, Hydrologic Unit 11130202, at county road bridge 0.4 mi west of U.S. Highway 281, 1 mi north of Apache.	25.2	1989	03-14-89	.86
07312945	Little Beaver Creek near Rush Springs, OK.	Lat 34°43'34", long 098°01'03", in SW 1/4 SW 1/4 SW 1/4 sec.14, T.3 N., R.8 W., Grady County, Hydrologic Unit 11130208, at county road bridge 3/4 mi west, 3 mi north of station 07312950.	10.6	1989	03-14-89	2.4
07312950	Little Beaver Creek near Marlow, OK.	Lat 34°40'57", long 098°00'31", in SE 1/4 SW 1/4 SW 1/4 sec.35, T.3 N., R.8 W., Grady County, Hydrologic Unit 11130208, at county road bridge 7 mi south, 2.5 mi west of junction U.S. Highway 81 and State Highway 17 at Rush Springs.	35.4	^b 1964-73 1989-91	03-14-89 02-11-91	8.0 6.30
07324180	Quatermaster Creek north of Hammon, OK.	Lat 35°41'05", long 099°20'45", in SW 1/4 NW 1/4 SW 1/4 sec.8, T.14 N., R.20 W., Roger Mills County, Hydrologic Unit 11130301, at State Highway 34 bridge 4.6 mi north of Junction of State Highways 33 and 34 at Hammon.	108	1991	02-10-91	2.8
07324550	Barnitz Creek near Clinton, OK.	Lat 35°32'04", long 099°00'48", in NE 1/4 NE 1/4 NW 1/4 sec.5, T.12N., R.17W., Custer County, Hydrologic Unit 11130302, at county road bridge 1.5 mi north of U.S. Highway 183 bridge over the Washita River, then 3.2 mi west on county road.	260	1991	02-10-91	24

^bPartial streamflow records for this period.

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
RED RIVER BASIN						
07325025	Beaver Creek near Clinton, OK.	Lat 35°32'04", long 099°55'53", in NW 1/4 NW 1/4 NE 1/4 sec.1, T.12N., R.17 W., Custer County, Hydrologic Unit 11130302, at county road bridge, 1.5 mi north of U.S. Highway 183 bridge over the Washita River, then 1.2 mi east on county road.	78.3	1991	02-10-91	7.4
07325775	Cobb Creek at Colony, OK.	Lat 35°20'55", long 098°40'08", in SW 1/4 SE 1/4 SW 1/4 sec.10, T.10 N., R.14 W., Washita County, Hydrologic Unit 11130302, at State Highway 69 bridge at east edge of Colony.	49.5	1989, 91	03-14-89 02-10-91	7.3 7.9
07325850	Lake Creek near Eakley, OK.	Lat 35°17'27", long 098°31'44", in NE 1/4 NW 1/4 sec.1, T.9 N., R., 13 W., Caddo County, Hydrologic Unit 11130302, at State Highway 152 bridge southeast of Eakley.	52	^a 1970-78 1991	02-10-91	5.93
07326475	Hog Creek near Anadarko, OK.	Lat 35°02'30", long 098°19'17", in SE 1/4 SW 1/4 SW 1/4 sec.9, T.5 N., R.11 W., Caddo County, Hydrologic Unit 11130302, at county road bridge 1/4 mi south of State Highway 9, U.S. Highway 281 2 mi east of the junction of highways 9 and 281.	20.4	1989, 91	03-13-89 02-11-91	4.2 4.3
07326800	Sugar Creek at Binger, OK.	Lat 35°16'45", long 098°20'01", in NE 1/4 SE 1/4 SW 1/4 sec.26, T.10 N., R.11 W., Caddo County, Hydrologic Unit 11130302, at U.S. Highway 281 and State Highway 152 bridge at east edge of Binger.	101	1991	02-10-91	17
07327020	Sugar Creek near Anadarko, OK.	Lat 35°07'01", long 098°11'49", in SE 1/4 SE 1/4 SE 1/4 sec.36, T.8 N., R.10 W., Caddo County, Hydrologic Unit 11130302, 2.4 mi north of U.S. Highway 281 bridge over the Washita River on U.S. Highway 281, then about 3.3 mi east on blacktopped road to county bridge.	236	1991	02-10-91	30
07327045	Spring Creek near Cogar, OK.	Lat 35°15'44", long 098°11'04", in SE 1/4 SE 1/4 SE 1/4 sec.7, T.9 N., R.9 W., Caddo County, Hydrologic Unit 11130302, at county road bridge 1.2 mi west, 5 mi north then 0.9 mi east of station 07327050.	11.0	1989, 91	03-13-89 02-10-91	1.5 1.7

^aContinuous streamflow records for this period.

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
RED RIVER BASIN						
07327050	Spring Creek near Gracemont, OK.	Lat 35°11'21", long 98°10'34", in SW 1/4 SW 1/4 SE 1/4 sec.5, T.8 N., R.9 W., Caddo County, Hydrologic Unit 11130302, at county road bridge 5.3 mi east of U.S. Highway 281 in Gracemont.	34.4	1989, 91, 92	03-13-89 02-10-91	3.5 3.9
07327055	Stinking Creek near Dutton, OK.	Lat 35°11'21", long 98°07'35", in NE 1/4 sec.10, T.8 N., R.9 W., Caddo County, Hydrologic Unit 11130302, on downstream side of county road bridge, 2 mi southwest of Dutton and 4.5 mi north of Lake Chickasha.	22.1	1991-92	08/08/91 10/09/91 11/19/91 12/19/91 01/06/92 02/20/92 03/31/92 04/17/92 04/17/92 04/17/92 05/15/92 07/01/92 08/17/92	0.73 2.2 5.4 96 7.6 4.4 3.6 35 41 25 1.8 4.4 2.7
07327065	Spring Creek near Verden, OK.	Lat 35°07'00", long 98°07'24", in NW 1/4, NW 1/4 sec.2, T.7 N., R.9 W., Caddo County, Hydrologic Unit 11130302, 3.0 mi northwest of Verden.	76.1	1991-92	08/08/91 10/09/91 11/18/91 01/07/92 02/20/92 03/31/92 05/13/92 07/02/92 08/17/92	0.43 7.9 7.8 35 34 33 36 35 0.33
07327480	Little Washita River near Farwell, OK.	Lat 34°51'32", long 98°20'00", in SW 1/4 SW 1/4 SE 1/4 sec.23, T.5 N., R.8 W., Grady County, Hydrologic Unit 11130302, at county road bridge 4.3 mi south of U.S. Highway 81 bridge over the Little Washita River on U.S. Highway 81. then 3.3 mi west on county road.	132	1991	02-11-91	28
07328560	Washington Creek Tributary near Pauls Valley, OK.	Lat 34°49'33", long 97°13'23", in NE 1/4, NW 1/4 sec.17, T.4 N., R.1 E., Garvin County, Hydrologic Unit 11130303, on left downstream end of culvert on paved county road, 4 mi north of Pauls Valley Lake and 7 mi north of Pauls Valley.	2.1	1991-92	07/31/91 09/03/91 09/04/91 10/02/91 11/18/91 12/20/91 01/08/92 02/19/92 03/30/92 05/11/92 05/12/92 07/01/92 08/19/92	0.01 0.02 3.1 0.04 0.94 19 0.98 0.38 0.38 41 9.2 3.9 0.16

Station number	Station name	Location	Drainage area (mi ²)	Period of record	<u>Measurements</u>	
					Date	Discharge (ft ³ /s)
RED RIVER BASIN						
07328730	Rush Creek at Rush Springs, OK.	Lat 35°46'04", long 097°56'04", in NW 1/4 SE 1/4 SE 1/4 sec.29, T.4 N., R.7 W., Grady County, Hydrologic Unit 11130303, at culvert 0.25 mi east of U.S. Highway 81 on Arapaho Street at north edge of Rush Springs, along north side of city park.	6.58	1991	02-11-91	0.87

RED RIVER BASIN

Water-Quality at Miscellaneous Stations

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER)	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)	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)
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07308870 BOXELDER CREEK NEAR APACHE, OK (LAT 34 54 48N LONG 098 21 43W)

MAR 1989

14...	1200	--	80020	--	1950	7.8	--	14.0	1200	370	58	51
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07312945 LITTLE BEAVER CREEK NEAR RUSH SPRINGS, OK (LAT 34 43 34N LONG 098 01 03W)

MAR 1989

14...	1630	--	80020	--	980	7.7	--	20.5	570	170	34	24
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07312950 LITTLE BEAVER CREEK NEAR MARLOW, OK (LAT 34 40 55N LONG 098 00 30W)

MAR 1989

14...	1520	--	80020	--	1040	7.7	--	21.0	520	150	33	19
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07325000 WASHITA RIVER NEAR CLINTON, OK (LAT 35 31 52N LONG 098 57 57W)

MAR 1989

13...	1615	--	80020	--	2450	8.2	--	16.0	1500	340	150	61
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07325500 WASHITA RIVER AT CARNEGIE, OK (LAT 35 07 02N LONG 098 33 49W)

MAR 1989

14...	1330	1028	80020	141	2300	8.3	18.0	18.0	1300	330	120	100
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07325800 COBB CREEK NEAR EAKLY, OK (LAT 35 17 26N LONG 098 35 38W)

MAR 1989

14...	1010	1028	80020	17	840	8.2	14.0	12.0	400	120	25	29
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07326475 HOG CREEK NEAR ANADARKO, OK (LAT 35 02 30N LONG 098 19 17W)

MAR 1989

13...	1600	--	80020	--	1480	8.4	--	13.5	880	320	21	22
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DATE	SODIUM PERCENT (00932)	SODIUM RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER WH IT FIELD (MG/L AS HCO3) (00450)	CAR- BONATE WATER WH IT FIELD (MG/L AS CO3) (00447)	ALKA- LINITY WAT WH TOT IT FIELD (MG/L AS CACO3) (00419)	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)	IODIDE, DIS- SOLVED (MG/L AS I) (71865)
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07308870 BOXELDER CREEK NEAR APACHE, OK (LAT 34 54 48N LONG 098 21 43W)

MAR 1989

14...	9	0.7	3.4	259	--	216	1300	22	0.62	<0.010	<0.001
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Water-Quality at Miscellaneous Stations--Continued

DATE	SODIUM PERCENT (00932)	SODIUM RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER WH IT FIELD (MG/L AS HCO3) (00450)	CAR- BONATE WATER WH IT FIELD (MG/L AS CO3) (00447)	ALKA- LINITY WAT WH TOT IT FIELD (MG/L AS CACO3) (00419)	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)	IODIDE, DIS- SOLVED (MG/L AS I) (71865)
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07312945 LITTLE BEAVER CREEK NEAR RUSH SPRINGS, OK (LAT 34 43 34N LONG 098 01 03W)

MAR 1989

14...	8	0.4	1.6	331	0	276	270	13	0.70	<0.010	<0.001
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07312950 LITTLE BEAVER CREEK NEAR MARLOW, OK (LAT 34 40 55N LONG 098 00 30W)

MAR 1989

14...	7	0.4	1.2	302	0	252	300	16	0.63	<0.010	<0.001
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07325000 WASHITA RIVER NEAR CLINTON, OK (LAT 35 31 52N LONG 098 57 57W)

MAR 1989

13...	8	0.7	3.1	290	0	242	1700	42	0.45	<0.010	<0.001
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07325500 WASHITA RIVER AT CARNEGIE, OK (LAT 35 07 02N LONG 098 33 49W)

MAR 1989

14...	15	1	3.2	264	--	220	1500	95	0.42	<0.010	<0.001
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07325800 COBB CREEK NEAR EAKLY, OK (LAT 35 17 26N LONG 098 35 38W)

MAR 1989

14...	14	0.6	1.3	293	0	244	220	14	0.32	<0.010	<0.001
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07326475 HOG CREEK NEAR ANADARKO, OK (LAT 35 02 30N LONG 098 19 17W)

MAR 1989

13...	5	0.3	1.8	259	--	216	860	11	0.57	<0.010	<0.001
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DATE	SOLIDS, SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SUM OF CONSTITUENTS, DIS- SOLVED (MG/L (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- SOLIDS, RESIDUE NO2+NO3 AT 105 DEG. C, TOTAL (MG/L) (00500)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00608)	PHOS- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	PHOS- PHORUS ORTHOR DIS- SOLVED (MG/L AS P) (00671)	PHATE, ORTHOR DIS- SOLVED (MG/L AS PO4) (00660)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
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07308870 BOXELDER CREEK NEAR APACHE, OK (LAT 34 54 48N LONG 098 21 43W)

MAR 1989

14...	8.9	1970	2.68	--	1860	<0.500	<0.100	--	0.072	0.22	<300
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07312945 LITTLE BEAVER CREEK NEAR RUSH SPRINGS, OK (LAT 34 43 34N LONG 098 01 03W)

MAR 1989

14...	21	741	1.01	--	729	<0.500	<0.100	--	0.077	0.24	<300
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Water-Quality at Miscellaneous Stations--Continued

DATE	SOLIDS, SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SUM OF CONSTITUENTS, DIS- (MG/L (70301)	SOLIDS, DIS- (TONS (70303)	SOLIDS, DIS- (TONS (70302)	NITRO- SOLIDS, RESIDUE AT 105 DEG. C, (MG/L) (00500)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N) (00608)	PHOS- GEN, AMMONIA DIS- SOLVED (MG/L) AS NH4) (71846)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L) AS P) (00671)	PHATE, ORTHO, DIS- SOLVED (MG/L) AS PO4) (00660)	ALUM- INUM, DIS- SOLVED (UG/L) AS AL) (01106)
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07312950 LITTLE BEAVER CREEK NEAR MARLOW, OK (LAT 34 40 55N LONG 098 00 30W)

MAR 1989

14... 18 740 1.01 -- 791 <0.500 <0.100 -- 0.117 0.36 <300

07325000 WASHITA RIVER NEAR CLINTON, OK (LAT 35 31 52N LONG 098 57 57W)

MAR 1989

13... 15 2480 3.38 -- 2390 1.70 0.110 0.14 0.080 0.25 <300

07325500 WASHITA RIVER AT CARNEGIE, OK (LAT 35 07 02N LONG 098 33 49W)

MAR 1989

14... 15 2370 3.23 904 2260 1.70 <0.100 -- 0.068 0.21 <300

07325800 COBB CREEK NEAR EAKLY, OK (LAT 35 17 26N LONG 098 35 38W)

MAR 1989

14... 19 629 0.86 28.4 623 1.20 0.100 0.13 0.087 0.27 <300

07326475 HOG CREEK NEAR ANADARKO, OK (LAT 35 02 30N LONG 098 19 17W)

MAR 1989

13... 18 1430 1.95 -- 1320 0.700 <0.100 -- 0.087 0.27 <300

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)
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07308870 BOXELDER CREEK NEAR APACHE, OK (LAT 34 54 48N LONG 098 21 43W)

MAR 1989

14... <350 <10 24 <10 200 <5.0 <10 <100 <10 65 <45

07312945 LITTLE BEAVER CREEK NEAR RUSH SPRINGS, OK (LAT 34 43 34N LONG 098 01 03W)

MAR 1989

14... <350 <10 99 <10 150 <5.0 <10 <100 <10 44 <45

07312950 LITTLE BEAVER CREEK NEAR MARLOW, OK (LAT 34 40 55N LONG 098 00 30W)

MAR 1989

14... <350 <10 98 <10 150 <5.0 <10 <100 <10 51 <45

Water-Quality at Miscellaneous Stations--Continued

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)
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07325000 WASHITA RIVER NEAR CLINTON, OK (LAT 35 31 52N LONG 098 57 57W)

MAR 1989

13...	<350	<10	85	<10	420	<5.0	<10	<100	<10	34	<45
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07325500 WASHITA RIVER AT CARNEGIE, OK (LAT 35 07 02N LONG 098 33 49W)

MAR 1989

14...	<350	<10	81	<10	440	<5.0	<10	<100	<10	33	<45
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07325800 COBB CREEK NEAR EAKLY, OK (LAT 35 17 26N LONG 098 35 38W)

MAR 1989

14...	<350	<10	160	<10	240	<5.0	<10	<100	<10	37	<45
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07326475 HOG CREEK NEAR ANADARKO, OK (LAT 35 02 30N LONG 098 19 17W)

MAR 1989

13...	<350	<10	85	<10	150	<5.0	<10	<100	<10	46	<45
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DATE	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	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)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CYANIDE DIS-SOLVED (MG/L AS CN) (00723)
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07308870 BOXELDER CREEK NEAR APACHE, OK (LAT 34 54 48N LONG 098 21 43W)

MAR 1989

14...	490	<0.5	<100	<25	<5	<7.0	2900	<200	<100	14	<0.01
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07312945 LITTLE BEAVER CREEK NEAR RUSH SPRINGS, OK (LAT 34 43 34N LONG 098 01 03W)

MAR 1989

14...	99	<0.5	<100	<25	<5	<7.0	910	<200	<100	38	<0.01
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07312950 LITTLE BEAVER CREEK NEAR MARLOW, OK (LAT 34 40 55N LONG 098 00 30W)

MAR 1989

14...	180	<0.5	<100	<25	<5	<7.0	850	<200	<100	6	<0.01
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07325000 WASHITA RIVER NEAR CLINTON, OK (LAT 35 31 52N LONG 098 57 57W)

MAR 1989

13...	270	<0.5	<100	<25	<5	<7.0	4900	<200	<100	10	<0.01
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RED RIVER BASIN

Water-Quality at Miscellaneous Stations--Continued

	MANGA- NESE, DIS- SOLVED DATE	MERCURY DIS- SOLVED (UG/L AS MN)	MOLYB- DENUM, DIS- SOLVED (UG/L AS HG)	NICKEL, DIS- SOLVED (UG/L AS MO)	SELE- NIUM, DIS- SOLVED (UG/L AS NI)	SILVER, DIS- SOLVED (UG/L AS SE)	STRON- TIUM, DIS- SOLVED (UG/L AS AG)	THAL- LIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS TL)	ZINC, DIS- SOLVED (UG/L AS V)	CYANIDE DIS- SOLVED (MG/L AS ZN)	AS CN)
	(01056)	(71890)	(01060)	(01065)	(01145)	(01075)	(01080)	(01057)	(01085)	(01090)	(00723)	

07325500 WASHITA RIVER AT CARNEGIE, OK (LAT 35 07 02N LONG 098 33 49W)

MAR 1989

14...	110	<0.5	<100	<25	<5	<7.0	3800	<200	<100	<5	<0.01
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07325800 COBB CREEK NEAR EAKLY, OK (LAT 35 17 26N LONG 098 35 38W)

MAR 1989

14...	77	<0.5	<100	<25	<5	<7.0	3400	<200	<100	8	<0.01
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07326475 HOG CREEK NEAR ANADARKO, OK (LAT 35 02 30N LONG 098 19 17W)

MAR 1989

13...	220	<0.5	<100	<25	<5	<7.0	2800	<200	<100	10	<0.01
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GROUND-WATER LEVELS

209

BEAVER COUNTY

WELL-IDENTIFICATION NUMBER.--363853100311001. Local number 02N-24E-07 CCD 1.

LOCATION.--Lat 36°38'53", long 100°31'10", Hydrologic Unit 11100201, 2 mi north of Elmwood.

AQUIFER.--Ogallala Formation.

WELL CHARACTERISTICS.--Drilled stock well, diameter 6 in., depth 95 ft.

DATUM.--Altitude of land-surface datum is 2,625 ft. Measuring point: highest point on north side of casing .50 ft above land-surface datum.

PERIOD OF RECORD.--1946, 1967-90, 1992 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 71.96 below land-surface datum, Jan. 12, 1971; lowest water level, 78.88 ft below land-surface datum, Jan. 23, 1973.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	WATER LEVEL
Apr. 2, 1992	76.59
June 9, 1992	76.82
Aug. 5, 1992	76.84

GROUND-WATER LEVELS

CADDO COUNTY

WELL-IDENTIFICATION NUMBER.--351308098341601. Local number 09N-13W-28 DDD 1.

LOCATION.--Lat 35°13'08", long 098°34'16", Hydrologic Unit 11130302, 2.0 mi east of Alfalfa.

AQUIFER.--Rush Springs Formation.

WELL CHARACTERISTICS.--Drilled well, diameter 8 in., depth 335 ft.

DATUM.--Altitude of land-surface datum is 1,440 ft. Measuring point: top of casing 1.00 ft above land-surface datum.

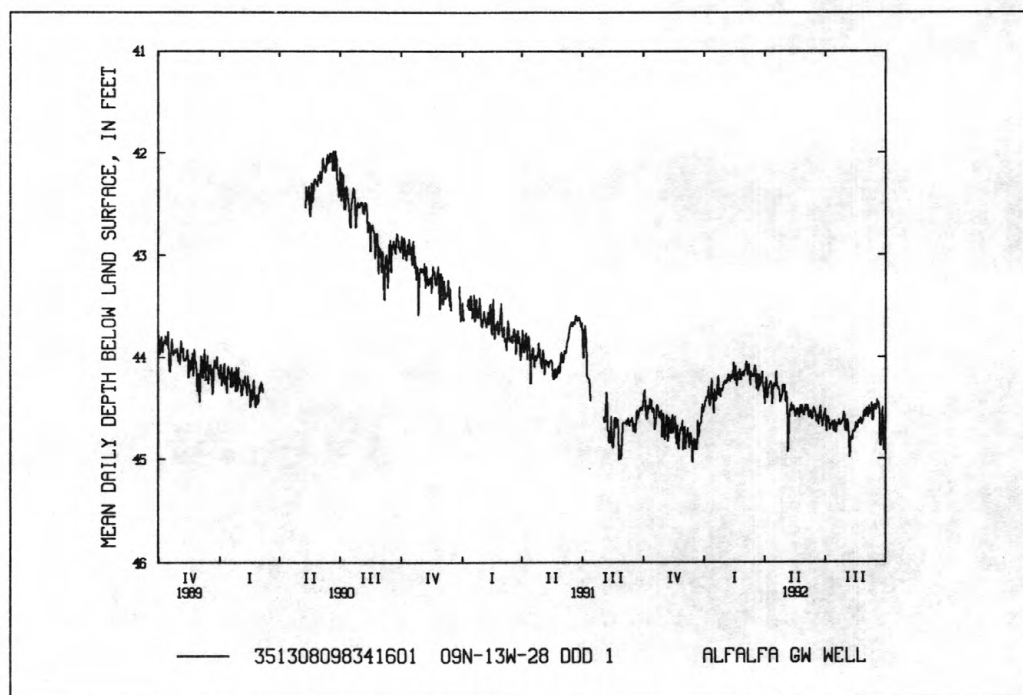
PERIOD OF RECORD.--1948 to current year.

REVISED RECORDS.--WDR OK-91-1: 1985 (L).

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 34.71 ft below land-surface datum, Aug. 1, 1949; lowest water level, 52.69 ft below land-surface datum, Apr. 5, 1985.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	44.58	44.56	44.77	44.40	44.20	44.07	44.40	44.47	44.47	44.58	44.65	44.48
10	44.51	44.69	44.78	44.45	44.18	44.28	44.24	44.53	44.55	44.67	44.78	44.62
15	44.50	44.74	44.86	44.55	44.23	44.19	44.26	44.51	44.52	44.62	44.71	44.52
20	44.61	44.85	44.89	44.31	44.16	44.24	44.30	44.51	44.63	44.66	44.62	44.48
25	44.59	44.75	44.66	44.39	44.22	44.28	44.42	44.47	44.59	44.65	44.65	44.49
EOM	44.55	44.91	44.50	44.27	44.19	44.36	44.30	44.53	44.54	44.71	44.57	44.61
MAX	44.78	44.91	45.03	44.55	44.28	44.36	44.46	44.93	44.68	44.74	44.98	44.92
MIN	44.33	44.56	44.46	44.19	44.05	44.04	44.14	44.27	44.47	44.51	44.52	44.42



GROUND-WATER LEVELS

211

CADDO COUNTY--Continued

WELL-IDENTIFICATION NUMBER.--352423098341701. Local number 11N-13W-21 DDD 1.

LOCATION.--Lat 35°24'23", long 098°34'17", Hydrologic Unit, 11130302, 7 mi north of Eakly.

AQUIFER.--Rush Springs Formation.

WELL CHARACTERISTICS.--Unused industrial well, diameter 5 in., depth 210 ft.

DATUM.--Altitude of land-surface datum is 1,610 ft. Measuring point: instrument shelf 2.75 ft above land-surface datum.

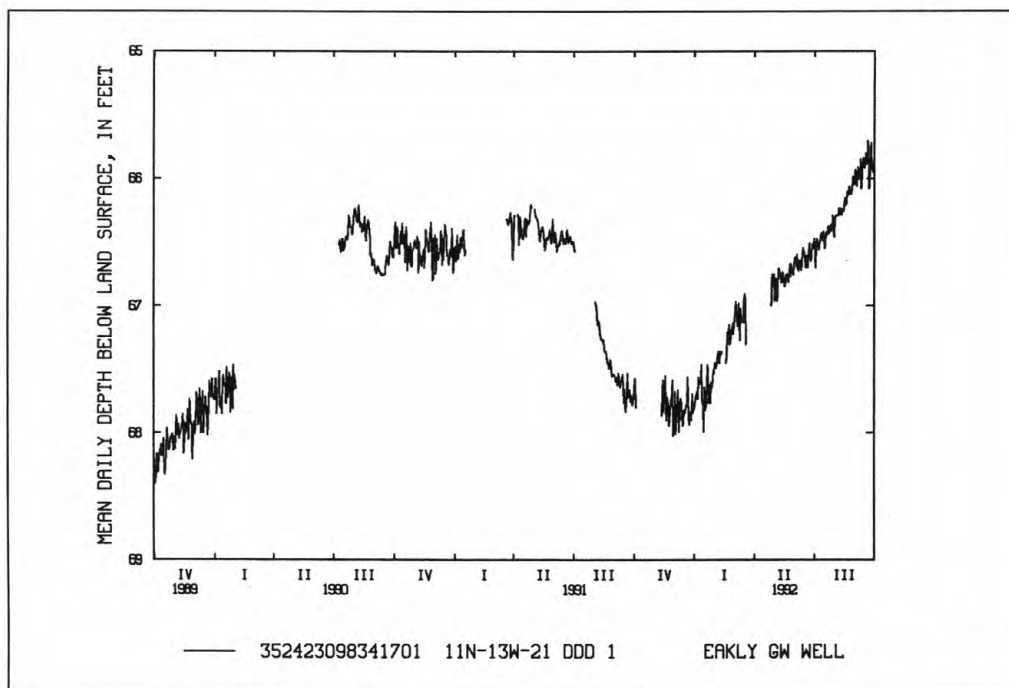
PERIOD OF RECORD.--1965 to 1981, 1983 to current year.

REVISED RECORDS.--WDR OK-91-1: 1985 (L). 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 58.06 ft below land-surface datum, Aug. 2, 1965; lowest water level, 75.94 ft below land-surface datum, Nov. 21, 1985.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	67.80	67.67	67.39	67.01	---	66.82	66.59	66.47	66.29	65.91
10	---	---	67.80	67.61	67.38	67.27	---	66.76	66.66	66.48	66.23	66.08
15	---	67.83	67.92	67.99	---	67.13	---	66.77	66.58	66.41	66.22	65.92
20	---	67.90	67.78	67.63	67.21	---	---	66.75	66.68	66.44	66.10	65.70
25	---	67.83	67.83	67.76	67.28	---	---	66.67	66.63	66.38	66.12	65.72
EOM	---	68.02	67.80	67.53	67.22	---	66.77	66.70	66.50	66.46	66.03	65.82
MAX	---	---	68.01	67.99	---	---	---	66.96	66.72	66.70	66.36	66.08
MIN	---	---	67.56	67.46	---	---	---	66.67	66.50	66.29	65.98	65.70



GROUND-WATER LEVELS

CANADIAN COUNTY

WELL-IDENTIFICATION NUMBER.--353107097453701. Local number 12N-05W-18 ADA 1.

LOCATION.--Lat 35°31'07", long 097°45'37", Hydrologic Unit 11100301, 0.5 mi northwest of Yukon.

AQUIFER.--Terrace, low, deposits.

WELL CHARACTERISTICS.--Drilled abandoned city well, diameter 12 in., depth 47.2 ft.

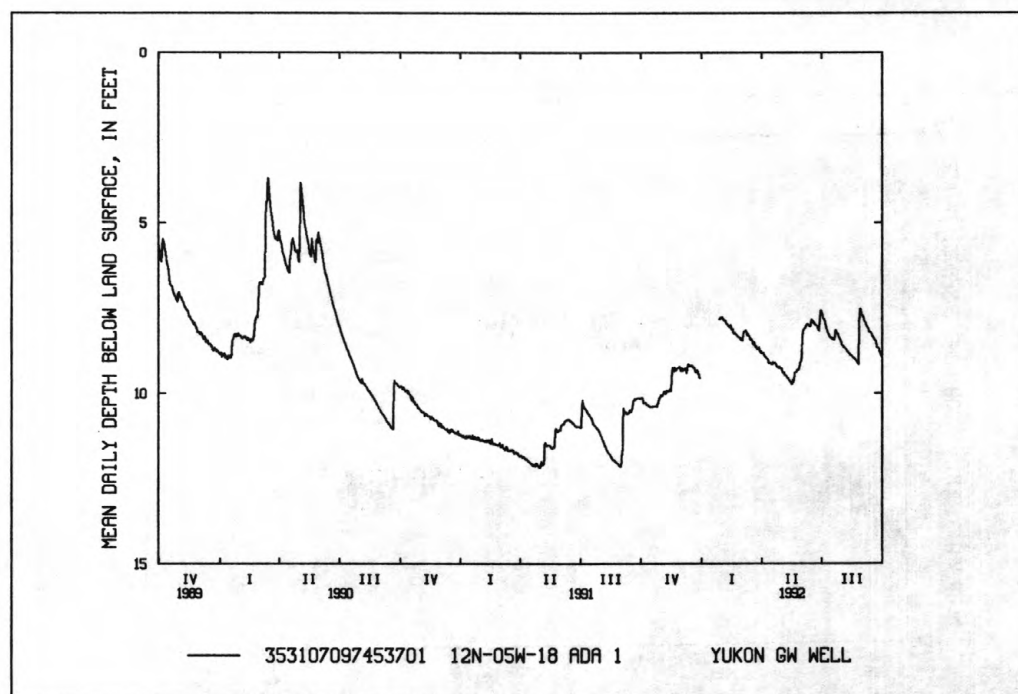
DATUM.--Altitude of land-surface datum 1,270 ft. Measuring point: top west edge of casing 0.80 ft above land-surface datum.

PERIOD OF RECORD.--1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.36 ft below land-surface datum, May 28, 1987: lowest water level, 15.31 ft below land-surface datum, Oct. 6, 1981.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	10.29	9.94	9.29	---	7.86	8.18	8.90	9.41	8.10	7.85	8.68	7.93
10	10.34	9.94	9.30	---	8.01	8.29	8.99	9.55	7.98	8.22	8.80	8.18
15	10.38	9.94	9.19	---	8.12	8.42	9.12	9.69	7.85	8.39	8.90	8.32
20	10.37	9.34	9.23	---	8.23	8.57	9.11	9.54	7.95	8.43	8.99	8.45
25	10.38	9.26	9.32	---	8.35	8.70	9.22	9.31	8.10	8.26	9.13	8.69
EOM	10.05	9.33	---	7.79	8.43	8.77	9.26	8.99	7.59	8.58	7.73	8.94
MAX	10.38	10.07	---	---	8.43	8.79	9.26	9.73	8.58	8.58	9.13	8.94
MIN	10.05	9.21	---	---	7.78	8.16	8.80	8.99	7.58	7.62	7.53	7.75



GROUND-WATER LEVELS

213

CIMARRON COUNTY

WELL-IDENTIFICATION NUMBER.--364450102190001. Local number 03N-07E-09 BBB 1.

LOCATION.--Lat 36°44'52", long 102°19'10", Hydrologic Unit 11100101, 6 mi southwest of Keys.

AQUIFER.--Ogallala Formation.

WELL CHARACTERISTICS.--Drilled unused stock well, diameter 6 in., depth 61 ft.

DATUM.--Altitude of land-surface datum is 3,965 ft. Measuring point: top of casing .50 ft above land-surface datum.

PERIOD OF RECORD.--1938-90, 1992 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 25.41 ft below land-surface datum, Nov. 28, 1989; lowest water level, 46.38 ft below land-surface datum, July 19, 1938.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	WATER LEVEL
Apr. 29, 1992	27.74
June 8, 1992	27.85
Aug. 4, 1992	27.90

GROUND-WATER LEVELS

COMANCHE COUNTY

WELL-IDENTIFICATION NUMBER.--343540098342001. Local number 01N-13W-04 BAA 1.

LOCATION.--Lat 34°35'36", long 098°34'22", Hydrologic Unit 11130203, 4 mi southeast of Cache.

AQUIFER.--Lower Arbuckle Group.

WELL CHARACTERISTICS.--Test well, diameter 6 in., depth 997 ft.

DATUM.--Altitude of land-surface datum is 1,200 ft. Measuring point: top of casing 1.8 ft above land-surface datum.

PERIOD OF RECORD.--1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 70.83 ft below land-surface datum, Aug. 13, 1992; lowest water level, 88.62 ft below land-surface datum, May 10, 1972.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 8, 1991	73.63	Mar. 30, 1992	72.39
Nov. 15, 1991	73.41	May 12, 1992	71.64
Jan. 9, 1992	73.41	June 30, 1992	71.13
Mar. 4, 1992	72.25	Aug. 13, 1992	70.83

GROUND-WATER LEVELS

215

CUSTER COUNTY

WELL-IDENTIFICATION NUMBER.--354112098430601. Local number 14N-14W-17 CBD 1.

LOCATION.--Lat 35°41'12", long 098°43'06", Hydrologic Unit 11090201, 4 mi south of Thomas.

AQUIFER.--Rush Springs Formation.

WELL CHARACTERISTICS.--Drilled unused irrigation well, diameter 16 in., depth 320 ft.

DATUM.--Altitude of land-surface datum is 1,685 ft. Measuring point: shelter base 2.26 ft above land-surface datum.

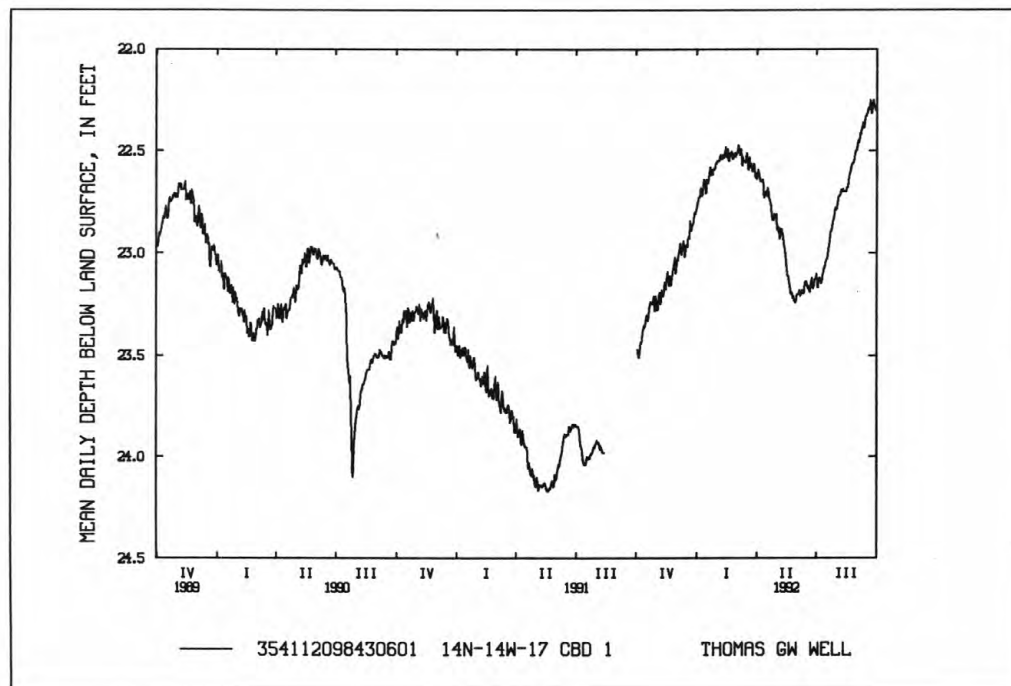
REMARKS.--Digital recorder installed May 20, 1981, mean-daily water levels published thereafter.

PERIOD OF RECORD.--1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.22 ft below land-surface datum, Sept. 25, 1992; lowest water level, 30.08 ft below land-surface datum Sept. 10, 1972.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	23.51	23.20	23.00	22.73	22.53	22.48	22.62	22.88	23.18	23.12	22.72	22.41
10	23.42	23.20	22.98	22.71	22.52	22.57	22.64	22.90	23.18	23.11	22.69	22.39
15	23.34	23.18	22.99	22.71	22.53	22.56	22.70	23.01	23.14	23.04	22.69	22.32
20	23.30	23.16	22.93	22.62	22.52	22.58	22.73	23.13	23.18	22.96	22.61	22.25
25	23.25	23.11	22.87	22.62	22.54	22.60	22.83	23.19	23.16	22.86	22.56	22.25
EOM	23.21	23.10	22.79	22.56	22.53	22.61	22.82	23.23	23.12	22.79	22.49	22.27
MAX	---	23.28	23.08	22.78	22.55	22.63	22.84	23.24	23.21	23.17	22.77	22.46
MIN	---	23.02	22.79	22.56	22.48	22.47	22.59	22.81	23.12	22.78	22.49	22.25



GROUND-WATER LEVELS

DELAWARE COUNTY

WELL-IDENTIFICATION NUMBER.--361415094452501. Local Number, 20N-24E-04 DCA 1.

LOCATION.--Lat 36°14'07", long 094°45'13", Hydrologic Unit 11070209, 3.3 mi northeast of Kansas, OK.

AQUIFER.--Keokuk Limestone.

WELL CHARACTERISTICS.--Drilled unused stock well, diameter 6 in., depth 38 ft.

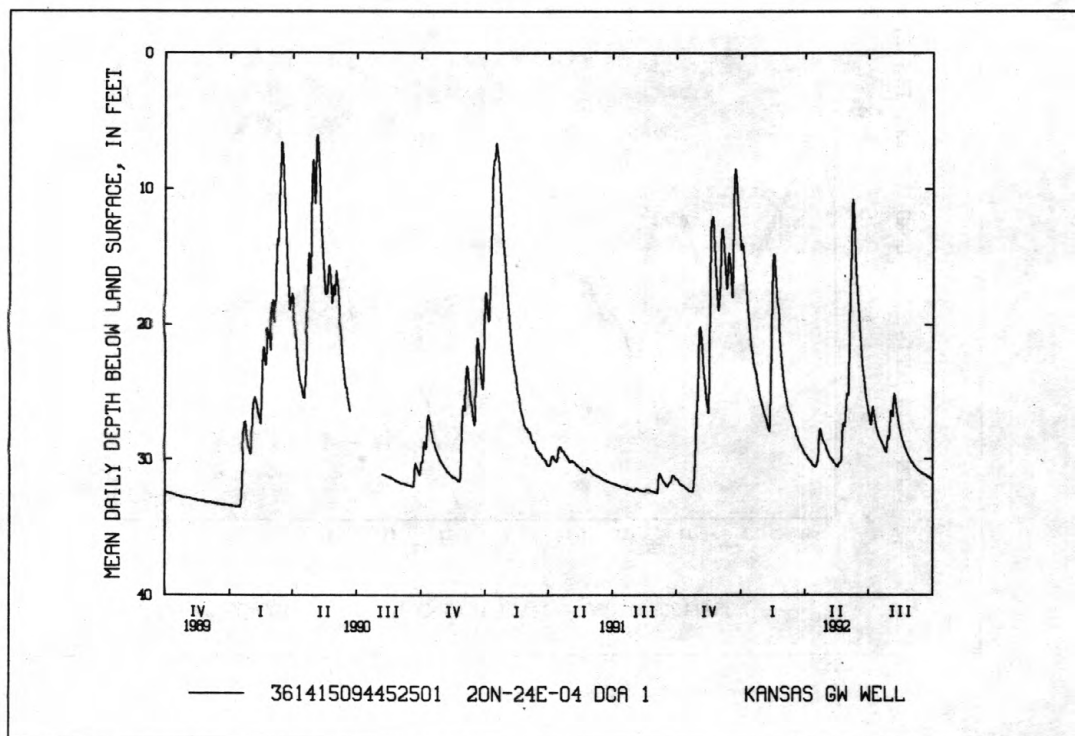
DATUM.--Altitude of land-surface datum is 1,150 ft. Measuring point: top of casing 1.85 ft above land-surface datum.

PERIOD OF RECORD.--1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.92 ft below land-surface datum, May 5, 1990; lowest, 33.52 ft below land-surface datum, Jan. 12, 1990.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	31.79	20.97	12.97	15.12	26.97	25.36	29.91	29.64	16.06	27.22	25.71	30.55
10	31.99	24.40	16.70	18.82	27.87	26.54	30.21	30.08	12.84	27.14	26.50	30.83
15	32.16	26.64	15.08	21.64	15.25	27.41	30.54	30.43	18.12	28.24	28.01	31.03
20	32.35	12.33	16.27	23.24	17.57	28.29	29.79	30.31	21.75	28.81	28.88	31.12
25	32.08	15.72	9.47	24.60	21.25	28.89	28.29	27.57	24.43	29.42	29.61	31.30
EOM	25.02	18.46	14.14	26.06	23.56	29.51	28.97	25.18	26.31	27.49	30.19	31.50
MAX	32.40	26.64	18.02	26.06	27.87	29.51	30.57	30.57	26.31	29.48	30.19	31.50
MIN	25.02	12.04	8.51	14.05	14.77	24.03	27.77	25.18	10.74	26.16	25.19	30.24



GROUND-WATER LEVELS

217

DEWEY COUNTY

WELL-IDENTIFICATION NUMBER.--355850098522701. Local number 17N-16W-02 ACB 1.

LOCATION.--Lat 35°58'50", long 98°52'27", Hydrologic Unit 11090201, 6.5 miles southeast of Taloga.
AQUIFER.--Rush Springs.

WELL CHARACTERISTICS.--Drilled unused well, diameter 6 in., depth 240 ft.

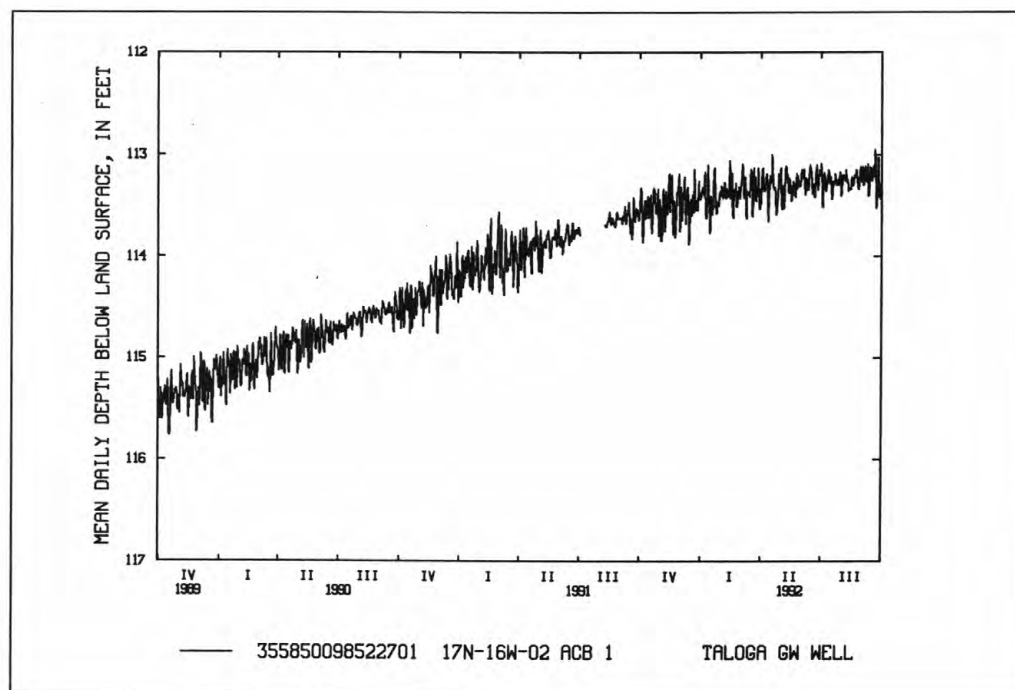
DATUM.--Altitude of land-surface datum is 1,810 ft. Measuring point: shelter base 2.89 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 112.92 ft below land-surface datum, Sept. 20, 1992; lowest water level, 116.36 ft below land-surface datum, May 27, 1989.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	113.86	113.34	113.42	113.33	113.33	113.14	113.32	113.31	113.14	113.18	113.24	113.11
10	113.63	113.49	113.44	113.60	113.37	113.63	113.19	113.18	113.25	113.27	113.25	113.41
15	113.55	113.56	113.65	113.77	113.43	113.41	113.21	113.27	113.15	113.22	113.32	113.26
20	113.55	113.78	113.50	113.38	113.37	113.49	113.32	113.27	113.37	113.28	113.20	112.95
25	113.58	113.49	113.45	113.58	113.51	113.46	113.53	113.18	113.25	113.26	113.29	113.03
EOM	113.44	113.75	113.44	113.41	113.43	113.34	113.20	113.27	113.17	113.41	113.27	113.23
MAX	113.86	113.85	113.88	113.77	113.62	113.63	113.66	113.54	113.42	113.52	113.35	113.53
MIN	113.33	113.19	113.14	113.10	113.06	113.09	113.00	113.11	113.10	113.08	113.12	112.95



GROUND-WATER LEVELS

ELLIS COUNTY

WELL-IDENTIFICATION NUMBER.--361536099464601. Local number 21N-24W-33 BBB 1.

LOCATION.--Lat 36°15'35", long 099°46'59", Hydrologic Unit 11100203, 4 mi southwest of Gage.

AQUIFER.--Ogallala Formation.

WELL CHARACTERISTICS.--Drilled unused well, diameter 5 in., depth 205 ft.

DATUM.--Altitude of land-surface datum is 2,295 ft. Measuring point: top of wooden recorder base 3.10 ft above land-surface datum.

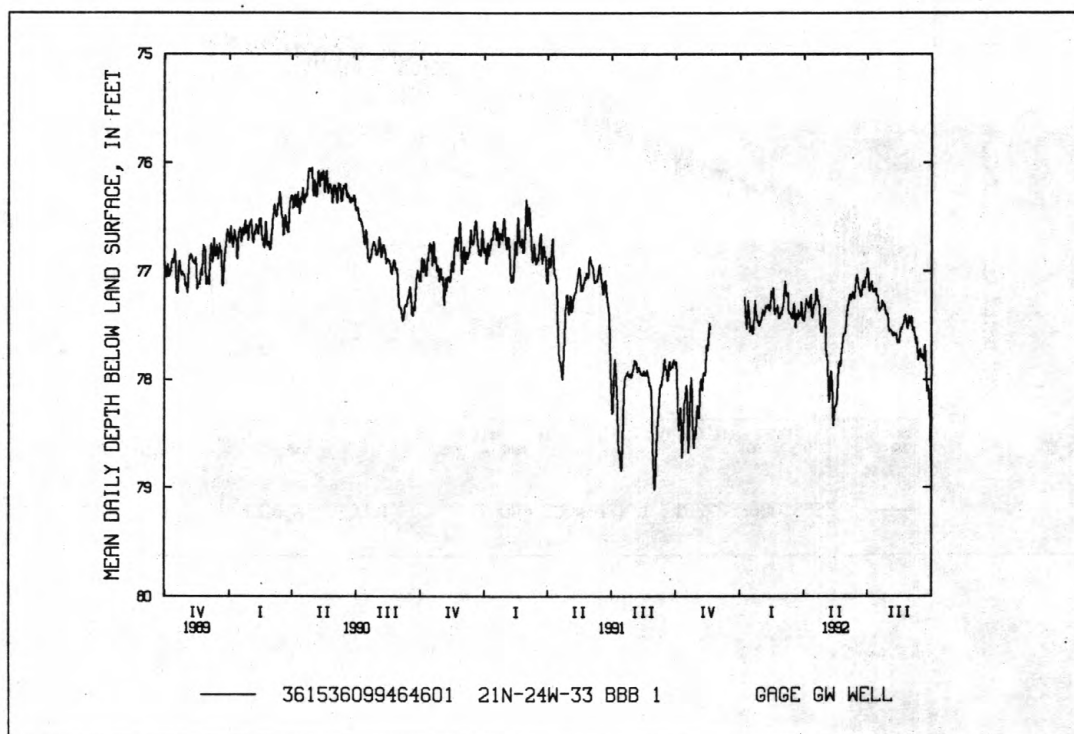
REMARKS.--Digital recorder installed June 2, 1981, mean-daily water levels published thereafter.

PERIOD OF RECORD.--April 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 75.96 ft below land-surface datum, April 29, 1990; lowest water level, 84.40 ft below land-surface datum, May 15, 1977.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	78.47	78.07	---	---	77.38	77.09	77.27	77.86	77.23	77.13	77.57	77.52
10	78.72	77.94	---	77.53	77.31	77.38	77.23	77.92	77.19	77.19	77.59	77.72
15	78.11	77.73	---	77.55	77.23	77.44	77.31	78.27	77.05	77.23	77.66	77.77
20	78.53	---	---	77.53	77.38	77.52	77.22	77.95	77.19	77.34	77.50	77.71
25	78.36	---	---	77.45	77.43	77.42	77.54	77.72	77.09	77.31	77.44	78.06
EOM	78.31	---	---	77.45	77.39	77.43	77.40	77.52	77.04	77.51	77.48	78.80
MAX	78.72	---	---	---	77.43	77.52	77.56	78.43	77.42	77.51	77.66	78.80
MIN	77.83	---	---	---	77.15	77.09	77.16	77.34	77.03	76.97	77.41	77.42



GROUND-WATER LEVELS

219

ELLIS COUNTY--Continued

WELL-IDENTIFICATION NUMBER.--363224099584601. Local number, 24N-26W-22 CCB 1.

LOCATION.--Lat 36°32'24", long 099°58'46", Hydrologic Unit 11100201, 3.5 mi northwest of Catesby.

AQUIFER.--Ogallala Formation.

WELL CHARACTERISTICS.--Drilled unused well, diameter 6 in., depth 94 ft.

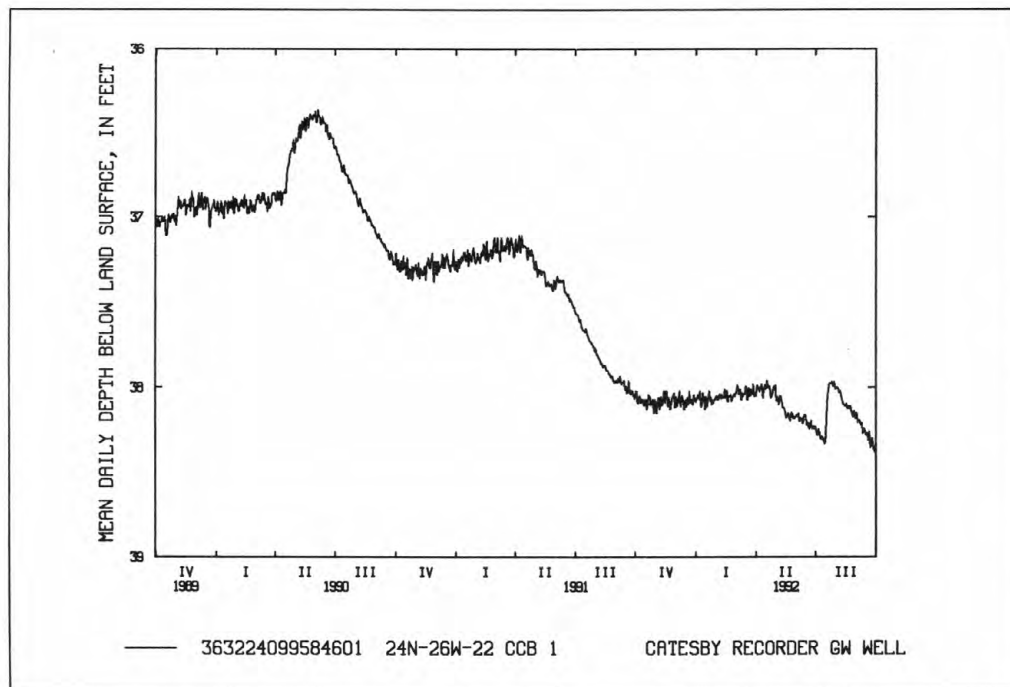
DATUM.--Altitude of land-surface datum is 2,340 ft. Measuring point: top edge of shelter base 2.40 ft above land-surface datum.

PERIOD OF RECORD.--1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 36.29 ft below land-surface datum, May 29, 1990; lowest daily water level, 40.98 ft below land-surface datum, Sept. 10, 1985.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	38.09	38.06	38.08	38.06	38.05	38.00	38.01	38.07	38.15	38.25	38.03	38.19
10	38.09	38.09	38.06	38.10	38.06	38.07	37.98	38.07	38.19	38.30	38.07	38.27
15	38.09	38.09	38.11	38.13	38.06	38.04	37.99	38.13	38.16	38.32	38.11	38.28
20	38.08	38.11	38.10	38.06	38.05	38.04	38.00	38.15	38.23	38.02	38.11	38.26
25	38.10	38.08	38.07	38.10	38.07	38.04	38.05	38.15	38.24	37.97	38.16	38.30
EOM	38.07	38.12	38.07	38.06	38.05	38.03	37.99	38.17	38.23	38.01	38.17	38.36
MAX	38.15	38.15	38.13	38.13	38.08	38.07	38.06	38.19	38.24	38.33	38.18	38.38
MIN	38.02	38.02	38.02	38.02	38.01	37.98	37.96	37.99	38.15	37.97	38.00	38.15



GROUND-WATER LEVELS

GRADY COUNTY

WELL-IDENTIFICATION NUMBER.--344656098031401. Local number 04N-08W-33 BBB 1.

LOCATION.--Lat 34°46'56", long 098°03'14", Hydrologic Unit 11130208, 5.6 mi west of Rush Springs on Hwy 17.

AQUIFER.--Rush Springs Formation.

WELL CHARACTERISTICS.--Drilled test well, diameter 6 in., depth 254 ft.

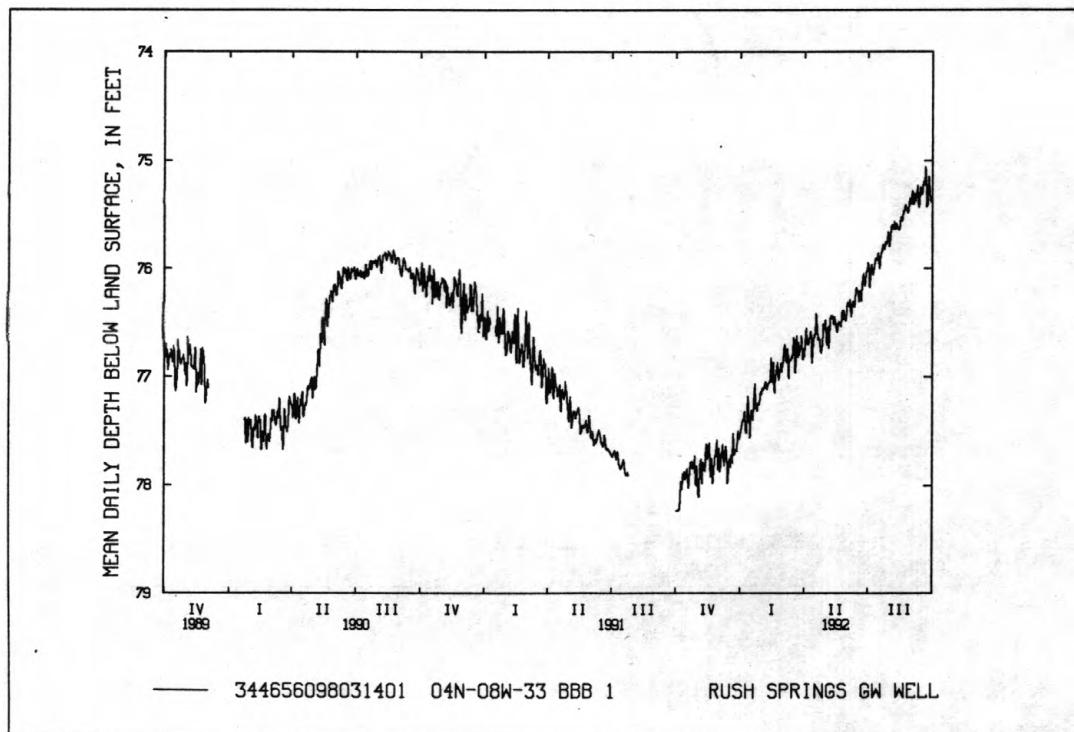
DATUM.--Altitude of land-surface datum is 1,335 ft. Measuring point: top of casing 3.98 ft above land-surface datum.

PERIOD OF RECORD.--1948 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 72.35 ft below land-surface datum, Sept. 15, 1987; lowest water level, 85.67 ft below land-surface datum, Feb. 29, 1968.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	78.23	77.80	77.75	77.40	77.07	76.73	76.70	76.55	76.29	75.98	75.61	75.30
10	78.03	77.81	77.73	77.52	77.06	77.02	76.59	76.47	76.31	75.97	75.58	75.39
15	77.93	77.77	77.89	77.57	77.05	76.83	76.62	76.49	76.20	75.86	75.62	75.31
20	77.94	77.93	77.77	77.29	77.02	76.90	76.61	76.50	76.24	75.85	75.47	75.06
25	77.85	77.82	77.68	77.32	77.03	76.81	76.78	76.39	76.12	75.79	75.46	75.15
EOM	77.83	77.86	77.58	77.17	76.96	76.74	76.52	76.44	76.01	75.80	75.40	75.30
MAX	---	78.11	77.99	77.57	77.15	77.02	76.88	76.74	76.45	76.18	75.75	75.43
MIN	---	77.59	77.51	77.07	76.83	76.63	76.42	76.39	76.01	75.67	75.35	75.06



GROUND-WATER LEVELS

221

HARMON COUNTY

WELL-IDENTIFICATION NUMBER.--344143099560601. Local number 03N-26W-33 ABA 1

LOCATION.--Lat 34°41'43", long 099°56'06", Hydrologic Unit 11130101, 1 mi northwest of Hollis.

AQUIFER.--Blaine Gypsum.

WELL CHARACTERISTICS.--Drilled unused irrigation well, diameter 16 in., depth 237 ft.

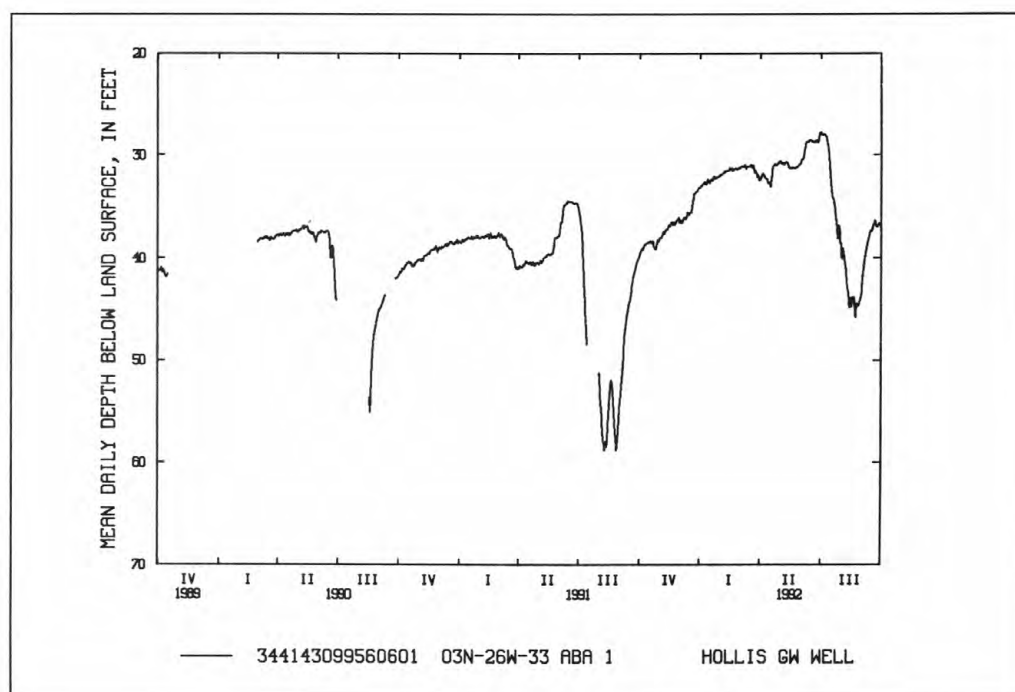
DATUM.--Altitude of land-surface datum is 1,640 ft. Measuring point: top of casing 1.53 ft above land-surface datum.

PERIOD OF RECORD.--1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water lever, 27.73 ft below land-surface datum, June 30, 1992; lowest water level, 114.58 ft below land-surface datum Sept. 6, 1983.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	39.21	37.51	36.32	32.79	31.69	31.01	31.85	30.74	30.07	27.96	40.02	40.01
10	38.70	37.23	36.08	32.79	31.50	31.26	32.29	30.69	28.72	28.64	42.94	38.32
15	38.48	36.91	35.68	32.67	31.43	31.09	32.75	31.28	28.57	31.79	43.93	37.43
20	38.38	36.75	34.43	32.29	31.37	31.19	31.06	31.20	28.76	34.38	43.76	36.36
25	39.11	36.44	33.55	32.24	31.40	31.67	30.96	31.11	28.66	37.03	44.70	36.79
EOM	38.02	36.49	33.14	31.96	31.26	32.33	30.64	30.81	27.82	38.58	43.60	36.95
MAX	39.61	38.03	36.59	33.10	31.87	32.42	33.09	31.29	30.59	38.62	45.83	42.44
MIN	38.02	36.07	33.14	31.96	31.22	30.94	30.64	30.57	27.82	27.78	39.00	36.36



GROUND-WATER LEVELS

JOHNSTON COUNTY

WELL-IDENTIFICATION NUMBER.--341243096534501. Local number 04S-04E-16 BBC 1.

LOCATION.--Lat 34°12'45", long 096°53'51", Hydrologic Unit 11130304, 2.0 mi northwest of Mannsville.

AQUIFER.--Antlers Sand.

WELL CHARACTERISTICS.--Drilled unused well, diameter 4 in., depth 51.8 ft.

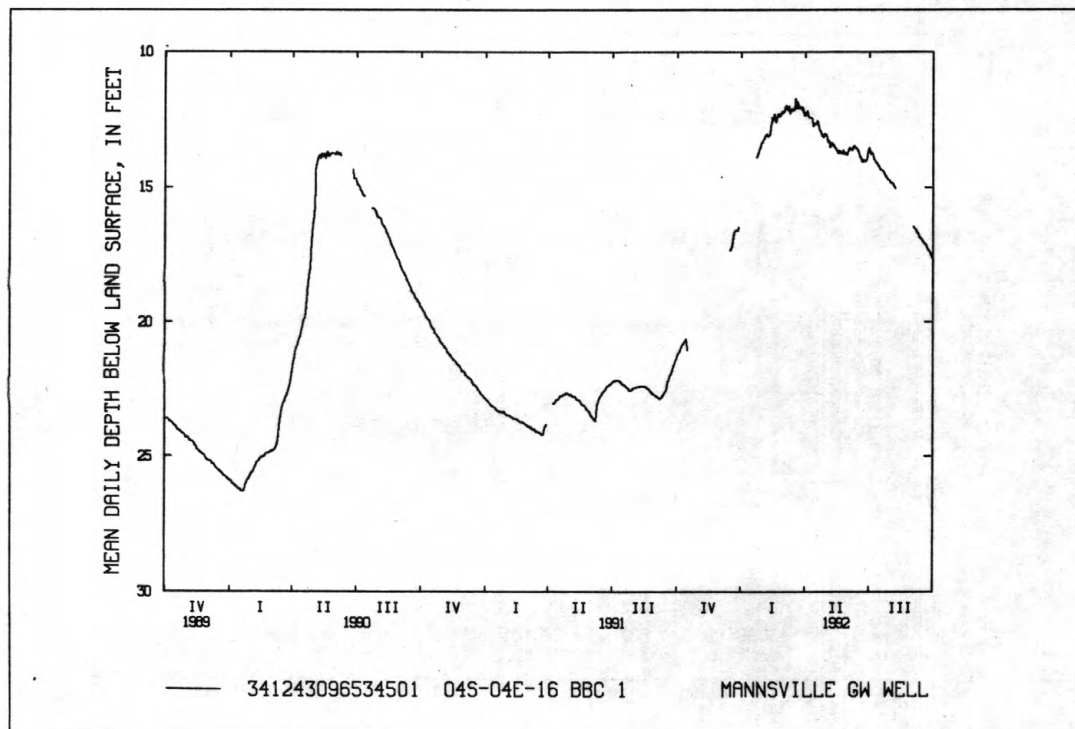
DATUM.--Altitude of land-surface datum is 745 ft. Measuring point: top of casing 1.00 ft above land-surface datum.

PERIOD OF RECORD.--1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.65 ft below land-surface datum, Mar. 18, 1992; lowest water level, 31.05 ft below land-surface datum, Feb. 29, 1980.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	21.08	---	---	---	13.09	12.01	12.35	13.28	13.57	13.71	14.95	16.54
10	20.80	---	---	---	13.08	12.29	12.44	13.45	13.46	14.04	---	16.77
15	20.73	---	---	---	12.49	12.16	12.63	13.61	13.63	14.23	---	16.99
20	---	---	17.00	---	12.47	12.09	12.74	13.67	13.97	14.38	---	17.13
25	---	---	16.60	13.74	12.36	12.09	13.11	13.66	14.05	14.62	---	17.38
EOM	---	---	---	13.34	12.27	12.25	13.08	13.78	13.61	14.82	---	17.66
MAX	---	---	---	---	13.27	12.30	13.15	13.80	14.06	14.82	---	---
MIN	---	---	---	---	12.21	11.74	12.19	13.06	13.46	13.54	---	---



GROUND-WATER LEVELS

223

LINCOLN COUNTY

WELL-IDENTIFICATION NUMBER.--354442096400801. Local number 15N-06E-29 AAA 1.

LOCATION.--Lat 35°45'10", long 096°40'50", Hydrologic Unit 11100303, 1 mi west of junction of Hwy 99 and 66 in Stroud.

AQUIFER.--Vamoosa Formation.

WELL CHARACTERISTICS.--Drilled unused public supply well, diameter 6 in., depth 339 ft.

DATUM.--Altitude of land-surface datum is 950 ft. Measuring point: top of casing 1 ft above land-surface datum.

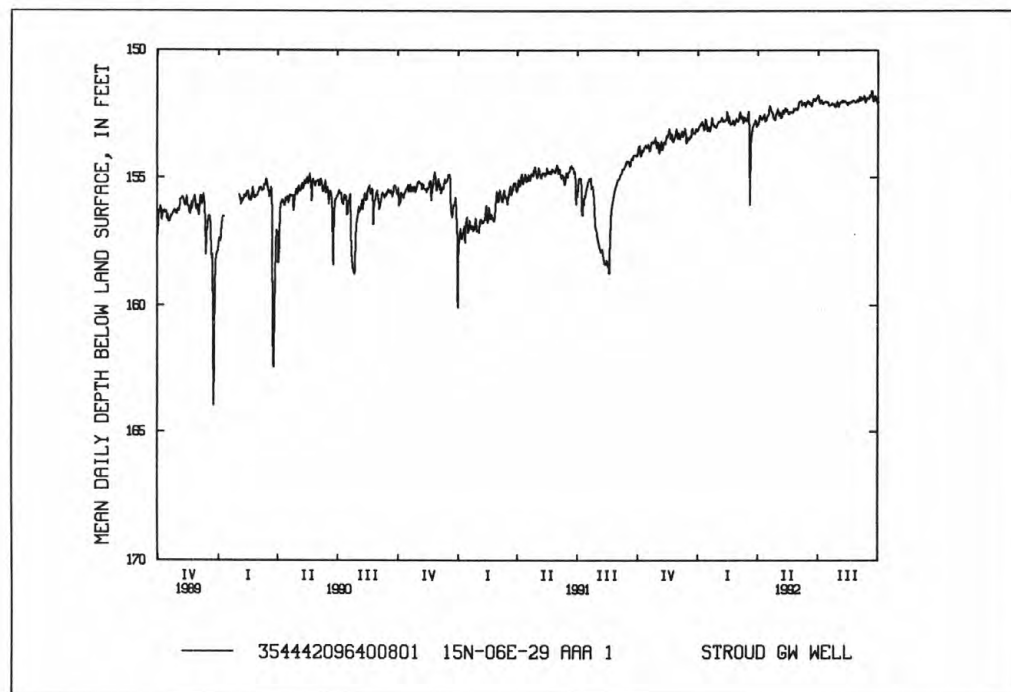
REMARKS.--Digital recorder installed May 28, 1981, mean-daily levels published thereafter.

PERIOD OF RECORD.--1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 151.56 ft below land-surface datum, Sept. 20, 1992; lowest water level, 184.01 ft below land-surface datum, Nov. 10, 1977.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	154.07	153.66	153.38	152.89	152.75	152.44	152.65	152.47	152.03	152.00	152.03	151.89
10	153.96	153.61	153.32	153.14	152.78	152.87	152.58	152.50	152.09	152.09	152.01	151.96
15	153.82	153.41	153.58	153.17	152.59	152.79	152.62	152.35	152.03	152.05	152.15	151.93
20	153.90	153.44	153.38	153.05	152.93	156.07	152.28	152.44	152.11	152.16	152.04	151.63
25	153.66	153.55	153.25	152.96	152.93	152.98	152.69	152.33	151.93	152.14	152.03	151.81
EOM	153.60	153.38	153.17	152.89	152.79	152.90	152.44	152.35	151.87	152.21	152.05	152.06
MAX	154.16	154.04	153.64	153.18	152.93	156.07	152.94	152.67	152.23	152.25	152.24	152.11
MIN	153.42	153.08	153.07	152.65	152.43	152.42	152.22	152.30	151.87	151.81	151.98	151.63



GROUND-WATER LEVELS

LOGAN COUNTY

WELL-IDENTIFICATION NUMBER.--354525097242201. Local number 15N-02W-22 CCB 1.

LOCATION.--Lat 35°45'25", long 097°24'22", Hydrologic Unit 11050002, 4.0 mi east of Waterloo.

AQUIFER.--Garber Sandstone.

WELL CHARACTERISTICS.--Drilled unused domestic well, diameter 6 in., depth 146 ft.

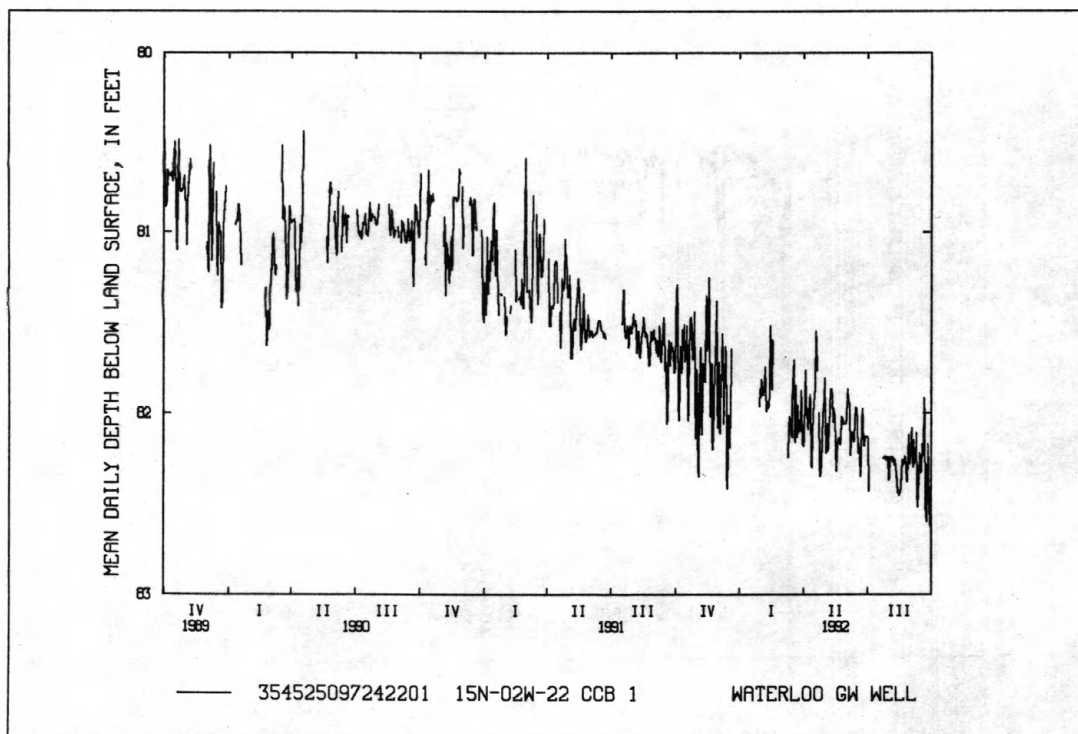
DATUM.--Altitude of land-surface datum is 1,225 ft. Measuring point: top of casing at land-surface datum.

PERIOD OF RECORD.--1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest daily water level, 70.46 ft below land-surface datum, June 3, 1987; lowest daily water level, 88.58 ft below land-surface datum, May 8, 1984.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	81.94	81.68	81.84	---	81.84	---	81.94	82.06	81.94	---	82.24	82.15
10	81.78	81.73	81.90	---	81.94	82.24	81.90	81.89	82.11	---	82.26	82.43
15	81.70	81.66	82.27	---	81.82	82.13	82.00	82.00	81.97	---	82.45	82.33
20	81.81	82.02	81.65	---	---	82.16	81.77	82.15	82.24	---	82.26	81.92
25	81.71	81.98	---	---	---	82.11	82.35	82.02	82.05	82.25	82.30	82.17
EOM	81.76	82.00	---	81.91	---	82.12	81.93	82.06	82.13	82.37	82.28	82.47
MAX	82.14	82.35	---	---	---	---	---	82.32	82.35	---	82.45	82.63
MIN	81.29	81.25	---	---	---	---	---	81.81	81.87	---	82.12	81.92



GROUND-WATER LEVELS

225

MAJOR COUNTY

WELL-IDENTIFICATION NUMBER.--361442098092801. Local number 20N-09W-04 AAA 1.

LOCATION.--Lat 36°14'42", long 098°09'21", Hydrologic Unit 11050002, 1.5 mi east of Ames.

AQUIFER.--Cimarron Terrace.

WELL CHARACTERISTICS.--Drilled unused well, diameter 6 in., depth 60 ft.

DATUM.--Altitude of land-surface datum is 1,225 ft. Measuring point: shelter base 2.10 ft above land-surface datum.

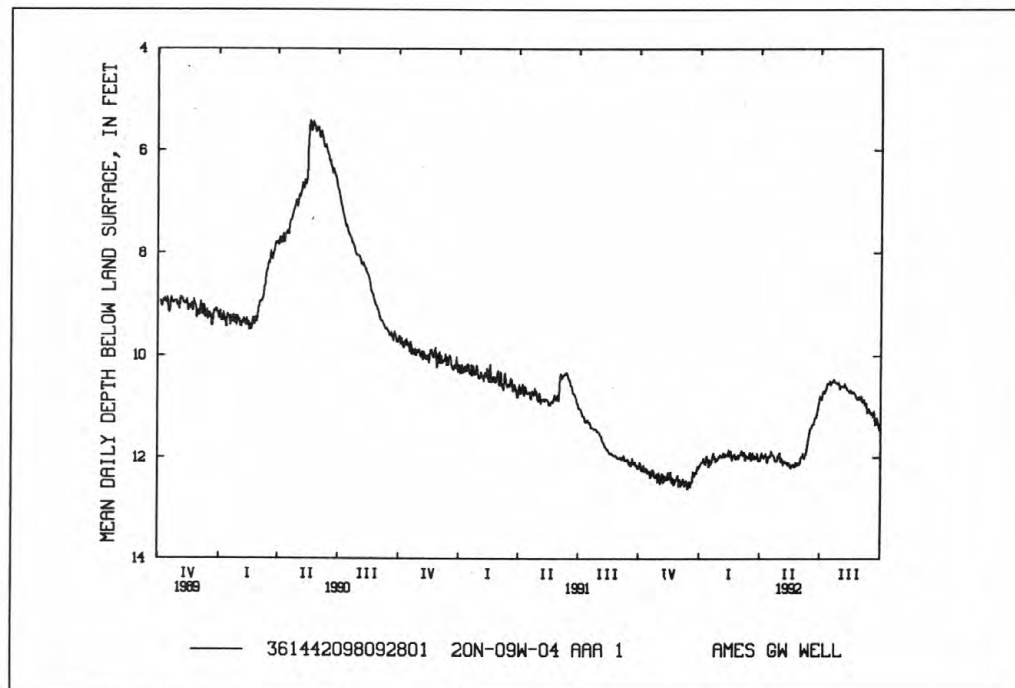
REMARKS.--Digital recorder installed Aug. 25, 1983, mean-daily water levels published thereafter.

PERIOD OF RECORD.--1965 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.73 ft below land-surface datum, June 1, 1987; lowest water level, 25.97 ft below land-surface datum, Sept. 15, 1971.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	12.25	12.31	12.48	12.08	11.94	11.86	11.97	12.04	11.93	10.70	10.61	10.86
10	12.26	12.40	12.49	12.13	11.95	12.05	11.92	12.10	11.87	10.66	10.62	11.10
15	12.28	12.43	12.54	12.18	11.96	12.00	11.96	12.10	11.49	10.50	10.70	11.14
20	12.29	12.50	12.49	12.01	11.95	12.02	11.94	12.14	11.34	10.51	10.70	11.08
25	12.38	12.45	12.29	12.07	12.02	12.02	12.07	12.10	11.20	10.51	10.84	11.21
EOM	12.29	12.55	12.18	11.98	12.00	12.00	11.93	12.11	10.85	10.64	10.86	11.39
MAX	12.47	12.55	12.62	12.18	12.04	12.06	12.10	12.19	12.06	10.85	10.86	11.44
MIN	12.09	12.27	12.17	11.91	11.84	11.86	11.86	11.91	10.85	10.47	10.54	10.80



GROUND-WATER LEVELS

MC CURTAIN COUNTY

WELL-IDENTIFICATION NUMBER.--335337094451101. Local number 08S-24E-01 BBD 1.

LOCATION.--Lat 33°53'37", long 094°45'11", Hydrologic Unit 11140107, 3.0 mi east of Idabel.

AQUIFER.--Antlers Sand.

WELL CHARACTERISTICS.--Drilled unused irrigation well, diameter 6 in., depth 66 ft.

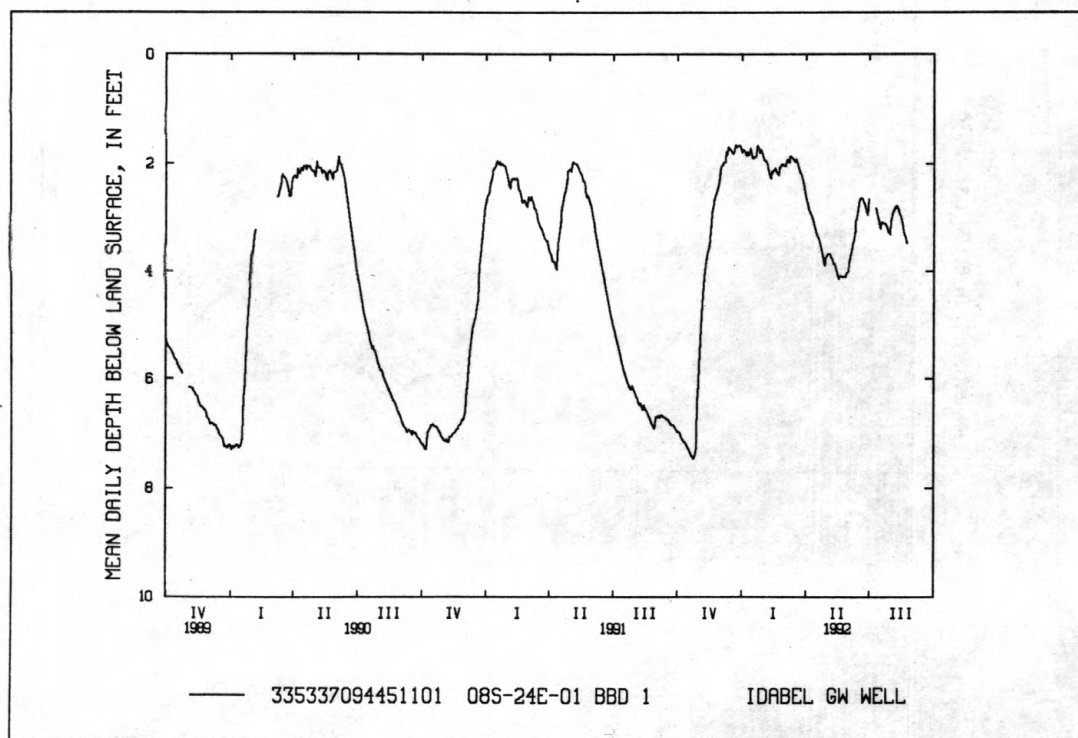
DATUM.--Altitude of land-surface datum is 408 ft. Measuring point: top of casing 1.50 ft above land-surface datum.

PERIOD OF RECORD.--1969 to 1971, 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.63 ft measured Dec. 22, 1991, below land-surface datum; lowest water level, 8.94 ft below land-surface datum, Oct. 3, 1970.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	7.05	4.70	1.99	1.78	1.97	1.92	2.85	3.68	3.64	---	2.84	---
10	7.18	3.89	1.83	1.83	2.24	1.85	3.01	3.85	3.28	2.83	2.83	---
15	7.26	3.54	1.74	1.85	2.11	1.93	3.26	4.02	2.77	3.16	3.06	---
20	7.41	2.86	1.80	1.87	2.17	1.99	3.43	4.09	2.64	3.11	3.34	---
25	7.46	2.55	1.68	1.72	2.04	2.18	3.72	4.10	2.81	3.18	---	---
EOM	6.03	2.25	1.74	1.87	2.02	2.55	3.74	4.02	2.67	3.07	---	---
MAX	7.48	5.71	2.10	1.89	2.26	2.55	3.90	4.14	3.93	---	---	---
MIN	6.03	2.25	1.66	1.67	1.91	1.85	2.61	3.68	2.64	---	---	---



GROUND-WATER LEVELS

227

MURRAY COUNTY

WELL-IDENTIFICATION NUMBER.--343022096565701. Local number 01S-03E-01 BBB 1.

LOCATION.--Lat 34°30'22", long 096°56'57", Hydrologic Unit 11130303, 1 mi south of Sulphur.

AQUIFER.--Simpson Group.

WELL CHARACTERISTICS.--Drilled unused well, diameter 6 in., drilled depth 436 ft.

DATUM.--Altitude of land-surface datum is 1,080 ft. Measuring point: top of casing at land-surface datum.

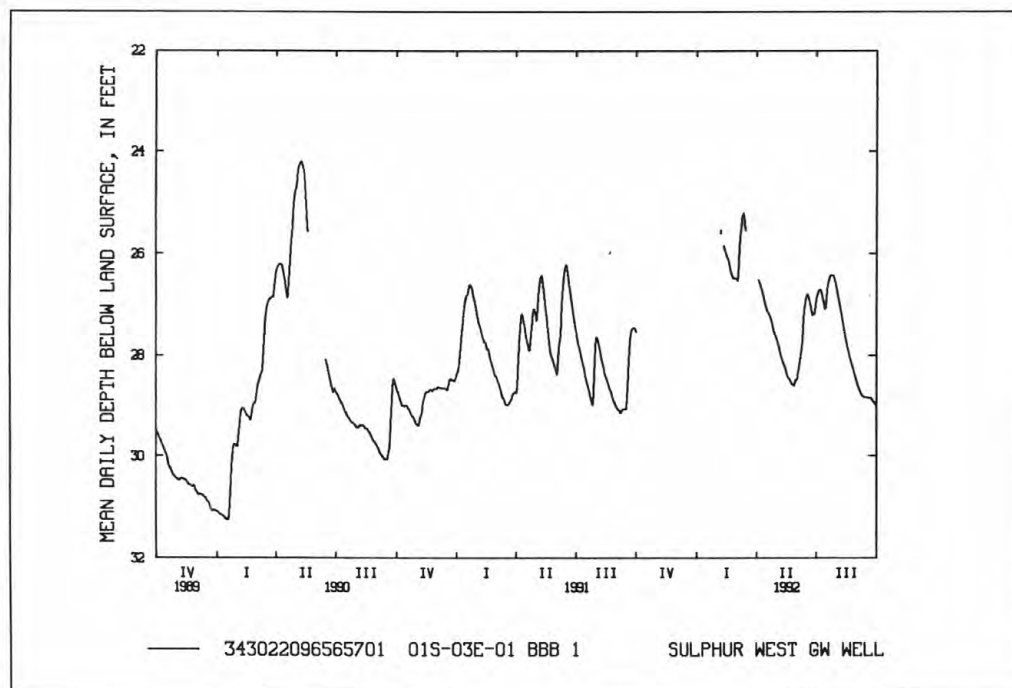
REMARKS.--West observation well, measured depth 99 ft, Feb. 6, 1992.

PERIOD OF RECORD.--August 1972 to current year. Records August 1972 to December 1985 provided by National Park Service.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 23.10 ft below land-surface datum, Mar. 20, 1975; lowest water level, 34.93 ft below land-surface datum, Sept. 1, 1980.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	---	---	---	26.15	26.54	27.83	28.19	26.72	26.99	28.72
10	---	---	---	---	---	25.25	26.76	28.08	27.63	26.84	27.37	28.82
15	---	---	---	---	26.01	25.54	27.02	28.27	26.88	27.05	27.73	28.83
20	---	---	---	---	26.26	---	27.19	28.46	26.90	26.51	28.01	28.85
25	---	---	---	---	26.47	---	27.40	28.57	27.21	26.42	28.24	28.92
EOM	---	---	---	---	26.48	---	27.63	28.49	26.98	26.64	28.53	29.01
MAX	---	---	---	---	---	---	---	28.60	28.48	27.10	28.53	29.01
MIN	---	---	---	---	---	---	---	27.66	26.81	26.42	26.71	28.58



GROUND-WATER LEVELS

OSAGE COUNTY

WELL-IDENTIFICATION NUMBER.--362935096291501. Local number, 23N-09E-10 AAD 1.

LOCATION.--Lat 36°29'01", long 096°19'06", Hydrologic Unit 11070107, 4.2 mi southeast of Wynona.

AQUIFER.--Vamoosa Formation.

WELL CHARACTERISTICS.--Drilled unused well, diameter 13 in., depth 55 ft.

DATUM.--Altitude of land-surface datum is 835 ft. Measuring point: metal plate on top of casing 2.45 ft above land-surface datum.

REMARKS.--Digital recorder installed June 10, 1981, mean daily water levels thereafter.

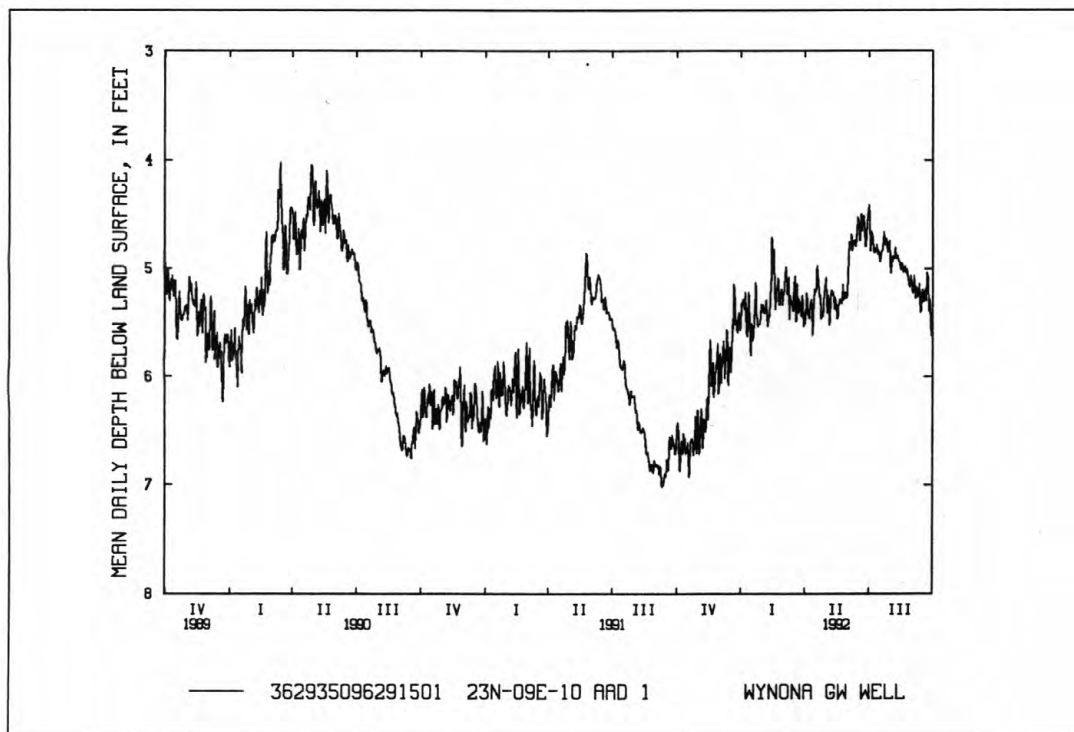
PERIOD OF RECORD.--1971 to current year.

REVISED RECORDS.--WDR OK-91-1: 1982 (H), 1981, 1982.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.96 ft below land-surface datum, Mar. 14, 1990; Lowest water level, 9.45 ft below land-surface datum, Oct. 6, 1981.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	6.85	6.30	5.86	5.28	5.35	4.98	5.41	5.31	4.78	4.65	4.90	5.27
10	6.72	6.42	5.87	5.63	5.45	5.47	5.29	5.25	4.74	4.82	4.91	5.23
15	6.70	6.40	5.92	5.80	5.02	5.39	5.19	5.32	4.53	4.84	4.99	5.19
20	6.76	6.09	5.52	5.48	5.22	5.46	5.11	5.31	4.49	4.82	5.01	5.22
25	6.73	6.04	5.48	5.53	5.34	5.39	5.44	5.15	4.65	4.77	5.06	5.28
EOM	6.31	6.16	5.57	5.40	5.34	5.41	5.14	5.25	4.46	4.93	5.13	5.48
MAX	6.93	6.72	6.09	5.80	5.53	5.53	5.61	5.52	5.11	4.93	5.17	5.61
MIN	6.31	5.66	5.15	5.13	4.71	4.98	4.97	5.08	4.46	4.41	4.80	5.04



GROUND-WATER LEVELS

229

OTTAWA COUNTY

WELL-IDENTIFICATION NUMBER.--365229094520201. Local number 28N-23E-30 DBC 1.

LOCATION.--Lat 36°52'30" (revised), long 094°52'02", Hydrologic Unit 11070206, 200 ft northeast of the intersection of Central and I Streets in Miami.

AQUIFER.--Roubidoux Formation.

WELL CHARACTERISTICS.--Drilled unused well, diameter 6 in., reduced to 3.5 in., depth 1,490 ft.

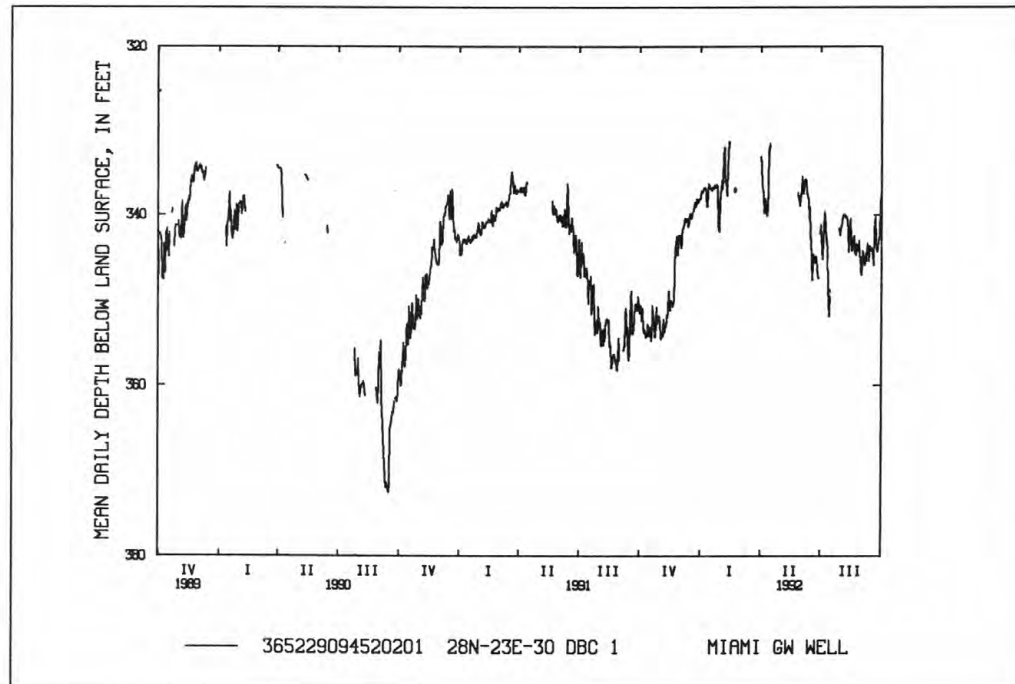
DATUM.--Altitude of land-surface datum 770 ft. Measuring point: top of 6 in. casing 1.00 ft below land-surface datum.

PERIOD OF RECORD.--1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 332.93 ft below land-surface datum, Apr. 13, 1991; lowest water level, 469.44 ft below land-surface datum, July 31 to Aug. 2, 1983.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	350.90	354.19	341.58	336.98	---	---	337.51	---	336.66	341.85	339.93	345.66
10	354.36	353.01	340.48	339.03	342.77	---	340.09	---	337.38	342.81	340.78	343.91
15	353.40	---	340.07	---	---	---	---	---	342.49	---	343.00	343.83
20	350.58	350.66	339.62	336.75	---	---	---	---	---	---	342.52	340.71
25	353.44	342.90	338.86	336.48	---	---	---	---	346.34	---	343.57	343.77
EOM	351.99	342.35	338.13	342.60	---	---	---	338.18	342.20	341.38	347.03	340.24
MAX	---	---	---	---	---	---	---	---	---	---	---	345.93
MIN	---	---	---	---	---	---	---	---	---	---	---	337.61



GROUND-WATER LEVELS

OTTAWA COUNTY--Continued

WELL-IDENTIFICATION NUMBER.--365732094513201. Local number, 29N-23E-30 CDD 1.

LOCATION.--Lat 36°57'34", long 094°51'27", Hydrologic Unit 11070206, 2.2 mi southeast of Picher.

AQUIFER.--Roubidoux Formation.

WELL CHARACTERISTICS.--Abandoned mine air shaft. Diameter 8 in., depth 289 ft.

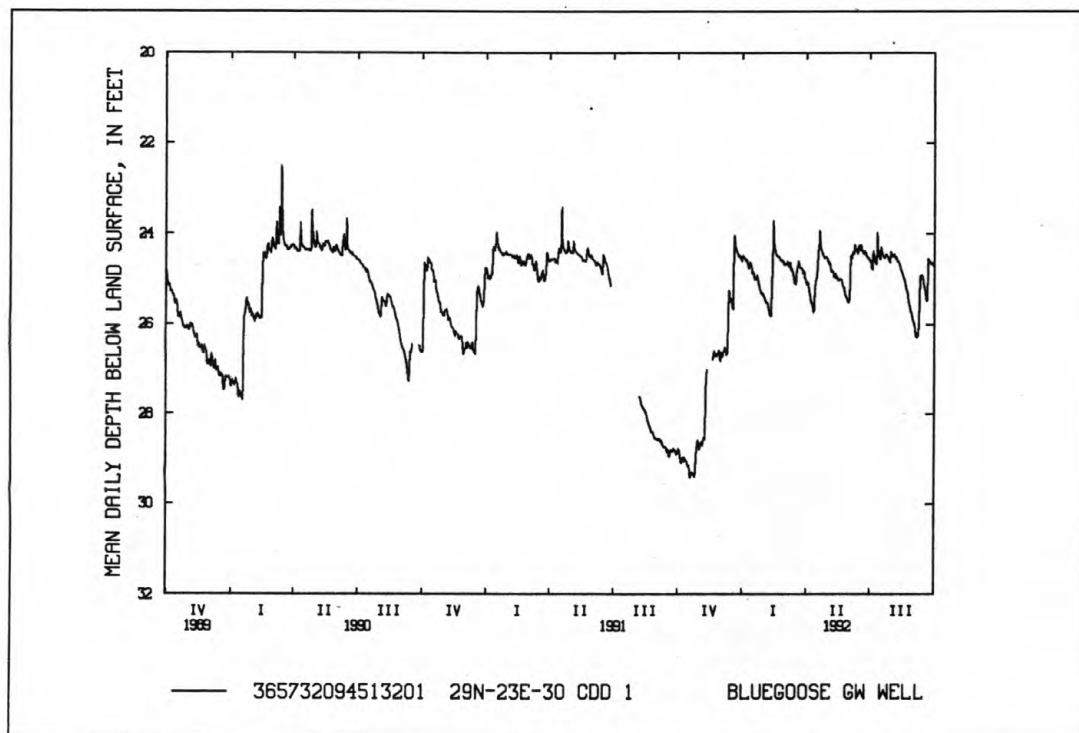
DATUM.--Altitude of land-surface datum is 820 ft. Measuring point: top of casing 1 ft above land-surface datum.

PERIOD OF RECORD.--1975 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest daily water level, 21.21 ft below land-surface datum Feb. 23, 1985; lowest, 170.70 ft below land-surface datum, Sept. 9, 1975.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	29.04	28.70	26.62	24.56	25.53	24.62	25.26	24.70	24.52	24.38	24.50	26.28
10	29.05	27.56	26.66	24.75	25.81	24.79	25.62	24.94	24.35	24.66	24.62	24.94
15	29.15	---	25.47	24.87	24.21	25.08	25.00	24.97	24.25	24.55	24.86	25.12
20	29.36	26.78	24.06	25.00	24.48	24.69	23.92	25.00	24.39	24.51	25.10	25.41
25	29.39	26.72	24.43	25.16	24.60	24.76	24.47	25.20	24.45	24.49	25.53	24.66
EOM	28.65	26.78	24.59	25.37	24.68	25.00	24.53	25.51	24.58	24.44	25.93	24.72
MAX	29.42	---	26.81	25.37	25.81	25.11	25.71	25.51	25.46	24.78	25.93	26.28
MIN	28.59	---	24.05	24.49	23.69	24.60	23.92	24.55	24.23	23.97	24.46	24.55



GROUND-WATER LEVELS

231

PONTOTOC COUNTY

WELL-IDENTIFICATION NUMBER.--343457096404501. Local number 01N-06E-04 CAD 1.

LOCATION.--Lat 34°34'57", long 096°40'45", Hydrologic Unit 11140102, 3.3 mi southwest of Fittstown.

AQUIFER.--Arbuckle Group.

WELL CHARACTERISTICS.--Drilled oil test well, diameter 18 in., depth 396 ft.

DATUM.--Altitude of land-surface datum is 1,155 ft. Measuring point: base of recorder shelter 2.83 ft above land-surface datum.

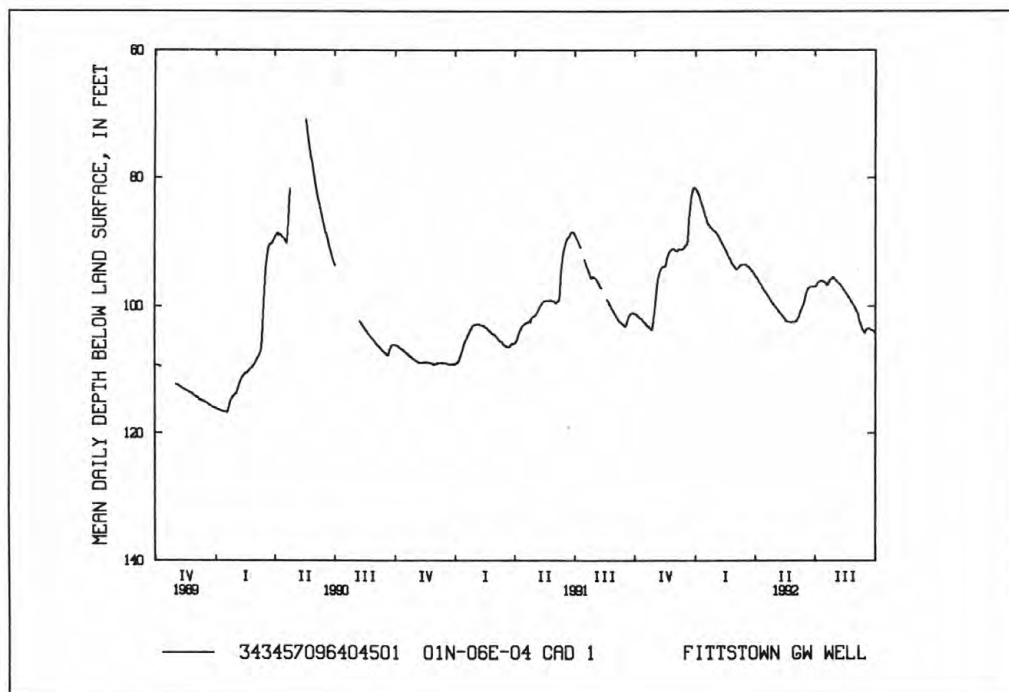
REMARKS.--Well originally 1,707 ft deep.

PERIOD OF RECORD.--1959 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest observed water level, 70.19 ft below land-surface datum, May 17, 1990; lowest water level, 128.23 ft below land-surface datum, Apr. 10, 1967.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	101.50	95.71	91.28	82.39	89.10	94.12	95.86	100.55	101.86	96.27	96.41	101.84
10	101.92	94.05	91.23	84.05	90.14	93.68	96.70	101.24	100.44	96.02	96.93	103.48
15	102.42	93.87	90.81	85.76	91.13	93.49	97.57	101.88	98.87	96.24	97.76	103.88
20	103.03	92.18	89.69	87.18	92.25	93.78	98.33	102.38	97.26	96.62	98.50	103.42
25	103.54	91.22	83.28	87.85	93.26	94.24	99.22	102.46	96.99	95.77	99.38	103.72
EOM	100.55	91.22	81.63	88.40	93.89	95.09	99.87	102.44	96.96	95.81	100.42	104.19
MAX	103.60	99.40	91.42	88.40	93.89	95.09	99.87	102.46	102.39	96.91	100.42	104.19
MIN	100.55	91.00	81.57	81.72	88.52	93.47	95.28	99.98	96.96	95.47	95.94	100.66



GROUND-WATER LEVELS

ROGER MILLS COUNTY

WELL-IDENTIFICATION NUMBER.--354527099470501. Local number 15N-24W-19 DDA 1.

LOCATION.--Lat 35°45'27", long 099°47'05", Hydrologic Unit 11130301, 4.5 mi southwest of Roll.

AQUIFER.--Ogallala Formation.

WELL CHARACTERISTICS.--Drilled unused irrigation well, diameter 12 in., depth 122 ft.

DATUM.--Altitude of land-surface datum is 2,315 ft. Measuring point: shelter base 2.28 ft above land-surface datum.

REMARKS.--Digital recorder installed May 19, 1981, mean-daily water levels published thereafter.

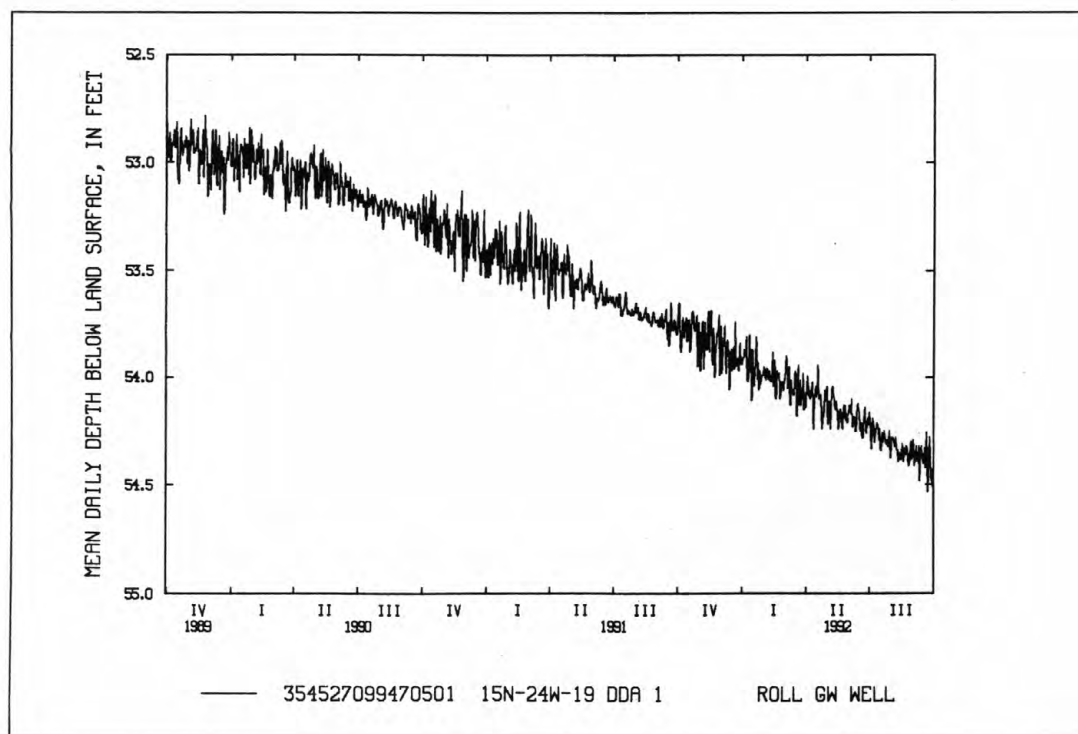
PERIOD OF RECORD.--1970 to current year.

REVISED RECORDS.--WDR OK-90-1; 1983, 1984.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 52.53 ft below land-surface datum, Mar. 2, 1989; lowest water level, 57.27 ft below land-surface datum, June 5, 1973.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	53.88	53.74	53.85	53.90	53.96	53.94	54.08	54.15	54.10	54.19	54.32	54.32
10	53.81	53.85	53.84	54.00	54.01	54.13	54.02	54.08	54.21	54.26	54.34	54.48
15	53.78	53.88	53.94	54.11	54.04	54.08	54.04	54.14	54.15	54.24	54.36	54.40
20	53.78	53.94	53.96	53.94	53.97	54.08	54.10	54.15	54.27	54.30	54.33	54.26
25	53.78	53.84	53.91	54.06	54.08	54.13	54.19	54.13	54.24	54.29	54.41	54.28
EOM	53.74	53.99	53.92	53.99	54.06	54.07	54.06	54.17	54.17	54.37	54.36	54.40
MAX	53.95	54.00	54.06	54.11	54.10	54.18	54.24	54.24	54.28	54.37	54.41	54.53
MIN	53.65	53.69	53.74	53.80	53.88	53.90	53.94	54.04	54.10	54.16	54.28	54.26



GROUND-WATER LEVELS

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TEXAS COUNTY

WELL-IDENTIFICATION NUMBER.--363033101440701. Local number 01N-12E-35 BDD 1.

LOCATION.--Lat 36°30'33", long 101°44'07", Hydrologic Unit 11100103, 2.5 mi east of Texhoma.

AQUIFER.--Ogallala Formation.

WELL CHARACTERISTICS.--Drilled well, diameter 7 in., depth 386 ft.

DATUM.--Altitude of land-surface datum is 3,430 ft. Measuring point: top of float line hole on north side 1.70 ft above land-surface datum.

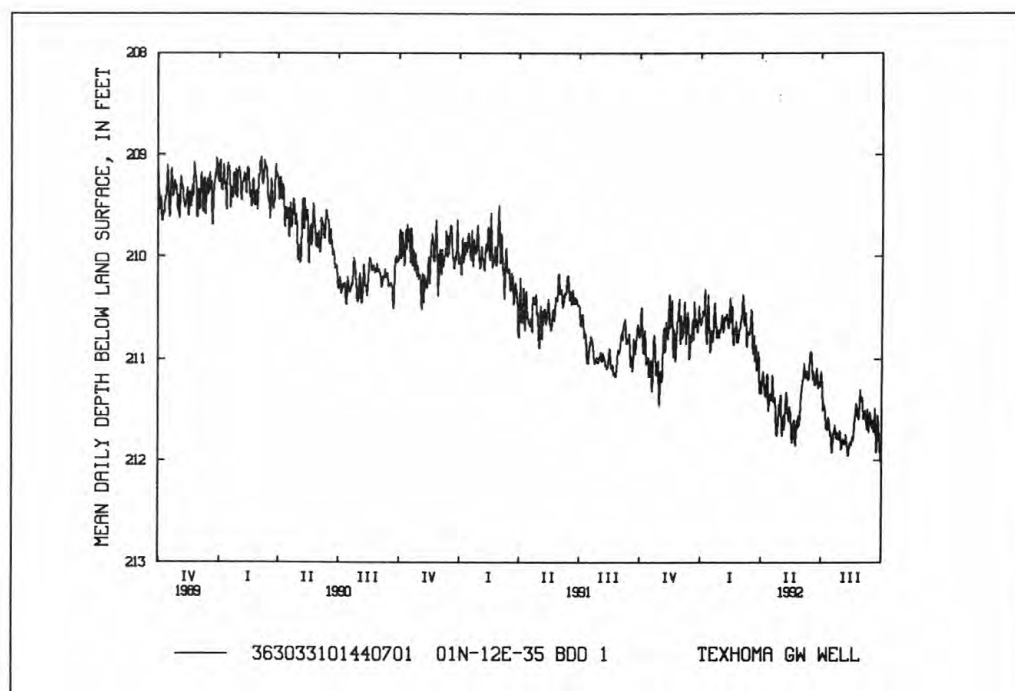
REMARKS.--Digital recorder installed Mar. 17, 1980, mean-daily water levels published thereafter.

PERIOD OF RECORD.--1956 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 188.80 ft below land-surface datum, May 20, 1957; lowest water level, 212.07 ft below land-surface datum, Sept. 29, 1992.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	210.93	210.74	210.67	210.56	210.64	210.41	211.21	211.55	211.04	211.44	211.84	211.50
10	211.05	210.75	210.68	210.85	210.62	210.88	211.14	211.36	211.14	211.69	211.89	211.67
15	211.13	210.69	210.90	210.93	210.64	210.73	211.33	211.51	210.93	211.72	211.85	211.66
20	211.08	210.98	210.71	210.71	210.72	210.95	211.41	211.62	211.20	211.71	211.63	211.48
25	211.15	210.74	210.61	210.79	210.84	211.11	211.75	211.60	211.18	211.72	211.54	211.55
EOM	211.13	210.80	210.62	210.70	210.70	211.21	211.40	211.40	211.18	211.89	211.41	211.92
MAX	211.45	211.22	211.00	210.93	210.86	211.33	211.75	211.85	211.31	211.92	211.95	212.02
MIN	210.50	210.37	210.44	210.32	210.40	210.37	211.12	211.32	210.93	211.12	211.30	211.37



GROUND-WATER LEVELS

WASHITA COUNTY

WELL-IDENTIFICATION NUMBER.--352142099122501. Local number 10N-19W-10 BBB 1.

LOCATION.--Lat 35°21'49", long 099°12'19", Hydrologic Unit 11130302, 2 mi west of Burns Flat.

AQUIFER.--Elk City Sandstone.

WELL CHARACTERISTICS.--Drilled unused well, diameter 8 in., depth 107 ft.

DATUM.--Altitude of land-surface datum is 1,920 ft. Measuring point: top of casing 1.35 ft above land-surface datum.

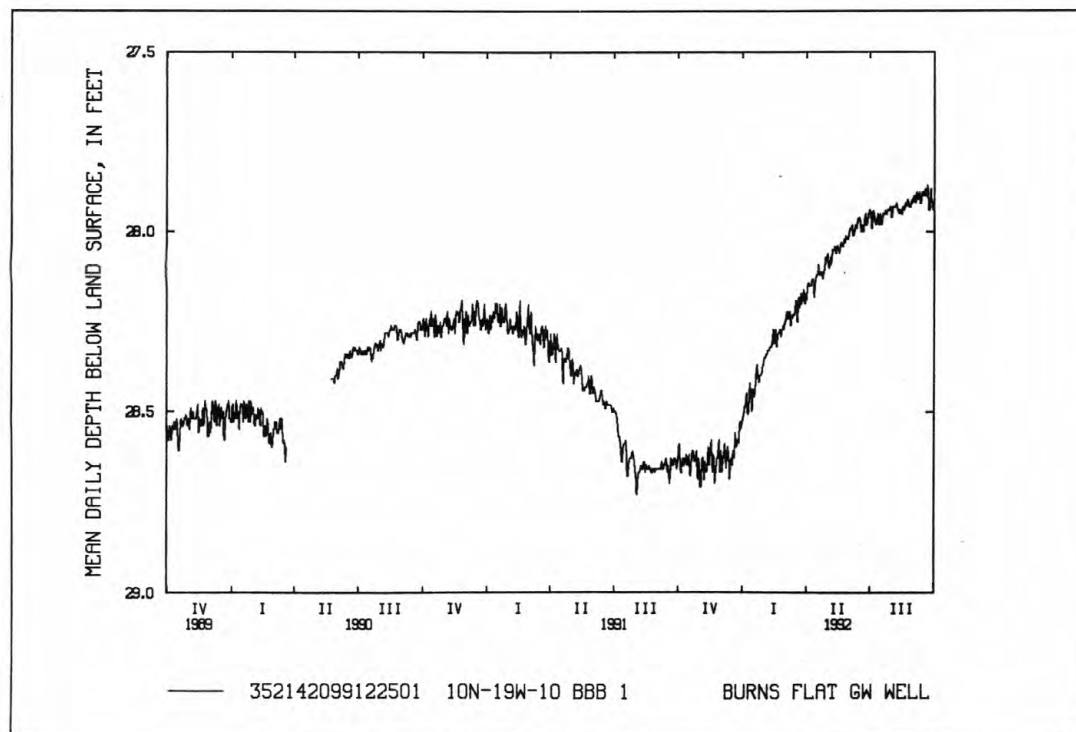
REMARKS.--Digital recorder installed May 20, 1981, mean-daily water levels published thereafter.

PERIOD OF RECORD.--April 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 27.87 ft below land-surface datum Sept. 19, 20, 1992; lowest water level, 34.87 ft below land-surface datum, Apr. 4, 1982.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	28.67	28.63	28.63	28.49	28.34	28.22	28.15	28.07	27.98	27.94	27.93	27.89
10	28.65	28.66	28.62	28.50	28.32	28.26	28.13	28.05	27.98	27.97	27.94	27.92
15	28.65	28.65	28.66	28.50	28.31	28.23	28.12	28.04	27.97	27.95	27.95	27.90
20	28.65	28.67	28.63	28.42	28.29	28.22	28.12	28.03	27.99	27.95	27.92	27.87
25	28.64	28.65	28.58	28.42	28.29	28.20	28.12	28.02	27.98	27.94	27.93	27.88
EOM	28.63	28.67	28.54	28.37	28.27	28.17	28.07	28.01	27.94	27.96	27.91	27.92
MAX	28.69	28.71	28.69	28.53	28.35	28.26	28.19	28.10	28.01	27.99	27.95	27.94
MIN	28.59	28.58	28.53	28.37	28.26	28.16	28.07	28.01	27.94	27.93	27.91	27.87



GROUND-WATER LEVELS

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WOODS COUNTY

WELL-IDENTIFICATION NUMBER.--365143098404201. Local number 28N-14W-35 BCC 1.

LOCATION.--Lat 36°51'50", long 098°40'55", Hydrologic Unit 11060002, 4 mi north of Alva.

AQUIFER.--Cedar Hills Sandstone.

WELL CHARACTERISTICS.--Drilled unused municipal well, diameter 13 in., depth 54 ft.

DATUM.--Altitude of land-surface datum is 1,360 ft. Measuring point: edge of large hole in steel plate 2.60 ft above land-surface datum.

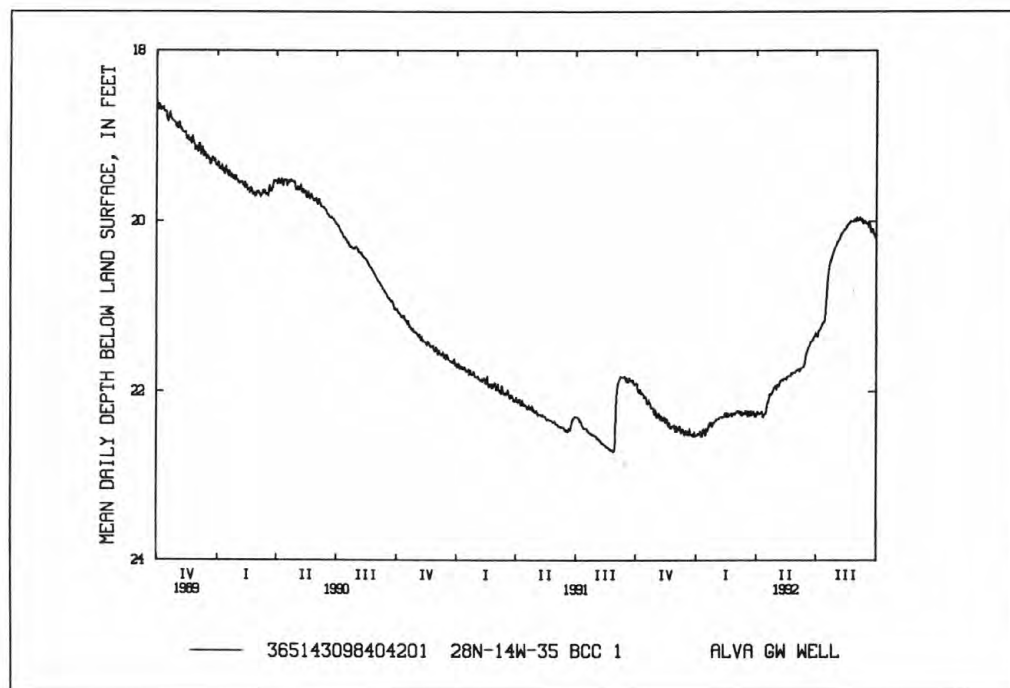
REMARKS.--Digital recorder installed July 30, 1980, mean-daily water levels published thereafter.

PERIOD OF RECORD.--1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest daily water level, 14.78 ft below land-surface datum, Aug. 28, 1987; lowest water level, 24.25 ft below land-surface datum, Mar. 15, 1979.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	22.00	22.26	22.45	22.51	22.31	22.23	22.26	21.93	21.74	21.29	20.21	19.96
10	22.03	22.33	22.45	22.53	22.31	22.29	22.24	21.87	21.72	21.23	20.13	20.02
15	22.08	22.37	22.49	22.52	22.30	22.27	22.26	21.85	21.61	21.05	20.07	20.03
20	22.13	22.41	22.51	22.42	22.27	22.27	22.11	21.82	21.48	20.60	20.02	20.02
25	22.20	22.42	22.51	22.41	22.29	22.28	22.02	21.79	21.41	20.41	20.00	20.09
EOM	22.21	22.48	22.52	22.34	22.27	22.27	21.94	21.77	21.34	20.30	19.98	20.18
MAX	22.27	22.48	22.53	22.53	22.33	22.29	22.31	21.97	21.76	21.35	20.28	20.19
MIN	21.90	22.26	22.41	22.34	22.25	22.23	21.94	21.77	21.34	20.30	19.97	19.96



GROUND-WATER LEVELS

WOODWARD COUNTY

WELL-IDENTIFICATION NUMBER.--361714099315101. Local number 21N-22W-23 BBB 1.

LOCATION.--Lat 36°17'25", long 099°31'58", Hydrologic Unit 11100203, 11 mi west of Sharon.

AQUIFER.--Ogallala Formation.

WELL CHARACTERISTICS.--Drilled test hole, diameter 6 in., depth 322 ft.

DATUM.--Altitude of land-surface datum is 2,335 ft. Measuring point: top of shelf 2 ft above land-surface datum.

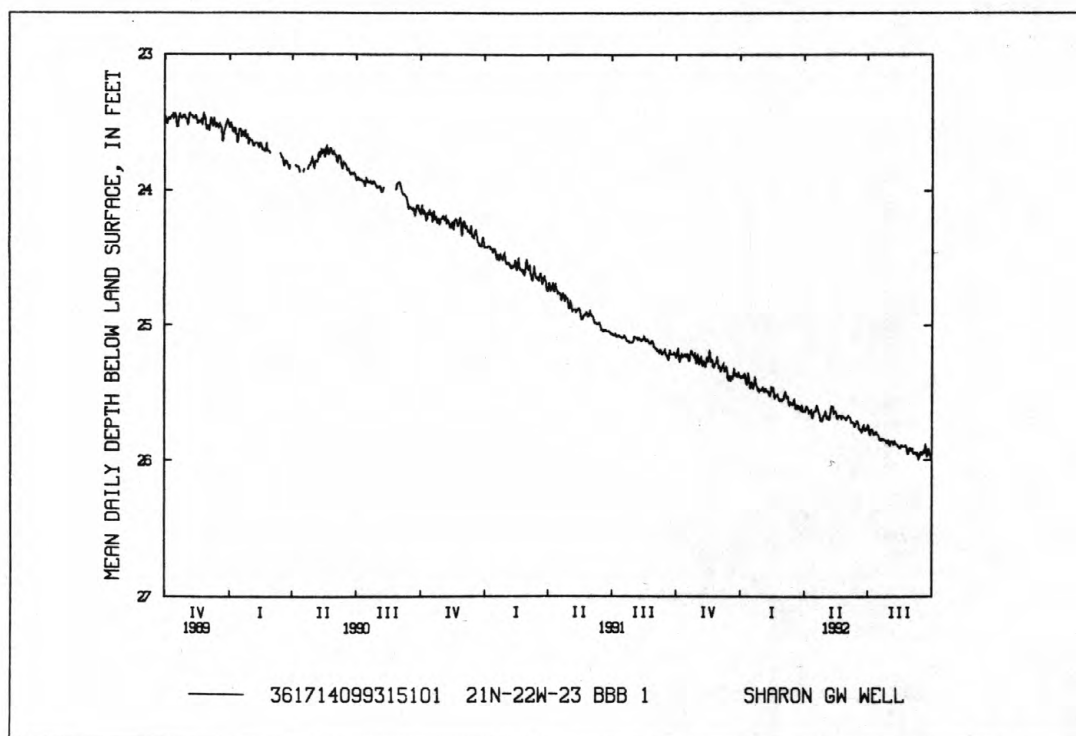
REMARKS.--Digital recorder installed Sept. 30, 1982, mean-daily water levels published thereafter.

PERIOD OF RECORD.--1957 to 1963, 1965 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest daily water level, 21.78 ft below land-surface datum, Nov. 15, 1987; lowest water level, 32.64 ft below land-surface datum, May 19, 1971.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	25.23	25.24	25.32	25.37	25.49	25.49	25.60	25.68	25.68	25.78	25.86	25.94
10	25.23	25.26	25.34	25.44	25.49	25.58	25.64	25.60	25.72	25.81	25.88	25.96
15	25.23	25.25	25.40	25.46	25.47	25.59	25.64	25.64	25.71	25.81	25.91	25.96
20	25.26	25.27	25.38	25.45	25.53	25.62	25.61	25.67	25.77	25.84	25.90	25.90
25	25.22	25.30	25.37	25.46	25.55	25.61	25.71	25.67	25.74	25.85	25.91	25.92
EOM	25.25	25.27	25.38	25.48	25.56	25.64	25.66	25.70	25.77	25.88	25.93	25.98
MAX	25.28	25.31	25.41	25.49	25.56	25.64	25.71	25.70	25.79	25.88	25.95	25.99
MIN	25.17	25.18	25.28	25.35	25.46	25.49	25.59	25.60	25.67	25.74	25.86	25.88



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FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
	4.047×10^{-3}	square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
	3.785×10^{-3}	cubic meters (m ³)
million gallons	3.785×10^3	cubic meters (m ³)
	3.785×10^{-3}	cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1	cubic decimeters (dm ³)
	2.832×10^{-2}	cubic meters (m ³)
cfs-days	2.447×10^3	cubic meters (m ³)
	2.447×10^{-3}	cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
	2.832×10^{-2}	cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
	6.309×10^{-5}	cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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