

Water Resources Data Texas Water Year 2003

Volume 1. Arkansas River Basin, Red River Basin, Sabine River Basin, Neches River Basin, and Intervening Coastal Basins

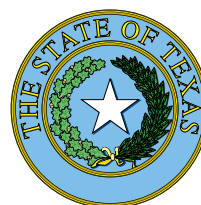
By Susan C. Gandara

Water-Data Report TX-03-1



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

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PREFACE

This edition of the annual hydrologic data report of Texas is one of a series of annual reports that document hydrologic data collected from the U.S. Geological Survey's collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by Federal, State, local agencies, and the private sector for developing and managing land and water resources in Texas which are contained in 6 volumes:

- Volume 1. Arkansas River Basin, Red River Basin, Sabine River Basin, Neches River Basin, and Intervening Coastal Basins
- Volume 2. Trinity River Basin
- Volume 3. San Jacinto River Basin, Brazos River Basin, San Bernard River Basin, and Intervening Coastal Basins
- Volume 4. Colorado River Basin, Lavaca River Basin and Intervening Coastal Basins
- Volume 5. Guadalupe River Basin, Nueces River Basin, Rio Grande Basin, and Intervening Coastal Basins
- Volume 6. Ground-Water Data

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. In addition to the authors, who had the primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to U.S. Geological Survey policy and established guidelines, most of the data were collected, computed, and processed from Subdistrict and Field Offices. The following supervised the collection, processing, and tabulation of the data:

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13. ABSTRACT (Maximum 200 words) Water-resources data for the 2003 water year for Texas are presented in six volumes, and consist of records of stage, discharge, and water quality of streams and canals; stage, contents, and water-quality of lakes and reservoirs; and water levels and water quality of ground-water wells. Volume 1 contains records for water discharge at 72 gaging stations; stage only at 3 gaging stations; stage and contents at 35 lakes and reservoirs; water quality at 28 gaging stations; and data for 9 partial-record stations comprised of 6 flood-hydrograph and 3 low-flow stations. Also included are lists of discontinued surface-water discharge or stage-only stations and discontinued surface-water-quality stations. Additional water data were collected at various sites, not part of the systematic data-collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating Federal, State, and local agencies in Texas. Records for a few pertinent stations in the bordering States also are included.				
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GAGING STATIONS, IN DOWNSTREAM ORDER,
FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

[Type of data collected: (d) discharge; (c) chemical; (b) biological; (t) water temperature;
(s) sediment; (e) elevation, gage heights, or contents; (p) precipitation.]

	Station number	Page
LOWER MISSISSIPPI RIVER BASIN		
ARKANSAS RIVER BASIN		
Arkansas River:		
Canadian River near Amarillo (d) (c) (t) -----	07227500	34
Lake Meredith near Sanford (e) -----	07227900	42
Canadian River near Canadian (d) -----	07228000	44
Palo Duro Creek near Spearman (d) -----	07233500	46
Palo Duro Reservoir near Spearman (e) -----	07233550	54
North Canadian River:		
Wolf Creek at Lipscomb (d) -----	07235000	56
RED RIVER BASIN		
Red River:		
Tierra Blanca Creek above Buffalo Lake near Umbarger (d) -----	07295500	60
Prairie Dog Town Fork Red River near Wayside (d) -----	07297910	62
MacKenzie Reservoir near Silverton (e) -----	07298100	64
Prairie Dog Town Fork Red River near Brice (d) -----	07298500	66
Prairie Dog Town Fork Red River near Childress (d) -----	07299540	68
Groesbeck Creek at State Highway 6 near Quanah (d) -----	07299670	70
Salt Fork Red River:		
Greenbelt Lake near Clarendon (e) -----	07299840	72
Lelia Lake Creek below Bell Creek near Hedley (d) (c) (t) -----	07299890	74
Salt Fork Red River near Wellington (d) (c) (t) (b) -----	07300000	82
Salt Fork Red River at Mangum, OK (d) -----	07300500	86
North Fork Red River:		
McClellan Creek near McLean (d) -----	07301200	88
North Fork Red River near Shamrock (d) (c) (t) (b) -----	07301300	90
Sweetwater Creek near Kelton (d) -----	07301410	94
Red River:		
Pease River near Childress (d) -----	07307800	98
Pease River near Vernon (d) -----	07308200	100
Red River near Burkburnett (d) (c) (t) -----	07308500	102
North Wichita River near Paducah (d) (c) (t) -----	07311600	112
Middle Wichita River near Guthrie (d) (c) (t) -----	07311630	124
North Wichita River near Truscott (d) (c) (t) -----	07311700	136
South Wichita River at low-flow dam near Guthrie (d) (c) (t) -----	07311782	148
South Wichita River below low-flow dam near Guthrie (d) (c) (t) -----	07311783	160
South Wichita River near Benjamin (d) (c) (t) -----	07311800	166
Wichita River near Seymour (d) (c) (t) -----	07311900	178
Lake Kemp near Mabelle (e) -----	07312000	188
Wichita River near Mabelle (d) (c) (t) -----	07312100	190
South Side Canal near Dundee (d) -----	07312110	202
Beaver Creek:		
Lake Electra near Electra (e) -----	07312180	204
Beaver Creek near Electra (d) -----	07312200	206
North Fork Buffalo Creek Reservoir near Iowa Park (e) -----	07312380	208
Wichita River at Wichita Falls (d) -----	07312500	210
Wichita River near Charlie (d) -----	07312700	212
North Fork Little Wichita River:		
Lake Kickapoo near Archer City (e) -----	07314000	216
Little Wichita River near Archer City (d) -----	07314500	218
Lake Arrowhead near Henrietta (e) -----	07314800	220
Little Wichita River above Henrietta (d) -----	07314900	222
East Fork Little Wichita River near Henrietta (d) -----	07315200	224

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

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	Station number	Page
LOWER MISSISSIPPI RIVER BASIN--Continued		
RED RIVER BASIN--Continued		
Red River near Terral, OK (d) (c) (t) (b) -----	07315500	226
Lake Nocona near Nocona (e) -----	07315600	230
Moss Lake near Gainesville (e) -----	07315950	232
Red River near Gainesville (d) (c) (t) -----	07316000	234
Red River at Denison Dam near Denison (d) (c) (t) -----	07331600	238
Shawnee Creek:		
Randell Lake near Denison (e) -----	07331700	240
Bois d' Arc Creek:		
Lake Bonham near Bonham (e) -----	07332610	242
Red River at Arthur City (d) -----	07335500	244
Lake Crook near Paris (e) -----	07335600	246
Red River at Index, AR (d) (c) (b) (t) (s) -----	07337000	248
Sulphur River:		
South Sulphur River at Commerce (d) -----	07342465	252
Middle Sulphur River at Commerce (d) -----	07342480	254
Jim L. Chapman Lake near Cooper (e) -----	07342495	256
South Sulphur River near Cooper (d) -----	07342500	258
North Sulphur River near Cooper (d) -----	07343000	260
Sulphur River near Talco (d) -----	07343200	262
White Oak Creek:		
Lake Sulphur Springs near Sulphur Springs (e) -----	07343460	264
White Oak Creek near Talco (d) -----	07343500	266
Wright Patman Lake near Texarkana (e) -----	07344200	268
Big Cypress Creek:		
Lake Cypress Springs near Mount Vernon (e) -----	07344484	270
Brushy Creek at Scroggins (d) -----	07344486	272
Monticello Reservoir near Mount Pleasant (e) -----	07344488	274
Lake Bob Sandlin near Mount Pleasant (e) -----	07344489	276
Big Cypress Creek near Pittsburg (d) (c) (t) -----	07344500	278
Lake O' the Pines near Jefferson (e) (c) (t) (b) -----	07345900	282
Big Cypress Creek near Jefferson (d) (c) (t) -----	07346000	292
Black Cypress Bayou at Jefferson (d) -----	07346045	296
Little Cypress Creek near Ore City (d) -----	07346050	298
Little Cypress Creek near Jefferson (d) -----	07346070	300
WESTERN GULF OF MEXICO BASINS		
SABINE RIVER BASIN		
Sabine River:		
Cowleech Fork Sabine River at Greenville (d) -----	08017200	304
South Fork Sabine River near Quinlan (d) -----	08017300	306
Lake Tawakoni near Wills Point (e) -----	08017400	308
Sabine River near Wills Point (d) -----	08017410	310
Mill Creek:		
Ciladon Creek:		
Lake Edgewood near Edgewood (e) -----	08017600	312
Sabine River near Mineola (d) -----	08018500	316
Lake Fork Creek:		
Lake Fork Reservoir near Quitman (e) -----	08018800	318
Lake Fork Creek near Quitman (d) -----	08019000	320
Sabine River near Hawkins (d) -----	08019200	322
Big Sandy Creek near Big Sandy (d) -----	08019500	324
Glade Creek:		
Lake Gladewater near Gladewater (e) -----	08019900	326
Sabine River near Gladewater (d) -----	08020000	330
Sabine River above Longview (d) -----	08020450	332
Sabine River below Longview (d) -----	08020900	334
Sabine River near Beckville (d) -----	08022040	336

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

	Station number	Page
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SABINE RIVER BASIN--Continued		
Sabine River:		
Martin Creek:		
Martin Lake near Tatum (e) -----	08022060	338
Murval Creek:		
Murval Lake near Gary (e) -----	08022200	340
Sabine River at Logansport, LA (e) -----	08022500	346
Toledo Bend Reservoir near Burkeville (e) -----	08025350	348
Sabine River at Toledo Bend Reservoir near Burkeville (d) -----	08025360	350
Sabine River near Burkeville (d) -----	08026000	352
Sabine River near Bon Wier (d) (c) (t) -----	08028500	354
Big Cow Creek near Newton (d) -----	08029500	358
Sabine River near Ruliff (d) -----	08030500	360
Cow Bayou near Maruiceville (d) -----	08031000	362
NECHES RIVER BASIN		
Neches River:		
Flat Creek:		
Lake Athens near Athens (e) -----	08031290	366
Lake Palestine near Frankston (e) -----	08031400	368
Neches River near Neches (d) (c) (t) -----	08032000	370
Talls Creek:		
Gum Creek:		
Lake Jacksonville near Jacksonville (e) -----	08032200	374
Neches River near Diboll (d) -----	08033000	376
Neches River near Rockland (d) (c) (t) -----	08033500	378
Angelina River:		
Mud Creek:		
Lake Tyler near Whitehouse (e) -----	08034000	382
Mud Creek near Jacksonville (d) -----	08034500	384
Angelina River near Alto (d) -----	08036500	386
Bayou Loco:		
Lake Nacogdoches near Nacogdoches (e) -----	08036700	388
Attoyac Bayou near Chireno (d) -----	08038000	390
Ayish Bayou near San Augustine (d) -----	08039100	392
Sam Rayburn Reservoir near Jasper (e) -----	08039300	394
B.A. Steinhagen Lake at Town Bluff (e) -----	08040000	396
Neches River near Town Bluff (d) -----	08040600	398
Neches River at Evadale (d) (c) (t) -----	08041000	400
Village Creek near Kountze (d) -----	08041500	404
Pine Island Bayou near Sour Lake (d) -----	08041700	406
TAYLOR BAYOU BASIN		
Taylor Bayou near LaBelle (e) -----	08042000	410
Hillebrandt Bayou near Lovell Lake (e) -----	08042500	412

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in Texas have been discontinued. Daily stream-flow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Those stations with an asterisk (*) after the station number are currently operated as partial-record stations. A pound sign (#) after a station indicates a temporary discontinuance to redefine ratings. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the title page of this report.

[Letters after station name designate the type of data collected: (d) discharge, (e) elevation (stage only).]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Punta De Agua Creek near Channing (d)	07227448	3,568	1968-73
East Cheyenne Creek Tributary near Channing (e)	07227460	1.60	1965-74
Canadian River at Tascosa (d)	07227470	18,536	1969-77
Tecovas Creek Tributary near Bushland (e)	07227480	2.5	1966-74
Dixon Creek near Borger (d)	07227920	134	1974-89
Palo Duro Creek near Canyon (e)	07229700	982	1942-54
White Woman Creek Tributary near Darrouzett (e)	07234150	4.03	1966-74
Tierra Blanca Creek above Buffalo Lake near Umbarger (d)	07295500	1,968	1939-54, 1967-73
Buffalo Lake near Umbarger (e)	07296000	2,075	1938-54
Prairie Dog Town Fork Red River near Canyon (d)	07297500	3,369	1924-26, 1938-49
Middle Tule Draw near Tulia (e)	07297920	313	1967-74
North Tule Draw at Reservoir near Tulia (d)	07298000	189	1939-40, 1941-73
Rock Creek Tributary near Silverton (d)	07298150	13.7	1966-74
Tule Creek near Silverton (d)	07298200	1,150	1964-86
Mulberry Creek near Brice (d)	07299000	534	1949-51
Prairie Dog Town Fork Red River near Lakeview (d)	07299200	6,792	1963-80
Little Red River near Turkey (d)	07299300	139	1968-81
Prairie Dog Town Fork Red River near Estelline (d)	07299500	7,293	1924-25, 1938-47
Prairie Dog Town Fork Red River below Mountain Creek near Estelline (e)	07299505	7,341	1974-77
Prairie Dog Town Fork Red River above Jonah Creek near Estelline (e)	07299510	7,533	1974-77
Jonah Creek at Weir near Estelline (d)	07299512	65.50	1974-82
Jonah Creek below Weir near Estelline (d)	07299514	66.60	1974-76
Jonah Creek at mouth near Estelline (d)	07299516	76	1974-76
Salt Creek near Estelline (d)	07299530	142	1974-79
Buck Creek near Wellington (e)	07299550	210	1951-64
Red River near Quanah (d)	07299570	8,321	1960-82
North Groesbeck Creek Tributary near Kirkland (d)	07299575	0.16	1966-74
Wanders Creek at Odell (e)	07299750	199	1949-50, 1952-89
Salt Fork Red River near Clarendon (d)	07299850	457	1960-64
Lelia Lake Creek near Hedley (e)	07299900	86	1951-70
Salt Fork Red River near Hedley (e)	07299930	744	1951, 1956-62
Oklahoma Draw Tributary near Hedley (e)	07299940	1.1	1965-74
Sweetwater Creek near Wheeler (e)	07301400	164	1951-64
Doodlebug Creek near Wheeler (e)	07301405	0.19	1967-73
Elm Creek near Shamrock (e)	07303300	N/A	1947-89
Quitaque Creek near Quitaque (d)	07307500	293	1945-59
North Pease River near Childress (d)	07307600	1,434	1973-79
North Pease River near Kirkland (e)	07307660	N/A	1973-79
Roaring Springs near Roaring Springs (e)	07307700	N/A	1937, 1943-95
Cottonwood Creek Tributary near Afton (e)	07307720	0.68	1967-74
Middle Pease River near Paducah (d)	07307750	1,086	1973-79
Middle Pease River near Paducah (d)	07307760	1,123	1980-82
Middle Pease River near Kirkland (e)	07307780	1,250	1973-79
Canal Creek near Crowell (e)	07307950	49.0	1968-70, 1978-79

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Pease River near Crowell (d)	07308000	3,037	1924-47
Plum Creek near Vernon (e)	07308220	4.99	1967-74
China Creek near Electra (e)	07308400	37	1967-76
North Fork Wichita River near Crowell (d)	07311622	591	1971-76
Middle Fork Wichita River near Truscott (d)	07311648	161	1971-76
South Fork Wichita River near Guthrie (d)	07311780	239	1952-54, 1956-57 1971-76
South Fork Wichita River at Ross Ranch near Benjamin (d)	07311790	499	1971-79
Wichita River at State Highway 25 near Kamay (d)	07312130	2,182	1996-2000
Beaver Creek Tributary near Crowell (e)	07312140	3.43	1966-74
Wolf Creek near Iowa Park (e)	07312300	8.5	1966-74
North Fork Little Wichita River Tributary near Archer City (e)	07314200	0.10	1966-74
Little Wichita River near Henrietta (d)	07315000	1,037	1953-79
Little Wichita River near Ringgold (d)	07315400	1,350	1959-65
Farmers Creek near Saint Jo (e)	07315550	0.82	1966-74
Mineral Creek near Sadler (d)	07316200	26	1968-77
Sandy Creek near Sadler (e)	07316230	24	1968-74
Lake Texoma near Denison (e)	07331500	39,719	1942-93, 2000
Bois D'Arc Creek near Randolph (d)	07332600	72	1963-85
Cooper Creek near Bonham (e)	07332602	6.21	1966-74
Sanders Creek near Chicota (d)	07335400	175	1968-86
Little Pine Creek near Kanawha (d)	07336750	75.40	1969-80
Pecan Bayou near Clarksville (d)	07336800	100	1962-77
Red River near DeKalb (d)	07336820	47,348	1967-98
McKinney Bayou near Leary (e)	07336940	3.33	1966-73
Barkman Creek near Leary (e)	07336950	31.5	1958-64
Nelson Branch near Leonard (e)	07342450	0.22	1966-74
South Sulphur River near Commerce (d)	07342470	189	1980-91
Cuthand Creek near Bogata (d)	07343300	69	1964-74
Dial Branch near Bagwell (e)	07343350	1.00	1966-74
White Oak Creek near Mt. Vernon (e)	07343480	434	1966, 1969-75
White Oak Creek below Talco (d)	07343800	579	1938-50
Buck Creek near Cookville (e)	07343900	0.78	1966-74
Sulphur River near Darden (d)	07344000	2,774	1924-56
Sulphur River near Texarkana (d)	07344210	3,443	1980-85
Big Cypress Creek near Winnsboro (d)	07344482	27.2	1974-92
Dragoo Creek near Mt. Pleasant (e)	07344490	4.27	1967-74
Williamson Creek near Pittsburg (e)	07344600	7.11	1967-74
Boggy Creek near Daingerfield (d)	07345000	72	1943-77
Ellison Creek Reservoir near Lone Star (e)	07345500	37	1943-62, 1974-89
Cypress Creek Tributary near Jefferson (e)	07346010	0.51	1966-74
Taylor Branch near Smithland (e)	07346072	0.73	1966-74
Big Cypress Creek near Karnack (e)	07346085	2,174	1980-85
Frazier Creek near Linden (d)	07346140	48.0	1965-91
Sabine River near Emory (d)	08017500	888	1952-73
Burnett Branch near Canton (e)	08017700	0.33	1966-74
Grand Saline Creek near Grand Saline (d)	08018200	91.4	1968-73
Burke Creek near Yantis (d)	08018730	33.10	1979-89
Dry Creek near Quitman (e)	08018950	63.6	1968-75
Lake Winnsboro near Winnsboro (d)	08019300	27.1	1962-86
Big Sandy Creek near Hawkins (e)	08019430	196	1980-82
Prairie Creek near Gladewater (d)	08020200	48.90	1968-77
Sabine River near Longview (d)	08020500	2,947	1904-07, 1924-33
Rabbit Creek at Kilgore (d)	08020700	75.80	1964-77

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Grace Creek Tributary at Longview (e)	08020800	5.05	1967-74
Mill Creek near Henderson (d)	08020960	20.30	1979-81
Mill Creek near Longview (d)	08020980	47.90	1979-81
Tiawichi Creek near Longview (d)	08020990	62.70	1978-81
Cherokee Bayou near Elderville (d)	08021000	120	1940-49
Lake Cherokee near Longview (e)	08021500	158	1951-83
Sabine River near Tatum (d)	08022000	3,493	1939-78,
“ “ “ “ (e)			1979-82
Redmon Branch near Hallesville (e)	08022010	0.46	1966-74
Eight Mile Creek near Tatum (e)	08022050	106	1962-71
Martin Creek near Tatum (d)	08022070	148	1974-96
Martin Creek near Beckville (e)	08022080	192	1962-71
Murvaul Bayou near Gary (d)	08022300	134	1958-83
Socagee Creek near Carthage (d)	08022400	82.60	1962-73
Tenaha Creek near Shelbyville (d)	08023200	97.80	1952-81
Dorsey Branch near Milam (e)	08024290	0.70	1967-74
Patroon Bayou near Milam (e)	08024300	130	1952-54,
			1959-63
Sabine River near Milam (d)	08024400	6,508	1924-25,
			1939-68
Palo Gaucho Bayou near Hemphill (d)	08024500	123	1952-65
Housen Bayou near Yellowpine (e)	08025250	92.1	1952-54,
			1957,
			1959-63
Sandy Creek near Yellowpine (e)	08025300	135	1952-54,
			1957,
			1959-63
Mill Creek near Burkeville (d)	08025307	17.6	1974-79
Little Cow Creek below McGraw Creek near Burkeville (e)	08026500	112	1952-58
Moore Branch near Newton (e)	08028505	3.77	1967-74
Nichols Creek near Buna (e)	08029750	54.4	1959-64
Cypress Creek near Buna (d)	08030000	69.20	1952-83
Adams Bayou Tributary near Deweyville (e)	08030700	12.4	1966-74
Bethlehem Branch near Van (e)	08031100	1.09	1966-74
Kickapoo Creek near Brownsboro (d)	08031200	232	1962-89
Neches River near Reese (d)	08031500	851	1924-27
Hurricane Creek Tributary near Palestine (e)	08032100	0.39	1966-74
One Arm Creek near Maydelle (e)	08032250	6.01	1967-74
Squirrel Creek near Elkhart (e)	08032300	1.57	1967-74
Neches River near Alto (d)	08032500	1,945	1944-79
Piney Creek Tributary near Pennington (e)	08033250	1.17	1967-74
Piney Creek near Groveton (d)	08033300	79	1962-89
Shawnee Creek Tributary near Huntington (e)	08033450	0.52	1966-74
Greenwood Creek Tributary near Colmesneil (e)	08033480	0.15	1966-74
Bowles Creek near Selman City (e)	08033600	14.5	1968-85
Striker Creek near Summerfield (d)	08033700	146	1941-49
Striker Creek Reservoir near New Salem (e)	08033800	148	1941-49
East Fork Angelina River near Cushing (d)	08033900	158	1964-89
Mud Creek at Ponta (d)	08035000	475	1924-27
Angelina River near Lufkin (d)	08037000	1,600	1924-34,
			1939-79
Bayou Lanana at Nacogdoches (d)	08037050	31.3	1965-86,
			1988-93
Gingham Branch near Mt. Enterprise (e)	08037300	0.90	1967-74
Arenoso Creek near San Augustine (d)	08037500	75.30	1938-40
Angelina River near Zavalla (d)	08038500	2,892	1952-65
Ayish Bayou at San Augustine (d)	08039000	15.80	1924-25
Angelina River at Horger (d)	08039500	3,486	1928-51,
			1967-73
Little Sandy Creek Tributary near Jasper (e)	08039900	0.46	1967-74

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Drakes Branch near Spurger (e)	08041400	5.03	1967-74
West Fork Double Bayou near Anahuac (e)	08042550	4.43	1967-74
North Creek SWS No. 28-A near Jermyn (e)	08042650	6.82	1972-80
North Creek near Jacksboro (d)	08042700	21.60	1956-80
Beans Creek at Wizard Wells (e)	08042900	29.60	1993-95
West Fork Trinity River at Bridgeport (d)	08043100	1,113	1984-89
West Fork Trinity River at Bridgeport (d)	08043500	1,147	1908-30
Big Sandy Creek near Bridgeport (d)	08044000	333	1937-95
Garrett Creek near Paradise (e)	08044135	52.5	1992-95
Salt Creek near Paradise (e)	08044140	52.7	1992-95
Walker Creek near Boyd (e)	08044200	2.95	1965-74
West Fork Trinity River at Lake Worth, Fort Worth (d)	08045500	2,069	1924-34
Clear Fork Trinity River near Aledo (d)	08046000	251	1947-75
Marine Creek at Fort Worth (d)	08048500	16.80	1950-58
Sycamore Creek at I.H. 35W, Fort Worth (d)	08048520	17.70	1970-76
Sycamore Creek Trib. above Seminary South, Fort Worth (d)	08048530	0.97	1970-76
Sycamore Creek Trib. at I.H. 35W, Fort Worth (d)	08048540	1.35	1970-76
Dry Branch at Fain Street at Fort Worth (d)	08048600	2.15	1969-76
Big Fossil Creek at Haltom City (d)	08048800*	52.8	1959-73
Little Fossil Creek at I.H. 820, Fort Worth (e)	08048820	5.64	1969-73
Little Fossil Creek at Mesquite Street, Fort Worth (d)	08048850	12.30	1969-76
Deer Creek Tributary near Crowley (e)	08048900	5.86	1967-74
Village Creek at Kennedale (d)	08048980	100	1986-89
Village Creek near Handley (d)	08049000	126	1925-30
Big Bear Creek near Grapevine (d)	08049550	29.6	1967-79
Trigg Branch at DFW Airport near Euless (d)	08049565	1.73	1983-87
Mountain Creek near Cedar Hill (d)	08049600	119	1961-84
Mountain Creek near Duncanville (e)	08049900	225	1971-90
Mountain Creek near Grand Prairie (d)	08050000	273	1925-33
Elm Fork Trinity River SWS 6-O near Muenster (e)	08050200	0.77	1957-73
Elm Fork Trinity River near Muenster (d)	08050300	46	1957-73
Elm Fork Trinity River near Sanger (d)	08050500	381	1949-85
Isle Du Bois Creek near Pilot Point (d)	08051000	266	1949-85
Elm Fork Trinity River near Pilot Point (d)	08051130	692	1985-92
Elm Fork Trinity River above Aubrey (e)	08051190	684	1981-89
Elm Fork Trinity River near Denton (d)	08052000	1,084	1924-27
Lake Dallas near Lake Dallas (e)	08052500	1,165	1929-57
Little Elm Creek SWS #10 near Gunter (e)	08052630	2.10	1966-72
Little Elm Creek near Celina (d)	08052650	46.70	1966-76
Hickory Creek at Denton (d)	08052780	129	1985-87
Indian Creek at Hebron Parkway at Carrollton (d)	08053010	15.0	1987-90
Furneaux Creek at Josey Lane at Carrollton (d)	08053030	4.10	1987-90
Hutton Branch at Broadway at Carrollton (e)	08053090	9.10	1987-90
Jones Valley Creek Tributary near Forestburg (e)	08053100	1.70	1966-74
Denton Creek near Roanoke (d)	08054000	621	1924-28, 1939-55
Gamble Branch near Argyle (e)	08054200	0.50	1965-74
Denton Creek near Grapevine (d)	08055000	705	1948-91
Joe's Creek at Royal Lane, Dallas (e)	08055580	1.94	1973-78
Joes Creek near Dallas (e)	08055600	7.4	1964-79
Bachman Branch at Dallas (d)	08055700	10	1964-79
Turtle Creek at Dallas (d)	08056500	7.98	1952-80, 1984-91
Coombs Creek at Sylvan Avenue, Dallas (e)	08057020	4.75	1965-78
Cedar Creek at Bonnie View Road, Dallas (e)	08057050	9.42	1965-78
White Rock Creek at Keller Springs Road, Dallas (d)	08057100	29.40	1961-79
Spanky Branch at McCallum Lane at Dallas (e)	08057120	6.77	1962-78
Rush Branch at Arapaho Road, Dallas (e)	08057130	1.22	1973-78
Newton Creek at Interstate Highway 635, Dallas (e)	08057135	5.91	1974-78

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Cottonwood Creek at Forest Lane, Dallas (e)	08057140	8.50	1962-78
Floyd Branch at Forrest Lane, Dallas (e)	08057160	4.17	1962-78
White Rock Creek at White Rock Lake, Dallas (d)	08057300	100	1963-79
Ash Creek at Highland Road, Dallas (e)	08057320	6.92	1963-78
Forney Creek at Lawnview Avenue, Dallas (e)	08057340	1.84	1963-72
White Rock Creek at Scyene Road, Dallas (d)	08057400	122	1963-79
Trinity River below Dallas (d)	08057410	6,278	1956-98
Elm Creek at Seco Boulevard, Dallas (e)	08057415	1.25	1973-78
Fivemile Creek at Kiest Boulevard, Dallas (e)	08057418	7.65	1974-78
Fivemile Creek at US Highway 77 West, Dallas (e)	08057420	14.30	1965-78
Woody Branch at US Highway 77 West, Dallas (e)	08057425	10.30	1965-78
Fivemile Creek at Lancaster Road, Dallas (e)	08057430	37.90	1965-78
White Branch at Interstate Highway 635, Dallas (e)	08057440	2.53	1974-78
Trinity River near Wilmer (d)	08057448	6,387	1998-2002
Tenmile Creek at State Highway 342 at Lancaster (d)	08057450	52.80	1970-79
Honey Creek SWS #11 near McKinney (e)	08057500	2.14	1952-73
Honey Creek SWS #12 near McKinney (e)	08058000	1.26	1952-77
Honey Creek near McKinney (d)	08058500	39	1951-73
East Fork Trinity River near McKinney (d)	08059000	190	1949-75
Arls Branch near Westminster (e)	08059200	0.52	1965-74
Sister Grove Creek near Princeton (d)	08059500	113	1949-75
East Fork Trinity River above Pilot Grove near Lavon (d)	08060000	324	1949-53
East Fork Trinity River near Lavon (d)	08061000	773	1954-89
East Fork Trinity River near Rockwall (d)	08061500	840	1924-54
Duck Creek at Buckingham Road, Garland (e)	08061620	8.05	1969-76
Duck Creek near Garland (d)	08061700	31.6	1958-93
South Mesquite Creek at State Highway 352, Mesquite (e)	08061920	13.40	1969-76
South Mesquite Creek at Mercury Road near Mesquite (d)	08061950	23	1969-79
Cedar Creek Reservoir Spillway Outflow near Trinidad (d)	08062650	1,007	1966-82
Bachelor Creek near Terrell (e)	08062850	13.0	1967-74
Kings Creek near Kaufman (d)	08062900	233	1963-87
Lacey Fork near Mabank (d)	08062980	118	1983-84
Cedar Creek near Mabank (d)	08063000	733	1939-66
South Twin Creek near Eustace (d)	08063003	27.40	1983-84
Red Oak Branch near Eustace (e)	08063005	0.90	1966-74
Cedar Creek at Trinidad (d)	08063020	1,011	1965-71
Briar Creek Tributary near Corsicana (e)	08063180	0.72	1966-74
Pin Oak Creek near Hubbard (d)	08063200	17.60	1956-72
Richland Creek near Richland (d)	08063500	734	1939-88
Alvarado Branch near Alvarado (e)	08063550	0.84	1966-74
Kings Branch near Reagor Springs (e)	08063620	0.62	1966-74
Chambers Creek near Corsicana (d)	08064500	963	1939-84
Richland Creek near Fairfield (d)	08064600	1,957	1972-83
Saline Branch Tributary near Bethel (e)	08064630	0.22	1967-74
Catfish Creek near Tennessee Colony (d)	08064800	207	1962-89
Mayes Branch near Latexo (e)	08065320	4.26	1967-74
Trinity River near Midway (d)	08065500	14,450	1939-71
Caney Creek near Madisonville (d)	08065700	112	1963-77
Nelson Creek near Riverside (e)	08065950	86.4	1949, 1965, 1970-74
Harmon Creek near Huntsville (e)	08065975	89.2	1973-81
West Carolina Creek near Oakhurst (e)	08066050	15.2	1949, 1966-73
White Rock Creek near Trinity (e)	08066100	222	1974-85
White Rock Creek near Trinity (e)	08066130	228	1966-74
Tantaboque Creek near Trinity (e)	08066140	61.3	1966-73
Caney Creek near Groveton (e)	08066145	41.4	1966-73
Brushy Creek near Onalaska (d)	08066150	29.1	1966-70
Rocky Creek near Onalaska (e)	08066180	40.6	1966-73

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Livingston Reservoir outflow weir near Goodrich (d)	08066191	16,583	1969-94
Long King Creek near Goodrich (d)	08066210	220	1972-81
Bluff Creek Tributary near Livingston (e)	08066280	0.62	1965-74
Big Creek near Shepherd(e)	08066400	38.80	1966-89
Gaylor Creek near Moss Hill (e)	08066800	32.3	1966-73
Devers Canal near Liberty (d)	08067080	N/A	1972-82
Goose Creek near McNair (e)	08067520	6.7	1963-65,
Welch Branch near Huntsville (e)	08067550	2.35	1965-74
Lake Conroe near Montgomery (e)	08067580	445	1973-76
Lake Conroe at Outflow Weir near Conroe (d)	08067610	445	1974,
			1977-89
Caney Creek near Dobbin (d)	08067700	40.40	1963-65
Landrum Creek Tributary near Montgomery (e)	08067750	0.13	1965-74
Lake Creek near Conroe (e)	08067900	291	1969-89
West Fork San Jacinto River near Porter (e)	08068100	970	1970-76
Mill Creek Tributary near Dobbin (e)	08068300	4.07	1967-73
Swale No. 8 at Woodlands (e)	08068438	0.55	1975-76,
			1980-88
Spring Creek at Spring (d)	08068520	419	1975-95
Spring Creek near Humble (e)	08068600	435	1971-76
Cypress Creek at Sharp Road near Hockley (d)	08068700*	80.7	1975-85
Cypress Creek near Cypress (e)	08068750*	138	1971-76
Cypress Creek at Stuebner-Airline Road near Westfield (d)	08068900*	248	1982-87
Cypress Creek near Humble (e)	08069200	319	1971-76
West Fork San Jacinto River near Humble (d)	08069500	1,741	1929-54
Bear Creek near Cleveland (e)	08069850	1.46	1967-73
Caney Creek near New Caney (e)	08070600	178	1970-76
Peach Creek near New Caney (e)	08071100	155	1970-76
Tarkington Bayou near Dayton (e)	08071200	142	1964-76
Luce Bayou near Huffman (e)	08071300	226	1971-76
San Jacinto River near Huffman (d)	08071500	2,800	1937-53
Buffalo Bayou at Clodine (e)	08072400	84.2	1974-85
Bettina Street Ditch at Houston (e)	08073630	1.37	1979-85
Stony Brook Street Ditch at Houston (e)	08073750	0.50	1967-72
Bering Ditch at Woodway Drive, Houston (e)	08073800	2.77	1965-73
Cole Creek at Guhn Road at Houston (e)	08074100	7.05	1964-72
Bingle Road Storm Sewer at Houston (e)	08074145	0.21	1980-88
Cole Creek at Deihl Road at Houston (d)	08074150*	7.50	1964-86
Brickhouse Gully at Clarblak Street at Houston (e)	08074200	2.56	1965-83
Brickhouse Gully at Costa Rica Street at Houston (d)	08074250*	11.4	1964-81
Lazybrook Street Storm Sewer, Houston (e)	08074400	0.13	1978-88
Little Whiteoak Bayou at Houston (e)	08074550	20.9	1971-79
Buffalo Bayou at Main St., Houston (d)	08074600	469	1962-94
Buffalo Bayou at McKee Street, Houston (d)	08074610	469	1992-2000
Buffalo Bayou at 69th Street, Houston (e)	08074700	476	1961-86
Brays Bayou at Addicks-Clodine Rd., Houston (e)	08074750	0.87	1974-77
Brays Bayou at Alief Road, Alief (e)	08074760*	12.9	1977-85
Keegans Bayou at Keegans Road near Houston (e)	08074780*	7.47	1964-71
Keegans Bayou at Roark Road near Houston (d)	08074800*	13.0	1964-85
Bintliff Ditch at Bissonnet Street, Houston (e)	08074850	4.38	1968-82
Willow Waterhole Bayou at Landsdowne Street, Houston (e)	08074900	3.81	1965-72
Hummingbird Street Ditch at Mullins Street, Houston (e)	08074910	0.32	1979-84
Brays Bayou at Scott Street, Houston (e)	08075100	106	1971-81
Sims Bayou at Carlsbad Street, Houston (e)	08075300	3.81	1964-72
Sims Bayou at MLK Blvd., Houston (e)	08075470	48.4	1978-89
Sims Bayou at Houston (d)	08075500*	63.0	1953-95
Berry Bayou at Gilpin Street, Houston (e)	08075550	2.87	1965-84
Berry Bayou Tributary at Globe Street, Houston (e)	08075600	1.58	1965-72
Berry Bayou at Galveston Road, Houston (e)	08075700	4.86	1965-72

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Hunting Bayou Tributary at Cavalcade Street, Houston (e)	08075750	1.20	1965-72
Hunting Bayou at Falls Street, Houston (e)	08075760	2.75	1964-84
Halls Bayou at Deertrail Street at Houston (e)	08076200	8.69	1965-84
Carpenters Bayou at Cloverleaf (e)	08076900	25.8	1964, 1971-93
Clear Creek near Pearland (d)	08077000	38.8	1944-45, 1946-60, 1963-94
Clear Creek Tributary at Hall Road, Houston (e)	08077100	1.31	1965-86
Clear Creek at Friendswood (d)	08077540	99.6	1994-97
Cowart Creek near Friendswood (e)	08077550	18	1965-74
Clear Creek near Friendswood (e)	08077600*	126	1966-94
Armand Bayou near Genoa (e)	08077620	18.2	1968, 1971-73
Highland Bayou at Hitchcock (e)	08077700	15.6	1963-82
Highland Bayou Tributary near Texas City (e)	08077750	1.97	1966-73
Highland Bayou near Texas City (e)	08077780	20.8	1965-88
Flores Bayou near Danbury (e)	08078700	23.3	1967-72
Oyster Creek near Angleton (d)	08079000	171	1945-80
North Fork Double Mountain Fork Brazos River at Lubbock (d)	08079500	5,300	1940-49,
North Fork Double Mountain Fork Brazos River above	08079530	29.3	1952-54,
Buffalo Springs nr Lubbock (e)			1957, 1962, 1967-76
Buffalo Springs Lake near Lubbock (e)	08079550	236	1967-77
Barnum Springs Draw near Post (e)	08079570	4.99	1965-73
North Fork Double Mountain Fork Brazos River near Post (d)	08079575	438	1984-93
Rattlesnake Creek near Post (e)	08079580	2.75	1966-74
Double Mountain Fork Brazos River near Rotan (d)	08080000	8,536	1950-51
Guest-Flowers Draw near Aspermont (e)	08080510	3.02	1965-74
McDonald Creek near Post (d)	08080540	103	1966-78
Callahan Draw near Lockney (e)	08080750	37.5	1966-77
White River near Crosbytown (e)	08080800	529	1951-64
White River below falls near Crosbytown (e)	08080900	529	1951-64
Salt Fork Brazos River at Farm Road 1081 near Clairemont (e)	08080916	1,135	1968-77
Red Mud Creek near Spur (e)	08080918	65.1	1967-74
Salt Fork Brazos River at State Highway 208 near Clairemont (e)	08080940	1,357	1968-77
Duck Creek near Girard (d)	08080950	431	1965-89
Salt Fork Brazos River at U.S. Highway 380 near Jayton (e)	08080959	1,797	1968-77
Salt Fork Brazos River near Peacock (d)	08081000	4,619	1950-51, 1965-86
Short Croton Creek at mouth near Jayton (e)	08081050	18.1	1959-82
Croton Creek below Short Croton Creek near Jayton (e)	08081100	250	1959-82
Croton Creek near Jayton (d)	08081200	290	1959-86
Salt Croton Creek at Weir D near Aspermont (e)	08081400	55.5	1957-76
Haystack Creek at Weir E near Aspermont (e)	08081450	15.1	1957-77
Salt Croton Creek near Aspermont (d)	08081500	64.30	1957-77
Stinking Creek near Aspermont (d)	08082100	88.80	1966-83
North Croton Creek near Knox City (d)	08082180	251	1965-86
North Elm Creek near Throckmorton (e)	08082900	3.58	1965-77
Elm Creek near Proffitt (e)	08082950	275	1969-85
Brazos River near Graham (d)	08083000	16,830	1916-20
Clear Fork Brazos River at Hawley (d)	08083240	1,416	1968-89
Mulberry Creek near Hawley (d)	08083245	205	1968-89
Elm Creek near Abilene (d)	08083300	133	1964-79
Little Elm Creek near Abilene (d)	08083400	39.10	1964-79
Elm Creek at Abilene (d)	08083430	422	1980-83
Cedar Creek at Abilene (d)	08083470	119	1971-84
Paint Creek near Haskell (d)	08085000	914	1950-51
Humphries Draw near Haskell (e)	08085300	3.51	1965-77

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Clear Fork Brazos River at Crystall Falls (d)	08086000	4,323	1922-29
Hubbard Creek near Sedwick (d)	08086015	128	1964-66
Hubbard Creek at Highway 380 near Moran (e)	08086020	152	1963-76
Deep Creek near Putnam (e)	08086030	33.8	1963-66
Brushy Creek near Putnam (e)	08086040	27.6	1963-66
Mexia Creek near Putnam (e)	08086045	67.0	1963-66
Hubbard Creek near Albany (d)	08086100	454	1962-75
Salt Prong Hubbard Creek below Lake McCarty near Albany (e)	08086110	45.5	1963-66
Salt Prong Hubbard Creek at U.S. 380 near Albany (d)	08086120	61	1964-68
Cook Creek near Albany (e)	08086130	11.3	1963-76
North Fork Hubbard Creek near Albany (d)	08086150	39.3	1963-90
Salt Prong Hubbard Creek near Albany (d)	08086200	115	1962-63
Snailum Creek near Albany (d)	08086210	22.90	1964-66
Big Sandy Creek near Eolian (e)	08086220	91.4	1963-76
Battle Creek near Putnam (e)	08086230	32.0	1963-66
Battle Creek near Moran (d)	08086235	108	1967-68
Battle Creek near Eolian (e)	08086240	137	1963-66
Pecan Creek at FM 1853 near Eolian (e)	08086250	6.95	1963-66
Pecan Creek near Eolian (d)	08086260	26.40	1967-75
Big Sandy Creek near Breckenridge (e)	08086300	288	1962-75
Hubbard Creek near Breckenridge (d)	08086500	1,089	1955-86
Clear Fork Brazos River near Crystal Falls (e)	08087000	5,658	1916-20, 1928-51
Clear Fork Brazos River near Eliasville (d)	08087300	5,697	1916-20, 1924-25, 1928-51, 1962-82
Salt Creek at Olney (d)	08088100	11.80	1958-77
Salt Creek near Newcastle (d)	08088200	120	1958-60
Briar Creek near Graham (d)	08088300	24.20	1958-89
Brazos River at Farm Road 1287 near Graham (e)	08088420	13,432	1970-77
Big Cedar Creek near Ivan (d)	08088450	97	1965-89
Brazos River at Morris Sheppard Dam near Graford (d)	08088600	14,030	1990-94
Elm Creek Tributary near Graford (e)	08089100	1.10	1965-74
Palo Pinto Creek near Santo (d)	08090500	573	1925, 1951-76
Cidwell Branch near Granbury (e)	08090850	3.37	1966-73
Morris Branch near Bluff Dale (e)	08091200	0.06	1965-73
Panther Branch near Tolar (e)	08091700	7.82	1966-74
Nolan River at Blum (d)	08092000*	282.0	1924-87
Brazos River near Whitney (d)	08093000	17,648	1939-74
Bond Branch near Hillsboro (e)	08093200	0.36	1965-74
Hackberry Creek at Hillsboro (d)	08093250	57.9	1980-92
Hackberry Creek below Hillsboro (e)	08093260	86.8	1980-92
Cobb Creek near Abbott (d)	08093400	12.40	1967-79
Aquilla Creek near Aquilla (d)	08093500#	308	1939-2001
Aquilla Creek at RR bridge near Aquilla (e)	08093530	345	1976-85
Aquilla Creek at Farm Road 2114 near Aquilla (e)	08093540	351	1976-85
Aquilla Creek at Farm Road and 1858 near Ross (e)	08093560	392	1976-85
Aquilla Creek at Farm Road 933 near Ross (e)	08093580	397	1976-85
North Bosque River at Stephenville (d)	08093700	95.90	1958-79
Green Creek SWS #1 near Dublin (d)	08094000	4.19	1955-77
Green Creek near Alexander (d)	08094500	45.40	1958-73
South Bosque River near McGregor (e)	08095220	15.9	1967-73
Willow Branch at McGregor (e)	08095250	2.52	1966-73
Middle Bosque River near McGregor (d)	08095300*	182.0	1959-86
Hog Creek near Crawford (d)	08095400*	78.0	1959-86
South Bosque River near Speegleville (d)	08095500	386	1924-30
Bosque River near Waco (d)	08095600*	1,656	1960-82
Box Branch at Robinson (e)	08096550	0.34	1965-73

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Cow Bayou SWS No. 4 (inflow) near Bruceville (e)	08096800	5.04	1958-75
Cow Bayou at Mooreville (d)	08097000	83.50	1958-75
Brazos River near Marlin (d)	08097500	30,211	1939-51
Deer Creek at Chilton (d)	08098000	84.50	1934-36
Leon River near De Leon (d)	08099100*	479.0	1960-87
Sabana River Tributary near De Leon (e)	08099350	0.48	1966-74
Leon River near Hasse (d)	08099500	1,261	1939-91
Eidson Creek near Hamilton (e)	08100100	2.91	1965-73
Bermuda Branch near Gatesville (e)	08100400	0.50	1966-73
Hoffman Branch near Hamilton (e)	08100800	5.56	1966-74
Cowhouse Creek near Killeen (d)	08101500	667	1925, 1939-42
Nolan Creek at Belton (d)	08102600	112	1974-82
School Branch near Lampasas (e)	08102900	0.90	1966-73
Fleece Branch near Lampasas (e)	08103450	1.08	1965-74
Lampasas River at Youngsport (d)	08104000	1,240	1924-80
Lampasas River near Belton (d)	08104100*	1,321	1963-89
Salado Creek above Salado (e)	08104290*	134	1985-88
Salado Creek below Salado Springs (d)	08104310*	136	1985-87
N. Fork San Gabriel River upstream from State Highway 418 at Georgetown (e)	08104795*	271	1985-88
North Fork San Gabriel River at Georgetown (d)	08104800	268	1964-68
South Fork San Gabriel River near Bertram (e)	08104850	8.9	1967-74
San Gabriel River at Georgetown (d)	08105000*	405	1924-25, 1934-73, 1984-87
Berry Creek at State Hwy. 971 near Georgetown (d)	08105200*	117	1985-87
San Gabriel River near Weir (d)	08105300*	563	1977-90
San Gabriel River near Circleville (d)	08105400	599	1924-34, 1967-77
Avery Branch near Taylor (e)	08105900	3.52	1966-73
Brushy Creek at Coupland (d)	08106000	205.0	1924-26
Brushy Creek near Rockdale (d)	08106300	505	1967-80
San Gabriel River near Rockdale (d)	08106310	1,359	1975-92
Big Elm Creek near Temple (d)	08107000	74.70	1934-36
Big Elm Creek near Buckholts (d)	08107500	171	1934-36
North Elm Creek near Ben Arnold (d)	08108000	32.20	1935-36
North Elm Creek near Cameron (d)	08108200	44.80	1963-73
Little Branch near Bryan (e)	08108800	0.14	1966-73
Brazos River near Bryan (d)	08109000	39,515	1899-1903, 1918-92
Brazos River near College Station (d)	08109500	30,033	1899-1902, 1918-25
Yegua Creek near Somerville (d)	08110000	1,009	1924-92
Brazos River at Washington (e)	08110200	41,192	1966-95
Plummers Creek at Mexia (e)	08110350	4.42	1965-73
Navasota River near Groesbeck (d)	08110400	311	1965-79
Navasota River near Bryan (d)	08111000	1,454	1951-94, 1994-97
Navasota River near College Station (d)	08111010	1,809	1977-85
Burton Creek at Villa Maria Road, Bryan (d)	08111025	1.33	1968-70
Hudson Creek near Bryan (d)	08111050	1.94	1968-70
Winkleman Creek near Brenham (e)	08111100	0.75	1965-73
Piney Creek near Bellville (e)	08111600	30.7	1948, 1955, 1958, 1964-89
West Fork Mill Creek near Industry (e)	08111650	15.3	1964-89
Brazos River near San Felipe (d)	08112000	35,100	1939-57
Brazos River near Wallis (e)	08112200	44,700	1974-75
Brazos River Authority Canal A near Fulshear (d)	08112500	N/A	1932-54,

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Richmond Irrigation Co. Canal near Richmond (d)	08113500	N/A	1958-73 1932-54, 1956-78
Brazos River near Juliff (d)	08114500	45,084	1949-69
Seabourne Creek near Rosenberg (e)	08114900	5.78	1968-74
Fairchild Creek near Needville (d)	08115500	26.20	1947-55
Big Creek near Guy (d)	08116000	116	1947-50
Dry Creek near Rosenberg (d)	08116400	8.65	1959-79
Dry Creek near Richmond (d)	08116500	12.20	1947-50, 1957-58
San Bernard River near West Columbia (e)	08117700	766	1949, 1971-77
Mound Creek Tributary at Guy (e)	08117800	1.48	1966-73
Big Boggy Creek near Wadsworth (d)	08117900	10.30	1970-77
Bull Creek near Ira (d)	08118500	26.30	1948-54, 1959-62
Colorado River below Bull Creek near Ira (e)	08118600	3,524	1975-78
Bluff Creek near Ira (d)	08119000	42.60	1948-65
Bluff Creek at mouth near Ira (e)	08119100	44.1	1975-78
Colorado River near Ira (d)	08119500	3,483	1948-52, 1959-89
Colorado river near Cuthburt (d)	08120700	3,912	1965-2002
Morgan Creek near Westbrook (d)	08121500	273	1954-63
Graze Creek near Westbrook (d)	08122000	21.70	1954-59
Morgan Creek near Colorado City (d)	08122500	313	1947-49
Champlin Creek near Colorado City (d)	08123500	198	1948-59
Sulphur Springs Draw near Wellman (e)	08123620	41.80	1966-74
Beals Creek above Big Spring (d)	08123650	9,319	1959-79
Beals Creek at Big Spring (d)	08123700	9,341	1957-59
Beals Creek near Coahoma (d)	08123720	9,383	1983-88
Coahoma Draw Tributary near Big Spring (e)	08123750	2.38	1966-74
Bull Creek Tributary near Forsan (e)	08123760	0.4	1966-74
Colorado River near Silver (d)	08123900	14,997	1957-70
Bitter Creek near Silver (e)	08123920	4.3	1967-74
Salt Creek Tributary near Hylton (e)	08125450	0.25	1966-74
Fish Creek Tributary near Hylton (e)	08126300	0.25	1966-71
Colorado River at Ballinger (d)	08126500	16,413	1907-79
Dry Creek near Christoval (e)	08127100	0.79	1965-73
South Concho Irrigation Co. Canal at Christoval (d)	08127500	N/A	1940-83
Middle Concho River near Tankersley (d)	08128500	2,653	1930-61
Spring Creek above Tankersley (d)	08129300*	424.7	1961-95
Dove Creek Springs near Knickerbocker (d)	08129500*	N/A	1944-58
Dove Creek at Knickerbocker (d)	08130500*	226	1961-95
Spring Creek near Tankersley (d)	08131000	699	1930-60
South Concho River above Pecan Creek near San Angelo (e)	08131300	470	1963-84
Tom Green Co. WCID No. 1 Canal near San Angelo (d)	08131600	N/A	1963-81
South Concho River at San Angelo (d)	08132500	3,866	1932-53
Quarry Creek near Sterling City (e)	08133300	3.25	1965-73
North Concho River at Sterling City (d)	08133500*	588.0	1939-87
Broome Creek near Broome (e)	08133800	0.29	1965-73
Nolke Station Creek near San Angelo (e)	08134300	0.59	1965-73
Gravel Pit Creek near San Angelo (e)	08134400	0.19	1965-74
North Concho River at San Angelo (d)	08135000	1,525	1916-31, 1947-90
Concho River near Veribest (e)	08136150	5,610	1970-74, 1998-2000
Puddle Creek near Veribest (e)	08136200	12.0	1966-73
Frog Pond Creek near Eden (e)	08136300	1.96	1967-73
Mukewater Creek SWS No. 10A near Trickham (e)	08136900	15.3	1965-72

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Mukewater Creek SWS No. 9 near Trickham (e)	08137000	4.02	1961-72
Mukewater Creek at Trickham (d)	08137500	70	1951-73
Deep Creek SWS No. 3 near Placid (e)	08139000	3.42	1954-60
Deep Creek near Mercury (d)	08139500	43.90	1954-73
Deep Creek SWS No. 8 near Mercury (e)	08140000	5.14	1952-71
Dry Prong Deep Creek near Mercury (d)	08140500	8.31	1951-71
Lake Clyde near Clyde (e)	08140600	36.9	1970-85
Pecan Bayou near Cross Cut (d)	08140700	532	1968-79
Jim Ned Creek near Coleman (d)	08140800	333	1965-80
McCall Branch near Coleman (e)	08141100	2.17	1966-73
Hords Creek near Valera (d)	08141500	54.20	1947-91
Hords Creek at Coleman (d)	08142000	107	1941-70
Brown County WID No. 1 Canal near Brownwood (d)	08142500	N/A	1950-83
Pecan Bayou at Brownwood (d)	08143500	1,660	1917-18, 1924-83
Brown Creek Tributary near Goldthwaite (e)	08143700	2.48	1966-73
Noyes Canal at Menard (d)	08144000	N/A	1924-83
Brady Creek near Eden (d)	08144800	101	1962-85
Brady Creek Tributary near Brady (e)	08145100	4.05	1967-73
Lake Buchanan near Burnet (e)	08148000	31,910	1937-90
Llano River Tributary near London (e)	08150200	0.58	1966-73
Stone Creek Tributary near Art (e)	08150900	0.40	1966-73
Llano River near Castell (d)	08151000	3,747	1924-39
Johnson Creek near Valley Spring (e)	08151300	5.66	1967-73
Little Flatrock Creek near Marble Falls (e)	08152700	3.20	1966-74
Spring Creek near Fredericksburg (e)	08152800	15.20	1967-73
Pedernales River at Stonewall (d)	08153000	647	1924-34
Cane Branch at Stonewall (e)	08153100	1.37	1965-71
Pedernales River near Spicewood (d)	08154000	1,294	1924-39
Lake Travis near Austin (d)	08154500	38,755	1940-90
Colorado River below Mansfield Dam, Austin (d)	08154510	38,755	1975-90
West Bull Creek at Loop 360 near Austin (e)	08154750	6.77	1976-82
Bull Creek at FM 2222, Austin (e)	08154760	30.4	1975-78
Bee Creek at West Lake Drive near Austin (e)	08154950	3.28	1980-82
Barton Creek near Camp Craft Road near Austin (d)	08155260	109	1982-89
Skunk Hollow Creek below Pond 1 at Austin (e)	08155370	0.12	1982-84
West Bouldin Creek at Riverside Drive, Austin (e)	08155550	3.12	1976-82
Shoal Creek at Steck Avenue, Austin (e)	08156650	2.79	1975-82
Shoal Creek at Northwest Park at Austin (d)	08156700	6.52	1975-84
Shoal Creek at White Rick Drive, Austin (e)	08156750	12.30	1975-82
Waller Creek at 38th Street, Austin (d)	08157000	2.31	1955-80
Waller Creek at 23rd Street, Austin (d)	08157500	4.13	1955-80
East Bouldin Creek at South 1st Street, Austin (d)	08157600	2.4	1997-2001
Blunn Creek near Little Stacey Park, Austin	08157700	1.2	1997-2001
Boggy Creek at US Highway 183, Austin	08158050	13.1	1977-86
			1994-2001
Walnut Creek at Farm-Market 1325 near Austin (e)	08158100	12.60	1975-88
Walnut Creek at Dessau Road, Austin (e)	08158200	26.20	1975-88
Ferguson Branch at Springdale Road, Austin (e)	08158300	1.63	1978-82
Little Walnut Creek at Georgian Drive, Austin (e)	08158380	5.22	1975-88
Little Walnut Creek at IH 35, Austin (e)	08158400	5.57	1975-82
Little Walnut Creek at Manor Road, Austin (e)	08158500	12.1	1975-82
Walnut Creek at Southern Pacific Railroad bridge, Austin (e)	08158640	53.5	1975-86
Onion Creek at Buda (e)	08158800	166	1961-78, 1979-83, 1992-95
“ “ “ (d)			
Bear Creek at Farm-Market Road 1626 near Manchaca (e)	08158820	24.0	1979-83
Little Bear Creek at Farm-Market Road 1626 near Manchaca (d)	08158825	21.0	1979
Slaughter Creek at FM 2304 near Austin (e)	08158860	23.1	1978-83
Boggy Creek (South) at Circle S Road, Austin (e)	08158880	3.58	1976-88

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Fox Branch near Oak Hill (e)	08158900	0.12	1965-73
Williamson Creek at Oak Hill (d)	08158920	6.30	1978-93
Williamson Creek at Jimmy Clay Road, Austin (d)	08158970	27.60	1975-85
Onion Creek below Del Valle (e)	08159100	339	1962-75
Wilbarger Creek near Pflugerville (d)	08159150	4.6	1963-80
Big Sandy Creek near McDade (d)	08159165	38.70	1979-85
Big Sandy Creek near Elgin (d)	08159170	63.80	1979-85
Dogwood Creek near McDade (e)	08159180	0.53	1980-85
Dogwood Creek at Highway 95 near McDade (e)	08159185	5.03	1980-85
Reeds Creek near Bastrop (e)	08159450	5.22	1967-73
Dry Creek at Buescher Lake near Smithville (d)	08160000	1.48	1940-66
Colorado River at La Grange (d)	08160500	40,430	1939-55
Colorado River above Columbus (d)	08160700	41,403	1983-85
Dry Branch Tributary near Altair (e)	08161580	0.68	1966-73
Little Robin Slough near Matagorda (e)	08162530	3.4	1969
Cashs Creek near Blessing (e)	08162650	14.8	1969-77
East Carancahua Creek near Blessing (e)	08162700	81.2	1968, 1970-83
West Carancahua Creek near Laward (e)	08162800	57.1	1970-76
Navidad River near Speaks (d)	08164350	437	1982-89, 1995-2000
Navidad River at Morales (d)	08164370	549	1995-2000
Navidad River near Ganado (d)	08164500	826	1939-80
Guadalupe River above Kerrville (e)	08166150	488	1976-79
Turtle Creek Tributary near Kerrville (e)	08166300	0.46	1966-74
Guadalupe River near Comfort (d)	08166500	762	1918-32
Rebecca Creek near Spring Branch (d)	08167600	10.90	1960-79
Blieiders Creek at New Braunfels (e)	08168600	16.0	1962-89
Panther Canyon at New Braunfels (e)	08168700	0.73	1962-89
Trough Creek near New Braunfels (e)	08168720	0.48	1966-74
W.P. Dry Comal Creek Tributary near New Braunfels (e)	08168750	0.32	1966-74
Dry Comal Creek at New Braunfels (e)	08168800	N/A	1962-74
Walnut Branch near Seguin (e)	08169750	5.46	1967-74
East Pecan Branch near Gonzales (e)	08169850	0.24	1965-74
San Marcos River at San Marcos (d)	08169950	83.7	1915-21
West Elm Creek near Niederwald (e)	08172100	0.44	1965-74
San Marcos River at Ottine (d)	08173500	1,249	1915-43
Guadalupe River below Cuero (d)	08176000	4,923	1903-07, 1916-19, 1921-36
Irish Creek near Cuero (e)	08176200	15.5	1967-74
Three Mile Creek near Cuero (e)	08176600	0.48	1966-74
Coletto Creek Reservoir inflow (Guadalupe diversion) near Schroeder (d)	08176990	357	1980-94
Coletto Creek near Schroeder (d)	08177000	369	1930-34, 1953-79
Olmos Creek Tributary at FM 1535 at Savano Park (e)	08177600	0.33	1969-81
Olmos Reservoir at San Antonio (e)	08177800	32.4	1968-71, 1976-89, 1992-95
San Antonio River at Woodlawn Avenue, San Antonio (e)	08177860	36.4	1989-95
San Antonio River at Dolorosa, San Antonio (d)	08177920	N/A	1980-86
Alazan Creek at St. Cloud Street, San Antonio (e)	08178300	3.26	1969-79
San Pedro Creek at Furnish St., San Antonio (d)	08178500*	2.60	1916-29
Harlandale Creek at W. Harding Street, San Antonio (e)	08178555	2.43	1977-81
Panther Springs Creek at FM 2696 near San Antonio (e)	08178600	9.54	1969-77
Lorence Creek at Thousand Oaks Blvd., San Antonio (e)	08178620	4.05	1980-84
West Elm Creek at San Antonio (e)	08178640	2.45	1976-88
East Elm Creek at San Antonio (e)	08178645	2.33	1976-81
Salado Creek Tributary at Bitters Road, San Antonio (e)	08178690	0.26	1969-81

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Salado Creek at Rittman Road, San Antonio (e)	08178720	137.1	1968-81
Salado Creek Tributary at Bee Street, San Antonio (e)	08178736	0.45	1970-77
Salado Creek at E. Houston Street, San Antonio (e)	08178740	181	1968-81
Salado Creek at U.S. Highway 87, San Antonio (e)	08178760	186	1968-81
Salado Creek at Southcross Blvd., San Antonio (e)	08178780	188	1968-81
Bandera Creek Tributary near Bandera (e)	08178900	0.27	1966-74
Medina River near Pipe Creek (d)	08179000	474	1923-35, 1953-82
Red Bluff Creek near Pipe Creek (d)	08179100	56.30	1956-81
Medina River Tributary near Pipe Creek (e)	08179200	0.30	1966-74
Medina River at La Coste (d)	08180640	805	1987-2000
Medio Creek at Pearsall Road, San Antonio (e)	08180750	47.9	1987-95
Leon Creek Tributary at FM 1604, San Antonio (e)	08181000	5.57	1968-80
French Creek Tributary near Helotes (e)	08181200	1.08	1966-74
Ranch Creek near Helotes (d)	08181410		1978
Leon Creek Tributary at Kelly Air Force Base (d)	08181450	1.19	1969-79
Calaveras Creek SWS No. 6 (inflow) near Elmendorf (e)	08182400	7.01	1957-77
Calaveras Creek near Elmendorf (d)	08182500	77.20	1954-71
San Antonio River at Calaveras (d)	08183000	1,786	1918-25
Cibolo Creek near Boerne (d)	08183900	68.4	1963-95
Cibolo Creek near Bulverde (d)	08184000	198	1946-66
Cibolo Creek above Bracken (d)	08184500	250	1946-51
Cibolo Creek at Sutherland Springs (d)	08185500	665	1924-29
Ecletto Creek near Runge (d)	08186500	239	1962-89
Escondido Creek SWS No. 1 (inflow) near Kenedy (e)	08187000	3.29	1955-73
Escondido Creek at Kenedy (d)	08187500	72.40	1954-73
Escondido Creek SWS No. 11 (inflow) near Kenedy (e)	08187900	8.45	1959-77
Dry Escondido Creek near Kenedy (d)	08188000	9.43	1954-59
Baugh Creek at Goliad (e)	08188400	3.02	1966-74
Guadalupe-Blanco River Authority Calhoun Canal-Flume No. 2 near Long Mott (d)	08188750	N/A	1972-86
Guadalupe River at State Highway 35 near Tivoli (e)	08188810	10,280	1975-82
Olmos Creek Tributary near Skidmore (e)	08189600	0.58	1966-73
Chiltipin Creek at Sinton (d)	08189800	128	1970-91
Nueces River near Uvalde (d)	08191500	1,930	1928-39
Nueces River near Cinonia (d)	08192500	2,150	1915-25
Plant Creek near Tilden (e)	08194550	0.36	1965-74
Nueces River at Simmons (d)	08194600	8,561	1965-77
Frio River at Knippa (d)	08195700	N/A	1953
Dry Frio River at Knippa (d)	08196500	179	1953
East Elm Creek near Sabinal (e)	08198900	10.6	1967-74
Frio River near Frio Town (d)	08199700	1,460	1924-27
Hondo Creek near Hondo (d)	08200500	132	1953-64
Bone Creek near Hondo (e)	08200900	0.19	1965-74
Seco Creek near Utopia (d)	08202000	53.20	1952-61
Seco Creek Reservoir inflow near Utopia (d)	08202450	59.5	1991-98
Seco Creek near D'Hanis (d)	08202500	87.40	1952-64
Parkers Creek Reservoir (d)	08202800	10.0	1991-99
Leona River Tributary near Uvalde (e)	08203500	1.21	1966-74
Leona River Spring Flow near Uvalde (d)	08204000*	1.21	1939-65 1966-2002
Leona River near Divot (d)	08204500	565	1924-29
Frio River at Calliham (d)	08207000	5,491	1925-26, 1932-81
Rutledge Hollow Creek near Poteet (e)	08207200	9.33	1966-74
Rutledge Hollow at 7th Street, Poteet (d)	08207220	N/A	1979-2000
Atascoas River at U.S. Highway 281, Pleasanton (d)	08207300	N/A	1973-2000
Atascosa River near McCoy (d)	08207500	530	1951-57
Lucas Creek near Pleasanton (e)	08207700	32.80	1966-73
Ramirena Creek near George West (d)	08210300	84.40	1968-72

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Lagarto Creek near George West (d)	08210400	155	1972-89
Nueces River below Mathis (d)	08211100	16,726	1966-67
Rincon Bayou Channel near Calallen (d)	08211503	N/A	1996-2000
Pintas Creek Tributary near Banquete (e)	08211550	3.28	1966-74
Hamon Creek near Freer (e)	08211600	0.73	1965-73
San Diego Creek at Alice (d)	08211800	319	1964-89
Lake Alice at Alice (e)	08211850	150	1965-86
San Fernando Creek near Alice (d)	08212000	518	1962-63
North Las Animas Creek Tributary near Freer (e)	08212320	0.07	1969-74
Rio Grande at Vinton Bridge near Anthony (d)	08363840	28,680	1969-74
Northgate Reservoir at El Paso (e)	08365540	6.89	1973-75
Range Reservoir at El Paso (e)	08365545	11.89	1973-75
Franklin Canal at El Paso (d)	08365550	N/A	1969-72
McKelligon Canyon at El Paso (d)	08365600	2.30	1958-77
Government Ditch at El Paso (d)	08365800	6.40	1958-77
Rio Grande at Jaurez, MX (d)	08366000	29,350	1938-56
Riverside Canal near Socorro (d)	08366400	37,830	1969-72
Rio Grande at Island Station near El Paso (d)	08366500	29,743	1938-60
Rio Grande at Tornillo Branch near Fabens (d)	08367000	N/A	1924-38
Tornillo Drain at mouth near Tornillo (d)	08368000	N/A	1969-72
Tornillo Canal near Tornillo (d)	08368300	N/A	1969-72
Hudspeth Feeder Canal near Tornillo (d)	08368900	N/A	1969-72
Rio Grande at County Line Station near El Paso (d)	08369500	30,610	1938-60
Camo Rice Arroyo Tributary near Fort Hancock (e)	08370200	2.35	1966-74
Wild Horse Creek Tributary near Van Horn (e)	08370800	0.74	1966-73
Cibolo Creek near Presidio (d)	08373200	276	1971-77
Rio Grande above Presidio (lower Station) (d)	08373500	N/A	1901-13, 1924-54
Rio Grande at Langtry (d)	08377500	84,795	1900-14, 1920, 1924-60
Rio Grande Tributary near Langtry (e)	08377600	0.32	1966-74
Delaware River Tributary near Orla (e)	08407800	1.6	1966-74
Pecos River near Angeles (d)	08409500	20,540	1914-37
Salt Screwbean Draw near Orla (d)	08411500	464	1939-41, 1944-57
Pecos River near Mentone (d)	08414000	21,650	1922-26, 1969-73
Reeves County WID No. 2 Canal near Mentone (d)	08414500	N/A	1922-25, 1939-57, 1964-90
Ward County WID No. 3 Canal near Barstow (d)	08415000	N/A	1939-57, 1964-90
Pecos River above Barstow (d)	08416500	21,800	1916-21
Ward County Irrigation District No. 1 Canal near Barstow (d)	08418000	N/A	1922-25, 1939-57, 1964-90
Pecos River at Pecos (d)	08420500	22,100	1898-1907, 1914-15, 1922-26, 1939-55
Madera Canyon near Toyahvale (d)	08424500	53.80	1932-49
Phantom Lake Spring near Toyahvale (d)	08425500*	N/A	1932-34, 1942-66
San Solomon Springs at Toyahvale (d)	08427500*	N/A	1932-34, 1941-65
West Sandia Spring at Balmorhea (d)	08429000	N/A	1932-33
East Sandia Spring at Balmorhea (d)	08430000	N/A	1932-33
Toyah Creek near Pecos (d)	08431000	1,024	1940-41, 1944-45

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Salt Draw near Pecos (d)	08431500	1,882	1939-41, 1944-45
Limpia Creek below Fort Davis (d)	08431800	227	1962-77
Limpia Creek near Fort Davis (d)	08432000	303	1925-32
Toyah Creek below Toyah Lake near Pecos (d)	08434000	3,709	1939-51
Grandfalls-Big Valley Canal near Barstow (d)	08435000	N/A	1922-26, 1939-57, 1964-76
Pecos River below Barstow (d)	08435500	25,980	1939-41
Toronto Creek near Alpine (d)	08435600	27.90	1971-76
Alpine Creek at Alpine (d)	08435620	18.10	1971-76
Moss Creek near Alpine (d)	08435660	11.30	1971-76
Sunny Glen Canyon near Alpine (d)	08435700	29.70	1968-77
Coyanosa Draw near Fort Stockton (d)	08435800	1,182	1964-77
Pecos County WID No. 2 (Upper Div.) Canal near Grandfalls (d)	08436500	N/A	1922-25, 1939-57, 1964-90
Courtney Creek Tributary near Fort Stockton (e)	08436800	0.44	1966-74
Pecos County WID No. 2 Canal near Imperial (d)	08437500	N/A	1940-57, 1964-90
Lake Leon Tributary near Fort Stockton (e)	08437550	1.59	1966-74
Pecos County WID No. 3 Canal near Imperial (d)	08437600	N/A	1940-57, 1964-90
Monument Draw Tributary at Pyote (e)	08437650	178	1966-74
Ward County WID No. 2 Canal near Grand Falls (d)	08437700	N/A	1939-57, 1964-90
Pecos River near Grand Falls (d)	08438100	27,810	1916-26
Pecos River below Grand Falls (d)	08441500	27,820	1921-26, 1939-56
Three Mile Mesa Creek near Fort Stockton (e)	08444400	1.04	1966-74
Comanche Springs at Fort Stockton (d)	08444500	N/A	1936-64
Pecos River near Sheffield (d)	08447000	31,600	1922-25, 1940-49
Howards Creek Tributary near Ozona (e)	08447200	7.53	1967-73
Pecos River near Shumla (d)	08447400	35,162	1955-60
Pecos River near Comstock (d)	08447500	35,298	1900-54
Goodenough Springs near Comstock (e)	08448500	N/A	1929-60
Sonora Field Creek at Sonora (e)	08448800	2.60	1965-71
Devils River near Juno (d)	08449000	2,730	1925-49, 1964-73
Devils River near Comstock (d)	08449300	3,903	1955-58
Rough Canyon Tributary near Del Rio (e)	08449470	7.90	1967-73
Devils River near Del Rio (d)	08449500	4,185	1900-14, 1924-57
Evans Creek Tributary near Del Rio (e)	08449600	0.39	1966-73
Devils River near mouth, Del Rio (d)	08450500	4,305	1954-60
Rio Grande near Del Rio (d)	08452500	123,303	1900-15, 1920, 1924-54
San Felipe Creek near Del Rio (e)	08453000	46.0	1931-60
Zorro Creek near Del Rio (e)	08453100	10.0	1966-74
East Perdido Creek near Brackettville (e)	08454900	3.39	1965-74
Pinto Creek near Del Rio (d)	08455000	249	1929-69, 1971-72
Rio Grande at San Antonio Crossing (d)	08458700	129,226	1952-60
Arroyo San Bartolo at Zapata (e)	08459600	0.61	1966-74
Rio Grande near Zapata (d)	08460500	163,344	1932-53
International Falcon Reservoir near Falcon Heights (d)	08461200	N/A	1953-60
Rio Grande at Roma (d)	08462500	166,464	1900-13, 1923-54

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Rio Grande near Rio Grande City (d)	08465500	180,941	1932-54
Rio Grande Tributary near Rio Grande City (e)	08466100	1.20	1966-74
Rio Grande Tributary near Sullivan City (e)	08466200	0.40	1966-74
North Floodway South of McAllen (d)	08468000	N/A	1928-60
South Floodway South of McAllen (d)	08470000	N/A	1929-60
Rio Grande at Hildalgo (d)	08471500	176,100	1928-32, 1935, 1939, 1941-51
Rio Grande near Progreso Bridge (d)	08473300	176,228	1953-60
Rio Grande near San Beniot (d)	08473700	176,304	1953-60
Rio Grande at Matamoros, MX (d)	08474500	182,211	1900-13, 1923-54
Rio Grande near Brownsville (d)	08475000	176,333	1935-50

DISCONTINUED SURFACE-WATER-QUALITY STATIONS

xxv

The following stations were discontinued as continuous-record surface-water-quality stations prior to the 2000 water year. Daily records of specific conductance, temperature, sediment, color, pH, dissolved oxygen, or chloride were collected and published for the record shown for each station.

[SC, specific conductance; T, temperature; S, sediment; C, color; pH, pH; DO, dissolved oxygen; Cl, chloride.]

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
Canadian River at Tascosa	07227470	19,200	SC, T, Cl	1948-53,
		18,536	SC, T, pH, Cl	1969-77
Canadian River near Canadian	07228000	22,866	SC, T	1974-81
Prairie Dog Town Fork Red River near Wayside	07297910	4,221	SC, T	1969-81
Tule Creek near Silverton	07298200	1,150	SC, T, pH, Cl	1968-69
Prairie Dog Town Fork Red River near Brice	07298500	6,082	SC, pH, Cl, S	1949-51,
			T	1950-51
Mulberry Creek near Brice	07299000	534	SC, pH, Cl, S	1949-51
Prairie Dog Town Fork Red River near Lakeview	07299200	6,792	SC, T	1968-80,
			S	1979-80
Little Red River near Turkey	07299300	139	SC, T	1968-81,
			S	1979-81
Jonah Creek at Weir near Estelline	07299512	65.50	SC	1974-82
Jonah Creek below Weir near Estelline	07299514	66.60	SC	1974-76
Salt Creek near Estelline	07299530	142	SC	1974-79
Prairie Dog Town Fork Red River near Childress	07299540	7,725	SC, T	1968-82,
				1994-97
Salt Fork Red River near Hedley	07299930	868	SC, T, pH, Cl	1956-61
North Pease River near Childress	07307600	1,434	SC, T	1973-79
Middle Pease River near Paducah	07307750	1,086	SC	1973-79,
			T	1973-79,
			S	1994-97
Middle Pease River near Paducah	07307760	1,128	SC	1980-82,
			T	1980
Pease River near Childress	07307800	2,754	SC, T	1968-82,
				1994-97
Pease River near Crowell	07308000	3,037	SC	1942-43
Pease River near Vernon	07308200	3,488	SC, T	1999
Red River near Burkburnett	07308500	20,570	SC, T	1968-81
North Fork Wichita River near Paducah	07311600	540	SC, T	1968-76
North Fork Wichita River near Crowell	07311622	591	SC	1971-76
Middle Fork Wichita River near Truscott	07311648	161	SC	1970-76
Truscott Brine Lake near Truscott	07311669	26.2	SC, T	1985-90
North Fork Wichita River near Truscott	07311700	937	SC, T	1969-92
South Fork Wichita River near Guthrie	07311780	239	SC	1970-76
South Fork Wichita River at Ross Ranch near Guthrie	07311790	499	SC	1971-79,
			Cl	1988-97,
			S	1978-79
Beaver Creek near Electra	07312200	652	SC,T	1969-70
				1996-2002
Wichita River at State Highway 25 near Kamay	07312130	2,182	SC, T	1996-2002
Wichita River at Wichita Falls	07312500	3,140	SC, T	1981-89,
				1996-2002
Wichita River near Charlie	07312700	3,439	SC, T	1967-81,
				1996-2002
Little Wichita River near Archer City	07314500	481	SC	1953-55,
			T	1953-54
Little Wichita River near Henrietta	07314900	1,037	SC, DO	1999
Little Wichita River near Henrietta	07315000	1,037	SC, T, pH, Cl	1953-56,
			S, T	1959-66,

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
East Fork Little Wichita River near Henrietta	07315200	178	T	1954
Little Wichita River near Ringgold	07315400	1,350	SC, pH, Cl	1959-62
Red River near Gainesville	07316000	30,872	SC, Cl	1944-46,
			SC, T, pH, Cl	1953-63,
			SC, T	1967-89,
Red River at Denison Dam near Denison	07331600	39,720	SC	1944-89,
			T	1945-89
Little Pine Creek near Kanawha	07336750	75.40	T	1980
Red River near De Kalb	07336820	47,348	SC, T	1968-91
Middle Sulphur River near Commerce	07342480	44.1	Cl, pH	1987-2001
South Sulphur River near Cooper	07342500	527	SC, T, pH, Cl	1959-66,
				1968-72,
			SC, T	1973-89
Sulphur River near Talco	07343200	1,365	SC, T, pH, Cl	1966-72,
			SC, T	1973-91
White Oak Creek near Talco	07343500	494	SC, T, pH, Cl	1966-72,
			SC, T	1973-91
Sulphur River near Darden	07344000	2,774	SC, T, pH, Cl	1947-50
Big Cypress Creek near Pittsburg	07344500	366	SC, T, pH, Cl	1968-72,
			SC, T	1973-89
Little Cypress Creek near Jefferson	07346070	675	SC, T, pH, Cl	1968-72,
			SC, T	1973-91
Sabine River near Emory	08017500	888	SC, T, pH, Cl	1952-54
Grand Saline Creek near Grand Saline	08018200	91.40	SC, T, pH, Cl	1968-73
Sabine River near Mineola	08018500	1,357	SC, T, pH, Cl	1968-72,
			SC, T	1973-92
Lake Fork Creek near Quitman	08019000	585	SC, T, pH, Cl	1968-72,
			SC, T	1973-89
Big Sandy Creek near Big Sandy	08019500	231	SC, T, S	1985-86
Sabine River near Beckville	08022040	3,589	SC, T	1952-98
Sabine River below Toledo Bend near Burkeville	08026000	7,482	SC, T	1969-86,
			C	1969-75
Sabine River near Bon Wier	08028500	8,229	SC, T, C	1969-84
Sabine River near Ruliff	08030500	9,329	SC	1945,
				1947-98
			T	1947-98
			pH, DO	1968-75,
			C	1970-76,
			Cl	1968
Cow Bayou near Mauriceville	08031000	83.30	SC, T, pH, Cl	1952-54,
			SC, T	1954-56
Neches River near Neches	08032000	1,145	SC, T	1974-91
Neches River near Alto	08032500	1,945	SC, T	1950-69
Neches River near Diboll	08033000	2,724	SC, T	1970-81
Neches River near Rockland	08033500	3,636	SC	1941-42,
				1946-47
Angelina River near Lufkin	08037000	1,600	SC, T, pH, Cl	1955-78,
			SC, T	1955-
Attoyac Bayou near Chireno	08038000	503	SC, T	1984-99
Sam Rayburn Reservoir near Jasper	08039300	3,449	SC, T	1964-84,
				1993-99
Angelina River below Sam Rayburn Dam near Jasper	08039400	3,449	SC, T	1964-79
Angelina River at SH 63 near Ebenezer	08039500	3,435	SC, T	1994-99
Village Creek near Kountze	08041500	860	SC, T	1968-70
Pine Island Bayou near Sour Lake	08041700	336	SC, T, pH, Cl	1968-72,
			SC, T	1973-89
Big Sandy Creek near Bridgeport	08044000	333	SC, T, S	1968-77,
Lake Worth above Fort Worth	08045400	2,064	pH, Cl	

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
Clear Fork Trinity River at Fort Worth	08047500	518	SC, pH, Cl T	1949-52, 1948-62
Village Creek at Everman	08048970	84.5	SC, pH, T, DO	1990
Lake Arlington at Arlington	08049200	143	SC, pH, T, DO	1989-2002
Elm Fork Trinity River SWS # 6-0 near Muenster	08050200	0.77	S	1957-66
Elm Fork Trinity River near Muenster	08050300	46	SC T	1967-68, 1957-58, 1966-68, 1957-68
Clear Creek near Sanger	08051500	295	SC, T, S	1968-77
Little Elm Creek near Celina	08052650	46.70	SC T, S	1967-75, 1966-75
Little Elm Creek near Aubrey	08052700	75.50	SC T, S	1967-75, 1967-75
Elm Fork Trinity River near Lewisville	08053000	1,673	SC T	1982-86, 1976-86
White Rock Creek at Greenville Avenue, Dallas	08057200	66.4	SC, pH, T, DO	1997-2000
Trinity River below Dallas	08057410	6,278	SC, T S Cl	1968-2000, 1972-75, 1998-2000 1970-81, 1998-99
Lavon Lake near Lavon	08060500	770	SC,T,CL	1969-74, 1975,82, 1995-99
Duck Creek near Garland	08061700	31.6	SC, pH, T, DO	1988-89
East Fork Trinity River above Seagoville	08061970	1,183	SC, T, pH, DO	1987-93
East Fork Trinity River at Seagoville	08061980	1,224	SC, pH, T, DO	1987-96
East Fork Trinity River near Crandall	08062000	1,256	SC, T pH, DO Cl	1968-1981, 1987-2000 1977, 1986-2000 1964-81, 1986-2000
Trinity River at Trinidad	08062700	8,538	SC, T pH, DO Cl S	1967-81 1986-2000 1967-81, 1986-2000 1966-94 1978-94
Cedar Creek near Mabank	08063000	733	SC, T, pH, Cl	1956-57
Pin Oak Creek near Hubbard	08063200	17.60	SC T S	1967-72, 1957-60, 1965-72, 1957-60, 1962-72
Richland Creek near Richland	08063500	734	SC, T, pH, Cl SC, T	1968-69, 1983-89
Chambers Creek near Corsicana	08064500	963	SC, T, pH, Cl	1961-70
Richland Creek near Fairfield	08064600	1,957	SC, T, pH, Cl SC, T S	1956-66, 1972, 1973-83
Trinity River near Oakwood	08065000	12,833	SC, T, pH, Cl SC, T, S	1948-54, 1977-81
Bedias Creek near Madisonville	08065800	321	SC, T S	1985-87, 1986
Long King Creek at Livingston	08066200	141	SC, T, pH, Cl	1963-72
Trinity River near Goodrich	08066250	16,844	SC, T	1970-73

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
Trinity River near Moss Bluff	08067100	17,738	SC, pH, Cl	1950-65
Old River near Cove	08067200	19.0	SC, pH, Cl	1950-65,
			T	1965
Trinity River at Anahuac	08067300	17,912	SC, pH, Cl	1950-65
Cedar Bayou near Crosby	08067500	69.4	SC, pH, Cl	1971-79
West Fork San Jacinto River near Conroe	08068000	828	SC, T	1962-90,
			DO	1979-81
Panther Branch near Spring	08068450	34.50	S	1975-76
West Fork San Jacinto River near Humble	08069500	1,741	SC, Cl	1945-46
East Fork San Jacinto River near New Caney	08070200	388	SC, T	1984-99
San Jacinto River near Huffman	08071500	2,800	SC	1945-54,
			T	1949-54
Buffalo Bayou at West Belt Drive at Houston	08073600	307	SC, T	1979-81
Buffalo Bayou at Houston	08074000	358	SC, pH, T, DO	1986-2000
			Cl	1969-81
Whiteoak Bayou at Main Street, Houston	08074598	127	SC, T, DO	1992-97
Buffalo Bayou at Main Street, Houston	08074600	469	SC, T, DO	1986-92
Buffalo Bayou at McKee Street, Houston	08074610	469	SC, T, DO	1992-2000
			pH	1998-2000
Sims Bayou at Houston	08075500	63.0	SC, T, DO	1994-97
Chocolate Bayou near Alvin	08078000	87.70	SC, T	1978-81
North Fork Double Mountain Fork Brazos River near Post	08079575	438	SC, T	1984-93
Double Mountain Fork Brazos River near Rotan	08080000	8,536	SC, T	1950-51
Double Mountain Fork Brazos River near Aspermont	08080500	8,796	SC, T, S	1949-51
			SC, T	1957-95
				1996-2002
McDonald Creek near Post	08080540	103	SC, T	1964-78
Salt Fork Brazos River near Peacock	08081000	4,619	SC, T	1950-51,
				1965-86
Croton Creek near Jayton	08081200	290	SC, T	1961-80
Salt Croton Creek near Aspermont	08081500	64.30	SC	1969-77,
			T	1972-73
Salt Fork Brazos River near Aspermont	08082000	5,130	SC, T, pH, Cl	1949-51,
			SC, T	1957-82
Stinking Creek near Aspermont	08082100	88.80	T	1950,
			SC, T	1966-69
North Croton Creek near Knox City	08082180	251	SC, T	1966-86
Brazos River at Seymour	08082500	15,538	SC, T	1960-95
				1996-2002
Medina River near Somerset	08082800	967	SC, T, Cl	1998-2000
Clear Fork Brazos River at Hawley	08083240	1,416	SC, T	1968-79,
				1982-84
Clear Fork Brazos River at Nugent	08084000	2,199	SC, T, pH, Cl	1948-53
California Creek near Stamford	08084800	478	SC, T	1963-79
Paint Creek near Haskell	08085000	914	SC, T	1950-5
Clear Fork Brazos River at Fort Griffin	08085500	3,988	SC, T, S	1950-51,
			SC, T	1968-79,
				1982-84
Hubbard Creek near Sedwick	08086015	128	SC, T	1964-66
Deep Creek at Moran	08086050	228	SC, T	1963-75
Hubbard Creek near Albany	08086100	454	SC, T	1962-75
Salt Prong Hubbard Creek at U.S. Highway 380 near Albany	08086120	61	SC, T	1964-68
North Fork Hubbard Creek near Albany	08086150	39.30	SC, T	1964-90
Salt Prong Hubbard Creek near Albany	08086200	115	SC, T	1962-63
Snailum Creek near Albany	08086210	22.90	SC, T	1964-66
Battle Creek near Moran	08086235	108	SC, T	1967-68
Pecan Creek near Eolian	08086260	26.40	SC, T	1967-75

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
Big Sandy Creek near Breckenridge	08086300	288	SC, T	1962-77
Hubbard Creek near Breckenridge	08086500	1,089	SC, T	1955-75
Clear Fork Brazos River at Eliasville	08087300	5,697	SC, T	1962-82
Brazos River near South Bend	08088000	22,673	SC, CI	1942-48,
			SC, T	1978-81
Salt Creek at Olney	08088100	11.80	SC, T	1958-60
Salt Creek near Newcastle	08088200	120	SC, T	1958-60
Brazos River at Morris Sheppard Dam near Graford	08088600	23,596	SC	1942-91,
			T	1950-55,
				1966-91
Brazos River near Dennis	08090800	25,237	SC, T	1971-95
Brazos River at Whitney Dam near Whitney	08092600	27,189	SC, T	1947-97
Aquilla Creek above Aquilla	08093360	255	SC, T	1980-83
Aquilla Creek near Aquilla	08093500	308	SC, T	196066,
				1968-82
Bosque River near Waco	08095600	1,656	SC, T	1998-2002
Brazos River near Highbank	08098290	30,436	T	1968-84
Leon River near Eastland	08098500	235	SC, T	1950-53
Leon River near Hasse	08099500	1,261	SC, T	1980-82,
				1990-97
Leon River near Belton	08102500	3,542	T	1957-72
South Fork Rocky Creek near Briggs	08103900	33.30	S	1963-65
Lampasas River at Youngsfort	08104000	1,240	SC, T	1961-64
Little River near Little River	08104500	5,228	SC, T	1965-73,
				1980-82
Little River near Cameron	08106500	7,065	SC, T	1959-97
San Gabriel River near Weir	08105300	563	T	1977-82
San Gabriel River at Laneport	08105700	738	T	1977-82
Brazos River at State Highway 21 near Bryan	08108700	39,049	SC, T	1961-65
Brazos River near Bryan	08109000	39,515	SC, T	1966
Brazos River near College Station	08109500	39,599	SC, T	1961-84
Yegua Creek near Somerville	08110000	1,009	SC, T	1961-67
Navasota River above Groesbeck	08110325	239	SC, T	1968-89
Navasota River near Groesbeck	08110400	311	SC, T	1968-78
Navasota River near Easterly	08110500	968	SC	1942-43,
				1947
Navasota River near Bryan	08111000	1,454	SC, T	1959-81,
			S	1976-81
Brazos River near Richmond	08114000	45,107	S	1966-86,
			SC	1942-95,
			T	1951-95
Brazos River near Rosharon	08116650	45,399	SC, T	1969-80
Brazos River at Harris Reservoir near Angleton	08116700	44,000	SC	1962-77,
			T	1967-77
Brazos River at Brazoria Reservoir near Brazoria	08117200	44,000	SC	1962-77,
			T	1967-77
San Bernard River near Boling	08117500	727	SC, T	1978-81
Colorado River above Bull Creek near Knapp	08118200	N/A	SC, T, CI	1950-52
Bull Creek near Ira	08118500	26.30	SC, T, pH, CI	1950-51
Bluff Creek near Ira	08119000	42.60	SC, T, pH, CI	1950
Colorado River near Ira	08119500	3,483	SC, T	1950-52,
				1959-70,
				1975-82,
			CI	1951-52
Deep Creek near Dunn	08120500	198	SC, T	1953-54
Colorado River near Cuthbert	08120700	3,912	SC, T	1965-99
				2001-02

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
Morgan Creek near Westbrook	08121500	273	T	1954-55
Graze Creek near Westbrook	08122000	21.70	T	1954-55
Morgan Creek near Colorado City	08122500	313	T	1947-49
Lake Colorado City near Colorado City	08123000	340	T	1954-55
Beals Creek above Big Spring	08123650	9,319	SC, T	1973-78
Beals Creek near Big Spring	08123700	9,341	SC, T	1956-57
Beals Creek near Coahoma	08123720	9,383	SC, T	1983-88
Colorado River near Silver	08123900	14,997	SC, T	1957-68
Colorado River at Robert Lee	08124000	15,307	SC, T, pH, Cl S	1948-51, 1949-51
Oak Creek near Blackwell	08126000	209	SC, T	1950
Colorado River at Ballinger	08126500	16,413	SC, T S	1961-79, 1978-79
Pecan Bayou at Brownwood	08143500	1,660	SC, T	1948-49
Pecan Bayou near Mullin	08143600	2,073	SC, T	1968-91
San Saba River near San Saba	08145500	N/A	SC, T	1962-65
San Saba River at San Saba	08146000	3,046	SC T	1962-69, 1963-70
Colorado River near San Saba	08147000	37,217	SC, T S	1947-92, 1951-62
Llano River at Llano	08151500	4,197	SC, T	1979-81
Lake Austin at Austin	08154900	38,240	SC, T	1965-80
Barton Creek below Barton Springs at Austin	08155505	125	SC, T,	1965, 1975-83, 1989-91, 1994-97
Waller Creek at 23rd Street at Austin	08157500	4.13	T	1955-60
East Bouldin Creek at South 1st Street, Austin	08157600	2.4	Cl	1997-2000
Blunn Creek near Little Stacey Park, Austin	08157700	1.2		1997-2001
Boggy Creek at US Highway 183, Austin	08158050	13.1	C C, T	1977-86 1994-2001
Colorado River at Austin	08158000	39,009	SC, T	1948-91
Colorado River above Columbus	08160700	41,403	SC, T	1983-86
Colorado River at Columbus	08161000	41,640	SC T	1967-73, 1957-59, 1961-68
Colorado River at Wharton	08162000	42,003	S SC T	1957-73 1945-92, 1946-48,
Lavaca River near Edna	08164000	817	SC, T	1978-81
Navidad River near Speaks	08164350	437	SC, T, pH, Cl	1996-97
Navidad River near Ganado	08164500	826	SC, T	1960-80
Guadalupe River near Spring Branch	08167500	1,315	SC	1942-45
Guadalupe River at Sattler	08167800	1,436	T	1984-87
Blanco River at Wimberley	08171000	355	T	1977-78
Plum Creek near Luling	08173000	309	SC, T	1968-86
Sandies Creek near Westhoff	08175000	549	S Cl	1966 1962-99
Guadalupe River at Victoria	08176500	5,198	SC T	1946-81, 1951-81
Coletto Creek Reservoir (Condenser No. 1) near Fannin	08177360	414	T	1980-94
Coletto Creek Reservoir (outflow) near Victoria	08177410	494	T	1980-94
Olmos Creek at Dresden Drive, San Antonio	08177700	21.2	SC, pH, T, DO S	1969-99 1973
San Antonio River at San Antonio	08178000	41.8	SC, T	1991-92, 1996-97
San Antonio River at Mitchell Street, San Antonio	08178050	42.4	SC, pH, T, DO	1992-99

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
San Antonio River at Loop 410 at San Antonio	08178565	125	SC, pH, T, DO	1987-2000
Medina River near Macdona	08180700	885	SC, pH, T, DO	1998-2000
Medina River at La Coste	08180640	805	SC, pH, T, DO	1987-95
Medio Creek at Pearsall Rd. at San Antonio	08180750	47.9	SC, pH, T, DO	1987-95
Ingram Road Outfall at Leon Creek Tributary at San Antonio	08181410	0.02	SC, pH, T, DO	1994-2000
Leon Creek at Interstate Highway 35 at San Antonio	08181480	219	SC, pH, T, DO	1985-2000
Medina River at San Antonio	08181500	1,317	SC, pH, T, DO	1987-2000
			CI	1965-2000
San Antonio River near Falls City	08183500	2,113	SC, pH, T, DO	1987-96
Cibolo Creek near Falls City	08186000	827	SC, T	1969-91
Escondido Creek SWS #1 near Kenedy	08187000	3.29	S	1955-65
Guadalupe River at Tivoli	08188800	10,128	SC, T	1966-82
Mission River at Refugio	08189500	690	SC, T	1961-81
Nueces River at Cotulla	08194000	5,171	SC	1942
Frio River at Calliham	08207000	5,491	SC, T	1968-81
Nueces River at Bluntzer	08211000	16,772	SC, T	1948-91
Los Olmos Creek near Falfurrias	08212400	480	SC, T	1975-81
Rio Grande at El Paso	08364000	29,267	SC, pH, T, DO	1930-2000
Rio Grande at Fort Quitman	08370500	31,944	SC, T	1975-78
Rio Grande at Foster Ranch near Langtry	08377200	80,742	SC, T	1975-81
Pecos River below Red Bluff Dam near Orla	08410100	20,720	SC	1937-69,
			T	1953-69
Salt Draw near Orla	08411500	464	SC, T	1943-48
Pecos River near Mentone	08414000	21,650	SC	1939
Pecos River at Pecos	08420500	22,100	SC	1939-41
Toyah Creek near Pecos	08431000	1,024	SC	1940,
				1944
Salt Draw near Pecos	08431500	1,882	SC	1940,
				1944
Toyah Creek below Toyah Lake near Pecos	08434000	3,709	SC	1940-50,
			CI	1940
Pecos River below Grand Falls	08441500	27,820	SC	1939-42,
				1947-56
Pecos River near Girvin	08446500	29,560	SC	1940-41,
				1947,
				1954-82
			T	1954-59,
				1964-82
Pecos River near Sheffield	08447000	31,600	SC	1940-41,
				1947
Pecos River near Langtry	08447410	35,179	SC, T	1971-76,
				1981-85
Devils River at Pafford Crossing near Comstock	08449400	3,961	SC, T	1978-85
Rio Grande at Laredo	08459000	132,578	SC	1975-86,
			T	1974-76
Rio Grande at Roma	08462500	166,464	SC	1942-43
Rio Grande at Fort Ringgold, Rio Grande City	08464700	174,362	SC, pH, T	1959-2000
Rio Grande near Los Ebanos	08466300	N/A	SC, pH, T	1977-2000
Rio Grande at Mission Pumping Plant	08468000	171,800	SC	1945-50
Rio Grande below Anzalduas Dam	08469200	176,112	SC, pH, T	1967-72,
				1959-2000
Rio Grande at Cameron Co. WID #2 near San Benito	08473800	N/A	SC	1942-43
Rio Grande at Los Fresnos Pumping Plant near Brownsville	08474130	N/A	SC	1945-46
Rio Grande near Brownsville	08475000	176,333	SC	1943-44,
			SC, T	1967-83
			S	1966-83

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WATER RESOURCES DATA—TEXAS, 2003

VOLUME 1

ARKANSAS RIVER BASIN, RED RIVER BASIN, SABINE RIVER BASIN, NECHES RIVER BASIN, AND INTERVENING COASTAL BASINS

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with Federal, State, and City agencies, obtains a large amount of data pertaining to the water resources of Texas each water year. Such 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 U.S. Geological Survey, the data are published annually in six volumes of this report series entitled "Water Resources Data - Texas."

This report series includes records of stage, discharge, and water quality of streams and canals; stage, contents, and water quality of lakes and reservoirs, and water levels and water quality of ground water wells. Volume 1 contains records for water discharge at 72 gaging stations; stage only at 3 gaging stations; stage and contents at 35 lakes and reservoirs; and water quality at 28 gaging stations. Also included are data for 9 partial-record stations comprised of 6 flood-hydrograph and 3 low-flow stations. The data in this report represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating Federal, State, and City agencies in Texas.

This series of annual reports for Texas 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 was changed to its present format, with data on quantities and quality of surface water contained in each of three volumes, and expanding to five volumes beginning with the 1999 water year. Ground-water levels and water quality have been published in a separate volume beginning with the 1991 water year.

Prior to introduction of this series and for several water years concurrent with it, water resources data for Texas 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 7 and 8." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from U.S. Geological Survey, Books and Open-File Reports, Federal Center, Bldg. 41, Box 25425 Denver, CO 80225.

Publications similar to this report are published annually by the U.S. Geological Survey for all States. These official U.S. Geological 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 TX-03-1." For archiving and general distribution, the reports for the 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or may be purchased on microfiche from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, (703) 605-6000.

Additional information, including the current prices, for ordering specific reports may be obtained from the Texas District Chief at the address given on the back of the title page or by telephone (512) 927-3500.

COOPERATION

Federal agencies that assisted the U.S. Geological Survey in the collection of data in this report in the form of funds or services in water year 2003 are:

- Corps of Engineers, U.S. Army.
- International Boundary and Water Commission
United States and Mexico, U.S. Section.
- National Park Service
- U.S. Bureau of Reclamation

Organizations that assisted in the collection of data in this report through joint funding agreements through the Texas Water Development Board or through direct joint funding agreements with the U.S. Geological Survey are:

Texas Water Development Board (TWDB), G.E. Kretzschmar, Executive Administrator; the cities of Abilene, Arlington, Austin, Corpus Christi, Fort Worth, Gainesville, Garland, Georgetown, Graham, Houston, Lubbock, Nacogdoches, San Angelo, and Wichita Falls; Bexar, Medina, and Atascosa Counties Water Improvement District No. 1; Barton Springs/Edwards Aquifer Conservation District; Brazos River Authority; Canadian Municipal Water Authority; Coastal Water Authority; Colorado River Municipal Water District; Dallas Public Works Department; Dallas Water Utilities; Edwards Underground Aquifer Authority; Fort Bend Subsidence District; Franklin County Water District; Galveston County; Greenbelt Municipal and Industrial Water Authority; Guadalupe-Blanco River Authority; Harris-Galveston Coastal Subsidence District; Harris County Office of Emergency Management; Harris County Flood Control District; Houston-Galveston Area Council; Lavaca-Navidad River Authority; Lower Colorado River Authority; Lower Neches Valley Authority; North Central Texas Municipal Water Authority; Northeast Texas Municipal Water District; North Texas Municipal Water District; Pecos River Commission; Red Bluff Water Power Control District; Red River Authority of Texas; Sabine River Authority of Texas; Sabine River Compact Administration; San Antonio City Public Service Board; San Antonio River Authority; San Antonio Water System; San Jacinto River Authority; Somervell County Water District; Tarrant Regional Water District; Texas Soil & Water Conservation Board; Texas Department of Public Transportation; Texas Natural Resources Conservation Commission; Titus County Fresh Water Supply District No. 1; Trinity River Authority; Upper Colorado River Authority; Upper Guadalupe River Author-

ity; Upper Neches River Municipal Water Authority; West Central Texas Municipal Water District; and Wichita County Water Improvement District No. 2.

SUMMARY OF HYDROLOGIC CONDITIONS

Precipitation

Large variations in precipitation, runoff, and streamflow characterize the usual hydrologic conditions in Texas. In the eastern part of the State, streams typically are deep with wide alluvial flood plains, and streamflow is perennial. In the western part of the State, most streams flow through arroyos, and streamflow usually is ephemeral.

Streamflow across the State averaged normal during water year 2003.

Conservation storage in 77 selected reservoirs throughout the State, with a combined conservation capacity of 34,485,000 acre-feet, remained at 77 percent from the end of September 2002 to the end of September 2003. Records from these reservoirs indicate that storage increased in 25, decreased in 48, and remained the same in 4.

The area for which water resources data are presented in volume 1 includes the Arkansas River Basin, Red River Basin, Sabine River Basin, Neches River Basin, and Intervening Coastal Basins. The area described in volume 1 and the location of selected streamflow stations in the area are shown in figure 1.

Streamflow

Monthly mean streamflow was normal in most streams in Texas during the 2003 water year. Comparisons of monthly mean and annual mean discharges in the 2003 water year, with median values for the period 1971-2000, were made for the following four representative index stations in Texas: the Neches River near Rockland (08033500) in southeastern Texas, the North Bosque River near Clifton (08095000) in east central Texas, the North Concho River near Carlsbad (08134000) in west central Texas, and the Guadalupe River near Spring Branch (08167500) in south central Texas (fig. 2).

Annual mean streamflow for the Neches River near Rockland was 3,285 cubic feet per second (ft^3/s) for the 2003 water year, or 181 percent of 1,811 ft^3/s for the reference period 1971-2003. The 2003 water year monthly mean discharges were above the normal range (greater than 75 percent of the median monthly discharge for the reference period) during the months of October, November, December, January, March,

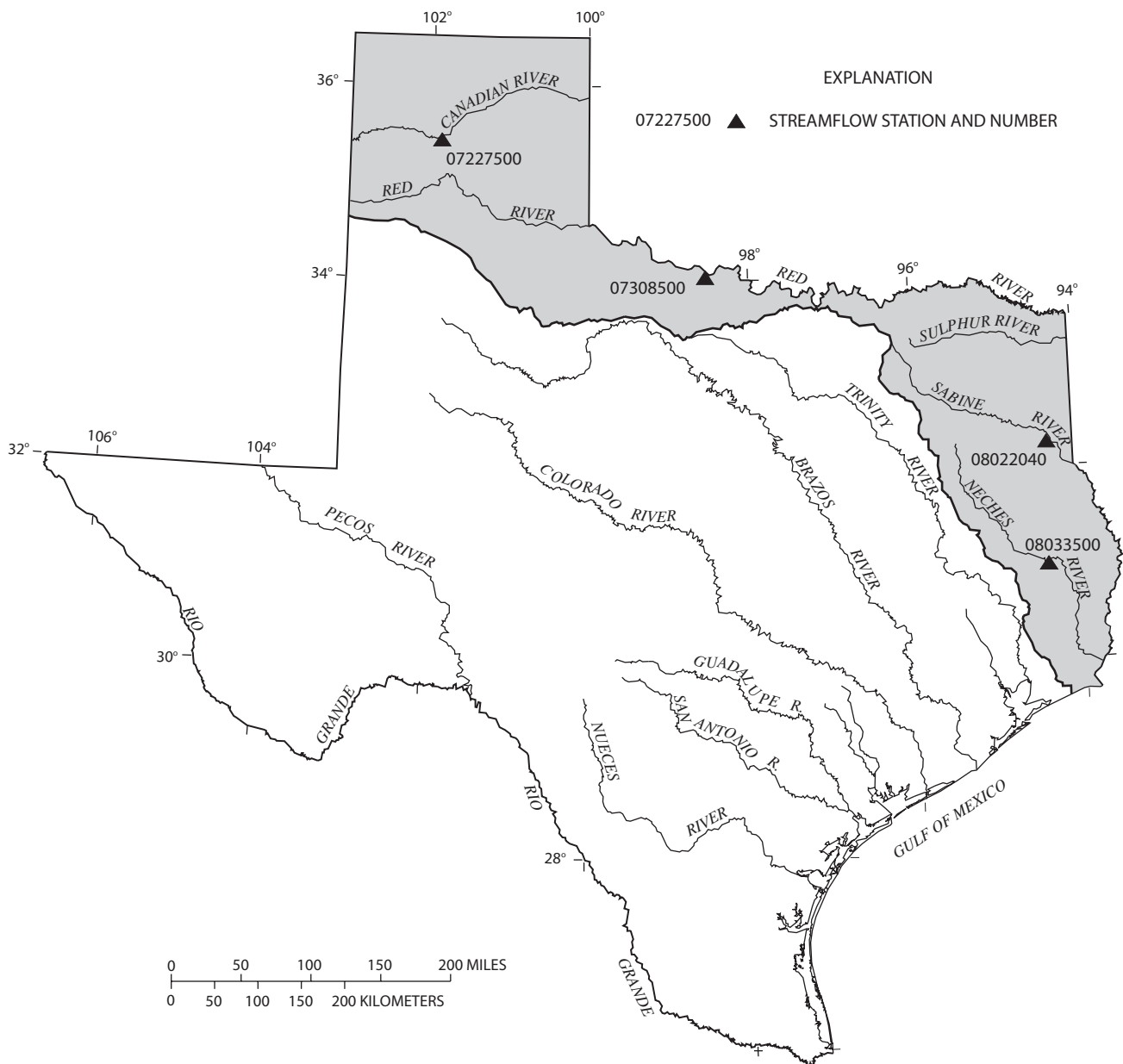


Figure 1. Area of Texas covered by volume 1 (shaded) and location of selected streamflow stations in volume 1.

WATER RESOURCES DATA—TEXAS, 2003

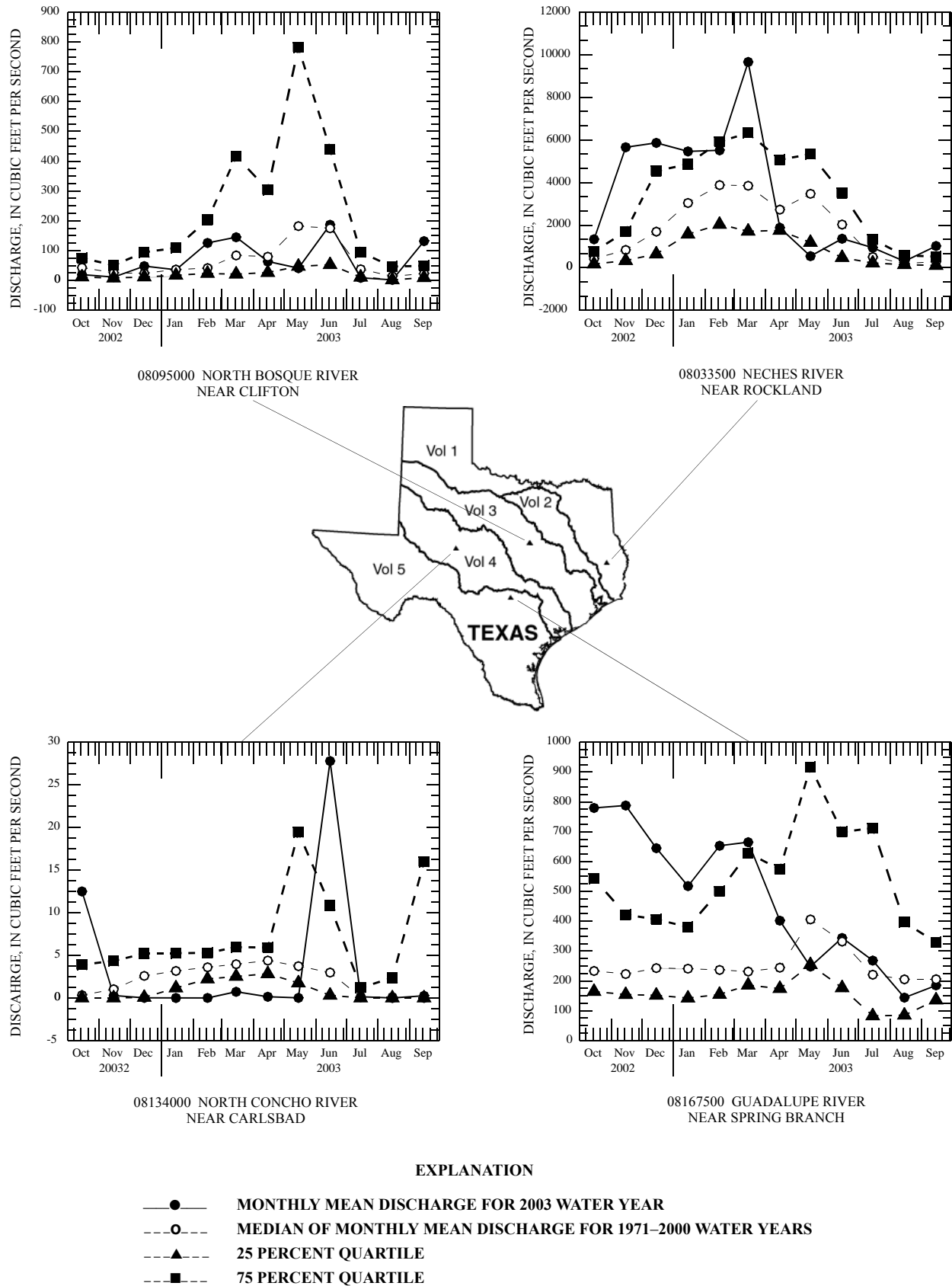


Figure 2. Monthly mean discharges at four long-term hydrologic index stations during 2003 water year and median of the monthly mean discharges for 1971–2000 water years.

and September, and below the normal range (less than 25 percent of the median monthly discharge for the reference period) during May. Monthly mean discharges for other months were within the normal range.

Annual mean streamflow for the North Bosque River near Clifton was 67.6 ft³/s for the 2003 water year, or 112 percent of 60.6 ft³/s for the reference period 1971-2000. The 2003 water year monthly mean discharges for the North Bosque River near Clifton were above the normal range (greater than 75 percent of the median monthly discharge for the reference period) during the month of September, and below the normal range (less than 25 percent of the median monthly discharge for the reference period) during the months of May and July. Monthly mean discharges for other months were within the normal range.

Annual mean streamflow for the North Concho River near Carlsbad was 3.48 ft³/s for the 2003 water year, or 170 percent of 2.05 ft³/s for the reference period 1971-2000. The 2003 water year monthly mean discharges for the North Concho River near Carlsbad were above the normal range (greater than 75 percent of the median monthly discharge for the reference period) during the months of October and June, and below the normal range (less than 25 percent of the median monthly discharge for the reference period) during the months of January, February, March, April, and May. Monthly mean discharges for other months were within the normal range.

Annual mean streamflow for the Guadalupe River near Spring Branch was 460 ft³/s for the 2003 water year or 176 percent of

267 ft³/s for the reference period 1971-2000. The 2003 water year monthly mean discharges for the Guadalupe River near Spring Branch were above the normal range (greater than 75 percent of the median monthly discharge for the reference period) during the months of October, November, December, January, February, and March, and below the normal range (less than 25 percent of the median monthly discharge for the reference period) during May. Monthly mean discharges for other months were within the normal range.

Conservation storage in 22 selected reservoirs in this area of the State, with a total combined conservation capacity of 14,654,000 acre-feet, decreased from 82 percent of capacity at the end of September 2002 to 81 percent of capacity at the end of September 2003. Records from these reservoirs indicate that storage decreased in 16, increased in 5, and remained the same in 1 during the water year.

Water Quality

Dissolved-solids concentrations in most streams in the State are inversely related to streamflow discharges. During years when precipitation and runoff are less than normal, streamflow commonly is more mineralized than during years when precipitation and runoff are normal or greater than normal. However, for streams in which discharge is controlled by reservoirs, the dissolved-solids concentrations may remain relatively constant despite substantial fluctuations in precipitation and runoff.

Table 1. Streamflow at four selected stations

Station no. and name	Discharge during 2003 water year (cubic feet per second)			Discharge during period of record (cubic feet per second)		
	Maximum instantaneous	Minimum daily mean	Mean	Maximum instantaneous	Minimum daily mean	Mean
<u>Arkansas River Basin</u>						
07227500 Canadian River near Amarillo, TX	8,250	0	53	135,000	0	268 (1938-2003)
<u>Red River Basin</u>						
07308500 Red River near Burkburnett, TX	15,200	7	436	174,000	0	1,218 (1960-2003)
<u>Sabine River Basin</u>						
08022040 Sabine River near Beckville, TX	15,100	124	2,069	49,400	2.4	2,632 (1961-2003)
<u>Neches River Basin</u>						
08033500 Neches River near Rockland, TX ^{1/}	18,600	162	3,285	42,300	18	2,425 (1962-2003)

^{1/} Hydrologic index station.

DOWNSTREAM ORDER AND STATION NUMBER

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

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These station numbers are in the same downstream order used in this report. In assigning a station number, 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 composed of both types of stations. Gaps are consecutive. The complete 8-digit (or 10-digit) number for each station such as 09004100, which appears just to the left of the station name, includes a 2-digit part number "09" plus the 6-digit (or 8-digit) downstream order number "004100." In areas of high station density, an additional two digits may be added to the station identification number to yield a 10-digit number. The stations are numbered in downstream order as described above between stations of consecutive 8-digit numbers.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 61 sites in small drainage basins in 39 States that was established in 1963 to provide consistent streamflow data representative of undeveloped watersheds nationwide, and from which data could be analyzed on a continuing basis for use in comparison and contrast with conditions observed in basins more obviously affected by human activities. At selected sites, water-quality information is being gathered on major ions and nutrients, primarily to assess the effects of acid deposition on stream chemistry. Additional information on the Hydrologic Benchmark Program may be accessed from <http://water.usgs.gov/hbn/>.

National Stream-Quality Accounting Network (NASQAN) is a network of sites used to monitor the water quality of large rivers within the Nation's largest river basins. From 1995 through 1999, a network of approximately 40 stations was operated in the Mississippi, Columbia, Colorado, and Rio Grande River basins. For the period 2000 through 2004, sampling was reduced to a few index stations on the Colorado and Columbia Rivers so that a network of 5 stations could be implemented on the Yukon River. Samples are collected with

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

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) is a network of monitoring sites that provide continuous measurement and assessment of the chemical constituents in precipitation throughout the United States. As the lead Federal agency, the USGS works together with over 100 organizations to provide a long-term, spatial and temporal record of atmospheric deposition generated from this network of 250 precipitation-chemistry monitoring sites. The USGS supports 74 of these 250 sites. This long-term, nationally consistent monitoring program, coupled with ecosystem research, provides critical information toward a national scorecard to evaluate the effectiveness of ongoing and future regulations intended to reduce atmospheric emissions and subsequent impacts to the Nation's land and water resources. Reports and other information on the NADP/NTN Program, as well as data from the individual sites, may be accessed from <http://bqs.usgs.gov/acidrain/>.

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

Assessment activities are being conducted in 42 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents is measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for water-resources managers to use in making decisions and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and Federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key Federal, State, and local water-resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies. Additional information about the NAWQA Program may be accessed from <http://water.usgs.gov/nawqa/>.

The USGS National Streamflow Information Program (NSIP) is a long-term program with goals to provide framework streamflow data across the Nation. Included in the program are creation of a permanent Federally funded streamflow network, research on the nature of streamflow, regional assessments of streamflow data and databases, and upgrades in the streamflow information delivery systems. Additional information about NSIP may be accessed from <http://water.usgs.gov/nsip/>.

EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS

Data Collection and Computation

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and volume of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from a water-stage recorder that is either downloaded electronically in the field to a laptop computer or similar device or is transmitted using telemetry such as GOES satellite, land-line or cellular-phone modems, or by radio transmission. Measurements of discharge are made with a current meter or acoustic Doppler current profiler, using the general methods adopted by the USGS. These methods are described in standard textbooks, USGS Water-Supply Paper 2175, and the Techniques of Water-Resources Investigations of the United States Geological Survey (TWRIs), Book 3, Chapters A1 through A19 and Book 8, Chapters A2 and B2. The methods are consistent with the American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

For stream-gaging stations, discharge-rating tables for any stage are prepared from stage-discharge curves. If extensions to the rating curves are necessary to express discharge greater than measured, the extensions are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, or computation of flow over dams and weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables,

then the monthly and yearly mean discharges are computed from the daily values. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features of the stream channel, the daily mean discharge is computed by the shifting-control method in which correction factors based on individual discharge measurements and notes by engineers and observers are used when applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the controlling section, the daily mean discharge is computed by the shifting-control method.

The stage-discharge relation at some stream-gaging stations is affected by backwater from reservoirs, tributary streams, or other sources. Such an occurrence 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 at some distance from the base gage.

An index velocity is measured using ultrasonic or acoustic instruments at some stream-gaging stations and this index velocity is used to calculate an average velocity for the flow in the stream. This average velocity along with a stage-area relation is then used to calculate average discharge.

At some stations, 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.

At some stream-gaging stations in the northern United States, the stage-discharge relation is affected by ice in the winter; therefore, computation of the discharge in the usual manner is impossible. Discharge for periods of ice effect is computed on the basis of gage-height record and occasional winter-discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge from other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the volume or contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly changes are computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys, the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some stream-gaging stations, periods of time occur when no gage-height record is obtained or the recorded gage height is faulty and cannot be used to compute daily discharge or contents. Such a situation can happen when the recorder stops or otherwise fails to operate properly, the intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated on the basis of

recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records from other stations in the same or nearby basins. Likewise, lake or reservoir volumes may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

Data Presentation

The records published for each continuous-record surface-water discharge station (stream-gaging station) consist of five parts: (1) the station manuscript or description; (2) the data table of daily mean values of discharge for the current water year with summary data; (3) a tabular statistical summary of monthly mean flow data for a designated period, by water year; (4) 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 (5) a hydrograph of discharge.

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 follow that clarify information presented under the various headings of the station description.

LOCATION.—Location information is obtained from the most accurate maps available. The location of the gaging station 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 term indicates the time period for which records have been published 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 its flow reasonably can be considered equivalent to flow at the present station.

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

GAGE.—The type of gage in current use, the datum of the current gage referred to a standard datum, 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 either will be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily discharge table. (See section titled Identifying Estimated Daily Discharge.) Information is presented 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 of 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, the outlet works and spillway, and the purpose and use of the reservoir.

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

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

REVISIONS.—Records are revised if errors in published records are discovered. Appropriate updates are made in the USGS distributed data system, NWIS, and subsequently to its Web-based National data system, NWISWeb (<http://water.usgs.gov/nwis/nwis>). Users are encouraged to obtain all required data from NWIS or NWISWeb to ensure that they have the most recent data updates. Updates to NWISWeb are made on an annual basis.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because no current or, possibly, future station manuscript would be published for these stations 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 (address given on the back of the title page of this report) to determine if the published records were revised after the station was discontinued. If, however, the data for a discontinued station were obtained by computer retrieval, the data would be current. 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 stage-capacity table when daily volumes are given.

Peak Discharge Greater than Base Discharge

Tables of peak discharge above base discharge are included for some stations where secondary instantaneous peak discharge data are used in flood-frequency studies of highway and bridge design, flood-control structures, and other flood-

related projects. The base discharge value is selected so an average of three peaks a year will be reported. This base discharge value has a recurrence interval of approximately 1.1 years or a 91-percent chance of exceedence in any 1 year.

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 arithmetic 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 is 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). Values for cubic feet per second per square mile and runoff in inches or in acre-feet may be omitted if extensive regulation or diversion is in effect 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 volumes are given. These values are identified by a symbol and a corresponding footnote.

Statistics of Monthly Mean Data

A tabular summary of the mean (line headed MEAN), maximum (MAX), and minimum (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 values. The designated period will be expressed as FOR WATER YEARS __-__, BY WATER YEAR (WY), and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. The designated period will consist of all of the station record within the specified water years, including complete months of record for partial water years, and may coincide with the period of record for the station. The water years for which the statistics are computed are 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 of the station records within the specified water years, including complete months of record for partial water years, and may coincide with the period of record for the station. The water years for which the statistics are computed are consecutive, unless a break in the station record is

indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (see line headings below), except for the ANNUAL 7-DAY MINIMUM statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. 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 the dates of occurrence do not fall within the selected water years listed in the heading, 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 extensive regulation or diversion of flow is in effect in the drainage basin.

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

ANNUAL TOTAL.—The sum of the daily mean values of discharge for the year.

ANNUAL MEAN.—The arithmetic mean for the individual daily mean discharges for the year noted or 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 analyses of annual 7-day minimum flows use a climatic year (April 1–March 31). The date shown in the summary statistics table is the initial date of the 7-day period. This value should not be confused with the 7-day 10-year low-flow statistic.

MAXIMUM PEAK FLOW.—The maximum instantaneous peak discharge occurring for the water year or designated period. Occasionally the maximum flow for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak flow is given in the table and the

maximum flow may be reported in a footnote or in the REMARKS paragraph in the manuscript.

MAXIMUM PEAK STAGE.—The maximum instantaneous peak stage occurring for the water year or designated period. Occasionally the maximum stage for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak stage is given in the table and the maximum stage may be reported in the REMARKS paragraph in the manuscript or in a footnote. If the dates of occurrence of the maximum peak stage and maximum peak flow are different, 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.—Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

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

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

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

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

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

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

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first table lists annual maximum stage and discharge at crest-stage stations, and the second table lists discharge measurements at low-flow partial-record stations. 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 often made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for a special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified. This identification is shown either by flagging individual daily values with the letter “e” and noting in a table footnote, “e—Estimated,” or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of Field Data and Computed Results

The accuracy of streamflow data 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 observations of stage, measurements of discharge, and interpretations of records.

The degree of accuracy of the records is stated in the REMARKS in the station description. “Excellent” indicates that about 95 percent of the daily discharges are within 5 percent of the true value; “good” within 10 percent; and “fair,” within 15 percent. “Poor” indicates that daily discharges have less than “fair” accuracy. Different accuracies may be attributed to different parts of a given record.

Values of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 ft³/s; to the nearest tenths between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures above 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 discharge values listed for partial-record stations.

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, values 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 Data Records Available

Information of a more detailed nature than that published for most of the stream-gaging stations such as discharge measurements, gage-height records, and rating tables is available from the District office. Also, most stream-gaging station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the District office (see address that is shown on the back of the title page of this report).

EXPLANATION OF WATER-QUALITY RECORDS

Collection and Examination of Data

Surface-water samples for analysis usually are collected at or near stream-gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, water temperature, sediment discharge, and so forth); extremes for the current year; and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, sampling date, or other pertinent data are given in the table containing the chemical analyses of the ground water.

Water Analysis

Most of the methods used for collecting and analyzing water samples are described in the TWRIs. A list of TWRIs is provided in this report.

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 discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled at several verticals to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

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 and minimum values (and sometimes mean or median values) for each constituent measured, and are based on 15-minute or 1-hour intervals of recorded data beginning at 0000 hours and ending at 2400 hours for the day of record.

SURFACE-WATER-QUALITY RECORDS

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because discharge data is useful in the interpretation of surface-water quality. Records of surface-water quality in this report involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A *continuous-record station* is a site where data are collected on a regularly scheduled basis. Frequency may be one or more times daily, weekly, monthly, or quarterly. A *partial-record station* is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A *miscellaneous sampling site* is a location other than a continuous- or partial-record station, where 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 *continuous records* as used in this report and *continuous recordings* that refer to a continuous graph or a series of discrete values recorded at short intervals. 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.

Accuracy of the Records

One of four accuracy classifications is applied for measured physical properties at continuous-record stations on a scale ranging from poor to excellent. The accuracy rating is based on data values recorded before any shifts or corrections are made. Additional consideration also is given to the amount of publishable record and to the amount of data that have been corrected or shifted.

Rating classifications for continuous water-quality records

[≤, less than or equal to; ±, plus or minus value shown; °C, degree Celsius; >, greater than; %, percent; mg/L, milligram per liter; pH unit, standard pH unit]

Measured physical property	Rating			
	Excellent	Good	Fair	Poor
Water temperature	≤ ±0.2 °C	> ±0.2 to 0.5 °C	> ±0.5 to 0.8 °C	> ±0.8 °C
Specific conductance	≤ ±3%	> ±3 to 10%	> ±10 to 15%	> ±15%
Dissolved oxygen	≤ ±0.3 mg/L	> ±0.3 to 0.5 mg/L	> ±0.5 to 0.8 mg/L	> ±0.8 mg/L
pH	≤ ±0.2 unit	> ±0.2 to 0.5 unit	> ±0.5 to 0.8 unit	> ±0.8 unit
Turbidity	≤ ±5%	> ±5 to 10%	> ±10 to 15%	> ±15%

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 is assuring that the data obtained represent the naturally occurring quality of the water. To ensure this, certain measurements, such as water temperature, pH, and dissolved oxygen, must be made on site when the samples are taken. To assure that measurements made in the laboratory also represent the naturally occurring water, carefully prescribed procedures must 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 on-site measurements and for collecting, treating, and shipping samples are given in TWRI Book 1, Chapter D2; Book 3, Chapters A1, A3, and A4; and Book 9, Chapters A1-A9. These TWRI are listed in this report. Also, detailed information on collecting, treating, and shipping samples can be obtained from the USGS District office (see address that is shown on the back of title page in this report).

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at the 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.

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

Sediment

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

and a coefficient applied to determine the mean concentration in the cross section.

During periods of rapidly changing flow or rapidly changing concentration, samples may be collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples are collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of suspended-sediment discharge, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

Laboratory Measurements

Samples for biochemical oxygen demand (BOD) and indicator bacteria are analyzed locally. All other samples are analyzed in the USGS laboratory in Lakewood, Colorado, unless otherwise noted. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chapter C1. Methods used by the USGS laboratories are given in the TWRI, Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, and A4. These methods are consistent with ASTM standards and generally follow ISO standards.

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

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

LOCATION.—See Data Presentation information in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

DRAINAGE AREA.—See Data Presentation information in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

PERIOD OF RECORD.—This indicates the time periods for which published water-quality records for the station are available. 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 USGS by a cooperating organization are identified here.

EXTREMES.—Maximums and minimums are given only for parameters measured daily or more frequently. For parameters measured weekly or less frequently, true maximums or minimums may not have been obtained. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.—Records are revised if errors in published water-quality records are discovered. Appropriate updates are made in the USGS distributed data system, NWIS, and subsequently to its Web-based National data system, NWISWeb (<http://waterdata.usgs.gov/nwis>). Users of USGS water-quality data are encouraged to obtain all required data from NWIS or NWISWeb to ensure that they have the most recent updates. Updates to the NWISWeb are made on an annual basis.

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.

Remarks Codes

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

Printed Output	Remark Code
e or 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
V	Analyte was detected in both the environmental sample and the associated blanks
M	Presence of material verified but not quantified

Printed Output	Value-Qualifier Code
b	Value was extrapolated below
c	See laboratory comment
d	Diluted sample: method hi range exceeded
e	See field comment
i	Result may be affected by interference
k	Counts outside the acceptable range
m	Highly var comp using method, ? prec
n	Below the NVD
o	Result determined by alternate method
p	Value reported is preferred
q	Insufficient sample received
r	Value verified by rerun, same method
t	Below the long-term MDL
v	Analyte detected in laboratory blank
@	Holding time exceeded
+	Improper preservation

Printed Output	Null Value-Qualifier Code
e	Required equipment not functional or available
i	Required sample type not received
l	Analysis discarded: lab QC failure
m	Results sent by separate memo
q	Sample discarded: holding time exceeded
r	Sample ruined in preparation
u	Unable to determine - matrix interference

Dissolved Trace-Element Concentrations

***NOTE:**—Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter ($\mu\text{g/L}$) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nan-

ograms per liter (ng/L). Data above the $\mu\text{g/L}$ level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey began using new trace-element protocols at some stations in water year 1994.

Change in National Trends Network Procedures

***NOTE:**--Sample handling procedures at all National Trends Network stations were changed substantially on January 11, 1994, in order to reduce contamination from the sample shipping container. The data for samples before and after that date are different and not directly comparable. A tabular summary of the differences based on a special intercomparison study, is available from the NADP Program Office, Illinois State Water Survey, 2204 Griffith Drive, Champaign, IL 61820-7495 (217-333-7873).

Water-Quality Control Data

The USGS National Water Quality Laboratory collects quality-control data on a continuing basis to evaluate selected analytical methods to determine long-term method detection levels (LT-MDLs) and laboratory reporting levels (LRLs). These values are re-evaluated each year on the basis of the most recent quality-control data and, consequently, may change from year to year.

This reporting procedure limits the occurrence of false positive error. Falsely reporting a concentration greater than the LT-MDL for a sample in which the analyte is not present is 1 percent or less. Application of the LRL limits the occurrence of false negative error. The chance of falsely reporting a non-detection for a sample in which the analyte is present at a concentration equal to or greater than the LRL is 1 percent or less.

Accordingly, concentrations are reported as less than LRL for samples in which the analyte was either not detected or did not pass identification. Analytes detected at concentrations between the LT-MDL and the LRL and that pass identification criteria are estimated. Estimated concentrations will be noted with a remark code of "E." These data should be used with the understanding that their uncertainty is greater than that of data reported without the E remark code.

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

procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples. These data are not presented in this report but are available from the District office.

Blank Samples

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

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

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

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

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

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

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

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

Reference Samples

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

Replicate Samples

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

Concurrent samples—A type of replicate sample in which the samples are collected simultaneously with two or more samplers or by using one sampler and alternating the collection of samples into two or more compositing containers.

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

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

Spike Samples

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

ACCESS TO USGS WATER DATA

The USGS provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily-mean and peak-flow discharge data for most current or discontinued gaging stations through the World Wide Web (WWW). These data may be accessed from <http://water.usgs.gov>.

Water-quality data and ground-water data also are available through the WWW. In addition, data can be provided in various machine-readable formats on various media. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each Water Discipline District Office (See address that is shown on the back of the title page of this report.)

DEFINITION OF TERMS

Specialized technical terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. Terms such as algae, water level, and precipitation are used in their common everyday meanings, definitions

of which are given in standard dictionaries. Not all terms defined in this alphabetical list apply to every State. See also table for converting English units to International System (SI) Units. Other glossaries that also define water-related terms are accessible from <http://water.usgs.gov/glossaries.html>.

Acid neutralizing capacity (ANC) is the equivalent sum of all bases or base-producing materials, solutes plus particulates, in an aqueous system that can be titrated with acid to an equivalence point. This term designates titration of an “unfiltered” sample (formerly reported as alkalinity).

Acre-foot (AC-FT, acre-ft) is a unit of volume, commonly used to measure quantities of water used or stored, equivalent to the volume of water required to cover 1 acre to a depth of 1 foot and equivalent to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters. (See also “Annual runoff”)

Adenosine triphosphate (ATP) is an organic, phosphate-rich compound important in the transfer of energy in organisms. Its central role in living cells makes ATP an excellent indicator of the presence of living material in water. A measurement of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter.

Adjusted discharge is discharge data that have been mathematically adjusted (for example, to remove the effects of a daily tide cycle or reservoir storage).

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample. (See also “Biomass” and “Dry weight”)

Alkalinity is the capacity of solutes in an aqueous system to neutralize acid. This term designates titration of a “filtered” sample.

Annual runoff is the total quantity of water that is discharged (“runs off”) from a drainage basin in a year. Data reports may present annual runoff data as volumes in acre-feet, as discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches.

Annual 7-day minimum is the lowest mean value for any 7-consecutive-day period in a year. Annual 7-day minimum values are reported herein for the calendar year and the water year (October 1 through September 30). Most low-flow frequency analyses use a climatic year (April 1–March 31), which tends to prevent the low-flow period from being artificially split between adjacent years. 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.)

Aroclor is the registered trademark for a group of polychlorinated biphenyls that were manufactured by the Monsanto Company prior to 1976. Aroclors are assigned specific 4-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 percentage weight of the hydrogen-substituted chlorine.

Artificial substrate is a device that purposely is 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 collected. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multi-plate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection. (See also "Substrate")

Ash mass is the mass or amount of residue present after the residue from a dry-mass determination has been ashed in a muffle furnace at a temperature of 500 °C for 1 hour. Ash mass of zooplankton and phytoplankton is expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2). (See also "Biomass" and "Dry mass")

Aspect is the direction toward which a slope faces with respect to the compass.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, whereas 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.

Bankfull stage, as used in this report, is the stage at which a stream first overflows its natural banks formed by floods with 1- to 3-year recurrence intervals.

Base discharge (for peak discharge) is a discharge value, determined for selected stations, above which peak discharge data are published. The base discharge at each station is selected so that an average of about three peak flows per year will be published. (See also "Peak flow")

Base flow is sustained flow of a stream in the absence of direct runoff. It includes natural and human-induced streamflows. Natural base flow is sustained largely by ground-water discharge.

Bed material is the sediment mixture of which a stream-bed, lake, pond, reservoir, or estuary bottom is composed. (See also "Bedload" and "Sediment")

Bedload is material in transport that primarily is supported by the streambed. In this report, bedload is considered to con-

sist of particles in transit from the bed to the top of the bedload sampler nozzle (an elevation ranging from 0.25 to 0.5 foot). These particles are retained in the bedload sampler. A sample collected with a pressure-differential bedload sampler also may contain a component of the suspended load.

Bedload discharge (tons per day) is the rate of sediment moving as bedload, reported as dry weight, that passes through a cross section in a given time. NOTE: Bedload discharge values in this report may include a component of the suspended-sediment discharge. A correction may be necessary when computing the total sediment discharge by summing the bedload discharge and the suspended-sediment discharge. (See also "Bedload," "Dry weight," "Sediment," and "Suspended-sediment discharge")

Benthic organisms are the group of organisms inhabiting the bottom of an aquatic environment. They include a number of types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish. They are useful as indicators of water quality.

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 mass per unit area or volume of habitat.

Biomass pigment ratio is an indicator of the total proportion of periphyton that are autotrophic (plants). This also is called the Autotrophic Index.

Blue-green algae (*Cyanophyta*) are a group of phytoplankton and periphyton organisms with a blue pigment in addition to a green pigment called chlorophyll. Blue-green algae can cause nuisance water-quality conditions in lakes and slow-flowing rivers; however, they are found commonly in streams throughout the year. The abundance of blue-green algae in phytoplankton samples is expressed as the number of cells per milliliter (cells/mL) or biovolume in cubic micrometers per milliliter (mm^3/mL). The abundance of blue-green algae in periphyton samples is given in cells per square centimeter (cells/cm^2) or biovolume per square centimeter (mm^3/cm^2). (See also "Phytoplankton" and "Periphyton")

Bottom material (See "Bed material")

Bulk electrical conductivity is the combined electrical conductivity of all material within a doughnut-shaped volume surrounding an induction probe. Bulk conductivity is affected by different physical and chemical properties of the material including the dissolved-solids content of the pore water, and the lithology and porosity of the rock.

Canadian Geodetic Vertical Datum 1928 is a geodetic datum derived from a general adjustment of Canada's first order level network in 1928.

Cell volume (biovolume) determination is one of several common methods used to estimate biomass of algae in aquatic systems. Cell members of algae are used frequently in aquatic surveys as an indicator of algal production. However, cell numbers alone cannot represent true biomass because of considerable cell-size variation among the algal species. Cell volume (mm^3) is determined by obtaining critical cell measurements or cell dimensions (for example, length, width, height, or radius) for 20 to 50 cells of each important species to obtain an average biovolume per cell. Cells are categorized according to the correspondence of their cellular shape to the nearest geometric solid or combinations of simple solids (for example, spheres, cones, or cylinders). Representative formulae used to compute biovolume are as follows:

sphere $\frac{4}{3} \pi r^3$ cone $\frac{1}{3} \pi r^2 h$ cylinder $\pi r^2 h$.

pi (π) is the ratio of the circumference to the diameter of a circle; $\pi = 3.14159\dots$

From cell volume, total algal biomass expressed as biovolume ($\mu\text{m}^3/\text{mL}$) is thus determined by multiplying the number of cells of a given species by its average cell volume and then summing these volumes for all species.

Cells/volume refers to the number of cells of any organism that 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 volume, and generally are reported as cells or units per milliliter (mL) or liter (L).

Cfs-day (See "Cubic foot per second-day")

Channel bars, as used in this report, are the lowest prominent geomorphic features higher than the channel bed.

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

Clostridium perfringens (*C. perfringens*) is a spore-forming bacterium that is common in the feces of human and other warmblooded animals. Clostridial spores are being used experimentally as an indicator of past fecal contamination and the presence of microorganisms that are resistant to disinfection and environmental stresses. (See also "Bacteria")

Coliphages are viruses that infect and replicate in coliform bacteria. They are indicative of sewage contamination of water and of the survival and transport of viruses in the environment.

Color unit is produced by 1 milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Confined aquifer is a term used to describe an aquifer containing water between two relatively impermeable boundaries. The water level in a well tapping a confined aquifer stands above the top of the confined aquifer and can be higher or lower than the water table that may be present in the material above it. In some cases, the water level can rise above the ground surface, yielding a flowing well.

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.

Continuous-record station is a site where data are collected with sufficient frequency to define daily mean values and variations within a day.

Control designates a feature in the channel that physically affects the water-surface elevation and thereby determines the stage-discharge relation at the gage. This feature may be a constriction of the channel, a bedrock outcrop, a gravel bar, an artificial structure, or a uniform cross section over a long reach of the channel.

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

Cubic foot per second (CFS, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point in 1 second. It is equivalent to approximately 7.48 gallons per second or approximately 449 gallons per minute, or 0.02832 cubic meters per second. The term "second-foot" sometimes is used synonymously with "cubic foot per second" but is now obsolete.

Cubic foot per second-day (CFS-DAY, Cfs-day, $[(\text{ft}^3/\text{s})/\text{d}]$) is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.98347 acre-feet, 646,317 gallons, or 2,446.6 cubic meters. The daily mean discharges reported in the daily value data tables numerically are equal to the daily volumes in cfs-days, and the totals also represent volumes in cfs-days.

Cubic foot per second per square mile [CFSM, $(\text{ft}^3/\text{s})/\text{mi}^2$] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming the runoff is distributed uniformly in time and area. (See also "Annual runoff")

Daily mean suspended-sediment concentration is the time-weighted mean concentration of suspended sediment passing a stream cross section during a 24-hour day. (See also "Sediment" and "Suspended-sediment concentration")

Daily record station is a site where data are collected with sufficient frequency to develop a record of one or more data

values per day. The frequency of data collection can range from continuous recording to data collection on a daily or near-daily basis.

Data collection platform (DCP) is an electronic instrument that collects, processes, and stores data from various sensors, and transmits the data by satellite data relay, line-of-sight radio, and/or landline telemetry.

Data logger is a microprocessor-based data acquisition system designed specifically to acquire, process, and store data. Data usually are downloaded from onsite data loggers for entry into office data systems.

Datum is a surface or point relative to which measurements of height and/or horizontal position are reported. A vertical datum is a horizontal surface used as the zero point for measurements of gage height, stage, or elevation; a horizontal datum is a reference for positions given in terms of latitude-longitude, State Plane coordinates, or Universal Transverse Mercator (UTM) coordinates. (See also “Gage datum,” “Land-surface datum,” “National Geodetic Vertical Datum of 1929,” and “North American Vertical Datum of 1988”)

Diatoms (*Bacillariophyta*) are unicellular or colonial algae with a siliceous cell wall. The abundance of diatoms in phytoplankton samples is expressed as the number of cells per milliliter (cells/mL) or biovolume in cubic micrometers per milliliter ($\mu\text{m}^3/\text{mL}$). The abundance of diatoms in periphyton samples is given in cells per square centimeter (cells/ cm^2) or biovolume per square centimeter ($\mu\text{m}^3/\text{cm}^2$). (See also “Phytoplankton” and “Periphyton”)

Diel is of or pertaining to a 24-hour period of time; a regular daily cycle.

Discharge, or flow, is the rate that matter passes through a cross section of a stream channel or other water body per unit of time. The term commonly refers to the volume of water (including, unless otherwise stated, any sediment or other constituents suspended or dissolved in the water) that passes a cross section in a stream channel, canal, pipeline, and so forth, within a given period of time (cubic feet per second). Discharge also can apply to the rate at which constituents, such as suspended sediment, bedload, and dissolved or suspended chemicals, pass through a cross section, in which cases the quantity is expressed as the mass of constituent that passes the cross section in a given period of time (tons per day).

Dissolved refers to that material in a representative water sample that passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal and State agencies that collect water-quality data. Determinations of “dissolved” constituent concentrations are made on sample water that has been filtered.

Dissolved oxygen (DO) is the molecular oxygen (oxygen gas) dissolved in water. The concentration in water is a function of atmospheric pressure, temperature, and dissolved-solids

concentration of the water. The ability of water to retain oxygen decreases with increasing temperature or dissolved-solids concentration. Photosynthesis and respiration by plants commonly cause diurnal variations in dissolved-oxygen concentration in water from some streams.

Dissolved solids concentration in water is the quantity of dissolved material in a sample of water. It 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, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. In the mathematical calculation, the bicarbonate value, in milligrams per liter, is multiplied by 0.4926 to convert it to carbonate. Alternatively, alkalinity concentration (as mg/L CaCO_3) can be converted to carbonate concentration by multiplying by 0.60.

Diversity index (H) (Shannon index) is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

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

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

Drainage area of a stream at a specific location is that area upstream from the location, measured in a horizontal plane, that has a common outlet at the site for its surface runoff from precipitation that normally drains by gravity into a stream. Drainage areas given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

Drainage basin is a part of the Earth’s surface that contains a drainage system with a common outlet for its surface runoff. (See “Drainage area”)

Dry mass refers to the mass of residue present after drying in an oven at 105 °C, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass. (See also “Ash mass,” “Biomass,” and “Wet mass”)

Dry weight refers to the weight of animal tissue after it has been dried in an oven at 65 °C until a constant weight is achieved. Dry weight represents total organic and inorganic matter in the tissue. (See also “Wet weight”)

Embeddedness is the degree to which gravel-sized and larger particles are surrounded or enclosed by finer-sized particles. (See also “Substrate embeddedness class”)

Enterococcus bacteria commonly are found in the feces of humans and other warmblooded animals. Although some strains are ubiquitous and not related to fecal pollution, the presence of enterococci in water is an indication of fecal pollution and the possible presence of enteric pathogens. Enterococcus bacteria are those bacteria that produce pink to red colonies with black or reddish-brown precipitate after incubation at 41 °C on mE agar (nutrient medium for bacterial growth) and subsequent transfer to EIA medium. Enterococci include *Streptococcus faecalis*, *Streptococcus faecium*, *Streptococcus avium*, and their variants. (See also “Bacteria”)

EPT Index is the total number of distinct taxa within the insect orders Ephemeroptera, Plecoptera, and Trichoptera. This index summarizes the taxa richness within the aquatic insects that generally are considered pollution sensitive; the index usually decreases with pollution.

Escherichia coli (*E. coli*) are bacteria present in the intestine and feces of warmblooded animals. *E. coli* are a member species of the fecal coliform group of indicator bacteria. In the laboratory, they are defined as those bacteria that produce yellow or yellow-brown colonies on a filter pad saturated with urea substrate broth after primary culturing for 22 to 24 hours at 44.5 °C on mTEC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also “Bacteria”)

Estimated (E) value of a concentration is reported when an analyte is detected and all criteria for a positive result are met. If the concentration is less than the method detection limit (MDL), an E code will be reported with the value. If the analyte is identified qualitatively as present, but the quantitative determination is substantially more uncertain, the National Water Quality Laboratory will identify the result with an E code even though the measured value is greater than the MDL. A value reported with an E code should be used with caution. When no analyte is detected in a sample, the default reporting value is the MDL preceded by a less than sign (<). For bacteriological data, concentrations are reported as estimated when results are based on non-ideal colony counts.

Euglenoids (*Euglenophyta*) are a group of algae that usually are free-swimming and rarely creeping. They have the ability to grow either photosynthetically in the light or heterotrophically in the dark. (See also “Phytoplankton”)

Extractable organic halides (EOX) are organic compounds that contain halogen atoms such as chlorine. These organic compounds are semivolatile and extractable by ethyl acetate from air-dried streambed sediment. The ethyl acetate extract is combusted, and the concentration is determined by microcoulometric determination of the halides formed. The concentration is reported as micrograms of chlorine per gram of the dry weight of the streambed sediment.

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

Fecal streptococcal bacteria are present in the intestines of warmblooded animals and are ubiquitous in the environment. They are characterized as gram-positive, cocci bacteria that are capable of growth in brain-heart infusion broth. In the laboratory, they are defined as all the organisms that produce red or pink colonies within 48 hours at 35 °C plus or minus 1.0 °C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also “Bacteria”)

Fire algae (*Pyrrophyta*) are free-swimming unicells characterized by a red pigment spot. (See also “Phytoplankton”)

Flow-duration percentiles are values on a scale of 100 that indicate the percentage of time for which a flow is not exceeded. For example, the 90th percentile of river flow is greater than or equal to 90 percent of all recorded flow rates.

Gage datum is a horizontal surface used as a zero point for measurement of stage or gage height. This surface usually is located slightly below the lowest point of the stream bottom such that the gage height is usually slightly greater than the maximum depth of water. Because the gage datum is not an actual physical object, the datum is usually defined by specifying the elevations of permanent reference marks such as bridge abutments and survey monuments, and the gage is set to agree with the reference marks. Gage datum is a local datum that is maintained independently of any national geodetic datum. However, if the elevation of the gage datum relative to the national datum (North American Vertical Datum of 1988 or National Geodetic Vertical Datum of 1929) has been determined, then the gage readings can be converted to elevations above the national datum by adding the elevation of the gage datum to the gage reading.

Gage height (G.H.) is the water-surface elevation, in feet above the gage datum. If the water surface is below the gage datum, the gage height is negative. Gage height often is used interchangeably with the more general term “stage,” although gage height is more appropriate when used in reference to a reading on a gage.

Gage values are values that are recorded, transmitted, and/or computed from a gaging station. Gage values typically are collected at 5-, 15-, or 30-minute intervals.

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

Gas chromatography/flame ionization detector (GC/FID) is a laboratory analytical method used as a screening technique for semivolatile organic compounds that are extractable from water in methylene chloride.

Geomorphic channel units, as used in this report, are fluvial geomorphic descriptors of channel shape and stream velocity. Pools, riffles, and runs are types of geomorphic channel units considered for National Water-Quality Assessment (NAWQA) Program habitat sampling.

Green algae (*Chlorophyta*) are unicellular or colonial algae with chlorophyll pigments similar to those in terrestrial green plants. Some forms of green algae produce mats or floating “moss” in lakes. The abundance of green algae in phytoplankton samples is expressed as the number of cells per milliliter (cells/mL) or biovolume in cubic micrometers per milliliter (mm³/mL). The abundance of green algae in periphyton samples is given in cells per square centimeter (cells/cm²) or biovolume per square centimeter (mm³/cm²). (See also “Phytoplankton” and “Periphyton”)

Habitat, as used in this report, includes all nonliving (physical) aspects of the aquatic ecosystem, although living components like aquatic macrophytes and riparian vegetation also are usually included. Measurements of habitat typically are made over a wider geographic scale than are measurements of species distribution.

Habitat quality index is the qualitative description (level 1) of instream habitat and riparian conditions surrounding the reach sampled. Scores range from 0 to 100 percent with higher scores indicative of desirable habitat conditions for aquatic life. Index only applicable to wadable streams.

Hardness of water is a physical-chemical characteristic that commonly is recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations (primarily calcium and magnesium) and is expressed as the equivalent concentration of calcium carbonate (CaCO₃).

High tide is the maximum height reached by each rising tide. The high-high and low-high tides are the higher and lower of the two high tides, respectively, of each tidal day. See NOAA Web site:
<http://www.co-ops.nos.noaa.gov/tideglos.html>

Hilsenhoff's Biotic Index (HBI) is an indicator of organic pollution that uses tolerance values to weight taxa abundances; usually increases with pollution. It is calculated as follows:

$$HBI = \frac{\sum(n)(a)}{N},$$

where n is the number of individuals of each taxon, a is the tolerance value of each taxon, and N is the total number of organisms in the sample.

Horizontal datum (See “Datum”)

Hydrologic index stations referred to in this report are continuous-record gaging stations that have been selected as representative of streamflow patterns for their respective regions. Station locations are shown on index maps.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as defined by the former Office of Water Data Coordination and delineated on the State Hydrologic Unit Maps by the USGS. Each hydrologic unit is identified by an 8-digit number.

Inch (IN., in.), in reference to streamflow, as used in this report, refers to the depth to which the drainage area would be covered with water if all of the runoff for a given time period were distributed uniformly on it. (See also “Annual runoff”)

Instantaneous discharge is the discharge at a particular instant of time. (See also “Discharge”)

International Boundary Commission Survey Datum refers to a geodetic datum established at numerous monuments along the United States-Canada boundary by the International Boundary Commission.

Island, as used in this report, is a mid-channel bar that has permanent woody vegetation, is flooded once a year, on average, and remains stable except during large flood events.

Laboratory reporting level (LRL) generally is equal to twice the yearly determined long-term method detection level (LT-MDL). The LRL controls false negative error. The probability of falsely reporting a nondetection for a sample that contained an analyte at a concentration equal to or greater than the LRL is predicted to be less than or equal to 1 percent. The value of the LRL will be reported with a “less than” (<) remark code for samples in which the analyte was not detected. The National Water Quality Laboratory (NWQL) collects quality-control data from selected analytical methods on a continuing basis to determine LT-MDLs and to establish LRLs. These values are reevaluated annually on the basis of the most current quality-control data and, therefore, may change. The LRL replaces the term ‘nondetection value’ (NDV).

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

Latent heat flux (often used interchangeably with latent heat-flux density) is the amount of heat energy that converts water from liquid to vapor (evaporation) or from vapor to liquid (condensation) across a specified cross-sectional area per unit time. Usually expressed in watts per square meter.

Light-attenuation coefficient, also known as the extinction coefficient, is a measure of water clarity. Light is attenuated according to the Lambert-Beer equation:

$$I = I_o e^{-\lambda L},$$

where I_o is the source light intensity, I is the light intensity at length L (in meters) from the source, λ is the light-attenuation coefficient, and e is the base of the natural logarithm. The light-attenuation coefficient is defined as

$$\lambda = -\frac{1}{L} \log_e \frac{I}{I_o}.$$

Lipid is any one of a family of compounds that are insoluble in water and that make up one of the principal components of living cells. Lipids include fats, oils, waxes, and steroids. Many environmental contaminants such as organochlorine pesticides are lipophilic.

Long-term method detection level (LT-MDL) is a detection level derived by determining the standard deviation of a minimum of 24 method detection limit (MDL) spike-sample measurements over an extended period of time. LT-MDL data are collected on a continuous basis to assess year-to-year variations in the LT-MDL. The LT-MDL controls false positive error. The chance of falsely reporting a concentration at or greater than the LT-MDL for a sample that did not contain the analyte is predicted to be less than or equal to 1 percent.

Low tide is the minimum height reached by each falling tide. The high-low and low-low tides are the higher and lower of the two low tides, respectively, of each tidal day. *See NOAA Web site:*
<http://www.co-ops.nos.noaa.gov/tideglos.html>

Macrophytes are the macroscopic plants in the aquatic environment. The most common macrophytes are the rooted vascular plants that usually are arranged in zones in aquatic ecosystems and restricted in the area by the extent of illumination through the water and sediment deposition along the shoreline.

Mean concentration of suspended sediment (Daily mean suspended-sediment concentration) is the time-weighted concentration of suspended sediment passing a stream cross section during a given time period. (See also “Daily mean suspended-sediment concentration” and “Suspended-sediment concentration”)

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period. (See also “Discharge”)

Mean high or low tide is the average of all high or low tides, respectively, over a specific period.

Mean sea level is a local tidal datum. It is the arithmetic mean of hourly heights observed over the National Tidal Datum

Epoch. Shorter series are specified in the name; for example, monthly mean sea level and yearly mean sea level. In order that they may be recovered when needed, such datums are referenced to fixed points known as benchmarks. (See also “Datum”)

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

Megahertz is a unit of frequency. One megahertz equals one million cycles per second.

Membrane filter is a thin microporous material of specific pore size used to filter bacteria, algae, and other very small particles from water.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Method detection limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99-percent confidence that the analyte concentration is greater than zero. It is determined from the analysis of a sample in a given matrix containing the analyte. At the MDL concentration, the risk of a false positive is predicted to be less than or equal to 1 percent.

Method of Cubatures is a method of computing discharge in tidal estuaries based on the conservation of mass equation.

Methylene blue active substances (MBAS) indicate the presence of detergents (anionic surfactants). The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram (UG/G, µg/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 kilogram (UG/KG, µg/kg) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the constituent per unit mass (kilogram) of the material analyzed. One microgram per kilogram is equivalent to 1 part per billion.

Micrograms per liter (UG/L, µg/L) is a unit expressing the concentration of chemical constituents in water as mass (micrograms) of constituent per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter. One microgram per liter is equivalent to 1 part per billion.

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

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

Minimum reporting level (MRL) is the smallest measured concentration of a constituent that may be reliably reported by using a given analytical method.

Miscellaneous site, miscellaneous station, or miscellaneous sampling site is a site where streamflow, sediment, and/or water-quality data or water-quality or sediment samples are collected once, or more often on a random or discontinuous basis to provide better areal coverage for defining hydrologic and water-quality conditions over a broad area in a river basin.

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

Multiple-plate samplers are artificial substrates of known surface area used for obtaining benthic invertebrate samples. They consist of a series of spaced, hardboard plates on an eyebolt.

Nanograms per liter (NG/L, ng/L) is a unit expressing the concentration of chemical constituents in solution as mass (nanograms) of solute per unit volume (liter) of water. One million nanograms per liter is equivalent to 1 milligram per liter.

National Geodetic Vertical Datum of 1929 (NGVD 29) is a fixed reference adopted as a standard geodetic datum for elevations determined by leveling. It formerly was called "Sea Level Datum of 1929" or "mean sea level." Although the datum was derived from the mean sea level at 26 tide stations, it does not necessarily represent local mean sea level at any particular place. See NOAA Web site: <http://www.ngs.noaa.gov/faq.shtml#WhatVD29VD88> (See "North American Vertical Datum of 1988")

Natural substrate refers to any naturally occurring immersed or submersed solid surface, such as a rock or tree, upon which an organism lives. (See also "Substrate")

Nekton are the consumers in the aquatic environment and consist of large, free-swimming organisms that are capable of sustained, directed mobility.

Nephelometric turbidity unit (NTU) is the measurement for reporting turbidity that is based on use of a standard suspension of formazin. Turbidity measured in NTU uses nephelometric methods that depend on passing specific light of a specific wavelength through the sample.

North American Datum of 1927 (NAD 27) is the horizontal control datum for the United States that was defined by a location and azimuth on the Clarke spheroid of 1866.

North American Datum of 1983 (NAD 83) is the horizontal control datum for the United States, Canada, Mexico, and Central America that is based on the adjustment of 250,000 points including 600 satellite Doppler stations that constrain the system to a geocentric origin. NAD 83 has been officially adopted as the legal horizontal datum for the United States by the Federal government.

North American Vertical Datum of 1988 (NAVD 88) is a fixed reference adopted as the official civilian vertical datum for elevations determined by Federal surveying and mapping activities in the United States. This datum was established in 1991 by minimum-constraint adjustment of the Canadian, Mexican, and United States first-order terrestrial leveling networks.

Open or screened interval is the length of unscreened opening or of well screen through which water enters a well, in feet below land surface.

Organic carbon (OC) is a measure of organic matter present in aqueous solution, suspension, or bottom sediment. May be reported as dissolved organic carbon (DOC), particulate organic carbon (POC), or total organic carbon (TOC).

Organic mass or volatile mass of a living substance is the difference between the dry mass and ash mass and represents the actual mass of the living matter. Organic mass is expressed in the same units as for ash mass and dry mass. (See also "Ash mass," "Biomass," and "Dry mass")

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

Organochlorine compounds are any chemicals that contain carbon and chlorine. Organochlorine compounds that are

important in investigations of water, sediment, and biological quality include certain pesticides and industrial compounds.

Parameter code is a 5-digit number used in the USGS computerized data system, National Water Information System (NWIS), to uniquely identify a specific constituent or property.

Partial-record station is a site where discrete measurements of one or more hydrologic parameters are obtained over a period of time without continuous data being recorded or computed. A common example is a crest-stage gage partial-record station at which only peak stages and flows are recorded.

Particle size is the diameter, in millimeters (mm), of a particle determined by sieve or sedimentation methods. The sedimentation method uses the principle of Stokes Law to calculate sediment particle sizes. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube, sedi-graph) 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, as used in this report, agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay	>0.00024 - 0.004	Sedimentation
Silt	>0.004 - 0.062	Sedimentation
Sand	>0.062 - 2.0	Sedimentation/sieve
Gravel	>2.0 - 64.0	Sieve
Cobble	>64 - 256	Manual measurement
Boulder	>256	Manual measurement

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. For the sedimentation method, 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.

Peak flow (peak stage) is an instantaneous local maximum value in the continuous time series of streamflows or stages, preceded by a period of increasing values and followed by a period of decreasing values. Several peak values ordinarily occur in a year. The maximum peak value in a year is called the annual peak; peaks lower than the annual peak are called secondary peaks. Occasionally, the annual peak may not be the maximum value for the year; in such cases, the maximum value occurs at midnight at the beginning or end of the year, on the recession from or rise toward a higher peak in the adjoining year. If values are recorded at a discrete series

of times, the peak recorded value may be taken as an approximation of the true peak, which may occur between the recording instants. If the values are recorded with finite precision, a sequence of equal recorded values may occur at the peak; in this case, the first value is taken as the peak.

Percent composition or **percent of total** 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, weight, mass, or volume.

Percent shading is a measure of the amount of sunlight potentially reaching the stream. A clinometer is used to measure left and right bank canopy angles. These values are added together, divided by 180, and multiplied by 100 to compute percentage of shade.

Periodic-record station is a site where stage, discharge, sediment, chemical, physical, or other hydrologic measurements are made one or more times during a year but at a frequency insufficient to develop a daily record.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. Although primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton are useful indicators of water quality.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

pH of water is the negative logarithm of the hydrogen-ion activity. Solutions with pH less than 7.0 standard units are termed "acidic," and solutions with a pH greater than 7.0 are termed "basic." Solutions with a pH of 7.0 are neutral. The presence and concentration of many dissolved chemical constituents found in water are affected, in part, by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms also are affected, in part, by the hydrogen-ion activity of water.

Phytoplankton is the plant part of the plankton. They usually are 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 commonly are known as algae. (See also "Plankton")

Picocurie (PC, pCi) is one-trillionth (1×10^{-12}) of the amount of radioactive nuclide represented by a curie (Ci). A curie is the quantity of radioactive nuclide that yields 3.7×10^{10} radioactive disintegrations per second (dps). A picocurie yields 0.037 dps, or 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. Concentrations are expressed as a number of cells per milliliter (cells/mL) of sample.

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

Polychlorinated naphthalenes (PCNs) are industrial chemicals that are mixtures of chlorinated naphthalene compounds. They have properties and applications similar to polychlorinated biphenyls (PCBs) and have been identified in commercial PCB preparations.

Pool, as used in this report, is a small part of a stream reach with little velocity, commonly with water deeper than surrounding areas.

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

Primary productivity (carbon method) is expressed as milligrams of carbon per area per unit time [$\text{mg C}/(\text{m}^2/\text{time})$] for periphyton and macrophytes or per volume [$\text{mg C}/(\text{m}^3/\text{time})$] for phytoplankton. The carbon method defines 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 with unenriched water samples. Unit time may be either the hour or day, depending on the incubation period. (See also "Primary productivity")

Primary productivity (oxygen method) is expressed as milligrams of oxygen per area per unit time [$\text{mg O}/(\text{m}^2/\text{time})$] for periphyton and macrophytes or per volume [$\text{mg O}/(\text{m}^3/\text{time})$] for phytoplankton. The oxygen method defines 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. (See also "Primary productivity")

Radioisotopes are isotopic forms of elements that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus; for example, ordinary chlorine is a mixture of isotopes having atomic weights of 35 and 37, and the natural mixture has an atomic weight of about 35.453.

Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron. There are 275 isotopes of the 81 stable elements, in addition to more than 800 radioactive isotopes.

Reach, as used in this report, is a length of stream that is chosen to represent a uniform set of physical, chemical, and biological conditions within a segment. It is the principal sampling unit for collecting physical, chemical, and biological data.

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

Recurrence interval, also referred to as return period, is the average time, usually expressed in years, between occurrences of hydrologic events of a specified type (such as exceedances of a specified high flow or nonexceedance of a specified low flow). The terms "return period" and "recurrence interval" do not imply regular cyclic occurrence. The actual times between occurrences vary randomly, with most of the times being less than the average and a few being substantially greater than the average. For example, the 100-year flood is the flow rate that is exceeded by the annual maximum peak flow at intervals whose average length is 100 years (that is, once in 100 years, on average); almost two-thirds of all exceedances of the 100-year flood occur less than 100 years after the previous exceedance, half occur less than 70 years after the previous exceedance, and about one-eighth occur more than 200 years after the previous exceedance. Similarly, the 7-day, 10-year low flow ($7Q_{10}$) is the flow rate below which the annual minimum 7-day-mean flow dips at intervals whose average length is 10 years (that is, once in 10 years, on average); almost two-thirds of the nonexceedances of the $7Q_{10}$ occur less than 10 years after the previous nonexceedance, half occur less than 7 years after, and about one-eighth occur more than 20 years after the previous nonexceedance. The recurrence interval for annual events is the reciprocal of the annual probability of occurrence. Thus, the 100-year flood has a 1-percent chance of being exceeded by the maximum peak flow in any year, and there is a 10-percent chance in any year that the annual minimum 7-day-mean flow will be less than the $7Q_{10}$.

Replicate samples are a group of samples collected in a manner such that the samples are thought to be essentially identical in composition.

Return period (See “Recurrence interval”)

Riffle, as used in this report, is a shallow part of the stream where water flows swiftly over completely or partially submerged obstructions to produce surface agitation.

River mileage is the curvilinear distance, in miles, measured upstream from the mouth along the meandering path of a stream channel in accordance with Bulletin No. 14 (October 1968) of the Water Resources Council and typically is used to denote location along a river.

Run, as used in this report, is a relatively shallow part of a stream with moderate velocity and little or no surface turbulence.

Runoff is the quantity of water that is discharged (“runs off”) from a drainage basin during a given time period. Runoff data may be presented as volumes in acre-feet, as mean discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches. (See also “Annual runoff”)

Sea level, as used in this report, refers to one of the two commonly used national vertical datums (NGVD 1929 or NAVD 1988). See separate entries for definitions of these datums.

Sediment is solid material that originates mostly from disintegrated rocks; when transported by, suspended in, or deposited from water, it is referred to as “fluvial sediment.” Sediment 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 affected by environmental and land-use factors. Some major factors are topography, soil characteristics, land cover, and depth and intensity of precipitation.

Sensible heat flux (often used interchangeably with latent sensible heat-flux density) is the amount of heat energy that moves by turbulent transport through the air across a specified cross-sectional area per unit time and goes to heating (cooling) the air. Usually expressed in watts per square meter.

Seven-day, 10-year low flow ($7Q_{10}$) is the discharge below which the annual 7-day minimum flow falls in 1 year out of 10 on the long-term average. The recurrence interval of the $7Q_{10}$ is 10 years; the chance that the annual 7-day minimum flow will be less than the $7Q_{10}$ is 10 percent in any given year. (See also “Annual 7-day minimum” and “Recurrence interval”)

Shelves, as used in this report, are streambank features extending nearly horizontally from the flood plain to the lower limit of persistent woody vegetation.

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. Sodium

hazard in water is an index that can be used to evaluate the suitability of water for irrigating crops.

Soil heat flux (often used interchangeably with soil heat-flux density) is the amount of heat energy that moves by conduction across a specified cross-sectional area of soil per unit time and goes to heating (or cooling) the soil. Usually expressed in watts per square meter.

Soil-water content is the water lost from the soil upon drying to constant mass at 105 °C; expressed either as mass of water per unit mass of dry soil or as the volume of water per unit bulk volume of soil.

Specific electrical conductance (conductivity) is a measure of the capacity of water (or other media) to conduct an electrical current. It is expressed in microsiemens per centimeter at 25 °C. Specific electrical conductance is a function of the types and quantity of dissolved substances in water and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is from 55 to 75 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stable isotope ratio (per MIL) is a unit expressing the ratio of the abundance of two radioactive isotopes. Isotope ratios are used in hydrologic studies to determine the age or source of specific water, to evaluate mixing of different water, as an aid in determining reaction rates, and other chemical or hydrologic processes.

Stage (See “Gage height”)

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

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.

Substrate embeddedness class is a visual estimate of riffle streambed substrate larger than gravel that is surrounded or covered by fine sediment (<2 mm, sand or finer). Below are the class categories expressed as the percentage covered by fine sediment:

0	no gravel or larger substrate	3	26-50 percent
1	> 75 percent	4	5-25 percent
2	51-75 percent	5	< 5 percent

Surface area of a lake is that area (acres) encompassed by the boundary of the lake as shown on USGS topographic maps, or other available maps or photographs. Because surface area changes with lake stage, surface areas listed in this report represent those determined for the stage at the time the maps or photographs were obtained.

Surficial bed material is the upper surface (0.1 to 0.2 foot) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Surrogate is an analyte that behaves similarly to a target analyte, but that is highly unlikely to occur in a sample. A surrogate is added to a sample in known amounts before extraction and is measured with the same laboratory procedures used to measure the target analyte. Its purpose is to monitor method performance for an individual sample.

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

Suspended sediment is the sediment maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid. (See also "Sediment")

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 foot above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L). The analytical technique uses the mass of all of the sediment and the net weight of the water-sediment mixture in a sample to compute the suspended-sediment concentration. (See also "Sediment" and "Suspended sediment")

Suspended-sediment discharge (tons/d) is the rate of sediment transport, as measured by dry mass or volume, that passes a cross section in a given time. It is calculated in units

of tons per day as follows: concentration (mg/L) x discharge (ft³/s) x 0.0027. (See also "Sediment," "Suspended sediment," and "Suspended-sediment concentration")

Suspended-sediment load is a general term that refers to a given characteristic of the material in suspension that passes a point during a specified period of time. The term needs to be qualified, such as "annual suspended-sediment load" or "sand-size suspended-sediment load," and so on. It is not synonymous with either suspended-sediment discharge or concentration. (See also "Sediment")

Suspended solids, total residue at 105 °C concentration is the concentration of inorganic and organic material retained on a filter, expressed as milligrams of dry material per liter of water (mg/L). An aliquot of the sample is used for this analysis.

Suspended, total is the total amount of a given constituent in the part of a water-sediment sample that is retained on a 0.45-micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. 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 directly analyzing portions of the suspended material collected on the filter or, more commonly, by difference, on the basis of determinations of (1) dissolved and (2) total concentrations of the constituent. (See also "Suspended")

Synoptic studies are short-term investigations of specific water-quality conditions during selected seasonal or hydrologic periods to provide improved spatial resolution for critical water-quality conditions. For the period and conditions sampled, they assess the spatial distribution of selected water-quality conditions in relation to causative factors, such as land use and contaminant sources.

Taxa (Species) richness is the number of species (taxa) present in a defined area or sampling unit.

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

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

Thalweg is the line formed by connecting points of minimum streambed elevation (deepest part of the channel).

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

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water resulting from the mixing of flow proportionally to the duration of the concentration.

Tons per acre-foot (T/acre-ft) is the dry mass (tons) of a constituent per unit volume (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, tons/d) is a common chemical or sediment discharge unit. It is the quantity of a substance in solution, in suspension, or as bedload that passes a stream section during a 24-hour period. It is equivalent to 2,000 pounds per day, or 0.9072 metric ton per day.

Total is the amount of a given constituent in a representative whole-water (unfiltered) 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 determined at least 95 percent of the constituent in the sample.)

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. This group includes coliforms that inhabit the intestine of warm-blooded animals and those that inhabit soils. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that 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 plus or minus 1.0 °C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milliliters of sample. (See also “Bacteria”)

Total discharge is the quantity of a given constituent, measured as dry mass or volume, that passes a stream cross section per unit of time. When referring to constituents other

than water, this term needs to be qualified, such as “total sediment discharge,” “total chloride discharge,” and so on.

Total in bottom material is the amount of a given constituent in a representative sample of bottom material. 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 judge when the results should be reported as “total in bottom material.”

Total length (fish) is the straight-line distance from the anterior point of a fish specimen’s snout, with the mouth closed, to the posterior end of the caudal (tail) fin, with the lobes of the caudal fin squeezed together.

Total load refers to all of a constituent in transport. When referring to sediment, it includes suspended load plus bed load.

Total organism count is the number of organisms collected and enumerated in any particular sample. (See also “Organism count/volume”)

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

Total sediment discharge is the mass of suspended-sediment plus bed-load transport, measured as dry weight, that passes a cross section in a given time. It is a rate and is reported as tons per day. (See also “Bedload,” “Bedload discharge,” “Sediment,” “Suspended sediment,” and “Suspended-sediment concentration”)

Total sediment load or total load is the sediment in transport as bedload and suspended-sediment load. The term may be qualified, such as “annual suspended-sediment load” or “sand-size suspended-sediment load,” and so on. It differs from total sediment discharge in that load refers to the material, whereas discharge refers to the quantity of material, expressed in units of mass per unit time. (See also “Sediment,” “Suspended-sediment load,” and “Total load”)

Transect, as used in this report, is a line across a stream perpendicular to the flow and along which measurements are taken, so that morphological and flow characteristics along the line are described from bank to bank. Unlike a cross sec-

tion, no attempt is made to determine known elevation points along the line.

Turbidity is the reduction in the transparency of a solution because of the presence of suspended and some dissolved substances. The measurement technique records the collective optical properties of the solution that cause light to be scattered and attenuated rather than transmitted in straight lines; the higher the intensity of scattered or attenuated light, the higher the value of the turbidity. Turbidity is expressed in nephelometric turbidity units (NTU). Depending on the method used, the turbidity units as NTU can be defined as the intensity of light of a specified wavelength scattered or attenuated by suspended particles or absorbed at a method specified angle, usually 90 degrees, from the path of the incident light. Currently approved methods for the measurement of turbidity in the USGS include those that conform to USEPA Method 180.1, ASTM D1889-00, and ISO 7027. Measurements of turbidity by these different methods and different instruments are unlikely to yield equivalent values.

Ultraviolet (UV) absorbance (absorption) at 254 or 280 nanometers is a measure of the aggregate concentration of the mixture of UV absorbing organic materials dissolved in the analyzed water, such as lignin, tannin, humic substances, and various aromatic compounds. UV absorbance (absorption) at 254 or 280 nanometers is measured in UV absorption units per centimeter of path length of UV light through a sample.

Unconfined aquifer is an aquifer whose upper surface is a water table free to fluctuate under atmospheric pressure. (See “Water-table aquifer”)

Vertical datum (See “Datum”)

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

Water table is that surface in a ground-water body at which the water pressure is equal to the atmospheric pressure.

Water-table aquifer is an unconfined aquifer within which the water table is found.

Water year in USGS reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it

ends and which includes 9 of the 12 months. Thus, the year ending September 30, 2003, is called the “2003 water year.”

Watershed (See “Drainage basin”)

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.

Wet mass is the mass of living matter plus contained water. (See also “Biomass” and “Dry mass”)

Wet weight refers to the weight of animal tissue or other substance including its contained water. (See also “Dry weight”)

WSP is used as an acronym for “Water-Supply Paper” in reference to previously published reports.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and often are 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. (See also “Plankton”)

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

The USGS publishes a series of manuals titled the “Techniques of Water-Resources Investigations” that describe procedures for planning and conducting specialized work in water-resources investigations. The material in these manuals 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. Each chapter then is limited to a narrow field of the section subject matter. This publication format permits flexibility when revision or printing is required.

Manuals in the Techniques of Water-Resources Investigations series, which are listed below, are available online at <http://water.usgs.gov/pubs/twri/>. Printed copies are available for sale from the USGS, Information Services, Box 25286, Federal

Center, Denver, Colorado 80225 (an authorized agent of the Superintendent of Documents, Government Printing Office). Please telephone “1-888-ASK-USGS” for current prices, and refer to the title, book number, section number, chapter number, and mention the “U.S. Geological Survey Techniques of Water-Resources Investigations.” Other products can be viewed online at <http://www.usgs.gov/sales.html>, or ordered by telephone or by FAX to (303)236-4693. Order forms for FAX requests are available online at <http://mac.usgs.gov/isb/pubs/forms/>. Prepayment by major credit card or by a check or money order payable to the “U.S. Geological Survey” is required.

Book 1. Collection of Water Data by Direct Measurement

Section D. Water Quality

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

Book 2. Collection of Environmental Data

Section D. Surface Geophysical Methods

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

Section E. Subsurface Geophysical Methods

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

Section F. Drilling and Sampling Methods

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

Book 3. Applications of Hydraulics

Section A. Surface-Water Techniques

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

- 3–A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS–TWRI book 3, chap. A5. 1967. 29 p.
- 3–A6. *General procedure for gaging streams*, by R.W. Carter and Jacob Davidian: USGS–TWRI book 3, chap. A6. 1968. 13 p.
- 3–A7. *Stage measurement at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A7. 1968. 28 p.
- 3–A8. *Discharge measurements at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A8. 1969. 65 p.
- 3–A9. *Measurement of time of travel in streams by dye tracing*, by F.A. Kilpatrick and J.F. Wilson, Jr.: USGS–TWRI book 3, chap. A9. 1989. 27 p.
- 3–A10. *Discharge ratings at gaging stations*, by E.J. Kennedy: USGS–TWRI book 3, chap. A10. 1984. 59 p.
- 3–A11. *Measurement of discharge by the moving-boat method*, by G.F. Smoot and C.E. Novak: USGS–TWRI book 3, chap. A11. 1969. 22 p.
- 3–A12. *Fluorometric procedures for dye tracing*, Revised, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS–TWRI book 3, chap. A12. 1986. 34 p.
- 3–A13. *Computation of continuous records of streamflow*, by E.J. Kennedy: USGS–TWRI book 3, chap. A13. 1983. 53 p.
- 3–A14. *Use of flumes in measuring discharge*, by F.A. Kilpatrick and V.R. Schneider: USGS–TWRI book 3, chap. A14. 1983. 46 p.
- 3–A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS–TWRI book 3, chap. A15. 1984. 48 p.
- 3–A16. *Measurement of discharge using tracers*, by F.A. Kilpatrick and E.D. Cobb: USGS–TWRI book 3, chap. A16. 1985. 52 p.
- 3–A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS–TWRI book 3, chap. A17. 1985. 38 p.
- 3–A18. *Determination of stream reaeration coefficients by use of tracers*, by F.A. Kilpatrick, R.E. Rathbun, Nobuhiro Yotsukura, G.W. Parker, and L.L. DeLong: USGS–TWRI book 3, chap. A18. 1989. 52 p.
- 3–A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS–TWRI book 3, chap. A19. 1990. 31 p.
- 3–A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F.A. Kilpatrick: USGS–TWRI book 3, chap. A20. 1993. 38 p.
- 3–A21. *Stream-gaging cableways*, by C. Russell Wagner: USGS–TWRI book 3, chap. A21. 1995. 56 p.

Section B. Ground-Water Techniques

- 3–B1. *Aquifer-test design, observation, and data analysis*, by R.W. Stallman: USGS–TWRI book 3, chap. B1. 1971. 26 p.
- 3–B2. *Introduction to ground-water hydraulics, a programmed text for self-instruction*, by G.D. Bennett: USGS–TWRI book 3, chap. B2. 1976. 172 p.
- 3–B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J.E. Reed: USGS–TWRI book 3, chap. B3. 1980. 106 p.
- 3–B4. *Regression modeling of ground-water flow*, by R.L. Cooley and R.L. Naff: USGS–TWRI book 3, chap. B4. 1990. 232 p.

- 3-B4. *Supplement 1. Regression modeling of ground-water flow—Modifications to the computer code for nonlinear regression solution of steady-state ground-water flow problems*, by R.L. Cooley: USGS-TWRI book 3, chap. B4. 1993. 8 p.
- 3-B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems—An introduction*, by O.L. Franke, T.E. Reilly, and G.D. Bennett: USGS-TWRI book 3, chap. B5. 1987. 15 p.
- 3-B6. *The principle of superposition and its application in ground-water hydraulics*, by T.E. Reilly, O.L. Franke, and G.D. Bennett: USGS-TWRI book 3, chap. B6. 1987. 28 p.
- 3-B7. *Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uniform flow*, by E.J. Wexler: USGS-TWRI book 3, chap. B7. 1992. 190 p.
- 3-B8. *System and boundary conceptualization in ground-water flow simulation*, by T.E. Reilly: USGS-TWRI book 3, chap. B8. 2001. 29 p.

Section C. Sedimentation and Erosion Techniques

- 3-C1. *Fluvial sediment concepts*, by H.P. Guy: USGS-TWRI book 3, chap. C1. 1970. 55 p.
- 3-C2. *Field methods for measurement of fluvial sediment*, by T.K. Edwards and G.D. Glysson: USGS-TWRI book 3, chap. C2. 1999. 89 p.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS-TWRI book 3, chap. C3. 1972. 66 p.

Book 4. Hydrologic Analysis and Interpretation

Section A. Statistical Analysis

- 4-A1. *Some statistical tools in hydrology*, by H.C. Riggs: USGS-TWRI book 4, chap. A1. 1968. 39 p.
- 4-A2. *Frequency curves*, by H.C. Riggs: USGS-TWRI book 4, chap. A2. 1968. 15 p.
- 4-A3. *Statistical methods in water resources*, by D.R. Helsel and R.M. Hirsch: USGS-TWRI book 4, chap. A3. 1991. Available only online at <http://water.usgs.gov/pubs/twri/twri4a3/>. (Accessed August 30, 2002.)

Section B. Surface Water

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

Section D. Interrelated Phases of the Hydrologic Cycle

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

Book 5. Laboratory Analysis

Section A. Water Analysis

- 5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M.J. Fishman and L.C. Friedman, editors: USGS-TWRI book 5, chap. A1. 1989. 545 p.

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

Section C. Sediment Analysis

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

Book 6. Modeling Techniques

Section A. Ground Water

- 6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M.G. McDonald and A.W. Harbaugh: USGS-TWRI book 6, chap. A1. 1988. 586 p.
- 6-A2. *Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model*, by S.A. Leake and D.E. Prudic: USGS-TWRI book 6, chap. A2. 1991. 68 p.
- 6-A3. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 1: Model Description and User's Manual*, by L.J. Torak: USGS-TWRI book 6, chap. A3. 1993. 136 p.
- 6-A4. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 2: Derivation of finite-element equations and comparisons with analytical solutions*, by R.L. Cooley: USGS-TWRI book 6, chap. A4. 1992. 108 p.
- 6-A5. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 3: Design philosophy and programming details*, by L.J. Torak: USGS-TWRI book 6, chap. A5. 1993. 243 p.
- 6-A6. *A coupled surface-water and ground-water flow model (MODBRANCH) for simulation of stream-aquifer interaction*, by Eric D. Swain and Eliezer J. Wexler: USGS-TWRI book 6, chap. A6. 1996. 125 p.
- 6-A7. *User's guide to SEAWAT: A computer program for simulation of three-dimensional variable-density ground-water flow*, by Weixing Guo and Christian D. Langevin: USGS-TWRI book 6, chap. A7. 2002. 77 p.

Book 7. Automated Data Processing and Computations

Section C. Computer Programs

- 7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by

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

Book 8. Instrumentation

Section A. Instruments for Measurement of Water Level

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

Section B. Instruments for Measurement of Discharge

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

Book 9. Handbooks for Water-Resources Investigations

Section A. National Field Manual for the Collection of Water-Quality Data

- 9–A1. *National field manual for the collection of water-quality data: Preparations for water sampling*, by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A1. 1998. 47 p.

- 9–A2. *National field manual for the collection of water-quality data: Selection of equipment for water sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A2. 1998. 94 p.
- 9–A3. *National field manual for the collection of water-quality data: Cleaning of equipment for water sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A3. 1998. 75 p.
- 9–A4. *National field manual for the collection of water-quality data: Collection of water samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A4. 1999. 156 p.
- 9–A5. *National field manual for the collection of water-quality data: Processing of water samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A5. 1999. 149 p.
- 9–A6. *National field manual for the collection of water-quality data: Field measurements*, edited by F.D. Wilde and D.B. Radtke: USGS–TWRI book 9, chap. A6. 1998. Various paginated.
- 9–A7. *National field manual for the collection of water-quality data: Biological indicators*, edited by D.N. Myers and F.D. Wilde: USGS–TWRI book 9, chap. A7. 1997 and 1999. Various paginated.
- 9–A8. *National field manual for the collection of water-quality data: Bottom-material samples*, by D.B. Radtke: USGS–TWRI book 9, chap. A8. 1998. 48 p.
- 9–A9. *National field manual for the collection of water-quality data: Safety in field activities*, by S.L. Lane and R.G. Fay: USGS–TWRI book 9, chap. A9. 1998. 60 p.

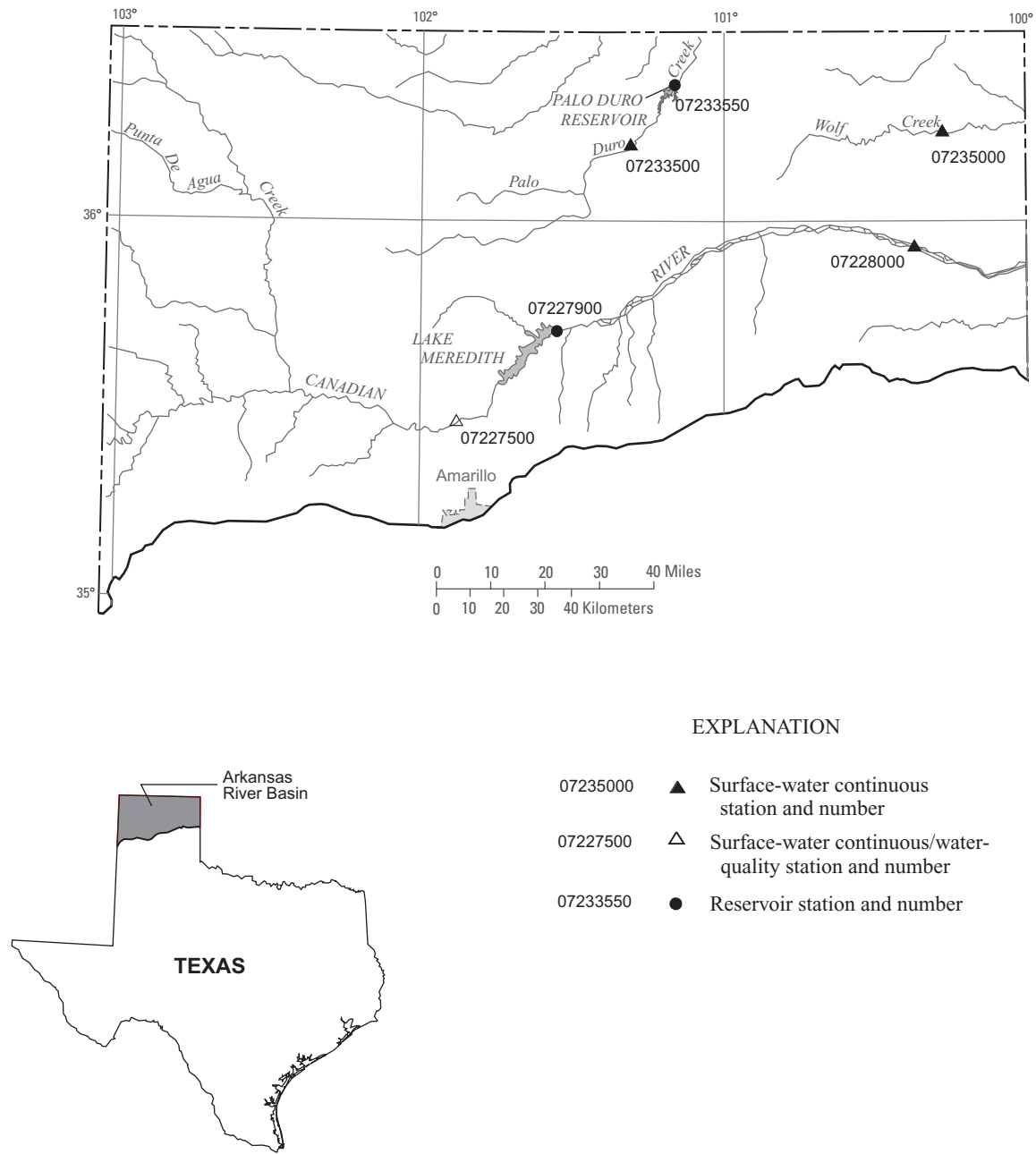


Figure 3.--Map showing location of gaging stations in the Arkansas River Basin

07227500	Canadian River near Amarillo, TX	34
07227900	Lake Meredith near Sanford, TX	42
07228000	Canadian River near Canadian, TX	44
07233500	Palo Duro Creek near Spearman, TX	46
07233550	Palo Duro Reservoir near Spearman, TX	54
07235000	Wolf Creek at Lipscomb, TX	56

LOCATION.--Lat 35°28'13", long 101°52'45", Potter County, Hydrologic Unit 11090105, on left bank at downstream side of southbound lane of bridge on U.S. Highways 87 and 287, 1,500 ft downstream from Pitcher Creek, 1.4 mi downstream from East Amarillo Creek, 1.7 mi downstream from Panhandle and Santa Fe Railway Co. bridge, 19 mi north of Amarillo, and 537.7 mi upstream from mouth.

WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 1341: Drainage area.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Since installation of gage in Jan. 1924, at least 10% of contributing drainage area has been regulated. Conchas and Bell Ranch Canals divert water from Conchas Reservoir upstream for irrigation. No flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2003h, BY WATER YEAR (WY)

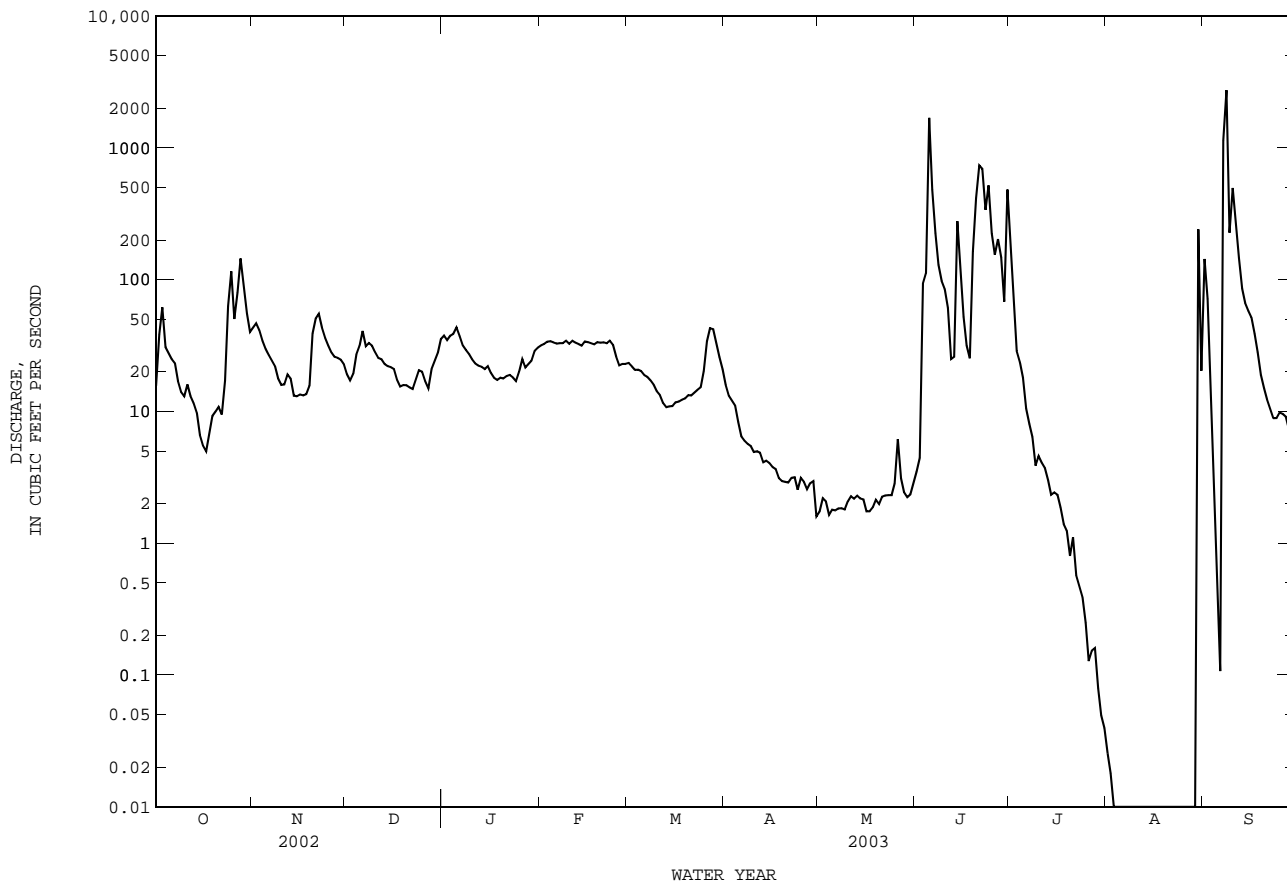
MEAN	297	76.8	49.1	54.9	49.8	52.5	173	419	487	536	504	499
MAX	5663	812	458	519	287	608	5988	6804	5288	4880	3007	8016
(WY)	1942	1942	1942	1943	2000	2000	1942	1941	1941	1941	1981	1941
MIN	0.57	1.52	1.25	4.75	3.00	1.86	1.52	2.27	0.95	0.24	0.11	0.00
(WY)	1981	1978	1984	1978	1939	1940	1978	2003	1990	1998	1983	2000

07227500 Canadian River near Amarillo, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR	FOR 2003 WATER YEAR	WATER YEARS 1938 - 2003h	
ANNUAL TOTAL	13493.13	19183.97		
ANNUAL MEAN	37.0	52.6	268	
HIGHEST ANNUAL MEAN			2351	1941
LOWEST ANNUAL MEAN			31.8	2002
HIGHEST DAILY MEAN	1060 Sep 19	2740 Sep 8	79600	Sep 23 1941
LOWEST DAILY MEAN	0.05 May 24	0.00 Aug 5	0.00	Aug 7 1940
ANNUAL SEVEN-DAY MINIMUM	0.13 May 20	0.00 Aug 5	0.00	Sep 3 1983
MAXIMUM PEAK FLOW		8250 Sep 7	135000	Jul 25 1941
MAXIMUM PEAK STAGE		5.91 Sep 7	15.70	Jul 25 1941
ANNUAL RUNOFF (AC-FT)	26760	38050	193800	
10 PERCENT EXCEEDS	62	74	460	
50 PERCENT EXCEEDS	14	17	26	
90 PERCENT EXCEEDS	2.3	0.21	3.6	

e Estimated

h See PERIOD OF RECORD paragraph



ARKANSAS RIVER BASIN

07227500 Canadian River near Amarillo, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: July 1948 to Oct. 1949, Feb. 1950 to Sept. 1997, Oct. 1998 to current year.

BIOCHEMICAL DATA: Mar. 1968 to Sept. 1997.

PESTICIDE DATA: Mar. 1968 to June 1981.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Oct. 1950 to current year.

WATER TEMPERATURE: Aug. 1949 to current year.

SUSPENDED SEDIMENT DISCHARGE: Aug. 1949 to Sept. 1952.

INSTRUMENTATION.--Water-quality monitor since Oct. 1995.

REMARKS.--Temperature records fair. Specific conductance records poor. Interruptions in the record were due to malfunction of the instrument. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and a regression relation between each chemical constituent and specific conductance. The computation of the selected constituent loads might include estimated discharge or specific conductance data. New regression equations were developed based on data from water years 1994 to 2003. The standard error of estimate for dissolved solids is 5%, chloride is 38%, sulfate is 23% and for hardness is 28%. Regression equations developed for this station may be obtained from the U.S. Geological Survey Texas District Office upon request. No flow Aug. 5-29.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 9,180 microsiemens/cm, June 8, 1990; minimum daily, 103 microsiemens/cm, Oct. 22, 2001.

WATER TEMPERATURE: Maximum daily, 39.0°C, July 7, 1973; minimum, -0.9°C, Nov. 19, 2000.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 8,390 microsiemens/cm, May 26; minimum, 183 microsiemens/cm, Aug. 29.

WATER TEMPERATURE: Maximum, 37.0°C, July 15; minimum, -0.1°C, on several days.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf, 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard-ness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorption ratio (00931)
DEC 05...	1205	32	4730	8.2	2.3	12.8	105	570	380	141	53.9	779	14
JAN 15...	1450	22	5420	8.3	12.1	9.5	101	690	500	164	66.9	898	15
MAR 27...	1405	40	3730	8.3	15.3	8.8	100	270	68	57.7	30.8	703	19
MAY 28...	1210	2.4	4010	8.3	27.0	8.0	113	550	400	139	48.6	627	12
JUL 02...	1240	75	1030	8.2	25.9	6.7	92	130	32	33.5	10.8	138	5
SEP 09...	1325	199	798	8.1	23.8	6.7	90	84	--	21.7c	7.23c	119c	6
Date	Potassium, water, fltrd, mg/L (00935)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate, water, fltrd, mg/L (00945)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue, water, fltrd, sum of constituents (70301)	Nitrate, water, fltrd, mg/L as N (00618)	Nitrite, water, fltrd, mg/L as N (00613)	Nitrite + nitrate, water, fltrd, mg/L as N (00631)	Ammonia, water, fltrd, mg/L as N (00608)	Organic nitrogen, water, fltrd, mg/L (00607)	Ammonia + org-N, water, fltrd, mg/L as N (00623)
DEC 05...	4.81	191	473	1100	.46	10.9	2670	--	E.004	.23	.06	.09	.15
JAN 15...	6.03	190	579	1280	.50	12.1	3120	--	<.008	.15	<.04	--	.14
MAR 27...	4.55	203	362	854	.65	7.9	2140	--	<.008	.30	<.04	--	.17
MAY 28...	6.29	152	559	872	.5	13.4	2360	.38	.030	.41	E.02	--	.34
JUL 02...	3.53	97	95.9	185	.3	8.5	536	--	E.005	.67	<.04	--	.25
SEP 09...	4.11c	97	80.7c	127c	.3	8.7	429	.52	.037	.56	<.04	--	.33

ARKANSAS RIVER BASIN

37

07227500 Canadian River near Amarillo, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)
DEC 05...	<.04	<.02
JAN 15...	<.04	<.02
MAR 27...	<.04	<.02
MAY 28...	<.04	<.02
JUL 02...	E.02	E.01
SEP 09...	E.03n	<.18d

Remark codes used in this report:

< -- Less than
E -- Estimated value

Value qualifier codes used in this report:

c -- See laboratory comment
d -- Diluted sample: method hi range exceeded
n -- Below the NDV

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 2002 TO SEPTEMBER 2003

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)	HARDNESS (CA,MG) (MG/L)
OCT.	2002	1039.5	1980	1150	3230	370	1040	270	765	270
NOV.	2002	821	3600	2120	4690	770	1700	470	1040	490
DEC.	2002	710	4870	2890	5540	1100	2170	610	1170	660
JAN.	2003	791	5420	3230	6900	1300	2790	670	1430	730
FEB.	2003	890	5610	3340	8030	1400	3280	690	1650	750
MAR.	2003	587	5340	3180	5040	1300	2040	660	1040	720
APR.	2003	155.6	5450	3250	1370	1300	562	660	279	730
MAY	2003	70.3	3650	2150	408	780	148	480	90.4	500
JUNE	2003	7707.9	1010	584	12150	170	3590	140	3000	140
JULY	2003	416.49	1680	977	1100	320	355	230	260	230
AUG.	2003	261.07	1650	953	672	300	209	230	162	230
SEPT	2003	5734.11	1090	628	9720	190	2900	150	2390	150
TOTAL		19183.97	**	**	58850	**	20780	**	13280	**
WTD.AVG.		53	1940	1140	**	400	**	260	**	260

ARKANSAS RIVER BASIN

07227500 Canadian River near Amarillo, TX--Continued

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	2580	2460	2520	3670	2950	3360	4720	4340	4510	4210	3860	4010
2	2620	1570	2150	4600	3450	3990	4900	4710	4800	4750	4020	4410
3	2060	1350	1710	4460	3360	3740	4940	4480	4730	4980	4540	4760
4	2380	2060	2270	4190	2930	3310	4740	4500	4600	5360	4820	5150
5	2290	2200	2250	3110	2940	3020	4760	3740	4460	5920	5310	5500
6	2340	2190	2280	3300	3060	3160	4250	3740	3960	6960	5920	6420
7	2500	2240	2330	3520	3300	3450	4510	4240	4370	6990	4460	5640
8	2740	2280	2510	3660	3500	3580	4360	4220	4270	4460	4230	4320
9	2800	2550	2710	3850	3660	3750	4480	4270	4350	4780	4380	4570
10	2800	2720	2750	3880	3760	3840	4880	4480	4680	5210	4780	4950
11	2740	2170	2500	4130	3850	3960	5090	4880	5000	5470	5210	5360
12	2600	2360	2510	3960	3380	3690	5320	5090	5180	5590	5450	5530
13	2510	2290	2460	3960	3500	3650	5660	5300	5440	5660	5490	5580
14	2570	2260	2450	4200	3960	4150	5840	5660	5770	5760	5620	5680
15	3140	2500	2900	4240	4060	4130	5860	5480	5730	5770	5340	5540
16	3320	3090	3170	4170	3960	4080	5480	4940	5150	6040	5770	5860
17	3210	3100	3150	4000	3930	3970	5140	4910	4980	6000	5850	5920
18	3140	2040	2450	4040	3200	3880	5210	5060	5130	6250	5860	6000
19	3140	2410	2780	4130	3180	3670	5450	5210	5330	6110	5850	5940
20	4460	3010	3380	5950	4130	4980	5500	5200	5370	5910	5730	5820
21	4490	2200	2870	5940	2870	4850	5560	5370	5480	5880	5780	5820
22	2930	2450	2790	2870	2220	2430	5560	5330	5440	6090	5520	5750
23	3860	2320	3050	2550	2220	2340	5460	4900	5140	6050	5570	5850
24	4220	1220	2850	3120	2550	2830	5300	4870	5030	6400	5700	6060
25	1670	701	1140	3160	3060	3110	5740	4390	5270	6440	5740	6090
26	1760	1040	1250	3510	3160	3330	5860	4790	5180	6360	5560	5930
27	2750	1760	2210	3940	3480	3700	6060	5080	5560	5780	5330	5510
28	2100	1060	1440	4200	3540	3880	5900	5250	5580	5660	5530	5600
29	1950	1230	1510	4170	3800	4080	5500	4840	5170	5700	5510	5630
30	2110	1780	1920	4360	4150	4260	5110	4520	4790	5750	5610	5690
31	2950	2110	2560	---	---	---	4520	3410	3960	5790	5440	5710
MONTH	4490	701	2410	5950	2220	3670	6060	3410	4980	6990	3860	5500

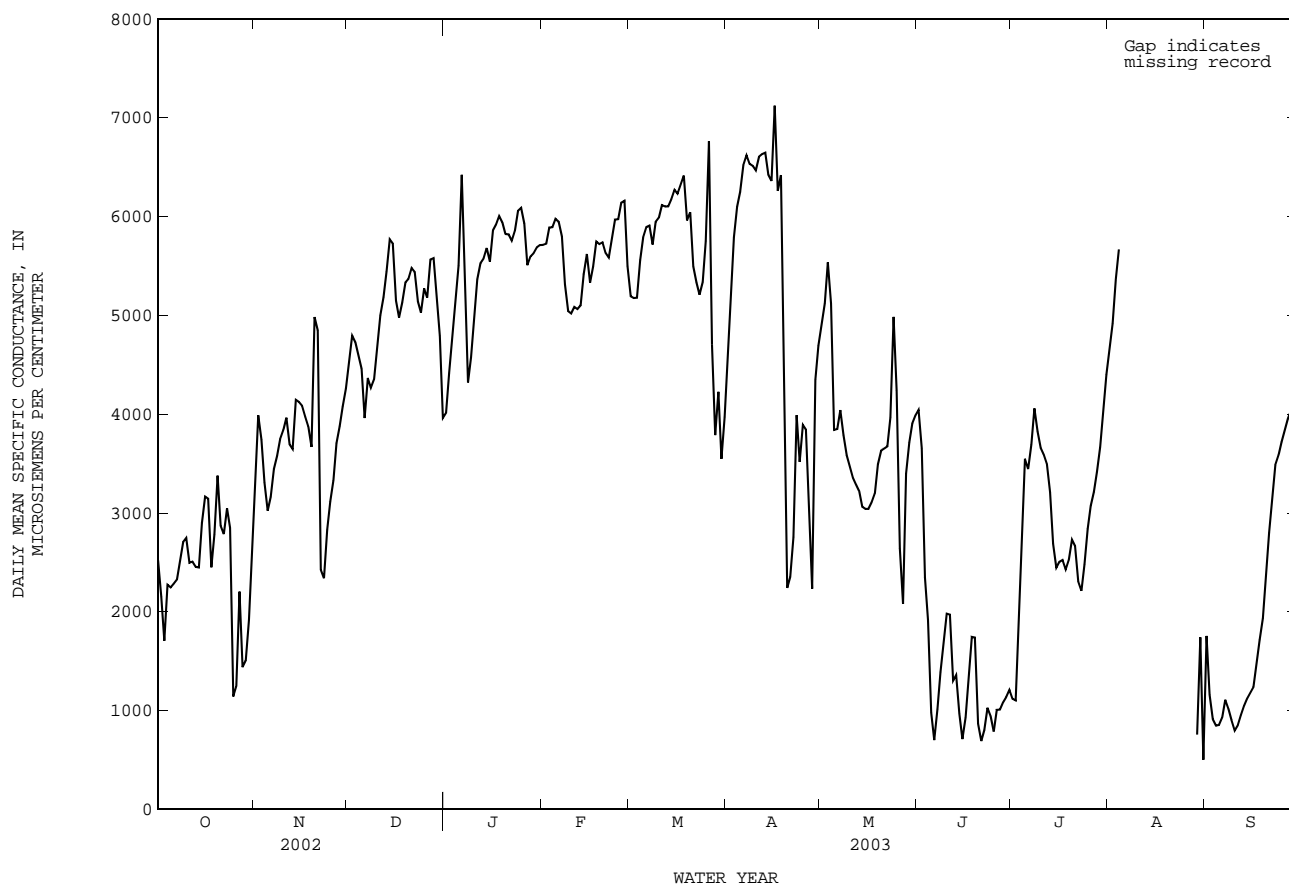
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5800	5630	5710	5370	4840	5190	4950	4350	4630	---	---	e4900
2	5840	5480	5720	5470	4850	5170	5590	4940	5240	---	---	e5120
3	5980	5760	5890	5540	4750	5180	6060	5580	5790	5900	5340	5540
4	6070	5760	5890	5870	5190	5560	6190	5980	6100	5800	4420	5120
5	6090	5880	5980	5940	5420	5790	6470	5780	6250	4530	3300	3840
6	6010	5850	5950	6120	5350	5890	6740	6230	6520	4130	3580	3850
7	6150	5120	5800	6180	5520	5910	6700	6540	6620	---	---	e4040
8	6090	4680	5310	6060	5170	5720	6680	6300	6530	---	---	e3790
9	5200	4780	5040	6200	5680	5950	6640	6190	6510	---	---	e3580
10	5180	4810	5020	6240	5590	5990	6710	6100	6470	---	---	e3470
11	5140	4930	5080	6350	5700	6110	6720	6300	6600	---	---	e3360
12	5120	4930	5060	6270	5880	6100	6770	6380	6630	---	---	e3290
13	5300	5010	5100	6180	5970	6100	6980	6340	6650	---	---	e3220
14	5580	5210	5420	6390	5960	6170	6740	6080	6420	---	---	e3060
15	5700	5530	5620	6340	6030	6270	7020	5690	6360	---	---	e3040
16	5660	5090	5330	6380	5990	6230	7590	6540	7120	---	---	e3040
17	5710	4990	5490	6530	6140	6330	7020	5540	6260	---	---	e3110
18	5850	5510	5750	6500	6220	6410	6840	5480	6420	---	---	e3200
19	5810	5570	5720	6470	5480	5960	6440	2350	4010	---	---	e3490
20	5850	5600	5740	6160	5850	6040	2390	2050	2240	---	---	e3630
21	5690	5420	5630	5850	5350	5500	2700	2060	2350	---	---	e3650
22	5680	5360	5590	5380	5260	5330	3350	2460	2760	---	---	e3670
23	5940	5620	5770	5400	5040	5210	5270	2980	3990	---	---	e3970
24	6340	5370	5970	5550	5130	5340	4750	2490	3520	---	---	e4980
25	6530	5500	5970	5920	5540	5750	5030	2870	3890	---	---	e4240
26	6660	5150	6140	8320	5770	6760	4650	3220	3850	8390	1470	2640
27	6550	5640	6160	8320	3420	4700	3360	2410	2940	---	---	e2080
28	6050	5150	5500	4480	3510	3790	4890	1690	2230	---	---	e3400
29	---	---	---	4850	3580	4230	---	---	e4350	---	---	e3710
30	---	---	---	3780	3420	3550	---	---	e4690	---	---	e3910
31	---	---	---	4360	3530	3970	---	---	---	---	---	e3990
MONTH	6660	4680	5620	8320	3420	5550	---	---	5130	---	---	3740

07227500 Canadian River near Amarillo, TX--Continued

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	e4040	1200	1050	1120	---	---	e4650	3470	742	1760
2	---	---	e3660	1260	1050	1100	---	---	e4920	1360	1040	1160
3	4340	1420	e2350	2360	1260	1760	---	---	e5370	1040	826	915
4	2920	1350	1920	3080	2360	2680	---	---	e5670	886	832	850
5	1940	598	981	3980	3080	3550	---	---	---	888	825	857
6	---	---	e703	3980	3180	3450	---	---	---	1040	879	932
7	---	---	e1010	4110	3430	3690	---	---	---	1190	1020	1110
8	---	---	e1390	4280	3820	4060	---	---	---	---	---	e1020
9	---	---	e1690	3910	3750	3820	---	---	---	---	---	e905
10	---	---	e1980	3860	3440	3660	---	---	---	1200	610	799
11	---	---	e1970	3720	3500	3590	---	---	---	908	806	855
12	1440	1030	1300	3700	3340	3500	---	---	---	1000	908	955
13	1520	876	1360	3700	2800	3210	---	---	---	1090	1000	1050
14	1460	498	967	2820	2400	2690	---	---	---	1150	1090	1120
15	771	625	711	2630	2270	2450	---	---	---	1210	1150	1180
16	1100	753	931	2590	2430	2510	---	---	---	1260	1210	1240
17	1570	1100	1360	2630	2380	2520	---	---	---	---	---	e1470
18	1860	1570	1750	2550	2260	2430	---	---	---	---	---	e1720
19	1900	1120	1740	2810	2250	2520	---	---	---	---	---	e1930
20	1120	724	868	2900	2430	2730	---	---	---	---	---	e2400
21	797	602	693	2840	2480	2670	---	---	---	---	---	e2800
22	945	646	804	2500	2000	2310	---	---	---	---	---	e3140
23	1120	928	1030	2310	1990	2210	---	---	---	---	---	e3490
24	1120	794	948	---	---	e2480	---	---	---	---	---	e3590
25	902	756	788	---	---	e2840	---	---	---	---	---	e3720
26	1100	902	1010	---	---	e3070	---	---	---	---	---	e3840
27	1100	931	1010	---	---	e3220	---	---	---	---	---	e3950
28	1140	1020	1090	---	---	e3420	---	---	---	---	---	e4040
29	1260	1090	1140	---	---	e3670	1130	183	758	---	---	e4220
30	1460	988	1210	---	---	e4030	4450	471	1740	---	---	e4400
31	---	---	---	---	---	e4400	742	419	503	---	---	---
MONTH	---	---	1410	---	---	2950	---	---	---	---	---	2050

e Estimated



ARKANSAS RIVER BASIN

07227500 Canadian River near Amarillo, TX--Continued

WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

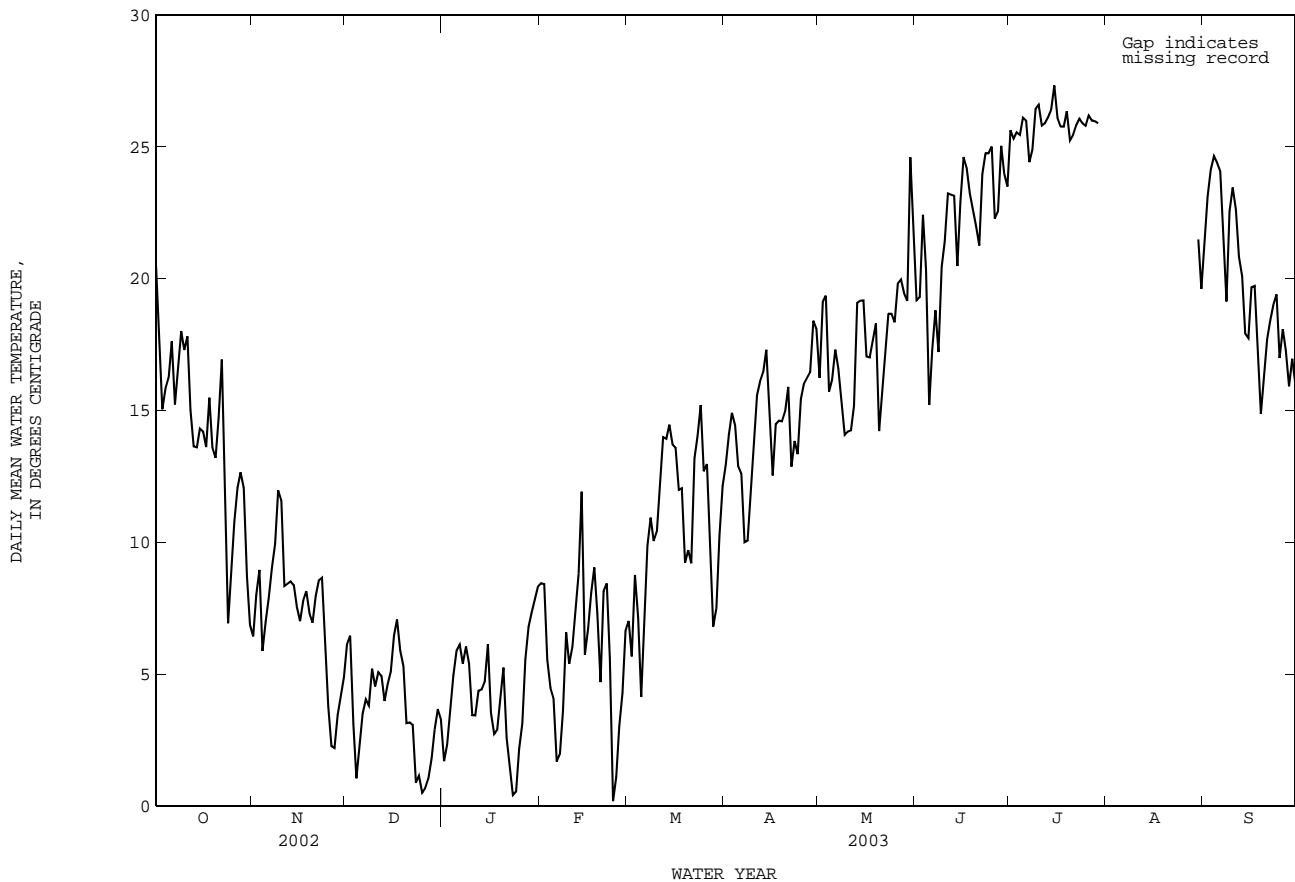
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	26.1	16.5	20.5	7.2	6.0	6.4	11.2	1.7	6.1	3.3	0.0	1.7
2	19.9	14.4	17.4	11.5	5.8	8.0	9.5	3.4	6.5	7.0	0.0	2.3
3	17.9	13.6	15.0	12.4	6.6	8.9	7.1	0.0	3.1	9.0	0.0	3.7
4	22.2	10.9	15.8	7.5	4.4	5.9	2.9	0.0	1.0	10.1	1.1	4.9
5	22.1	11.5	16.3	11.5	3.9	7.0	4.8	0.6	2.2	10.9	1.9	5.9
6	22.1	15.2	17.6	13.4	3.1	7.9	7.9	0.2	3.5	10.4	2.9	6.1
7	18.6	12.8	15.2	14.2	4.6	9.0	7.5	1.2	4.0	10.8	1.4	5.4
8	21.5	13.2	16.6	14.3	6.2	9.9	6.9	1.5	3.8	11.5	1.4	6.0
9	23.4	15.8	18.0	16.8	8.6	12.0	8.8	3.6	5.2	8.6	2.9	5.4
10	21.9	15.3	17.3	15.9	9.2	11.6	9.5	0.7	4.5	8.3	0.0	3.4
11	23.9	14.2	17.8	10.2	6.3	8.3	9.9	1.6	5.1	8.3	0.0	3.4
12	18.1	12.9	15.0	13.3	4.8	8.4	8.9	2.3	4.9	9.5	0.7	4.4
13	18.0	10.5	13.6	12.8	5.0	8.5	8.9	0.3	4.0	10.3	0.0	4.4
14	20.4	8.4	13.6	11.1	6.0	8.4	10.1	0.7	4.6	10.1	1.1	4.7
15	21.1	9.7	14.3	9.3	5.6	7.5	9.9	0.7	5.1	12.4	2.8	6.1
16	21.7	10.3	14.2	12.5	3.1	7.0	11.1	2.9	6.5	8.1	0.4	3.5
17	19.6	9.0	13.6	13.8	3.2	7.8	11.7	4.6	7.1	7.2	0.6	2.7
18	20.4	13.3	15.5	12.6	4.8	8.1	10.7	2.2	5.9	8.4	-0.1	2.9
19	15.3	11.4	13.6	12.6	3.4	7.3	9.2	2.5	5.3	10.5	-0.1	4.0
20	19.4	8.8	13.2	11.4	2.9	6.9	8.0	-0.1	3.1	12.1	0.1	5.2
21	21.4	9.9	14.7	12.4	4.3	8.0	7.6	0.0	3.2	4.9	0.2	2.6
22	22.4	14.1	16.9	12.8	5.0	8.5	5.7	1.0	3.1	5.7	-0.1	1.4
23	16.3	8.3	10.5	12.8	5.3	8.6	3.2	0.0	0.9	2.4	-0.1	0.4
24	8.3	5.6	6.9	7.9	3.9	6.0	4.4	0.0	1.1	2.6	-0.1	0.5
25	13.5	6.2	9.0	6.3	2.1	3.8	2.8	0.0	0.5	6.8	-0.1	2.1
26	11.6	10.2	10.8	5.1	0.2	2.3	3.4	-0.1	0.7	9.2	0.0	3.1
27	15.4	9.0	12.1	6.8	0.0	2.2	4.6	0.0	1.0	12.6	0.6	5.6
28	13.5	11.6	12.7	8.4	-0.1	3.5	7.4	-0.1	1.8	12.7	2.6	6.8
29	16.1	8.7	12.1	7.6	1.4	4.2	7.6	0.2	2.9	13.6	3.6	7.3
30	11.0	7.1	8.7	10.0	1.2	4.9	8.0	0.8	3.7	14.2	3.0	7.8
31	8.0	5.8	6.9	---	---	---	7.6	0.0	3.3	14.8	3.6	8.3
MONTH	26.1	5.6	14.0	16.8	-0.1	7.2	11.7	-0.1	3.7	14.8	-0.1	4.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	14.7	3.6	8.4	13.5	3.8	7.0	20.6	6.4	12.9	20.3	12.6	16.2
2	13.5	4.1	8.4	11.1	3.2	5.7	21.8	7.9	14.1	28.6	13.2	19.1
3	9.4	2.5	5.5	17.6	2.7	8.8	22.0	9.8	14.9	27.3	15.0	19.4
4	11.0	0.0	4.5	13.7	1.0	7.1	23.9	7.5	14.4	20.1	12.4	15.7
5	7.6	1.7	4.1	11.8	0.0	4.1	20.9	8.6	12.9	24.4	9.8	16.2
6	3.4	-0.1	1.7	16.4	0.0	6.7	20.7	6.7	12.6	24.3	11.8	17.3
7	7.4	-0.1	2.0	19.4	2.7	9.9	17.8	5.1	10.0	20.9	12.4	16.6
8	10.0	-0.1	3.6	19.5	4.4	10.9	19.5	3.1	10.1	18.7	12.9	15.3
9	13.3	3.6	6.6	18.4	3.8	10.0	22.8	3.5	12.0	18.9	10.3	14.1
10	12.7	0.1	5.4	20.6	3.0	10.4	23.3	6.5	13.9	19.6	12.0	14.2
11	13.6	0.6	6.0	21.7	5.3	12.3	25.4	8.6	15.6	18.6	10.5	14.2
12	14.6	2.0	7.4	22.6	7.5	14.0	26.7	8.1	16.1	18.9	11.7	15.2
13	12.6	6.6	8.8	23.3	6.7	13.9	24.2	10.7	16.5	25.3	15.8	19.1
14	19.0	7.5	11.9	22.2	8.7	14.5	25.0	12.1	17.3	21.6	17.4	19.2
15	10.0	2.5	5.7	20.1	9.2	13.7	21.1	8.6	14.8	20.9	17.5	19.2
16	14.4	2.1	6.7	19.7	8.6	13.6	18.6	7.2	12.5	20.4	15.5	17.0
17	14.4	3.5	8.1	17.5	8.6	12.0	20.7	9.6	14.5	22.7	13.2	17.0
18	14.3	5.8	9.0	21.1	5.5	12.0	20.0	10.5	14.6	21.6	14.6	17.7
19	10.6	4.2	7.3	11.2	7.2	9.2	22.2	10.7	14.6	24.0	14.8	18.3
20	8.2	1.2	4.7	15.7	6.5	9.7	24.1	8.5	15.0	19.4	12.1	14.2
21	15.8	3.3	8.2	11.3	7.1	9.2	24.4	9.7	15.9	21.6	12.3	15.5
22	16.4	2.2	8.4	20.8	8.4	13.2	14.3	11.6	12.9	23.1	14.1	17.1
23	9.9	0.5	5.6	22.7	7.6	14.0	19.3	10.6	13.8	22.2	17.0	18.7
24	0.7	-0.1	0.2	24.7	7.8	15.2	19.9	8.7	13.3	21.7	16.5	18.7
25	3.7	-0.1	1.1	18.4	8.0	12.7	24.0	9.6	15.4	19.6	17.3	18.3
26	8.1	-0.1	3.0	19.1	7.5	13.0	21.6	11.0	16.0	25.3	15.2	19.8
27	10.7	0.7	4.3	15.2	5.8	10.3	19.5	12.8	16.2	29.7	14.9	20.0
28	14.1	3.0	6.6	12.7	2.1	6.8	20.7	13.9	16.5	25.9	14.6	19.5
29	---	---	---	14.6	1.6	7.5	26.8	12.7	18.4	23.1	16.4	19.2
30	---	---	---	17.8	3.5	10.2	26.4	12.5	18.1	34.6	17.4	24.6
31	---	---	---	19.9	5.7	12.1	---	---	---	28.6	16.9	21.8
MONTH	19.0	-0.1	5.8	24.7	0.0	10.6	26.8	3.1	14.5	34.6	9.8	17.7

07227500 Canadian River near Amarillo, TX--Continued

WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	22.4	17.0	19.2	30.5	21.5	25.6	---	---	---	26.1	18.2	21.4
2	23.2	16.6	19.3	30.7	20.8	25.3	---	---	---	28.2	18.5	23.1
3	28.1	17.4	22.4	31.9	20.4	25.6	---	---	---	29.6	19.8	24.1
4	23.1	18.6	20.4	31.7	20.1	25.5	---	---	---	29.8	20.8	24.7
5	19.1	11.5	15.2	33.2	20.6	26.1	---	---	---	30.4	19.5	24.4
6	23.1	12.9	17.3	32.3	21.4	26.0	---	---	---	29.4	20.1	24.1
7	20.7	17.2	18.8	29.9	20.4	24.4	---	---	---	26.8	16.0	21.5
8	18.2	16.4	17.2	30.6	20.7	24.9	---	---	---	23.4	16.0	19.1
9	26.1	17.3	20.4	34.7	20.1	26.4	---	---	---	26.0	20.4	22.6
10	24.4	18.9	21.4	34.3	21.0	26.6	---	---	---	25.6	21.5	23.5
11	29.5	18.4	23.2	35.5	20.0	25.8	---	---	---	24.7	20.1	22.6
12	29.7	18.0	23.2	34.5	19.8	25.9	---	---	---	23.0	18.5	20.8
13	30.1	18.8	23.1	34.0	20.3	26.1	---	---	---	22.1	18.8	20.1
14	23.7	17.7	20.5	34.4	20.5	26.4	---	---	---	19.4	16.3	17.9
15	28.7	17.8	22.9	37.0	20.4	27.3	---	---	---	20.0	15.1	17.7
16	30.4	19.9	24.6	34.8	20.7	26.1	---	---	---	22.1	17.7	19.7
17	30.6	19.3	24.2	33.8	19.8	25.8	---	---	---	21.7	17.7	19.7
18	28.1	20.5	23.2	33.6	20.1	25.8	---	---	---	20.4	15.1	17.3
19	27.8	20.0	22.6	35.7	20.0	26.4	---	---	---	16.8	12.4	14.9
20	26.6	19.0	22.0	32.2	20.0	25.2	---	---	---	19.1	13.4	16.2
21	25.4	17.8	21.3	32.5	20.5	25.5	---	---	---	19.3	16.3	17.7
22	28.2	20.0	24.0	33.8	19.8	25.8	---	---	---	20.7	15.8	18.4
23	29.4	21.5	24.8	34.6	20.1	26.1	---	---	---	20.7	17.0	19.0
24	29.2	21.2	24.8	34.3	19.6	25.9	---	---	---	22.0	17.2	19.4
25	29.6	21.7	25.0	33.4	19.9	25.8	---	---	---	18.4	15.8	17.0
26	26.5	18.4	22.3	33.6	21.2	26.2	---	---	---	20.3	15.5	18.1
27	27.2	18.4	22.6	33.6	20.5	26.0	---	---	---	18.7	15.6	17.3
28	30.8	20.6	25.0	33.4	20.7	26.0	---	---	---	17.6	14.4	15.9
29	29.1	19.5	24.0	---	21.8	25.9	---	---	---	20.0	14.6	17.0
30	27.1	20.0	23.5	---	---	---	24.7	19.4	21.5	17.7	14.5	16.0
31	---	---	---	---	---	---	21.7	18.4	19.6	---	---	---
MONTH	30.8	11.5	21.9	---	---	---	---	---	---	30.4	12.4	19.7



LOCATION.--Lat 35°42'38", long 101°33'03", Hutchinson County, Hydrologic Unit 11090105, in outlet tower near right end of dam on Canadian River 1.2 mi northwest of Sanford, and 508.5 mi upstream from mouth.

PERIOD OF RECORD.--Oct. 1964 to Sept. 1987, Oct. 1999 to Sept. 2002 (daily mean contents). Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Aug. 1965, nonrecording gage read daily at same site and datum. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 6,410 ft long. The dam was completed and storage began in Oct. 1964. The service spillway is an uncontrolled concrete drop inlet located near the left end of the dam. The spillway discharges into a 22-ft diameter conduit that is designed to discharge 19,300 ft³/s at an elevation of 3,004.9 ft. The dam was built by the U.S. Bureau of Reclamation and is owned by the Canadian River Municipal Authority and used for flood control, and municipal and industrial supply for the cities of Amarillo, Borger, Brownfield, Lamesa, Levelland, Lubbock, O'Donnell, Pampa, Plainview, Slaton, and Tahoka. The area-capacity curves are based on sediment resurvey by the Texas Water Development Board. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	3,011.0
Design flood.....	3,004.9
Crest drop inlet.....	2,965.0
Lowest gated outlet (invert).....	2,850.0

COOPERATION.--Capacity table provided by Canadian Municipal Water Authority.

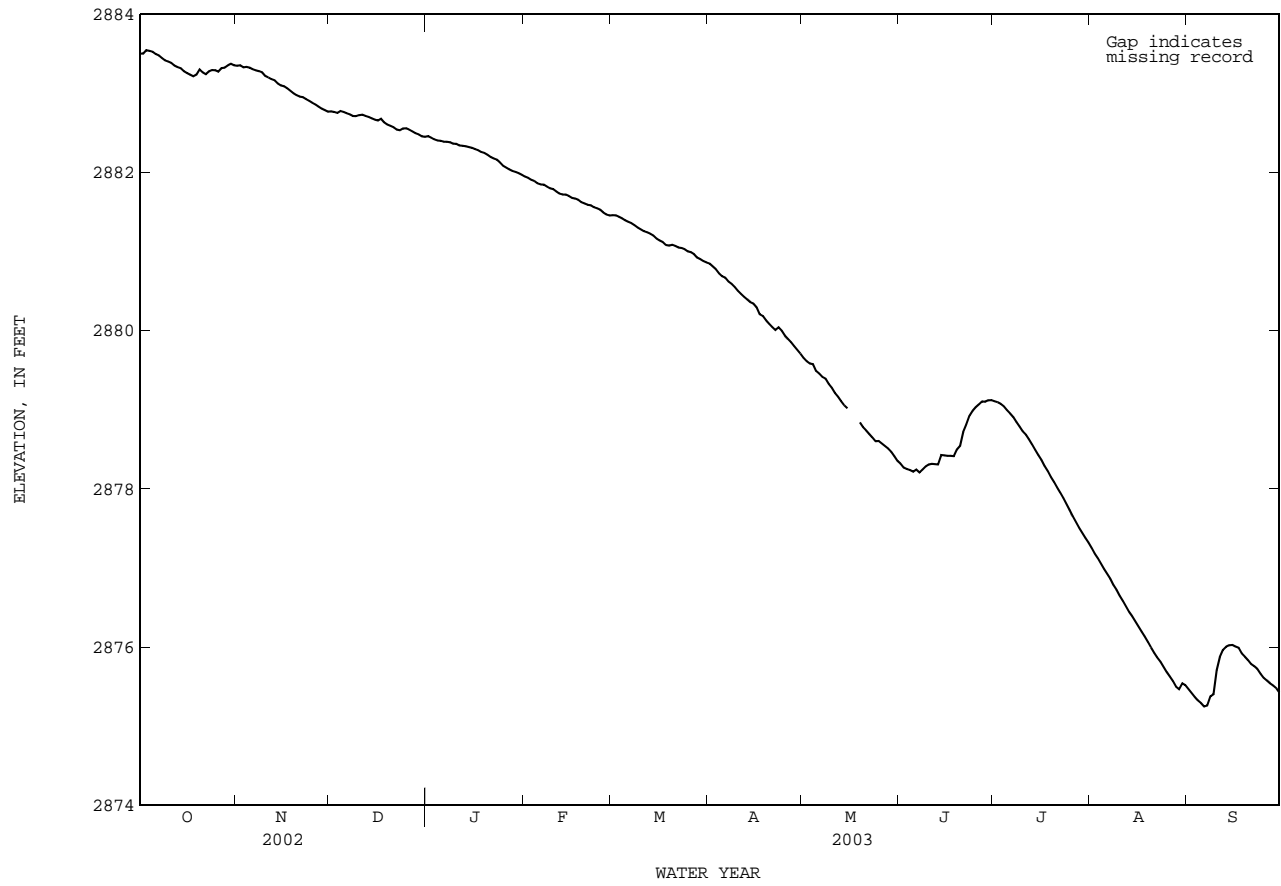
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 546,100 acre-ft, Apr. 28, 1973, elevation, 2,914.91 ft; minimum contents after initial filling, 165,500 acre-ft, May 27, 1981, elevation, 2,876.17 ft; minimum elevation, 2,875.20 ft, Sept. 7, 2003.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 2,883.57 ft, Oct. 4; minimum elevation, 2,875.20 ft, Sept. 7.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2883.51	2883.35	2882.78	2882.46	2881.95	2881.46	2880.85	2879.66	2878.32	2879.11	2877.25	2875.47
2	2883.51	2883.36	2882.77	2882.44	2881.93	2881.46	2880.81	2879.61	2878.27	2879.10	2877.18	2875.42
3	2883.55	2883.33	2882.76	2882.42	2881.91	2881.44	2880.78	2879.59	2878.25	2879.08	2877.12	2875.37
4	2883.54	2883.34	2882.78	2882.41	2881.89	2881.42	2880.72	2879.58	2878.24	2879.04	2877.06	2875.32
5	2883.53	2883.33	2882.77	2882.40	2881.86	2881.40	2880.69	2879.49	2878.22	2879.00	2876.99	2875.29
6	2883.50	2883.31	2882.75	2882.39	2881.85	2881.38	2880.67	2879.46	2878.24	2878.95	2876.93	2875.25
7	2883.48	2883.29	2882.74	2882.39	2881.85	2881.36	2880.62	2879.42	2878.21	2878.91	2876.86	2875.26
8	2883.45	2883.28	2882.72	2882.39	2881.82	2881.33	2880.59	2879.40	2878.24	2878.85	2876.79	2875.38
9	2883.42	2883.27	2882.72	2882.37	2881.80	2881.31	2880.55	2879.33	2878.28	2878.79	2876.72	2875.40
10	2883.41	2883.22	2882.73	2882.36	2881.79	2881.28	2880.51	2879.28	2878.31	2878.73	2876.65	2875.71
11	2883.39	2883.20	2882.73	2882.34	2881.76	2881.26	2880.47	2879.21	2878.32	2878.69	2876.59	2875.88
12	2883.35	2883.18	2882.72	2882.34	2881.74	2881.24	2880.43	2879.17	2878.31	2878.63	2876.51	2875.96
13	2883.33	2883.17	2882.70	2882.33	2881.72	2881.23	2880.40	2879.11	2878.31	2878.56	2876.45	2876.00
14	2883.32	2883.13	2882.68	2882.32	2881.72	2881.20	2880.36	2879.06	2878.43	2878.49	2876.39	2876.02
15	2883.28	2883.10	2882.67	2882.31	2881.70	2881.17	2880.34	2879.02	2878.42	2878.43	2876.33	2876.03
16	2883.26	2883.09	2882.66	2882.30	2881.68	2881.14	2880.30	---	2878.42	2878.37	2876.26	2876.01
17	2883.24	2883.07	2882.68	2882.28	2881.67	2881.12	2880.21	---	2878.42	2878.29	2876.20	2875.99
18	2883.22	2883.03	2882.64	2882.26	2881.66	2881.09	2880.19	---	2878.41	2878.22	2876.13	2875.92
19	2883.24	2883.00	2882.61	2882.25	2881.63	2881.08	2880.13	2878.84	2878.50	2878.15	2876.07	2875.88
20	2883.30	2882.98	2882.59	2882.23	2881.61	2881.09	2880.09	2878.78	2878.54	2878.09	2876.00	2875.83
21	2883.27	2882.96	2882.57	2882.20	2881.59	2881.07	2880.05	2878.74	2878.72	2878.02	2875.93	2875.79
22	2883.24	2882.95	2882.54	2882.18	2881.59	2881.05	2880.01	2878.69	2878.82	2877.95	2875.87	2875.76
23	2883.28	2882.93	2882.53	2882.16	2881.56	2881.05	2880.04	2878.65	2878.93	2877.88	2875.82	2875.72
24	2883.30	2882.91	2882.56	2882.13	2881.55	2881.03	2880.00	2878.60	2878.99	2877.81	2875.75	2875.66
25	2883.30	2882.89	2882.56	2882.09	2881.53	2881.01	2879.94	2878.61	2879.03	2877.73	2875.68	2875.61
26	2883.28	2882.86	2882.55	2882.06	2881.50	2880.99	2879.90	2878.57	2879.07	2877.66	2875.63	2875.58
27	2883.32	2882.84	2882.52	2882.04	2881.47	2880.97	2879.85	2878.54	2879.11	2877.58	2875.57	2875.54
28	2883.33	2882.81	2882.50	2882.02	2881.46	2880.93	2879.81	2878.51	2879.10	2877.51	2875.50	2875.51
29	2883.36	2882.79	2882.48	2882.01	---	2880.90	2879.76	2878.47	2879.12	2877.45	2875.47	2875.48
30	2883.38	2882.77	2882.46	2881.99	---	2880.88	2879.71	2878.41	2879.12	2877.39	2875.54	2875.43
31	2883.36	---	2882.45	2881.97	---	2880.86	---	2878.35	---	2877.32	2875.52	---
MEAN	2883.36	2883.09	2882.64	2882.25	2881.71	2881.17	2880.29	---	2878.56	2878.32	2876.28	2875.65
MAX	2883.55	2883.36	2882.78	2882.46	2881.95	2881.46	2880.85	---	2879.12	2879.11	2877.25	2876.03
MIN	2883.22	2882.77	2882.45	2881.97	2881.46	2880.86	2879.71	---	2878.21	2877.32	2875.47	2875.25
CAL YR 2002		MAX 2890.64	MIN 2882.45									
WTR YR 2003		MAX 2883.55	MIN 2875.25									

07227900 Lake Meredith near Sanford, TX--Continued



ARKANSAS RIVER BASIN

07228000 Canadian River near Canadian, TX

LOCATION.--Lat 35°56'06", long 100°22'13", Hemphill County, Hydrologic Unit 11090106, on downstream side of bridge on U.S. Highways 60 and 83, 600 ft downstream from Panhandle and Santa Fe Railway Co. bridge, 1.2 mi downstream from Red Deer Creek, 1.6 mi northeast of Canadian, and 433.9 mi upstream from mouth.

DRAINAGE AREA.--22,866 mi², of which 4,688 mi² probably is noncontributing.

PERIOD OF RECORD.--July 1924 to Aug. 1925 (gage heights only), Jan. 1938 to current year. Prior to Apr. 1938, monthly discharges only, published in WSP 1311.

Water-quality records.--Chemical data: Aug. 1966 to Sept. 1994. Biochemical data: Aug. 1966 to Sept. 1994. Pesticide data: Oct. 1970 to June 1982. Specific conductance: Oct. 1974 to Sept. 1981. Water temperature: Oct. 1974 to Sept. 1981.

REVISED RECORDS.--WSP 1341: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,301.50 ft above NGVD of 1929. July 1, 1924, to Aug. 31, 1925, and Apr. 21 to Dec. 15, 1938, nonrecording gage; Dec. 16, 1938, to Sept. 30, 1953, Oct. 12, 1995, to Jan. 30, 1998, water-stage recorder and nonrecording gages; all at site 300 ft upstream at same datum. Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Since installation of gage in Jan. 1938, at least 10% of contributing drainage area has been regulated. Extreme low flow is maintained by springs that enter river about 600 ft upstream from the gage. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 20.0 ft Oct. 2, 1904, from a local resident. Floods of May 2, 1914, and Oct. 5, 1923, reached stages of 12 ft from information furnished by the Chief Engineer Office of the Panhandle and Santa Fe Railroad Company.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	105	79	153	90	95	70	51	49	130	18	22
2	40	110	79	140	88	97	68	51	47	101	16	20
3	81	120	87	132	84	98	66	51	47	78	15	19
4	62	112	117	127	83	95	66	50	63	60	14	18
5	48	109	128	124	84	91	67	49	83	55	14	17
6	44	102	139	118	89	90	69	47	174	50	13	16
7	41	99	162	114	91	89	67	47	136	47	12	15
8	40	94	187	114	94	88	66	47	107	45	11	26
9	41	89	195	109	98	85	67	45	87	41	29	29
10	40	85	190	103	101	84	66	45	78	38	25	26
11	40	82	177	101	98	85	66	44	70	35	22	29
12	39	97	162	101	96	85	66	45	68	33	19	30
13	38	96	146	101	96	85	65	45	128	31	17	28
14	37	92	135	100	99	84	63	44	296	28	15	27
15	37	87	128	100	93	83	64	45	136	26	13	26
16	36	83	123	98	89	81	70	53	90	25	12	25
17	36	82	118	95	85	77	68	50	80	24	9.4	23
18	36	81	109	93	84	75	67	47	74	23	7.8	21
19	87	79	105	92	84	81	63	45	90	23	6.1	21
20	263	79	102	92	84	102	61	43	185	22	4.9	20
21	119	78	102	92	85	107	59	43	240	22	4.5	24
22	e161	77	100	90	86	107	57	42	317	21	4.4	25
23	e190	77	105	87	88	99	60	42	226	21	4.2	24
24	e239	76	113	87	84	92	61	42	124	20	4.0	22
25	213	74	120	89	e84	90	59	86	84	18	3.8	21
26	187	74	125	87	e88	91	56	84	73	17	3.7	21
27	398	74	125	89	e92	87	55	83	67	15	3.6	20
28	417	76	131	90	92	80	53	80	61	14	3.4	20
29	208	78	146	88	---	75	53	66	129	15	13	20
30	149	78	160	90	---	73	52	56	156	21	29	20
31	124	---	158	90	---	72	---	50	---	21	24	---
TOTAL	3513	2645	4053	3186	2509	2723	1890	1618	3565	1120	390.8	675
MEAN	113	88.2	131	103	89.6	87.8	63.0	52.2	119	36.1	12.6	22.5
MAX	417	120	195	153	101	107	70	86	317	130	29	30
MIN	22	74	79	87	83	72	52	42	47	14	3.4	15
AC-FT	6970	5250	8040	6320	4980	5400	3750	3210	7070	2220	775	1340

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2003, BY WATER YEAR (WY)

	MEAN	359	87.4	95.1	116	104	115	204	570	589	435	305	367
MAX	10210	1397	694	541	380	592	5978	8164	8976	6118	3524	7399	
(WY)	1942	1942	1960	1943	1960	1961	1942	1941	1941	1941	1941	1941	
MIN	0.35	1.03	1.50	1.53	28.3	1.76	1.14	0.46	0.34	0.019	0.019	0.000	
(WY)	1976	1946	1940	1957	1959	1946	1964	1962	1966	1970	1980	1983	

07228000 Canadian River near Canadian, TX--Continued

SUMMARY STATISTICS

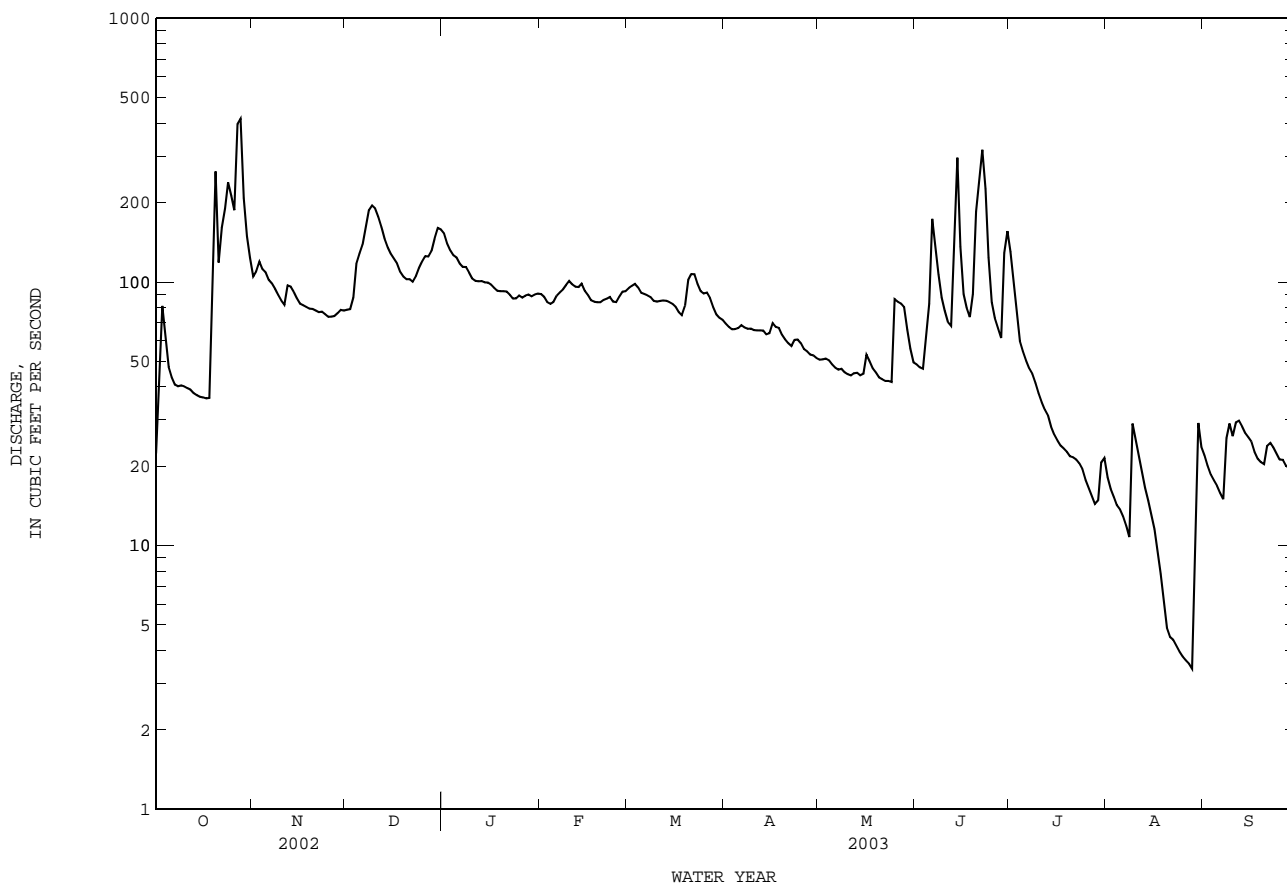
FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1938 - 2003

ANNUAL TOTAL	27724		27887.8		273	
ANNUAL MEAN	76.0		76.4		2963	1941
HIGHEST ANNUAL MEAN					34.5	1964
LOWEST ANNUAL MEAN					60600	Sep 24 1941
HIGHEST DAILY MEAN	729	May 28	417	Oct 28	0.00	Jan 4 1941
LOWEST DAILY MEAN	13	Aug 7	3.4	Aug 28	0.00	Apr 8 1941
ANNUAL SEVEN-DAY MINIMUM	15	Aug 3	3.9	Aug 22	38900	Oct 9 1968
MAXIMUM PEAK FLOW			585	Jun 13	9.83	Apr 15 1973
MAXIMUM PEAK STAGE			3.88	Oct 20		
ANNUAL RUNOFF (AC-FT)	54990		55320		198100	
10 PERCENT EXCEEDS	128		129		306	
50 PERCENT EXCEEDS	54		77		40	
90 PERCENT EXCEEDS	27		20		0.70	

e Estimated



ARKANSAS RIVER BASIN

07233500 Palo Duro Creek near Spearman, TX

LOCATION.--Lat 36°12'08", long 101°18'20", Hansford County, Hydrologic Unit 11100104, on right bank at downstream side of bridge on State Highway 15, 6 mi west of Spearman, and 18 mi upstream from Horse Creek.

DRAINAGE AREA.--1,076 mi².

PERIOD OF RECORD.--Aug. 1945 to Sept. 1979, June 1999 to current year.

REVISED RECORDS.--WSP 1341: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,958.95 ft above sea level. Aug. 1, 1945, to May 8, 1968, water-stage recorder at present site and at datum 2.68 ft higher than current datum. May 8, 1968, to Dec. 4, 1969, water-stage recorder at site 5 mi downstream at different datum. Dec. 4, 1969 to Sept. 30, 1979, water-stage recorder at present site and at datum 2.68 ft higher than current datum. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. No known regulation. Small diversion upstream for irrigation. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1936, 22.5 ft from floodmark, discharge 34,000 ft³/s. Flood of June 4, 1936, reached a stage of 21 ft from floodmark, discharge 26,100 ft³/s from rating curve extended above 20,000 ft³/s.

REVISIONS.--Revised daily discharges, in cubic feet per second, for period from June 17, 1999 to Sept. 30, 2001, are given below. These figures supersede those published in previous reports.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
2	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
3	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
4	---	---	---	---	---	---	---	---	---	0.00	17	0.00
5	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
6	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
7	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
8	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
9	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
10	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
11	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
12	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
13	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
14	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
15	---	---	---	---	---	---	---	---	---	0.00	0.00	3.6
16	---	---	---	---	---	---	---	---	---	0.00	0.00	0.04
17	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.01
18	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
19	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
20	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
21	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
22	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
23	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
24	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
25	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
26	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
27	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
28	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
29	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
30	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
31	---	---	---	---	---	---	---	---	---	0.00	0.00	---
TOTAL	---	---	---	---	---	---	---	---	---	0.00	17.00	3.65
MEAN	---	---	---	---	---	---	---	---	---	0.000	0.55	0.12
MAX	---	---	---	---	---	---	---	---	---	0.00	17	3.6
MIN	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00
AC-FT	---	---	---	---	---	---	---	---	---	0.00	34	7.2

07233500 Palo Duro Creek near Spearman, TX--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	e6.0	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	e3.8	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	e2.5	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	e1.5	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	e0.69	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.2	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	21	0.00	0.01	58	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	473	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	168	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	362	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	316	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	61	0.00	0.00	0.00
31	0.00	---	0.00	0.00	---	0.00	---	0.00	---	0.00	0.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	21.03	0.00	0.01	1442.23	26.64	0.00	0.00
MEAN	0.000	0.000	0.000	0.000	0.000	0.68	0.000	0.000	48.1	0.86	0.000	0.000
MAX	0.00	0.00	0.00	0.00	0.00	21	0.00	0.01	473	12	0.00	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	0.00	0.00	0.00	0.00	42	0.00	0.02	2860	53	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2000h, BY WATER YEAR (WY)

MEAN	38.9	7.64	1.17	0.72	0.71	1.90	8.86	32.7	53.6	32.5	19.0	18.0
MAX	835	213	7.99	3.00	3.47	36.6	106	349	879	188	91.8	188
(WY)	1947	1972	1960	1947	1964	1973	1955	1951	1965	1953	1950	1960
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.28	0.000	0.000	0.000
(WY)	1953	1956	1956	1965	1965	1965	1965	2000	1973	1974	1964	1947

SUMMARY STATISTICS

FOR 2000 WATER YEAR

WATER YEARS 1945 - 2000h

ANNUAL TOTAL	1489.91		
ANNUAL MEAN	4.07	18.2	
HIGHEST ANNUAL MEAN		89.9	1965
LOWEST ANNUAL MEAN		1.50	1964
HIGHEST DAILY MEAN	473	Jun 26	11400 Oct 7 1946
LOWEST DAILY MEAN	0.00	Oct 1	0.00 Aug 1 1945
ANNUAL SEVEN-DAY MINIMUM	0.00	Oct 1	0.00 Aug 1 1945
MAXIMUM PEAK FLOW	642	Jun 26	21200 Oct 7 1946
MAXIMUM PEAK STAGE	12.04	Jun 26	19.87 Oct 7 1946
ANNUAL RUNOFF (AC-FT)	2960		13190
10 PERCENT EXCEEDS	0.00		8.2
50 PERCENT EXCEEDS	0.00		0.60
90 PERCENT EXCEEDS	0.00		0.00

e Estimated

h See PERIOD OF RECORD paragraph.

ARKANSAS RIVER BASIN

07233500 Palo Duro Creek near Spearman, TX--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	2.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
6	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.12	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.09	0.00	0.00	0.00
22	0.03	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
23	0.06	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
24	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.2	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00
28	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	18	0.00	0.00	0.00	---	0.00	0.00	0.01	0.00	0.00	0.00	0.00
30	7.7	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	5.2	---	0.00	0.00	---	0.00	---	0.00	---	0.00	0.00	---
TOTAL	31.21	83.39	0.00	0.00	85.20	0.02	0.05	0.24	0.21	0.00	38.23	0.69
MEAN	1.01	2.78	0.000	0.000	3.04	0.001	0.002	0.008	0.007	0.000	1.23	0.023
MAX	18	52	0.00	0.00	70	0.01	0.02	0.14	0.12	0.00	37	0.68
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	62	165	0.00	0.00	169	0.04	0.1	0.5	0.4	0.00	76	1.4

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2001h, BY WATER YEAR (WY)

MEAN	37.9	7.51	1.14	0.70	0.78	1.84	8.62	31.8	52.1	31.6	18.6	17.5
MAX	835	213	7.99	3.00	3.47	36.6	106	349	879	188	91.8	188
(WY)	1947	1972	1960	1947	1964	1973	1955	1951	1965	1953	1950	1960
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.000
(WY)	1953	1956	1956	1965	1965	1965	1965	2000	2001	1974	1964	1947

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1945 - 2001h	
ANNUAL TOTAL	1604.51		239.24			
ANNUAL MEAN	4.38		0.66		17.7	
HIGHEST ANNUAL MEAN					89.9	
LOWEST ANNUAL MEAN					0.66	
HIGHEST DAILY MEAN	473	Jun 26	70	Feb 7	11400	Oct 7 1946
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	0.00	Aug 1 1945
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Oct 1	0.00	Aug 1 1945
MAXIMUM PEAK FLOW			1240	Feb 7	21200	Oct 7 1946
MAXIMUM PEAK STAGE			14.80	Feb 7	19.87	Oct 7 1946
ANNUAL RUNOFF (AC-FT)	3180		475		12840	
10 PERCENT EXCEEDS	0.00		0.00		8.0	
50 PERCENT EXCEEDS	0.00		0.00		0.50	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

h See PERIOD OF RECORD paragraph.

07233500 Palo Duro Creek near Spearman, TX--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.01	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.35	0.32	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	81	0.00	0.00	0.00
14	0.00	1.7	0.00	0.00	0.00	0.00	0.00	0.00	431	0.00	0.00	0.00
15	0.00	1.7	0.00	0.00	0.00	0.00	0.00	0.00	16	0.00	0.00	0.00
16	0.00	1.8	0.00	0.00	0.00	0.00	0.00	0.00	5.2	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.3	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.8	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	---	0.00	0.00	---	0.00	---	0.00	---	0.00	0.00	---
TOTAL	0.00	5.20	0.00	0.00	0.00	0.00	0.26	2.06	538.28	0.33	0.71	0.00
MEAN	0.000	0.17	0.000	0.000	0.000	0.000	0.009	0.066	17.9	0.011	0.023	0.000
MAX	0.00	1.8	0.00	0.00	0.00	0.00	0.26	1.8	431	0.32	0.64	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	10	0.00	0.00	0.00	0.00	0.5	4.1	1070	0.7	1.4	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002h, BY WATER YEAR (WY)

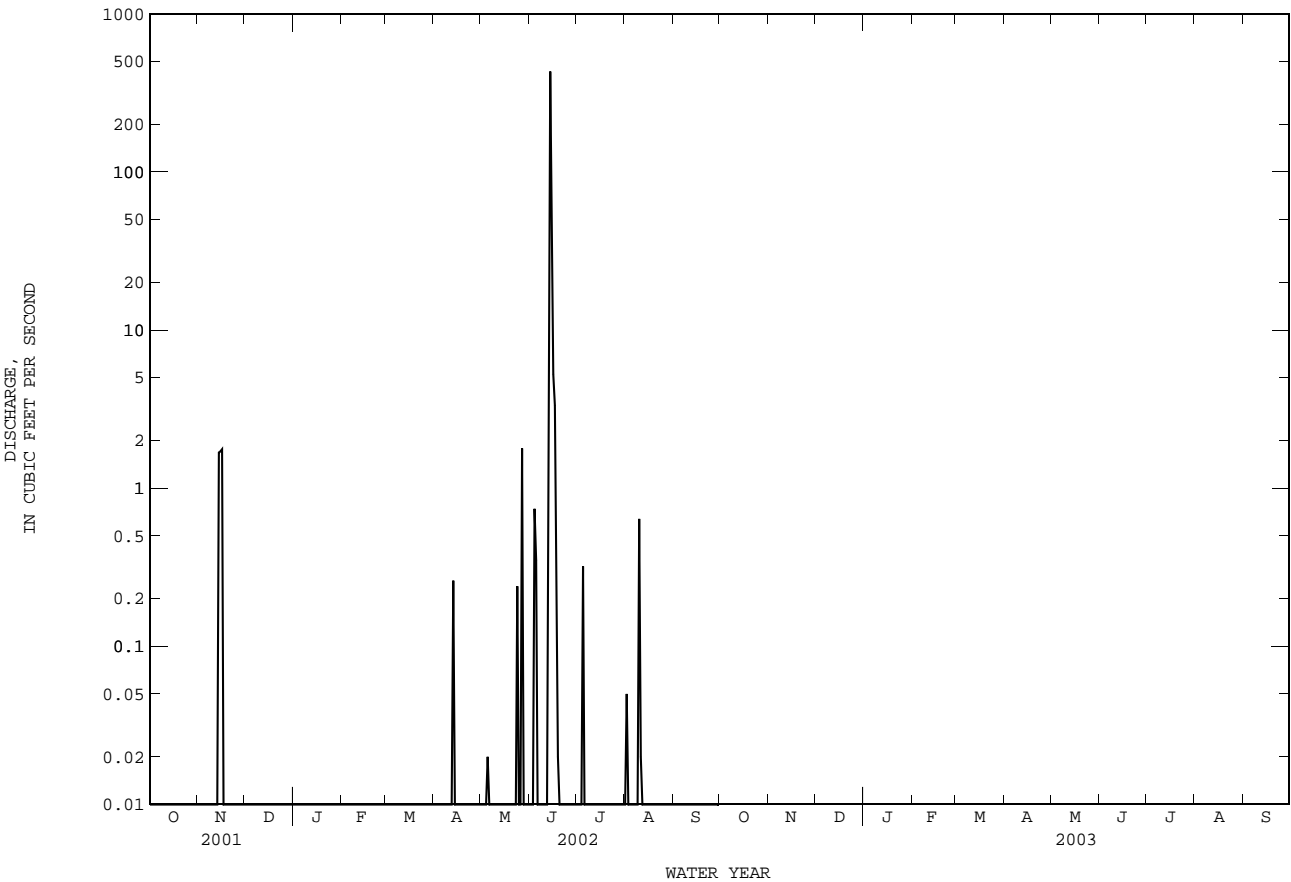
MEAN	36.9	7.31	1.11	0.68	0.75	1.79	8.39	30.9	51.2	30.8	18.1	17.0
MAX	835	213	7.99	3.00	3.47	36.6	106	349	879	188	91.8	188
(WY)	1947	1972	1960	1947	1964	1973	1955	1951	1965	1953	1950	1960
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.000
(WY)	1953	1956	1956	1965	1965	1965	1965	2000	2001	1974	1964	1947

ARKANSAS RIVER BASIN

07233500 Palo Duro Creek near Spearman, TX--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR			FOR 2002 WATER YEAR			WATER YEARS 1945 - 2002h		
ANNUAL TOTAL	129.84			546.84			17.3		
ANNUAL MEAN	0.36			1.50			89.9		
HIGHEST ANNUAL MEAN							0.66		
LOWEST ANNUAL MEAN							11400		
HIGHEST DAILY MEAN	70	Feb	7	431	Jun	14	Oct	7	1946
LOWEST DAILY MEAN	0.00	Jan	1	0.00	Oct	1	Aug	1	1945
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan	1	0.00	Oct	1	Aug	1	1945
MAXIMUM PEAK FLOW				1070	Jun	14	21200	Oct	7 1946
MAXIMUM PEAK STAGE				14.31	Jun	14	19.87	Oct	7 1946
ANNUAL RUNOFF (AC-FT)	258			1080			12520		
10 PERCENT EXCEEDS	0.00			0.00			7.7		
50 PERCENT EXCEEDS	0.00			0.00			0.50		
90 PERCENT EXCEEDS	0.00			0.00			0.00		

h See PERIOD OF RECORD paragraph.



07233500 Palo Duro Creek near Spearman, TX--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.4	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	156	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.7	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.0	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
23	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	---	0.00	0.00	---	0.00	---	0.00	---	0.00	0.00	---
TOTAL	0.08	0.00	0.00	0.00	0.00	0.00	0.00	1.32	170.14	0.01	0.00	0.00
MEAN	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.043	5.67	0.000	0.000	0.000
MAX	0.07	0.00	0.00	0.00	0.00	0.00	0.00	1.0	156	0.01	0.00	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.2	0.00	0.00	0.00	0.00	0.00	0.00	2.6	337	0.02	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2003h, BY WATER YEAR (WY)

MEAN	35.9	7.12	1.08	0.66	0.74	1.75	8.16	30.1	50.0	30.0	17.7	16.6
MAX	835	213	7.99	3.00	3.47	36.6	106	349	879	188	91.8	188
(WY)	1947	1972	1960	1947	1964	1973	1955	1951	1965	1953	1950	1960
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.000
(WY)	1953	1956	1956	1965	1965	1965	1965	2000	2001	1974	1964	1947

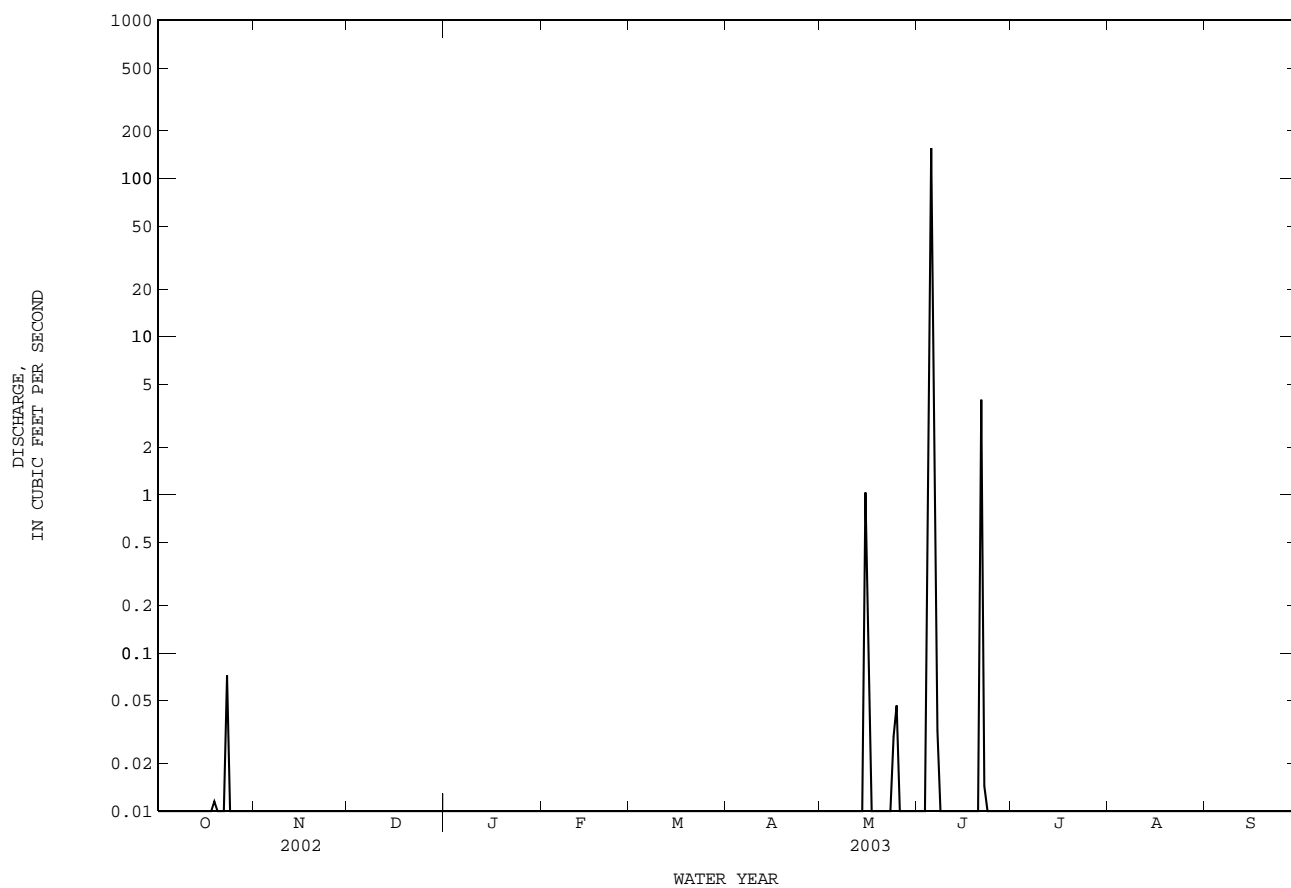
SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1945 - 2003h

ANNUAL TOTAL	541.72	171.55	16.8	1965
ANNUAL MEAN	1.48	0.47	0.47	2003
HIGHEST ANNUAL MEAN			89.9	
LOWEST ANNUAL MEAN			0.47	1965
HIGHEST DAILY MEAN	431	Jun 14	11400	Oct 7 1946
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Aug 1 1945
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Aug 1 1945
MAXIMUM PEAK FLOW			21200	Oct 7 1946
MAXIMUM PEAK STAGE			15.08	Jun 5
ANNUAL RUNOFF (AC-FT)	1070	340	12200	Oct 7 1946
10 PERCENT EXCEEDS	0.00	0.00	7.4	
50 PERCENT EXCEEDS	0.00	0.00	0.40	
90 PERCENT EXCEEDS	0.00	0.00	0.00	

h See PERIOD OF RECORD paragraph.

ARKANSAS RIVER BASIN

07233500 Palo Duro Creek near Spearman, TX--Continued



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LOCATION.--Lat 36°21'42", long 101°09'48", Hansford County, Hydrologic Unit 11100104, on intake tower south of dam on Palo Duro Creek, 11 mi north of Spearman.

PERIOD OF RECORD.--June 1999 to Sept. 2002 (daily mean contents). Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 3,800 ft long. The dam was completed Feb. 11, 1991, and storage began May 22, 1991. The dam and lake are owned by the Palo Duro River Authority. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	2,943.0
Design flood (2-foot freeboard).....	2,919.0
Crest of spillway.....	2,915.0
Lowest gated outlet	2,892.0

COOPERATION.--Area-capacity curves developed by Freese and Nichols, Inc. and provided by the Palo Duro River Authority.

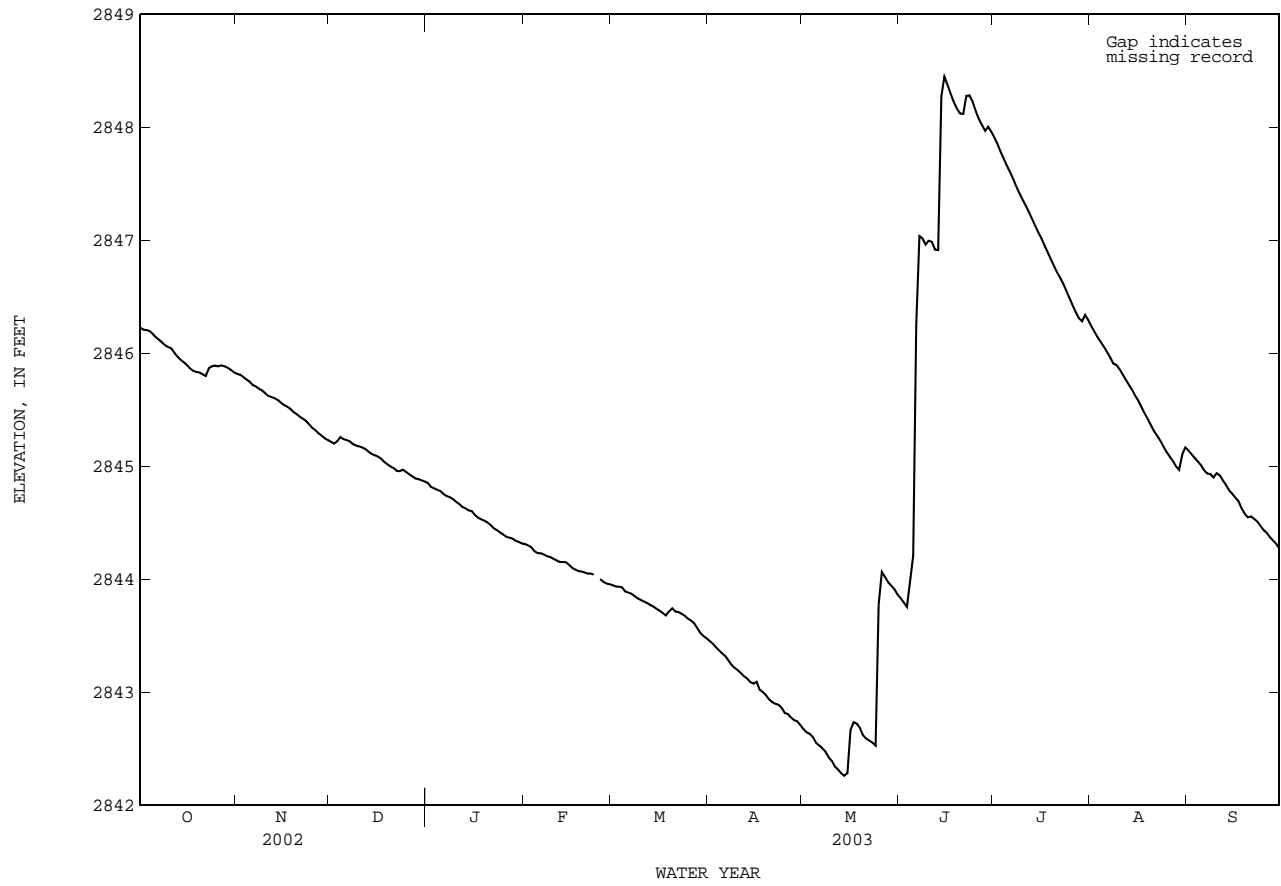
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 32,910 acre-ft, July 1, 1999, elevation, 2,877.89 ft; minimum contents, 4,000 acre-ft, Sept. 30, 2002, elevation, 2,846.23 ft; minimum elevation, 2,842.23 ft, May 15, 2003.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 2,848.47 ft, June 15; minimum elevation, 2,842.23 ft, May 15.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2846.23	2845.82	2845.22	2844.85	2844.31	2843.95	2843.45	2842.67	2843.83	2847.91	2846.24	2845.14
2	2846.21	2845.81	2845.20	2844.82	2844.30	2843.93	2843.43	2842.64	2843.80	2847.85	2846.19	2845.11
3	2846.21	2845.79	2845.22	2844.80	2844.28	2843.93	2843.40	2842.63	2843.76	2847.78	2846.14	2845.07
4	2846.20	2845.77	2845.26	2844.79	2844.25	2843.93	2843.37	2842.60	2843.97	2847.72	2846.10	2845.04
5	2846.17	2845.75	2845.24	2844.78	2844.23	2843.89	2843.34	2842.55	2844.21	2847.66	2846.06	2845.01
6	2846.14	2845.72	2845.23	2844.75	2844.23	2843.88	2843.32	2842.53	2846.25	2847.60	2846.01	2844.96
7	2846.12	2845.71	2845.22	2844.74	2844.22	2843.87	2843.28	2842.50	2847.04	2847.54	2845.96	2844.93
8	2846.10	2845.69	2845.20	2844.73	2844.20	2843.85	2843.24	2842.47	2847.02	2847.48	2845.91	2844.93
9	2846.07	2845.67	2845.18	2844.71	2844.20	2843.83	2843.21	2842.42	2846.96	2847.42	2845.90	2844.90
10	2846.05	2845.64	2845.18	2844.68	2844.18	2843.82	2843.19	2842.39	2847.00	2847.36	2845.86	2844.94
11	2846.04	2845.62	2845.17	2844.67	2844.17	2843.80	2843.17	2842.34	2846.99	2847.31	2845.81	2844.92
12	2846.00	2845.61	2845.15	2844.64	2844.15	2843.79	2843.14	2842.32	2846.92	2847.25	2845.76	2844.87
13	2845.97	2845.60	2845.13	2844.63	2844.15	2843.77	2843.12	2842.28	2846.91	2847.19	2845.72	2844.83
14	2845.94	2845.59	2845.11	2844.61	2844.15	2843.76	2843.09	2842.26	2848.27	2847.13	2845.67	2844.79
15	2845.92	2845.56	2845.10	2844.60	2844.13	2843.74	2843.08	2842.28	2848.45	2847.07	2845.62	2844.76
16	2845.89	2845.54	2845.09	2844.57	2844.10	2843.72	2843.09	2842.66	2848.38	2847.02	2845.58	2844.72
17	2845.87	2845.53	2845.07	2844.54	2844.09	2843.70	2843.02	2842.73	2848.30	2846.96	2845.52	2844.69
18	2845.84	2845.51	2845.04	2844.53	2844.07	2843.68	2843.00	2842.72	2848.23	2846.90	2845.47	2844.63
19	2845.84	2845.48	2845.02	2844.52	2844.07	2843.71	2842.97	2842.68	2848.17	2846.84	2845.42	2844.58
20	2845.83	2845.46	2845.00	2844.50	2844.06	2843.74	2842.93	2842.62	2848.12	2846.78	2845.36	2844.55
21	2845.81	2845.44	2844.98	2844.48	2844.05	2843.72	2842.91	2842.59	2848.12	2846.72	2845.31	2844.56
22	2845.80	2845.42	2844.96	2844.45	2844.05	2843.71	2842.90	2842.57	2848.28	2846.67	2845.27	2844.53
23	2845.87	2845.40	2844.96	2844.43	2844.04	2843.70	2842.89	2842.55	2848.28	2846.61	2845.23	2844.51
24	2845.89	2845.37	2844.97	2844.41	---	2843.68	2842.86	2842.53	2848.23	2846.55	2845.18	2844.47
25	2845.89	2845.34	2844.95	2844.40	2844.00	2843.65	2842.82	2843.77	2848.15	2846.49	2845.13	2844.43
26	2845.88	2845.32	2844.93	2844.38	2843.98	2843.64	2842.81	2844.06	2848.08	2846.43	2845.08	2844.41</

07233550 Palo Duro Reservoir near Spearman, TX--Continued



ARKANSAS RIVER BASIN

07235000 Wolf Creek at Lipscomb, TX

LOCATION.--Lat 36°14'19", long 100°16'31", Lipscomb County, Hydrologic Unit 11100202, on right bank at downstream side of State Highway 305, 0.3 mi north of Lipscomb, 0.6 mi downstream from Sand Creek, 2.0 mi upstream from Plum Creek, and 61.2 mi upstream from mouth.

DRAINAGE AREA.--697 mi², of which 222 mi² probably is noncontributing.

PERIOD OF RECORD.--Oct. 1937 to Sept. 1940, monthly discharges only, published in WSP 1311, Oct. 1940 to Sept. 1942 and Oct. 1961 to current year.

Water-quality records.--Chemical data: May 1980. Biochemical data: May 1980.

REVISED RECORDS.--WSP 1311: 1938-39, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,371.29 ft above NGVD of 1929. Prior to Feb. 25, 1938, nonrecording gage, Feb. 25, 1938, to Sept. 30, 1942, water-stage recorder at present site at datum 5.77 ft higher. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. Since reactivation of gage in Oct. 1961, at least 10% of contributing drainage area has been regulated. There are small diversions upstream from station for irrigation and recreation. No flow at times.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--5 years (water years 1938-42), 39.7 ft³/s, 28,760 acre-feet/yr.

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1938-42).--Maximum discharge, 20,000 ft³/s Oct. 21, 1941 (gage-height, 11.57 ft, present datum), from rating curve extended above 14,000 ft³/s on basis of velocity-area studies. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1890, 15.5 ft June 23, 1957, present site and datum, from floodmarks. A flood in May 1955 reached a stage of 12.1 ft, present site and datum, from information by Texas Department of Transportation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	2.2	1.6	3.2	2.9	3.4	2.7	2.1	1.5	12	0.71	0.80
2	1.5	2.3	1.7	3.1	2.9	3.5	2.5	2.0	1.5	9.9	0.63	0.70
3	1.6	2.2	2.2	3.0	2.7	3.5	2.6	2.1	1.5	8.5	0.56	0.61
4	1.5	2.2	2.5	3.0	2.6	3.5	2.5	2.1	1.8	7.4	0.55	0.57
5	1.5	2.1	2.5	3.1	2.6	3.3	2.8	1.9	2.1	6.6	0.54	0.53
6	1.5	1.9	2.7	2.9	2.8	3.3	2.5	1.9	2.2	6.0	0.50	0.49
7	1.5	1.9	3.0	3.1	2.8	3.2	2.6	1.8	2.1	5.5	0.49	0.49
8	1.5	1.8	3.2	3.2	2.9	3.1	2.6	1.8	2.0	4.9	0.48	0.65
9	1.4	1.8	3.6	3.0	3.1	3.0	2.9	1.7	1.9	4.4	0.70	0.54
10	1.4	1.7	3.6	2.8	3.2	2.9	3.0	1.6	1.8	3.9	0.56	0.55
11	1.5	1.6	3.6	2.7	3.2	2.8	3.1	1.6	1.7	3.6	0.53	0.64
12	1.7	1.8	3.5	2.7	3.1	2.8	3.2	1.6	1.7	3.2	0.51	0.55
13	1.8	1.6	3.3	2.8	3.1	2.7	3.1	1.5	1.8	2.9	0.49	0.54
14	1.8	1.4	3.2	2.7	3.2	2.6	3.0	1.6	1000	2.6	0.51	0.55
15	1.7	1.4	3.1	2.7	3.0	2.4	3.3	1.7	187	2.3	0.48	0.54
16	2.0	1.4	3.1	2.7	2.9	2.5	3.5	2.5	97	2.1	0.50	0.59
17	2.1	1.4	3.0	2.7	3.0	2.4	3.3	2.4	69	2.0	0.51	0.53
18	2.2	1.4	2.8	2.8	3.0	2.4	3.2	2.2	56	1.8	0.52	0.54
19	2.3	1.5	2.9	2.8	2.9	2.9	3.0	2.1	54	1.7	0.50	0.58
20	2.3	1.5	2.7	2.8	2.9	3.3	2.7	2.0	51	1.5	0.51	0.63
21	2.4	1.4	2.6	2.8	2.9	3.3	2.5	1.9	52	1.4	0.55	0.71
22	2.3	1.4	2.5	2.7	2.9	3.3	2.5	1.8	39	1.2	0.55	0.63
23	2.7	1.4	2.9	2.7	3.0	3.1	2.7	1.8	32	1.1	0.52	0.62
24	2.7	1.3	3.0	2.8	2.8	3.6	2.7	1.8	27	0.97	0.50	0.61
25	2.4	1.2	3.1	2.8	2.9	3.7	2.7	2.0	23	0.87	0.47	0.62
26	2.4	1.3	3.1	2.8	3.0	3.2	2.5	2.1	19	0.79	0.40	0.64
27	3.3	1.3	3.1	3.0	3.3	3.2	2.4	1.9	17	0.73	0.43	0.61
28	3.2	1.3	3.2	3.0	3.3	2.9	2.5	1.8	14	0.79	0.35	0.60
29	2.6	1.4	3.5	2.9	---	2.8	2.3	1.8	18	0.66	0.92	0.67
30	2.5	1.4	3.5	2.9	---	2.8	2.2	1.6	15	0.80	1.3	0.62
31	2.3	---	3.4	2.9	---	2.8	---	2.2	---	0.72	0.85	---
TOTAL	62.7	48.5	91.7	89.1	82.9	94.2	83.1	58.9	1793.6	102.83	17.62	17.95
MEAN	2.02	1.62	2.96	2.87	2.96	3.04	2.77	1.90	59.8	3.32	0.57	0.60
MAX	3.3	2.3	3.6	3.2	3.3	3.7	3.5	2.5	1000	12	1.3	0.80
MIN	1.1	1.2	1.6	2.7	2.6	2.4	2.2	1.5	1.5	0.66	0.35	0.49
AC-FT	124	96	182	177	164	187	165	117	3560	204	35	36
CFSM	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.13	0.01	0.00	0.00
IN.	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.14	0.01	0.00	0.00

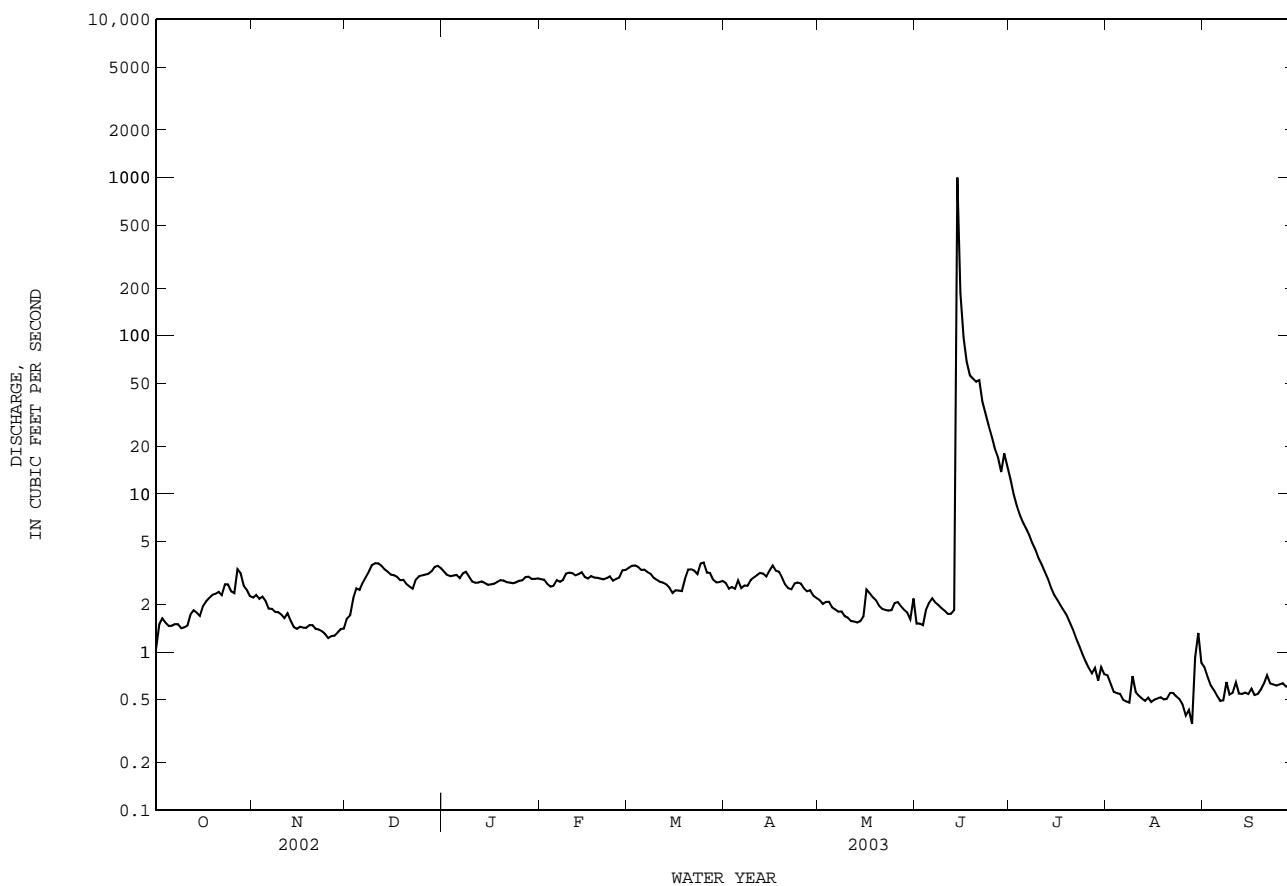
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2003hz, BY WATER YEAR (WY)

	MEAN	6.35	5.47	3.62	3.85	4.72	7.11	10.8	17.7	17.5	7.62	7.49	12.9
MAX	167	112	14.6	11.8	11.0	53.0	109	124	206	82.7	77.6	323	
(WY)	1969	1972	1997	1969	1997	1974	1999	1979	1965	1967	1965	1996	
MIN	0.10	0.50	0.60	0.55	0.60	1.10	0.94	0.35	0.12	0.026	0.000	0.21	
(WY)	1965	1995	1995	1986	1986	1986	1986	2002	2002	2002	1964	1984	

07235000 Wolf Creek at Lipscomb, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1962 - 2003hz	
ANNUAL TOTAL	501.14		2543.10			
ANNUAL MEAN	1.37		6.97		8.76	
HIGHEST ANNUAL MEAN					30.5 1965	
LOWEST ANNUAL MEAN					1.06 2002	
HIGHEST DAILY MEAN	4.1	Feb 8	1000	Jun 14	5800	Sep 19 1996
LOWEST DAILY MEAN	0.00	May 22	0.35	Aug 28	0.00	May 24 1964
ANNUAL SEVEN-DAY MINIMUM	0.00	Jun 20	0.46	Aug 22	0.00	Jul 22 1964
MAXIMUM PEAK FLOW			2970	Jun 14	10300	Sep 19 1996
MAXIMUM PEAK STAGE			10.13	Jun 14	12.44	Sep 19 1996
ANNUAL RUNOFF (AC-FT)	994		5040		6350	
ANNUAL RUNOFF (CFSM)	0.003		0.015		0.018	
ANNUAL RUNOFF (INCHES)	0.04		0.20		0.25	
10 PERCENT EXCEEDS	2.9		3.5		11	
50 PERCENT EXCEEDS	1.4		2.4		2.5	
90 PERCENT EXCEEDS	0.00		0.57		0.50	

h See PERIOD OF RECORD paragraph.
 z Period of regulated streamflow.



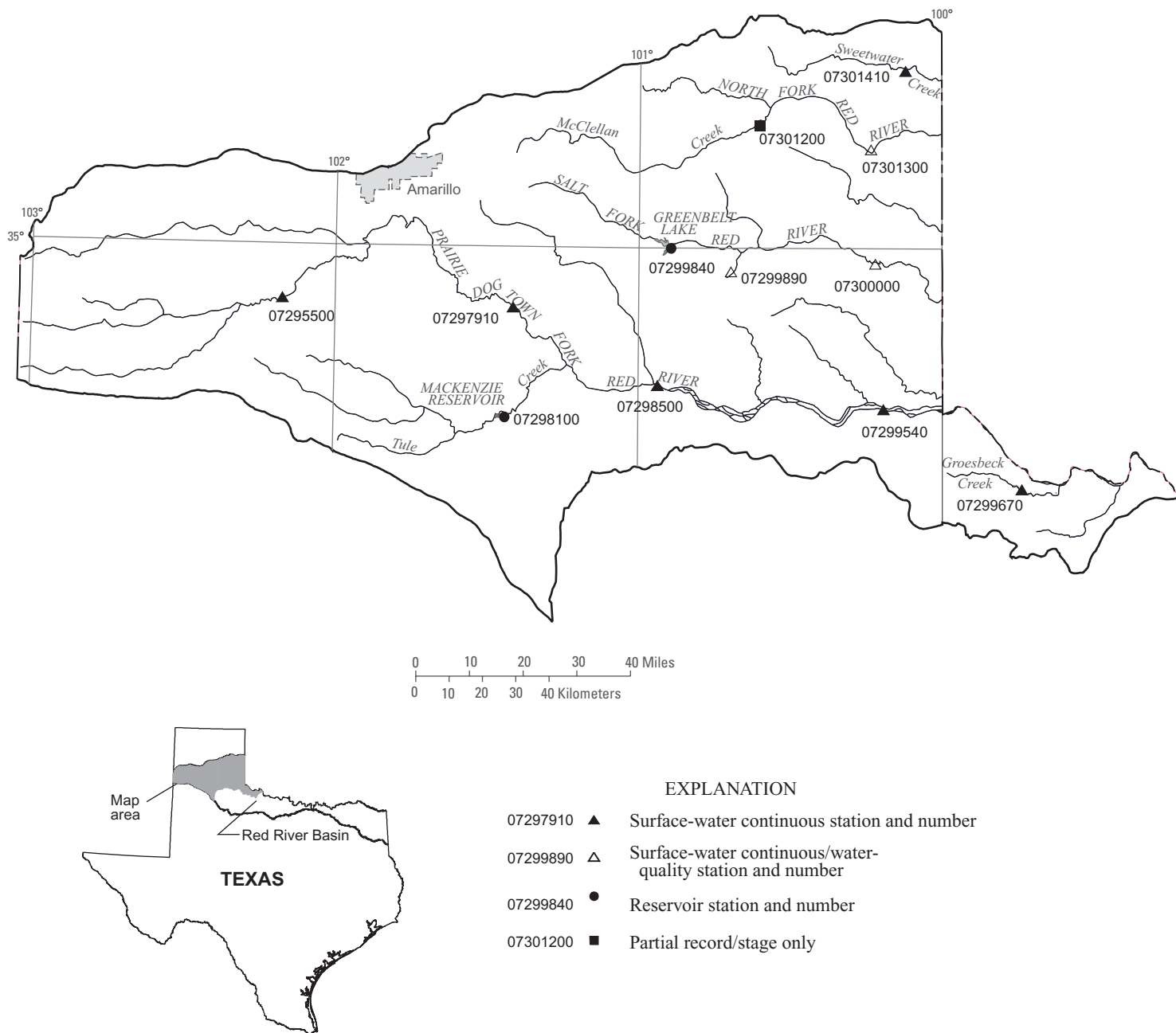


Figure 4.--Map showing location of gaging stations in the first section of the Red River Basin

07295500	Tierra Blanca Creek above Buffalo Lake near Umbarger, TX	60
07297910	Prairie Dog Town Fork Red River near Wayside, TX	62
07298100	MacKenzie Reservoir near Silverton, TX	64
07298500	Prairie Dog Town Fork Red River near Brice, TX	66
07299540	Prairie Dog Town Fork Red River near Childress, TX	68
07299670	Groesbeck Creek at State Highway 6 near Quanah, TX	70
07299840	Greenbelt Lake near Clarendon, TX	72
07299890	Lelia Lake Creek below Bell Creek near Hedley, TX	74
07300000	Salt Fork Red River near Wellington, TX	82
07300500*	Salt Fork Red River at Mangum, OK	86
07301200	McClellan Creek near McLean, TX	88
07301300	North Fork Red River near Shamrock, TX	90
07301410	Sweetwater Creek near Kelton, TX	94

* Station is not located within the illustrated map area.

RED RIVER BASIN

07295500 Tierra Blanca Creek above Buffalo Lake near Umbarger, TX

LOCATION.--Lat 34°51'01", long 102°10'32", Deaf Smith County, Hydrologic Unit 11120101, on left bank, 22 ft upstream from a 90° V-notch wier, 8.4 mi, southwest of Umbarger, 9 mi upstream from Buffalo Lake Dam.

DRAINAGE AREA.--1,968 mi², of which 1,430 mi² is probably noncontributing.

PERIOD OF RECORD.--1938 to Nov. 1939 (occasional daily discharges), Dec. 1939 to Sept. 1954 published "at reservoir near Umbarger", Mar. 1967 to Sept. 1973, Oct. 2002 to current year.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 3,649.13 ft above NGVD of 1929. Satellite telemeter at site.

REMARKS.--Records good. Surface runoff represents inflow to Buffalo Lake.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	---	0.00	0.00	---	0.00	---	0.00	---	0.00	0.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MAX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2003h, BY WATER YEAR (WY)

MEAN	20.3	1.64	1.46	1.26	1.23	1.23	2.66	38.3	31.0	6.29	4.27	5.87
MAX	247	14.6	8.01	4.00	4.00	4.75	20.6	386	438	70.4	38.3	69.7
(WY)	1942	1942	1943	1942	1942	1942	1953	1941	1941	1950	1945	1971
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	1941	1948	1941	1971	1971	2003	1971	1973	1945	1945	1946	1943

SUMMARY STATISTICS

FOR 2003 WATER YEAR

WATER YEARS 1940 - 2003h

ANNUAL TOTAL	0.00		
ANNUAL MEAN	0.000		6.86
HIGHEST ANNUAL MEAN			27.2
LOWEST ANNUAL MEAN			0.000
HIGHEST DAILY MEAN	0.00	Oct 1	5830
LOWEST DAILY MEAN	0.00	Oct 1	0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	Oct 1	0.00
MAXIMUM PEAK FLOW	0.01	Aug 28	11300
MAXIMUM PEAK STAGE	1.46	Aug 28	
ANNUAL RUNOFF (AC-FT)	0.00		4970
10 PERCENT EXCEEDS	0.00		3.4
50 PERCENT EXCEEDS	0.00		0.60
90 PERCENT EXCEEDS	0.00		0.00

e Estimated

h See PERIOD OF RECORD paragraph.

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RED RIVER BASIN

07297910 Prairie Dog Town Fork Red River near Wayside, TX

LOCATION.--Lat 34°50'15", long 101°24'49", Armstrong County, Hydrologic Unit 11120103, on left bank at downstream side of bridge on State Highway 207, 13 mi northeast of Wayside, 26 mi south of Claude, and at mile 1,145.

DRAINAGE AREA.--4,211 mi², of which 3,281 mi² probably is noncontributing.

PERIOD OF RECORD.--Oct. 1967 to current year.

Water-quality records.--Specific conductance: Oct. 1969 to Sept. 1981. Water temperature: Oct. 1969 to Sept. 1981.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2,463.74 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. No known regulation. There are several small diversions upstream from station. Wastewater effluent is released into river above station by the city of Amarillo. No flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	19	15	12	8.7	7.2	5.9	4.0	0.68	11	0.03	0.45
2	157	18	15	12	8.6	6.0	5.8	4.4	0.64	9.8	0.03	0.33
3	70	18	16	14	7.3	6.4	5.8	4.2	34	8.5	0.03	0.22
4	33	17	14	11	7.9	6.4	5.2	3.9	1.7	7.4	0.03	0.16
5	24	18	14	11	8.2	6.8	4.5	3.1	83	6.2	0.02	0.12
6	19	19	16	10	6.5	7.5	4.6	2.8	342	5.3	0.38	0.08
7	14	19	16	11	6.0	6.6	4.3	4.2	59	4.6	0.11	0.05
8	15	20	14	12	7.4	5.7	5.5	3.4	36	4.0	0.00	0.11
9	160	20	15	10	8.3	5.5	5.4	3.1	37	3.7	0.00	0.03
10	19	19	15	10	7.8	5.0	5.8	2.5	53	3.1	0.00	45
11	14	18	14	8.6	8.9	5.9	4.8	2.8	31	2.7	0.00	316
12	12	18	14	8.1	8.5	5.9	5.1	e2.0	23	2.5	0.00	15
13	10	18	14	8.4	9.0	5.8	6.1	e1.1	31	2.0	0.00	9.8
14	10	17	15	9.6	9.4	5.6	5.0	1.1	130	1.6	0.00	7.8
15	9.4	16	15	10	7.5	5.6	7.4	11	44	1.3	0.00	6.8
16	9.0	16	14	8.9	8.1	5.5	7.2	23	29	1.1	0.00	6.5
17	9.0	17	14	9.9	8.5	5.0	7.0	5.0	24	0.99	0.00	5.6
18	9.4	15	13	11	7.6	4.7	8.6	2.1	20	0.89	0.00	4.7
19	8.5	15	12	11	7.4	6.1	6.0	1.8	81	0.78	0.00	4.5
20	8.3	15	12	11	7.7	4.8	4.7	1.5	428	0.63	0.00	4.6
21	8.7	16	12	9.8	8.3	6.0	4.3	1.3	1260	0.56	0.00	5.1
22	9.4	16	11	9.6	7.9	8.2	5.7	1.8	237	0.48	0.00	4.9
23	9.7	17	15	8.6	6.4	6.5	6.7	1.8	145	0.31	0.00	4.9
24	424	14	13	8.8	5.5	7.4	4.6	8.3	212	0.29	0.00	5.0
25	48	14	14	10	8.4	6.9	4.2	93	54	0.25	0.01	4.3
26	87	13	13	9.9	7.7	8.0	3.5	17	21	0.20	0.00	4.5
27	536	14	13	11	7.0	8.8	4.1	6.5	16	0.16	0.00	3.9
28	112	15	14	10	7.0	6.9	4.0	3.3	15	0.13	0.00	3.4
29	46	15	14	9.7	---	7.4	3.6	1.9	13	0.10	34	3.5
30	23	15	13	9.9	---	8.1	3.2	1.2	12	0.09	131	3.2
31	19	---	13	9.0	---	7.1	---	0.98	---	0.05	1.7	---
TOTAL	1945.4	501	432	315.8	217.5	199.3	158.6	224.08	3473.02	80.71	167.34	470.55
MEAN	62.8	16.7	13.9	10.2	7.77	6.43	5.29	7.23	116	2.60	5.40	15.7
MAX	536	20	16	14	9.4	8.8	8.6	93	1260	11	131	316
MIN	8.3	13	11	8.1	5.5	4.7	3.2	0.98	0.64	0.05	0.00	0.03
AC-FT	3860	994	857	626	431	395	315	444	6890	160	332	933

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2003, BY WATER YEAR (WY)

MEAN	27.0	12.0	6.31	5.97	5.59	9.04	24.6	60.0	55.9	28.8	79.6	24.5
MAX	175	147	20.3	24.7	19.0	48.9	448	603	304	207	1410	110
(WY)	1999	1999	1988	1988	1999	1998	1997	1999	1984	1996	1968	1969
MIN	0.000	0.066	0.099	0.30	0.16	0.34	0.17	0.13	0.47	0.000	0.12	0.000
(WY)	1976	1971	1971	1971	1976	1971	1978	1984	1998	1974	2000	1975

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

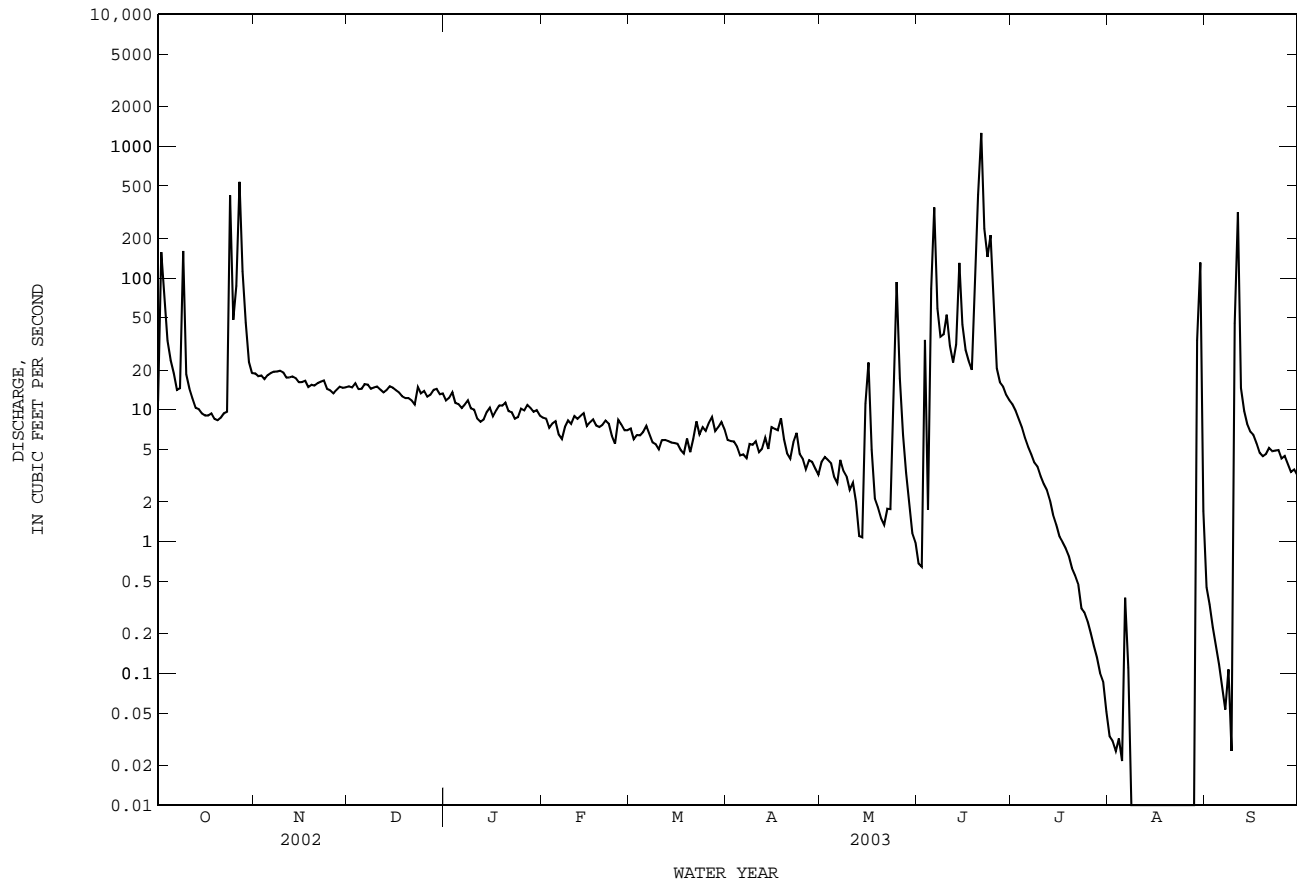
FOR 2003 WATER YEAR

WATER YEARS 1968 - 2003

ANNUAL TOTAL	8602.86	8185.30	
ANNUAL MEAN	23.6	22.4	28.4
HIGHEST ANNUAL MEAN			137 1968
LOWEST ANNUAL MEAN			1.90 1983
HIGHEST DAILY MEAN	666 Aug 10	1260 Jun 21	22700 Aug 29 1968
LOWEST DAILY MEAN	0.62 Aug 6	0.00 Aug 8	0.00 Jul 30 1968
ANNUAL SEVEN-DAY MINIMUM	0.81 Aug 3	0.00 Aug 8	0.00 Jul 30 1968
MAXIMUM PEAK FLOW		5420 Sep 11	58000 Aug 28 1968
MAXIMUM PEAK STAGE		9.67 Sep 11	13.00 Aug 28 1968
ANNUAL RUNOFF (AC-FT)	17060	16240	20610
10 PERCENT EXCEEDS	22	23	24
50 PERCENT EXCEEDS	9.6	7.9	2.6
90 PERCENT EXCEEDS	1.5	0.15	0.08

e Estimated

07297910 Prairie Dog Town Fork Red River near Wayside, TX--Continued



RED RIVER BASIN

07298100 MacKenzie Reservoir near Silverton, TX

LOCATION.--Lat 34°32'43", long 101°26'16", Briscoe County, Hydrologic Unit 11120104, at upstream side of dam on Tule Creek, 0.9 mi upstream from Rock Creek, 9.5 mi northwest of Silverton, and 22.7 mi upstream from mouth.

DRAINAGE AREA.--1,053 mi², of which 904 mi² probably is noncontributing.

PERIOD OF RECORD.--Oct. 1974 to Sept. 1986, Apr. 1999 to Sept. 2002 (daily mean contents). Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The reservoir is formed by a rolled earthfill dam 2,100 ft long. The dam was completed in Aug. 1974, and storage began in June 1974. The uncontrolled spillway is an open-cut channel just beyond the right end of the dam. The service spillway is an uncontrolled ogee-type weir across a concrete chute at the right end of the dam. A 30-in gated outlet concrete pipe discharges into a valve vault at the downstream toe of the dam and then into the creek bed downstream. The dam is owned by MacKenzie Municipal Water Authority and the water is used for municipal, industrial, and recreational purposes by the cities of Floydada, Silverton, and Tulia. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	3,127
Crest of spillway.....	3,111
Crest of spillway with ogee weir	3,100
Lowest gated outlet (invert).....	2,961

COOPERATION.--Area-capacity curves developed by Freese and Nichols, Inc.

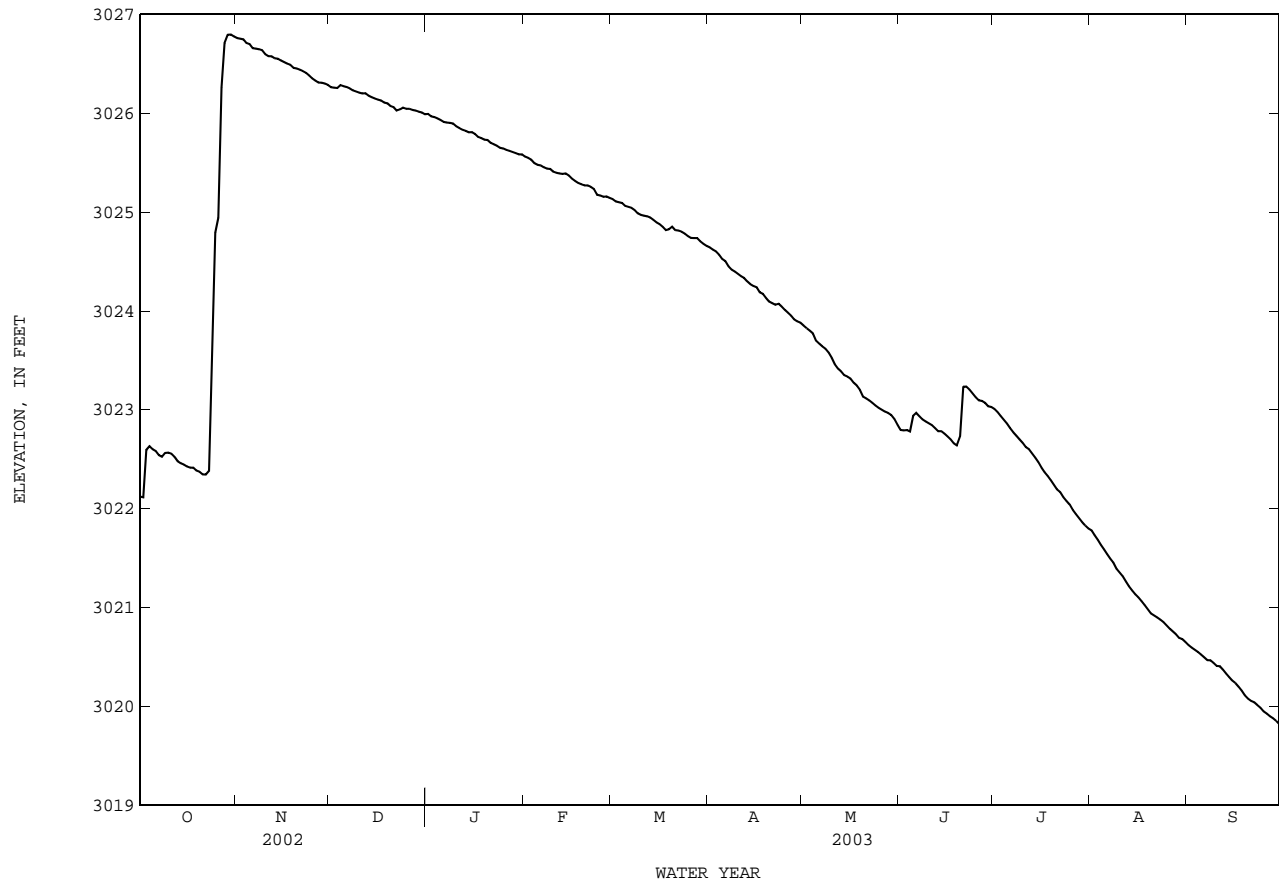
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 23,950 acre-ft, Oct. 15, 1986, elevation, 3,065.08 ft; minimum contents, 598 acre-ft, Oct. 1, 1974, elevation, 2,980.61 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 3,026.84 ft, Oct. 29; minimum elevation, 3,019.79 ft, Sept. 30.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3022.12	3026.76	3026.26	3025.99	3025.56	3025.13	3024.64	3023.85	3022.80	3023.01	3021.78	3020.62
2	3022.11	3026.75	3026.26	3025.97	3025.55	3025.11	3024.62	3023.82	3022.79	3022.98	3021.73	3020.59
3	3022.59	3026.75	3026.26	3025.96	3025.53	3025.10	3024.60	3023.80	3022.80	3022.94	3021.68	3020.57
4	3022.63	3026.71	3026.29	3025.95	3025.50	3025.09	3024.57	3023.77	3022.78	3022.90	3021.64	3020.55
5	3022.60	3026.70	3026.27	3025.93	3025.48	3025.06	3024.53	3023.70	3022.94	3022.86	3021.59	3020.52
6	3022.58	3026.66	3026.27	3025.91	3025.47	3025.05	3024.51	3023.67	3022.97	3022.82	3021.54	3020.49
7	3022.54	3026.66	3026.25	3025.91	3025.45	3025.04	3024.45	3023.64	3022.93	3022.77	3021.49	3020.47
8	3022.53	3026.65	3026.23	3025.90	3025.44	3025.02	3024.42	3023.62	3022.90	3022.74	3021.45	3020.47
9	3022.56	3026.64	3026.22	3025.90	3025.44	3024.99	3024.40	3023.58	3022.88	3022.70	3021.39	3020.44
10	3022.57	3026.60	3026.21	3025.87	3025.41	3024.97	3024.38	3023.53	3022.86	3022.67	3021.35	3020.41
11	3022.56	3026.58	3026.20	3025.85	3025.40	3024.97	3024.35	3023.46	3022.84	3022.62	3021.32	3020.41
12	3022.52	3026.58	3026.20	3025.83	3025.39	3024.96	3024.34	3023.42	3022.81	3022.60	3021.26	3020.37
13	3022.48	3026.56	3026.18	3025.82	3025.39	3024.95	3024.30	3023.39	3022.78	3022.56	3021.21	3020.33
14	3022.46	3026.55	3026.16	3025.81	3025.39	3024.92	3024.27	3023.35	3022.78	3022.52	3021.17	3020.30
15	3022.45	3026.53	3026.15	3025.81	3025.37	3024.90	3024.25	3023.34	3022.76	3022.47	3021.13	3020.26
16	3022.43	3026.52	3026.14	3025.79	3025.34	3024.88	3024.24	3023.32	3022.73	3022.41	3021.10	3020.24
17	3022.41	3026.50	3026.13	3025.76	3025.32	3024.85	3024.19	3023.27	3022.70	3022.37	3021.06	3020.20
18	3022.41	3026.49	3026.11	3025.75	3025.30	3024.82	3024.17	3023.24	3022.66	3022.33	3021.02	3020.16
19	3022.39	3026.46	3026.10	3025.73	3025.28	3024.83	3024.13	3023.20	3022.64	3022.29	3020.98	3020.11
20	3022.37	3026.45	3026.07	3025.73	3025.27	3024.85	3024.09	3023.13	3022.73	3022.24	3020.94	3020.08
21	3022.35	3026.44	3026.06	3025.70	3025.27	3024.82	3024.08	3023.11	3023.23	3022.20	3020.92	3020.05
22	3022.34	3026.43	3026.03	3025.69	3025.26	3024.81	3024.06	3023.09	3023.24	3022.17	3020.90	3020.04
23	3022.38	3026.41	3026.04	3025.67	3025.23	3024.80	3024.07	3023.07	3023.20	3022.11	3020.88	3020.01
24	3023.70	3026.38	3026.06	3025.65	3025.18	3024.78	3024.05	3023.04	3023.17	3022.08	3020.85	3019.98
25	3024.79	3026.35	3026.05	3025.64	3025.17	3024.76	3024.01	3023.02	3023.13	3022.04	3020.82	3019.95
26	3024.94	3026.33	3026.05	3025.63	3025.16	3024.74	3023.98	3023.00	3023.10	3021.99	3020.78	3

07298100 MacKenzie Reservoir near Silverton, TX--Continued



RED RIVER BASIN

07298500 Prairie Dog Town Fork Red River nr Brice, TX

LOCATION.--Lat 34°37'40", long 100°56'25", Hall County, Hydrologic Unit 11120105 on left upstream corner of bridge on State Highway 70, 0.5 mi downstream from Battle Creek, 1.5 mi upstream from Mulberry Creek, and 6 mi southwest of Brice, TX.

DRAINAGE AREA.--6,082 mi², of which 4,501 mi² probably is noncontributing.

PERIOD OF RECORD.--Jan. 1939 to June 1944, Sept. 1949 to July 1959, Dec. 1959 to May 1963. Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage 2,051.30 ft above NGVD of 1929. Dec. 14, 1938, to June 30, 1944, at site 2 mi upstream and a datum 24.71 ft higher than present, Aug. 10, 1949 to July 31, 1951, at site 2 mi upstream and a datum 18.71 ft higher than present, Nov. 30, 1959 to May 1963 at different datum. Satellite telemeter at station.

REMARKS.-- Records fair except those for estimated daily discharges, which are poor. There are several small diversions upstream from gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	77	11	13	6.4	6.6	2.3	0.01	2.3	14	0.00	2.1
2	0.02	83	10	12	5.0	6.1	0.76	0.02	212	8.6	0.00	0.22
3	471	70	24	9.8	3.4	5.5	0.39	0.01	56	5.6	0.00	0.00
4	6.3	73	48	10	3.1	3.4	0.31	0.01	53	3.1	0.00	0.00
5	1.5	61	29	11	3.0	2.3	0.34	0.00	648	e1.7	0.00	0.00
6	1.8	51	19	8.1	4.3	1.8	0.26	0.00	2270	e1.0	0.00	0.00
7	2.6	43	18	8.1	5.0	1.6	0.18	0.00	208	e0.60	0.00	0.00
8	3.1	40	18	8.2	5.5	1.9	0.13	0.00	93	e0.12	0.00	0.00
9	102	34	16	7.8	5.7	1.6	0.19	0.00	74	e0.06	0.00	0.00
10	0.60	27	17	7.1	4.7	1.1	0.18	0.00	61	e0.03	0.00	0.00
11	1.3	31	15	6.7	4.5	0.62	0.19	0.00	69	0.02	0.00	548
12	2.5	35	13	6.8	4.0	0.58	0.16	0.00	45	0.02	0.00	4.6
13	3.1	36	12	7.3	5.1	0.46	0.25	0.00	37	0.02	0.00	0.02
14	2.2	24	11	6.2	6.7	0.48	0.14	0.00	206	0.02	0.00	0.00
15	2.1	23	11	5.1	5.5	0.36	0.33	0.00	138	0.02	0.00	0.00
16	2.3	21	13	4.5	4.2	0.46	0.02	0.00	75	0.01	0.00	0.00
17	2.2	21	12	5.6	3.4	0.45	0.06	0.00	46	0.02	0.00	0.00
18	2.9	15	10	5.5	3.9	0.19	0.06	0.00	34	0.01	0.00	0.00
19	4.3	12	6.9	6.7	4.6	0.74	0.40	0.00	36	0.00	0.00	0.00
20	5.8	9.6	6.8	8.1	5.0	1.8	0.02	0.01	162	0.00	0.00	0.00
21	4.7	8.7	6.3	7.2	5.4	2.5	0.02	0.00	2890	0.00	0.00	0.00
22	4.3	11	6.1	7.2	6.0	3.5	1.1	0.00	e1450	0.00	0.00	0.00
23	10	10	26	6.4	4.9	6.9	1.3	0.00	e918	0.00	0.00	0.00
24	1390	10	48	4.8	2.8	8.7	0.12	6.9	e516	0.00	0.00	0.00
25	345	9.4	28	6.1	2.9	4.3	0.07	436	e258	0.00	0.00	0.00
26	182	8.5	20	9.6	2.7	2.5	0.05	16	105	0.00	0.00	0.00
27	1590	8.4	18	12	4.6	1.5	0.05	8.0	79	0.00	0.00	0.00
28	213	9.8	15	9.9	6.3	9.2	0.03	3.3	34	0.00	0.00	0.00
29	83	11	15	7.6	---	11	0.02	1.6	21	0.00	14	0.00
30	56	12	13	6.8	---	7.2	0.01	1.2	15	0.00	156	0.00
31	55	---	12	6.0	---	5.7	---	1.2	---	0.00	14	---
TOTAL	4550.62	885.4	528.1	241.2	128.6	101.04	9.44	474.26	10811.3	34.95	184.00	554.94
MEAN	147	29.5	17.0	7.78	4.59	3.26	0.31	15.3	360	1.13	5.94	18.5
MAX	1590	83	48	13	6.7	11	2.3	436	2890	14	156	548
MIN	0.00	8.4	6.1	4.5	2.7	0.19	0.01	0.00	2.3	0.00	0.00	0.00
AC-FT	9030	1760	1050	478	255	200	19	941	21440	69	365	1100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2003h, BY WATER YEAR (WY)

MEAN	192	25.9	11.1	5.46	2.17	3.19	19.5	194	245	124	62.2	68.2
MAX	1038	102	36.2	21.3	7.85	12.6	132	1329	1231	384	144	239
(WY)	1942	1941	1943	1944	1944	1942	1943	1951	1941	1950	1939	1950
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.90	41.6	0.000	0.000	0.000
(WY)	1940	1940	1940	1940	1939	1939	1944	1962	1940	1940	1943	1939

SUMMARY STATISTICS

FOR 2003 WATER YEAR

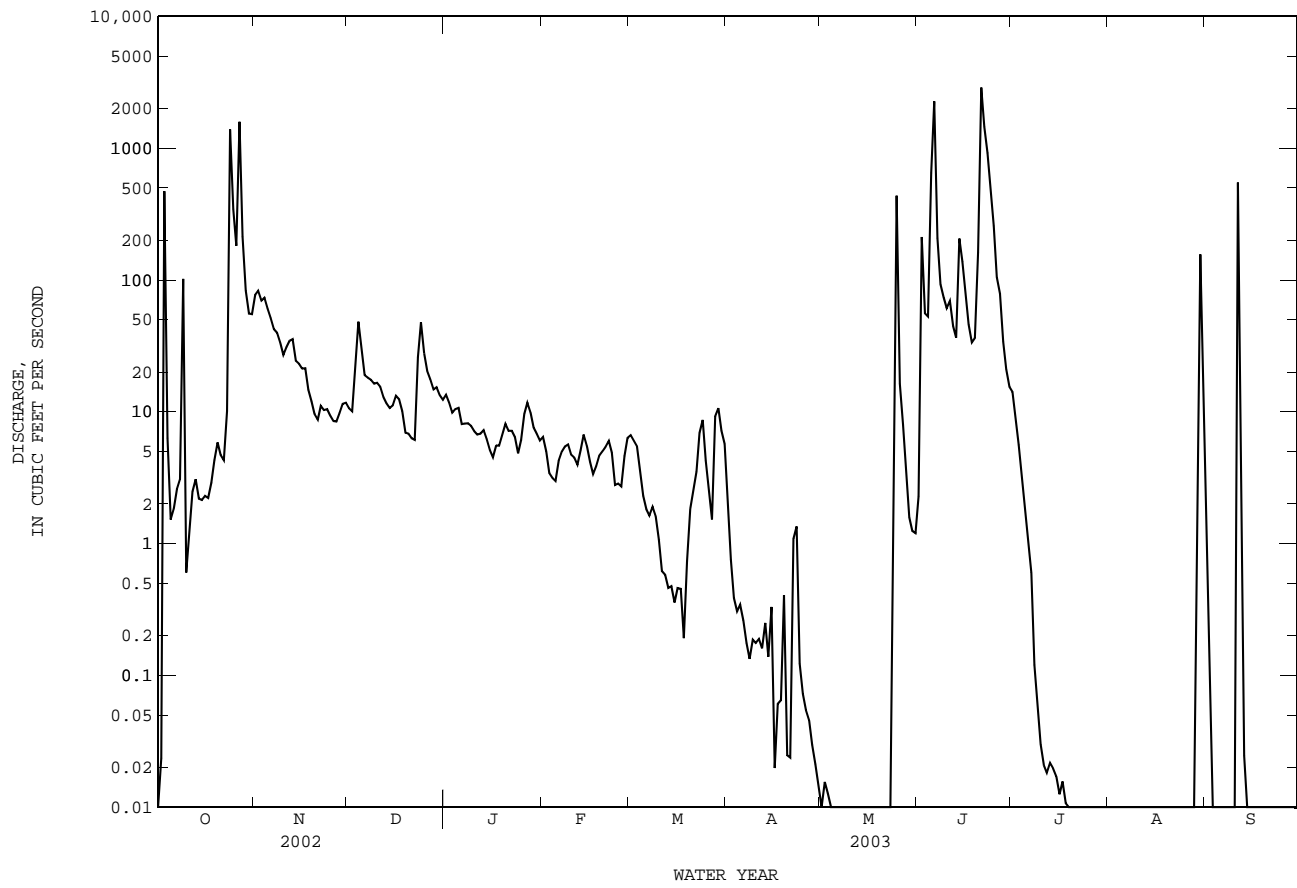
WATER YEARS 1939 - 2003h

ANNUAL TOTAL	18503.85		
ANNUAL MEAN	50.7	80.7	
HIGHEST ANNUAL MEAN		171	1941
LOWEST ANNUAL MEAN		18.7	1940
HIGHEST DAILY MEAN	2890	Jun 21	14300 May 17 1951
LOWEST DAILY MEAN	0.00	Oct 1	0.00 Jan 1 1939
ANNUAL SEVEN-DAY MINIMUM	0.00	May 5	0.00 Jan 1 1939
MAXIMUM PEAK FLOW	6200	Jun 6	49000 Jun 7 1960
MAXIMUM PEAK STAGE	7.76	Jun 6	12.20 Jun 7 1960
ANNUAL RUNOFF (AC-FT)	36700		58440
10 PERCENT EXCEEDS	56		95
50 PERCENT EXCEEDS	3.4		0.00
90 PERCENT EXCEEDS	0.00		0.00

e Estimated

h See PERIOD OF RECORD paragraph.

07298500 Prairie Dog Town Fork Red River nr Brice, TX--Continued



07299540 Prairie Dog Town Fork Red River near Childress, TX

LOCATION.--Lat 34°34'09", long 100°11'37", Childress County, Hydrologic Unit 11120105, on left bank at downstream side of bridge on U.S. Highways 62 and 83, 3.1 mi downstream from Salt Creek, 10.0 mi north of Childress, and at mile 1,061.

DRAINAGE AREA.--7,725 mi², of which 4,767 mi² probably is noncontributing.

PERIOD OF RECORD.--Apr. 1965 to current year.

Water-quality records.--Chemical data: Oct. 1968 to Sept. 1982, Oct. 1994 to Sept. 1997. Pesticide data: Oct. 1994 to Sept. 1997. Specific conductance: Oct. 1968 to Sept. 1982, Oct. 1994 to Sept. 1997. Water temperature: Oct. 1968 to Sept. 1982, Oct. 1994 to Sept. 1997.

GAGE.--Water-stage recorder. Datum of gage is 1,628.4 ft above NGVD of 1929 (from Texas Department of Transportation benchmark). From Dec. 1964 to Mar. 1965, gage heights from water-stage recorder were not published. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Since installation of gage in Dec. 1964, at least 10% of contributing drainage area has been regulated. Many small diversions upstream from station. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1899, 16.9 ft in May or June 1957, from information by local residents and Texas Department of Transportation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	131	52	36	15	29	4.1	5.8	2.3	53	e1.2	124
2	6.7	223	59	31	12	28	3.5	7.1	3.9	25	e1.1	51
3	614	158	620	26	10	21	3.7	8.8	178	11	e1.2	21
4	351	150	219	22	9.9	19	3.5	7.3	51	6.0	e1.2	7.7
5	53	114	74	23	11	16	4.3	3.9	70	e4.1	e1.1	4.6
6	12	80	83	21	21	13	6.6	4.3	2410	e3.1	e1.2	3.1
7	12	65	54	21	21	13	4.7	5.6	626	e2.9	e1.1	2.5
8	90	47	44	20	17	11	4.0	6.4	135	e3.1	e1.1	2.4
9	28	27	47	16	36	9.5	4.2	4.6	104	e3.0	e1.2	2.2
10	494	26	45	14	30	9.8	4.1	5.2	81	e2.6	e1.2	2.0
11	63	44	39	12	18	12	4.1	3.9	57	e2.4	e1.1	544
12	14	41	31	13	16	13	4.4	5.2	34	e2.4	e1.2	1550
13	12	33	25	14	20	13	4.6	6.1	28	e2.3	e1.2	151
14	12	29	21	13	21	11	4.0	7.0	23	e2.1	e1.2	66
15	11	36	20	14	17	10	46	8.3	246	e2.1	e1.3	24
16	9.6	34	18	12	13	11	50	6.4	141	e2.0	e1.2	9.0
17	9.0	33	17	13	12	11	7.0	6.1	94	e2.1	e1.1	2.8
18	13	26	13	12	14	9.1	4.2	6.2	53	e1.9	e1.1	1.5
19	12	27	11	12	16	13	169	5.8	61	e1.8	e1.1	1.1
20	11	26	11	11	16	15	17	10	294	e1.8	0.86	1.4
21	10	28	8.7	11	17	13	7.5	27	4200	e1.8	0.45	1.5
22	12	28	9.6	11	17	16	17	16	1240	e1.7	0.45	1.9
23	14	30	144	9.7	15	36	16	8.1	183	e1.6	0.49	1.7
24	481	31	113	11	13	18	9.9	8.9	110	e1.6	0.48	1.1
25	2520	31	83	11	10	10	7.4	2460	54	e1.6	0.46	1.3
26	101	30	125	15	14	7.6	5.8	558	205	e1.4	0.54	2.3
27	285	35	92	16	16	16	5.1	26	117	e1.4	0.45	1.4
28	1100	43	68	13	21	35	5.5	8.7	72	e1.4	0.39	1.8
29	627	48	60	14	---	16	5.6	3.2	219	e1.3	1.4	1.9
30	183	49	49	16	---	8.6	6.6	0.91	162	3.1	642	2.5
31	122	---	43	16	---	6.0	---	0.90	---	1.3	442	---
TOTAL	7287.5	1703	2298.3	499.7	468.9	469.6	439.4	3241.71	11254.2	152.9	1112.07	2588.7
MEAN	235	56.8	74.1	16.1	16.7	15.1	14.6	105	375	4.93	35.9	86.3
MAX	2520	223	620	36	36	36	169	2460	4200	53	642	1550
MIN	5.2	26	8.7	9.7	9.9	6.0	3.5	0.90	2.3	1.3	0.39	1.1
AC-FT	14450	3380	4560	991	930	931	872	6430	22320	303	2210	5130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2003, BY WATER YEAR (WY)

MEAN	101	51.4	37.7	37.6	40.8	61.3	108	258	353	95.1	154	138
MAX	1279	377	265	296	358	500	735	1835	1413	367	1086	470
(WY)	1987	1987	1993	1993	1998	1998	1997	1978	1965	1972	1968	1966
MIN	3.14	1.85	2.27	2.05	2.00	1.72	2.95	1.18	3.46	0.66	1.56	3.39
(WY)	1985	1978	1983	1971	1974	1966	1978	1988	1994	1974	1980	1984

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

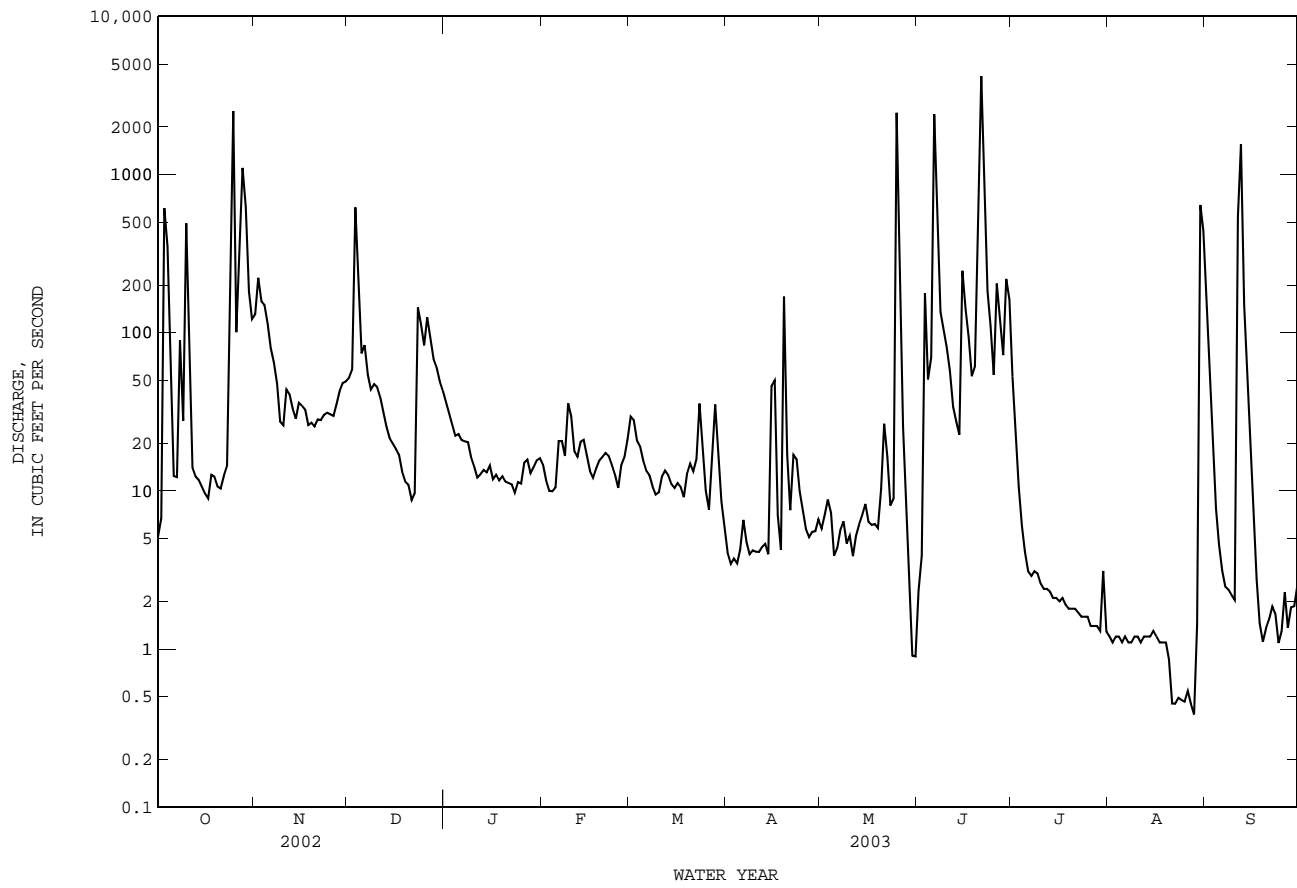
FOR 2003 WATER YEAR

WATER YEARS 1965 - 2003

ANNUAL TOTAL	28208.91	31515.98	
ANNUAL MEAN	77.3	86.3	
HIGHEST ANNUAL MEAN			118
LOWEST ANNUAL MEAN			27.6
HIGHEST DAILY MEAN	2520	Oct 25	34200
LOWEST DAILY MEAN	0.07	Aug 18	0.00
ANNUAL SEVEN-DAY MINIMUM	2.3	Aug 14	0.00
MAXIMUM PEAK FLOW			12500
MAXIMUM PEAK STAGE			10.40
ANNUAL RUNOFF (AC-FT)	55950	62510	85750
10 PERCENT EXCEEDS	209	133	174
50 PERCENT EXCEEDS	21	13	9.5
90 PERCENT EXCEEDS	5.2	1.4	1.2

e Estimated

07299540 Prairie Dog Town Fork Red River near Childress, TX--Continued



RED RIVER BASIN

07299670 Groesbeck Creek at State Highway 6 near Quanah, TX

LOCATION.--Lat 34°21'16", long 99°44'24", Hardeman County, Hydrologic Unit 11130101, near left bank at downstream side of bridge on State Highway 6, 2.0 mi downstream from confluence of North and South Groesbeck Creeks, 4.0 mi north of Quanah, and 9.0 mi upstream from mouth.

DRAINAGE AREA.--303 mi².

PERIOD OF RECORD.--Nov. 1961 to current year. Prior to Oct. 1974, published as "Groesbeck Creek at State Highway 283".

GAGE.--Water-stage recorder. Datum of gage is 1,425.69 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records fair. No known regulation. There are several diversions upstream from station for farm and ranch use and for a gypsum plant. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--The highest stage known occurred in June 1891, and the highest stage since 1891 occurred in Sept. 1929, stages unknown. Other large floods are reported to have occurred in 1912, 1936, 1946, 1951, 1955, and 1957, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.6	13	12	13	13	14	13	14	15	115	10	160
2	9.6	13	12	13	13	14	14	13	15	28	9.8	27
3	9.9	13	14	13	13	13	14	13	15	18	10	19
4	9.9	12	15	13	13	13	13	14	14	16	10	18
5	9.7	12	14	14	13	13	13	13	14	14	9.7	16
6	9.8	11	13	13	14	13	14	13	17	13	9.7	15
7	10	11	12	14	13	13	13	13	18	12	9.5	15
8	15	11	12	14	13	13	13	13	16	12	9.4	14
9	18	12	12	14	13	13	13	13	15	12	10	14
10	14	11	12	13	13	14	14	13	14	12	9.9	13
11	13	11	12	14	13	14	14	12	14	12	9.7	131
12	12	12	12	14	13	14	14	12	14	12	9.5	34
13	12	12	12	14	13	14	14	13	13	11	9.5	14
14	12	12	12	14	e14	14	14	13	13	11	9.4	12
15	12	12	12	14	e14	14	13	13	14	11	9.6	10
16	12	13	13	14	e14	15	14	13	13	11	9.6	9.9
17	12	13	13	14	e13	14	13	13	13	11	9.7	9.4
18	12	13	13	14	e13	14	13	13	13	11	9.5	9.3
19	12	13	13	14	13	14	35	13	13	11	9.5	9.3
20	12	13	13	14	13	14	25	13	14	11	9.9	9.3
21	12	12	13	13	13	14	16	14	22	11	9.9	9.2
22	12	12	13	13	13	14	15	14	36	11	9.9	10
23	12	13	15	13	13	14	15	14	28	11	10	11
24	14	13	16	13	13	14	14	14	19	11	10	10
25	14	12	15	13	13	14	14	55	16	11	9.4	10
26	13	12	14	13	13	14	14	153	14	10	9.0	9.9
27	13	12	14	13	14	14	14	150	13	10	8.9	9.7
28	15	12	14	13	14	14	14	42	13	10	8.9	9.9
29	16	12	14	13	---	14	14	22	16	10	9.1	9.9
30	14	12	14	13	---	14	14	17	104	10	11	9.8
31	13	---	13	13	---	13	---	15	---	11	975	---
TOTAL	384.5	365	408	417	370	427	447	770	568	480	1265.0	658.6
MEAN	12.4	12.2	13.2	13.5	13.2	13.8	14.9	24.8	18.9	15.5	40.8	22.0
MAX	18	13	16	14	14	15	35	153	104	115	975	160
MIN	9.6	11	12	13	13	13	13	12	13	10	8.9	9.2
AC-FT	763	724	809	827	734	847	887	1530	1130	952	2510	1310

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2003, BY WATER YEAR (WY)

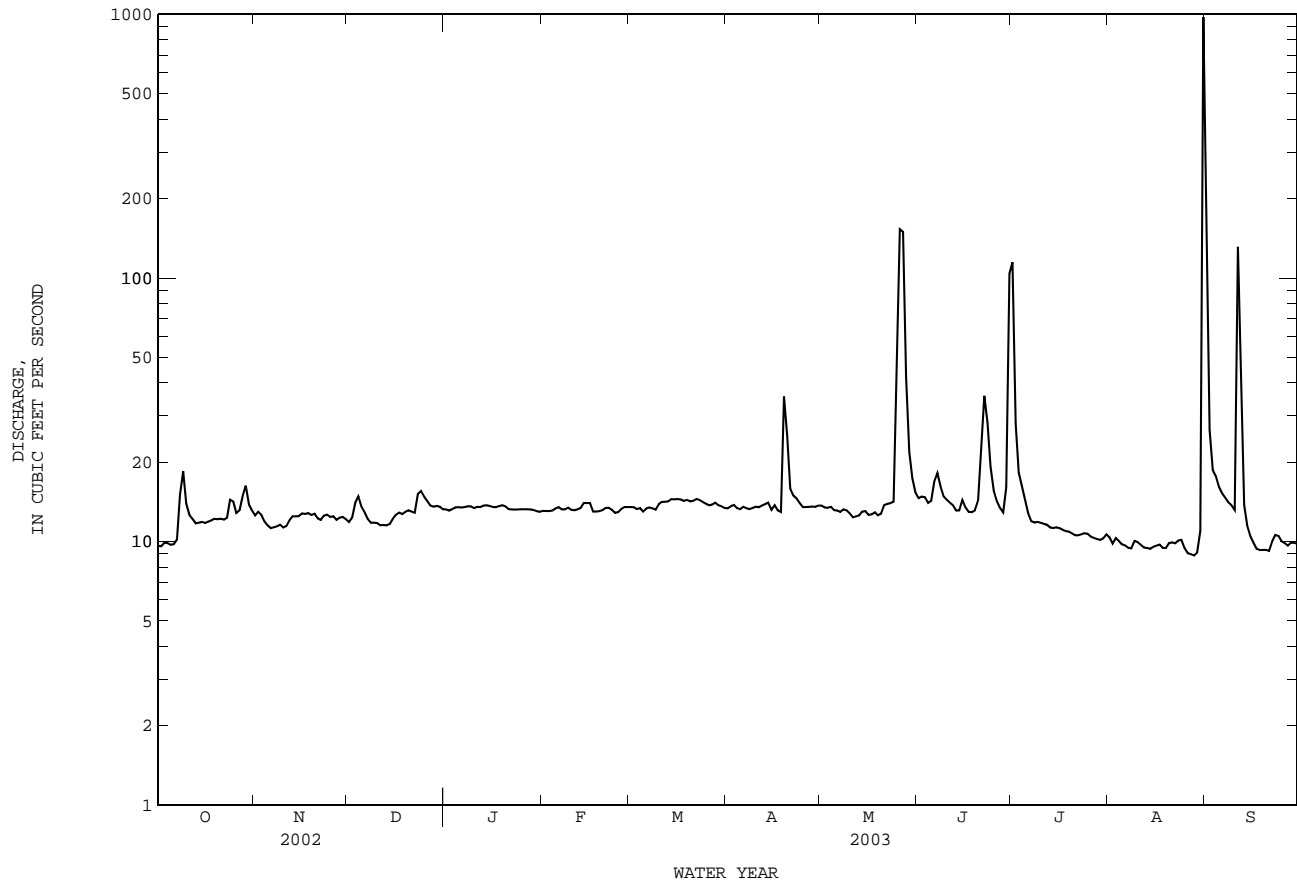
	MEAN	32.2	12.2	10.6	9.59	11.4	13.9	21.0	30.4	53.7	21.7	26.8	45.0
MAX	393	41.3	43.0	26.4	62.0	91.2	271	163	502	228	545	286	
(WY)	1984	2002	1992	2001	1997	1998	1997	1987	1995	1996	1995	1974	
MIN	0.68	1.33	1.48	1.33	1.35	1.18	1.12	1.74	1.54	0.10	0.000	0.39	
(WY)	1969	1969	1969	1971	1971	1971	1969	1967	1967	1964	1964	1968	

SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1962 - 2003

ANNUAL TOTAL	4465.8	6560.1	
ANNUAL MEAN	12.2	18.0	23.7
HIGHEST ANNUAL MEAN			112
LOWEST ANNUAL MEAN			2.97
HIGHEST DAILY MEAN	326	Jul 8	9570
LOWEST DAILY MEAN	1.9	May 9	8.9
ANNUAL SEVEN-DAY MINIMUM	2.3	May 4	9.3
MAXIMUM PEAK FLOW			1830
MAXIMUM PEAK STAGE			15.57
ANNUAL RUNOFF (AC-FT)	8860	13010	17150
10 PERCENT EXCEEDS	15	15	26
50 PERCENT EXCEEDS	10	13	7.7
90 PERCENT EXCEEDS	2.9	9.9	1.7

e Estimated

07299670 Groesbeck Creek at State Highway 6 near Quanah, TX--Continued



RED RIVER BASIN

07299840 Greenbelt Lake near Clarendon, TX

LOCATION.--Lat 35°00'02", long 100°53'40", Donley County, Hydrologic Unit 11120201, on upstream side near right end of dam on Salt Fork Red River and 4.3 mi north of Clarendon.

DRAINAGE AREA.--457 mi², of which 191 mi² probably is noncontributing.

PERIOD OF RECORD.--Aug. 1967 to Sept. 2002 (daily mean contents). Oct. 2002 to current year. Prior to Oct. 1973, published as "Greenbelt Reservoir".

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Gage-height telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 5,800 ft long. Deliberate impoundment began Dec. 5, 1966, and the dam was completed in Aug. 1967. The dam is the property of Greenbelt Municipal and Industrial Water Authority and was built to impound water for municipal and industrial uses by the cities of Childress, Clarendon, Crowell, Hedley, and Quanah. The spillway is an uncontrolled open cut through natural ground, 1,450 ft wide and located at the left end of dam, designed to discharge 184,000 ft³/s at an elevation of 2,684.0 ft. A morning-glory-type drop inlet with a 26-foot 8.5-inch-diameter opening at crest discharges into a 7- by 7-foot concrete conduit. The outlet works consists of a 36-inch pipe that is controlled by two 20-inch valves that control the discharge into a stilling basin and to a water treatment plant. The capacity table, dated Apr. 1964, is based on U.S. Geological Survey topographic maps dated 1962. Data regarding the dam are given in the following table.

	Elevation (feet)
Top of dam.....	2,686.0
Design flood.....	2,683.0
Crest of spillway.....	2,674.0
Crest of morning-glory-type drop inlet.....	2,663.7
Lowest gated outlet (invert).....	2,597.0

COOPERATION.-- Capacity table provided by Greenbelt Municipal and Industrial Water Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 44,650 acre-ft, June 26-28, 1975, elevation, 2,655.71 ft; minimum contents after initial filling, 10,940 acre-ft, Aug. 11, 1968, elevation, 2,625.1 ft.

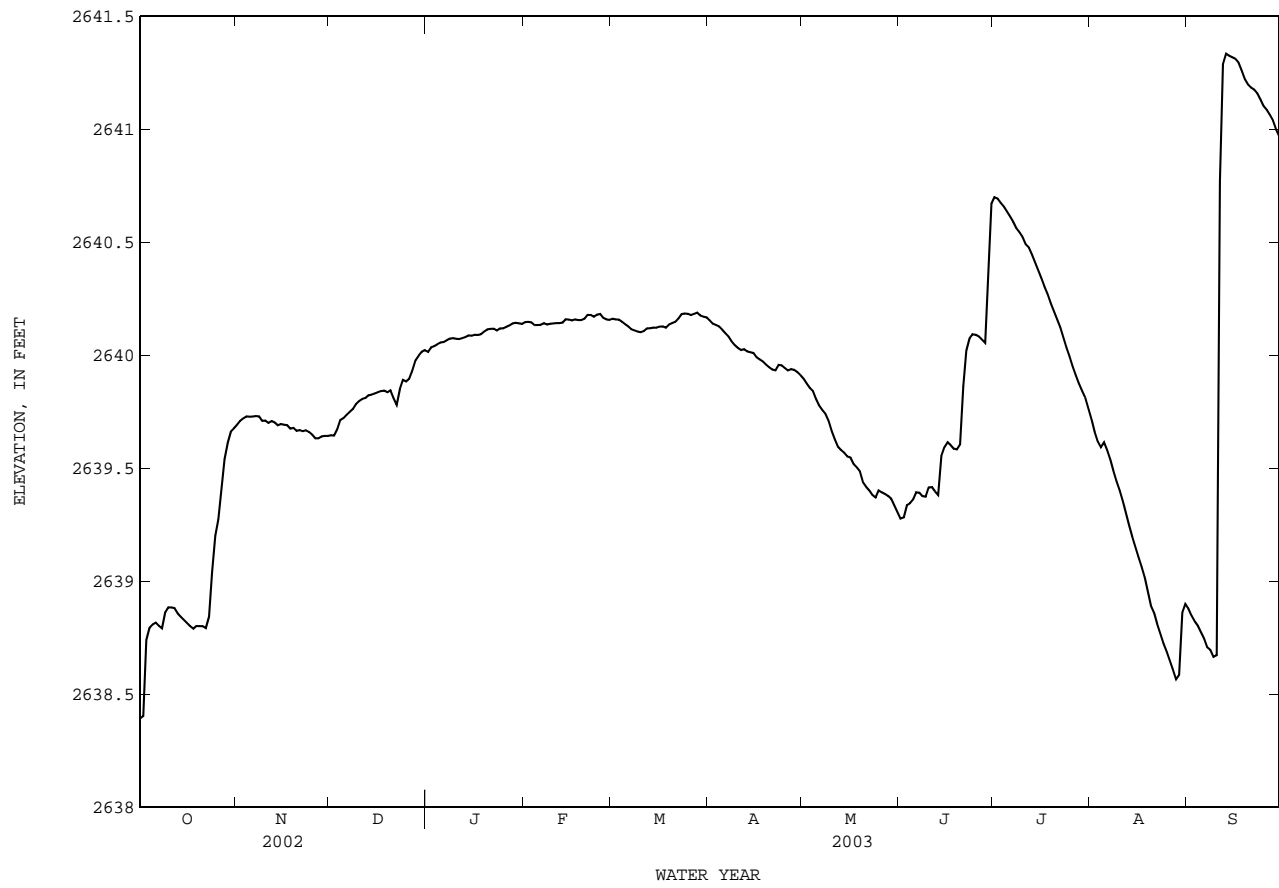
EXTREMES FOR CURRENT YEAR.--Maximum elevation, 2,641.35 ft, Sept. 13; minimum elevation, 2,638.36 ft, Oct. 1, 2.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2638.39	2639.69	2639.65	2640.01	2640.15	2640.16	2640.16	2639.90	2639.28	2640.70	2639.72	2638.88
2	2638.40	2639.71	2639.64	2640.03	2640.15	2640.16	2640.14	2639.88	2639.28	2640.69	2639.66	2638.85
3	2638.74	2639.72	2639.68	2640.04	2640.15	2640.16	2640.13	2639.86	2639.34	2640.68	2639.62	2638.82
4	2638.79	2639.73	2639.71	2640.05	2640.13	2640.15	2640.13	2639.84	2639.34	2640.66	2639.59	2638.80
5	2638.81	2639.73	2639.72	2640.06	2640.13	2640.14	2640.11	2639.81	2639.36	2640.64	2639.62	2638.77
6	2638.82	2639.73	2639.74	2640.06	2640.14	2640.13	2640.10	2639.78	2639.39	2640.61	2639.58	2638.74
7	2638.80	2639.73	2639.75	2640.07	2640.14	2640.11	2640.08	2639.76	2639.39	2640.59	2639.54	2638.71
8	2638.79	2639.73	2639.76	2640.07	2640.14	2640.11	2640.06	2639.74	2639.38	2640.56	2639.49	2638.70
9	2638.86	2639.71	2639.78	2640.08	2640.14	2640.11	2640.05	2639.71	2639.37	2640.54	2639.44	2638.66
10	2638.88	2639.71	2639.80	2640.07	2640.14	2640.10	2640.03	2639.66	2639.41	2640.52	2639.40	2638.67
11	2638.88	2639.70	2639.81	2640.07	2640.14	2640.11	2640.02	2639.63	2639.42	2640.49	2639.36	2640.77
12	2638.88	2639.71	2639.81	2640.08	2640.14	2640.12	2640.03	2639.60	2639.40	2640.48	2639.30	2641.29
13	2638.86	2639.70	2639.82	2640.08	2640.14	2640.12	2640.02	2639.58	2639.38	2640.45	2639.25	2641.34
14	2638.84	2639.69	2639.83	2640.09	2640.16	2640.12	2640.01	2639.57	2639.55	2640.41	2639.20	2641.33
15	2638.83	2639.70	2639.83	2640.09	2640.16	2640.12	2640.01	2639.55	2639.59	2640.38	2639.16	2641.32
16	2638.82	2639.69	2639.84	2640.09	2640.15	2640.13	2639.99	2639.55	2639.61	2640.34	2639.11	2641.31
17	2638.80	2639.69	2639.84	2640.09	2640.16	2640.13	2639.98	2639.52	2639.60	2640.30	2639.06	2641.30
18	2638.79	2639.68	2639.84	2640.09	2640.16	2640.12	2639.97	2639.50	2639.59	2640.27	2639.02	2641.26
19	2638.80	2639.68	2639.84	2640.11	2640.16	2640.14	2639.96	2639.49	2639.58	2640.23	2638.96	2641.22
20	2638.80	2639.67	2639.84	2640.11	2640.16	2640.14	2639.95	2639.44	2639.61	2640.20	2638.89	2641.20
21	2638.80	2639.67	2639.81	2640.12	2640.18	2640.15	2639.94	2639.42	2639.86	2640.16	2638.86	2641.18
22	2638.79	2639.66	2639.78	2640.12	2640.18	2640.16	2639.93	2639.40	2640.02	2640.13	2638.81	2641.18
23	2638.84	2639.67	2639.85	2640.11	2640.17	2640.18	2639.96	2639.38	2640.07	2640.08	2638.77	2641.16
24	2639.04	2639.66	2639.89	2640.12	2640.18	2640.18	2639.96	2639.37	2640.09	2640.03	2638.73	2641.13
25	2639.20	2639.65	2639.88	2640.12	2640.18	2640.18	2639.94	2639.40	2640.09	2639.99	2638.69	2641.10
26	2639.27	2639.63	2639.90	2640.13	2640.17	2640.18	2639.93	2639.39	2640.08	2639.95	2638.65	2641.09
27	2639.41	2639.63	2639.93	2640.13	2640.16	2640.18	2639.94	2639.39	2640.07	2639.91	2638.61	2641.07
28	2639.54	2639.64	2639.98	2640.14	2640.16	2640.19	2639.94	2639.38	2640.05	2639.88	2638.57	2641.04
29	2639.61	2639.64	2640.00	2640.14	---	2640.18	2639.93	2639.36	2640.40	2639.84	2638.59	2641.00
30	2639.66	2639.64	2640.02	2640.14	---	2640.17	2639.91	2639.34	2640.67	2639.81	2638.86	2640.97
31	2639.68	---	2640.02	2640.14	---	2640.17	---	2639.31	---	2639.77	2638.90	---
MEAN	2638.95	2639.69	2639.83	2640.09	2640.15	2640.14	2640.01	2639.57	2639.68	2640.30	2639.13	2640.36
MAX	2639.68	2639.73	2640.02	2640.14	2640.18	2640.19	2640.16	2639.90	2640.67	2640.70	2639.72	2641.34
MIN	2638.39	2639.63	2639.64	2640.01	2640.13	2640.10	2639.91	2639.31	2639.28	2639.77	2638.57	2638.66

CAL YR 2002 MAX 2641.04 MIN 2638.39
WTR YR 2003 MAX 2641.34 MIN 2638.39

07299840 Greenbelt Lake near Clarendon, TX--Continued



RED RIVER BASIN

07299890 Lelia Lake Creek below Bell Creek near Hedley, TX

LOCATION.--Lat 34°56'08", long 100°41'46", Donley County, Hydrologic Unit 11120201, on left downstream side of bridge of FM 2471, 1.0 mi downstream from Bell Creek, and 5.0 mi north of Hedley.

DRAINAGE AREA.--74 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Aug. 1964 to Sept. 1995 (miscellaneous measurements), Aug. 1997 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,408.56 ft above NGVD of 1929. Satellite telemeter at site.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. No known regulation. There are several small diversions upstream from the station for farm and ranch use. No flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.85	2.8	1.6	3.7	4.6	e3.1	2.7	1.3	0.23	10	1.0	1.6
2	0.98	2.6	1.4	3.1	4.4	e3.0	2.3	1.6	0.27	5.2	1.0	1.5
3	1.3	2.4	2.3	3.3	4.1	e2.9	3.9	1.9	1.2	3.8	0.70	1.4
4	1.2	2.5	3.6	3.1	4.3	2.8	1.5	1.7	0.67	3.0	0.73	1.3
5	1.1	2.2	3.0	2.9	4.3	2.6	1.5	1.2	0.72	2.7	e1.0	1.3
6	1.0	1.9	2.7	3.0	4.5	2.5	1.4	e1.4	0.95	2.7	0.80	1.3
7	0.99	1.8	2.6	2.9	4.0	2.5	1.9	1.5	0.53	2.6	0.62	1.1
8	1.2	1.8	2.4	3.0	5.0	2.3	1.6	1.2	0.54	2.5	0.37	1.1
9	57	1.7	2.3	3.0	6.0	2.2	1.7	0.83	0.48	2.3	0.23	0.98
10	1.2	1.7	2.3	2.7	4.6	2.3	1.7	0.73	0.64	2.1	0.30	0.81
11	1.0	1.7	2.3	2.8	3.9	2.6	1.5	0.66	0.50	2.0	0.21	54
12	0.85	1.8	2.2	3.1	3.4	2.6	3.0	0.74	0.41	2.0	0.11	3.4
13	0.85	1.8	2.1	3.0	3.6	2.5	2.5	0.75	0.40	1.9	0.12	2.4
14	0.91	1.9	2.1	3.1	3.7	2.5	2.4	0.67	2.1	1.7	0.13	2.1
15	0.90	1.8	2.2	3.2	3.0	2.6	3.9	1.2	1.0	1.6	0.15	2.0
16	1.1	1.8	2.3	3.2	2.7	2.7	9.3	0.66	0.70	1.7	0.13	1.8
17	0.93	1.9	2.3	2.7	2.9	2.8	6.0	0.63	0.63	1.7	0.06	1.7
18	0.71	2.0	2.3	2.9	3.2	2.7	4.9	0.51	0.59	1.6	0.02	1.5
19	2.7	1.9	2.1	2.8	3.1	2.8	4.6	0.45	0.67	1.5	0.00	1.5
20	2.3	2.0	2.1	3.7	3.0	3.4	3.6	0.45	1.1	1.4	0.00	1.6
21	1.6	1.9	2.3	3.0	3.1	3.7	3.0	0.86	28	1.4	0.00	1.4
22	1.5	1.9	2.3	3.2	3.3	4.3	2.9	0.74	0.64	1.4	0.00	1.4
23	2.5	1.8	3.5	3.1	3.2	4.5	3.6	0.65	0.10	1.4	0.00	1.3
24	27	1.8	3.6	3.3	2.4	3.9	3.5	0.55	0.04	1.4	0.00	1.1
25	7.9	1.8	3.7	3.8	2.4	2.9	2.6	0.77	0.03	1.3	0.00	1.0
26	5.6	1.7	3.6	3.8	2.7	2.1	1.9	0.69	0.05	1.2	0.00	1.1
27	8.1	1.8	3.5	4.5	3.1	2.5	1.6	0.51	0.03	1.1	0.00	0.91
28	7.3	1.9	3.4	4.6	3.2	4.5	1.3	0.46	0.02	1.1	0.00	1.0
29	5.8	2.0	4.8	4.1	---	3.3	1.3	0.38	207	1.1	0.00	0.75
30	4.1	2.0	4.8	4.0	---	3.2	1.4	0.29	40	1.2	2.7	0.78
31	3.1	---	3.8	3.8	---	2.9	---	0.24	---	1.1	1.7	---
TOTAL	153.57	58.6	85.5	102.4	101.7	91.2	85.0	26.22	290.24	67.7	12.08	95.13
MEAN	4.95	1.95	2.76	3.30	3.63	2.94	2.83	0.85	9.67	2.18	0.39	3.17
MAX	57	2.8	4.8	4.6	6.0	4.5	9.3	1.9	207	10	2.7	54
MIN	0.71	1.7	1.4	2.7	2.4	2.1	1.3	0.24	0.02	1.1	0.00	0.75
AC-FT	305	116	170	203	202	181	169	52	576	134	24	189

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2003, BY WATER YEAR (WY)

	MEAN	2.39	3.15	3.03	3.26	3.72	6.16	4.61	3.48	4.00	2.18	0.97	1.51
MAX	4.95	6.47	5.04	5.70	7.73	13.5	7.48	4.41	9.67	7.75	3.87	4.11	
(WY)	2003	2002	1998	1998	1998	1998	1998	2000	2003	2002	1997	1997	
MIN	0.80	1.25	1.62	1.72	1.25	0.85	2.83	0.85	0.81	0.20	0.20	0.28	
(WY)	2002	2000	2000	2000	2002	2002	2003	2003	2002	2001	2001	2000	

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

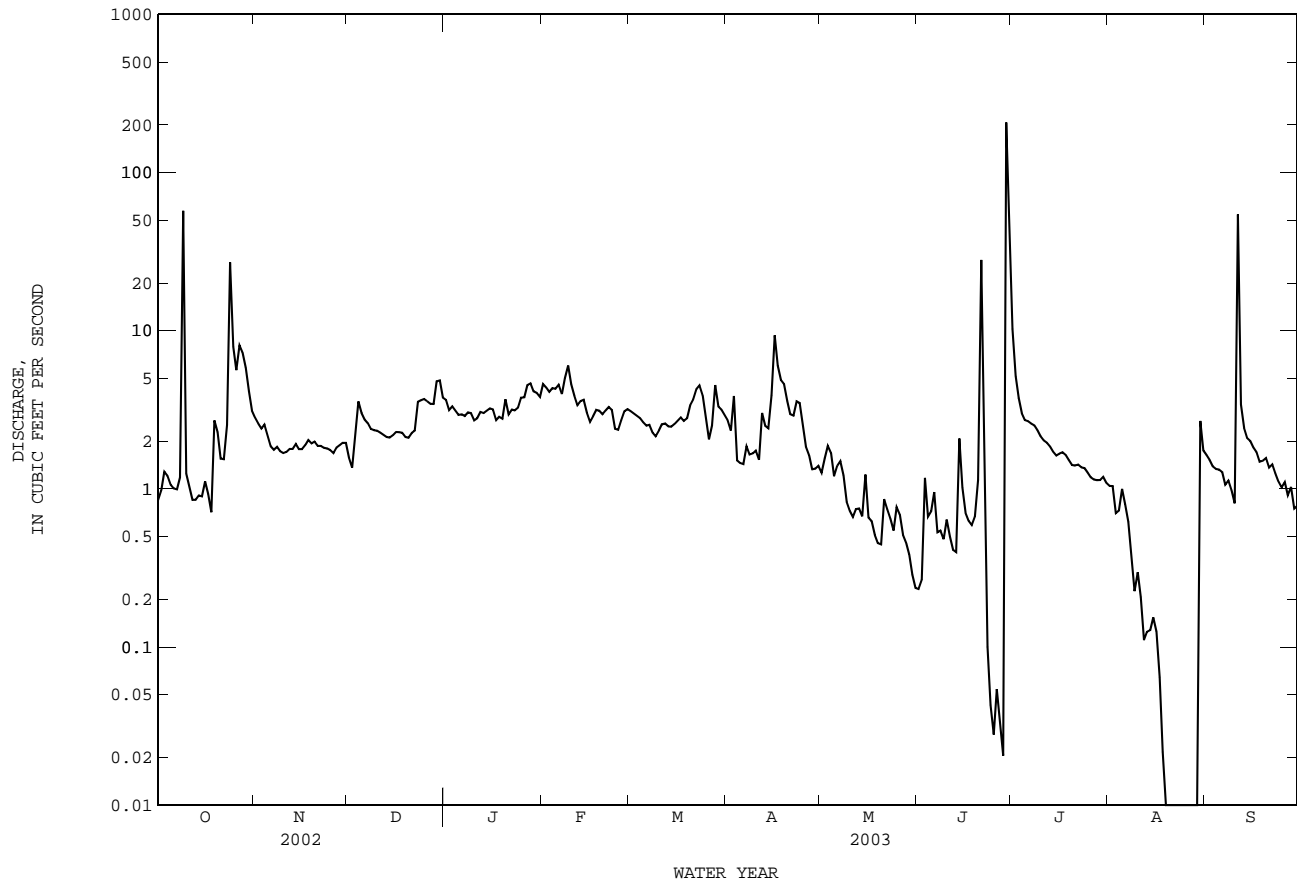
WATER YEARS 1997 - 2003

ANNUAL TOTAL	923.00	1169.34		
ANNUAL MEAN	2.53	3.20	3.12	
HIGHEST ANNUAL MEAN			4.57	1998
LOWEST ANNUAL MEAN			2.09	2001
HIGHEST DAILY MEAN	188	Jul 5	207	Jun 29 2003
LOWEST DAILY MEAN	0.00	Jun 22	0.00	Aug 3 2001
ANNUAL SEVEN-DAY MINIMUM	0.00	Jun 22	0.00	Aug 3 2001
MAXIMUM PEAK FLOW			917	Jun 29 2002
MAXIMUM PEAK STAGE			7.60	Jun 29 2002
ANNUAL RUNOFF (AC-FT)	1830	2320	2260	
10 PERCENT EXCEEDS	2.8	4.0	5.5	
50 PERCENT EXCEEDS	1.3	1.9	2.0	
90 PERCENT EXCEEDS	0.41	0.45	0.44	

e Estimated

a From floodmark.

07299890 Lelia Lake Creek below Bell Creek near Hedley, TX--Continued



07299890 Lelia Lake Creek below Bell Creek near Hedley, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Aug. 1997 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Aug. 1997 to current year.

TEMPERATURE: Aug. 1997 to current year.

INSTRUMENTATION.--Water-quality monitor since Aug. 1997.

REMARKS.--Temperature records fair. Specific-conductance records good. Interruption in the record was caused by malfunctions of the instrument. No flow Aug. 19-29.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 18,900 microsiemens/cm, May 26, 1996; minimum, 59 microsiemens/cm, Oct. 9, 2002.

TEMPERATURE: Maximum, 36.5°C, July 13, 1998; minimum, -0.2°C, Feb. 25, 2003.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,330 microsiemens/cm, Aug. 30; minimum, 59 microsiemens/cm, Oct. 9.

WATER TEMPERATURE: Maximum, 32.8°C, Aug. 6; minimum, -0.2°C, Feb. 25.

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	922	875	907	1020	1000	1010	1080	1060	1070	1120	1090	1110
2	923	906	915	---	---	e1000	1090	1030	1070	1100	1080	1090
3	935	892	917	---	---	e1010	1090	1080	1090	1100	1080	1090
4	921	887	909	---	---	e1030	1080	1060	1060	1100	1070	1090
5	919	882	905	---	---	e1040	1080	1070	1080	1100	1070	1080
6	918	874	900	1040	1040	1040	---	---	e1070	1110	1080	1100
7	917	877	901	1050	1040	1040	---	---	e1070	1090	1070	1080
8	919	898	910	1050	1040	1040	---	---	e1060	1080	1070	1080
9	915	59	699	1050	1030	1040	---	---	e1040	1080	1060	1070
10	976	886	955	1050	1030	1040	---	---	e1050	1080	1060	1070
11	950	941	946	1040	1030	1040	---	---	e1050	1080	1060	1070
12	981	933	947	1050	1030	1040	---	---	e1070	1080	1050	1070
13	1020	981	1010	1050	1030	1040	1090	1070	1090	1080	1060	1070
14	1020	1000	1010	1050	1030	1040	1090	1070	1080	1080	1060	1080
15	1020	1010	1020	1050	1030	1040	1090	1070	1080	1080	1060	1070
16	1030	1020	1020	1050	1040	1050	1090	1060	1080	1070	1060	1070
17	1030	1010	1020	1060	1040	1050	1080	1060	1080	1070	1050	1070
18	1030	1000	1020	1060	1040	1060	1090	1070	1080	1070	1060	1070
19	1030	487	940	1070	1050	1060	1090	1060	1080	1070	1050	1060
20	1010	987	1000	1060	1040	1060	1080	1060	1070	1090	1060	1080
21	1010	997	1010	1070	1040	1060	1070	1060	1070	1100	1060	1080
22	1010	996	1010	1070	1050	1060	1070	1050	1060	1110	1080	1100
23	1010	934	977	1070	1040	1060	1060	1010	1030	1100	1080	1090
24	975	402	764	1070	1040	1060	1050	1030	1040	1090	1070	1080
25	877	640	685	1070	1040	1060	1060	1040	1050	1090	1060	1080
26	857	738	824	1060	1050	1060	1100	1060	1080	1080	1060	1070
27	907	810	859	1060	1050	1050	1120	1090	1100	1090	1070	1080
28	1020	907	967	1070	1050	1060	1090	1080	1090	1100	1080	1090
29	1040	1000	1030	1070	1050	1060	1080	1060	1080	1110	1070	1090
30	1010	992	997	1070	1050	1070	1120	1080	1090	1090	1060	1080
31	1020	1000	1020	---	---	---	1130	1110	1120	1090	1050	1070
MONTH	1040	59	935	---	---	1050	---	---	1070	1120	1050	1080

07299890 Lelia Lake Creek below Bell Creek near Hedley, TX--Continued

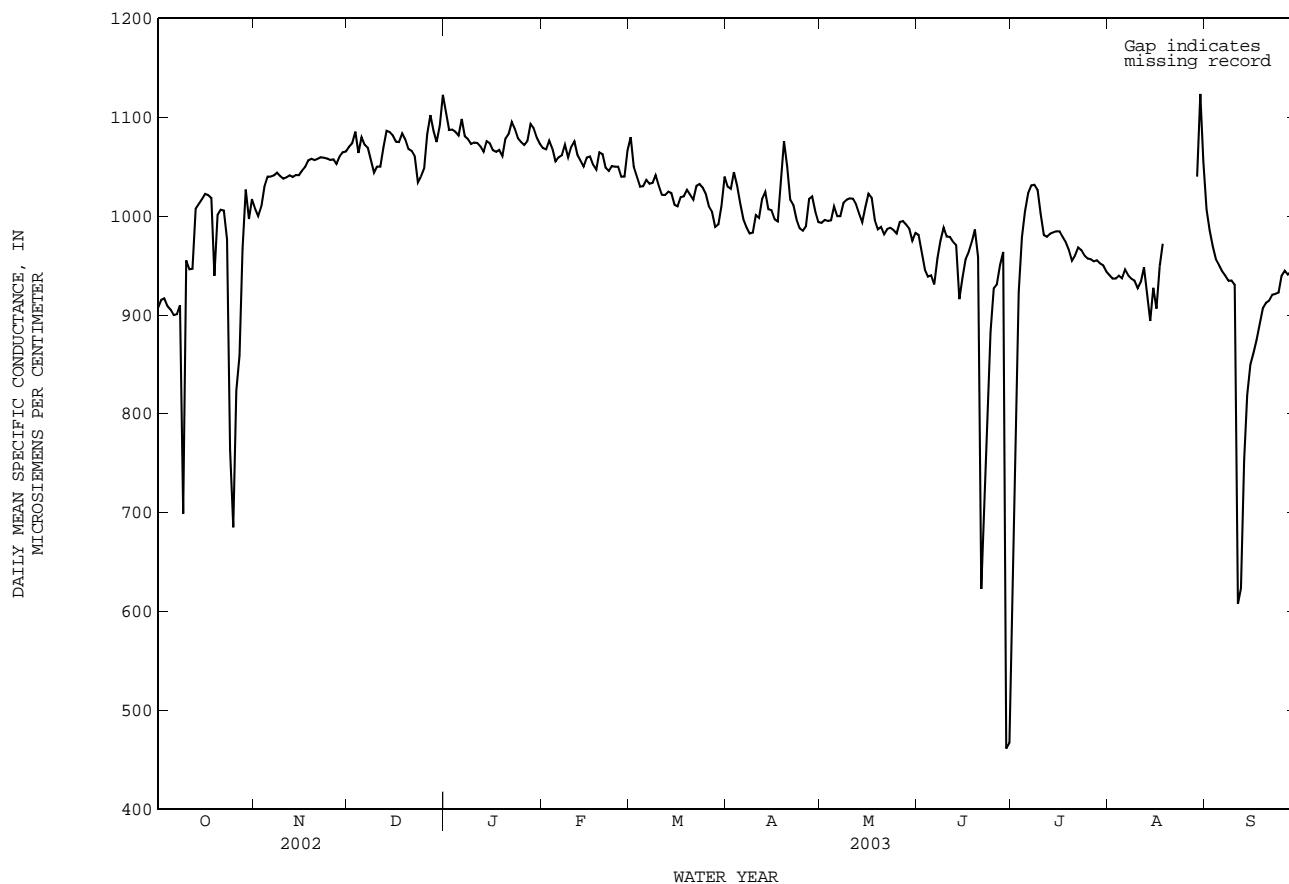
SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	1080	1050	1070	---	1070	e1080	1050	1000	1030	1020	955	993
2	1080	1040	1070	---	---	e1050	1050	991	1030	1010	974	996
3	1090	1060	1080	---	---	e1040	1090	999	1040	1020	961	995
4	1080	1060	1070	---	---	e1030	1050	1000	1030	1010	965	996
5	1070	1040	1060	1040	1020	1030	1040	974	1010	---	986	e1010
6	1070	1050	1060	1040	1030	1040	1020	962	997	---	---	e1000
7	1080	1060	1060	1040	1020	1030	1010	958	989	---	986	e1000
8	1080	1060	1070	1040	1020	1030	1000	951	983	1030	990	1010
9	1080	1040	1060	1050	1030	1040	1000	953	983	1030	997	1020
10	1080	1060	1070	1040	1010	1030	1020	966	1000	1030	997	1020
11	1090	1060	1080	1030	1000	1020	1030	947	998	1030	996	1020
12	1080	1040	1060	1030	1000	1020	1040	1000	1020	1030	991	1010
13	1060	1040	1060	1040	1000	1020	1060	971	1020	1020	979	1000
14	1060	1020	1050	1040	1000	1020	1040	955	1010	1000	982	994
15	1070	1040	1060	1030	987	1010	1030	939	1010	1070	977	1010
16	1070	1040	1060	1020	985	1010	1040	962	997	1040	1010	1020
17	1070	1030	1050	1030	1000	1020	1020	949	995	1040	995	1020
18	1060	1030	1050	1030	1000	1020	1080	1010	1040	1010	974	996
19	1070	1050	1060	1040	1010	1030	1100	1030	1080	999	971	987
20	1080	1040	1060	1040	1000	1020	1080	999	1050	998	977	989
21	1060	1030	1050	1030	994	1020	1050	964	1020	995	969	982
22	1060	1030	1050	1050	1020	1030	1030	983	1010	995	971	987
23	1060	1040	1050	1050	1010	1030	1020	948	996	1000	969	988
24	---	1040	e1050	1050	1000	1030	1010	943	988	1000	963	986
25	---	---	e1050	1040	993	1020	1010	938	985	996	963	983
26	---	---	e1040	1030	979	1010	1020	948	990	1000	980	994
27	---	---	e1040	1040	969	1000	1040	976	1020	1010	975	995
28	1070	1050	1070	1010	963	989	1050	974	1020	1010	974	992
29	---	---	---	1010	972	992	1030	966	1000	1000	972	987
30	---	---	---	1040	983	1010	1000	961	994	984	967	975
31	---	---	---	1060	1010	1040	---	---	---	990	970	983
MONTH	---	---	1060	---	---	1020	1100	938	1010	---	---	998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	972	e981	775	594	694	960	917	940	1020	981	1010
2	991	870	964	898	775	842	950	918	937	1010	958	986
3	1000	903	946	950	898	923	948	923	937	993	938	969
4	948	929	939	997	950	978	954	897	940	981	923	956
5	951	914	940	1030	995	1000	---	---	e937	976	916	950
6	945	914	931	1040	1020	1020	967	918	946	973	907	944
7	971	944	957	1050	1020	1030	952	926	940	965	908	940
8	994	961	975	1050	969	1030	951	921	937	960	899	935
9	1010	952	989	1060	989	1030	951	914	935	964	897	935
10	998	955	979	1050	952	1000	942	907	927	961	381	931
11	999	948	979	1020	921	981	950	921	933	842	333	608
12	998	939	974	1010	929	979	967	926	948	696	547	623
13	988	939	971	1010	943	982	971	---	e923	805	696	754
14	950	880	916	1020	948	983	936	---	e894	849	804	819
15	959	918	937	1010	947	985	954	830	927	863	818	850
16	973	934	956	1010	948	985	952	841	906	879	818	861
17	987	930	963	1010	908	979	969	---	e949	893	850	875
18	991	948	974	1000	933	974	---	---	e972	910	867	891
19	1010	956	986	991	931	966	---	---	---	924	880	907
20	987	699	959	978	921	955	---	---	---	938	877	912
21	889	412	623	976	935	960	---	---	---	943	870	914
22	718	684	700	992	941	968	---	---	---	952	876	920
23	852	718	782	986	937	965	---	---	---	960	872	921
24	917	852	883	979	936	960	---	---	---	955	875	923
25	944	916	927	977	934	957	---	---	---	960	917	940
26	955	899	931	976	934	956	---	---	---	976	892	945
27	970	926	950	975	932	954	---	---	---	970	897	941
28	980	935	964	974	934	955	---	---	---	967	911	944
29	983	127	461	974	931	952	1080	1020	1040	971	903	944
30	594	346	467	968	927	950	1330	439	1120	969	909	946
31	---	---	---	964	916	944	1110	1020	1060	---	---	---
MONTH	---	127	897	1060	594	962	---	---	---	1020	333	900

e Estimated

07299890 Lelia Lake Creek below Bell Creek near Hedley, TX--Continued



WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	23.7	18.8	20.7	9.5	8.6	9.2	9.3	3.6	6.3	5.1	3.0	4.0
2	21.3	17.5	19.9	---	8.3	---	9.7	5.8	7.7	6.9	2.4	4.2
3	19.5	16.8	18.0	---	---	---	8.1	3.2	5.9	7.9	2.2	4.6
4	20.6	14.6	17.2	---	---	---	4.6	2.1	3.0	8.7	3.2	5.6
5	19.5	12.6	15.8	11.8	---	---	---	3.0	---	8.9	3.5	5.9
6	20.3	15.5	17.4	12.6	6.3	9.1	---	---	---	7.8	4.5	5.9
7	17.6	14.2	15.7	14.0	7.9	10.5	---	---	---	8.7	2.6	5.3
8	15.8	14.9	15.4	14.8	9.8	11.9	---	---	---	9.7	3.3	6.2
9	15.9	---	---	16.7	11.6	13.6	---	---	---	8.6	5.0	6.6
10	17.0	15.2	15.9	15.2	10.9	12.7	---	---	---	7.1	2.5	4.6
11	18.9	14.3	16.0	12.5	10.0	11.0	---	---	---	6.2	1.6	3.7
12	17.8	14.4	15.8	13.4	8.8	10.6	9.6	---	---	7.1	3.8	5.1
13	16.7	12.6	14.2	12.8	7.2	9.7	8.9	4.5	6.3	8.1	2.2	4.8
14	16.2	9.8	12.6	13.3	8.7	10.6	8.8	3.6	5.9	7.7	2.9	4.9
15	16.6	10.2	12.9	11.5	7.7	9.5	8.7	3.3	5.9	6.3	3.6	4.6
16	16.9	10.6	13.3	11.9	6.4	8.8	10.0	6.2	7.6	5.9	1.6	3.5
17	16.9	11.9	14.2	12.0	5.5	8.4	10.8	6.0	7.9	5.0	1.1	2.6
18	17.7	14.2	15.7	12.4	7.5	9.4	9.9	6.6	8.0	6.6	1.0	3.2
19	16.2	12.5	14.9	11.2	5.3	8.0	8.6	4.8	6.8	8.0	1.4	4.3
20	17.2	12.1	14.2	11.6	5.8	8.3	7.2	2.5	4.6	9.2	2.5	5.3
21	18.5	12.5	14.9	12.6	6.5	9.2	7.3	2.8	4.5	7.5	3.7	5.0
22	17.5	15.4	16.2	12.5	6.5	9.3	5.3	3.0	4.2	4.6	1.5	2.9
23	16.4	12.0	14.1	12.4	7.0	9.4	4.6	1.1	2.5	3.3	0.8	1.8
24	12.0	6.9	9.3	10.8	6.7	8.3	4.5	1.2	2.3	1.7	0.0	0.9
25	13.6	8.6	10.7	8.2	5.0	6.2	3.8	0.0	1.9	4.6	0.0	2.8
26	12.4	11.4	11.9	5.5	3.2	4.5	3.2	0.6	1.7	5.8	0.6	2.8
27	12.9	11.2	12.0	5.9	0.6	3.1	3.0	0.0	1.7	8.2	0.8	4.1
28	13.2	12.5	12.7	8.1	1.7	4.5	5.5	0.0	2.6	11.2	4.3	7.1
29	15.5	12.1	13.3	8.8	3.7	6.0	7.0	2.7	4.7	10.2	5.8	7.3
30	13.8	10.1	12.1	9.4	5.0	6.7	8.4	4.3	5.9	10.4	3.3	6.5
31	10.5	9.4	9.9	---	---	---	7.6	3.1	5.2	11.4	5.3	7.7
MONTH	23.7	---	---	---	---	---	---	---	---	11.4	0.0	4.6

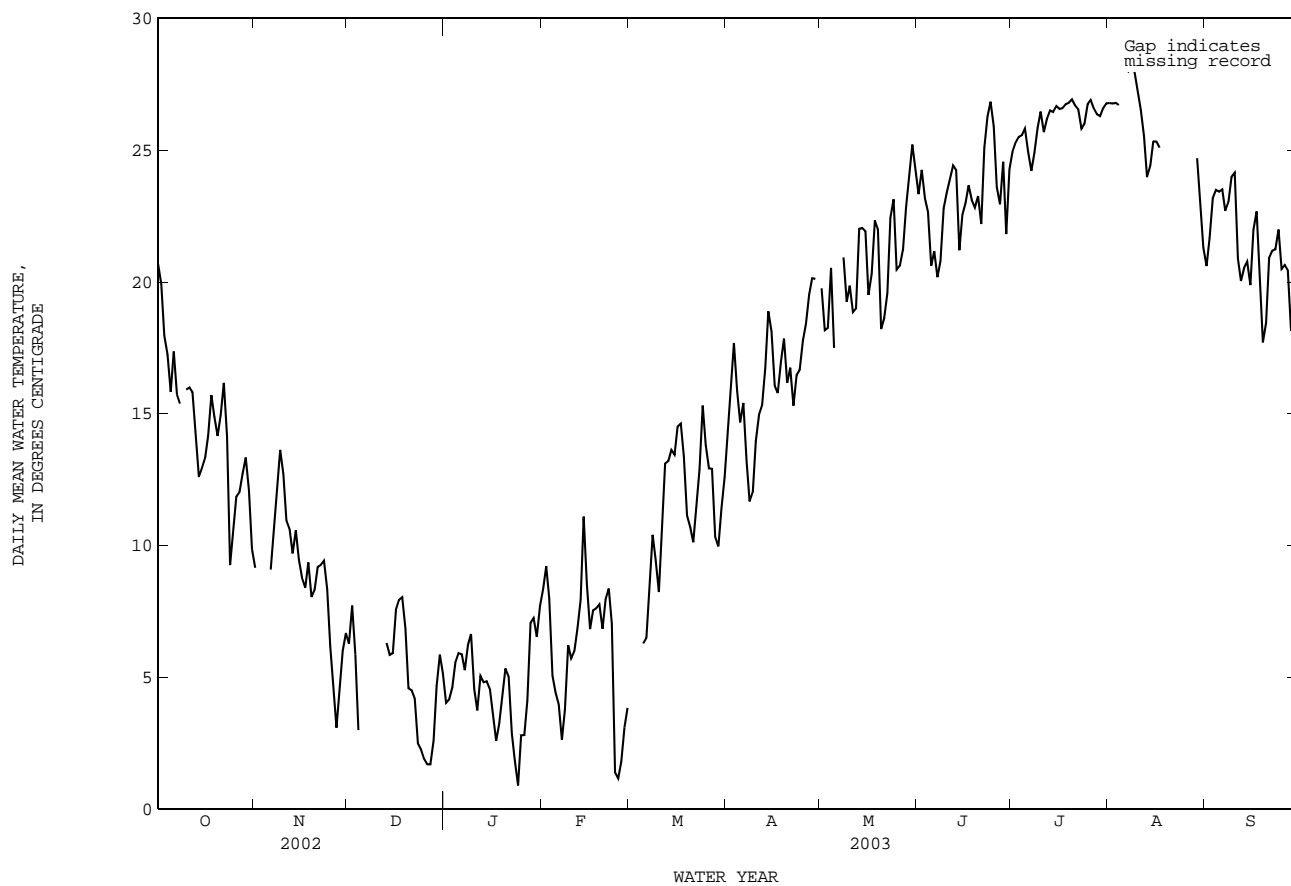
07299890 Lelia Lake Creek below Bell Creek near Hedley, TX--Continued

WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	12.5	5.4	8.3	---	---	---	20.4	9.5	14.4	24.8	15.4	19.8
2	12.1	6.5	9.2	---	---	---	21.4	11.6	16.0	19.8	16.3	18.2
3	10.2	5.1	8.0	---	---	---	23.1	14.6	17.7	22.6	15.5	18.3
4	8.4	2.2	5.1	14.9	---	---	20.9	12.5	15.9	24.7	17.8	20.5
5	5.6	3.2	4.4	10.8	3.3	6.3	19.2	11.0	14.7	24.2	13.9	17.5
6	4.8	2.4	4.0	12.1	1.7	6.5	20.1	11.8	15.4	---	---	---
7	5.6	0.2	2.6	14.6	3.9	8.7	18.4	9.1	13.2	24.3	---	---
8	7.3	0.7	3.8	15.8	6.2	10.4	17.0	7.2	11.7	25.4	17.5	20.9
9	9.7	4.2	6.2	13.9	5.7	9.5	19.0	6.0	12.0	24.6	14.3	19.2
10	9.5	2.6	5.7	12.8	4.8	8.2	20.0	8.6	14.0	25.1	15.9	19.9
11	10.2	2.7	6.0	16.6	6.9	10.9	19.8	10.5	15.0	24.7	13.9	18.9
12	10.7	3.4	6.9	18.4	8.8	13.1	22.0	9.6	15.3	23.3	14.8	19.0
13	9.3	6.7	7.9	18.7	8.5	13.2	21.9	12.5	16.7	28.0	17.5	22.0
14	15.0	8.3	11.1	19.0	9.1	13.6	24.7	14.3	18.9	24.6	19.8	22.0
15	11.1	5.6	8.5	16.6	10.4	13.4	21.2	14.7	18.1	25.2	19.9	21.9
16	10.8	4.1	6.8	19.0	10.4	14.5	22.0	11.4	16.1	22.2	17.7	19.5
17	11.8	4.5	7.5	17.2	12.5	14.6	19.0	12.6	15.8	26.7	15.5	20.3
18	9.7	6.0	7.6	17.9	10.3	13.4	22.0	12.7	17.0	27.8	18.1	22.3
19	8.8	6.7	7.8	12.2	10.1	11.1	22.4	15.0	17.8	25.6	18.9	22.0
20	9.2	4.1	6.8	13.7	8.8	10.7	21.9	11.6	16.2	22.2	14.8	18.2
21	10.1	6.4	8.0	12.3	8.2	10.1	22.5	11.8	16.8	22.3	15.8	18.6
22	12.9	4.8	8.4	15.1	8.8	11.4	17.9	13.9	15.3	24.3	16.9	19.6
23	8.8	3.8	7.0	19.0	8.0	12.9	21.6	13.8	16.5	27.9	18.4	22.4
24	3.8	0.0	1.4	21.1	10.7	15.3	22.2	12.1	16.7	26.3	20.1	23.1
25	3.3	-0.2	1.2	16.7	11.0	13.8	23.7	12.9	17.8	22.1	19.1	20.5
26	3.3	0.7	1.8	18.1	8.3	12.9	23.9	13.6	18.4	25.5	16.9	20.6
27	5.0	1.9	3.1	17.0	10.1	12.9	24.9	14.9	19.5	27.0	17.0	21.2
28	4.5	3.1	3.8	14.9	6.9	10.3	25.3	16.2	20.1	28.9	17.7	22.8
29	---	---	---	15.4	5.5	10	25.5	15.5	20.1	30.2	19.0	24.1
30	---	---	---	17.4	6.6	11.4	---	16.8	---	31.6	20.1	25.2
31	---	---	---	18.6	7.5	12.6	---	---	---	29.5	19.7	24.3
MONTH	15.0	-0.2	6.0	---	---	---	---	6.0	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	29.3	19.0	23.3	28.4	22.1	24.9	31.3	22.9	26.8	22.0	19.5	20.6
2	30.0	19.7	24.3	29.2	22.2	25.3	30.5	24.0	26.8	26.7	17.9	21.7
3	26.3	20.5	23.2	29.6	22.3	25.5	31.0	23.8	26.8	27.0	19.7	23.2
4	26.5	19.6	22.7	29.8	22.4	25.6	30.8	24.2	26.7	27.6	19.9	23.5
5	22.5	19.3	20.6	30.2	22.6	25.8	---	---	---	27.6	19.9	23.4
6	26.9	16.9	21.2	27.9	22.7	24.9	32.8	24.2	28.1	27.4	19.9	23.5
7	22.9	17.6	20.2	25.8	22.7	24.2	32.2	24.6	28.0	24.5	20.8	22.7
8	25.7	17.3	20.8	28.6	22.8	24.9	31.9	25.5	28.3	27.2	20.0	23.0
9	28.0	18.9	22.8	30.5	22.3	25.8	30.8	25.4	28.0	28.2	20.9	24.0
10	26.8	21.0	23.4	30.8	23.0	26.5	30.5	24.3	27.2	26.7	21.2	24.1
11	30.0	19.7	23.9	30.2	22.0	25.7	29.3	23.8	26.5	23.1	19.3	20.9
12	30.1	20.1	24.4	31.2	22.3	26.2	27.5	23.8	25.5	22.6	17.6	20.0
13	28.5	21.3	24.2	30.9	23.0	26.5	26.4	21.8	24.0	24.2	17.7	20.5
14	23.1	19.6	21.2	30.9	22.7	26.5	26.7	22.6	24.4	24.5	18.4	20.8
15	28.1	18.2	22.6	31.8	22.5	26.7	28.5	22.8	25.3	24.2	16.3	19.9
16	27.0	19.2	23.0	30.9	22.8	26.6	28.7	22.6	25.3	26.3	19.0	22.0
17	28.8	19.5	23.7	31.0	22.9	26.6	27.6	23.1	25.1	26.7	19.8	22.7
18	26.4	20.3	23.1	31.4	22.9	26.7	---	---	---	22.8	17.7	20.2
19	26.6	20.7	22.8	31.5	22.8	26.8	---	---	---	21.8	14.4	17.7
20	28.1	20.4	23.3	31.3	23.3	26.9	---	---	---	22.9	14.8	18.4
21	24.7	20.3	22.2	29.2	24.2	26.7	---	---	---	24.3	18.6	20.9
22	29.7	21.7	25.1	30.8	23.0	26.6	---	---	---	25.2	17.7	21.2
23	30.9	23.0	26.3	29.8	22.3	25.8	---	---	---	24.0	18.6	21.2
24	30.8	23.7	26.8	30.6	22.3	26.0	---	---	---	26.3	18.7	22.0
25	27.9	23.8	25.9	31.0	23.2	26.7	---	---	---	22.8	19.2	20.5
26	27.2	20.4	23.6	31.1	23.4	26.9	---	---	---	25.0	17.1	20.6
27	27.9	18.8	22.9	30.9	22.8	26.6	---	---	---	22.8	18.6	20.4
28	29.5	20.5	24.6	30.8	22.5	26.4	---	---	---	20.5	15.8	18.1
29	25.2	18.7	21.8	30.7	22.5	26.3	24.8	24.2	24.7	22.0	16.3	18.8
30	27.6	21.7	24.3	30.4	23.4	26.6	24.8	21.8	22.9	21.8	16.6	18.8
31	---	---	---	31.4	22.7	26.8	22.3	20.4	21.3	---	---	---
MONTH	30.9	16.9	23.3	31.8	22.0	26.1	---	---	---	28.2	14.4	21.2

07299890 Lelia Lake Creek below Bell Creek near Hedley, TX--Continued



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07300000 Salt Fork Red River near Wellington, TX

LOCATION.--Lat 34°57'27", long 100°13'14", Collingsworth County, Hydrologic Unit 11120202, near center of stream at downstream side of bridge on U.S. Highway 83, 4.0 mi downstream from Fort Worth and Denver (Burlington) Railway Co. bridge, 4.5 mi south of Lutie, and 7.2 mi north of Wellington.

DRAINAGE AREA.--1,222 mi², of which 209 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1952 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,941.41 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. Since water year 1967, at least 10% of contributing drainage area has been regulated. There are several small diversions upstream from gage for irrigation.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--14 years (water years 1953-66) prior to completion of Greenbelt Lake, 72.6 ft³/s (52,600 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1953-66).--Maximum discharge, 146,000 ft³/s May 16, 1957 (gage height, 19.00 ft), from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of 63,400 ft³/s; minimum, 0.1 ft³/s June 19, 1952.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	113	51	57	32	53	25	15	6.9	211	3.0	1.9
2	1.6	121	48	46	31	43	23	14	7.0	82	2.7	1.8
3	59	118	54	45	27	38	21	15	11	45	2.6	1.8
4	104	93	107	47	23	35	20	14	9.8	27	2.6	1.7
5	28	101	99	42	25	34	19	13	9.6	19	2.9	1.7
6	20	83	79	41	32	34	20	11	17	17	2.4	1.6
7	16	78	69	41	35	34	18	11	15	15	2.3	1.6
8	21	76	64	43	40	35	17	10	12	14	2.2	1.6
9	92	71	58	44	48	30	19	9.7	11	12	2.1	1.6
10	97	59	54	36	50	27	20	9.3	15	9.2	2.0	1.9
11	61	58	51	35	41	28	19	8.5	12	7.7	1.8	2500
12	48	74	48	37	35	33	18	8.5	10	7.0	1.5	544
13	35	74	42	38	33	31	19	8.8	76	6.7	1.6	190
14	30	60	38	38	41	30	18	9.0	12	6.1	1.5	83
15	29	57	39	41	37	28	21	8.8	10	5.5	1.5	50
16	27	59	40	38	29	31	41	9.5	22	5.3	1.5	41
17	26	58	39	35	30	32	39	13	22	5.0	1.5	32
18	27	55	36	36	31	30	31	18	18	4.9	1.4	23
19	38	51	37	39	33	32	31	17	21	4.6	1.2	18
20	130	51	39	40	36	41	23	13	51	4.4	1.1	18
21	79	50	42	37	38	42	20	15	509	4.4	1.2	19
22	61	48	41	34	40	40	21	14	339	4.2	1.1	20
23	88	52	54	27	38	39	28	13	113	3.6	1.1	18
24	409	54	77	23	e23	36	26	13	55	3.2	1.0	17
25	301	51	74	27	e20	30	25	14	43	3.1	1.0	16
26	258	47	73	47	25	25	21	37	45	3.0	0.96	16
27	358	46	65	56	36	24	19	34	46	2.9	0.93	14
28	363	54	68	47	57	30	17	20	32	2.8	0.91	14
29	286	56	78	36	---	31	20	13	380	3.4	1.3	14
30	189	56	81	32	---	29	16	9.4	473	4.2	6.3	16
31	128	---	63	32	---	28	---	6.9	---	3.3	2.0	---
TOTAL	3410.6	2024	1808	1217	966	1033	675	425.4	2403.3	546.5	57.20	3680.2
MEAN	110	67.5	58.3	39.3	34.5	33.3	22.5	13.7	80.1	17.6	1.85	123
MAX	409	121	107	57	57	53	41	37	509	211	6.3	2500
MIN	1.0	46	36	23	20	24	16	6.9	6.9	2.8	0.91	1.6
AC-FT	6760	4010	3590	2410	1920	2050	1340	844	4770	1080	113	7300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2003z, BY WATER YEAR (WY)

	MEAN	32.1	29.7	28.4	32.5	39.3	47.0	89.3	106	139	30.6	26.0	32.4
MAX	279	213	92.4	86.0	117	165	1218	468	1006	155	301	123	
(WY)	1987	1987	1992	1993	1998	1998	1997	1977	1995	1993	1968	2003	
MIN	3.81	8.03	3.59	10.5	10.9	8.15	6.10	2.61	8.17	2.65	1.68	2.22	
(WY)	2002	1981	1984	1971	1967	1972	1971	1971	1970	1970	1970	1984	

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

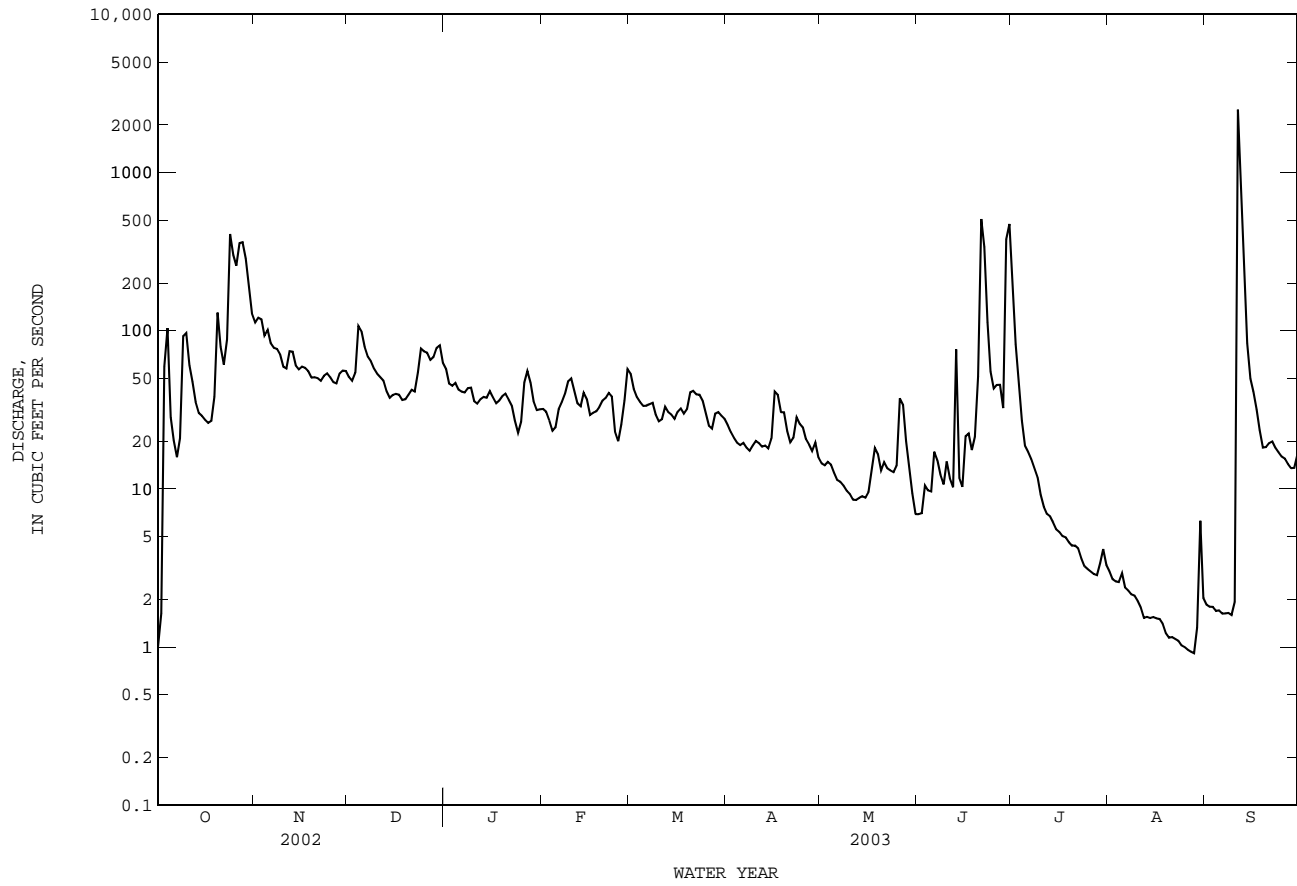
WATER YEARS 1967 - 2003z

ANNUAL TOTAL	15366.59	18246.20	
ANNUAL MEAN	42.1	50.0	52.6
HIGHEST ANNUAL MEAN			165
LOWEST ANNUAL MEAN			10.5
HIGHEST DAILY MEAN	831	2500	17500
LOWEST DAILY MEAN	0.61	0.91	0.40
ANNUAL SEVEN-DAY MINIMUM	0.71	1.0	0.71
MAXIMUM PEAK FLOW		4430	81100
MAXIMUM PEAK STAGE		6.80	17.10
ANNUAL RUNOFF (AC-FT)	30480	36190	38120
10 PERCENT EXCEEDS	78	78	72
50 PERCENT EXCEEDS	19	30	17
90 PERCENT EXCEEDS	2.8	2.4	4.0

e Estimated

z Period of regulated streamflow.

07300000 Salt Fork Red River near Wellington, TX--Continued



07300000 Salt Fork Red River near Wellington, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Feb. 1951 to Oct. 1954, Oct. 1967 to Sept. 1997, Oct. 1999 to current year.

BIOLOGICAL DATA: Oct. 1974 to Sept. 1997, Oct. 1999 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June 1952 to Sept. 1954, Oct. 1967 to Sept. 1991.

TEMPERATURE: June 1952 to Sept. 1954, Oct. 1967 to Sept. 1991.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Fecal coliform, M-FC col/ 100 mL (31625)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hardness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	
OCT 30...	1415	175	2360	8.3	13.4	11.0	106	200	190	820	630	221	65.7	
MAR 11...	1120	27	3000	8.3	9.4	11.6	102	E67k	46	1300	1200	389	84.3	
JUN 03...	1245	12	3040	7.9	25.2	7.5	93	1000	830	1600	1500	497	83.4	
AUG 20...	1210	1.2	2920	7.7	33.0	7.3	110	1000	1500	1500	1300	475d	73.4d	
Date		Sodium, water, fltrd, mg/L (00930)	Sodium adsorption ratio (00931)	Potassium, water, fltrd, mg/L (00935)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate, water, fltrd, mg/L (00945)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of constituents (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)	Nitrate, water, fltrd, mg/L as N (00618)	Nitrite, water, fltrd, mg/L as N (00613)	Nitrite + nitrate, water, fltrd, mg/L as N (00631)
OCT 30...	203	3	4.79	198	682	276	.84	25.0	1600	78	--	<.008	.18	
MAR 11...	213	3	3.78	150	1160	307	.72	18.8	2270	10	--	E.006	1.04	
JUN 03...	152	2	4.02	132	1470	204	.6	18.5	2520	<10	1.82	.022	1.84	
AUG 20...	131d	1	4.96d	141	1420d	169d	.6	24.1	2390	<10	1.67	.012	1.68	
Date		Ammonia water, fltrd, mg/L as N (00608)	Total nitrogen, water, unfltrd mg/L (00600)	Organic nitrogen, water, unfltrd mg/L (00605)	Organic nitrogen, water, fltrd, mg/L (00607)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Phosphorus, water, unfltrd mg/L (00665)	Phosphorus, water, fltrd, mg/L (00666)	Orthophosphate, water, fltrd, mg/L as P (00671)				
OCT 30...		<.04	.50	--	--	.18	.31	.059	<.004	<.02				
MAR 11...		E.03	1.2	--	--	.11	.14	.005	<.004	<.02				
JUN 03...		.07	2.0	.14	.05	.12	.21	.004	<.004	<.02				
AUG 20...		.06	1.9	.12	.07	.13	.18	.007	E.003n	<.02				

Remark codes used in this report:

< -- Less than

E -- Estimated value

Value qualifier codes used in this report:

d -- Diluted sample: method hi range exceeded

k -- Counts outside acceptable range

n -- Below the NDV

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RED RIVER BASIN

07300500 Salt Fork Red River at Mangum, OK

LOCATION.--Lat 34°51'30", long 99°30'30", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ 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 sea level (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.--Records fair. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s and maximum (*):

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 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	147	37	84	38	46	33	13	2.1	310	0.00	0.00
2	0.00	134	40	78	37	56	29	10	1.3	142	0.00	0.00
3	0.00	123	44	72	35	61	26	11	3.0	79	0.00	0.00
4	0.00	117	62	65	32	57	24	32	6.0	43	0.00	0.00
5	0.00	111	90	60	31	51	21	17	4.2	24	0.00	0.00
6	18	99	104	58	34	46	21	9.2	3.5	14	0.00	0.00
7	23	91	90	56	34	42	19	7.6	2.4	8.2	0.00	0.00
8	27	79	78	55	36	37	17	6.8	2.3	5.3	0.00	0.00
9	44	72	75	51	43	34	16	5.6	1.3	3.2	0.00	0.00
10	29	65	73	48	44	35	15	4.4	0.79	1.2	0.00	0.00
11	46	61	70	46	48	37	15	3.2	0.76	0.35	0.00	1,320
12	51	57	68	43	53	37	14	2.8	0.57	0.09	0.00	942
13	38	54	64	41	46	35	14	2.2	8.9	0.00	0.00	244
14	28	58	63	41	45	33	14	2.1	11	0.00	0.00	130
15	18	61	60	41	44	33	14	2.0	41	0.00	0.00	89
16	13	57	57	40	44	33	16	9.4	18	0.00	0.00	61
17	11	52	54	40	45	33	19	12	7.8	0.00	0.00	e45
18	9.4	49	53	40	41	31	26	5.6	3.9	0.00	0.00	e35
19	9.8	47	50	40	39	31	56	3.3	2.3	0.00	0.00	29
20	9.2	46	47	39	39	33	54	2.4	6.1	0.00	0.00	24
21	8.4	44	45	40	41	34	37	3.3	98	0.00	0.00	21
22	40	43	44	41	42	38	32	3.8	435	0.00	0.00	18
23	41	41	63	e35	42	46	33	4.3	316	0.00	0.00	17
24	62	40	78	e30	41	45	36	4.2	182	0.00	0.00	16
25	241	38	74	e32	39	43	38	19	105	0.00	0.00	12
26	208	38	93	e34	36	39	32	10	71	0.00	0.00	9.3
27	208	37	93	e38	e35	35	27	5.0	61	0.00	0.00	7.0
28	e270	37	85	e46	e44	37	23	2.9	94	0.00	0.00	6.0
29	e260	39	77	51	---	34	20	4.8	66	0.00	0.00	6.1
30	e217	38	75	46	---	32	16	8.4	239	0.00	0.00	4.9
31	176	---	83	41	---	34	---	4.4	---	0.00	0.00	---
TOTAL	2,105.80	1,975	2,089	1,472	1,128	1,218	757	231.7	1,794.22	630.34	0.00	3,036.30
MEAN	67.9	65.8	67.4	47.5	40.3	39.3	25.2	7.47	59.8	20.3	0.000	101
MAX	270	147	104	84	53	61	56	32	435	310	0.00	1,320
MIN	0.00	37	37	30	31	31	14	2.0	0.57	0.00	0.00	0.00
AC-FT	4,180	3,920	4,140	2,920	2,240	2,420	1,500	460	3,560	1,250	0.00	6,020

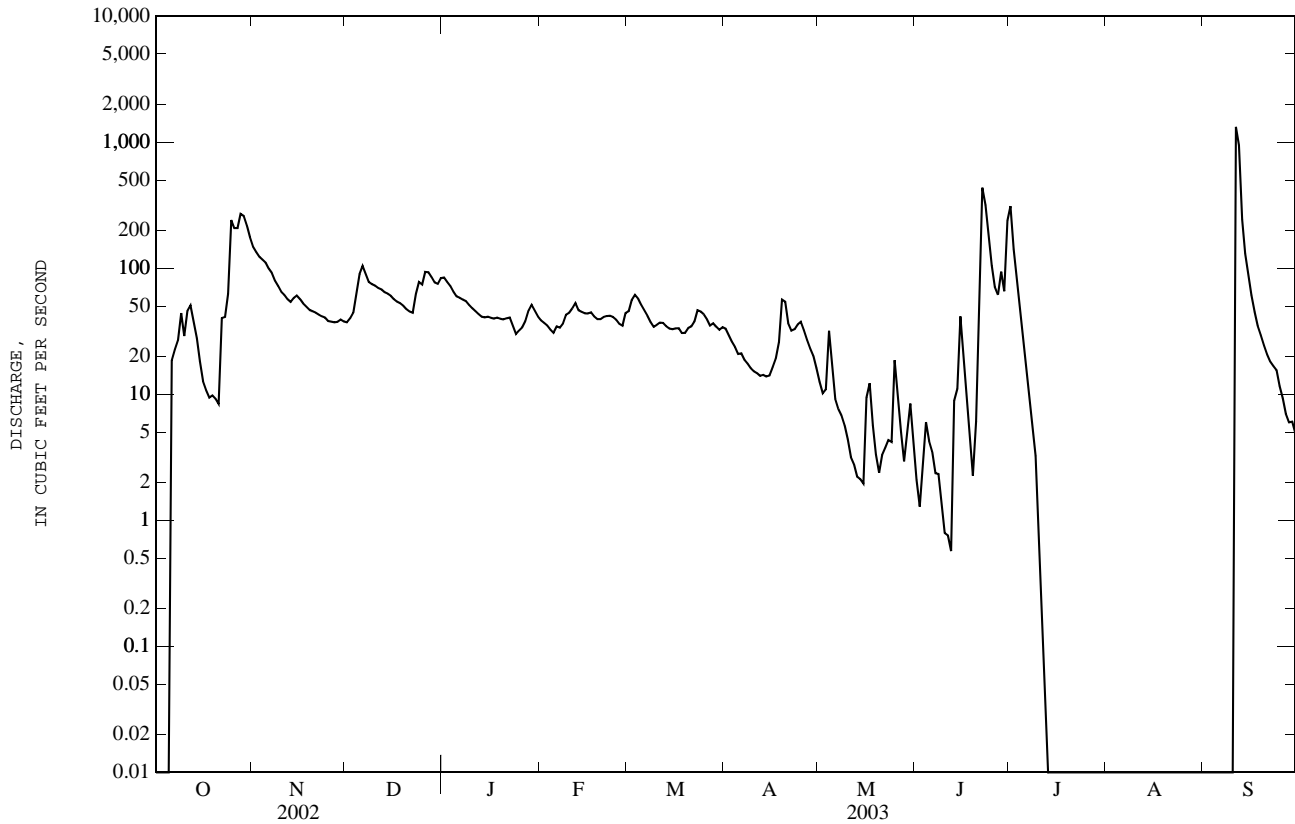
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2003, BY WATER YEAR (WY)

	75.4	32.5	38.6	47.3	56.9	55.8	103	253	230	63.5	38.4	50.3
MEAN	75.4	32.5	38.6	47.3	56.9	55.8	103	253	230	63.5	38.4	50.3
MAX	919	196	148	199	263	344	1,292	1,389	1,602	575	539	424
(WY)	(1961)	(1987)	(1992)	(1960)	(1998)	(1998)	(1997)	(1957)	(1941)	(1953)	(1995)	(1995)
MIN	0.000	0.000	0.000	0.000	0.000	0.12	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	(1941)	(1940)	(1940)	(1940)	(1953)	(1971)	(1955)	(1953)	(1952)	(1963)	(1943)	(1939)

e Estimated

07300500 Salt Fork Red River at Mangum, OK--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1938 - 2003	
ANNUAL TOTAL	13,694.68		16,437.36		87.1	
ANNUAL MEAN	37.5		45.0		277	
HIGHEST ANNUAL MEAN					12.3	
LOWEST ANNUAL MEAN					1941	
HIGHEST DAILY MEAN	724	Apr 13	1,320	Sep 11	22,600	May 28, 1978
LOWEST DAILY MEAN	0.00	at times	0.00	at times	0.00	most years
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 7	0.00	Jul 13	0.00	Aug 14, 1938
MAXIMUM PEAK FLOW			3,120	Sep 11	72,000	May 16, 1957
MAXIMUM PEAK STAGE			8.61	Sep 11	14.70	Jun 16, 1938
ANNUAL RUNOFF (AC-FT)	27,160		32,600		63,080	
10 PERCENT EXCEEDS	78		81		127	
50 PERCENT EXCEEDS	24		33		19	
90 PERCENT EXCEEDS	0.00		0.00		0.00	



RED RIVER BASIN

07301200 McClellan Creek near McLean, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 35°19'45", long 100°36'32", Gray County, Hydrologic Unit 11120301, on left bank at downstream side of bridge on State Highway 273, 5.0 mi upstream from mouth.

DRAINAGE AREA.--759.0 mi², of which 299 mi² probably is noncontributing.

PERIOD OF RECORD.--Oct. 1967 to Sept. 1980 (daily mean discharge), Oct. 1981 to Sept. 1992 (annual maximum), Oct. 1992 to current year (peak discharges greater than base discharge).

REVISED RECORDS.--WDR TX-75-1: 1968-70, 1972, 1973(M), 1974.

GAGE.--Water-stage recorder. Datum of gage is 2,545.99 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. Since installation of gage in Oct. 1967, at least 10% of contributing drainage area has been regulated.

AVERAGE DISCHARGE.--13 years (water years 1967-80), 20.1 ft³/s, 14,560 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,600 ft³/s May 29, 1975 (gage height, 14.55 ft). No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1912, 21 ft in May 1957, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
No peak greater than base discharge.				Sept. 11	0800	*28	*5.61

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RED RIVER BASIN

07301300 North Fork Red River near Shamrock, TX

LOCATION.--Lat 35°15'51", long 100°14'29", Wheeler County, Hydrologic Unit 11120302, on left bank at downstream side of bridge on U.S. Highway 83, 2.5 mi north of Shamrock.

DRAINAGE AREA.--1,082 mi², of which 379 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Oct. 1951 to Sept. 1963 (miscellaneous measurements). Oct. 1964 to Sept. 1991, Oct. 1992 to Sept. 2000 (peak discharge greater than base discharge), Oct. 2000 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,165.55 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily discharges and discharged computed from affected unit values from May 17, to June 24, which are fair. Since installation of gage in Oct. 1951, at least 10% of contributing drainage area has been regulated. Flow is affected at times by discharge from flood-detention pools of eleven floodwater retarding structures with combined detention capacity of 18,290 acre-feet. These structures control runoff from 165 mi². No flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	33	29	49	45	33	19	10	14	66	0.11	0.16
2	0.54	42	30	33	44	29	17	11	8.6	42	0.07	0.12
3	354	69	43	19	44	34	18	13	30	20	0.08	0.07
4	81	66	53	21	38	49	19	13	72	15	0.31	0.04
5	27	55	71	21	41	41	19	9.2	82	13	0.19	0.01
6	23	28	55	21	52	46	20	7.5	89	10	0.07	0.00
7	17	26	47	19	60	31	18	6.7	53	8.2	0.04	0.00
8	23	31	76	17	50	24	16	6.7	48	7.6	0.03	0.00
9	53	39	54	22	51	20	15	5.2	30	6.3	0.24	0.00
10	48	41	29	24	71	17	15	3.5	40	4.9	0.05	128
11	32	45	24	33	59	19	14	2.1	20	2.7	0.02	393
12	26	66	25	43	45	20	14	1.7	13	0.95	0.01	83
13	18	48	27	40	48	19	15	0.99	28	0.84	0.01	61
14	13	47	33	40	54	18	14	1.6	111	0.78	0.01	48
15	12	41	34	40	51	17	25	6.1	167	0.72	0.01	20
16	11	42	35	37	41	19	58	1390	44	0.70	0.00	10
17	10	41	28	39	42	20	36	74	42	0.68	0.00	6.0
18	11	41	22	38	37	22	27	74	17	0.65	0.00	4.8
19	32	30	19	38	32	27	35	32	13	0.59	0.00	2.3
20	66	32	20	40	29	32	23	27	10	0.51	0.00	1.3
21	40	30	20	43	28	31	17	41	241	0.55	0.00	1.2
22	42	31	29	44	37	27	18	28	402	0.50	0.00	1.2
23	130	33	52	45	46	28	19	20	140	0.47	0.00	1.1
24	257	32	64	e41	e26	25	21	20	95	0.40	0.00	0.84
25	161	26	36	40	e28	22	17	69	24	0.32	0.00	0.78
26	112	30	59	70	e46	22	13	42	23	0.27	0.00	0.84
27	245	30	49	53	e52	26	14	37	20	0.25	0.00	0.52
28	385	31	42	40	e54	31	14	29	15	0.22	0.00	0.51
29	116	34	48	41	---	26	13	109	76	0.36	0.00	0.46
30	56	34	48	43	---	24	11	105	102	0.40	1.1	0.89
31	43	---	52	45	---	19	---	23	---	0.23	0.22	---
TOTAL	2444.54	1174	1253	1139	1251	818	594	2218.29	2069.6	206.09	2.57	766.14
MEAN	78.9	39.1	40.4	36.7	44.7	26.4	19.8	71.6	69.0	6.65	0.083	25.5
MAX	385	69	76	70	71	49	58	1390	402	66	1.1	393
MIN	0.00	26	19	17	26	17	11	0.99	8.6	0.22	0.00	0.00
AC-FT	4850	2330	2490	2260	2480	1620	1180	4400	4110	409	5.1	1520

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2003h, BY WATER YEAR (WY)

	MEAN	19.1	16.0	20.5	27.4	32.5	37.8	45.8	85.4	77.8	12.0	5.82	14.7
MAX	155	75.2	124	158	97.1	116	252	609	369	73.6	55.5	60.9	
(WY)	1986	1976	2001	1988	1988	1987	1973	1977	1965	1967	1969	1966	
MIN	0.000	0.000	0.000	0.000	0.48	0.061	0.000	0.36	0.000	0.000	0.000	0.000	0.000
(WY)	1967	1967	1971	1971	1981	1972	1971	1984	1966	1969	1965	1970	

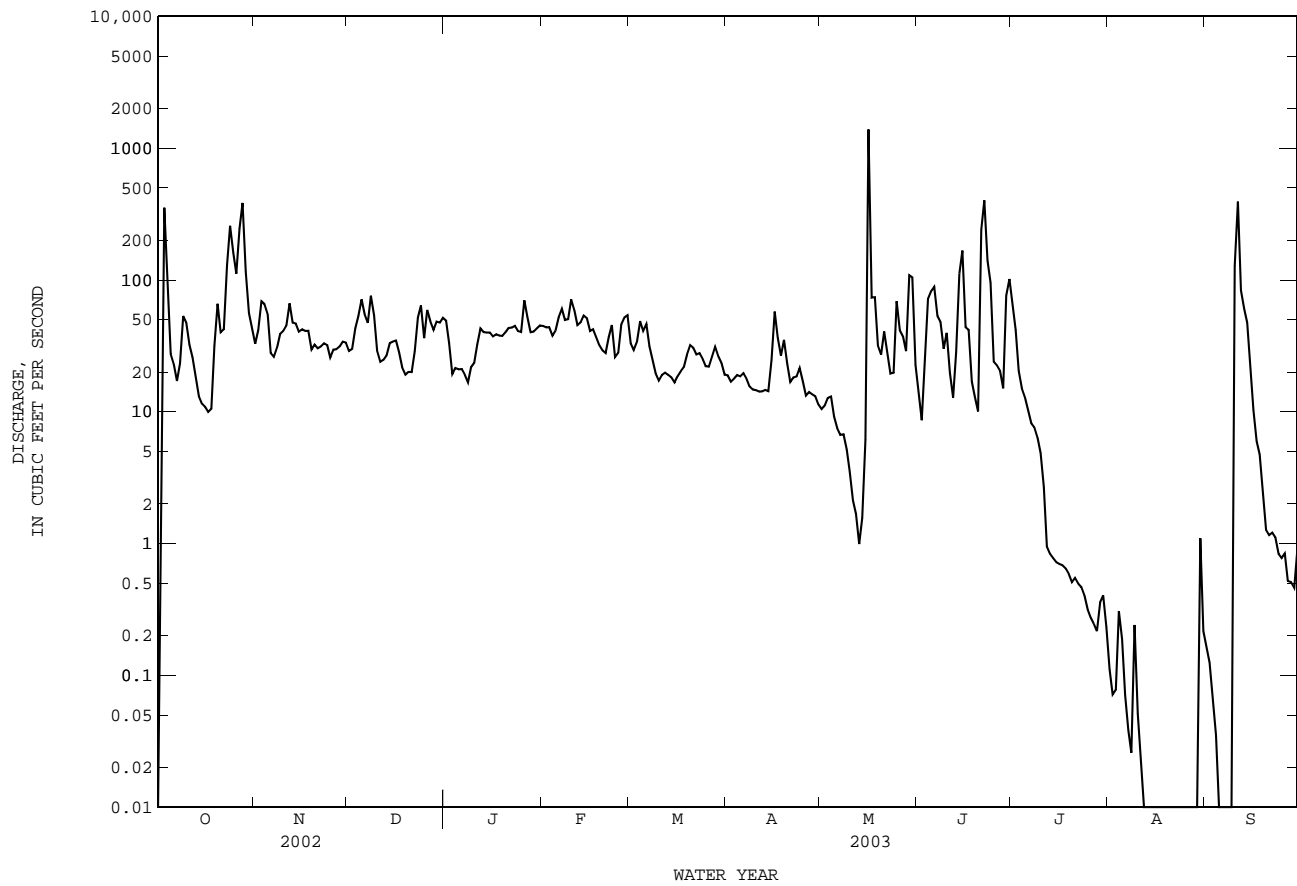
SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1965 - 2003h

ANNUAL TOTAL	9519.90	13936.23	
ANNUAL MEAN	26.1	38.2	32.8
HIGHEST ANNUAL MEAN			91.7
LOWEST ANNUAL MEAN			3.68
HIGHEST DAILY MEAN	385	Oct 28	14200
LOWEST DAILY MEAN	0.00	Aug 16	0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 20	0.00
MAXIMUM PEAK FLOW			9430
MAXIMUM PEAK STAGE			4.91
ANNUAL RUNOFF (AC-FT)	18880	27640	23790
10 PERCENT EXCEEDS	52	66	62
50 PERCENT EXCEEDS	20	26	1.8
90 PERCENT EXCEEDS	0.11	0.18	0.00

e Estimated

h See PERIOD OF RECORD paragraph.

07301300 North Fork Red River near Shamrock, TX--Continued



RED RIVER BASIN

07301300 North Fork Red River near Shamrock, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Oct. 1999 to current year.

BIOLOGICAL DATA: Oct. 1999 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Fecal coliform, M-FC 0.7u MF col/100 mL (31625)	E coli, m-TEC MF, water, col/100 mL (31633)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hardness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)
OCT 30...	1225	65	1960	8.3	10.5	11.4	102	280	450	560	360	171	31.9
MAR 11...	0935	18	2250	8.2	6.1	12.4	100	480	380	670	530	200	41.8
JUN 03...	1110	27	2480	8.0	23.5	8.2	97	970	720	820	730	248	49.4
SEP 16...	1205	12	2370	8.2	25.0	8.0	97	73	29	660	530	196	41.6

Date	Sodium, water, fltrd, mg/L (00930)	Sodium adsorption ratio (00931)	Potassium, water, fltrd, mg/L (00935)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate, water, fltrd, mg/L (00945)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue, water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)	Nitrite + nitrate, water, fltrd, mg/L as N (00613)	Nitrite + nitrate, water, fltrd, mg/L as N (00631)	Ammonia, water, fltrd, mg/L as N (00608)
OCT 30...	176	3	4.60	199	265	350	.61	23.9	1140	103	<.008	<.06	<.04
MAR 11...	219	4	3.50	145	372	441	.62	17.7	1380	10	<.008	.08	<.04
JUN 03...	229	3	4.98	97	608	405	.6	16.9	1620	<10	<.008	E.06	E.02
SEP 16...	200	3	6.37	133	475d	418d	.7	25.0	1440	<10	<.008	E.06n	<.04

Date	Total nitrogen, water, unfltrd mg/L (00600)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Phosphorus, water, unfltrd mg/L (00665)	Phosphorus, water, fltrd, mg/L (00666)	Orthophosphate, water, fltrd, mg/L as P (00671)
OCT 30...	--	.21	.43	.087	<.004	<.02
MAR 11...	.27	.16	.19	.009	<.004	<.02
JUN 03...	--	.17	.21	.008	<.004	<.02
SEP 16...	--	.24	.30	.010	E.004n	<.02

Remark codes used in this report:

< -- Less than

E -- Estimated value

Value qualifier codes used in this report:

d -- Diluted sample: method hi range exceeded

n -- Below the NDV

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RED RIVER BASIN

07301410 Sweetwater Creek near Kelton, TX

LOCATION.--Lat 35°28'23", long 100°07'14", Wheeler County, Hydrologic Unit 11120302, near center of stream at downstream side of bridge on Farm Road 592, 5.0 mi north of Kelton, 8.0 mi upstream from Texas-Oklahoma State line, and 8.5 mi northeast of Wheeler.

DRAINAGE AREA.--287 mi², of which 20 mi² probably is noncontributing.

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

Water-quality records.--Chemical data: Oct. 1969 to June 1985.

GAGE.--Water-stage recorder. Datum of gage is 2,230 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily discharges, which are fair. No known regulation. There are many small diversions upstream from the station for ranch use. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1882, about 20 ft May 16, 1957, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.71	27	16	22	18	19	16	13	7.1	8.5	0.34	0.49
2	1.2	26	16	20	19	19	16	12	6.8	8.2	0.28	0.50
3	66	26	16	19	19	19	16	12	6.7	7.5	0.27	0.49
4	54	25	20	19	18	19	15	12	35	6.8	0.27	0.48
5	23	25	19	19	18	18	15	11	34	6.2	0.28	0.45
6	13	23	20	18	19	18	15	11	20	5.8	0.24	0.41
7	9.4	22	22	19	19	18	15	11	16	5.3	0.24	0.39
8	7.5	23	23	19	19	18	15	10	14	4.9	0.23	0.45
9	8.4	22	23	18	21	17	14	9.8	12	4.7	0.47	0.41
10	8.0	20	21	18	21	17	14	9.5	11	5.7	0.33	0.35
11	6.5	19	20	18	21	17	15	9.2	10	4.6	0.27	1.2
12	5.9	20	20	18	20	17	14	9.0	9.5	3.7	0.24	0.75
13	5.1	20	20	18	19	17	14	8.8	9.0	3.1	0.25	0.74
14	4.9	20	19	18	19	17	14	8.6	11	2.6	0.22	0.75
15	4.8	19	19	18	19	17	15	9.0	14	2.3	0.22	0.81
16	4.3	18	18	18	18	17	27	53	11	2.0	0.21	0.87
17	4.0	18	18	18	18	17	20	24	9.6	1.8	0.18	0.76
18	3.9	18	18	18	18	17	17	16	9.1	1.7	0.16	0.71
19	5.8	18	18	18	19	17	16	13	11	1.6	0.13	0.83
20	8.2	17	17	18	19	20	15	11	10	1.4	0.10	0.93
21	8.9	17	18	18	19	19	15	11	14	1.3	0.08	1.0
22	8.3	17	17	18	19	18	15	11	15	e1.2	0.08	1.1
23	13	17	18	18	19	18	15	10	13	e1.0	0.07	0.93
24	e36	17	19	19	19	18	15	10	11	e0.92	0.07	0.78
25	54	17	19	19	20	17	15	9.7	9.8	e0.80	0.07	0.72
26	35	16	19	18	20	16	14	9.8	8.8	e0.71	0.07	0.82
27	35	15	19	19	20	16	14	9.7	8.5	e0.62	0.07	0.71
28	41	15	19	19	19	16	13	9.8	8.0	e0.54	0.06	0.69
29	44	16	22	18	---	16	13	8.9	8.4	0.47	0.11	0.73
30	36	16	26	18	---	16	12	8.1	9.5	0.54	0.58	0.88
31	31	---	24	18	---	16	---	7.5	---	0.45	0.40	---
TOTAL	586.81	589	603	573	536	541	459	378.4	372.8	96.95	6.59	21.13
MEAN	18.9	19.6	19.5	18.5	19.1	17.5	15.3	12.2	12.4	3.13	0.21	0.70
MAX	66	27	26	22	21	20	27	53	35	8.5	0.58	1.2
MIN	0.71	15	16	18	18	16	12	7.5	6.7	0.45	0.06	0.35
AC-FT	1160	1170	1200	1140	1060	1070	910	751	739	192	13	42

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2003, BY WATER YEAR (WY)

	MEAN	8.57	10.6	12.3	13.5	16.3	18.7	21.9	25.6	22.4	5.95	4.99	6.91
MAX	42.1	34.5	27.1	27.6	30.5	42.2	100	196	86.3	32.3	42.7	40.9	
(WY)	1987	1975	1998	1998	2001	1998	1997	1977	1965	1967	1963	1988	
MIN	0.30	1.05	3.11	5.78	6.82	9.09	8.72	3.38	2.80	0.44	0.000	0.027	
(WY)	1985	1985	1984	1995	1995	1977	1971	1971	1966	1974	1964	1984	

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

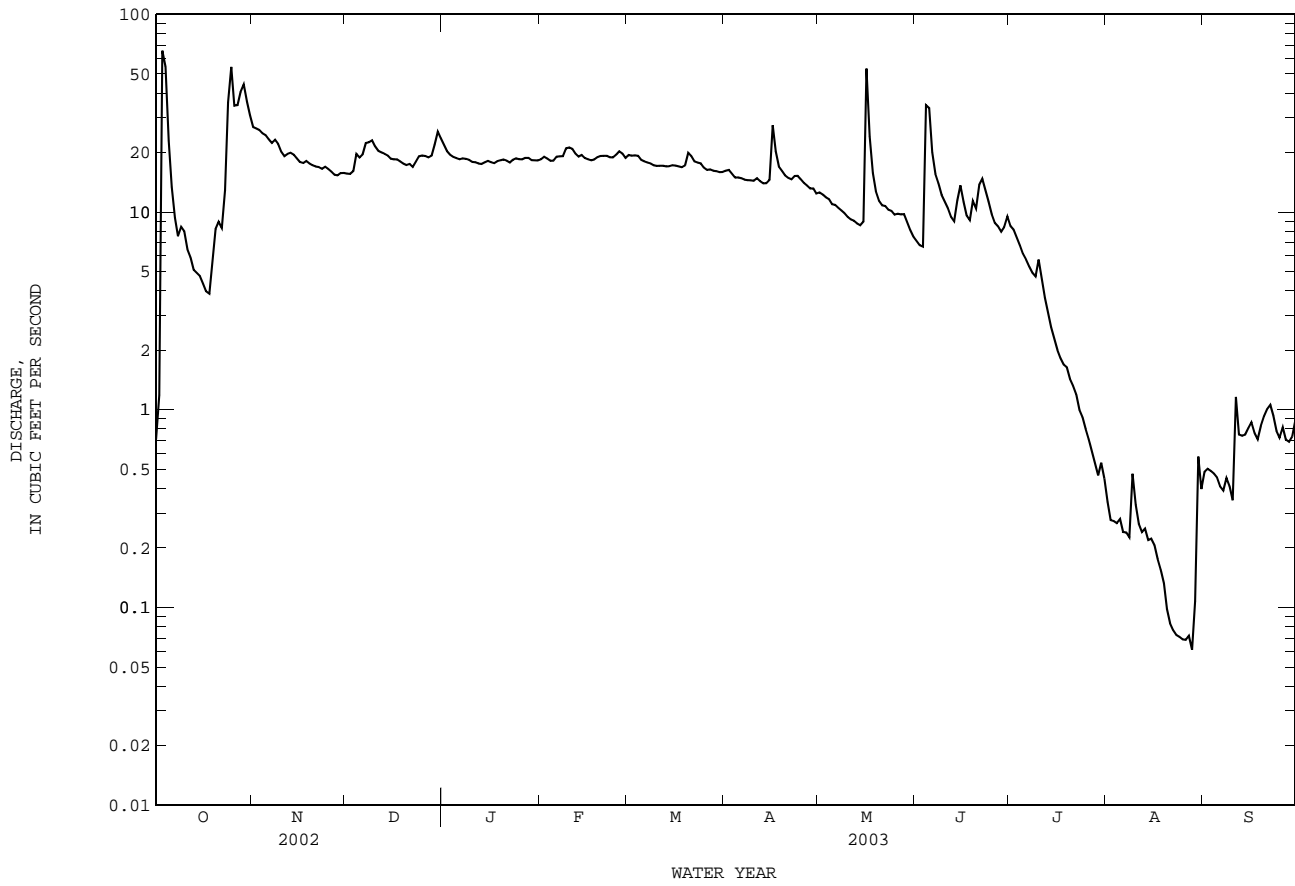
FOR 2003 WATER YEAR

WATER YEARS 1962 - 2003

ANNUAL TOTAL	3831.36	4763.68	
ANNUAL MEAN	10.5	13.1	13.8
HIGHEST ANNUAL MEAN			33.5
LOWEST ANNUAL MEAN			4.89
HIGHEST DAILY MEAN	66	66	1820
LOWEST DAILY MEAN	0.19	0.06	0.00
ANNUAL SEVEN-DAY MINIMUM	0.23	0.07	0.00
MAXIMUM PEAK FLOW		116	2890
MAXIMUM PEAK STAGE		8.86	15.73
ANNUAL RUNOFF (AC-FT)	7600	9450	10000
10 PERCENT EXCEEDS	19	20	23
50 PERCENT EXCEEDS	10	15	10
90 PERCENT EXCEEDS	0.59	0.46	0.82

e Estimated

07301410 Sweetwater Creek near Kelton, TX--Continued



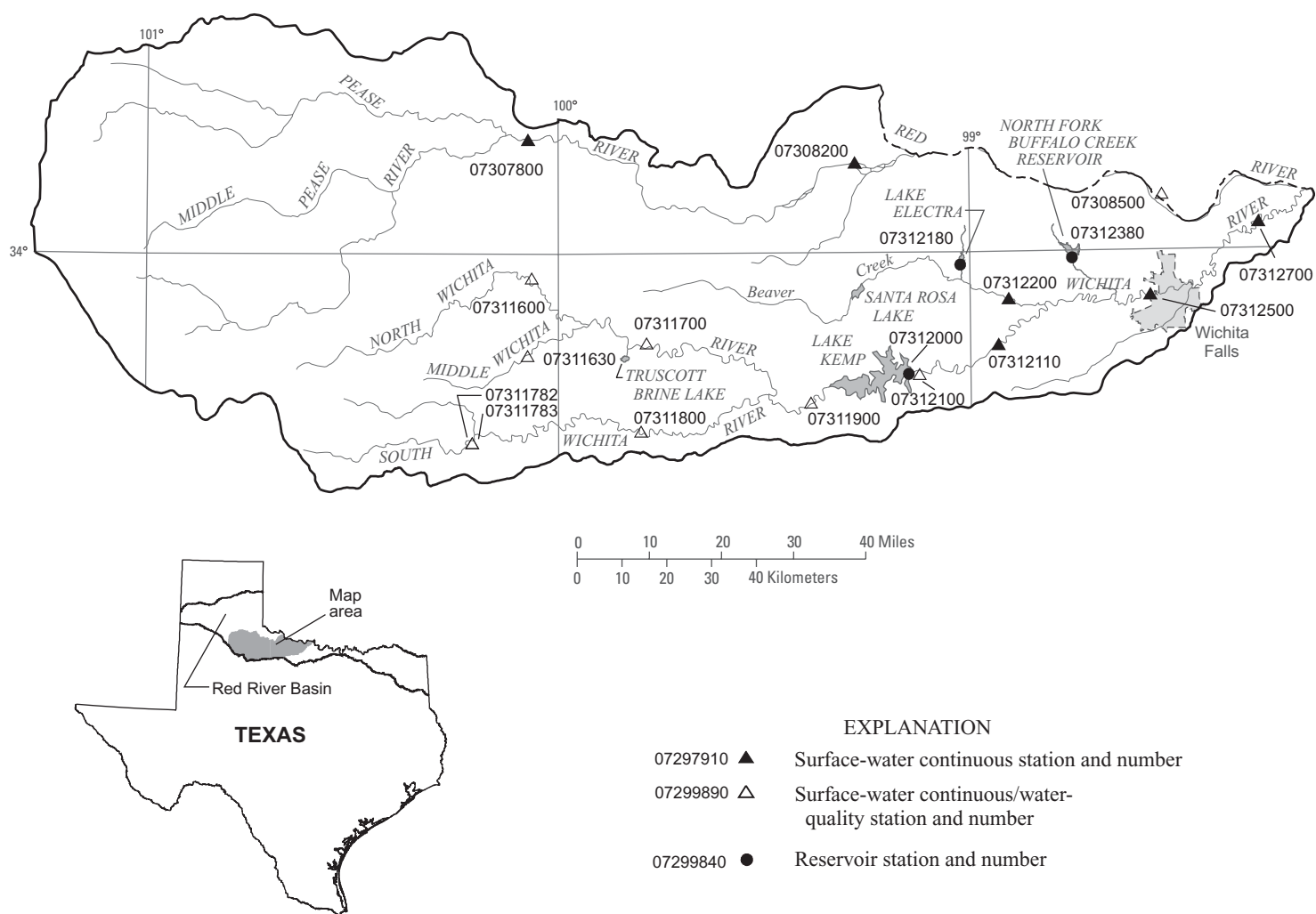


Figure 5.--Map showing location of gaging stations in the second section of the Red River Basin

07307800	Pease River near Childress, TX	98
07308200	Pease River near Vernon, TX	100
07308500	Red River near Burkburnett, TX	102
07311600	North Wichita River near Paducah, TX	112
07311630	Middle Wichita River near Guthrie, TX	124
07311700	North Wichita River near Truscott, TX	136
07311782	South Wichita River at low-flow dam near Guthrie, TX	148
07311783	South Wichita River below low-flow dam near Guthrie, TX	160
07311800	South Wichita River near Benjamin, TX	166
07311900	Wichita River near Seymour, TX	178
07312000	Lake Kemp near Mabelle, TX	188
07312100	Wichita River near Mabelle, TX	190
07312110	South Side Canal near Dundee, TX	202
07312180	Lake Electra near Electra, TX	204
07312200	Beaver Creek near Electra, TX	206
07312380	North Fork Buffalo Creek Reservoir near Iowa Park, TX	208
07312500	Wichita River at Wichita Falls, TX	210
07312700	Wichita River near Charlie, TX	212

RED RIVER BASIN

07307800 Pease River near Childress, TX

LOCATION.--Lat 34°13'39", long 100°04'24", Cottle County, Hydrologic Unit 11130105, near right bank at downstream side of bridge on State Highway 207, 0.8 mi upstream from Catfish Creek, 4.4 mi downstream from confluence of North and Middle Forks, 17 mi southeast of Childress, and 71.0 mi upstream from mouth.

DRAINAGE AREA.--2,754 mi², of which 559 mi² probably is noncontributing

PERIOD OF RECORD.--Dec. 1959 to Sept. 1962, Oct. 1967 to current year.

Water-quality records.--Chemical data: July 1968 to Sept. 1982, Oct. 1994 to Sept. 1997. Pesticide data: Oct. 1994 to Sept. 1997. Specific conductance: Oct. 1994 to Sept. 1997. Water temperature: Oct. 1994 to Sept. 1997.

GAGE.--Water-stage recorder. Datum of gage is 1,492.98 ft above NGVD of 1929. Prior to Dec. 21, 1959, nonrecording gage at same site and datum. Satellite telemeter at station.

REMARKS.--Records fair. No known regulation. There are three small diversions for irrigation above station. Flow is affected at times by discharge from the flood-detention pools of six floodwater-retarding structures with a combined detention capacity of 1,360 acre-ft. These structures control runoff from 6.27 mi² in the Kent Creek drainage basin. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1909, 22 ft June 1, 1957; flood in May 1935 reached a stage of 18 ft and was the second highest, from information by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.69	19	12	12	9.4	12	7.2	6.3	3.1	104	1.5	9.3
2	e0.80	21	16	11	8.9	12	6.6	6.8	6.3	71	1.3	4.9
3	e0.81	18	26	11	8.3	12	6.5	8.9	28	45	1.3	2.0
4	e0.82	18	60	11	8.5	10	6.3	9.4	16	26	1.3	1.3
5	e0.89	18	31	11	9.1	8.9	6.6	6.7	31	16	1.2	1.0
6	e0.94	15	23	11	10	9.1	6.8	5.0	55	13	1.0	0.80
7	1.4	13	20	11	10	9.0	6.5	5.1	106	13	0.87	0.70
8	39	13	18	11	10	8.6	6.0	5.2	87	13	0.85	0.63
9	27	11	19	9.9	10	8.2	6.3	4.5	38	12	0.91	0.46
10	13	11	17	9.5	9.4	8.5	6.3	3.7	33	9.3	0.79	0.32
11	10	11	16	9.7	9.6	8.9	6.2	3.4	20	7.7	0.70	12
12	8.6	12	14	10	9.5	9.4	6.3	3.7	10	6.3	0.72	3.6
13	7.4	11	14	11	10	8.7	6.2	4.9	9.3	5.3	0.70	5.0
14	8.2	12	13	10	11	8.4	5.7	4.9	15	4.9	2.1	2.1
15	7.2	10	13	10	9.4	8.5	10	4.2	17	4.6	1.7	1.3
16	6.4	11	13	10	8.9	8.7	22	4.8	9.6	4.5	0.09	1.0
17	6.4	11	12	9.6	9.0	8.1	16	4.5	7.7	3.9	0.07	0.73
18	6.8	9.9	12	9.8	9.2	7.9	10	3.4	7.7	3.6	0.06	0.76
19	6.6	9.5	11	9.7	9.5	8.4	165	2.8	11	3.4	0.06	0.82
20	5.8	9.7	11	9.5	9.7	9.0	43	19	182	3.2	0.05	0.76
21	6.0	9.9	11	9.3	11	8.6	18	14	148	2.7	0.05	0.92
22	6.4	11	11	8.8	11	9.1	39	7.3	296	2.6	0.47	0.90
23	16	11	25	8.3	9.4	9.5	75	4.1	141	2.5	0.05	0.90
24	21	10	30	8.7	8.7	8.6	44	2.4	459	2.5	0.04	0.72
25	27	10	22	9.0	9.9	7.8	29	162	154	2.1	0.05	0.85
26	19	10	19	9.2	11	7.5	17	388	109	2.1	0.03	0.97
27	25	10	17	10	11	7.4	8.7	134	168	2.0	0.03	0.89
28	56	10	16	9.8	11	11	7.5	60	249	2.0	0.03	0.95
29	72	14	15	9.3	---	9.7	7.2	19	222	1.8	0.80	1.3
30	27	11	14	9.8	---	9.2	6.7	4.5	203	1.8	59	7.2
31	20	---	13	9.6	---	8.3	---	3.0	---	1.7	379	---
TOTAL	454.15	371.0	564	309.5	272.4	281.0	607.6	915.5	2841.7	393.5	456.82	65.08
MEAN	14.7	12.4	18.2	9.98	9.73	9.06	20.3	29.5	94.7	12.7	14.7	2.17
MAX	72	21	60	12	11	12	165	388	459	104	379	12
MIN	0.69	9.5	11	8.3	8.3	7.4	5.7	2.4	3.1	1.7	0.03	0.32
AC-FT	901	736	1120	614	540	557	1210	1820	5640	781	906	129
CFSM	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.04	0.01	0.01	0.00
IN.	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.02	0.05	0.01	0.01	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003h, BY WATER YEAR (WY)

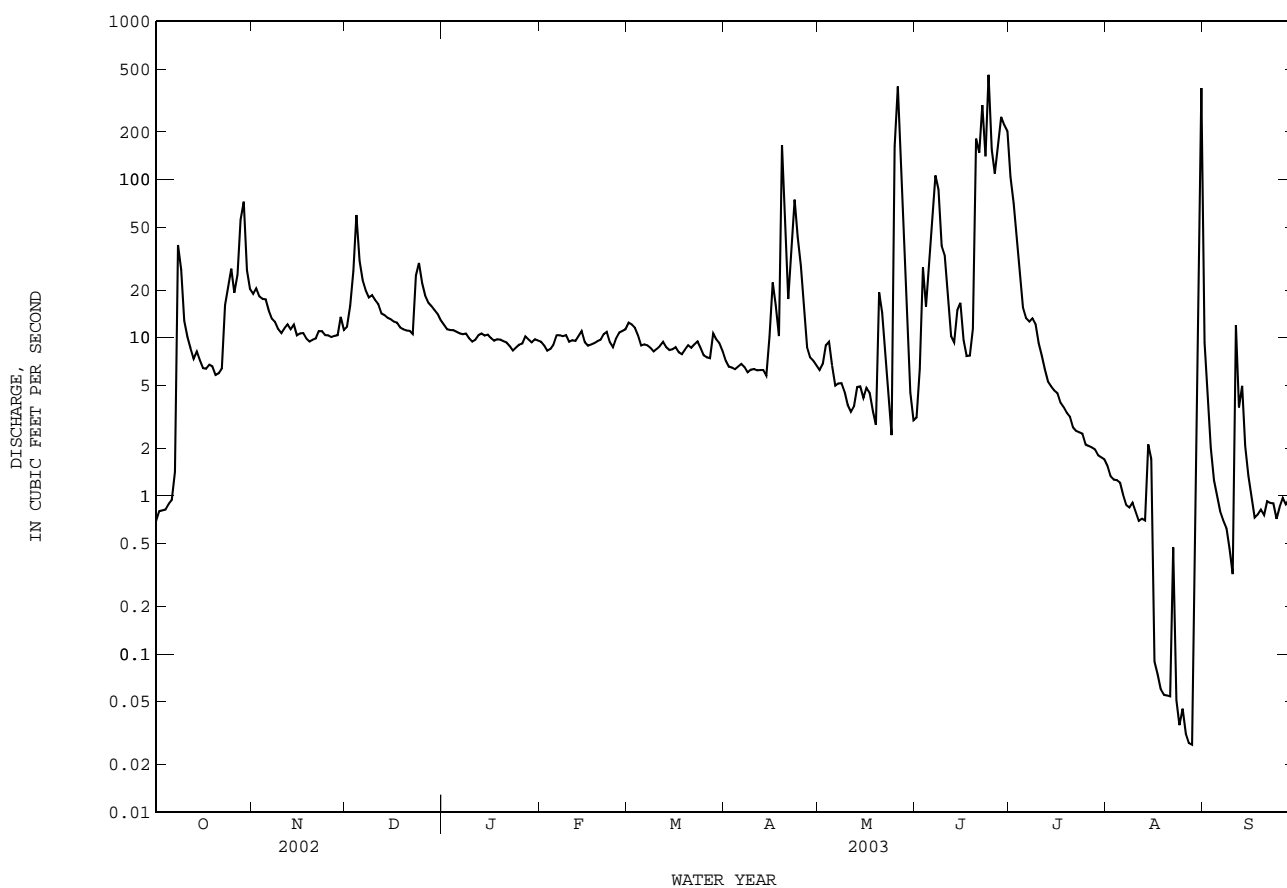
	MEAN	89.3	22.4	20.0	20.0	25.1	32.8	56.1	87.8	198	48.9	60.1	81.4
MAX	895	154	132	158	170	181	750	424	858	248	723	683	
(WY)	1984	1987	1992	1992	1992	1973	1997	1997	1995	1961	1995	1995	
MIN	1.68	3.04	3.74	2.70	2.83	2.78	2.87	3.67	2.47	0.28	0.13	0.58	
(WY)	1981	1978	1979	1971	1971	1971	1960	1961	2001	1980	1980	2000	

07307800 Pease River near Childress, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR	FOR 2003 WATER YEAR	WATER YEARS 1960 - 2003h	
ANNUAL TOTAL	6686.86	7532.25		
ANNUAL MEAN	18.3	20.6	61.3	
HIGHEST ANNUAL MEAN			204	1995
LOWEST ANNUAL MEAN			15.8	1994
HIGHEST DAILY MEAN	394 Jul 7	459 Jun 24	14800	Oct 20 1983
LOWEST DAILY MEAN	0.68 Aug 4	0.03 Aug 26	0.00	Aug 10 1969
ANNUAL SEVEN-DAY MINIMUM	0.81 Sep 30	0.10 Aug 22	0.00	Aug 10 1969
MAXIMUM PEAK FLOW		2440 Aug 31	28500	Jun 5 1995
MAXIMUM PEAK STAGE		9.60 Aug 31	17.12	Jun 5 1995
ANNUAL RUNOFF (AC-FT)	13260	14940	44390	
ANNUAL RUNOFF (CFSM)	0.008	0.009	0.028	
ANNUAL RUNOFF (INCHES)	0.11	0.13	0.38	
10 PERCENT EXCEEDS	27	30	90	
50 PERCENT EXCEEDS	8.2	9.4	9.0	
90 PERCENT EXCEEDS	2.6	0.89	1.7	

e Estimated

h See PERIOD OF RECORD paragraph.



RED RIVER BASIN

07308200 Pease River near Vernon, TX

LOCATION.--Lat 34°10'47", long 99°19'23", Wilbarger County, Hydrologic Unit 11130105, near left bank at downstream side of bridge on U.S. Highway 287, 1.0 mi west of Vernon, and 12.0 mi upstream from mouth.

DRAINAGE AREA.--3,488 mi², of which 559 mi² probably is noncontributing.

PERIOD OF RECORD.--Dec. 1959 to Sept. 1982, Oct. 1982 to Sept. 1987 (annual maximum), Mar. 1992 to current year.

Water-quality records.--Chemical data: Nov. 1967 to Sept. 1981. Specific conductance: Oct. 1998 to Sept. 1999. Water Temperature: Oct. 1998 to Sept. 1999.

GAGE.--Water-stage recorder. Datum of gage is 1,179.04 ft above NGVD of 1929. From Nov. 28, 1959 to Mar. 21, 2002, at site 2.0 mi downstream at different datum. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Flow is affected at times by discharge from the flood-detention pools of six flood-retarding structures with a combined detention capacity of 1,360 acre-ft. These structures control runoff from 6.27 mi² in the Kent Creek drainage basin. There are four small diversions for irrigation above station. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, 24 ft in 1891. The flood in Sept. 1936 reached a stage of 23.5 ft, and the flood of June 2, 1957, reached a stage of 22.0 ft, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.04	87	14	51	27	24	17	22	38	243	0.00	e214
2	0.04	74	14	47	27	24	17	19	65	e152	0.00	e78
3	0.03	70	23	45	25	25	17	19	57	e118	0.00	e37
4	0.02	64	98	43	24	24	16	17	44	e82	0.00	31
5	0.02	56	e120	42	24	22	16	15	91	e59	0.00	18
6	0.04	48	83	40	24	21	15	13	1480	e42	0.00	12
7	0.02	42	68	39	24	21	13	13	461	e28	0.00	6.2
8	4.2	38	53	39	24	21	12	13	153	e22	0.00	2.8
9	7.1	34	50	38	26	19	12	12	158	e17	0.00	1.5
10	3.3	30	46	36	26	19	13	11	138	e13	0.00	0.67
11	18	27	43	34	26	19	13	9.0	91	e11	0.00	4.1
12	16	25	40	35	26	21	13	8.2	62	e8.4	0.00	20
13	11	23	37	35	26	20	13	7.8	55	e7.1	0.00	52
14	8.9	22	34	34	27	20	12	7.9	49	e6.5	0.00	40
15	6.7	22	32	33	27	20	13	8.3	51	e5.0	0.00	20
16	5.1	22	30	32	26	22	14	7.5	35	e3.7	0.00	12
17	3.9	20	29	31	25	20	13	5.7	29	e2.4	0.00	9.5
18	3.9	19	27	31	23	20	13	5.2	28	e2.1	0.00	5.8
19	4.0	18	26	31	22	21	18	4.1	23	e1.7	0.00	1.9
20	3.4	17	24	31	22	19	45	7.3	19	e0.98	0.00	2.0
21	3.2	17	23	31	24	19	159	15	17	e0.46	0.00	1.4
22	3.1	16	22	29	27	20	87	19	65	0.61	0.00	1.4
23	4.8	16	174	28	26	21	68	18	113	0.30	0.00	0.92
24	13	15	602	28	24	21	66	18	198	0.21	0.00	0.96
25	23	14	216	27	e23	19	77	22	150	0.18	0.00	0.74
26	25	14	124	27	25	19	47	34	444	0.09	0.00	0.75
27	24	14	91	28	24	18	36	396	267	0.05	0.00	0.19
28	107	14	76	29	24	19	30	305	122	0.00	0.00	0.01
29	666	14	66	27	---	18	26	145	132	0.00	0.00	0.01
30	244	14	62	27	---	18	24	83	233	0.00	0.36	0.00
31	129	---	55	27	---	18	---	53	---	0.00	e30	---
TOTAL	1337.81	906	2402	1055	698	632	935	1333.0	4868	826.78	30.36	574.85
MEAN	43.2	30.2	77.5	34.0	24.9	20.4	31.2	43.0	162	26.7	0.98	19.2
MAX	666	87	602	51	27	25	159	396	1480	243	30	214
MIN	0.02	14	14	27	22	18	12	4.1	17	0.00	0.00	0.00
AC-FT	2650	1800	4760	2090	1380	1250	1850	2640	9660	1640	60	1140

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003h, BY WATER YEAR (WY)

	MEAN	93.1	53.6	27.5	25.0	28.3	45.9	64.5	182	310	122	102	170
MAX	1057	427	163	138	172	269	359	777	2196	1185	1657	895	
(WY)	1961	2001	1960	2001	1993	1973	1973	1977	1995	1975	1995	1965	
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.12	6.86	0.000	0.000	0.20	
(WY)	1964	1971	1971	1971	1971	1971	1971	1961	1998	1964	1980	1980	

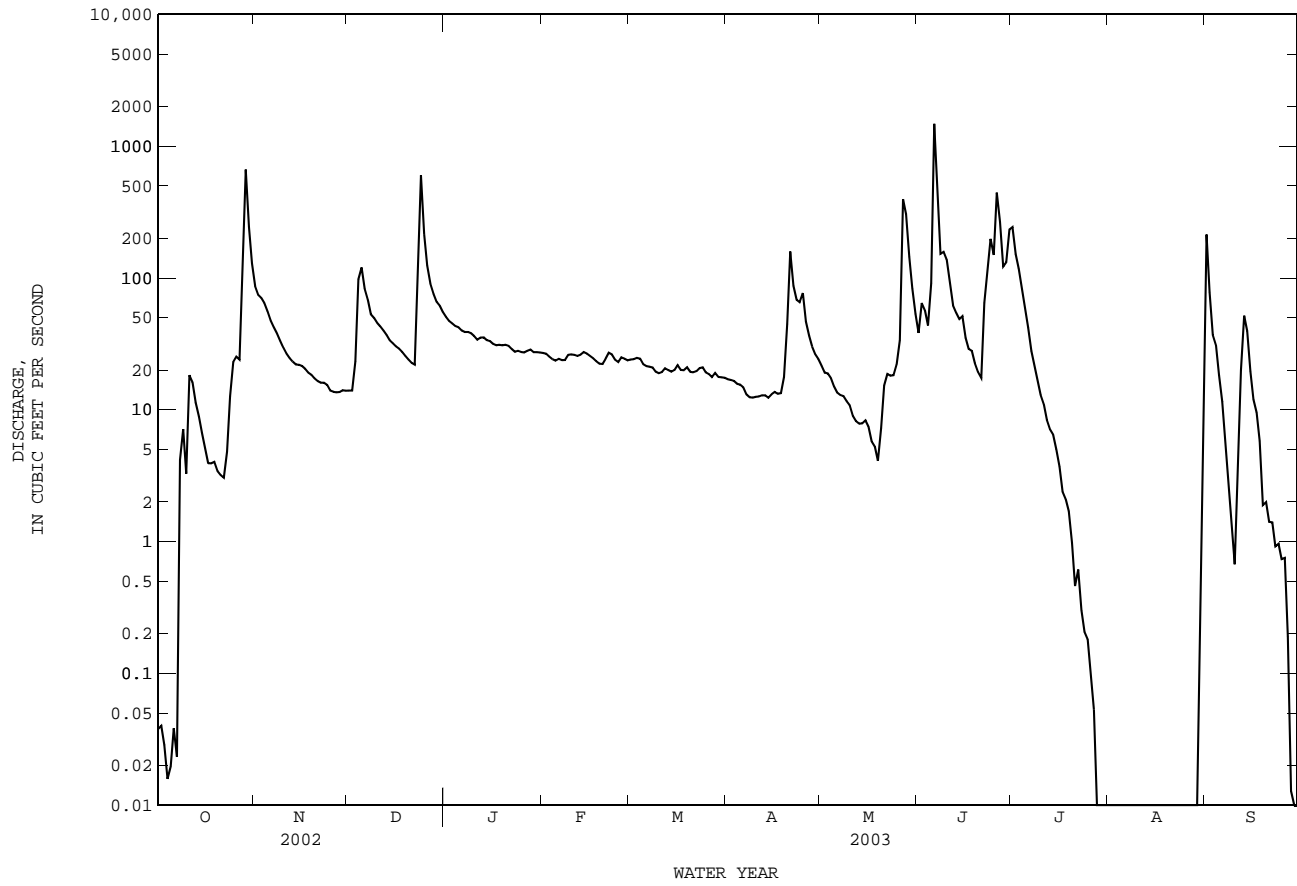
SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1960 - 2003h

ANNUAL TOTAL	30167.75	15598.80	
ANNUAL MEAN	82.7	42.7	99.9
HIGHEST ANNUAL MEAN			441
LOWEST ANNUAL MEAN			7.23
HIGHEST DAILY MEAN	2760	Jul 5	20400
LOWEST DAILY MEAN	0.02	Oct 4	0.00
ANNUAL SEVEN-DAY MINIMUM	0.03	Sep 29	0.00
MAXIMUM PEAK FLOW			2300
MAXIMUM PEAK STAGE			9.14
ANNUAL RUNOFF (AC-FT)	59840	30940	72380
10 PERCENT EXCEEDS	132	85	142
50 PERCENT EXCEEDS	23	21	9.7
90 PERCENT EXCEEDS	1.8	0.02	0.00

e Estimated

h See PERIOD OF RECORD paragraph.

07308200 Pease River near Vernon, TX--Continued



RED RIVER BASIN

07308500 Red River near Burkburnett, TX

LOCATION.--Lat 34°06'36", long 98°31'53", Cotton County, OK, Hydrologic Unit 11130102, on downstream guardrail of downstream 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 Aug. 1925 (monthly discharge only), Dec. 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 952.57 ft above NGVD 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. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. There are many small diversions upstream from station for irrigation. No flow at times.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	1280	179	471	249	148	83	178	282	3710	47	238
2	14	1040	184	428	241	152	63	149	250	1830	42	1050
3	12	930	203	426	218	182	60	130	256	1200	38	1160
4	13	809	338	432	228	218	64	113	1250	949	35	525
5	11	656	533	437	220	180	59	100	1860	659	29	317
6	10	601	528	406	209	174	57	81	2610	503	26	192
7	9.4	516	581	409	224	191	48	72	9980	410	22	122
8	106	429	507	393	216	195	47	69	3120	351	18	93
9	234	377	521	372	211	180	167	68	2470	304	34	75
10	268	327	517	361	238	171	229	65	1300	252	26	61
11	408	291	490	349	257	163	169	66	1250	231	21	60
12	459	261	444	363	235	153	149	61	1050	196	16	59
13	325	243	415	376	248	148	137	58	949	162	16	52
14	330	226	394	e363	244	142	118	58	1140	154	36	224
15	219	213	380	e324	207	137	111	59	3730	128	39	1830
16	164	215	360	283	197	133	150	74	4440	120	27	1850
17	132	208	345	286	203	135	141	74	1720	109	36	831
18	116	205	317	281	185	126	145	62	1190	99	35	507
19	108	205	299	275	167	113	e164	52	870	94	26	371
20	116	194	293	271	168	110	160	58	662	88	17	291
21	95	185	283	252	191	117	443	79	560	86	13	236
22	83	184	263	239	227	142	596	90	474	e83	11	209
23	88	183	334	252	187	214	498	95	2340	69	9.0	184
24	212	179	1140	e254	173	160	e418	118	3090	62	7.3	155
25	391	174	1490	e243	179	132	e362	818	1690	58	7.1	140
26	308	177	1110	245	e151	126	276	711	1610	53	7.8	127
27	806	172	1020	e238	e107	116	227	1330	2030	50	7.9	114
28	1490	171	815	e236	126	107	197	2160	2290	50	8.0	100
29	1880	175	640	e235	---	108	177	1390	1890	50	9.7	87
30	3320	171	562	e253	---	107	e187	733	2380	56	63	79
31	1610	---	514	256	---	94	---	420	---	52	211	---
TOTAL	13353.4	10997	15999	10009	5706	4574	5702	9591	58733	12218	940.8	11339
MEAN	431	367	516	323	204	148	190	309	1958	394	30.3	378
MAX	3320	1280	1490	471	257	218	596	2160	9980	3710	211	1850
MIN	9.4	171	179	235	107	94	47	52	250	50	7.1	52
AC-FT	26490	21810	31730	19850	11320	9070	11310	19020	116500	24230	1870	22490

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003, BY WATER YEAR (WY)

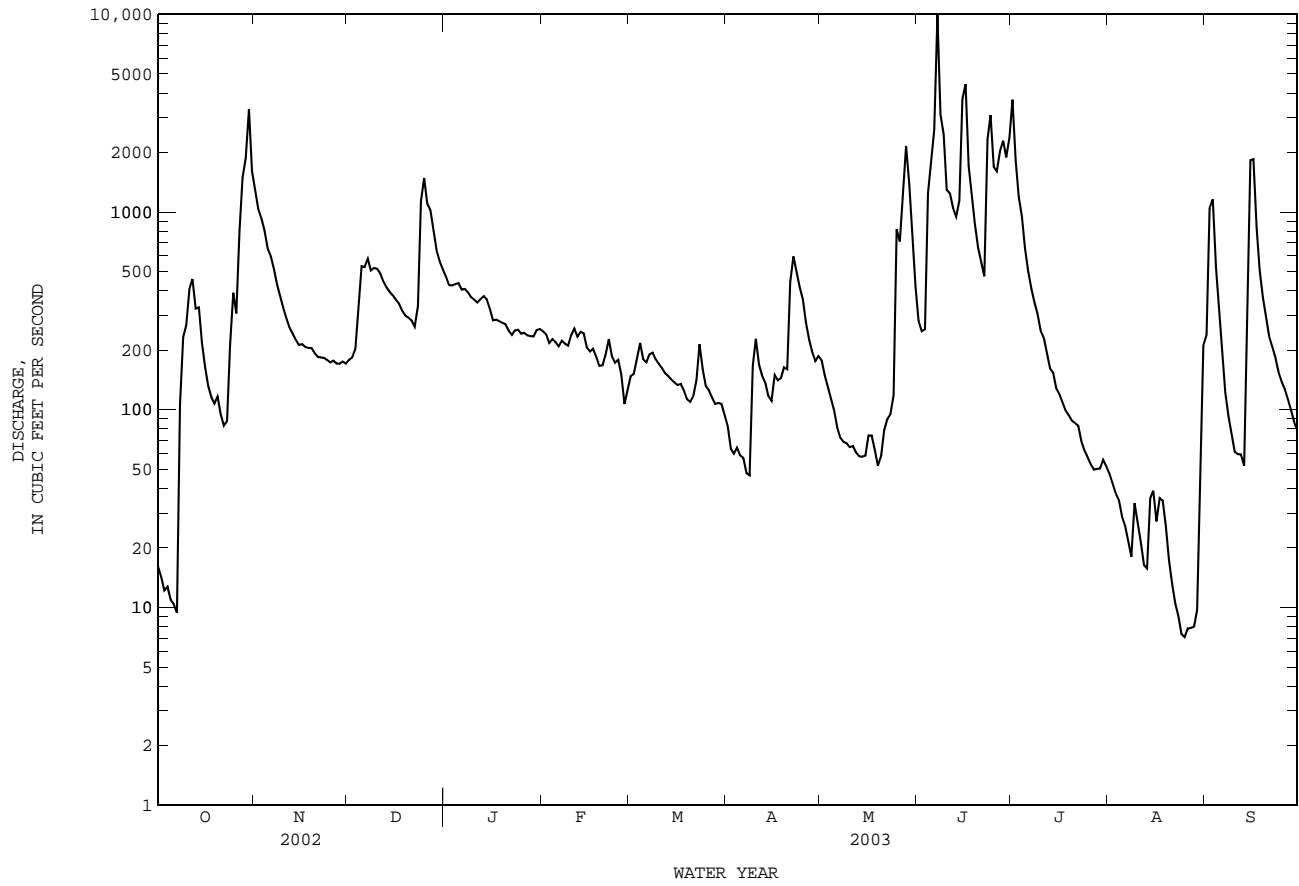
MEAN	1457	685	570	497	716	953	1091	2314	3307	871	833	1285
MAX	14900	4960	4435	2293	4986	10050	13040	12470	24780	5947	10540	6381
(WY)	1987	1987	1992	1998	1998	1998	1997	1977	1995	1975	1995	1996
MIN	21.9	0.96	2.98	5.53	8.37	7.97	0.15	11.4	148	0.058	1.29	29.9
(WY)	1971	1971	1971	1971	1971	1971	1971	1971	1970	1970	1964	2002

SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1960 - 2003

ANNUAL TOTAL	156446.4	159162.2	
ANNUAL MEAN	429	436	1218
HIGHEST ANNUAL MEAN			4424
LOWEST ANNUAL MEAN			178
HIGHEST DAILY MEAN	5390	Apr 15	9980 Jun 7
LOWEST DAILY MEAN	9.4	Oct 7	7.1 Aug 25
ANNUAL SEVEN-DAY MINIMUM	12	Oct 1	8.1 Aug 23
MAXIMUM PEAK FLOW			15200 Jun 7
MAXIMUM PEAK STAGE			7.68 Jun 7
ANNUAL RUNOFF (AC-FT)	310300	315700	882400
10 PERCENT EXCEEDS	1030	1140	2430
50 PERCENT EXCEEDS	183	203	303
90 PERCENT EXCEEDS	32	47	53

e Estimated

07308500 Red River near Burkburnett, TX--Continued



07308500 Red River near Burkburnett, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: May 1968 to current year.

BIOCHEMICAL DATA: Oct. 1974 to Aug. 1994.

PESTICIDE DATA: Oct. 1973 to Sept. 1982, Oct. 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1968 to Sept. 1981, Oct. 1994 to Jan. 2004.

WATER TEMPERATURE: July 1968 to Sept. 1981, Oct. 1994 to May 2004.

INSTRUMENTATION.--Water-quality monitor Dec. 1968 to Sept. 1981 and Oct. 1994 to May 2004.

REMARKS.--Records fair. Interruptions in the record were due to malfunction of the instrument. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed for previous years using the daily (or continuous) records of specific conductance and a regression relation between each chemical constituent and specific conductance. The computation of the selected constituent loads might include estimated discharge or specific conductance data. Regression equations developed for this station may be obtained from the U.S. Geological Survey Texas District Office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 17,400 microsiemens/cm, July 30, 1972; minimum, 440 microsiemens/cm, Apr. 13, 2002.

WATER TEMPERATURE: Maximum, 38.0°C, July 24, 2001; minimum, 0.0°C, on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 17,800 microsiemens/cm, Oct. 9; minimum, 3,090 microsiemens/cm, Oct. 25.

WATER TEMPERATURE: Maximum, 29.0°C, Oct. 2; minimum, 1.4°C, Dec. 25.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf, uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard-ness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorption ratio (00931)
OCT													
10...	1035	298	9450	7.8	16.1	8.4	88	1300	1200	361	87.2	1600	20
NOV													
22...	1230	106	9340	8.3	13.3	12.6	123	1500	1400	411	122	1500	17
DEC													
13...	1355	394	10800	8.0	8.3	12.0	106	1600	1400	437	125	1800	19
JAN													
03...	1230	431	10000	8.1	5.4	12.8	105	1600	1400	412	130	1730	19
FEB													
05...	1505	224	9630	8.2	7.0	13.4	114	1700	1500	433	141	1500	16
MAR													
04...	1035	210	9340	8.1	9.7	13.2	121	1600	1400	411	140	1510	16
APR													
14...	1035	124	9760	8.1	18.5	9.4	104	1700	1600	432	153	1610	17
MAY													
21...	1415	77	9490	8.1	19.3	10.6	117	1600	1500	417	144	1710	18
JUN													
27...	1030	1920	6330	7.9	23.1	8.8	106	870	780	258	54.4	948	14
JUL													
24...	1155	64	7400	8.2	27.6	8.0	103	1700	1600	429dp	155dp	1430dp	15
AUG													
19...	1130	32	6950	8.2	29.4	8.0	106	1400	1300	308d	144d	996d	12
SEP													
24...	1055	156	7920	8.1	22.6	8.5	102	1400	1400	411d	100d	1320d	15

07308500 Red River near Burkburnett, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Potas- sium, water, fltrd, mg/L (00935)	Alka- linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate water, fltrd, mg/L (00945)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue total at 105 deg. C, sus- pended, mg/L (00530)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)	Total nitro- gen, water, unfltrd mg/L (00600)
OCT 10...	11.4	83	1030	2410	.54	6.9	5560	4040r	.48	.090	.57	.10	6.9
NOV 22...	8.30	169	1250	2480	.50	10.9	5880	134	.80	.009	.81	<.04	1.7
DEC 13...	9.70	174	1330	3000	.50	9.5	6810	74	.88	.014	.89	.10	1.4
JAN 03...	9.70	184	1220	2750	.50	10.4	6370	114	1.20	.025	1.22	.09	1.8
FEB 05...	8.37	145	1330	2500	.51	4.1	6000	22	.55	.015	.56	E.03	1.0
MAR 04...	8.80	161	1280	2420	.47	2.6	5870	39	.38	.012	.39	<.04	1.0
APR 14...	12.7	123	1440	2560	.50	1.7	6290	26	--	<.008	<.06	E.04	--
MAY 21...	12.5	116	1310	2500	.5	6.5	6170	19	--	<.008	<.06	<.04	--
JUN 27...	11.0	90	709	1630	.5	9.6	3670	263	--	E.010	E.56	E.01	--
JUL 24...	12.2dp	114	1130d	1820d	.6	8.8	5050	47	.11	.014	.12	.15	.40
AUG 19...	11.0d	84	1150d	1660d	.6	10.0	4320	29	--	<.008	<.06	E.02n	--
SEP 24...	13.7d	74	1060d	2050d	.4	9.4	5010	124	--	<.008	<.06	<.04	--
Date	Organic nitro- gen, water, unfltrd mg/L (00605)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Phos- phorus, water, unfltrd mg/L (00665)	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Ortho- phos- phate, water, fltrd, mg/L (00660)	Arsenic water, unfltrd ug/L (01002)	Arsenic water, fltrd, ug/L (01000)	Barium, water, unfltrd recover- able, ug/L (01007)	Barium, water, fltrd, ug/L (01005)	Cadmium water, unfltrd ug/L (01027)	Cadmium water, fltrd, ug/L (01025)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)
OCT 10...	6.3	6.4	3.02	<.04	<.02	--	17	1.1	560	104	.56	<.15	36.9
NOV 22...	--	.85	.16	<.04	E.01	--	5	3.3	110	94	<.14	<.15	1.4
DEC 13...	.39	.48	.10	.04	.04	.117	E2	2.9	87	87	<.17	<.18	1.7
JAN 03...	.46	.55	.13	.06	.06	.184	3	3.6	111	92	<.14	<.15	1.6
FEB 05...	--	.45	E.03	<.04	<.02	--	E1	2.8	70	67	<.14	<.15	<.8
MAR 04...	--	.64	.05	<.04	<.02	--	E1	2.8	66	62	<.14	E.11n	E.5
APR 14...	--	.91	.12	<.04	<.02	--	5	2.4	68	69	<.14	<.15	<.8
MAY 21...	--	1.1	.13	E.02	<.02	--	3	3.3	97	94	<.14	<.15	<.8
JUN 27...	--	3.7	1.89	.06	E.04	--	12	3.4	542	121	.40	<.11	22.4
JUL 24...	.13	.28	<.04	<.04	<.02	--	3	4.6d	149d	133	<.10d	.29d	.8
AUG 19...	--	.72	.05	<.04	<.02	--	4	4.7d	109d	96d	<.10d	<.11d	<.8
SEP 24...	--	.89	.15	<.04	<.02	--	3	2.5	176	135	<.14	E.03	E.8

RED RIVER BASIN

07308500 Red River near Burkburnett, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chromium, water, fltrd, ug/L (01030)	Copper, water, unfltrd recover- able, ug/L (01042)	Copper, water, fltrd, ug/L (01040)	Iron, water, unfltrd recover- able, ug/L (01045)	Iron, water, fltrd, ug/L (01046)	Lead, water, unfltrd recover- able, ug/L (01051)	Lead, water, fltrd, ug/L (01049)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, unfltrd recover- able, ug/L (71900)	Mercury water, fltrd, ug/L (71890)	Nickel, water, unfltrd recover- able, ug/L (01067)	Nickel, water, fltrd, ug/L (01065)
OCT 10...	<.8	73.7	6.5	28300	<50	59	E.22n	2900	1.7	.23	E.01	101	10.4
NOV 22...	<.8	15.9	3.6	1160	<50	1	<.32	73	6.5	<.02	<.02	22	16.4
DEC 13...	<.8	10.1	4.4	780	<100	M	<.40	52	7.5	<.02	<.02	26	18.4
JAN 03...	<.8	9.6	4.2	940	<50	2	<.32	71	6.4	<.02	<.02	27	21.1
FEB 05...	<4.0	15.5	4.7	50	<50	Mn	<.32	26	11.3	<.02	<.02	42	26.0
MAR 04...	.8	6.9	3.3	120	<50	M	E.18n	38	20.7	<.02	<.02	13	14.0
APR 14...	<.8	10.8	6.8	160	<100	M	<.32	61	45.4	<.02	<.02	18	17.0
MAY 21...	<.8	12.4	4.9	70	<8	M	<.32	62	25.9	E.01	<.02	16	17.2
JUN 27...	<.8	49.8	3.5	<6	<8	41	E.13n	1650	E.4n	.05	<.02	57	6.54
JUL 24...	<.8	6.2d	3.8	460	<40d	Md	<.24d	78d	7.6	<.02	<.02	14d	12.7d
AUG 19...	<.8	7.4d	5.1d	210d	<40d	Md	<.24d	82d	12.5d	--	--	18d	9.46d
SEP 24...	<1.6	13.9	4.1	1020	<40	2	.16	94	2.7	<.02	<.02	17	6.06
Date	Selen- ium, water, unfltrd ug/L (01147)	Selen- ium, water, fltrd, ug/L (01145)	Silver, water, unfltrd recover- able, ug/L (01077)	Silver, water, fltrd, ug/L (01075)	Zinc, water, unfltrd recover- able, ug/L (01092)	Zinc, water, fltrd, ug/L (01090)	Aldrin, water, unfltrd ug/L (39330)	Aroclor 1016 + 1242, water, unfltrd ug/L (81648)	Aroclor 1221, water, unfltrd ug/L (39488)	Aroclor 1232, water, unfltrd ug/L (39492)	Aroclor 1248, water, unfltrd ug/L (39500)	Aroclor 1254, water, unfltrd ug/L (39504)	Aroclor 1260, water, unfltrd ug/L (39508)
OCT 10...	4.9	3.2	<.64	1	134	5	--	--	--	--	--	--	--
NOV 22...	8.1	6.6	<.64	<.80	11	E3n	--	--	--	--	--	--	--
DEC 13...	6.7	7.1	<.80	<1	10	5	--	--	--	--	--	--	--
JAN 03...	5.2	4.2p	<.64	<.80	9	E4n	--	--	--	--	--	--	--
FEB 05...	11.4	8.4	<.64	<.80	E8n	5	--	--	--	--	--	--	--
MAR 04...	7.3	8.2	<.64	Mn	E4n	4	--	--	--	--	--	--	--
APR 14...	6.7	4.5	<.64	<.80	11	4	<.20d	<.5d	<5d	<.5d	<.5d	<.5d	<.5d
MAY 21...	4.7	2.7	<.64	<.80	E6n	6	--	--	--	--	--	--	--
JUN 27...	3.0	2.7	<.48	<.60	92	E3n	<.04	<.1	<1	<.1	<.1	<.1	<.1
JUL 24...	4.4d	5.3d	<.48d	<.60d	E5nd	4d	--	--	--	--	--	--	--
AUG 19...	6.0d	E1.3nd	<.48d	<.60d	E3nd	3d	--	--	--	--	--	--	--
SEP 24...	4.6	3.9	<.64	<.20	10	2	--	--	--	--	--	--	--

07308500 Red River near Burkburnett, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlor- dane, tech- nical, water, unfltrd ug/L (39350)	Diel- drin, water, unfltrd ug/L (39380)	Endo- sulfan sulfate water, unfltrd ug/L (34351)	Endrin, water, unfltrd ug/L (39390)	Endrin alde- hyde, water, unfltrd ug/L (34366)	Hepta- chlor, water, unfltrd ug/L (39410)	Hepta- chlor epoxide water, unfltrd ug/L (39420)	Lindane water, unfltrd ug/L (39340)	PCB 207, surrog, Schl608 water, unfltrd pct rcv (99781)	Toxa- phene, water, unfltrd ug/L (39400)	alpha- Endo- sulfan, water, unfltrd ug/L (34361)	alpha- HCH, water, unfltrd ug/L (39337)	alpha- HCH-d6, surrog, Schl608 water, unfltrd pct rcv (99778)
OCT 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 22...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 14...	<.5d	<.10d	<3.0d	<.30d	<1.0d	<.15d	<4.0d	<.15d	53.3d	<10d	<.5d	<.15d	33.0d
MAY 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 27...	<.1	<.02	<.6	<.06	<.2	<.03	<.8	<.03	73.0	<2	<.1	<.03	49.9
JUL 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 19...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 24...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	beta- Endo- sulfan, water, unfltrd ug/L (34356)	beta- HCH, water, unfltrd ug/L (39338)	cis- Chlor- dane, water, unfltrd ug/L (39062)	delta- HCH, water, unfltrd ug/L (34259)	p,p'- DDD, water, unfltrd ug/L (39310)	p,p'- DDE, water, unfltrd ug/L (39320)	p,p'- DDT, water, unfltrd ug/L (39300)	trans- Chlor- dane, water, unfltrd ug/L (39065)
OCT 10...	--	--	--	--	--	--	--	--
NOV 22...	--	--	--	--	--	--	--	--
DEC 13...	--	--	--	--	--	--	--	--
JAN 03...	--	--	--	--	--	--	--	--
FEB 05...	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--
APR 14...	<.20d	<.15d	<.5d	<.45d	<.5d	<.20d	<.5d	<.5d
MAY 21...	--	--	--	--	--	--	--	--
JUN 27...	<.04	<.03	<.1	<.09	<.1	<.04	<.1	<.1
JUL 24...	--	--	--	--	--	--	--	--
AUG 19...	--	--	--	--	--	--	--	--
SEP 24...	--	--	--	--	--	--	--	--

Remark codes used in this report:

< -- Less than
E -- Estimated value
M -- Presence verified, not quantified

Value qualifier codes used in this report:

d -- Diluted sample: method hi range exceeded
n -- Below the NDV
p -- Value reported is preferred
r -- Value verified by rerun, same method

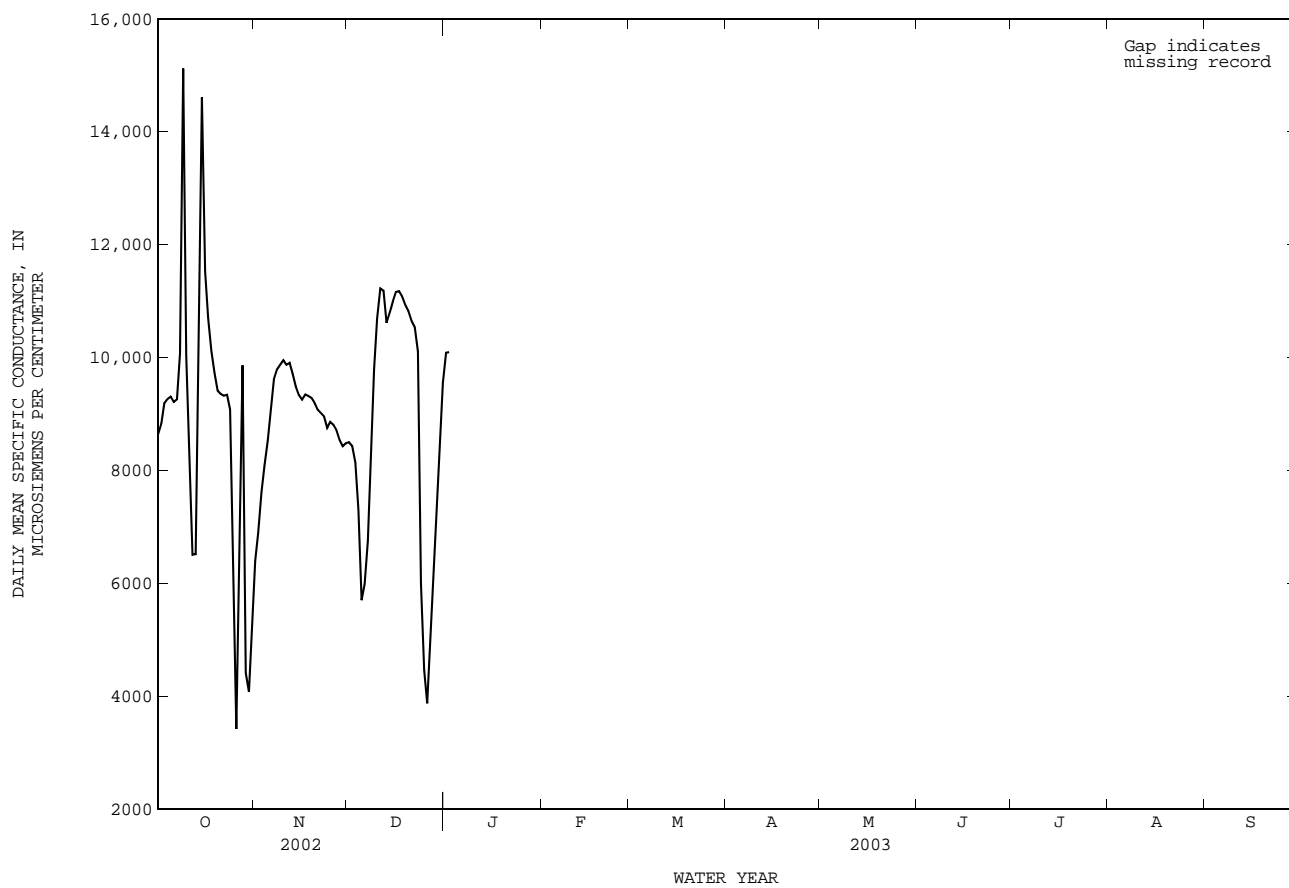
SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8780	8480	8630	---	---	e6400	8550	8460	8500	10200	9970	10100
2	9140	8700	8820	---	---	e6910	8490	8390	8440	---	---	e10100
3	9360	9100	9190	---	---	e7610	8420	7480	8140	---	---	---
4	9380	9160	9270	---	---	e8090	7550	7000	7310	---	---	---
5	9390	9220	9310	---	---	e8520	7000	4970	5700	---	---	---
6	9310	9110	9210	---	---	e9050	6670	5370	5990	---	---	---
7	9300	9200	9260	---	---	e9620	7140	6320	6750	---	---	---
8	17100	8080	10100	---	---	e9800	9270	6880	8050	---	---	---
9	17800	12200	15100	---	---	e9870	10700	9260	9790	---	---	---
10	12200	8910	10000	---	---	e9950	10900	10600	10700	---	---	---
11	9590	7350	8580	---	---	e9870	11700	10700	11200	---	---	---
12	7350	6100	6510	---	---	e9910	11700	10600	11200	---	---	---
13	6940	6200	6520	9840	9580	9720	10800	10400	10600	---	---	---
14	16000	6940	10300	9590	9380	9490	10900	10700	10800	---	---	---
15	16500	12400	14600	9460	9240	9340	11100	10800	11000	---	---	---
16	12400	11000	11500	9320	9180	9260	11200	11100	11200	---	---	---
17	11000	10300	10700	9380	9310	9350	11300	11100	11200	---	---	---
18	10300	9870	10100	9380	9260	9320	11100	11000	11100	---	---	---
19	9870	9600	9740	9350	9220	9290	11100	10800	10900	---	---	---
20	9630	9300	9420	9310	9070	9200	11000	10700	10800	---	---	---
21	9420	9300	9360	9140	9030	9080	10800	10500	10600	---	---	---
22	9350	9300	9320	9100	8930	9020	10600	10500	10500	---	---	---
23	9380	9320	9340	9050	8860	8960	10500	8440	10100	---	---	---
24	9390	8220	9090	8860	8650	8760	8570	3440	6000	---	---	---
25	8730	3090	5300	8910	8780	8860	5140	3600	4470	---	---	---
26	3830	3110	3420	8870	8760	8810	4670	3580	3880	---	---	---
27	14600	3830	6520	8760	8650	8720	5080	4300	4940	---	---	---
28	14600	4880	9860	8700	8420	8540	6640	5020	5960	---	---	---
29	4880	3520	4420	8470	8410	8430	7940	6640	7160	---	---	---
30	4460	---	e4080	8520	8450	8490	9100	7940	8540	---	---	---
31	---	---	e5180	---	---	---	10100	9100	9560	---	---	---
MONTH	---	---	8800	---	---	8940	11700	3440	8740	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---							

07308500 Red River near Burkburnett, TX--Continued

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
e	Estimated											

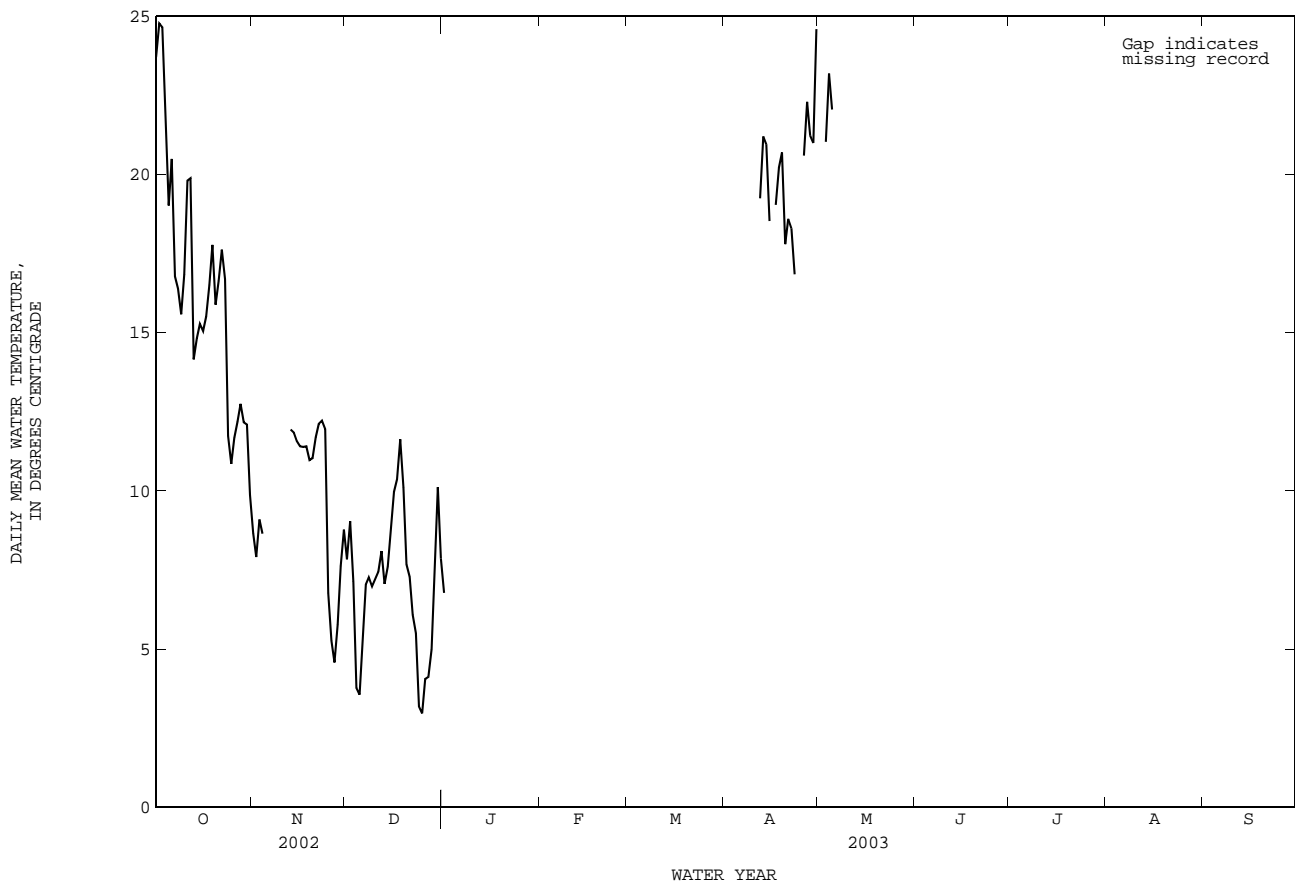


DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	27.8	20.3	23.7	9.2	8.0	8.7	10.7	5.2	7.8	9.0	5.0	6.8
2	29.0	21.8	24.8	8.3	7.5	7.9	11.8	7.0	9.0	---	2.8	---
3	28.7	21.7	24.7	10.1	8.3	9.1	9.5	4.9	7.1	---	---	---
4	24.8	18.6	21.8	9.1	7.7	8.7	4.9	2.9	3.8	---	---	---
5	22.6	15.5	19.0	---	8.1	---	6.0	1.5	3.6	---	---	---
6	23.5	17.9	20.5	---	---	---	8.0	2.5	5.0	---	---	---
7	19.3	15.2	16.8	---	---	---	9.9	4.6	7.0	---	---	---
8	17.2	15.5	16.4	---	---	---	7.8	6.9	7.3	---	---	---
9	16.4	14.8	15.6	---	---	---	7.2	6.7	7.0	---	---	---
10	18.6	15.7	16.8	---	---	---	7.7	6.6	7.2	---	---	---
11	23.6	17.3	19.8	---	---	---	10.1	5.2	7.4	---	---	---
12	22.7	16.7	19.9	15.3	---	---	9.2	7.3	8.1	---	---	---
13	16.7	12.1	14.2	14.6	9.5	11.9	9.5	4.8	7.1	---	---	---
14	18.9	12.0	14.8	14.8	9.4	11.8	10.7	5.0	7.6	---	---	---
15	19.2	12.0	15.3	14.6	9.2	11.6	11.8	6.1	8.8	---	---	---
16	18.9	11.8	15.1	14.4	8.9	11.4	11.8	8.4	10	---	---	---
17	19.4	12.3	15.5	14.6	8.6	11.4	13.3	7.6	10.4	---	---	---
18	18.3	15.0	16.5	13.8	9.6	11.4	13.3	10.0	11.6	---	---	---
19	21.2	14.9	17.8	13.9	8.2	11.0	11.7	8.3	10.1	---	---	---
20	20.2	13.3	15.9	13.9	8.4	11.0	10.3	5.2	7.7	---	---	---
21	19.8	13.7	16.6	15.1	8.6	11.7	10.2	5.0	7.3	---	---	---
22	18.7	16.6	17.6	15.0	9.6	12.1	7.8	4.1	6.1	---	---	---
23	17.6	14.6	16.7	15.7	9.3	12.2	6.6	4.1	5.5	---	---	---
24	14.6	10.1	11.7	15.2	9.3	12.0	4.2	2.4	3.2	---	---	---
25	12.4	9.6	10.9	9.3	5.1	6.8	4.8	1.4	3.0	---	---	---
26	12.7	10.5	11.7	6.7	4.4	5.3	6.1	2.6	4.1	---	---	---
27	12.7	11.7	12.2	7.8	1.7	4.6	5.8	2.3	4.1	---	---	---
28	13.0	12.2	12.8	9.6	2.4	5.8	7.8	2.4	5.0	---	---	---
29	13.0	11.6	12.2	10.5	4.8	7.6	10.4	5.1	7.7	---	---	---
30	12.5	11.0	12.1	11.3	6.7	8.8	10.9	8.6	10.1	---	---	---
31	11.0	9.2	9.9	---	---	---	9.9	5.8	7.9	---	---	---
MONTH	29.0	9.2	16.4	---	---	---	13.3	1.4	7.0	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	23.6	---	---
3	---	---	---	---	---	---	---	---	---	26.2	18.4	21.0
4	---	---	---	---	---	---	---	---	---	27.2	20.9	23.2
5	---	---	---	---	---	---	---	---	---	28.8	17.5	22.1
6	---	---	---	---	---	---	---	---	---	---	17.8	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---								

07308500 Red River near Burkburnett, TX--Continued

WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---



RED RIVER BASIN

07311600 North Wichita River near Paducah, TX

LOCATION.--Lat 33°57'02", long 100°03'52", Cottle County, Hydrologic Unit 11130204, at right downstream end of old abandoned county bridge, 4.0 mi downstream from Cottonwood Creek, 7.0 mi downstream from Salt Creek, 10.0 mi upstream from Middle Fork, 14.0 mi southeast of Paducah, and 211.3 mi upstream from mouth of the Wichita River.

DRAINAGE AREA.--540 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1951-54 (occasional low-flow measurements), July 1961 to Sept. 1982, Oct. 1994 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,530 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges and the period of July 3, to Sept. 23, which are poor. No known regulation. One small diversion for irrigation above station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	8.4	9.4	11	7.7	7.4	6.2	7.8	8.0	10	8.1	16
2	7.2	9.5	9.2	11	7.7	7.1	6.4	7.6	10	11	7.1	6.2
3	6.9	8.9	14	9.8	7.1	7.8	7.2	8.1	9.0	9.0	7.1	4.4
4	6.8	8.9	16	9.7	7.5	7.7	5.9	7.5	8.1	8.3	6.4	4.2
5	7.4	8.9	11	9.9	7.5	7.2	6.1	6.9	31	9.0	6.0	4.4
6	7.6	9.0	9.8	9.6	7.2	7.9	6.1	6.6	54	10	6.5	4.8
7	7.3	9.6	9.5	8.8	7.3	7.1	5.4	6.8	39	10	5.4	4.9
8	11	9.4	9.3	8.0	7.6	6.8	5.9	6.6	22	13	4.4	5.7
9	10	8.9	9.8	7.7	7.4	6.7	6.1	7.4	13	12	4.3	7.8
10	8.3	8.5	10	8.1	7.5	6.6	6.3	7.9	12	14	4.3	6.9
11	8.8	8.6	10	8.6	6.8	6.7	7.2	6.4	e10	10	4.0	15
12	8.6	8.9	9.7	8.3	6.8	7.2	7.3	8.2	8.5	8.0	5.0	5.8
13	7.8	9.0	9.5	8.3	7.1	8.8	7.7	7.3	9.3	7.6	4.3	4.6
14	8.8	8.5	9.7	8.1	7.2	10	7.8	7.1	11	8.8	5.1	4.2
15	8.8	8.5	10	8.2	6.6	11	8.2	7.6	8.5	8.4	5.5	4.5
16	8.9	9.1	9.8	7.5	6.5	14	7.4	6.4	7.9	9.3	5.6	5.8
17	9.0	9.2	10	7.9	6.8	10	7.1	7.4	e8.5	11	6.0	5.8
18	9.5	8.9	10	7.9	7.0	8.2	7.1	6.8	9.2	10	6.1	4.4
19	9.1	9.0	9.3	8.0	6.8	8.1	26	e7.4	9.2	10	5.5	4.7
20	8.4	9.0	e9.1	7.9	6.8	8.1	47	e10	14	8.8	5.7	5.3
21	8.8	9.3	e9.5	7.8	7.1	8.7	16	11	11	7.5	5.5	6.2
22	8.8	9.6	e9.1	7.6	7.0	7.6	14	10	11	7.0	5.6	6.9
23	9.2	9.7	e13	7.9	6.8	8.0	55	8.8	8.4	e4.8	5.7	5.9
24	14	9.3	e12	e8.1	e6.6	8.2	156	7.8	7.8	5.2	5.0	5.9
25	13	8.8	e11	8.4	e7.4	8.0	27	8.6	6.7	5.1	5.1	5.4
26	9.8	8.5	e10	8.1	8.2	7.7	15	9.0	8.0	4.9	e5.5	5.7
27	10	9.0	e10	8.1	7.5	6.6	10	7.4	9.4	5.2	e6.1	5.3
28	19	9.1	10	7.7	7.4	6.6	8.5	7.1	11	5.3	5.7	5.2
29	17	9.1	11	7.3	---	6.6	8.5	7.0	11	5.4	6.6	5.6
30	11	9.3	12	7.8	---	7.4	8.7	6.7	9.2	6.8	9.5	5.3
31	8.7	---	12	7.3	---	6.5	---	6.6	---	7.7	7.4	---
TOTAL	297.1	270.4	324.7	260.4	200.9	246.3	513.1	237.8	395.7	263.1	180.1	182.8
MEAN	9.58	9.01	10.5	8.40	7.17	7.95	17.1	7.67	13.2	8.49	5.81	6.09
MAX	19	9.7	16	11	8.2	14	156	11	54	14	9.5	16
MIN	6.8	8.4	9.1	7.3	6.5	6.5	5.4	6.4	6.7	4.8	4.0	4.2
AC-FT	589	536	644	517	398	489	1020	472	785	522	357	363

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2003h, BY WATER YEAR (WY)

	MEAN	18.2	13.5	11.7	10.8	11.3	14.6	25.4	40.3	61.4	14.7	33.1	31.1
MAX	62.4	40.5	24.8	19.9	19.7	49.7	265	186	452	80.4	239	141	
(WY)	1966	2002	1998	1996	1996	1998	1997	1982	1995	1975	1995	1974	
MIN	3.08	3.94	4.58	4.84	4.77	4.93	5.30	3.63	7.25	2.12	1.98	2.06	
(WY)	1964	1965	1965	1965	1965	1965	1964	1966	2001	1966	1964	1964	

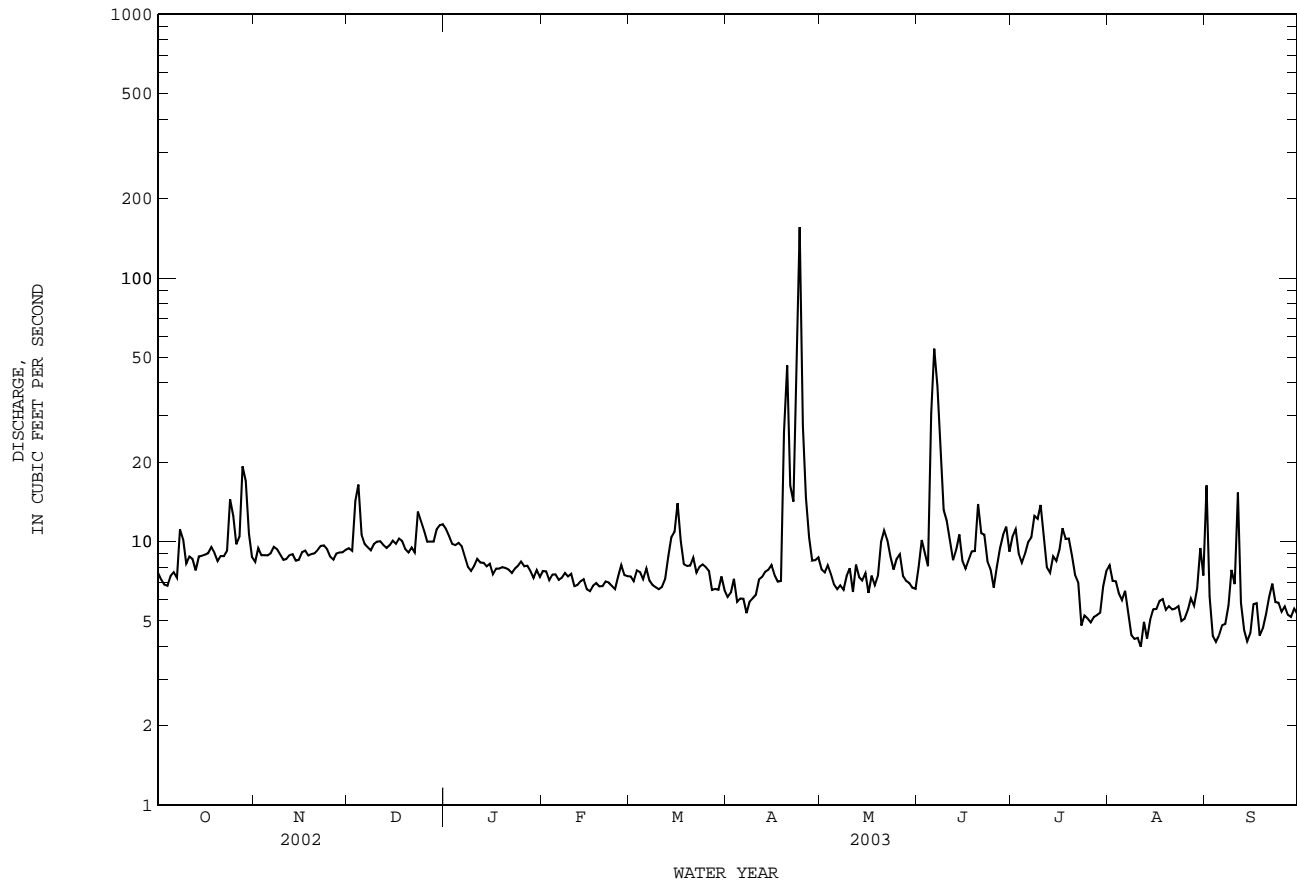
SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1961 - 2003h

ANNUAL TOTAL	3792.1	3372.4	
ANNUAL MEAN	10.4	9.24	24.0
HIGHEST ANNUAL MEAN			75.5
LOWEST ANNUAL MEAN			6.10
HIGHEST DAILY MEAN	30	Jul 8	156
LOWEST DAILY MEAN	6.0	Sep 21	4.0
ANNUAL SEVEN-DAY MINIMUM	6.7	Sep 19	4.5
MAXIMUM PEAK FLOW			408
MAXIMUM PEAK STAGE			4.93
ANNUAL RUNOFF (AC-FT)	7520	6690	17370
10 PERCENT EXCEEDS	13	11	21
50 PERCENT EXCEEDS	10	8.0	11
90 PERCENT EXCEEDS	8.2	5.5	5.0

e Estimated

h See PERIOD OF RECORD paragraph.

07311600 North Wichita River near Paducah, TX--Continued



07311600 North Wichita River near Paducah, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Oct. 1994 to current year.
 PESTICIDE DATA: Oct. 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Oct. 1994 to current year.
 WATER TEMPERATURE: Oct. 1994 to current year.

INSTRUMENTATION.--Water-quality monitor since Oct. 1994.

REMARKS.--Records fair. Interruption in the record was caused by malfunctions of the instrument. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and a regression relation between each chemical constituent and specific conductance. The computation of the selected constituent loads might include estimated discharge or specific conductance data. New regression equations were developed based on data from water years 1995 to 2003. The standard error of estimate for dissolved solids is 4%, chloride is 6%, sulfate is 6% and for hardness is 9%. Regression equations developed for this station may be obtained from the U.S. Geological Survey Texas District Office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 32,200 microsiemens/cm, Sept. 1, 2003; minimum, 318 microsiemens/cm, May 27, 1999.
 WATER TEMPERATURE: Maximum, 35.4°C, Aug. 10, 2001; minimum, -0.5°C, Feb. 25, 2003.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 32,200 microsiemens/cm, Sept. 1; minimum, 2,590 microsiemens/cm, Apr. 24.
 WATER TEMPERATURE: Maximum, 34.8°C, July 22; minimum, -0.5°C, Feb. 25.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard-ness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorption ratio (00931)
OCT													
02...	1130	7.2	27100	7.5	23.6	5.5	71	3100	3000	936	190	5430	42
NOV													
26...	1300	8.5	25800	7.8	7.0	12.2	110	3100	3000	924	192	5310	41
DEC													
16...	1145	9.5	25300	7.6	9.4	9.2	88	2900	2700	858	179	4760	39
JAN													
13...	1335	8.1	24800	7.8	7.7	11.3	103	3100	2900	928	189	5100	40
FEB													
10...	1325	7.5	24900	7.8	9.6	11.0	105	3100	3000	918	197	5200r	41
MAR													
24...	1110	7.4	25800	7.7	16.8	8.5	97	3100	3000	916d	196d	5260d	41
APR													
11...	1030	7.4	26500	7.8	15.7	7.8	86	3100	3000	911	195	5490	43
MAY													
01...	1120	7.7	18700	7.8	21.5	8.2	100	2300	2200	674	142	3560	33
JUN													
11...	1230	8.6	15900	7.5	28.4	7.7	105	2000	1900	577	127	3140	31
JUL													
23...	1155	5.1	29100	7.7	27.4	5.9	81	3700	3600	1080d	238dr	6200d	44
AUG													
14...	1155	4.9	30300	7.7	25.3	5.9	78	3200	3100	932d	211d	5880d	45
SEP													
23...	1135	5.8	27400	7.5	23.2	6.0	77	3200	3100	920d	207d	5350d	41

07311600 North Wichita River near Paducah, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Potas- sium, water, fltrd, mg/L (00935)	Alka- linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate water, fltrd, mg/L (00945)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue total at 105 deg. C, sus- pended, mg/L (00530)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)	Total nitro- gen, water, unfltrd mg/L (00600)
OCT 02...	18.5	79	2650	8240	.69	2.3	17500	<10	.23	.015	.24	.16	.64
NOV 26...	16.6	133	2520	7920	.65	6.9	17000	<10	--	E.005	.59	.11	.74
DEC 16...	16.3	146	2500	7560	.65	5.5	16000	<10	.66	.008	.67	.14	.83
JAN 13...	16.0	159	2440	7720	.66	7.2	16500	<10	.76	.008	.77	.15	1.0
FEB 10...	16.1	151	2390	7440	.68	8.6	16300	<10	.78	.010	.79	.18	.98
MAR 24...	14.4d	128r	2490d	7590d	.57	4.4	16600	<10	.43	.011	.44	.12	.87
APR 11...	22.7	111	2600	8150	.68	2.2	17400	<10	.35	.008	.36	.13	.70
MAY 01...	15.0	111	1950	5700	.54	1.3	12100	14	--	E.006	.25	.08	.63
JUN 11...	14.4	92	1710	4850	.5	1.3	10500	<10	.15	.011	.16	.07	.68
JUL 23...	63.4d	74	2850d	9170d	.8	4.0	19700	<10	--	<.008	<.06	<.04	--
AUG 14...	20.5d	77	2860d	9410d	.8	4.1	19400	27	.11	.014	.13	.12	.73
SEP 23...	23.2d	80	2690d	8400d	.7	1.8	17600	<10	.23	.011	.24	.11	.39
Date	Organic nitro- gen, water, unfltrd mg/L (00605)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Phos- phorus, water, unfltrd mg/L (00665)	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Arsenic water unfltrd ug/L (01002)	Arsenic water, fltrd, ug/L (01000)	Barium, water, unfltrd recover- able, ug/L (01007)	Barium, water, fltrd, ug/L (01005)	Cadmium water, unfltrd ug/L (01027)	Cadmium water, fltrd, ug/L (01025)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Chrom- ium, water, fltrd, ug/L (01030)
OCT 02...	.24	.40	<.04	<.04	<.02	<6	4.5	26	29	<.39	<.41	<2.4	<2.4
NOV 26...	.04	.16	<.04	<.04	<.02	<6	<2.6	20	23	<.35	<.37	<1.6	<2.4
DEC 16...	.03	.17	<.04	<.04	<.02	<2	<2.6dc	20d	26d	<.35dc	<.37dc	<2.4dc	<2.4dc
JAN 13...	.08	.24	<.04	<.04	<.02	<6	<2.3	20	24	<.32	<.33	<2.4	<2.4
FEB 10...		.19	.06	E.02	<.02	<6	<2.6	20	20	<.35	<.37	<4.8	<2.4
MAR 24...	.31	.43	E.02	E.03	<.02	<6	3.1	22	26	<.35	<.37	64.2	<2.4
APR 11...	.22	.34	<.04	<.04	<.02	E4n	<2.6	20	23	<.35	<.37	<2.4	<2.4
MAY 01...	.31	.39	<.04	<.04	<.02	5	5.1	129	130	<.28	<.30	<1.6	<1.6
JUN 11...	.44	.52	E.03	<.04	<.02	E3n	3.5	127	133	<.24	<.26	<1.6	<1.6
JUL 23...	--	.81	.08	<.04	<.02	E3nd	3.3d	42d	39d	<.42d	1.19d	<2.4d	<2.4d
AUG 14...	.48	.60	<.04	<.04	<.02	<8d	E2.1nd	38d	36d	<.46d	<.48d	<3.2d	<3.2d
SEP 23...	.03	.15	E.04n	<.04	<.02	<2	<2.9d	34d	34d	<.39d	<.41d	<2.4d	<2.4d

07311600 North Wichita River near Paducah, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, unfltrd recover- able, ug/L (01042)	Copper, water, fltrd, ug/L (01040)	Iron, water, unfltrd recover- able, ug/L (01045)	Iron, water, fltrd, ug/L (01046)	Lead, water, unfltrd recover- able, ug/L (01051)	Lead, water, fltrd, ug/L (01049)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, unfltrd recover- able, ug/L (71900)	Mercury water, fltrd, ug/L (71890)	Nickel, water, unfltrd recover- able, ug/L (01067)	Nickel, water, fltrd, ug/L (01065)	Selen- ium, water, unfltrd ug/L (01147)
OCT 02...	14.6	14.2	<20	<150	<.66	<.88	25	26.7	E.01	<.02	46	15.5	10.3
NOV 26...	21.2	7.1	<20	<150	<.60	<.80	7	7.0	<.02	<.02	57	35.2	9.4
DEC 16...	17.3d	7.3d	<20	<150dc	<.60dc	<.80dc	13d	14.5d	E.02	E.01	51d	34.8d	9.2d
JAN 13...	14.2	9.0	<160	<150	<.54	<.72	33	39.7	<.02	E.01	39	40.0	11.1r
FEB 10...	27.4	15.4	<20	<150	<.60	<.80	58	59.4	<.02	<.02	63	37.0	12.6
MAR 24...	12.5	11.8	<20	<150	<.60	1.16	100	97.4	<.02	E.01	27	14.4	8.9p
APR 11...	17.0	13.3	<20	<150	<.60	<.80	65	75.4	<.02	<.02	39	34.4	13.7
MAY 01...	14.2	11.0	<20	<150	Mn	<.64	92	90.2	<.02	<.02	21	19.6	<1
JUN 11...	22.1	12.9	140	<80	<.42	<.56	75	63.8	<.02	<.02	20	19.1	6.5
JUL 23...	25.5d	8.2d	140d	E69nd	<.72d	<.96d	41d	37.1d	<.02	<.02	51d	34.3d	5.8d
AUG 14...	26.1d	13.1d	130d	<120d	<.78d	<1.04d	34d	30.4d	<.02	<.02	54d	38.2d	9.4d
SEP 23...	44.9d	9.0d	300	E64nd	<.66d	<.88d	28d	24.0d	<.02	<.02	35d	17.6d	9.4d
Date	Selen- ium, water, unfltrd ug/L (01145)	Silver, water, unfltrd recover- able, ug/L (01077)	Silver, water, fltrd, ug/L (01075)	Zinc, water, unfltrd recover- able, ug/L (01092)	Zinc, water, fltrd, ug/L (01090)	Aldrin, water, unfltrd ug/L (39330)	Aroclor 1016 + 1242, water, unfltrd ug/L (81648)	Aroclor 1221, water, unfltrd ug/L (39488)	Aroclor 1232, water, unfltrd ug/L (39492)	Aroclor 1248, water, unfltrd ug/L (39500)	Aroclor 1254, water, unfltrd ug/L (39504)	Aroclor 1260, water, unfltrd ug/L (39508)	Chlor- dane, tech- nical, water, unfltrd ug/L (39350)
OCT 02...	13.3	<1.76	<2	E15n	12	--	--	--	--	--	--	--	--
NOV 26...	9.4	<1.60	<2	E11n	E7n	--	--	--	--	--	--	--	--
DEC 16...	14.9d	<1.60dc	<2d	E12nd	E7nd	--	--	--	--	--	--	--	--
JAN 13...	10.0p	<1.44	<2	<18	10	--	--	--	--	--	--	--	--
FEB 10...	11.0	<1.60	<2	E12n	14	--	--	--	--	--	--	--	--
MAR 24...	11.6r	<1.60	<2	E10n	E7n	--	--	--	--	--	--	--	--
APR 11...	8.1	<1.60	<2	E18n	E8n	<.20d	<.5d	<5d	<.5d	<.5d	<.5d	<.5d	<.5d
MAY 01...	<1	<1.28	<2	E8n	E7n	--	--	--	--	--	--	--	--
JUN 11...	6.4	<1.12	<1	E11n	8	<.20d	<.5d	<5d	<.5d	<.5d	<.5d	<.5d	<.5d
JUL 23...	6.9dp	<1.92d	<2d	<24d	E8nd	--	--	--	--	--	--	--	--
AUG 14...	12.6d	<2.08d	<3d	<26d	E10nd	--	--	--	--	--	--	--	--
SEP 23...	8.6d	<1.76d	<2d	E14nd	E7nd	--	--	--	--	--	--	--	--

07311600 North Wichita River near Paducah, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Diel- drin, water, unfltrd ug/L (39380)	Endo- sulfan water unfltrd ug/L (34351)	Endrin, water, unfltrd ug/L (39390)	Endrin alde- hyde, water, unfltrd ug/L (34366)	Hepta- chlor, water, unfltrd ug/L (39410)	Hepta- chlor epoxide water unfltrd ug/L (39420)	Lindane water, unfltrd ug/L (39340)	PCB 207, surrog, Schl608 water, unfltrd pct rcv (99781)	Toxa- phene, water, unfltrd ug/L (39400)	alpha- Endo- sulfan, water, unfltrd ug/L (34361)	alpha- HCH, water, unfltrd ug/L (39337)	alpha- HCH-d6, surrog, Schl608 water, unfltrd pct rcv (99778)	beta- Endo- sulfan, water, unfltrd ug/L (34356)
OCT 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 26...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 16...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 11...	<.10d	<3.0d	<.30d	<1.0d	<.15d	<4.0d	<.15d	35.0d	<10d	<.5d	<.15d	31.1d	<.20d
MAY 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 11...	<.10d	<3.0d	<.30d	<1.0d	<.15d	<4.0d	<.15d	81.5d	<10d	<.5d	<.15d	37.1d	<.20d
JUL 23...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 23...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	beta- HCH, water, unfltrd ug/L (39338)	cis- Chlor- dane, water, unfltrd ug/L (39062)	delta- HCH, water, unfltrd ug/L (34259)	p,p'- DDD, water, unfltrd ug/L (39310)	p,p'- DDE, water, unfltrd ug/L (39320)	p,p'- DDT, water, unfltrd ug/L (39300)	trans- Chlor- dane, water, unfltrd ug/L (39065)
OCT 02...	--	--	--	--	--	--	--
NOV 26...	--	--	--	--	--	--	--
DEC 16...	--	--	--	--	--	--	--
JAN 13...	--	--	--	--	--	--	--
FEB 10...	--	--	--	--	--	--	--
MAR 24...	--	--	--	--	--	--	--
APR 11...	<.15d	<.5d	<.45d	<.5d	<.20d	<.5d	<.5d
MAY 01...	--	--	--	--	--	--	--
JUN 11...	<.15d	<.5d	<.45d	<.5d	<.20d	<.5d	<.5d
JUL 23...	--	--	--	--	--	--	--
AUG 14...	--	--	--	--	--	--	--
SEP 23...	--	--	--	--	--	--	--

Remark codes used in this report:

< -- Less than
 E -- Estimated value
 M -- Presence verified, not quantified

Value qualifier codes used in this report:

c -- See laboratory comment
 d -- Diluted sample: method hi range exceeded
 n -- Below the NDV
 p -- Value reported is preferred
 r -- Value verified by rerun, same method

RED RIVER BASIN

07311600 North Wichita River near Paducah, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 2002 TO SEPTEMBER 2003

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)	HARDNESS (CA, MG) (MG/L)
OCT.	2002	297.1	25120	16320	13090	7700	6180	2600	2050	3000
NOV.	2002	270.4	24130	15730	11490	7400	5390	2500	1840	2900
DEC.	2002	324.7	23890	15590	13670	7300	6400	2500	2200	2900
JAN.	2003	260.4	24150	15750	11070	7400	5190	2500	1780	2900
FEB.	2003	200.9	24010	15670	8500	7300	3980	2500	1370	2900
MAR.	2003	246.3	25150	16350	10870	7700	5130	2600	1710	3000
APR.	2003	513.1	13060	8670	12000	3900	5460	1500	2120	1800
MAY	2003	237.8	24260	15810	10150	7400	4770	2500	1620	2900
JUNE	2003	395.7	19410	12780	13660	5900	6290	2200	2320	2500
JULY	2003	263.1	27730	17860	12690	8600	6080	2600	1880	3100
AUG.	2003	180.1	29450	18860	9170	9100	4440	2700	1310	3100
SEPT	2003	182.8	25600	16580	8190	7900	3880	2600	1260	3000
TOTAL		3372.4	**	**	134500	**	63190	**	21450	**
WTD.AVG.		9.2	22680	14780	**	6900	**	2400	**	2700

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	26800	26500	26700	20200	19900	20100	25400	23300	24900	24900	21900	24300
2	27000	26600	26700	20900	20000	20400	25600	21800	24500	25100	21600	24400
3	27100	26600	26900	21700	20900	21200	25300	20600	23200	25200	22400	24600
4	27000	26700	26800	22500	21700	22100	23500	20700	22600	25100	22500	24500
5	27200	26800	27000	23000	22500	22700	25200	22400	24400	25100	22100	24200
6	27000	26600	26800	23300	23000	23200	24500	18000	21100	25100	23400	24600
7	27200	26800	27000	23400	23200	23300	21000	15900	19000	25500	23000	25000
8	27200	24400	25900	23700	23300	23500	22900	14500	20000	---	---	e24800
9	25800	24700	25100	24200	23700	24000	23100	14900	20400	---	---	e24600
10	26000	25800	25900	24500	24100	24400	23700	19400	22100	---	---	e24500
11	26200	25800	26000	24700	24400	24500	24000	22600	23700	---	---	e24600
12	26800	26200	26600	24600	24400	24500	24500	24000	24200	---	---	e24700
13	26800	26400	26600	24800	24400	24600	24800	24400	24700	---	---	e24800
14	26400	25400	25900	25100	24700	24900	25000	23200	24500	24800	20700	23500
15	25400	25000	25200	25300	25000	25200	25100	23500	24800	24200	21400	23000
16	25700	25200	25500	25400	25100	25200	25200	24700	25000	24700	20300	23000
17	25900	25600	25800	25300	25000	25100	25300	25000	25200	24900	22900	24200
18	26000	25700	25900	25200	24800	25000	25300	24900	25200	25100	21500	24000
19	25900	25600	25800	25200	25000	25100	25500	25000	25300	24800	21700	23500
20	26100	25900	26000	25100	24400	25000	---	---	e25600	24800	21300	23200
21	26200	25900	26100	25200	24800	25000	---	---	e25300	24900	21600	23800
22	26000	25900	25900	24900	24700	24800	---	---	e25600	25000	21300	23600
23	25900	25600	25700	25000	24700	24800	---	---	e25300	25400	22600	24400
24	25800	23300	24600	25100	24800	24900	---	---	e24900	25200	20900	23500
25	25300	23700	24800	25400	24600	25200	---	---	e24700	25100	20900	23900
26	25600	24800	25100	25600	24300	25300	---	---	e24500	25300	22200	24500
27	26100	25300	25800	25700	23900	25400	---	---	e24300	25200	21600	24400
28	25300	18300	21700	25600	20700	24600	---	---	e24000	24400	22800	23900
29	22200	19700	21100	25600	23900	25300	---	---	e23800	24300	23600	24100
30	23300	22200	23100	25600	21900	24500	---	---	e23600	24300	23000	24000
31	23000	20200	21400	---	---	---	24600	23200	24500	24000	23600	23800
MONTH	27200	18300	25500	25700	19900	24100	---	---	23900	---	---	24100

07311600 North Wichita River near Paducah, TX--Continued

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

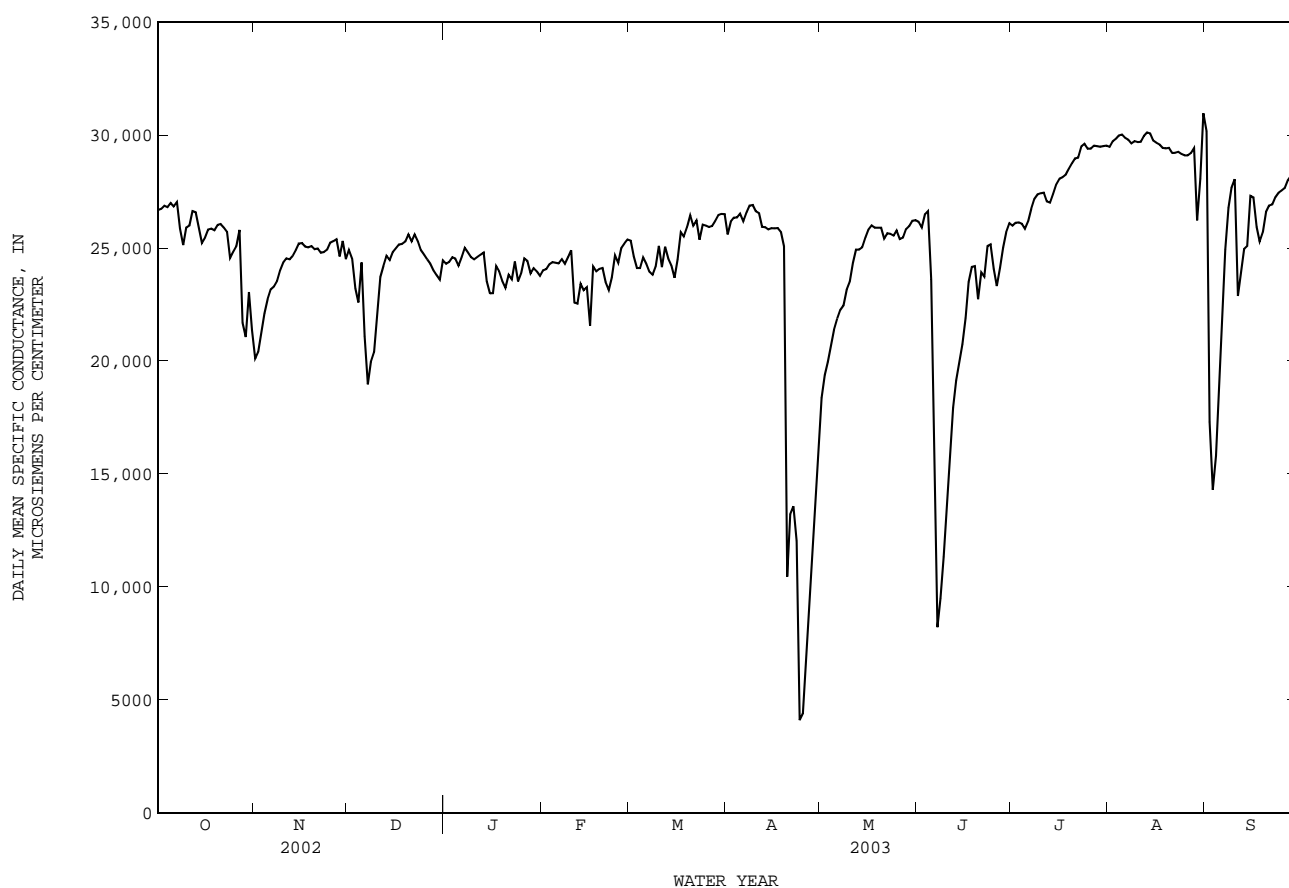
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	24200	23800	24000	25700	25000	25300	25900	25300	25600	18800	17500	18400
2	24200	23900	24100	25100	24200	24600	26600	25800	26200	19700	18800	19400
3	24400	24200	24300	24700	23800	24100	26600	26100	26300	20300	19700	20000
4	24600	24200	24400	24500	23600	24100	26700	26100	26400	21200	20300	20700
5	24600	24200	24300	25000	24100	24600	26800	26300	26500	21600	21200	21400
6	24600	24100	24300	24900	23700	24300	26400	26000	26200	22000	21600	21900
7	25000	23100	24500	24400	23300	24000	26800	26200	26600	22500	22000	22300
8	---	---	e24300	24400	23100	23800	27100	26700	26900	22900	22300	22500
9	---	---	e24600	25000	23000	24200	27300	26600	26900	23300	22900	23200
10	---	---	e24900	25800	24400	25100	26900	26400	26600	23900	23300	23500
11	24800	19200	22600	26100	23100	24100	27000	26200	26500	24600	23900	24400
12	24700	19400	22500	26100	23600	25100	26300	25600	25900	25100	24600	24900
13	24500	21400	23400	25300	22700	24500	26200	25700	25900	25200	24600	24900
14	24100	20200	23100	25700	22700	24200	26200	25500	25800	25200	24900	25000
15	24400	21300	23300	24600	21700	23700	26100	25200	25900	25600	25200	25500
16	24900	19400	21600	26200	21300	24500	26200	25600	25900	26100	25600	25800
17	24600	23800	24200	26900	24000	25700	26100	25600	25900	26300	25700	26000
18	24100	23800	24000	27200	23500	25500	26100	25400	25700	26200	25600	25900
19	24200	23900	24100	26700	24900	25900	25600	12800	25100	---	---	e25900
20	24300	23800	24100	26800	26100	26400	12800	6660	10500	---	---	e25900
21	24000	22900	23500	27100	24700	26000	13600	12700	13200	26000	25100	25400
22	23500	22700	23100	26800	25200	26200	13800	13200	13600	25900	25200	25700
23	24400	23100	23700	26200	23900	25400	13800	8290	12000	25800	25400	25600
24	24900	24400	24700	26800	25500	26000	8290	2590	4100	25700	25400	25600
25	25400	22200	24400	26200	25900	26000	5800	3110	4390	26000	25700	25800
26	25400	24800	25000	26300	25600	25900	8260	5800	7060	25700	25100	25400
27	25600	25000	25200	26200	25800	26000	10700	8260	9460	25700	25300	25500
28	25600	25200	25400	26400	26000	26200	12800	10700	11700	26000	25600	25800
29	---	---	---	26800	26300	26500	14800	12800	13700	26200	25700	26000
30	---	---	---	26900	26300	26500	17500	14800	16200	26400	26000	26200
31	---	---	---	26700	26100	26500	---	---	---	26400	26000	26200
MONTH	---	---	24000	27200	21300	25200	27300	2590	20400	---	---	24200

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	26400	25600	26200	26200	25800	26000	29800	28800	29500	32200	23100	30200
2	26100	25700	25900	26400	25900	26100	29900	29500	29700	23100	14500	17300
3	26900	25900	26500	26300	25900	26100	30000	29500	29800	14700	14100	14300
4	26900	26300	26600	26400	25800	26100	30100	29900	30000	17000	14700	15800
5	27000	16600	23600	26100	25600	25800	30200	29800	30000	20200	17000	18400
6	17900	12700	16000	26600	25800	26200	30200	29600	29900	23600	20200	22100
7	12700	7300	8220	26900	26400	26700	30000	29600	29800	26100	23600	24900
8	10300	8790	9490	27400	26900	27200	29800	29400	29600	27400	26100	26800
9	12500	10300	11300	27600	27100	27400	29900	29500	29700	28000	27400	27700
10	14400	12500	13600	27700	27200	27400	29900	29500	29700	28300	27800	28000
11	17200	---	e16000	27800	27100	27500	29900	29400	29700	28300	12900	22900
12	18400	17200	17900	27500	26600	27100	30200	29700	30000	25600	22900	23900
13	19600	18400	19100	27200	26900	27000	30400	29800	30100	25700	24400	25000
14	20200	19600	19900	27700	27100	27400	30200	29900	30100	26500	24400	25100
15	21300	20200	20700	28000	27700	27800	30100	29500	29800	27600	26500	27300
16	22400	21300	21900	28300	27900	28100	29800	29500	29700	27800	26700	27200
17	23800	---	e23500	28300	27900	28100	29800	29300	29600	26800	25200	25900
18	24400	23800	24200	28400	28100	28200	29700	29100	29400	25500	25200	25300
19	24600	20500	24200	28700	28300	28500	29600	29200	29400	25900	25500	25700
20	23300	21500	22700	28900	28600	28800	29700	29200	29400	26800	26200	26600
21	24200	23300	23900	29200	28800	29000	29500	28900	29200	27000	26700	26900
22	24600	23300	23700	29100	28800	29000	29400	28900	29200	27100	26700	26900
23	25300	24600	25100	29600	29400	29500	29600	29100	29300	27500	27000	27200
24	25400	24700	25200	29900	29400	29600	29400	29000	29200	27800	27200	27400
25	24800	23400	24100	29700	28500	29400	29300	29000	29100	27700	27200	27500
26	23600	23000	23300	29600	29200	29400	---	---	e29100	27800	27500	27700
27	24600	23600	24100	29800	29400	29500	29400	28900	29200	28200	27600	28000
28	25300	24600	25000	29800	29200	29500	29600	29300	29400	28400	28100	28200
29	26000	25300	25700	29700	29200	29500	29500	14800	26200	28300	27900	28200
30	26400	25800	26100	29700	29300	29500	30000	26900	28100	28300	27900	28100
31	---	---	---	29800	29300	29500	31300	30000	31000	---	---	---
MONTH	27000	---	21500	29900	25600	28000	---	---	29500	32200	12900	25200

e Estimated

RED RIVER BASIN

07311600 North Wichita River near Paducah, TX--Continued



WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	27.1	22.9	24.7	10.4	9.6	10.0	10.9	6.8	9.2	8.7	6.0	7.3
2	26.4	23.5	24.8	10.2	9.3	9.7	12.9	8.9	10.9	7.9	3.7	5.9
3	25.3	21.5	23.5	11.9	9.8	10.6	11.7	6.9	9.2	9.1	4.1	6.7
4	24.8	19.8	22.5	10.6	8.9	9.7	6.9	4.6	5.4	10.4	5.6	8.1
5	22.4	18.0	20.4	12.7	8.6	10.6	8.1	4.3	6.1	10.7	6.6	8.9
6	22.8	19.9	21.1	13.6	8.7	11.4	9.1	4.7	7.2	9.4	6.6	7.9
7	20.9	17.3	18.5	14.7	10.1	12.6	10.4	6.4	8.6	---	4.4	---
8	17.9	16.8	17.3	15.7	11.6	13.9	9.3	8.0	8.4	---	---	---
9	17.8	16.7	17.3	17.6	13.5	15.7	8.3	7.6	8.0	---	---	---
10	18.9	16.9	17.8	16.6	14.1	15.2	11.1	7.4	9.3	---	---	---
11	19.5	16.0	17.7	14.6	12.1	13.5	10.9	7.5	9.3	---	---	---
12	19.2	16.7	18.2	15.4	12.2	13.7	11.3	8.2	9.7	---	---	---
13	17.9	14.3	16.1	14.8	10.8	13.0	10.9	7.1	9.1	---	---	---
14	18.5	14.3	16.2	15.0	11.3	13.3	11.1	6.7	9.2	10.1	6.0	8.1
15	18.8	13.5	16.2	14.2	10.9	12.7	11.7	7.2	9.8	8.2	7.0	7.5
16	18.8	13.9	16.4	14.5	11.0	12.8	12.0	9.1	10.6	7.1	3.9	5.5
17	19.3	15.2	17.3	14.1	9.9	12.2	12.4	8.5	10.7	6.3	2.4	4.3
18	19.5	17.3	18.4	14.4	11.0	12.7	11.9	9.8	10.8	7.2	1.9	4.8
19	20.8	17.4	18.9	13.8	9.6	11.9	10.5	8.1	9.5	8.8	3.1	6.2
20	20.0	16.1	17.9	14.0	9.8	12.0	---	---	---	11.2	5.4	8.4
21	19.1	15.4	17.4	14.8	9.8	12.5	---	---	---	10.1	7.4	8.8
22	18.5	17.4	18.1	14.8	10.7	13.1	---	---	---	7.7	3.7	5.4
23	18.2	14.7	17.0	15.2	10.8	13.2	---	---	---	4.7	1.0	2.9
24	14.7	11.0	12.6	15.2	11.5	13.2	---	---	---	2.8	0.9	1.8
25	14.2	10.7	12.2	11.5	7.7	8.8	---	---	---	5.3	0.0	2.7
26	14.1	12.8	13.5	7.7	6.1	7.0	---	---	---	5.0	2.7	3.7
27	14.1	12.9	13.5	7.8	3.7	6.0	---	---	---	8.3	2.5	5.3
28	14.0	13.2	13.7	9.2	4.0	6.9	---	---	---	12.0	6.0	8.9
29	17.2	13.0	14.9	10.0	5.8	8.1	---	---	---	10.0	7.6	8.5
30	15.6	12.6	14.4	11.0	7.6	9.4	---	---	---	10.3	4.6	7.8
31	12.6	10.4	11.1	---	---	---	9.8	6.4	8.3	12.2	7.2	9.7
MONTH	27.1	10.4	17.4	17.6	3.7	11.5	---	---	---	---	---	---

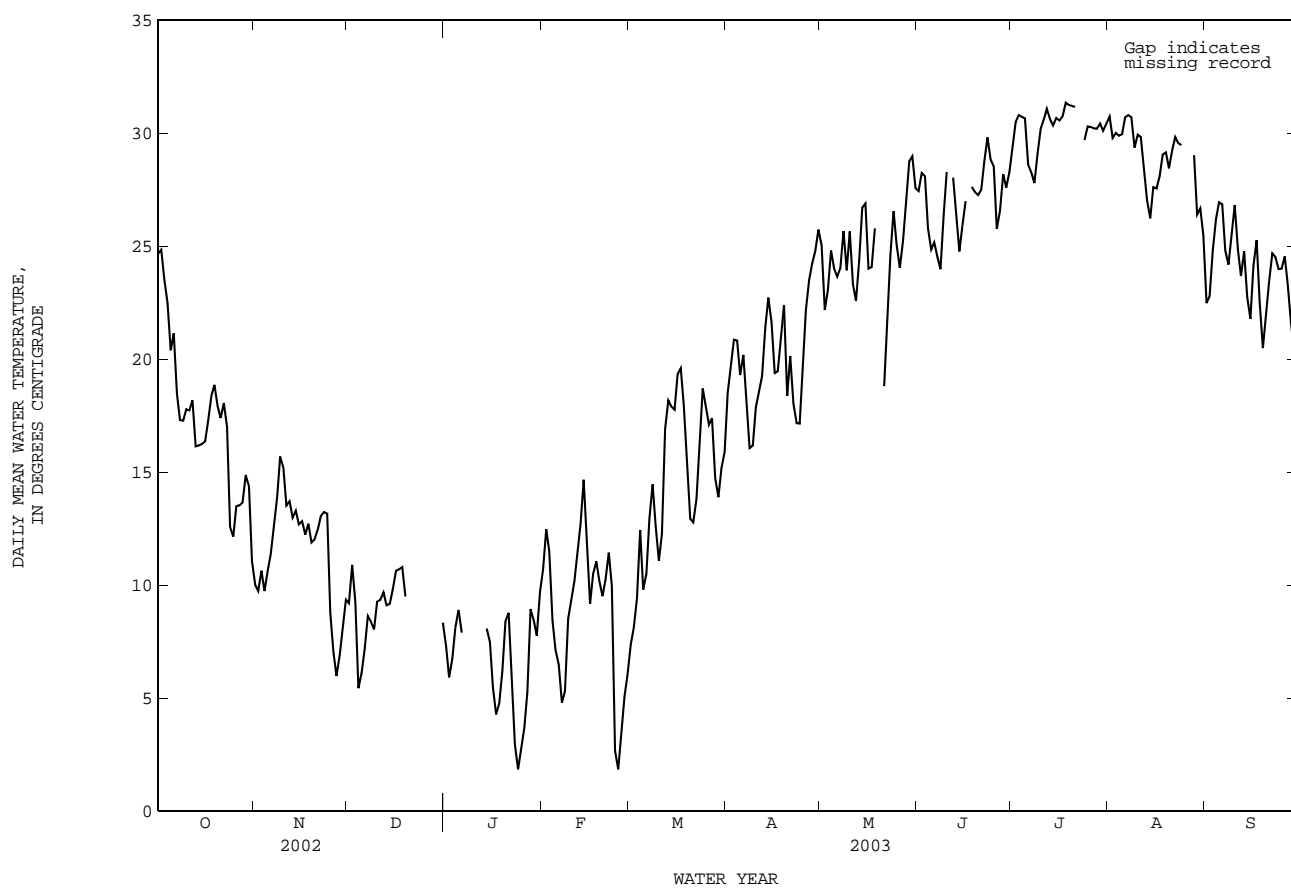
07311600 North Wichita River near Paducah, TX--Continued

WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13.4	7.6	10.7	9.4	6.1	7.4	21.9	13.9	18.5	28.1	21.2	25.1
2	14.9	9.7	12.5	10.1	6.9	8.1	23.7	15.8	19.7	25.1	20.6	22.2
3	13.8	9.2	11.5	13.0	5.0	9.4	23.7	18.5	20.9	27.4	20.0	23.1
4	10.5	6.0	8.4	16.7	9.7	12.4	24.1	17.6	20.8	27.4	22.6	24.8
5	8.2	6.2	7.1	13.1	5.8	9.8	21.2	16.6	19.3	27.7	20.1	24.0
6	7.4	4.3	6.5	14.1	6.3	10.5	22.9	17.7	20.2	26.9	20.0	23.7
7	7.3	2.2	4.8	17.0	8.7	13.0	21.1	15.0	18.2	27.8	20.4	24.0
8	7.6	2.7	5.3	17.6	12.2	14.5	19.0	12.7	16.1	28.3	23.8	25.7
9	11.5	5.8	8.5	15.7	8.5	12.6	20.7	11.3	16.2	27.3	19.9	23.9
10	12.1	6.2	9.3	13.6	8.4	11.1	21.6	13.6	17.9	28.8	23.4	25.7
11	12.5	7.1	10.2	16.0	8.8	12.3	21.3	15.5	18.6	26.8	19.2	23.3
12	13.8	8.3	11.4	21.3	12.9	16.9	23.7	14.7	19.3	24.3	20.1	22.6
13	13.4	11.9	12.7	21.7	15.0	18.2	24.9	17.8	21.4	29.4	20.5	24.4
14	17.3	12.6	14.7	21.8	13.7	17.9	26.8	18.9	22.7	28.8	24.7	26.7
15	15.2	9.2	12.4	21.1	14.3	17.8	23.3	20.5	21.6	29.3	24.9	26.9
16	11.9	6.6	9.2	23.1	15.5	19.3	22.9	15.2	19.4	26.6	21.6	24.0
17	14.6	6.5	10.5	22.8	17.2	19.6	21.1	17.1	19.5	28.4	19.9	24.1
18	13.4	9.7	11.1	21.2	15.1	17.9	25.0	17.3	21.1	29.7	22.5	25.8
19	11.4	9.0	10.2	17.8	13.4	15.3	25.0	19.4	22.4	---	---	---
20	11.6	7.2	9.5	15.0	11.6	12.9	22.1	14.9	18.4	19.2	---	---
21	11.6	9.5	10.3	15.4	9.5	12.8	23.1	16.8	20.1	21.5	16.9	18.8
22	15.0	7.6	11.4	17.0	11.4	13.8	20.2	16.7	18.0	24.1	19.3	21.4
23	12.1	6.5	10	20.4	11.5	16.0	20.0	15.9	17.2	28.3	21.4	24.6
24	6.5	0.3	2.7	23.0	14.1	18.7	20.8	14.2	17.2	29.1	23.5	26.6
25	4.3	-0.5	1.9	20.1	16.1	18.0	24.0	16.4	20.1	27.4	23.7	25.1
26	5.0	0.9	3.3	20.8	13.0	17.1	26.2	18.5	22.2	27.5	21.0	24.1
27	6.6	3.7	5.1	20.3	14.8	17.4	27.1	20.1	23.5	29.1	21.5	25.2
28	7.5	5.0	6.0	17.3	11.9	14.7	27.6	21.1	24.2	31.2	22.9	27.0
29	---	---	---	17.1	10.1	13.9	28.8	21.1	24.8	32.8	25.0	28.8
30	---	---	---	19.0	10.8	15.2	29.4	22.3	25.7	32.5	25.5	29.0
31	---	---	---	20.7	13.0	15.9	---	---	---	30.1	24.8	27.6
MONTH	17.3	-0.5	8.8	23.1	5.0	14.5	29.4	11.3	20.2	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	31.5	24.2	27.4	32.4	25.9	29.4	33.9	27.7	30.7	24.3	21.7	22.5
2	31.8	24.2	28.2	33.7	27.1	30.5	32.1	27.6	29.8	25.2	20.8	22.8
3	31.0	25.1	28.1	34.2	27.4	30.8	32.5	27.6	30.0	27.5	22.0	24.8
4	27.8	23.7	25.8	34.0	27.2	30.7	32.4	27.6	29.9	28.8	23.5	26.2
5	28.4	22.6	24.9	33.4	27.7	30.7	32.8	27.7	30.0	30.0	23.9	26.9
6	28.6	21.9	25.2	30.4	26.7	28.6	34.0	27.4	30.7	29.4	24.1	26.9
7	27.9	21.4	24.5	30.4	26.2	28.3	33.6	28.0	30.8	26.5	23.6	24.8
8	27.6	20.7	24.0	29.4	26.3	27.8	34.0	27.8	30.7	27.2	21.5	24.2
9	29.9	23.2	26.4	32.9	25.8	29.1	31.8	27.1	29.4	28.9	22.4	25.5
10	32.4	24.9	28.3	33.3	27.3	30.2	33.3	26.8	29.9	30.3	23.5	26.8
11	32.7	---	---	34.1	27.3	30.6	32.8	27.1	29.8	26.8	22.4	24.9
12	32.0	23.7	28.0	34.3	28.1	31.1	31.1	26.0	28.4	26.0	20.7	23.7
13	28.5	25.1	26.5	33.4	27.8	30.6	29.6	24.7	27.0	27.5	21.9	24.8
14	28.2	22.4	24.8	33.2	27.7	30.4	28.3	24.1	26.2	24.7	21.7	22.8
15	29.5	22.3	25.9	34.4	27.5	30.7	31.1	24.6	27.6	23.8	19.2	21.8
16	30.4	24.1	27.0	33.6	27.6	30.6	30.2	25.8	27.6	28.0	20.5	24.1
17	30.6	---	---	33.8	27.8	30.7	31.2	25.0	28.1	28.2	22.0	25.3
18	30.2	24.4	27.6	34.7	28.4	31.4	31.9	26.2	29.1	25.4	20.1	22.5
19	30.7	24.9	27.4	34.6	28.1	31.3	31.7	26.5	29.2	23.5	17.8	20.5
20	31.2	24.2	27.3	34.3	28.3	31.2	30.3	26.5	28.5	25.2	18.5	22.0
21	30.7	24.0	27.5	33.8	28.6	31.2	32.5	26.0	29.2	26.3	21.0	23.5
22	32.0	24.9	28.8	34.8	---	---	32.8	27.1	29.8	27.8	21.3	24.7
23	33.0	26.4	29.8	32.6	---	---	32.9	26.5	29.6	26.7	23.0	24.5
24	31.0	26.7	28.9	33.0	26.5	29.7	32.2	26.7	29.5	27.4	20.9	24.0
25	31.1	26.6	28.5	33.2	27.5	30.3	---	26.4	---	25.2	22.4	24.0
26	28.1	23.7	25.8	33.1	27.6	30.3	---	---	---	27.7	21.5	24.6
27	30.6	22.5	26.6	33.3	27.4	30.2	32.4	---	---	25.3	21.6	23.3
28	31.6	24.4	28.2	33.0	27.5	30.2	31.7	26.7	29.0	24.2	19.0	21.6
29	29.9	25.4	27.6	33.8	27.2	30.4	28.8	23.9	26.4	21.3	18.6	20.3
30	30.4	24.0	28.3	32.1	28.1	30.1	28.8	24.8	26.7	24.2	17.8	20.8
31	---	---	---	33.8	27.1	30.4	26.8	24.0	25.5	---	---	---
MONTH	33.0	---	---	34.8	---	---	---	---	---	30.3	17.8	23.8

07311600 North Wichita River near Paducah, TX--Continued



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07311630 Middle Wichita River near Guthrie, TX

LOCATION.--Lat 33°47'45", long 100°04'29", King County, Hydrologic Unit 11130204, on right bank 100 ft downstream from inflatable dam, 0.71 mi upstream from Forrer Creek, 1.0 mi downstream from ranch road crossing, 12.0 mi upstream from confluence with North Wichita River and 19.0 mi northeast of Guthrie.

DRAINAGE AREA.--50.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1994 to Sept. 1996 (daily mean discharges less than 30 ft³/s), Oct. 1996 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,583.90 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. No known regulation or diversions. Low flow is maintained by springs that enter river in the vicinity of gage.

EXTREMES FOR PERIOD OF DAILY MEAN DISCHARGES BELOW BASE.--Maximum gage height, 16.02 ft, Aug. 2, 1995; minimum daily discharge, 2.7 ft³/s, Aug. 23, 1996.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	4.4	4.4	6.9	5.5	4.7	4.4	4.7	4.2	2.5	3.9	5.0
2	4.5	4.7	4.4	6.7	e5.8	4.7	4.5	4.6	4.4	1.9	4.2	4.9
3	4.7	4.4	6.3	6.7	e6.1	4.5	4.5	4.2	4.2	3.7	3.9	4.7
4	4.4	4.3	5.7	6.4	6.3	4.3	4.7	4.1	4.3	3.7	e3.9	4.7
5	4.3	4.2	4.6	6.4	6.3	4.4	e4.9	4.0	7.8	3.7	3.8	4.7
6	4.3	4.2	4.5	6.4	6.2	4.4	e5.1	4.1	8.6	3.8	3.8	4.6
7	4.1	4.3	4.6	6.3	6.2	4.2	5.3	4.2	4.6	3.9	3.8	e4.6
8	4.9	4.2	4.7	6.1	6.2	4.2	5.3	4.2	4.8	4.2	4.7	4.0
9	4.2	4.1	4.9	6.3	6.0	4.2	5.5	4.2	4.7	4.2	3.4	4.1
10	3.9	4.1	4.7	3.5	5.7	4.3	5.2	4.2	4.7	3.6	3.4	3.9
11	3.7	4.2	4.7	3.8	5.5	4.3	5.2	4.3	4.7	3.7	3.4	20
12	3.6	4.3	4.7	6.2	5.5	4.2	5.3	4.4	4.7	4.1	3.4	6.4
13	3.7	4.2	4.7	6.0	5.4	4.2	5.3	4.4	4.8	e4.0	3.3	4.4
14	3.7	4.1	4.7	5.8	5.4	4.3	5.3	4.4	5.1	3.4	3.3	5.0
15	3.8	4.2	4.8	5.9	5.3	4.3	5.7	e4.4	4.9	3.3	3.3	4.5
16	4.0	4.2	4.7	5.7	5.2	4.3	5.8	e2.2	4.8	3.3	3.0	4.5
17	3.9	4.2	4.7	5.6	5.3	4.3	5.7	1.8	4.9	3.3	3.1	4.5
18	4.0	4.2	4.8	5.7	5.3	4.4	5.7	4.0	4.7	3.3	7.2	4.5
19	4.1	4.2	2.3	5.6	5.2	4.5	5.9	4.0	4.8	3.2	2.6	4.6
20	4.0	4.2	3.5	5.6	5.1	4.4	5.7	5.1	4.9	3.2	3.6	4.7
21	4.0	4.2	5.2	5.7	5.3	4.4	5.6	5.6	4.5	3.2	3.6	4.7
22	3.8	4.3	5.3	5.9	5.1	4.6	6.8	5.1	4.4	3.3	3.9	4.7
23	5.5	4.4	18	5.6	5.1	4.5	12	4.7	4.4	3.3	4.2	4.8
24	5.5	e4.4	8.5	5.6	4.8	4.4	5.5	4.5	4.5	3.4	4.1	4.7
25	4.5	e4.5	7.7	6.2	5.3	4.4	4.9	4.4	4.4	3.4	4.0	4.9
26	e3.8	4.5	7.3	7.8	4.7	4.4	4.9	4.3	5.1	3.5	4.2	4.8
27	4.1	4.6	7.2	7.6	4.6	4.5	4.8	4.2	4.6	3.6	4.2	4.2
28	23	4.6	7.1	7.1	4.5	4.7	2.9	4.2	4.6	3.7	4.5	4.4
29	9.3	4.5	6.8	6.4	---	4.5	3.0	4.1	5.5	9.1	11	4.5
30	5.0	4.4	6.8	6.1	---	4.5	5.3	4.1	9.0	3.3	5.2	2.2
31	4.2	---	6.9	5.6	---	4.5	---	4.1	---	3.7	4.6	---
TOTAL	154.8	129.3	179.2	187.2	152.9	136.5	160.7	130.8	151.6	113.5	128.5	152.2
MEAN	4.99	4.31	5.78	6.04	5.46	4.40	5.36	4.22	5.05	3.66	4.15	5.07
MAX	23	4.7	18	7.8	6.3	4.7	12	5.6	9.0	9.1	11	20
MIN	3.6	4.1	2.3	3.5	4.5	4.2	2.9	1.8	4.2	1.9	2.6	2.2
AC-FT	307	256	355	371	303	271	319	259	301	225	255	302

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2003, BY WATER YEAR (WY)

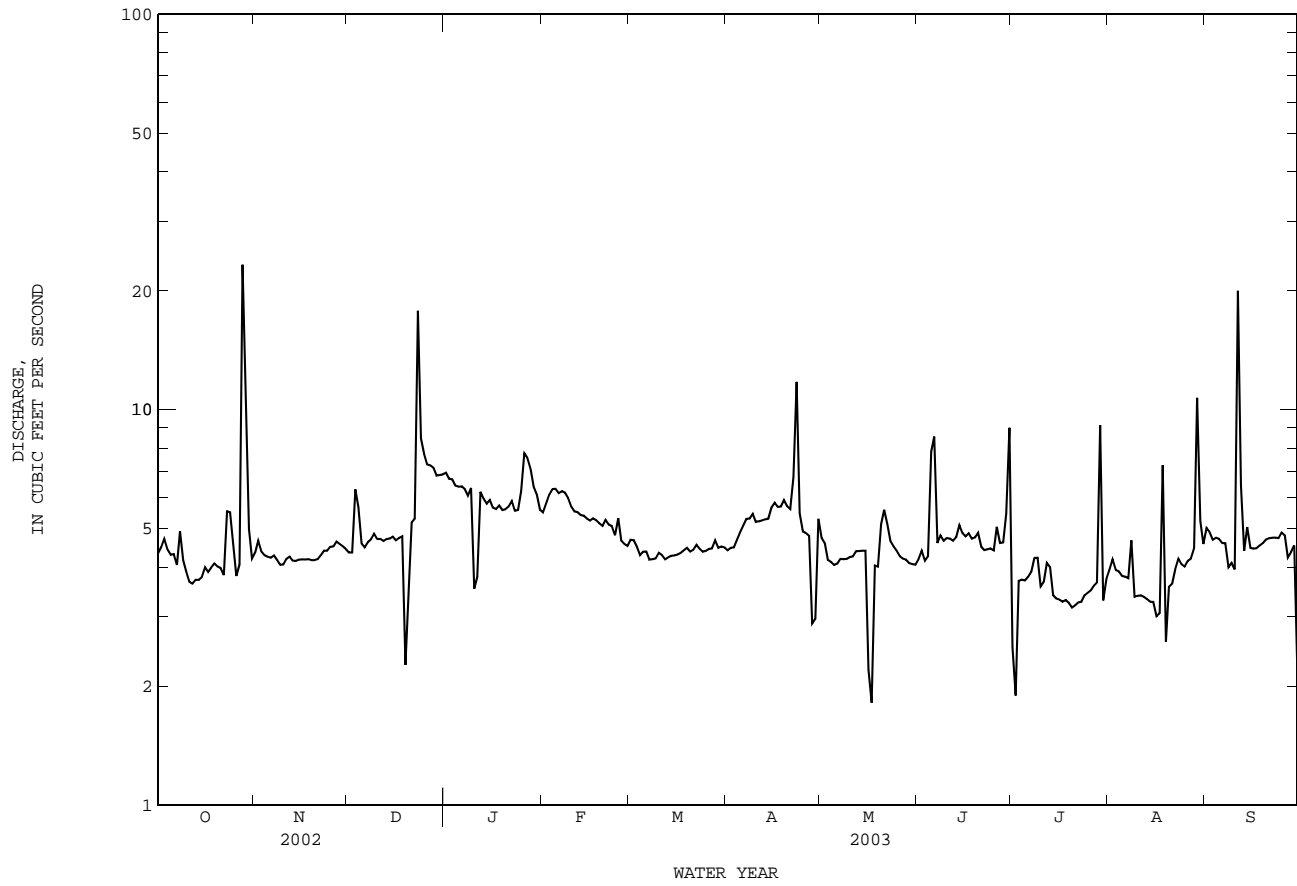
	MEAN	6.32	6.73	6.25	6.28	5.94	8.52	6.43	6.40	5.84	5.41	5.38	5.04
MAX		9.37	10.1	8.22	7.54	7.58	24.1	7.77	11.5	7.59	8.25	8.39	6.45
(WY)		2001	2001	1998	2001	1997	2000	1999	1999	1997	1999	2001	1997
MIN		4.98	4.31	4.79	4.53	4.40	4.40	5.33	4.22	4.31	3.66	2.59	3.39
(WY)		2000	2003	1999	2002	2002	2003	2002	2003	1998	2003	2002	2002

SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1997 - 2003

ANNUAL TOTAL	1633.5	1777.2	
ANNUAL MEAN	4.48	4.87	6.22
HIGHEST ANNUAL MEAN			7.75
LOWEST ANNUAL MEAN			4.85
HIGHEST DAILY MEAN	23	Oct 28	514
LOWEST DAILY MEAN	1.8	Aug 14	1.8
ANNUAL SEVEN-DAY MINIMUM	1.9	Aug 13	3.3
MAXIMUM PEAK FLOW			332
MAXIMUM PEAK STAGE			10.74
ANNUAL RUNOFF (AC-FT)	3240	3530	4500
10 PERCENT EXCEEDS	5.4	6.2	7.7
50 PERCENT EXCEEDS	4.3	4.5	5.3
90 PERCENT EXCEEDS	2.8	3.6	4.0

e Estimated

07311630 Middle Wichita River near Guthrie, TX--Continued



07311630 Middle Wichita River near Guthrie, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Oct. 1993 to current year.
 PESTICIDE DATA: Oct. 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Oct. 1994 to current year.
 TEMPERATURE: Oct. 1994 to current year.

INSTRUMENTATION.--Water-quality monitor since Oct. 1994.

REMARKS.--Records good. Interruption in record was caused by malfunctions of the instrument. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and a regression relation between each chemical constituent and specific conductance. The computation of the selected constituent loads might include estimated discharge or specific conductance data. New regression equations were developed based on data from water years 1994 to 2003. The standard error of estimate for dissolved solids is 3%, chloride is 4%, sulfate is 3% and for hardness is 5%. Regression equations developed for this station may be obtained from the U.S. Geological Survey Texas District Office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 18,900 microsiemens/cm, May 26, 1996; minimum, 210 microsiemens/cm, May 10, 1999.
 TEMPERATURE: Maximum, 36.4°C, July 1, 2003; minimum, 0.0°C, Dec. 22, 1999.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 13,800 microsiemens/cm, Feb. 25; minimum, 3,850 microsiemens/cm, Oct. 28.
 WATER TEMPERATURE: Maximum, 36.4°C, July 1; minimum, 0.4°C, Feb. 25.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard-ness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorption ratio (00931)
OCT													
22...	1240	4.4	13200	7.9	17.2	9.0	97	2600	2400	793	146	2220	19
NOV													
25...	1310	4.5	12800	7.9	7.1	12.4	106	2500	2400	778	142	2020	18
DEC													
18...	1115	4.5	12800	7.9	10.3	11.5	108	2500	2400	778	143	2050	18
JAN													
07...	1220	6.8	12500	8.0	10.8	11.7	109	2500	2400	776	147	2110	18
FEB													
03...	1405	5.3	12700	8.0	13.0	9.9	98	2500	2400	778	142	2140	19
MAR													
03...	1125	4.9	12600	7.8	8.9	11.7	105	2600	2400	795	147	2070	18
APR													
07...	1125	5.1	12900	7.9	17.1	9.3	101	2700	2500	822	153	2210	19
MAY													
06...	1140	4.4	13100	7.9	21.2	10.2	120	2600	2500	804	150	2140	18
JUN													
10...	1135	4.3	12200	7.8	27.6	10.5	140	2300	2100	695	130	1930	18
JUL													
28...	1130	4.0	13100	7.9	28.6	7.9	106	2600	2500	802dp	153dp	2170d	18
AUG													
05...	1205	4.0	13300	7.9	28.2	7.6	102	2600	2500	791d	149d	2240d	19
SEP													
10...	1150	3.8	13300	7.9	26.3	9.5	122	2600	2500	808d	142d	2100d	18

07311630 Middle Wichita River near Guthrie, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Potas- sium, water, fltrd, mg/L (00935)	Alka- linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate water, fltrd, mg/L (00945)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue total at 105 deg. C, sus- pended, mg/L (00530)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)	Total nitro- gen, water, unfltrd mg/L (00600)
OCT 22...	11.4	149	2250	3240	.58	11.2	8760	<10	.36	.011	.37	.09	.57
NOV 25...	10.1	171	2340	3210	.58	12.1	8630	<10	.52	.008	.53	.15	.70
DEC 18...	11.5	177	2350	3230	.58	11.0	8690	<10	.52	.008	.52	.15	.66
JAN 07...	11.3	167	2320	3220	.57	12.3	8700	<10	--	E.006	.57	.13	.79
FEB 03...	11.2	169	2210	3070	.59	11.1	8460	<10	.49	.010	.50	.17	.69
MAR 03...	11.5	174r	2260	3080	.58	11.4	8490	<10	.57	.009	.58	.13	.69
APR 07...	14.7	154	2360	3200	.56	10.2	8860	<10	.31	.013	.33	.12	.60
MAY 06...	13.2	142	2380	3230	.59	8.5	8820	32	.22	.011	.23	.15	.62
JUN 10...	11.2	140	2240	3000	.6	7.4	8100	<10	.07	.012	.08	.16	.48
JUL 28...	14.3d	117	2320d	3290d	.6	7.9	8830	<10	--	E.006	<.06	.10	--
AUG 05...	12.8d	113	2320d	3330d	.6	8.3	8920	17	--	E.006n	<.06	.10	--
SEP 10...	13.9d	124	2290d	3340d	.6	8.6	8770	30	.07	.008	.07	.12	.52
Date	Organic nitro- gen, water, unfltrd mg/L (00605)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Phos- phorus, water, unfltrd mg/L (00665)	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Arsenic water unfltrd ug/L (01002)	Arsenic water, fltrd, ug/L (01000)	Barium, water, unfltrd recover- able, ug/L (01007)	Barium, water, fltrd, ug/L (01005)	Cadmium water, unfltrd ug/L (01027)	Cadmium water, fltrd, ug/L (01025)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Chrom- ium, water, fltrd, ug/L (01030)
OCT 22...	.11	.20	<.04	<.04	<.02	<4	<1.6	18	20	<.21	<.22	<1.6	<1.6
NOV 25...	.02	.17	<.04	<.04	<.02	<4	<1.3	17	17	<.17	<.18	<1.6	<1.6
DEC 18...	--	.14	<.04	<.04	<.02	<2	<1.3dc	16d	19d	<.17dc	<.18dc	<1.6dc	<1.6dc
JAN 07...	.09	.23	<.04	<.04	<.02	<4	1.5	16	17	<.17	<.18	<1.6	<1.6
FEB 03...	.02	.19	<.04	<.04	<.02	<4	<1.6	18	19	<.21	<.22	<1.6	<4.0
MAR 03...	--	.11	<.04	<.04	<.02	<4	2.0	17	18	<.17	E.14n	<6.4	<1.6
APR 07...	.15	.27	<.04	<.04	<.02	<4	2.1	19	18	<.17	<.18	<1.6	<1.6
MAY 06...	.23	.39	E.02	<.04	<.02	E2n	3.3	24	26	<.21	<.22	<1.6	<1.6
JUN 10...	.24	.40	.05	<.04	<.02	E2n	1.7	28	27	<.17	<.18	<1.6	1.8
JUL 28...	.26	.36	<.04	<.04	<.02	<4d	3.3d	25d	21d	<.21d	.74d	<1.6d	<1.6d
AUG 05...	.35	.45	<.04	<.04	<.02	<4d	E1.2nd	25d	22d	<.21d	<.22d	<1.6d	<1.6d
SEP 10...	.33	.45	E.02n	<.04	<.18d	E1n	2.5d	24d	21d	<.21d	<.22d	E.9nd	<1.6d

07311630 Middle Wichita River near Guthrie, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, unfltrd recover- able, ug/L (01042)	Copper, water, fltrd, ug/L (01040)	Iron, water, unfltrd recover- able, ug/L (01045)	Iron, water, fltrd, ug/L (01046)	Lead, water, unfltrd recover- able, ug/L (01051)	Lead, water, fltrd, ug/L (01049)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, unfltrd recover- able, ug/L (71900)	Mercury water, fltrd, ug/L (71890)	Nickel, water, unfltrd recover- able, ug/L (01067)	Nickel, water, fltrd, ug/L (01065)	Selen- ium, water, unfltrd ug/L (01147)
OCT 22...	11.8	13.6	<20	<100	<.36	E.46n	9	7.8	<.02	<.02	37	22.1	15.2
NOV 25...	26.9	5.7	<20	<100	<.30	<.40	9	9.4	<.02	<.02	37	29.1	14.2
DEC 18...	15.6d	6.6d	<20	<100dc	<.30dc	<.40dc	11d	13.8d	<.02	<.02	40d	30.2d	13.9d
JAN 07...	14.9	7.0	<20	<100	<.30	<.40	9	7.7	<.02	<.02	42	35.8	12.3
FEB 03...	20.1	7.2	<20	<100	<.36	<.48	11	9.4	<.02	<.02	50	45.3	16.4
MAR 03...	10.7	6.1	<20	<100	<.30	E.20n	6	7.0	<.02	<.02	21	25.8	14.0
APR 07...	23.5	8.3	<20	<100	<.30	<.40	13	11.7	<.02	<.02	26	8.74	12.8
MAY 06...	15.0	14.5	180	E46n	M	E.34n	22	21.5	<.02	<.02	26	29.1	12.3
JUN 10...	28.0	8.5	330	<80	M	<.40	37	30.4	<.02	<.02	22	26.3	11.7
JUL 28...	13.7d	5.9d	410d	44d	Mnd	<.48d	22d	17.6d	<.02	<.02	24d	15.4d	12.7d
AUG 05...	23.5d	7.2d	460d	<40d	Mnd	<.48d	20d	14.8d	<.02	<.02	37d	21.6d	14.1d
SEP 10...	19.1d	19.4d	380	E49nd	Md	<.48d	17d	12.0d	<.02	<.02	16d	8.01d	12.3d
Date	Selen- ium, water, unfltrd, ug/L (01145)	Silver, water, unfltrd recover- able, ug/L (01077)	Silver, water, fltrd, ug/L (01075)	Zinc, water, unfltrd recover- able, ug/L (01092)	Zinc, water, fltrd, ug/L (01090)	Aldrin, water, unfltrd ug/L (39330)	Aroclor 1016 + 1242, water, unfltrd ug/L (81648)	Aroclor 1221, water, unfltrd ug/L (39488)	Aroclor 1232, water, unfltrd ug/L (39492)	Aroclor 1248, water, unfltrd ug/L (39500)	Aroclor 1254, water, unfltrd ug/L (39504)	Aroclor 1260, water, unfltrd ug/L (39508)	Chlor- dane, tech- nical, water, unfltrd ug/L (39350)
OCT 22...	10.4	<.96	2	E8n	9	--	--	--	--	--	--	--	--
NOV 25...	14.5	<.80	<1	12	6	--	--	--	--	--	--	--	--
DEC 18...	17.5d	<.80dc	<1d	E10nd	6d	--	--	--	--	--	--	--	--
JAN 07...	12.7	<.80	<1	E8n	6	--	--	--	--	--	--	--	--
FEB 03...	13.3	<.96	<1	E10n	8	--	--	--	--	--	--	--	--
MAR 03...	13.7	<.80	<1	E7n	6	--	--	--	--	--	--	--	--
APR 07...	10.2	<.80	<1	E9n	6	<.04	<.1	<1	<.1	<.1	<.1	<.1	<.1
MAY 06...	13.9	<.96	<1	E8n	8	--	--	--	--	--	--	--	--
JUN 10...	14.1	<.80	<1	14	8	<.20d	<.5d	<5d	<.5d	<.5d	<.5d	<.5d	<.5d
JUL 28...	12.9d	<.96d	<1d	E7nd	E4nd	--	--	--	--	--	--	--	--
AUG 05...	10.7d	<.96d	<1d	E10nd	6d	--	--	--	--	--	--	--	--
SEP 10...	12.8d	<.96d	<1d	E11nd	9d	--	--	--	--	--	--	--	--

07311630 Middle Wichita River near Guthrie, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Diel- drin, water, unfltrd ug/L (39380)	Endo- sulfan water, unfltrd ug/L (34351)	Endrin, water, unfltrd ug/L (39390)	Endrin alde- hyde, water, unfltrd ug/L (34366)	Hepta- chlor, water, unfltrd ug/L (39410)	Hepta- chlor epoxide water, unfltrd ug/L (39420)	Lindane water, unfltrd ug/L (39340)	PCB 207, surrog, Schl608 water, unfltrd pct rcv (99781)	Toxa- phene, water, unfltrd ug/L (39400)	alpha- Endo- sulfan, water, unfltrd ug/L (34361)	alpha- HCH, water, unfltrd ug/L (39337)	alpha- HCH-d6, surrog, Schl608 water, unfltrd pct rcv (99778)	beta- Endo- sulfan, water, unfltrd ug/L (34356)
OCT 22...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 07...	<.02	<.6	<.06	<.2	<.03	<.8	<.03	75.4	<2	<.1	<.03	108	<.04
MAY 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 10...	<.10d	<3.0d	<.30d	<1.0d	<.15d	<4.0d	<.15d	90.1d	<10d	<.5d	<.15d	43.4d	<.20d
JUL 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 10...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	beta- HCH, water, unfltrd ug/L (39338)	cis- Chlor- dane, water, unfltrd ug/L (39062)	delta- HCH, water, unfltrd ug/L (34259)	p,p'- DDD, water, unfltrd ug/L (39310)	p,p'- DDE, water, unfltrd ug/L (39320)	p,p'- DDT, water, unfltrd ug/L (39300)	trans- Chlor- dane, water, unfltrd ug/L (39065)
OCT 22...	--	--	--	--	--	--	--
NOV 25...	--	--	--	--	--	--	--
DEC 18...	--	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--	--
FEB 03...	--	--	--	--	--	--	--
MAR 03...	--	--	--	--	--	--	--
APR 07...	<.03	<.1	<.09	<.1	<.04	<.1	<.1
MAY 06...	--	--	--	--	--	--	--
JUN 10...	<.15d	<.5d	<.45d	<.5d	<.20d	<.5d	<.5d
JUL 28...	--	--	--	--	--	--	--
AUG 05...	--	--	--	--	--	--	--
SEP 10...	--	--	--	--	--	--	--

Remark codes used in this report:

< -- Less than
 E -- Estimated value
 M -- Presence verified, not quantified

Value qualifier codes used in this report:

c -- See laboratory comment
 d -- Diluted sample: method hi range exceeded
 n -- Below the NDV
 p -- Value reported is preferred
 r -- Value verified by rerun, same method

RED RIVER BASIN

07311630 Middle Wichita River near Guthrie, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 2002 TO SEPTEMBER 2003

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)	HARDNESS (CA, MG) (MG/L)
OCT.	2002	154.8	11100	7810	3260	2800	1160	2200	930	2400
NOV.	2002	129.3	11750	8190	2860	2900	1030	2300	801	2500
DEC.	2002	179.2	11560	8080	3910	2900	1400	2300	1100	2500
JAN.	2003	187.2	12650	8610	4350	3200	1610	2300	1170	2500
FEB.	2003	152.9	13050	8790	3630	3300	1360	2300	954	2500
MAR.	2003	136.5	12310	8460	3120	3100	1140	2300	852	2500
APR.	2003	160.7	12140	8370	3630	3100	1330	2300	998	2500
MAY	2003	130.8	12200	8410	2970	3100	1080	2300	815	2500
JUNE	2003	151.6	10490	7530	3080	2600	1070	2200	909	2400
JULY	2003	113.5	12750	8650	2650	3200	988	2300	707	2500
AUG.	2003	128.5	12310	8460	2930	3100	1080	2300	800	2500
SEPT	2003	152.2	11170	7830	3220	2800	1150	2200	911	2400
TOTAL		1777.2	**	**	39620	**	14400	**	10950	**
WTD.AVG.		4.9	11940	8260	**	3000	**	2300	**	2500

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12500	12400	12500	10700	10400	10600	12400	12000	12200	11700	11600	11600
2	12400	12300	12300	10700	10300	10500	12300	12000	12200	11900	11700	11800
3	12400	12300	12300	11000	10700	10800	12100	9150	11100	12200	11700	11900
4	12500	12400	12400	11100	10800	10900	11600	9950	10700	11900	11700	11800
5	12500	12400	12500	11200	10900	11100	12300	11600	11900	12100	11800	11900
6	12500	12400	12500	11300	11000	11100	12400	12200	12300	12200	12000	12100
7	12500	12500	12500	11400	11000	11300	12500	12300	12400	12600	---	e12400
8	12500	11300	12200	11400	11200	11300	12500	12300	12400	12600	12200	12400
9	11400	11000	11200	11400	11200	11300	12400	12200	12300	12700	12500	12500
10	11500	11300	11400	11500	11400	11400	12500	12300	12400	12900	12700	12800
11	11900	11500	11600	11700	11500	11600	12600	12500	12600	13000	12800	12900
12	12200	11900	12000	11800	11600	11700	12700	12500	12600	13000	12600	12700
13	12500	12200	12400	11800	11700	11800	12800	12600	12700	12700	12500	12600
14	12600	12400	12600	11900	11700	11800	12900	12700	12800	12700	12600	12600
15	12800	12600	12700	12000	11900	12000	12800	12600	12700	12900	12600	12700
16	12900	12700	12800	12200	11800	12000	12900	12700	12800	13000	12800	12900
17	13000	12800	12900	12200	11800	12100	13000	12700	12800	13000	12900	13000
18	13000	12800	12900	12100	11900	12100	13000	12600	12800	13100	13000	13000
19	12900	12700	12800	12300	11900	12200	12800	12600	12700	13000	12800	12900
20	12900	12700	12800	12300	12100	12200	13000	12400	12600	12900	12700	12800
21	13000	12900	12900	12300	12100	12200	12600	12400	12400	12800	12700	12800
22	13200	12700	13000	---	---	e12300	12400	12300	12300	13200	12800	13000
23	12700	10700	11800	---	---	e12400	12300	6280	9220	13200	13100	13200
24	11000	9560	10400	---	---	e12600	10500	6580	9520	13200	13100	13200
25	---	9650	e10000	---	---	e12700	11000	10500	10800	13300	13000	13100
26	11500	---	e11400	12200	12000	12100	11200	11000	11100	13100	12900	13000
27	11900	11400	11600	12200	12000	12100	11300	11100	11200	13000	12800	13000
28	11700	3850	8530	12300	12000	12100	11400	11200	11300	13000	12900	13000
29	8030	4050	6480	12200	11900	12000	11400	11200	11300	13100	12900	13000
30	---	8030	e9100	12200	12000	12100	11500	11300	11400	13200	12900	13000
31	10600	---	e10000	---	---	---	11600	11400	11500	13200	12900	13100
MONTH	---	---	11700	---	---	11700	13000	6280	11900	13300	---	12700

07311630 Middle Wichita River near Guthrie, TX--Continued

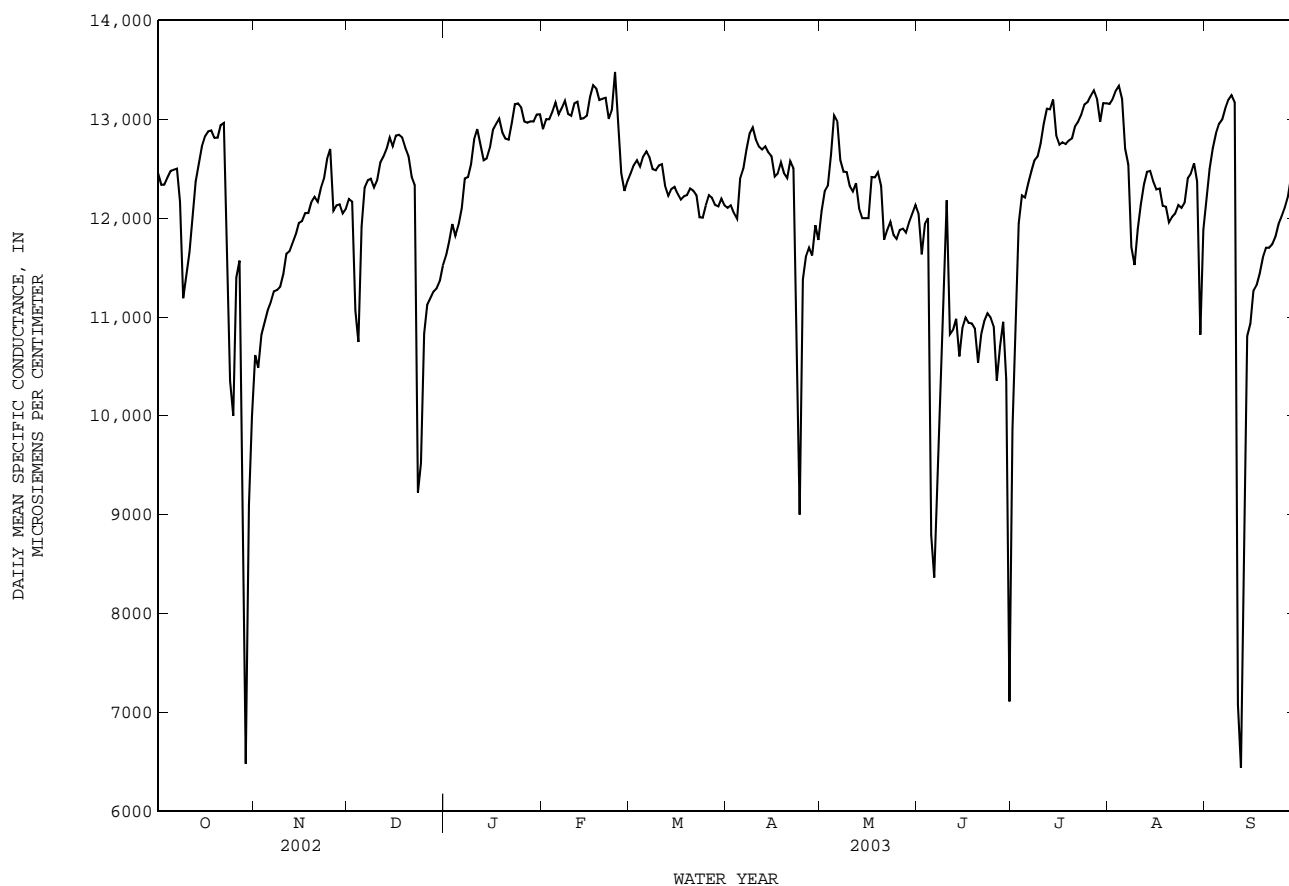
SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13000	12800	12900	12500	12400	12500	12200	12100	12100	12200	11700	12100
2	---	---	e13000	12600	12500	12500	12200	12000	12100	12400	12000	12300
3	13100	---	e13000	12700	12500	12600	12100	12000	12100	12500	11800	12300
4	13200	13000	13100	12600	12500	12500	12100	11900	12000	13100	12300	12600
5	13200	13100	13200	12700	12600	12600	---	---	e12400	13200	12900	13000
6	13200	13000	13000	12700	12600	12700	---	---	e12500	13300	12600	13000
7	13200	13000	13100	12800	12500	12600	12900	---	e12700	12800	12300	12600
8	13200	13100	13200	12500	12400	12500	12900	12800	12900	12600	12300	12500
9	13200	12900	13100	12500	12400	12500	13000	12800	12900	12600	12300	12500
10	13200	12900	13000	12600	12500	12500	12900	12700	12800	12400	12100	12300
11	13200	13100	13200	12600	12400	12500	12800	12700	12700	12400	12000	12300
12	13300	13100	13200	12400	12200	12300	12800	12600	12700	12500	12200	12400
13	13100	13000	13000	12300	12200	12200	12800	12700	12700	12300	11800	12100
14	13100	12800	13000	12400	12200	12300	12700	12600	12700	12200	11800	12000
15	13200	13000	13000	12400	12200	12300	12700	12300	12600	---	---	e12000
16	13300	13200	13200	12300	12200	12200	12600	12300	12400	12300	11800	e12000
17	13400	13300	13300	12200	12100	12200	12600	12300	12500	12600	12300	12400
18	13400	13300	13300	12300	12200	12200	12700	12500	12600	12500	12200	12400
19	13300	13100	13200	12300	12200	12200	12600	12300	12500	12500	12400	12500
20	13300	13200	13200	12300	12300	12300	12500	12400	12400	12500	11900	12300
21	13300	13100	13200	12300	12200	12300	12700	12500	12600	11900	11600	11800
22	13100	13000	13000	12300	12100	12200	12700	11700	12500	11900	11800	11900
23	13300	13000	13100	12100	12000	12000	12000	8470	10800	12100	11800	12000
24	13700	13300	13500	12100	11900	12000	11100	6320	9000	11900	11700	11800
25	13800	7490	12900	12200	12100	12100	11600	11100	11400	11900	11700	11800
26	12600	12300	12500	12300	12200	12200	11800	11400	11600	12000	11800	11900
27	12300	12200	12300	12300	12200	12200	11800	11500	11700	12000	11700	11900
28	12400	12300	12400	12200	12100	12100	11800	11300	11600	12000	11700	11900
29	---	---	---	12200	12000	12100	12100	11800	11900	12100	11800	12000
30	---	---	---	12300	12100	12200	12000	11500	11800	12100	11900	12000
31	---	---	---	12200	12100	12100	---	---	---	12200	11900	12100
MONTH	---	---	13000	12800	11900	12300	---	---	12200	---	---	12200

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	12300	11400	12000	10700	8860	9870	13200	13100	13200	12300	12000	12200
2	11900	11200	11600	11000	10500	10700	13300	13100	13200	12600	12300	12500
3	12100	11700	11900	12900	11000	11900	13300	13200	13300	12900	12600	12700
4	12100	11900	12000	12300	12100	12200	13400	13300	13300	13000	12700	12900
5	12100	6880	8790	12300	12100	12200	13500	12800	13200	13100	12800	13000
6	8660	8140	8360	12400	12200	12400	12800	12600	12700	13100	12800	13000
7	10300	8250	9550	12500	12300	12500	12700	12400	12500	13200	13000	13100
8	---	---	e10500	12600	12500	12600	12500	9310	11700	13300	13100	13200
9	---	---	e11500	12700	12600	12600	12600	9700	11500	13400	13000	13200
10	12300	---	e12200	12900	12600	12800	12100	11700	11900	13400	12800	13200
11	11100	10600	10800	13000	12900	13000	12300	12100	12100	12900	4640	7080
12	11000	10600	10900	13200	13000	13100	12400	12200	12300	7140	6190	6440
13	11100	10800	11000	---	---	e13100	12600	12400	12500	10900	7140	9300
14	11100	10200	10600	13500	---	e13200	12600	12300	12500	10900	10700	10800
15	11100	10600	10900	13100	12700	12800	12500	12300	12400	11200	10700	10900
16	11200	10900	11000	12800	12700	12700	12300	12200	12300	11400	11100	11300
17	11100	10800	10900	12800	12700	12800	12300	12300	12300	11500	11200	11300
18	11100	10800	10900	12800	12700	12700	12500	11600	12100	11500	11400	11400
19	11100	10400	10900	12900	12700	12800	12800	11900	12100	11700	11500	11600
20	10700	10400	10500	12900	12700	12800	12100	11900	12000	11900	11600	11700
21	10900	10700	10800	13000	12900	12900	12100	11900	12000	11800	11600	11700
22	11100	10800	11000	13000	12900	13000	12100	12000	12000	11900	11600	11700
23	11100	10900	11000	13100	13000	13100	12200	12000	12100	11900	11700	11800
24	11100	10900	11000	13300	13100	13100	12200	12000	12100	12100	11800	11900
25	11000	10700	10900	13300	13100	13200	12400	12100	12200	12100	11900	12000
26	10800	10000	10400	13300	13200	13200	12600	12300	12400	12300	12000	12100
27	10900	10500	10700	13400	13200	13300	12500	12300	12500	12300	12100	12200
28	11100	10800	11000	13400	12900	13200	12700	12500	12600	12600	12300	12400
29	11100	7960	10400	13400	12700	13000	12700	11000	12400	12600	12400	12500
30	10400	4790	7110	13400	13100	13200	11600	9950	10800	12700	12500	12600
31	---	---	---	13200	13100	13200	12000	11600	11900	---	---	---
MONTH	---	---	10700	---	---	12700	13500	9310	12300	13400	4640	11700

e Estimated

07311630 Middle Wichita River near Guthrie, TX--Continued



WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

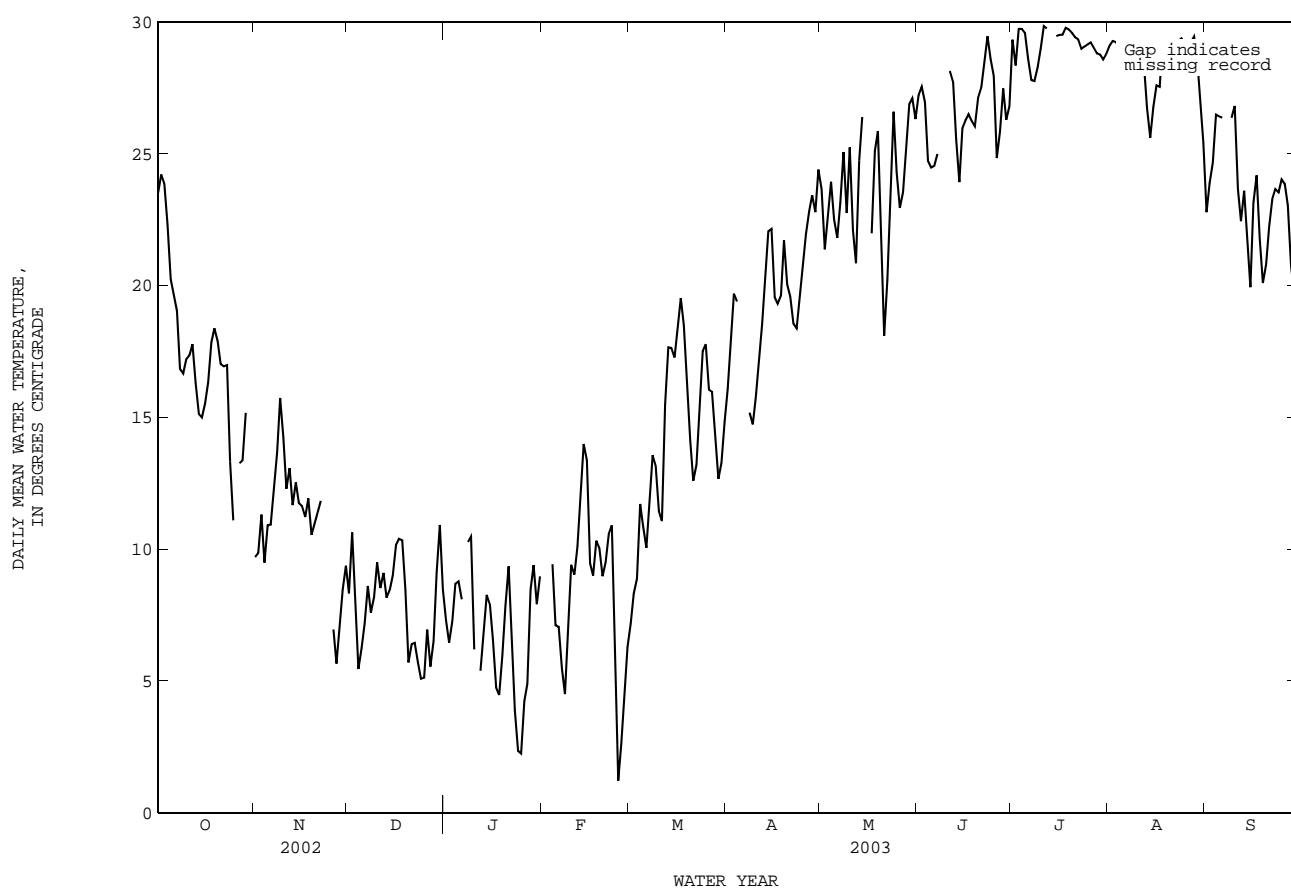
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	24.9	22.6	23.5	10.3	9.3	9.7	12.1	5.2	8.3	10.7	5.2	7.3
2	25.4	23.3	24.2	10.7	9.1	9.9	14.1	8.4	10.6	10.2	4.0	6.5
3	25.2	23.1	23.9	13.1	9.7	11.3	10.5	6.5	8.4	11.8	4.0	7.3
4	23.1	21.1	22.3	10.9	8.2	9.5	6.6	4.5	5.5	13.1	5.7	8.7
5	21.8	19.2	20.2	15.2	8.3	10.9	9.7	4.4	6.2	12.9	5.8	8.8
6	20.5	19.1	19.7	15.6	7.2	10.9	11.0	4.3	7.2	10.2	6.8	8.1
7	19.6	17.9	19.0	16.9	9.0	12.3	12.4	6.4	8.6	12.0	---	---
8	17.9	16.3	16.8	17.5	10.6	13.7	8.8	6.6	7.6	14.6	6.9	10.3
9	16.9	16.4	16.7	19.5	13.2	15.7	8.7	7.6	8.2	12.8	7.2	10.5
10	17.8	16.7	17.2	16.1	12.3	14.2	12.8	7.2	9.5	10.1	3.7	6.2
11	18.8	16.4	17.4	14.9	10.3	12.3	11.3	6.3	8.5	6.2	---	---
12	18.3	17.1	17.8	16.6	10.7	13.1	12.4	7.4	9.1	5.8	4.3	5.4
13	17.1	15.1	16.3	15.6	8.6	11.7	11.9	5.8	8.2	8.7	5.4	6.8
14	16.6	14.2	15.1	16.3	10.3	12.5	12.8	5.7	8.5	9.4	7.1	8.3
15	16.0	14.1	15.0	14.5	9.7	11.8	13.0	5.7	9.0	8.4	7.1	7.9
16	17.2	14.7	15.5	15.4	9.1	11.6	13.2	8.2	10.2	7.4	5.2	6.6
17	18.2	15.1	16.3	15.4	8.2	11.2	13.9	7.7	10.4	5.8	3.5	4.8
18	18.4	16.7	17.8	15.1	10.0	11.9	12.0	8.9	10.3	6.2	2.8	4.5
19	19.4	17.6	18.4	14.5	7.0	10.5	11.0	4.3	8.4	7.5	4.2	6.0
20	19.4	17.1	17.9	14.7	8.6	11.0	8.4	1.5	5.7	9.5	5.7	7.9
21	18.0	16.3	17.0	15.4	8.3	11.4	7.6	5.3	6.4	10.0	8.1	9.4
22	17.4	16.4	16.9	15.3	9.1	11.8	7.2	5.6	6.4	8.1	4.7	7.1
23	17.7	15.6	17.0	---	---	---	6.6	4.7	5.7	4.7	2.7	3.9
24	15.7	10.8	13.3	---	---	---	8.0	3.7	5.1	3.2	1.3	2.3
25	11.8	10.4	11.1	8.2	---	---	9.1	2.1	5.1	3.7	0.7	2.2
26	13.9	---	---	9.2	5.7	7.0	10.8	5.1	7.0	5.2	2.7	4.2
27	13.7	12.8	13.3	8.9	2.9	5.7	8.7	3.1	5.5	6.8	3.4	4.9
28	14.0	12.9	13.4	11.6	3.7	7.0	11.1	3.1	6.5	10.0	5.8	8.5
29	18.8	12.9	15.2	11.7	5.8	8.5	12.0	6.5	9.1	10.1	7.8	9.4
30	15.8	---	---	12.8	7.2	9.4	13.6	8.7	10.9	9.4	7.1	7.9
31	10.4	---	---	---	---	---	11.9	5.9	8.5	10.3	7.3	9.0
MONTH	25.4	---	---	---	---	---	14.1	1.5	7.9	14.6	---	---

07311630 Middle Wichita River near Guthrie, TX--Continued

WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	9.3	---	8.0	6.3	7.2	18.3	14.6	16.1	27.7	19.3	23.7
2	---	---	---	9.2	7.5	8.3	20.1	16.2	18.0	25.3	19.3	21.4
3	---	---	---	10.8	7.4	8.9	20.9	19.0	19.7	29.5	18.2	22.7
4	11.0	6.9	9.4	13.4	9.1	11.7	21.0	18.6	19.4	28.0	20.9	23.9
5	7.6	6.5	7.1	11.9	9.8	10.8	---	---	---	29.7	17.2	22.5
6	7.5	6.4	7.1	11.8	9.0	10.1	---	---	---	28.2	16.2	21.8
7	6.4	4.2	5.5	13.7	10.0	11.7	18.4	---	---	30.7	17.8	23.1
8	5.9	3.1	4.5	14.1	12.9	13.6	16.6	13.8	15.2	30.0	21.4	25.1
9	9.0	4.2	7.2	14.1	12.2	13.2	17.4	13.0	14.7	29.7	16.3	22.8
10	10.8	8.3	9.4	13.2	10.0	11.5	17.6	14.2	15.8	31.0	21.5	25.2
11	10.0	8.2	9.0	12.7	9.7	11.1	18.4	16.1	17.2	29.1	16.7	22.1
12	11.6	9.0	10.1	17.8	12.7	15.5	20.8	17.0	18.5	25.7	16.2	20.9
13	12.9	11.0	12.0	18.3	16.5	17.7	22.0	19.2	20.5	32.5	19.4	24.7
14	15.0	12.9	14.0	19.5	16.6	17.6	24.0	20.5	22.1	30.9	23.0	26.4
15	14.4	10.7	13.4	18.7	16.2	17.3	22.6	20.6	22.2	---	---	---
16	10.7	8.5	9.5	20.1	17.0	18.5	21.5	18.1	19.6	27.6	---	---
17	10.5	7.9	9.0	20.6	18.3	19.5	19.9	18.5	19.3	24.7	18.2	22.0
18	11.0	9.8	10.3	20.1	16.9	18.5	21.7	17.9	19.6	27.2	23.5	25.1
19	10.6	9.5	10.1	17.4	14.6	16.5	22.8	20.7	21.7	27.0	24.8	25.9
20	9.5	8.5	9.0	14.6	12.8	14.1	20.7	19.3	20.0	24.8	18.4	21.7
21	10.1	8.4	9.5	13.6	11.8	12.6	20.4	18.8	19.6	18.8	17.4	18.1
22	12.3	9.4	10.6	14.6	12.4	13.2	20.0	16.5	18.6	22.9	18.4	20.2
23	11.8	9.1	10.9	17.1	13.3	15.1	22.7	16.3	18.4	29.2	19.9	23.9
24	9.1	2.3	6.2	19.2	16.2	17.5	26.9	14.2	19.7	31.8	22.2	26.6
25	2.6	0.4	1.2	18.5	16.1	17.8	28.1	15.2	20.8	27.2	22.0	24.3
26	3.8	0.9	2.6	18.0	14.6	16.1	29.4	16.1	21.9	28.9	19.1	23.0
27	5.6	3.3	4.7	17.1	14.7	16.0	29.3	17.8	22.8	31.3	17.6	23.6
28	6.9	5.3	6.3	15.6	12.5	14.4	30.3	18.9	23.4	33.1	19.3	25.4
29	---	---	---	14.5	11.6	12.7	25.8	18.3	22.8	34.5	21.1	26.9
30	---	---	---	15.6	11.6	13.3	26.2	22.2	24.4	34.1	21.9	27.1
31	---	---	---	16.8	13.4	14.8	---	---	---	32.7	21.9	26.3
MONTH	---	---	---	20.6	6.3	14.1	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	34.8	22.0	27.2	36.4	23.9	29.3	31.0	27.8	29.1	24.0	21.6	22.8
2	34.3	22.8	27.6	32.1	23.6	28.4	31.3	28.1	29.3	29.1	20.7	23.9
3	33.8	22.9	27.0	31.8	28.2	29.7	30.9	28.2	29.2	29.7	20.5	24.7
4	29.5	22.3	24.7	31.8	28.3	29.7	30.7	27.9	29.1	32.2	23.0	26.5
5	31.3	20.0	24.5	31.5	28.3	29.6	30.8	28.0	29.2	33.3	21.6	26.4
6	31.0	20.1	24.5	29.6	27.6	28.6	30.4	27.8	29.1	32.3	21.7	26.4
7	32.3	19.7	25.0	29.0	26.9	27.8	30.9	28.2	29.2	---	21.8	---
8	---	---	---	29.1	26.9	27.8	31.1	27.9	29.3	30.7	---	---
9	---	---	---	30.4	26.6	28.3	30.0	27.7	28.9	33.0	22.1	26.4
10	34.6	---	---	30.1	28.0	29.0	30.1	27.4	28.8	32.3	23.0	26.8
11	35.0	23.5	28.1	32.1	28.4	29.9	29.8	28.3	29.0	26.2	21.5	23.7
12	35.7	22.1	27.7	31.6	28.3	29.8	29.2	27.7	28.4	26.0	19.3	22.5
13	28.1	22.6	25.6	---	---	---	27.7	25.8	26.7	29.3	19.5	23.6
14	29.0	20.3	23.9	30.9	---	---	27.0	24.8	25.6	23.5	19.8	21.6
15	32.8	21.0	26.0	31.7	28.0	29.5	28.7	25.3	26.8	24.2	16.4	19.9
16	32.3	21.8	26.3	31.4	28.2	29.5	29.2	26.9	27.6	29.4	19.2	23.2
17	32.7	21.5	26.5	31.0	28.3	29.5	29.6	25.9	27.5	29.6	20.3	24.2
18	31.9	21.9	26.2	31.6	28.5	29.8	33.6	27.1	29.3	24.2	19.1	21.8
19	31.3	22.0	26.1	31.5	28.4	29.7	31.2	26.6	29.2	25.4	16.8	20.1
20	34.3	22.8	27.1	31.2	28.4	29.6	30.1	28.2	29.0	26.8	16.2	20.8
21	34.1	22.8	27.5	31.0	28.3	29.4	30.7	27.2	28.7	26.0	19.6	22.2
22	35.2	23.7	28.5	30.9	28.5	29.3	30.4	28.2	29.1	28.5	19.2	23.3
23	36.1	24.9	29.5	30.0	28.2	29.0	31.4	27.9	29.3	27.9	21.0	23.7
24	33.2	25.7	28.6	31.1	27.6	29.1	31.2	28.3	29.4	28.6	20.1	23.5
25	32.3	25.5	28.0	30.7	28.0	29.2	31.0	28.0	29.2	26.1	22.2	24.0
26	27.6	22.7	24.8	30.9	28.0	29.2	30.9	27.8	29.0	29.1	20.0	23.9
27	33.4	20.3	25.9	30.7	27.9	29.0	31.0	28.0	29.2	26.1	20.5	23.0
28	34.7	22.2	27.5	30.6	27.6	28.8	31.0	28.4	29.5	25.2	17.0	20.8
29	32.0	23.6	26.3	31.3	27.5	28.8	29.6	26.0	28.6	22.1	17.3	19.7
30	34.0	21.1	26.8	29.8	26.8	28.6	30.9	24.9	27.1	25.8	17.2	20.6
31	---	---	---	30.2	27.7	28.8	28.9	23.3	25.4	---	---	---
MONTH	---	---	---	---	---	---	33.6	23.3	28.5	---	---	---

07311630 Middle Wichita River near Guthrie, TX--Continued



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RED RIVER BASIN

07311700 North Wichita River near Truscott, TX

LOCATION.--Lat 33°49'14", long 99°47'10", Foard-Knox County line, Hydrologic Unit 11130204, near right bank at downstream side of bridge on State Highway 6, 4.5 mi north of Truscott, about 47.6 mi upstream from confluence with South Wichita River, and 188.4 mi upstream from mouth.

DRAINAGE AREA.--937 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1952-57 (occasional low-flow measurements), Dec. 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,351.78 ft above NGVD of 1929. Prior to Jan. 2, 1960, nonrecording gage at same site and datum. Satellite telemeter at station.

REMARKS.--Records good. No known regulation. There is one small diversion for irrigation upstream from station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900 occurred in Sept. 1919; the next highest flood occurred in May 1954, from information by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	47	16	26	19	21	e17	13	9.2	11	2.2	22
2	5.2	58	16	24	18	21	15	14	15	13	2.8	22
3	4.8	54	59	23	18	20	15	14	12	9.2	2.1	21
4	5.5	43	118	22	18	18	16	14	8.3	6.6	1.5	15
5	4.0	37	57	21	19	17	16	12	54	5.4	1.5	13
6	5.3	29	30	20	20	16	17	11	588	4.7	1.6	11
7	6.4	24	24	21	21	15	18	9.9	109	4.8	1.5	9.9
8	18	22	23	20	21	15	16	9.3	73	5.0	1.9	9.4
9	20	21	32	20	21	16	15	8.8	49	5.6	2.1	11
10	21	19	32	19	21	16	13	8.3	34	5.9	2.2	11
11	13	19	25	19	20	16	13	7.3	25	4.7	2.0	192
12	10	19	22	20	19	16	13	7.2	20	3.8	2.5	90
13	8.5	20	26	19	19	15	13	7.5	17	3.1	2.2	37
14	8.5	21	26	20	20	14	12	7.4	17	2.9	2.3	17
15	9.5	20	24	20	20	15	12	7.7	16	2.7	18	13
16	7.8	21	26	19	19	16	32	8.5	16	2.4	6.4	11
17	6.9	21	22	19	19	16	27	7.8	15	2.3	3.9	9.2
18	7.9	21	20	19	19	17	20	6.7	14	2.3	3.3	7.6
19	9.5	18	19	19	19	17	26	5.5	14	3.2	3.0	7.4
20	9.6	17	19	19	19	18	36	17	15	3.5	2.6	7.3
21	9.7	18	18	18	20	19	61	24	15	3.3	2.8	7.3
22	9.5	18	16	19	22	21	47	17	21	2.7	3.3	7.3
23	84	17	451	19	20	21	204	14	15	2.4	2.6	7.3
24	98	17	233	19	20	19	163	12	11	2.4	2.0	6.9
25	116	17	87	19	19	19	135	11	11	2.1	2.2	6.5
26	37	17	55	20	20	18	48	11	23	1.8	2.7	6.5
27	22	17	42	21	21	18	28	10	10	1.8	2.8	6.4
28	473	17	36	20	20	19	19	9.0	9.3	1.6	2.7	6.5
29	901	17	33	19	---	20	16	7.3	31	1.7	59	6.4
30	126	16	31	20	---	19	16	5.4	51	1.8	67	6.5
31	60	---	28	19	---	20	---	4.1	---	2.0	23	---
TOTAL	2121.6	722	1666	622	551	548	1099	321.7	1317.8	125.7	235.7	604.4
MEAN	68.4	24.1	53.7	20.1	19.7	17.7	36.6	10.4	43.9	4.05	7.60	20.1
MAX	901	58	451	26	22	21	204	24	588	13	67	192
MIN	4.0	16	16	18	18	14	12	4.1	8.3	1.6	1.5	6.4
AC-FT	4210	1430	3300	1230	1090	1090	2180	638	2610	249	468	1200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003, BY WATER YEAR (WY)

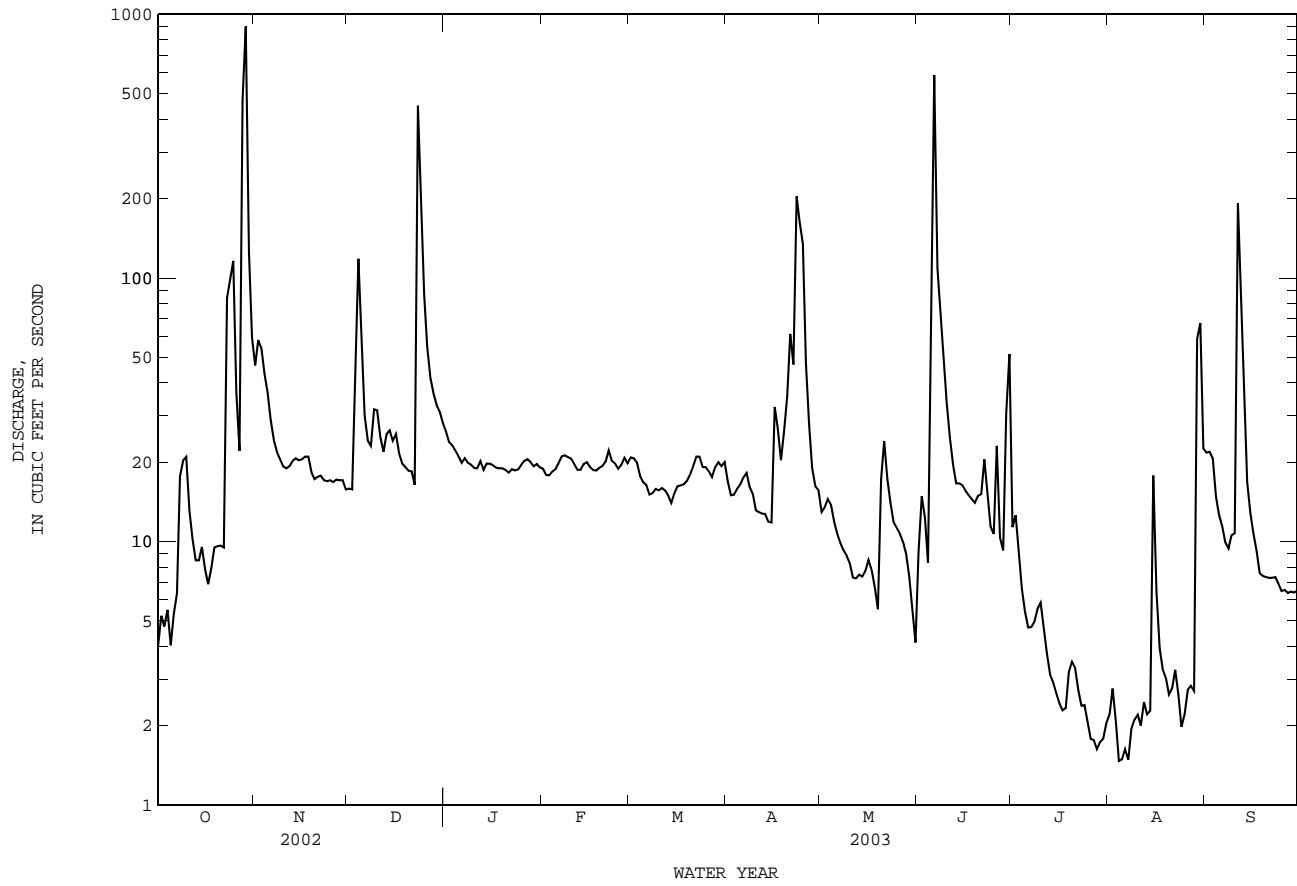
	MEAN	97.3	34.0	27.9	24.6	28.6	37.0	50.4	109	145	46.1	76.1	95.1
MAX	1170	109	120	68.5	149	162	340	771	737	317	1266	818	
(WY)	1984	2001	1992	1992	1992	2000	1997	1987	1995	1975	1966	1965	
MIN	3.90	10.4	11.8	8.23	6.16	5.49	7.61	10.4	9.34	0.72	1.17	3.51	
(WY)	1964	1968	1964	1965	1965	1965	1964	2003	2001	1964	1964	1968	

SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1960 - 2003

ANNUAL TOTAL	11980.5	9934.9	
ANNUAL MEAN	32.8	27.2	64.0
HIGHEST ANNUAL MEAN			193
LOWEST ANNUAL MEAN			17.2
HIGHEST DAILY MEAN	901	Oct 29	19400
LOWEST DAILY MEAN	3.9	Sep 28	0.02
ANNUAL SEVEN-DAY MINIMUM	4.8	Sep 30	0.13
MAXIMUM PEAK FLOW			1560
MAXIMUM PEAK STAGE			14.39
ANNUAL RUNOFF (AC-FT)	23760	19710	46340
10 PERCENT EXCEEDS	53	37	65
50 PERCENT EXCEEDS	16	17	20
90 PERCENT EXCEEDS	6.6	2.9	7.5

e Estimated

07311700 North Wichita River near Truscott, TX--Continued



07311700 North Wichita River near Truscott, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Feb. 1954 to Mar. 1959, July 1968 to Dec. 1989, Sept. 1990 to June 1992, Oct. 1994 to current year.

BIOCHEMICAL DATA: Sept. 1990 to current year.

PESTICIDE DATA: Sept. 1996 to current year.

SEDIMENT DATA: Apr. 1978 to Dec. 1989.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1968 to Dec. 1989, Sept. 1990 to June 1992, Oct. 1994 to current year.

WATER TEMPERATURE: July 1968 to Dec. 1989 (local observer), Sept. 1990 to June 1992, Oct. 1994 to current year.

INSTRUMENTATION.--Water-quality monitor July 1968 to Dec. 1989, Sept. 1990 to June 1992, Oct. 1994 to current year.

REMARKS.--Records fair. Interruption in the record was caused by malfunctions of the instrument. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and a regression relation between each chemical constituent and specific conductance. The computation of the selected constituent loads might include estimated discharge or specific conductance data. New regression equations were developed based on data from water years 1994 to 2003. The standard error of estimate for dissolved solids is 6%, chloride is 11%, sulfate is 9% and for hardness is 10%. Regression equations developed for this station may be obtained from the U.S. Geological Survey Texas District Office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 35,800 microsiemens/cm, Oct. 9, 1982; minimum, 400 microsiemens/cm, June 7, 8, 1985.

WATER TEMPERATURE: Maximum, 39.0°C, Aug. 21, 23, 1969, Aug. 22, 1973; minimum, -0.9°C, Feb. 25, 2003.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 32,100 microsiemens/cm, Aug. 15; minimum, 1,550 microsiemens/cm, Oct. 28, Apr. 23.

WATER TEMPERATURE: Maximum, 37.5°C, Aug. 7; minimum, -0.9°C, Feb. 25.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf, uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard-ness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorption ratio (00931)
OCT													
16...	1145	8.7	21200	7.9	14.7	8.6	91	3000	2900	877	196	4150	33
NOV													
21...	1248	17	19000	7.8	12.6	10.1	100	2700	2600	783	188	3510	29
DEC													
11...	1045	24	13800	7.9	6.5	11.1	95	2200	2100	629	159	2330	21
JAN													
06...	1220	20	15500	8.0	7.7	11.4	99	2600	2500	712	202	2750	23
FEB													
25...	1215	13	18900	7.7	1.9	13.1	100	2900	2800	822	205	3460	28
MAR													
12...	1130	14	19300	7.9	17.5	9.6	108	2900	2800	836	206	3630	29
APR													
23...	1120	52	8750	7.8	16.2	8.8	93	1500	1400	435	94.1	1390	16
MAY													
12...	1300	7.9	16200	7.8	24.1	7.7	96	2500	2400	708	177	2800	24
JUN													
07...	1035	101	9050	7.7	22.8	7.6	91	1400	1300	404dc	86.4dc	1470dc	17
JUL													
22...	1110	2.4	26200	7.9	30.0	7.0	101	3900	3800	1090d	282d	4800d	34
AUG													
13...	1200	2.0	30900	8.3	29.7	9.1	132	4700	4600	1320dr	330dr	6280dr	40
SEP													
11...	1230	234	7170	7.7	22.7	6.6	78	1000	960	309	56.0	1070d	15

07311700 North Wichita River near Truscott, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Potas- sium, water, fltrd, mg/L (00935)	Alka- linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate water, fltrd, mg/L (00945)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue total at 105 deg. C, sus- pended, mg/L (00530)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)	Total nitro- gen, water, unfltrd mg/L (00600)
OCT 16...	15.4	52	2530	6280	.48	.7r	14100	<10	--	<.008	<.06	.08	--
NOV 21...	12.6	110	2520	5450	.42	1.9	12500	<10	--	<.008	<.06	<.04	--
DEC 11...	13.8	139	1960	3800	.40	4.9	8980	31	--	E.004	.07	.05	.26
JAN 06...	14.2	157	2250	4220	.38	3.5	10300	13	--	<.008	.07	.06	.32
FEB 25...	10.7	122	2420	5180	.44	1.2	12200	<10	--	<.008	<.06	.08	--
MAR 12...	11.0	104	2540	5520	.47	1.0	12800	<10	--	<.008	<.06	.07	--
APR 23...	15.6	79	1240	2210	.38	3.2	5440	360	--	<.008	E.04	E.04	--
MAY 12...	15.9r	73	2330	4660	.37	2.1	10700	15	--	<.008	<.06	.08	--
JUN 07...	12.5dc	54	1210d	2370d	.3	5.1	5590	284d	--	E.006	<.06	.04	--
JUL 22...	26.7dr	83	3310d	7850d	.5	2.8	17400	<10	--	<.008	<.06	.14	--
AUG 13...	24.4dr	59	3880d	9650d	.6	1.3	21500	11	--	<.008	<.06	.17	--
SEP 11...	9.65	38	939d	1610d	.4	5.7	4020	E6070	.16	.011	.18	E.03n	4.5
Date	Organic nitro- gen, water, unfltrd mg/L (00605)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Phos- phorus, water, unfltrd mg/L (00665)	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Arsenic water unfltrd ug/L (01002)	Arsenic water, fltrd, ug/L (01000)	Barium, water, unfltrd recover- able, ug/L (01007)	Barium, water, fltrd, ug/L (01005)	Cadmium water, unfltrd ug/L (01027)	Cadmium water, fltrd, ug/L (01025)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Chrom- ium, water, fltrd, ug/L (01030)
OCT 16...	.12	.20	<.04	<.04	<.02	4	<2.3	38	41	<.32	<.33	<1.6	E.9n
NOV 21...	--	.11	<.04	<.04	<.02	E3n	2.4	48	49	<.24	<.26	<1.6	<1.6
DEC 11...	.14	.19	E.02	<.04	<.02	<4	3.1	46	41	<.21	<.22	1.7	<1.6
JAN 06...	.20	.25	<.04	<.04	<.02	E2n	3.5	47	47	<.21	<.22	<1.6	<1.6
FEB 25...	.05	.13	E.02	<.04	<.02	<4	4.1	28	27	<.28	<.30	<1.6	<3.2
MAR 12...	.09	.16	E.02	<.04	<.02	<4	4.1	30	31	<.24	<.26	<6.4	<1.6
APR 23...	--	.65	.27	<.04	<.02	8	3.3	108	63	<.14	<.15	7.3	<.8
MAY 12...	.22	.30	E.02	E.03	<.02	E2ndc	4.1d	107d	103d	<.24dc	<.26dc	<1.6dc	<.8
JUN 07...	.71	.75	.38	<.04	<.02	6	3.3	276d	212d	<.14d	<.15d	7.7	<.8
JUL 22...	.36	.50	<.04	<.04	<.02	7d	3.1	69d	67	<.39d	1.10d	<2.4d	<2.4d
AUG 13...	.52	.69	<.04	<.04	<.02	8d	8.5d	63d	60d	<.46d	<.48d	<3.2d	<3.2d
SEP 11...	--	4.4d	3.79d	<.04	<.18d	36	5.3d	553d	139d	.16d	<.11d	49.6d	<.8

07311700 North Wichita River near Truscott, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, unfltrd recover- able, ug/L (01042)	Copper, water, fltrd, ug/L (01040)	Iron, water, unfltrd recover- able, ug/L (01045)	Iron, water, fltrd, ug/L (01046)	Lead, water, unfltrd recover- able, ug/L (01051)	Lead, water, fltrd, ug/L (01049)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, unfltrd recover- able, ug/L (71900)	Mercury water, fltrd, ug/L (71890)	Nickel, water, unfltrd recover- able, ug/L (01067)	Nickel, water, fltrd, ug/L (01065)	Selen- ium, water, unfltrd ug/L (01147)
OCT 16...	14.0	13.5	<20	<150	<.54	<.72	16	10.9	<.02	<.02	41	38.1	E3.4n
NOV 21...	27.2	6.7	<20	<100	<.42	<.56	18	19.0	.02	E.01	43	32.1	10.7
DEC 11...	12.2	6.1	200	<100	Mn	.53	23	9.6	<.02	<.02	34	21.9	6.7r
JAN 06...	13.8	7.2	<20	<100	<.36	<.48	25	16.9	.03	E.01	43	36.0	7.2
FEB 25...	10.7	7.2	<20	<100	<.48	<.64	18	18.6	<.02	<.02	30p	33.9p	9.9
MAR 12...	13.1	5.9	<20	<100	<.42	1.74	14	13.6	<.02	<.02	27	31.0	11.5
APR 23...	15.6	5.3	5510	<50	3	<.32	142	5.2	E.01	<.02	25	17.4	5.5
MAY 12...	34.4d	17.6d	<20	<100dc	<.42dc	<.56dc	13d	8.6d	<.02	<.02	24d	26.7d	5.3d
JUN 07...	21.0d	6.1d	6370	<40d	3d	<.32d	203d	10.0d	<.02	<.02	24d	14.2d	<1.9
JUL 22...	29.7d	8.9	210d	<80d	<.66d	<.88d	48d	39.9	<.02	<.02	58d	39.6	5.8d
AUG 13...	35.8d	18.0d	150d	<120d	<.78d	<1.04d	31d	22.9d	<.02	<.02	66d	55.5d	<6.2d
SEP 11...	32.3d	8.4d	31900d	E5n	29d	<.24d	1500d	18.6d	.03	<.02	112d	3.63d	2.4d
Date	Selen- ium, water, unfltrd recover- able, ug/L (01145)	Silver, water, unfltrd recover- able, ug/L (01077)	Silver, water, fltrd, ug/L (01075)	Zinc, water, unfltrd recover- able, ug/L (01092)	Zinc, water, fltrd, ug/L (01090)	Aldrin, water, unfltrd ug/L (39330)	Aroclor 1016 + 1242, water, unfltrd ug/L (81648)	Aroclor 1221, water, unfltrd ug/L (39488)	Aroclor 1232, water, unfltrd ug/L (39492)	Aroclor 1248, water, unfltrd ug/L (39500)	Aroclor 1254, water, unfltrd ug/L (39504)	Aroclor 1260, water, unfltrd ug/L (39508)	Chlor- dane, tech- nical, water, unfltrd ug/L (39350)
OCT 16...	7.0	<1.44	E1n	E11n	12	--	--	--	--	--	--	--	--
NOV 21...	7.1	<1.12	<1	E13n	7	--	--	--	--	--	--	--	--
DEC 11...	10.6r	<.96	<1	E10n	6	--	--	--	--	--	--	--	--
JAN 06...	6.7	<.96	<1	E8n	E6n	--	--	--	--	--	--	--	--
FEB 25...	7.2	<1.28	<2	<16	E5n	--	--	--	--	--	--	--	--
MAR 12...	8.6	<1.12	<1p	<14	E4n	--	--	--	--	--	--	--	--
APR 23...	3.7	<.64	<.80	34	E4n	<.20d	<.5d	<5d	<.5d	<.5d	<.5d	<.5d	<.5d
MAY 12...	5.0d	<1.12dc	<1dc	16d	10d	--	--	--	--	--	--	--	--
JUN 07...	2.4	<.64d	<.80d	37d	E4nd	<.20d	<.5d	<5d	<.5d	<.5d	<.5d	<.5d	<.5d
JUL 22...	3.8	<1.76d	<2d	E11nd	5	--	--	--	--	--	--	--	--
AUG 13...	7.5d	<2.08d	<3d	E16nd	E12nd	--	--	--	--	--	--	--	--
SEP 11...	2.1d	<.48d	<.60d	177d	4d	--	--	--	--	--	--	--	--

07311700 North Wichita River near Truscott, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Diel- drin, water, unfltrd ug/L (39380)	Endo- sulfan water unfltrd ug/L (34351)	Endrin, water, unfltrd ug/L (39390)	Endrin alde- hyde, water, unfltrd ug/L (34366)	Hepta- chlor, water, unfltrd ug/L (39410)	Hepta- chlor epoxide water unfltrd ug/L (39420)	Lindane water, unfltrd ug/L (39340)	PCB 207, surrog, Schl608 water, unfltrd pct rcv (99781)	Toxa- phene, water, unfltrd ug/L (39400)	alpha- Endo- sulfan, water, unfltrd ug/L (34361)	alpha- HCH, water, unfltrd ug/L (39337)	alpha- HCH-d6, surrog, Schl608 water, unfltrd pct rcv (99778)	beta- Endo- sulfan, water, unfltrd ug/L (34356)
OCT 16...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 23...	<.10d	<3.0d	<.30d	<1.0d	<.15d	<4.0d	<.15d	56.5d	<10d	<.5d	<.15d	42.1d	<.20d
MAY 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 07...	<.10d	<3.0d	<.30d	<1.0d	<.15d	<4.0d	<.15d	54.9d	<10d	<.5d	<.15d	29.2d	<.20d
JUL 22...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 11...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	beta- HCH, water, unfltrd ug/L (39338)	cis- Chlor- dane, water, unfltrd ug/L (39062)	delta- HCH, water, unfltrd ug/L (34259)	p,p'- DDD, water, unfltrd ug/L (39310)	p,p'- DDE, water, unfltrd ug/L (39320)	p,p'- DDT, water, unfltrd ug/L (39300)	trans- Chlor- dane, water, unfltrd ug/L (39065)
OCT 16...	--	--	--	--	--	--	--
NOV 21...	--	--	--	--	--	--	--
DEC 11...	--	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--	--
FEB 25...	--	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--	--
APR 23...	<.15d	<.5d	<.45d	<.5d	<.20d	<.5d	<.5d
MAY 12...	--	--	--	--	--	--	--
JUN 07...	<.15d	<.5d	<.45d	<.5d	<.20d	<.5d	<.5d
JUL 22...	--	--	--	--	--	--	--
AUG 13...	--	--	--	--	--	--	--
SEP 11...	--	--	--	--	--	--	--

Remark codes used in this report:

< -- Less than
E -- Estimated value
M -- Presence verified, not quantified

Value qualifier codes used in this report:

c -- See laboratory comment
d -- Diluted sample: method hi range exceeded
n -- Below the NDV
p -- Value reported is preferred
r -- Value verified by rerun, same method

RED RIVER BASIN

07311700 North Wichita River near Truscott, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 2002 TO SEPTEMBER 2003

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)	HARDNESS (CA, MG) (MG/L)
OCT.	2002	2121.6	6760	4590	26290	1900	10770	1000	5920	1200
NOV.	2002	722	14010	9500	18510	4000	7820	2000	3970	2300
DEC.	2002	1666	9520	6470	29090	2600	11910	1500	6560	1700
JAN.	2003	622	16710	11320	19010	4800	8120	2400	4000	2700
FEB.	2003	551	18480	12500	18600	5400	8040	2600	3840	2900
MAR.	2003	548	19390	13110	19400	5700	8450	2700	3950	3000
APR.	2003	1099	11900	8060	23930	3400	10200	1700	5050	1900
MAY	2003	321.7	14680	9950	8640	4200	3660	2100	1840	2400
JUNE	2003	1317.8	9030	6130	21820	2500	8950	1400	4910	1600
JULY	2003	125.7	20440	13800	4680	6100	2080	2700	924	3000
AUG.	2003	235.7	20650	13920	8860	6300	4010	2600	1680	2900
SEPT	2003	604.4	12880	8730	14250	3700	6020	1900	3060	2100
TOTAL		9934.9	**	**	213100	**	90030	**	45710	**
WTD.AVG.		27	11720	7940	**	3400	**	1700	**	1900

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	24000	23500	23800	8000	6030	7000	19300	19100	19200	13400	12900	13000
2	23800	23200	23500	8520	6780	7860	19200	19000	19100	14600	13400	14100
3	23500	21600	23000	9950	8520	9520	19000	5800	15800	14600	14200	14500
4	24600	20600	22400	10100	9720	9960	10400	6070	9190	14600	14200	14300
5	25100	23400	24500	10900	9220	10200	12000	9780	10900	15000	14600	14700
6	25200	24400	24900	12500	10900	11800	12800	12000	12600	15700	15000	15400
7	24700	24500	24600	12800	12500	12700	12800	10700	11800	16100	15700	15900
8	24600	11400	20400	12800	12400	12600	11000	10200	10500	16000	15700	15800
9	21900	13100	19200	13200	12400	12800	12600	11000	12000	16300	15800	16100
10	22000	21200	21700	14200	12900	13500	12900	9410	11800	16800	16300	16600
11	21200	20200	20600	14900	14100	14600	13900	12900	13600	17100	16800	16900
12	20600	20000	20300	15600	14800	15200	14300	13900	14100	17000	16400	16700
13	20700	19900	20300	16200	15600	16000	14800	14300	14700	16600	16400	16500
14	21800	20300	21000	16700	16100	16500	14800	14500	14600	17500	16600	16900
15	21700	21000	21400	17000	16700	16900	14500	14300	14400	18000	17200	17700
16	21700	20900	21200	17400	17000	17200	14900	14400	14600	17300	17100	17200
17	21100	20900	21000	17700	17400	17600	15500	14900	15300	17600	17300	17500
18	21000	20100	20600	17900	17600	17700	16000	15500	15700	17800	17300	17600
19	20100	19600	19800	18200	17900	18000	16600	16000	16300	17700	17200	17500
20	20400	19900	20200	18400	18200	18300	17100	16600	16800	17600	17400	17500
21	20600	20400	20500	18600	18400	18400	17300	17100	17200	17700	17500	17600
22	20600	20400	20500	18600	18500	18500	17400	17200	17300	18000	17700	17900
23	20400	1910	11700	18800	18500	18600	17300	1640	7330	18200	18000	18100
24	17900	2630	7790	18800	18500	18700	4610	3190	3820	18400	18100	18300
25	10800	4370	7850	19300	18800	19100	6650	4600	5630	18400	17800	18200
26	11700	7280	9800	19400	19300	19400	8700	6650	7600	18300	18100	18200
27	13400	11700	12500	19600	19400	19500	9920	8700	9550	18300	18100	18200
28	13900	1550	8000	19700	19400	19500	10100	9280	9840	18200	17800	18000
29	2980	1760	2430	19600	19300	19400	11500	10100	10800	18100	17800	17900
30	4140	2980	3510	19400	19100	19200	12200	11500	11800	18400	18100	18200
31	6030	4140	5040	---	---	---	12900	12200	12700	18200	18000	18100
MONTH	25200	1550	17500	19700	6030	15500	19300	1640	12800	18400	12900	16800

07311700 North Wichita River near Truscott, TX--Continued

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

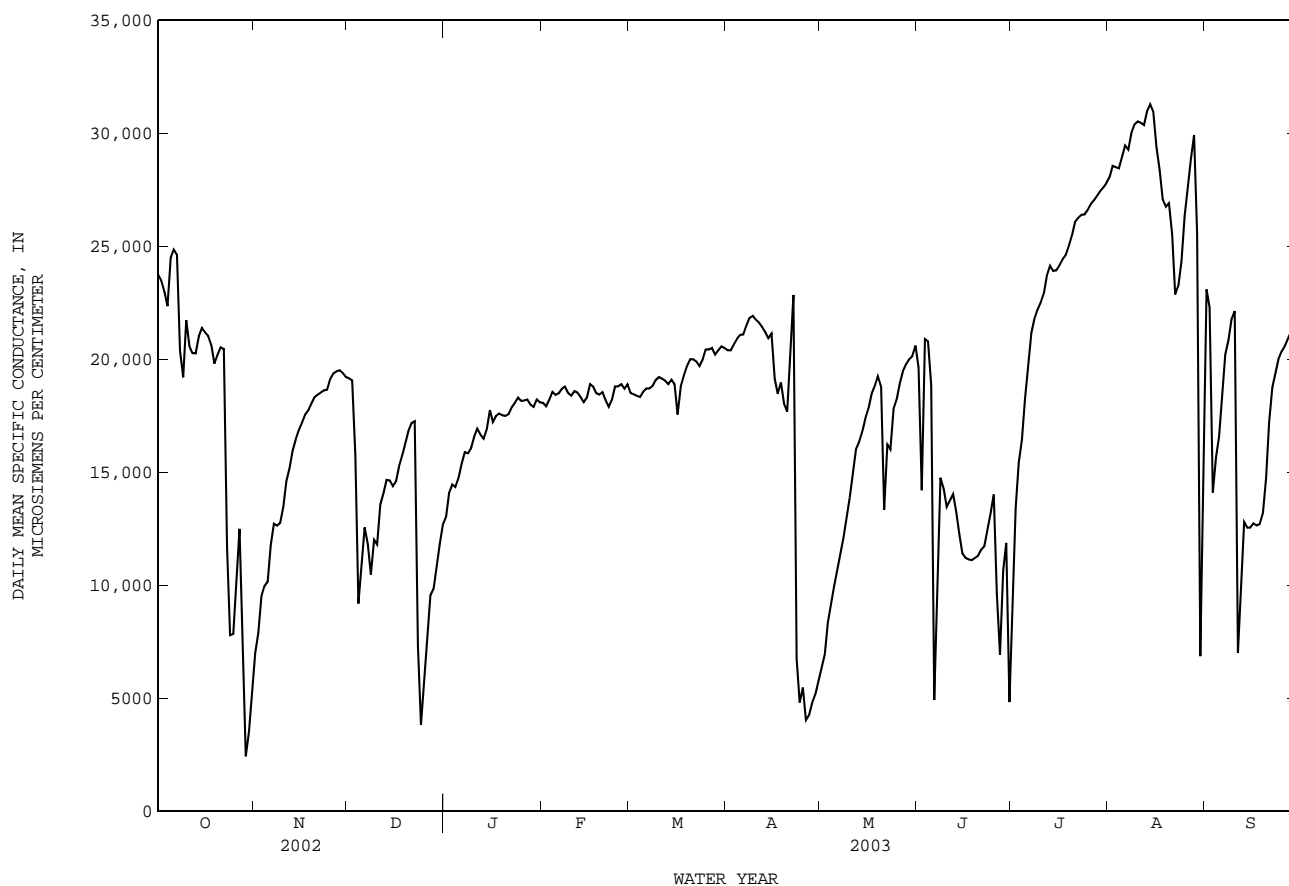
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	18200	18000	18100	19000	18300	18500	---	---	e20400	6670	5990	6300
2	18000	17800	17900	18600	18400	18500	20600	20300	20400	7950	6670	6940
3	18400	17900	18200	18600	18200	18400	20900	20400	20700	8790	7950	8350
4	18700	18400	18600	18500	18200	18300	21100	20700	20900	9530	8790	9130
5	18500	18400	18400	18700	18500	18600	21200	20900	21100	10400	9530	9950
6	18600	18400	18500	18900	18600	18700	21300	21000	21100	11100	10400	10700
7	18800	18500	18700	18900	18600	18700	21800	21300	21500	11700	11100	11400
8	18900	18700	18800	19000	18700	18800	22000	21700	21800	12600	11700	12100
9	18700	18300	18500	19200	19000	19100	22200	21600	21900	13500	12600	13100
10	18600	18200	18400	19300	19100	19200	22000	21500	21800	14500	13500	13900
11	18800	18500	18600	19200	19000	19100	21800	21500	21600	15600	14500	15000
12	18700	18400	18500	19600	18600	19100	21700	21100	21400	16300	15600	16000
13	18500	18200	18300	19100	18700	18900	21400	21000	21200	16500	16100	16300
14	18300	18000	18100	19300	18900	19100	21300	20500	20900	17100	16500	16800
15	18400	18100	18300	19300	16100	18900	21500	19700	21100	17600	17000	17400
16	19100	18900	18900	18500	16100	17600	21000	15400	19100	18200	17000	17800
17	19200	18500	18800	19300	18500	18800	20100	15000	18500	18800	18200	18500
18	18600	18400	18500	19400	19100	19300	20200	18100	19000	19100	18600	18800
19	18500	18400	18400	19900	19400	19700	19500	15100	18100	19700	19000	19300
20	18600	18400	18500	20100	19900	20000	20000	16000	17700	20000	16900	18800
21	18500	17700	18200	20300	19900	20000	23200	15100	20500	19900	7570	13300
22	18100	17800	17900	20100	19400	19900	23900	13200	22900	19000	14200	16200
23	18500	17900	18200	19900	19600	19700	14900	1550	6750	16700	15500	16000
24	18900	18500	18800	20200	19800	20000	7860	2060	4810	18200	16700	17800
25	18900	18600	18800	20600	20100	20400	7660	4120	5470	18500	17500	18200
26	19000	18600	18900	20700	20100	20400	4140	3960	4030	19400	18500	18900
27	18800	18600	18700	20800	20300	20500	4600	4100	4260	19800	19300	19500
28	19100	18700	18900	20500	20100	20200	4970	4600	4790	19900	19600	19800
29	---	---	---	20700	20200	20400	5440	4910	5170	20200	19900	20000
30	---	---	---	20800	20400	20600	5990	5440	5700	20300	20000	20100
31	---	---	---	20900	---	e20500	---	---	---	20800	20200	20600
MONTH	19200	17700	18500	20900	---	19400	---	---	16500	20800	5990	15400

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	21100	3000	19600	11500	7810	9810	28400	27800	28100	24600	22500	23100
2	20800	8500	14200	---	11500	e13400	29000	28200	28600	23600	14100	22300
3	21800	20200	20900	---	---	e15400	28900	28200	28500	---	---	e14100
4	21100	20400	20800	---	---	e16400	29100	28000	28500	---	---	e15700
5	20500	2340	18900	---	---	e18200	29500	28600	29000	---	---	e16600
6	7240	1940	4920	---	---	e19700	29700	29200	29500	---	---	e18300
7	10700	6740	8670	---	---	e21200	29500	28900	29300	---	---	e20200
8	16300	10700	14800	---	---	e21800	30500	29400	30000	---	---	e20900
9	14900	13500	14300	---	---	e22200	30800	29900	30400	---	---	e21800
10	13600	13400	13500	22700	---	e22500	30900	30200	30500	---	---	e22100
11	14000	13600	13700	23500	22700	22900	31000	30000	30500	---	---	e7000
12	14300	13700	14000	24200	23400	23700	30800	29800	30400	12600	7180	9440
13	13700	12800	13300	24400	23800	24100	31400	30500	31000	13000	12100	12800
14	12800	11700	12300	24200	23500	23900	31900	30100	31300	---	---	e12600
15	11700	11200	11400	24200	23500	23900	32100	29500	31000	---	---	e12600
16	11300	11100	11200	24600	23700	24200	29800	29000	29400	---	---	e12700
17	11300	11000	11100	24700	24000	24400	29100	27600	28400	---	---	e12600
18	11200	11000	11100	25000	24200	24600	27600	26800	27100	12900	---	e12700
19	11300	11100	11200	25500	24600	25000	26900	26500	26800	13700	12900	13200
20	11400	11200	11300	25900	25100	25500	27100	26700	26900	15900	13700	14700
21	11700	11400	11600	26500	25800	26100	26800	24000	25500	18400	15900	17200
22	12200	11300	11700	26800	25500	26300	24000	22100	22900	19100	18400	18700
23	12900	12200	12500	26800	26000	26400	23700	22800	23300	19900	19100	19400
24	13700	12900	13200	26700	26100	26400	25200	23700	24300	20200	19800	20000
25	14200	13300	14000	27000	26200	26600	27300	25200	26300	20600	20200	20300
26	14500	4500	9680	27100	26500	26900	28200	27300	27600	20700	20400	20600
27	8900	5000	6930	27300	26600	27000	29800	28200	28900	21200	20700	20900
28	12100	8900	10700	27400	26900	27200	30300	29600	29900	21400	20900	21200
29	13400	4710	11900	27700	27100	27400	30400	2000	25600	21500	20600	21300
30	7810	3610	4830	27900	27400	27600	9010	2300	6860	21600	21100	21400
31	---	---	---	28100	27600	27800	24300	9010	17700	---	---	---
MONTH	21800	1940	12600	---	---	23200	32100	2000	27200	---	---	17200

e Estimated

RED RIVER BASIN

07311700 North Wichita River near Truscott, TX--Continued



WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

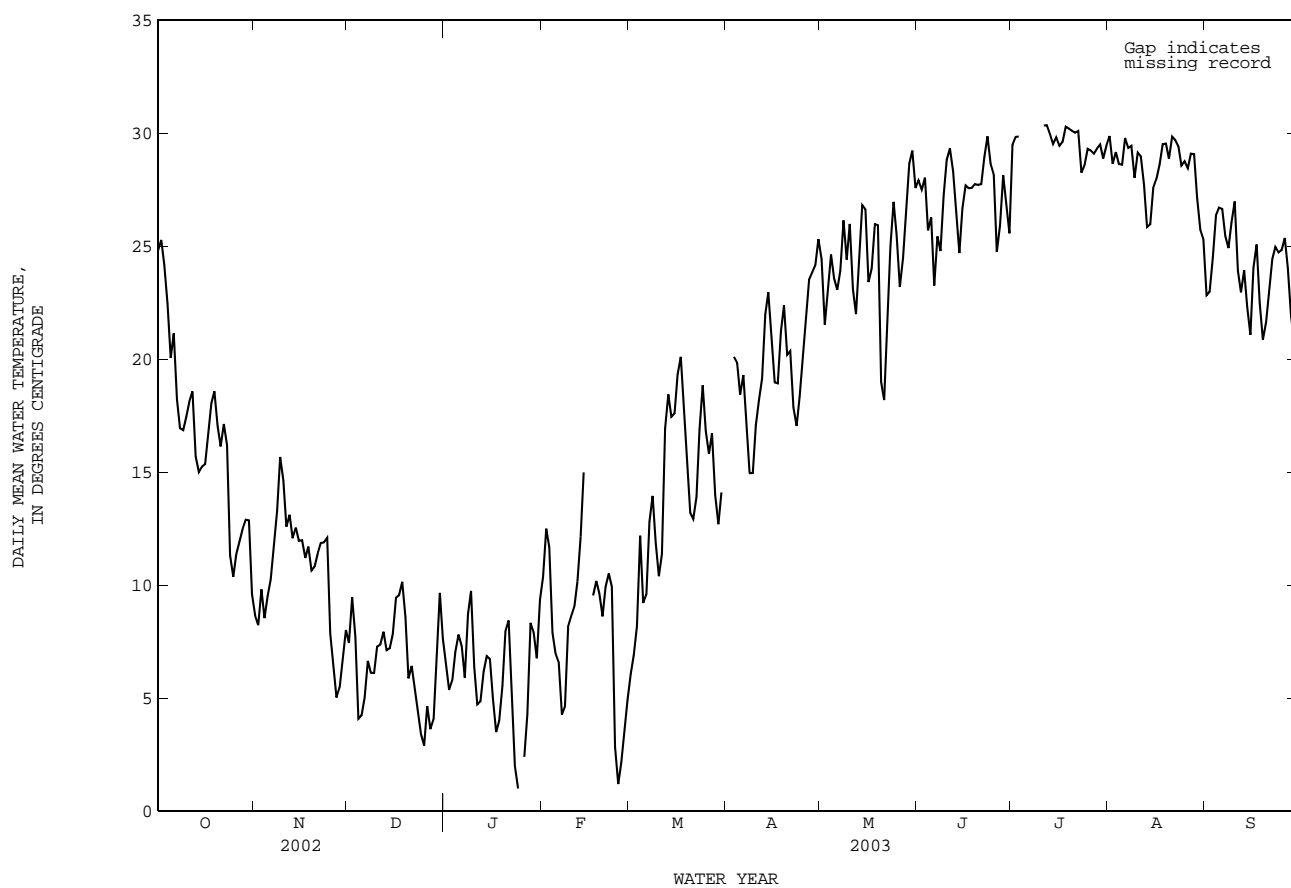
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	28.7	22.3	24.8	9.0	8.3	8.7	9.3	5.2	7.4	8.1	4.8	6.5
2	28.9	23.1	25.3	9.0	7.7	8.2	11.5	7.8	9.5	7.2	3.2	5.4
3	27.4	21.5	24.2	11.1	9.0	9.8	10.0	4.3	7.7	8.0	3.3	5.8
4	25.8	19.3	22.5	9.3	7.6	8.5	4.8	3.5	4.1	9.1	4.6	7.1
5	23.8	16.9	20.1	11.8	7.2	9.5	5.7	2.8	4.2	9.7	5.5	7.8
6	25.0	19.4	21.1	12.6	7.3	10.3	6.8	2.7	5.0	8.6	5.7	7.3
7	20.3	17.1	18.2	14.0	8.8	11.7	8.5	4.6	6.7	8.0	3.2	5.9
8	17.7	16.2	16.9	15.4	10.8	13.3	7.3	5.6	6.1	10.9	6.0	8.7
9	17.3	16.5	16.9	17.8	13.4	15.7	6.6	5.7	6.1	10.9	7.7	9.7
10	18.8	16.6	17.4	15.9	13.0	14.6	8.8	5.8	7.3	7.8	4.5	6.4
11	20.4	15.8	18.1	14.3	11.1	12.6	8.9	5.5	7.4	5.7	3.4	4.7
12	20.0	17.1	18.6	15.1	11.4	13.1	9.3	6.6	7.9	5.2	4.1	4.9
13	17.4	13.8	15.7	14.0	9.6	12.1	8.6	5.2	7.1	8.2	4.3	6.2
14	17.3	13.4	15.0	14.5	10.7	12.6	8.9	5.0	7.2	8.7	4.8	6.9
15	18.4	12.2	15.2	13.8	9.8	12.0	9.6	5.3	7.8	7.4	6.1	6.7
16	18.4	12.4	15.4	13.8	10.1	12.0	10.9	8.0	9.4	6.5	3.4	5.0
17	19.4	14.0	16.7	13.3	8.9	11.2	11.3	7.3	9.6	5.3	1.6	3.5
18	19.7	16.7	18.1	13.5	10.5	11.7	10.9	9.2	10.2	6.3	1.4	4.0
19	22.0	16.2	18.6	12.7	8.1	10.6	9.5	6.9	8.6	7.9	2.7	5.5
20	19.6	15.2	17.0	13.0	8.8	10.8	7.3	3.8	5.9	10.6	5.1	8.0
21	17.9	14.0	16.1	13.6	8.9	11.4	8.4	4.5	6.4	9.8	6.8	8.4
22	17.9	15.9	17.1	13.6	9.9	11.9	6.4	4.0	5.5	6.8	2.7	4.6
23	17.6	14.5	16.2	14.1	9.4	11.9	5.9	3.2	4.4	3.7	0.1	2.0
24	14.5	9.1	11.3	14.3	10.3	12.1	4.5	2.6	3.4	1.5	0.1	1.0
25	11.8	9.4	10.4	10.3	6.3	7.9	5.0	0.8	2.9	3.4	---	---
26	12.1	10.7	11.4	8.1	5.4	6.5	6.5	3.0	4.6	3.8	1.6	2.4
27	12.4	11.4	11.9	6.6	3.1	5.0	5.0	1.7	3.6	7.3	1.4	4.3
28	12.7	12.3	12.5	7.7	3.0	5.5	6.6	1.2	4.1	11.4	5.2	8.3
29	14.2	12.0	12.9	8.7	4.8	6.8	9.0	4.8	6.9	9.4	6.4	7.9
30	13.8	11.1	12.9	10.0	6.4	8.0	11.3	8.5	9.7	9.3	3.6	6.8
31	11.1	9.0	9.6	---	---	---	9.4	5.7	7.6	12.0	6.8	9.4
MONTH	28.9	9.0	16.7	17.8	3.0	10.5	11.5	0.8	6.6	12.0	---	---

07311700 North Wichita River near Truscott, TX--Continued

WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13.2	7.1	10.4	7.0	5.2	6.1	---	---	---	28.4	19.9	24.4
2	15.0	9.8	12.5	8.0	6.0	6.9	24.4	---	---	23.6	20.1	21.5
3	13.6	8.9	11.7	12.2	4.2	8.2	24.0	17.9	20.1	28.0	19.3	23.0
4	10.1	5.2	7.9	16.4	9.2	12.2	23.7	16.2	19.9	27.6	22.3	24.6
5	7.6	6.1	7.0	12.1	6.3	9.2	21.5	15.0	18.4	28.4	18.9	23.6
6	7.3	4.6	6.6	13.6	5.4	9.6	22.7	16.6	19.3	27.3	18.5	23.1
7	6.6	1.9	4.3	17.0	8.6	12.8	20.4	13.4	16.9	29.1	19.4	23.9
8	6.6	2.8	4.6	16.2	12.5	14.0	18.6	11.4	15.0	30.0	23.2	26.1
9	11.2	5.5	8.2	14.8	8.9	11.9	19.8	10.2	15.0	29.4	19.0	24.4
10	11.1	5.6	8.6	13.2	8.3	10.4	21.8	12.3	17.1	30.5	23.0	26.0
11	11.8	5.9	9.1	14.8	8.2	11.4	21.8	14.6	18.2	27.9	18.5	23.1
12	13.0	6.8	10.2	21.6	12.4	16.9	24.4	13.8	19.1	25.1	18.2	22.0
13	13.2	11.1	12.1	22.2	15.2	18.4	26.7	17.8	22.0	30.7	20.2	24.5
14	17.9	12.7	15.0	21.4	13.2	17.5	27.7	18.7	23.0	30.6	24.0	26.8
15	---	11.6	---	21.0	14.4	17.6	23.1	19.6	21.0	30.4	24.1	26.6
16	11.6	---	---	23.3	15.6	19.3	22.6	14.9	19.0	25.7	21.1	23.4
17	12.8	6.0	9.5	23.5	17.5	20.1	20.6	16.8	18.9	29.6	18.9	24.0
18	11.6	9.0	10.2	21.1	15.5	17.9	26.0	16.9	21.2	31.2	21.4	26.0
19	10.5	8.8	9.6	17.3	13.6	15.6	25.3	19.4	22.4	30.2	22.7	25.9
20	10.2	6.6	8.6	14.9	12.1	13.2	24.1	15.8	20.2	22.7	17.2	19.0
21	11.0	9.4	9.9	15.9	9.7	12.9	23.0	16.6	20.4	20.5	16.6	18.2
22	13.9	7.0	10.5	16.6	11.8	13.9	21.5	16.1	17.9	24.1	19.0	21.3
23	11.8	7.0	9.9	20.8	11.5	16.9	19.2	15.6	17.1	29.4	21.2	25.0
24	7.0	0.0	2.8	23.0	14.7	18.8	21.9	15.2	18.4	31.3	23.3	27.0
25	3.2	-0.9	1.2	19.1	14.4	16.8	24.0	16.7	20.2	29.0	23.5	25.5
26	2.6	1.6	2.1	20.3	11.1	15.8	25.8	17.6	21.7	25.7	20.6	23.2
27	5.0	2.4	3.6	20.1	13.9	16.7	27.6	19.5	23.5	29.8	19.2	24.5
28	5.9	4.0	4.9	17.4	11.1	14.0	27.5	20.5	23.8	31.8	21.4	26.7
29	---	---	---	16.7	9.1	12.7	28.9	20.0	24.2	34.0	23.5	28.7
30	---	---	---	18.5	9.6	14.1	30.1	21.4	25.3	34.3	24.6	29.2
31	---	---	---	---	11.8	---	---	---	---	31.7	24.1	27.6
MONTH	---	---	---	---	4.2	---	---	---	---	34.3	16.6	24.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	34.0	22.9	27.9	34.8	24.3	29.5	36.8	25.1	29.9	24.1	22.0	22.8
2	32.8	22.2	27.5	34.0	25.8	29.8	33.8	25.1	28.7	26.1	20.6	23.0
3	32.1	24.8	28.0	34.4	25.8	29.9	35.6	25.2	29.2	27.7	21.7	24.5
4	29.2	23.2	25.7	---	---	---	34.8	24.1	28.7	30.8	23.3	26.4
5	30.7	22.4	26.3	---	---	---	35.7	24.7	28.6	31.2	23.0	26.7
6	27.2	20.4	23.3	---	---	---	36.8	24.2	29.8	31.4	22.7	26.6
7	29.7	21.8	25.4	---	---	---	37.5	24.2	29.4	28.9	22.8	25.5
8	28.3	21.2	24.8	---	---	---	36.4	24.6	29.4	29.8	21.7	24.9
9	31.1	23.9	27.3	---	---	---	33.8	24.8	28.0	31.1	22.2	26.1
10	33.0	25.2	28.8	35.0	---	---	36.1	24.0	29.2	32.0	23.1	27.0
11	34.3	25.4	29.3	36.6	25.0	30.4	36.6	24.4	29.0	26.2	21.1	23.9
12	33.6	24.0	28.3	36.5	25.5	30.4	33.6	24.3	27.7	24.6	21.1	23.0
13	29.4	24.3	26.4	36.2	25.6	30.0	30.6	22.0	25.9	27.2	20.9	23.9
14	30.1	21.9	24.7	35.6	24.9	29.5	31.5	22.1	26.0	24.1	20.4	22.3
15	32.0	22.0	26.7	37.0	25.0	29.8	32.4	23.5	27.6	24.6	17.5	21.1
16	32.2	23.5	27.7	35.7	24.9	29.5	31.4	25.3	28.0	29.0	20.0	24.0
17	31.8	23.4	27.6	36.1	24.8	29.6	34.5	24.1	28.6	29.0	21.6	25.1
18	32.0	23.5	27.6	36.6	25.3	30.3	35.0	25.2	29.5	24.7	19.8	22.5
19	32.6	24.2	27.8	37.0	24.9	30.2	35.3	25.5	29.6	25.0	17.4	20.9
20	32.9	24.5	27.7	37.3	25.5	30.1	33.4	25.2	28.9	26.8	16.9	21.6
21	32.5	23.5	27.8	36.4	26.1	30.0	35.4	24.9	29.9	26.4	20.3	23.0
22	33.4	25.1	28.9	37.2	25.5	30.1	35.8	25.8	29.7	29.0	20.0	24.4
23	34.8	26.1	29.9	34.9	23.8	28.3	36.0	24.9	29.4	28.7	22.3	25.0
24	32.8	26.2	28.7	36.1	23.4	28.6	34.6	24.2	28.6	29.0	21.3	24.7
25	32.9	26.1	28.2	36.4	24.4	29.3	36.2	24.1	28.8	27.6	22.5	24.8
26	27.1	22.8	24.8	36.4	24.5	29.2	35.2	24.1	28.5	29.8	21.4	25.4
27	31.7	20.9	25.9	36.0	24.0	29.1	35.8	25.2	29.1	27.2	21.2	24.0
28	33.6	23.3	28.2	36.2	24.3	29.3	34.7	25.1	29.1	26.4	18.1	21.9
29	32.2	20.4	26.8	37.4	24.3	29.5	33.3	23.8	27.1	24.0	18.2	20.8
30	31.5	20.5	25.6	33.4	25.7	28.9	28.1	23.8	25.7	26.2	17.5	21.1
31	---	---	---	37.1	23.7	29.5	26.6	24.1	25.3	---	---	---
MONTH	34.8	20.4	27.1	---	---	---	37.5	22.0	28.5	32.0	16.9	23.9

07311700 North Wichita River near Truscott, TX--Continued



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07311782 South Wichita River at low-flow dam near Guthrie, TX

LOCATION.--Lat 33°37'19", long 100°12'31", King County, Hydrologic Unit 11130205, on right bank 1.0 mi downstream from ranch road crossing, 2.9 mi upstream from Willow Creek, 6.6 mi east of Guthrie, and 91.5 mi upstream from mouth.

DRAINAGE AREA.--223 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Oct. 1984 to Sept. 1985, May 1987 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,590.0 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Discharge represents flow diverted by pumping from South Wichita River at Low Flow Dam near Guthrie (station 07311782) via pipeline to Truscott Brine Lake near Truscott (station 07311669). Flow is determined from digital recorder monitoring flowmeter in pipeline.

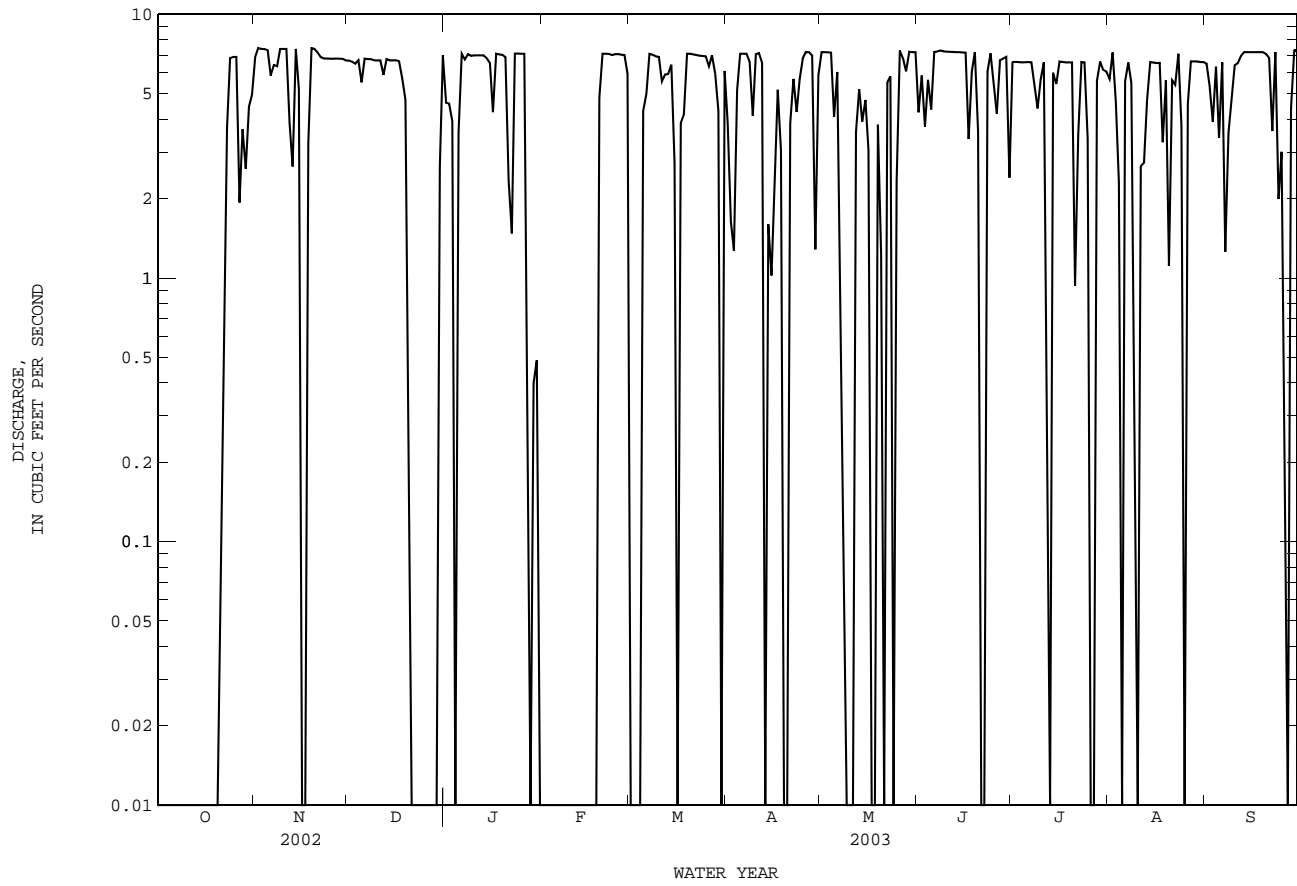
COOPERATION.--Discharge data furnished by the U.S. Army Corps of Engineers, Tulsa District.

DISCHARGE FLOW THRU PIPELINE, in CFS, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	6.9	6.7	4.6	0.00	0.00	3.9	7.2	4.3	6.6	5.7	6.5
2	0.00	7.5	6.6	4.6	0.00	0.00	1.6	7.2	5.9	6.6	7.2	5.4
3	0.00	7.4	6.5	3.9	0.00	0.00	1.3	7.2	3.8	6.6	4.7	3.9
4	0.0	7.4	6.7	0.00	0.00	e0.00	5.2	7.2	5.7	6.6	2.3	6.3
5	0.00	7.3	5.5	3.6	0.00	e4.3	7.1	4.1	4.4	6.6	0.00	3.4
6	0.00	5.9	6.8	7.1	0.00	e5.0	7.1	6.1	7.2	6.6	5.6	6.6
7	0.00	6.4	6.8	6.8	0.00	7.1	7.1	2.2	7.2	6.6	6.6	1.3
8	0.00	6.4	6.8	7.1	0.00	7.0	6.6	0.18	7.3	5.4	5.5	3.6
9	0.00	7.4	6.7	7.0	0.00	6.9	4.1	0.00	7.2	4.4	0.75	4.8
10	0.00	7.4	6.7	7.0	0.00	6.9	7.1	0.00	7.2	5.6	0.00	6.4
11	0.00	7.4	6.7	7.0	0.00	5.6	7.1	0.00	7.2	6.6	2.7	6.5
12	0.00	3.9	5.9	7.0	0.00	5.9	6.6	3.6	7.2	1.1	2.7	7.0
13	0.00	2.6	6.8	7.0	0.00	6.0	0.00	5.2	7.2	0.00	4.7	7.2
14	0.00	7.4	6.7	6.8	0.00	6.4	1.6	3.9	7.2	6.0	6.6	7.2
15	0.00	5.2	6.7	6.5	0.00	2.7	1.0	4.7	7.2	5.4	6.6	7.2
16	0.00	0.00	6.7	4.3	0.00	0.00	2.7	3.1	7.2	6.6	6.5	7.2
17	0.00	0.00	6.6	7.1	0.00	3.9	5.2	0.00	3.4	6.6	6.5	7.2
18	0.00	3.3	5.7	7.1	0.00	4.2	3.1	0.00	6.1	6.6	3.3	7.2
19	0.00	7.5	4.7	7.0	4.8	7.1	0.00	3.8	7.2	6.6	5.6	7.2
20	0.00	7.4	0.29	6.9	7.1	7.1	0.00	1.2	3.6	6.6	1.1	7.1
21	0.36	7.2	0.00	2.3	7.1	7.1	3.9	0.00	0.00	0.93	5.6	6.8
22	1.2	6.9	0.00	1.5	7.1	7.0	5.7	5.5	0.00	3.5	5.4	3.6
23	3.7	6.8	0.0	7.1	7.0	7.0	4.3	5.8	6.1	6.6	7.1	7.2
24	6.8	6.8	0.00	7.1	7.1	7.0	5.7	0.00	7.1	6.6	3.8	2.0
25	6.9	6.8	0.00	7.1	7.1	6.9	6.8	2.3	5.5	3.4	0.00	3.0
26	6.9	6.8	0.00	7.1	7.0	6.4	7.2	7.3	e4.2	0.00	4.6	0.88
27	1.9	6.8	0.00	2.1	7.0	7.0	7.2	6.8	e6.7	0.00	6.6	0.00
28	3.7	6.8	0.00	0.00	6.0	6.0	7.0	6.1	e6.8	5.6	6.6	4.4
29	2.6	6.8	0.00	0.40	---	4.3	1.3	7.2	e6.9	6.6	6.6	7.3
30	4.5	6.7	2.6	0.49	---	0.00	5.9	7.2	e2.4	6.2	6.6	7.3
31	5.0	---	7.0	0.00	---	e6.1	---	7.2	---	6.1	6.6	---
TOTAL	43.56	183.10	132.19	153.59	67.30	150.90	133.40	122.28	169.40	159.23	144.15	161.68
MEAN	1.41	6.10	4.26	4.95	2.40	4.87	4.45	3.94	5.65	5.14	4.65	5.39
MAX	6.9	7.5	7.0	7.1	7.1	7.1	7.2	7.3	7.3	6.6	7.2	7.3
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	86	363	262	305	133	299	265	243	336	316	286	321

e Estimated

07311782 South Wichita River at low-flow dam near Guthrie, TX--Continued



07311782 South Wichita River at low-flow dam near Guthrie, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Oct. 1984 to current year.
 PESTICIDE DATA: Sept. 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Oct. 1984 to current year. Oct. 1986 to Apr. 1987, published as "South Wichita River at low-flow dam near Guthrie" (station 07311783).
 WATER TEMPERATURE: Oct. 1984 to current year. Oct. 1986 to Apr. 1987, published as "South Wichita River at low-flow dam near Guthrie" (station 07311783).

INSTRUMENTATION.--Water-quality monitor since Oct. 1984.

REMARKS.--Records good. Interruption in the record was caused by malfunction of the instrument or when the pumps were not running. Temperature and specific-conductance values for days of zero flow through the pipeline are published if water is present behind the low-flow dam. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and a regression relation between each chemical constituent and specific conductance. The computation of the selected constituent loads might include estimated discharge or specific conductance data. New regression equations were developed based on data from water years 1994 to 2003. The standard error of estimate for dissolved solids is 6%, chloride is 8%, sulfate is 7% and for hardness is 5%. Regression equations developed for this station may be obtained from the U.S. Geological Survey Texas District Office upon request. Samples for chemical analyses are collected 0.5 mi upstream from the collection pool. No flow through the pipeline for many days.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 55,800 microsiemens/cm, Aug. 13, 2003; minimum, 200 microsiemens/cm, July 3, 1986.
 WATER TEMPERATURE: Maximum, 36.0°C, July 5, 11-13, 21, 1996; minimum, 0.0°C, Dec. 23, 1989, Dec. 22, 1990.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 55,800 microsiemens/cm, Aug. 13; minimum, 27,200 microsiemens/cm, Oct. 31.
 WATER TEMPERATURE: Maximum, 34.1°C, July 31; minimum, 4.7°C, Dec. 24.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard-ness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorption ratio (00931)
OCT													
21...	1430	.83	56700	7.8	16.8	9.6	124	4700	4600	1340	340	13300	84
NOV													
07...	1500	.01	49600	8.0	14.4	12.3	147	4000	3900	1130	293	10700	73
DEC													
30...	1245	.01	48900	7.6	12.0	8.5	98	4300	4100	1200	309	10800	72
JAN													
21...	1240	.01	50300	7.8	9.9	8.7	95	4300	4200	1220	311	11100	74
FEB													
20...	1205	7.1	54600	7.7	9.4	9.0	99	4800	4700	1350	340	12600	79
MAR													
06...	1330	7.1	54000	8.1	11.7	11.9	137	4800	4700	1370	340	12700	79
APR													
28...	1250	7.2	56100	7.9	22.6	10.0	145	5200	5100	1470	375	12000	72
MAY													
14...	1230	5.7	59200	7.8	25.7	9.2	142	4900	4800	1370	350	13600	85
JUN													
17...	1400	.01	56600	7.7	26.9	10.5	163	4900	4800	1360	353dc	13100	82
JUL													
08...	1300	6.6	58000	7.3	26.7	4.9	76	5800	5700	1620d	422d	12000d	69
AUG													
07...	1215	6.7	65400	7.5	28.5	3.4	56	5100	5000	1440d	363d	14800d	90
SEP													
03...	1325	6.6	61200	7.4	25.2	4.9	75	4900	4800	1380d	364d	14100dc	88

07311782 South Wichita River at low-flow dam near Guthrie, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Potas- sium, water, fltrd, mg/L (00935)	Alka- linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate water, fltrd, mg/L (00945)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue total at 105 deg. C, sus- pended, mg/L (00530)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)	Total nitro- gen, water, unfltrd mg/L (00600)
OCT 21...	49.2	107	3130	20100	.57	9.2	38400	<10	.16	.094	.26	.33r	.45
NOV 07...	38.1	111	2850	17800	.56	7.2	32800	<10	.22	.105	.33	.39	.68
DEC 30...	37.6	125	2790	17200	.56	6.1	32400	13	.16	.114	.27	.38	.65
JAN 21...	40.0	125	2850	17300	.55	5.3	33000	12	.16	.113	.27	.36	.67
FEB 20...	39.0	119	2980	19100	.55	6.5	36500	13	.14	.118	.25	.44	.68
MAR 06...	43.4	111	3040	20200	.55	4.6	37700	12	.13	.105	.24	.30	.55
APR 28...	54.7	94	3160	20900p	.56	1.2	38000	16	.03	.041	.07	.20	.36
MAY 14...	62.7	90	3280	22300	.54	1.1	41000	12	.03	.046	.08	.24	.36
JUN 17...	49.5	95	3040	20100	.6	1.3	38100	<10	--	.025	E.05	.22	--
JUL 08...	75.3d	103	3020d	21500d	.6	4.4	38700	47	.04	.048	.08	.49	.76
AUG 07...	60.0d	103	3310d	24100d	.6	12.8	44100	52	.07	.060	.12	.78	1.1
SEP 03...	68.3d	108	3220d	22500d	.7	11.6	41700	88	.12	.073	.20	.66	1.1
Date	Organic nitro- gen, water, unfltrd mg/L (00605)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Phos- phorus, water, unfltrd mg/L (00665)	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Arsenic water unfltrd ug/L (01002)	Arsenic water, fltrd, ug/L (01000)	Barium, water, unfltrd recover- able, ug/L (01007)	Barium, water, fltrd, ug/L (01005)	Cadmium water, unfltrd ug/L (01027)	Cadmium water, fltrd, ug/L (01025)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Chrom- ium, water, fltrd, ug/L (01030)
OCT 21...	--	.20r	<.04	<.04	<.02	<11	<6.0	33	36	<.81	<.85	<4.8	<4.8
NOV 07...	--	.35	<.04	<.04	<.02	<10	<5.2	39	42	<.70	<.74	<4.0	<4.0
DEC 30...	.00	.38	<.04	<.04	<.02	<10	<5.2	35	41	<.70	<.74	<4.0	<4.0
JAN 21...	.05	.40	<.04	E.03	<.02	<11	<5.2	28	34	<.73	<.74	<4.8	<4.8
FEB 20...	--	.43	<.04	.04	<.02	<11	<5.7	31	30	<.77	<.81	<4.8	<4.8
MAR 06...	.01	.31	.04	.05	<.02	<11	<6.0	30	31	<.77	<.85	<4.8	<4.8
APR 28...	.09	.29	<.04	<.04	E.01	<11	<6.0	33	36	<.81	<.85	<4.8	<4.8
MAY 14...	.04	.28	<.04	E.02	<.02	<11	<6.2	33	35	<.84	<.89	<4.8	<4.8
JUN 17...	.26	.48	<.04	<.04	<.02	<11d	<6.0d	37d	39d	<.81d	<.85d	<4.8d	<4.8d
JUL 08...	.19	.67	E.02	E.03	<.02	<11d	<6.2d	38d	39d	<.84d	<.89d	<4.8d	<4.8d
AUG 07...	.17	.95	<.04	<.04	<.02	<13d	<7.0d	39d	39d	<.94d	<1.00d	<5.6d	<5.6d
SEP 03...	.22	.88	<.04	<.04	<.18d	<95d	<6.5d	39d	39d	<.88d	<.93d	<5.6d	<5.6d

07311782 South Wichita River at low-flow dam near Guthrie, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, unfltrd recover- able, ug/L (01042)	Copper, water, fltrd, ug/L (01040)	Iron, water, unfltrd recover- able, ug/L (01045)	Iron, water, fltrd, ug/L (01046)	Lead, water, unfltrd recover- able, ug/L (01051)	Lead, water, fltrd, ug/L (01049)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury, water, unfltrd recover- able, ug/L (71900)	Mercury, water, fltrd, ug/L (71890)	Nickel, water, unfltrd recover- able, ug/L (01067)	Nickel, water, fltrd, ug/L (01065)	Selen- ium, water, unfltrd ug/L (01147)
OCT 21...	17.0p	36.5p	<20	<500	<1	<1.84	48	47.9	E.02	E.02	84	49.1	24.2
NOV 07...	20.2	11.2	<20	<500	<1	<1.60	44	44.7	.03	E.01	67	39.6	13.0
DEC 30...	22.6	11.4	<20	<250	<1	<1.60	82	92.9	.03	.02	78	46.8	<9.6
JAN 21...	17.6	13.3	<160	<300	<1	<1.60	83	101	E.02	E.01	66	61.4	E9.2nr
FEB 20...	34.7	10.5	<20	<500	<1	<1.76	168	176	E.01	<.02	62p	52.6p	14.7
MAR 06...	E9.5n	8.7	<240	<250	<1	<1.84	115	128	E.01	<.02	53	61.1	23.7
APR 28...	31.5	11.2	<20	<300	<1	<1.84	92	109	E.01	E.01	51	45.1	<11.0
MAY 14...	44.8	16.8	<20	<500	<1	<1.92	79r	100r	E.01	<.02	76	55.9	E11.2n
JUN 17...	16.4d	16.2d	50d	<8	<1d	<1.84d	37d	38.2d	E.01	E.01	47d	30.5d	15.2d
JUL 08...	25.9d	9.3d	160d	<200d	<1d	<1.92d	141d	129d	<.02	E.01	53d	30.2d	E9.3nd
AUG 07...	37.9d	13.0d	310d	E160nd	<2d	<2.16d	178d	170d	E.01	E.01	95d	40.7d	19.8d
SEP 03...	40.2d	13.9d	330d	<200d	<2d	E1.00d	136d	126d	<.02	<.02	71d	47.2d	19.6d
Date	Selen- ium, water, unfltrd ug/L (01145)	Silver, water, unfltrd recover- able, ug/L (01077)	Silver, water, fltrd, ug/L (01075)	Zinc, water, unfltrd recover- able, ug/L (01092)	Zinc, water, fltrd, ug/L (01090)	Aldrin, water, unfltrd ug/L (39330)	Aroclor 1016 + 1242, water, unfltrd ug/L (81648)	Aroclor 1221, water, unfltrd ug/L (39488)	Aroclor 1232, water, unfltrd ug/L (39492)	Aroclor 1248, water, unfltrd ug/L (39500)	Aroclor 1254, water, unfltrd ug/L (39504)	Aroclor 1260, water, unfltrd ug/L (39508)	Chlor- dane, tech- nical, water, unfltrd ug/L (39350)
OCT 21...	13.5	<3.68	<5	<46	32	--	--	--	--	--	--	--	--
NOV 07...	<10.0	<3.20	<4	<40	21	--	--	--	--	--	--	--	--
DEC 30...	E8.2n	<3.20	<4	<40	E15n	--	--	--	--	--	--	--	--
JAN 21...	<10.5p	<3.36	<4	E26n	<20	--	--	--	--	--	--	--	--
FEB 20...	<11.0	<3.52	<4	<44	<22	--	--	--	--	--	--	--	--
MAR 06...	17.6	<3.52	E4n	<44	<23	--	--	--	--	--	--	--	--
APR 28...	<11.5	<3.68	E2n	<46	<23	<.20d	<.5d	<5d	<.5d	<.5d	<.5d	<.5d	<.5d
MAY 14...	<12.0	<3.84	<5	<48	E16n	--	--	--	--	--	--	--	--
JUN 17...	E7.9nd	<3.68d	<5d	<46d	E12nd	<.04	<.1	<1	<.1	<.1	<.1	<.1	<.1
JUL 08...	E9.4nd	<3.84d	<5d	<48d	E13nd	--	--	--	--	--	--	--	--
AUG 07...	<13.5d	<4.32d	<5d	<54d	<27d	--	--	--	--	--	--	--	--
SEP 03...	17.9d	<4.00d	<5d	<50d	E14nd	--	--	--	--	--	--	--	--

07311782 South Wichita River at low-flow dam near Guthrie, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Diel- drin, water, unfltrd ug/L (39380)	Endo- sulfan water, unfltrd ug/L (34351)	Endrin, water, unfltrd ug/L (39390)	Endrin alde- hyde, water, unfltrd ug/L (34366)	Hepta- chlor, water, unfltrd ug/L (39410)	Hepta- chlor epoxide water, unfltrd ug/L (39420)	Lindane water, unfltrd ug/L (39340)	PCB 207, surrog, Schl608 water, unfltrd pct rcv (99781)	Toxa- phene, water, unfltrd ug/L (39400)	alpha- Endo- sulfan, water, unfltrd ug/L (34361)	alpha- HCH, water, unfltrd ug/L (39337)	alpha- HCH-d6, surrog, Schl608 water, unfltrd pct rcv (99778)	beta- Endo- sulfan, water, unfltrd ug/L (34356)
OCT 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 28...	<.10d	<3.0d	<.30d	<1.0d	<.15d	<4.0d	<.15d	39.0d	<10d	<.5d	<.15d	21.7d	<.20d
MAY 14...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 17...	<.02	<.6	<.06	<.2	<.03	<.8	<.03	68.6	<2	<.1	<.03	41.0	<.04
JUL 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 03...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	beta- HCH, water, unfltrd ug/L (39338)	cis- Chlor- dane, water, unfltrd ug/L (39062)	delta- HCH, water, unfltrd ug/L (34259)	p,p'- DDD, water, unfltrd ug/L (39310)	p,p'- DDE, water, unfltrd ug/L (39320)	p,p'- DDT, water, unfltrd ug/L (39300)	trans- Chlor- dane, water, unfltrd ug/L (39065)
OCT 21...	--	--	--	--	--	--	--
NOV 07...	--	--	--	--	--	--	--
DEC 30...	--	--	--	--	--	--	--
JAN 21...	--	--	--	--	--	--	--
FEB 20...	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--
APR 28...	<.15d	<.5d	<.45d	<.5d	<.20d	<.5d	<.5d
MAY 14...	--	--	--	--	--	--	--
JUN 17...	<.03	<.1	<.09	<.1	<.04	<.1	<.1
JUL 08...	--	--	--	--	--	--	--
AUG 07...	--	--	--	--	--	--	--
SEP 03...	--	--	--	--	--	--	--

Remark codes used in this report:

< -- Less than
E -- Estimated value

Value qualifier codes used in this report:

c -- See laboratory comment
d -- Diluted sample: method hi range exceeded
n -- Below the NDV
p -- Value reported is preferred
r -- Value verified by rerun, same method

RED RIVER BASIN

07311782 South Wichita River at low-flow dam near Guthrie, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 2002 TO SEPTEMBER 2003

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)	HARDNESS (CA, MG) (MG/L)
OCT.	2002	43.57	35310	24300	2860	12600	1480	2500	300	3500
NOV.	2002	183.1	42530	29230	14450	15200	7520	3000	1490	4100
DEC.	2002	132.2	42110	28960	10340	15000	5370	3000	1070	4100
JAN.	2003	153.59	42750	29380	12180	15300	6340	3000	1250	4100
FEB.	2003	67.3	45190	30990	5630	16200	2950	3100	561	4300
MAR.	2003	150.9	44860	30780	12540	16100	6550	3100	1250	4300
APR.	2003	133.4	46860	32100	11560	16800	6070	3100	1120	4400
MAY	2003	122.28	47350	32420	10700	17000	5620	3100	1030	4400
JUNE	2003	169.4	44230	30350	13880	15800	7250	3100	1400	4200
JULY	2003	159.23	48350	33080	14220	17400	7490	3100	1350	4400
AUG.	2003	144.15	51600	35200	13700	18700	7270	3200	1240	4600
SEPT	2003	161.68	44870	30770	13430	16100	7030	3100	1330	4200
TOTAL		1620.8	**	**	135500	**	70930	**	13400	**
WTD.AVG.		4.4	45160	30960	**	16200	**	3100	**	4300

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	31100	28200	29400	44300	43000	43700	43000	39700	42000
2	---	---	---	36800	31100	34100	43800	42900	43500	43100	41000	42700
3	---	---	---	39500	36800	38200	43700	40000	42100	43500	42700	43100
4	---	---	---	40300	39500	40000	43100	41600	42800	43200	41100	42500
5	---	---	---	40500	34800	38800	43000	41100	42000	44500	37900	43000
6	---	---	---	42100	40100	41300	41700	39600	41000	44400	39800	43500
7	---	---	---	42400	42100	42300	41700	40400	41000	44400	43800	44100
8	---	---	---	42900	42200	42700	42400	40900	41800	44100	41000	43300
9	---	---	---	43200	40200	42500	42700	41900	42300	43600	38700	42500
10	---	---	---	43500	42600	43200	42800	40600	42100	43600	36900	42800
11	---	---	---	44400	43100	43700	43000	41300	42600	43400	38800	42600
12	---	---	---	44000	42400	43500	42800	40600	42100	43600	39600	43100
13	---	---	---	44500	40500	43900	43200	42500	42800	43800	41700	43300
14	---	---	---	44900	44100	44600	43700	28200	42400	43500	39200	42000
15	---	---	---	45400	44900	45200	43800	37600	42400	42500	38000	41200
16	---	---	---	45400	43800	44900	43800	34600	41300	42300	39700	41800
17	---	---	---	45800	44700	45500	43400	39800	42300	42400	38800	41700
18	---	---	---	45600	44300	45200	43800	27900	40300	43100	40500	42200
19	---	---	---	45900	44900	45600	43900	33400	41100	43000	41000	42400
20	---	---	---	45600	43800	44900	44000	36600	41400	43200	40400	42300
21	---	---	---	45600	44100	45100	44200	36600	40300	42700	39200	41900
22	---	---	---	45200	44800	45000	45700	39200	42700	42800	40700	42400
23	---	---	---	45200	44200	44800	46500	39200	43600	43800	39700	42400
24	---	---	46100	44800	42200	44000	46400	36000	42300	45300	35100	43500
25	45900	43300	44500	45200	44400	45000	45600	38100	43400	45300	43000	44500
26	45800	43500	44200	44800	43500	44300	44900	41000	43600	44600	41600	43200
27	43900	42500	43300	45000	43000	44400	44300	42500	43800	43800	39300	42700
28	45100	43000	44100	45000	44100	44500	43900	42700	43400	43800	40800	42900
29	44100	31000	37700	44600	43900	44400	43300	41500	42600	43500	40800	42500
30	31000	27500	28600	44400	44000	44200	42600	39800	41600	44000	40700	43300
31	29400	27200	28200	---	---	---	43100	40900	42300	44000	42600	43400
MONTH	---	---	---	45900	28200	42800	46500	27900	42300	45300	35100	42700

07311782 South Wichita River at low-flow dam near Guthrie, TX--Continued

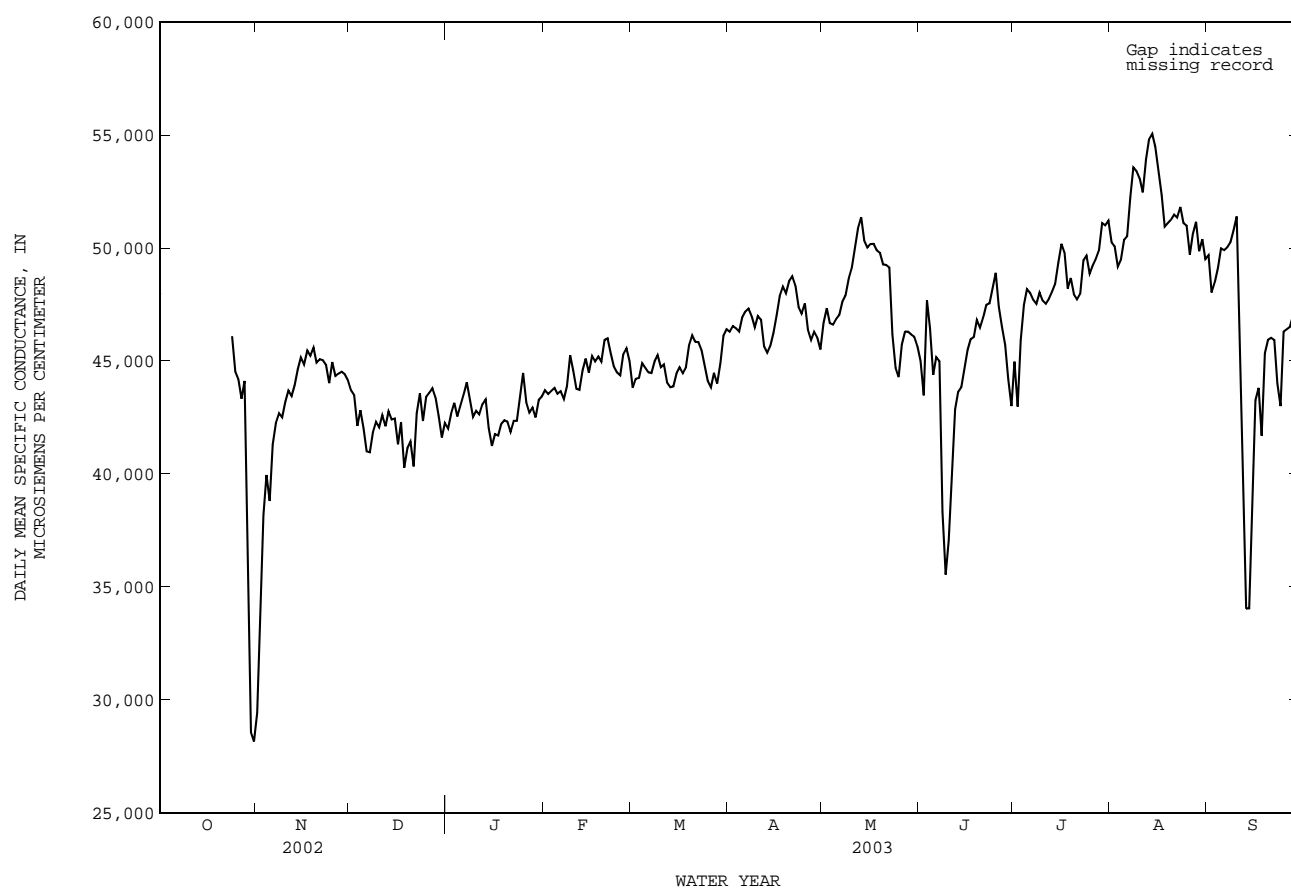
SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	44300	41700	43700	44900	41400	43800	46700	46000	46300	47400	45900	46700
2	44000	41600	43500	44400	42900	44200	46800	46200	46500	47800	46700	47300
3	44000	42900	43700	45100	41000	44300	46700	46100	46500	47200	46000	46700
4	44200	42300	43800	45400	43200	44900	46500	46100	46300	47300	46200	46600
5	44600	31900	43600	---	---	e44700	47200	46500	46900	47300	46500	46800
6	44800	41800	43700	44900	44300	44500	47400	46900	47200	47500	46700	47000
7	45000	40900	43300	44600	44300	44500	47700	46800	47300	48000	47200	47600
8	45700	40800	43900	45300	44500	45000	47400	46500	47000	48300	47500	47900
9	46000	43800	45300	45400	45100	45300	46800	45900	46500	48800	48300	48600
10	45500	43400	44600	45200	44300	44700	47500	46400	47000	49700	48800	49100
11	44400	42200	43800	45000	44600	44800	47600	46100	46800	50300	49700	50100
12	44500	40500	43700	44700	43700	44000	46400	45000	45600	51500	50300	50900
13	44900	43600	44600	44300	43400	43800	45500	45200	45400	51700	50900	51400
14	45400	44900	45100	44300	43400	43900	45900	45400	45700	51100	49300	50300
15	45400	43000	44500	44600	44100	44500	46500	45900	46300	50300	49800	50000
16	45900	43800	45200	44800	44600	44700	47400	46500	47000	50500	49900	50200
17	45400	44200	45000	44900	44000	44500	48300	47400	47900	50600	49800	50200
18	45600	44300	45200	45200	44400	44700	48500	48100	48300	50200	49600	49900
19	45600	44200	45000	46000	45200	45700	48400	47700	48000	50000	49500	49800
20	46500	45400	45900	46400	45000	46100	48800	48400	48500	50200	48800	49300
21	46800	45100	46000	46600	45300	45900	49100	48500	48800	49400	49100	49300
22	45900	44600	45300	46100	45500	45800	48600	47800	48300	49600	48500	49100
23	45500	43500	44800	45900	44900	45500	47800	46900	47400	48700	43900	46200
24	45400	44100	44500	45700	44000	44800	47700	46600	47100	45100	43900	44700
25	44700	43600	44400	44500	43800	44100	48000	46900	47500	44900	43700	44300
26	46500	41400	45300	44200	43300	43800	47000	45800	46400	46500	44800	45700
27	46500	44100	45600	45000	44000	44500	46300	45600	45900	47200	44800	46300
28	45400	44200	45000	45000	---	e44000	46600	45900	46300	46700	45400	46300
29	---	---	---	45600	---	e44900	46400	45300	46000	46900	45000	46200
30	---	---	---	46400	45600	46100	45900	45100	45500	47000	44500	46100
31	---	---	---	46700	46100	46400	---	---	---	46700	44000	45600
MONTH	46800	31900	44600	---	---	44800	49100	45000	46900	51700	43700	47900

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	46500	41900	45000	48100	42500	45000	51100	49800	50300	50300	48700	49700
2	45600	41800	43500	44900	41200	43000	50500	49600	50100	48700	47300	48000
3	48300	45600	47700	46900	44900	45900	49700	48700	49200	49000	47800	48500
4	48200	44300	46500	48000	46800	47500	50000	49200	49500	49800	48400	49100
5	45000	44000	44400	48400	47400	48200	51000	49700	50400	50300	49700	50000
6	46000	43800	45200	48300	47500	48000	51000	50200	50500	50200	49700	49900
7	46200	42900	45000	48100	46800	47700	54800	50500	52300	50400	49800	50000
8	42900	33800	38300	48000	47000	47500	54400	52800	53600	50500	50100	50300
9	40600	33200	35500	48600	47600	48000	53600	53000	53400	51500	50300	50800
10	38600	35900	37100	48800	46300	47700	53600	52300	53100	51900	50900	51400
11	42400	38600	40100	48400	46800	47500	53000	52000	52500	51400	34500	42900
12	43300	42400	42900	48700	47200	47700	54800	53000	53900	40100	35600	37900
13	44500	42900	43600	48300	47700	48100	55800	53400	54800	35600	31100	34000
14	44500	43400	43800	48600	48200	48400	55700	54300	55100	36000	32300	34000
15	45300	44100	44600	50400	48600	49300	55400	52400	54500	42700	36000	39600
16	46500	45000	45500	50900	49600	50200	54000	52600	53400	43600	42700	43300
17	46500	45400	46000	50200	48500	49800	52900	51600	52300	44200	43300	43800
18	46800	45500	46100	48800	47300	48200	51700	50600	50900	44600	33400	41700
19	47400	46200	46800	49000	48300	48700	51700	50500	51100	46000	44200	45400
20	47300	45800	46500	48600	47400	47900	51400	50800	51300	46200	45700	45900
21	47300	46600	46900	48300	47100	47700	52000	51000	51500	46200	45700	46000
22	47600	47300	47500	48600	47600	48000	52400	50500	51300	46200	45500	45900
23	47800	47100	47600	50800	47900	49500	52800	51100	51800	46300	40700	44000
24	48800	47600	48200	51000	49200	49700	52500	50700	51100	---	---	e43000
25	49400	47800	48900	49300	48400	48900	51700	49500	51000	46500	46100	46300
26	49400	---	e47400	49600	48800	49200	50100	49400	49700	---	---	e46400
27	---	---	e46500	49800	49300	49500	51400	49900	50600	46800	46200	46500
28	---	---	e45700	50900	49500	49900	52100	49500	51200	47200	46800	47000
29	---	---	e44200	52800	49600	51100	51100	48600	49900	47400	47100	47200
30	---	---	e43000	52300	49600	51000	50900	49700	50400	47600	47000	47300
31	---	---	---	51600	50700	51200	50200	48400	49500	---	---	---
MONTH	---	---	44700	52800	41200	48400	55800	48400	51600	---	---	45500

e Estimated

07311782 South Wichita River at low-flow dam near Guthrie, TX--Continued



WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

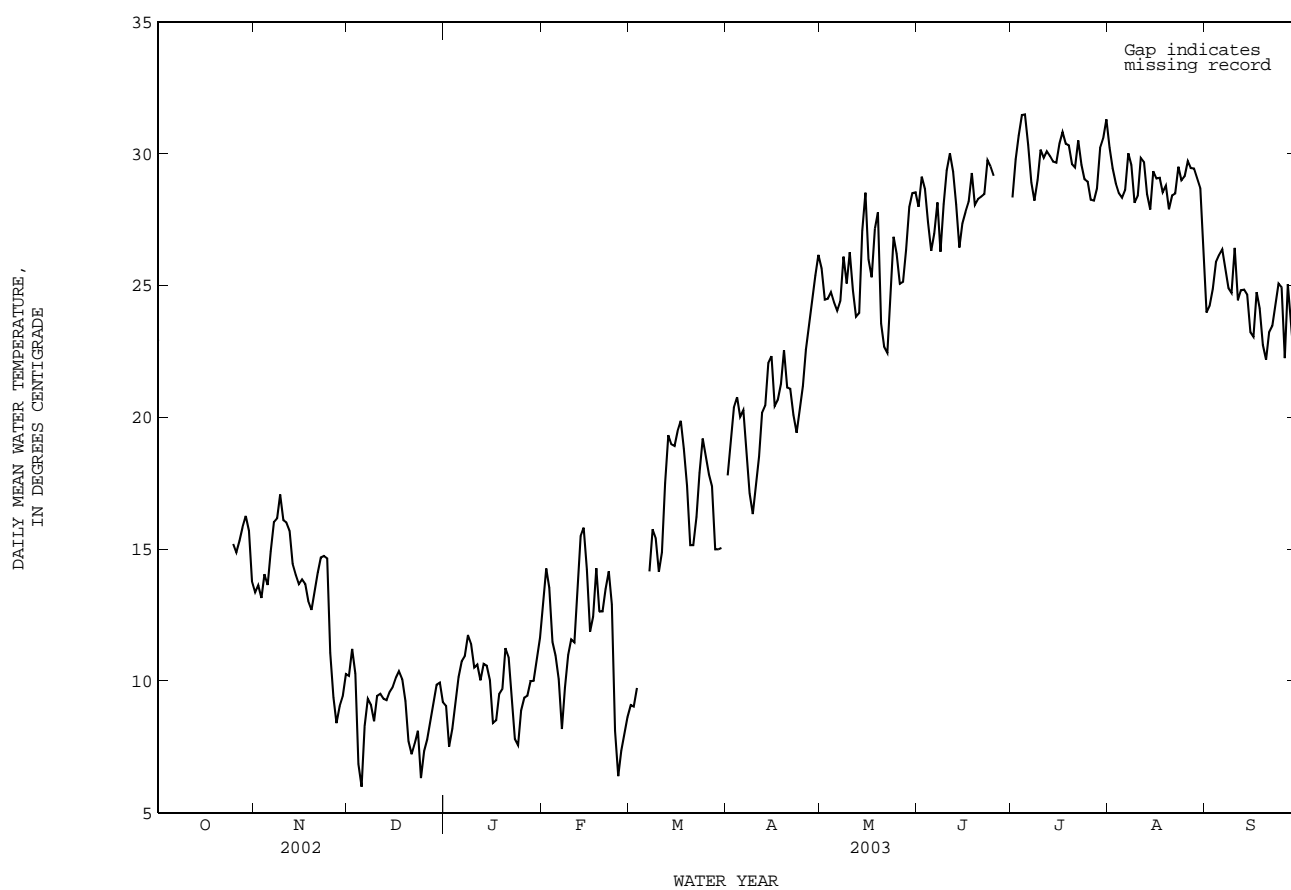
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	14.6	11.6	13.4	11.9	8.3	10.2	10.1	7.6	9.1
2	---	---	---	14.1	13.4	13.6	13.0	9.7	11.2	8.5	6.4	7.5
3	---	---	---	13.6	11.2	13.2	11.6	8.7	10.3	9.5	7.0	8.2
4	---	---	---	14.5	13.6	14.1	8.7	5.9	6.9	10.3	7.8	9.1
5	---	---	---	14.6	9.7	13.6	6.9	5.5	6.0	11.7	8.9	10.1
6	---	---	---	15.8	13.8	14.9	9.6	6.9	8.3	11.4	9.6	10.8
7	---	---	---	16.7	15.6	16.0	10.5	8.2	9.3	12.2	10.2	10.9
8	---	---	---	16.9	15.6	16.2	10.4	8.5	9.1	12.6	10.5	11.7
9	---	---	---	17.9	16.5	17.1	9.0	8.2	8.5	12.7	10.0	11.4
10	---	---	---	17.6	15.4	16.1	10.6	8.3	9.4	11.2	9.8	10.5
11	---	---	---	17.1	15.1	16.0	10.6	8.4	9.5	10.9	10.0	10.6
12	---	---	---	16.5	14.4	15.7	10.4	8.3	9.3	10.5	9.3	10.0
13	---	---	---	15.4	13.8	14.5	10.4	8.1	9.3	11.6	10.0	10.7
14	---	---	---	15.1	13.0	14.0	11.0	8.2	9.6	12.0	9.0	10.6
15	---	---	---	14.5	12.8	13.7	11.1	8.3	9.8	10.7	9.6	10.0
16	---	---	---	14.8	12.4	13.9	11.5	9.0	10.1	9.8	7.1	8.4
17	---	---	---	14.9	12.4	13.7	11.8	9.0	10.4	10.0	7.5	8.5
18	---	---	---	13.9	11.9	13.0	11.1	9.5	10.1	11.3	8.2	9.5
19	---	---	---	13.9	11.5	12.7	10.0	8.7	9.2	12.2	7.9	9.7
20	---	---	---	14.1	11.9	13.4	8.7	7.2	7.7	13.6	9.2	11.2
21	---	---	---	15.6	13.3	14.1	8.3	6.1	7.2	12.0	9.9	10.9
22	---	---	---	15.8	13.8	14.7	8.7	6.3	7.6	10.8	7.9	9.4
23	---	---	---	15.9	13.9	14.7	8.7	7.3	8.1	9.2	6.6	7.8
24	---	---	---	15.3	13.3	14.7	8.0	4.7	6.3	8.7	6.2	7.6
25	15.9	13.7	15.2	13.3	10.3	11.1	7.6	7.1	7.3	10.0	7.1	8.9
26	15.6	14.5	14.9	10.3	8.7	9.4	8.2	7.5	7.8	9.9	9.0	9.4
27	16.1	14.1	15.3	9.6	6.9	8.4	8.9	8.2	8.5	10.6	7.6	9.4
28	16.2	15.2	15.8	11.2	7.3	9.0	9.7	8.8	9.2	11.5	8.1	10.0
29	18.6	12.1	16.3	10.8	8.1	9.4	10.2	9.5	9.9	11.3	9.2	10.0
30	17.1	15.1	15.7	11.9	8.9	10.3	10.4	9.3	9.9	12.2	9.7	10.8
31	15.5	12.6	13.8	---	---	---	10.3	7.6	9.2	13.1	10.4	11.6
MONTH	---	---	---	17.9	6.9	13.5	13.0	4.7	8.9	13.6	6.2	9.8

07311782 South Wichita River at low-flow dam near Guthrie, TX--Continued

WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	14.3	12.0	12.9	9.6	8.6	9.1	21.0	14.4	17.8	28.8	22.8	25.7
2	15.8	12.1	14.3	9.7	8.6	9.0	21.2	17.2	19.1	26.1	23.1	24.5
3	14.9	12.4	13.5	11.8	8.2	9.7	22.3	19.1	20.4	27.6	22.5	24.5
4	12.4	10.3	11.5	---	11.0	---	22.6	19.0	20.8	26.6	23.6	24.8
5	11.8	10.7	11.0	---	---	---	21.4	18.3	20.0	28.0	22.1	24.4
6	11.2	8.8	10.1	14.5	---	---	21.6	19.0	20.3	27.6	20.9	24.1
7	8.9	7.3	8.2	16.3	12.5	14.2	21.2	16.5	18.8	27.1	21.9	24.4
8	11.4	8.4	9.8	17.4	14.6	15.8	19.3	14.7	17.1	27.6	24.8	26.1
9	11.7	9.9	11.0	17.3	13.4	15.4	19.7	13.9	16.3	26.4	23.6	25.1
10	11.9	11.1	11.6	15.8	12.6	14.1	20.1	14.4	17.5	27.7	25.2	26.3
11	12.8	9.8	11.5	17.2	13.0	14.9	21.9	16.1	18.5	26.3	23.0	24.8
12	15.5	12.1	13.4	20.4	14.9	17.5	24.0	16.7	20.2	25.4	23.0	23.8
13	15.6	15.3	15.5	21.5	16.8	19.3	22.1	18.9	20.5	26.9	22.4	24.0
14	16.6	15.3	15.8	21.8	16.6	19.0	24.5	20.2	22.1	30.1	25.1	27.1
15	16.6	12.4	14.2	20.6	17.1	18.9	23.8	21.3	22.3	30.0	27.2	28.5
16	13.3	10.4	11.9	20.6	18.3	19.5	22.5	18.1	20.4	28.5	24.8	26.0
17	13.7	11.1	12.4	21.5	18.8	19.9	21.6	19.6	20.7	27.6	23.5	25.3
18	14.9	13.7	14.3	20.1	17.7	18.8	23.1	19.6	21.3	29.1	25.4	27.2
19	14.6	12.2	12.6	18.9	16.1	17.4	23.7	21.3	22.6	29.4	26.4	27.8
20	13.8	11.9	12.6	16.1	14.5	15.2	23.4	19.1	21.1	26.9	22.1	23.6
21	13.9	12.8	13.5	17.3	13.1	15.2	22.2	19.4	21.1	23.3	22.3	22.7
22	16.3	12.5	14.2	18.7	14.5	16.2	21.8	19.1	20.1	23.4	21.7	22.5
23	15.6	11.0	12.9	21.2	14.6	17.9	21.7	18.0	19.4	27.2	22.5	24.4
24	11.4	6.6	8.1	22.6	16.2	19.2	22.6	17.9	20.3	27.2	26.5	26.9
25	7.4	5.5	6.4	20.1	16.6	18.6	23.7	19.0	21.2	27.4	25.3	26.2
26	8.3	6.4	7.4	21.5	15.1	17.8	25.2	20.1	22.6	26.5	23.6	25.1
27	9.9	6.8	8.0	19.9	15.7	17.4	25.9	21.1	23.6	27.8	22.6	25.1
28	9.5	7.9	8.6	16.8	13.3	15.0	28.2	21.8	24.4	29.6	23.9	26.4
29	---	---	---	16.8	12.8	15.0	28.0	23.2	25.4	31.6	25.3	28.0
30	---	---	---	18.3	12.5	15.0	28.6	24.1	26.2	31.9	26.2	28.5
31	---	---	---	---	14.4	---	---	---	---	31.4	26.3	28.5
MONTH	16.6	5.5	11.7	---	---	---	28.6	13.9	20.7	31.9	20.9	25.6
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	32.8	25.6	28.0	29.0	27.6	28.3	33.0	27.9	30.2	25.7	23.2	24.0
2	32.4	26.3	29.1	30.9	28.6	29.8	32.2	27.2	29.5	27.0	22.2	24.2
3	30.7	27.0	28.7	31.8	29.8	30.7	31.5	27.2	28.9	28.1	22.6	24.9
4	28.9	25.5	27.4	32.9	30.4	31.5	30.4	26.4	28.5	28.8	24.2	25.9
5	28.0	25.0	26.3	32.3	30.6	31.5	29.9	27.3	28.3	29.0	24.3	26.2
6	29.0	25.2	27.0	31.1	29.5	30.3	30.0	27.3	28.6	29.6	23.8	26.4
7	29.2	26.5	28.2	30.0	27.9	28.9	31.9	28.5	30.0	26.7	24.5	25.7
8	28.2	25.3	26.3	30.0	26.3	28.2	31.9	27.8	29.6	26.1	23.8	24.9
9	30.0	26.3	28.1	32.0	26.5	29.0	29.4	27.0	28.1	26.8	23.1	24.7
10	31.9	27.6	29.4	32.3	28.4	30.2	30.2	27.2	28.4	29.1	24.1	26.4
11	33.0	27.5	30.0	32.7	27.5	29.9	32.0	28.3	29.9	27.0	22.9	24.4
12	33.4	26.1	29.3	32.0	28.4	30.1	30.4	28.7	29.7	25.1	24.2	24.8
13	30.7	26.5	28.1	31.6	28.6	29.9	29.7	27.2	28.5	25.3	24.6	24.9
14	28.7	24.3	26.4	31.4	28.3	29.7	29.6	26.2	27.9	25.1	23.8	24.7
15	30.9	24.1	27.4	32.0	28.1	29.7	31.2	28.1	29.3	23.8	23.0	23.2
16	30.4	25.3	27.8	32.6	28.7	30.4	30.1	28.2	29.1	24.3	22.4	23.1
17	30.7	25.5	28.2	33.0	29.2	30.8	30.9	27.8	29.1	26.0	24.0	24.8
18	32.1	26.8	29.3	32.9	27.3	30.4	30.8	26.0	28.5	25.4	22.3	24.1
19	30.7	26.2	28.1	33.2	28.0	30.3	30.1	27.2	28.8	24.4	20.9	22.7
20	31.0	25.7	28.3	32.5	27.5	29.6	29.4	26.4	27.9	24.7	20.1	22.2
21	29.6	26.9	28.4	32.2	27.1	29.5	30.0	26.8	28.4	26.3	21.4	23.2
22	30.2	26.8	28.5	33.7	28.7	30.5	30.3	26.6	28.5	25.2	22.1	23.5
23	32.1	28.1	29.8	32.1	27.4	29.6	31.9	27.8	29.5	25.9	23.0	24.3
24	30.8	27.9	29.5	32.0	26.6	29.0	30.9	27.0	29.0	30.6	20.7	25.1
25	30.1	27.9	29.2	31.4	26.7	28.9	31.0	27.7	29.1	26.1	19.9	24.9
26	---	---	---	29.6	26.7	28.3	30.6	28.9	29.7	28.0	16.8	22.3
27	---	---	---	29.5	27.1	28.2	30.1	28.9	29.5	25.9	24.0	25.1
28	---	---	---	30.5	27.3	28.7	30.8	27.6	29.4	24.8	22.6	23.5
29	---	---	---	32.7	27.9	30.2	30.7	26.9	29.1	23.3	20.8	22.0
30	---	---	---	33.5	27.6	30.6	29.9	26.5	28.7	24.4	20.0	21.9
31	---	---	---	34.1	29.3	31.3	27.6	25.0	26.0	---	---	---
MONTH	---	---	---	34.1	26.3	29.8	33.0	25.0	28.9	30.6	16.8	24.3

07311782 South Wichita River at low-flow dam near Guthrie, TX--Continued



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07311783 South Wichita River below low-flow dam near Guthrie, TX

LOCATION.--Lat 33°37'19", long 100°12'31", King County, Hydrologic Unit 11130205, on right bank 1.1 mi downstream from ranch road crossing, 2.8 mi upstream from Willow Creek, 6.6 mi east of Guthrie, and 91.4 mi upstream from mouth.

DRAINAGE AREA.--223 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Oct. 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,590.0 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. No known regulation. Low-flow diversions from South Wichita River at low-flow dam near Guthrie (station 07311782) via pipeline to Truscott Brine Lake near Truscott (station 07311669) began in May 1987. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1950, 20.8 ft in May 1954, at South Fork Wichita River near Guthrie (discontinued station 07311780) located about 1.1 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.02	e0.61	0.07	0.55	4.5	0.02	0.06	0.02	e0.03	0.05	0.03	0.02
2	e0.02	e0.49	0.17	4.4	7.7	0.96	0.08	0.03	e0.04	0.05	0.03	0.01
3	e0.02	e0.30	0.20	2.3	7.0	2.0	1.6	0.02	e0.04	0.05	0.03	0.00
4	e0.02	e0.10	0.07	10	5.9	e2.4	3.1	0.01	e0.50	0.05	0.02	0.01
5	e0.02	e0.05	0.08	6.3	6.1	e0.06	0.04	0.01	e28	0.06	0.02	0.02
6	e0.02	e0.05	0.17	0.12	3.8	e0.04	0.03	0.01	e7.3	0.06	0.02	0.02
7	e0.03	e0.04	0.21	0.07	4.7	0.04	0.04	0.01	e1.3	0.06	0.02	0.02
8	e0.03	e0.03	0.37	0.08	5.0	0.03	0.03	0.02	e0.29	0.06	0.02	0.02
9	e0.03	0.10	0.38	0.07	3.5	0.04	0.03	0.29	e0.03	0.08	0.02	0.02
10	e0.03	0.05	0.33	0.07	4.7	0.04	0.03	4.9	0.02	0.09	0.02	0.02
11	e0.03	0.07	0.21	0.09	3.7	0.04	0.02	3.4	0.02	0.11	0.02	47
12	e0.03	0.19	0.15	0.27	4.6	0.04	0.03	2.1	0.02	0.12	0.72	33
13	e0.03	1.5	0.20	0.06	4.8	0.04	0.04	0.06	0.03	0.13	6.7	0.02
14	e0.03	0.32	0.27	0.03	5.5	0.04	0.06	0.02	0.03	0.13	0.02	0.05
15	e0.03	0.14	0.33	0.03	4.6	0.04	1.1	0.13	0.03	0.12	0.02	0.02
16	e0.03	5.1	0.38	0.08	5.3	0.67	5.1	0.07	0.03	0.12	0.02	0.02
17	e0.03	6.7	0.27	0.12	4.3	2.1	0.05	3.2	0.03	0.12	0.02	0.02
18	e0.03	4.1	0.20	0.03	5.4	3.1	1.1	3.1	0.03	0.06	0.02	0.02
19	e0.03	0.15	0.58	0.02	2.7	0.05	8.5	2.3	0.04	0.05	0.02	0.02
20	e0.03	0.11	0.69	0.02	0.03	0.04	6.1	4.6	0.04	0.05	0.02	0.02
21	e0.03	0.12	2.3	0.06	0.03	0.04	2.6	7.2	0.04	0.04	0.04	0.02
22	e0.03	0.07	3.7	0.01	0.04	0.04	0.66	3.1	0.04	0.05	0.02	0.02
23	e0.03	0.03	18	0.01	0.03	0.05	0.50	0.02	6.8	0.05	0.02	0.01
24	e1.6	0.13	13	0.02	0.03	0.05	2.2	4.1	0.04	0.05	0.02	10
25	e1.6	0.12	8.5	0.02	0.03	0.08	0.05	7.7	0.04	0.04	0.03	14
26	e0.04	0.24	10	0.02	0.02	0.06	0.02	0.03	22	0.04	0.04	22
27	e0.04	0.11	9.3	0.02	0.02	0.05	0.01	0.99	0.05	0.03	0.05	0.02
28	e27	0.06	8.9	2.6	0.02	0.05	0.01	0.03	0.05	0.03	0.04	0.02
29	e8.0	0.03	8.9	4.7	---	0.08	0.02	0.04	21	0.03	0.03	0.02
30	e4.2	0.05	5.2	5.0	---	0.09	0.03	0.11	37	0.03	0.03	0.02
31	e2.1	---	0.18	5.8	---	0.05	---	e0.02	---	0.03	0.02	---
MEAN	1.46	0.71	3.01	1.39	3.36	0.40	1.11	1.54	4.16	0.066	0.26	4.22
MAX	27	6.7	18	10	7.7	3.1	8.5	7.7	37	0.13	6.7	47
MIN	0.02	0.03	0.07	0.01	0.02	0.02	0.01	0.01	0.02	0.03	0.02	0.00
AC-FT	90	42	185	85	187	25	66	94	248	4.0	16	251

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2003, BY WATER YEAR (WY)

	MEAN	4.01	1.86	2.62	2.64	2.70	1.76	2.19	7.12	3.72	10.4	2.85	10.7
MAX	30.6	8.51	9.34	9.16	17.8	5.30	10.4	53.2	13.8	154	15.7	90.1	
(WY)	1987	1987	1992	1990	1992	2000	1997	1987	1991	1986	1995	1996	
MIN	0.027	0.018	0.028	0.073	0.038	0.016	0.011	0.043	0.097	0.025	0.021	0.016	
(WY)	2000	1997	1989	1989	1995	1991	1996	1988	1998	1993	1994	1990	

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

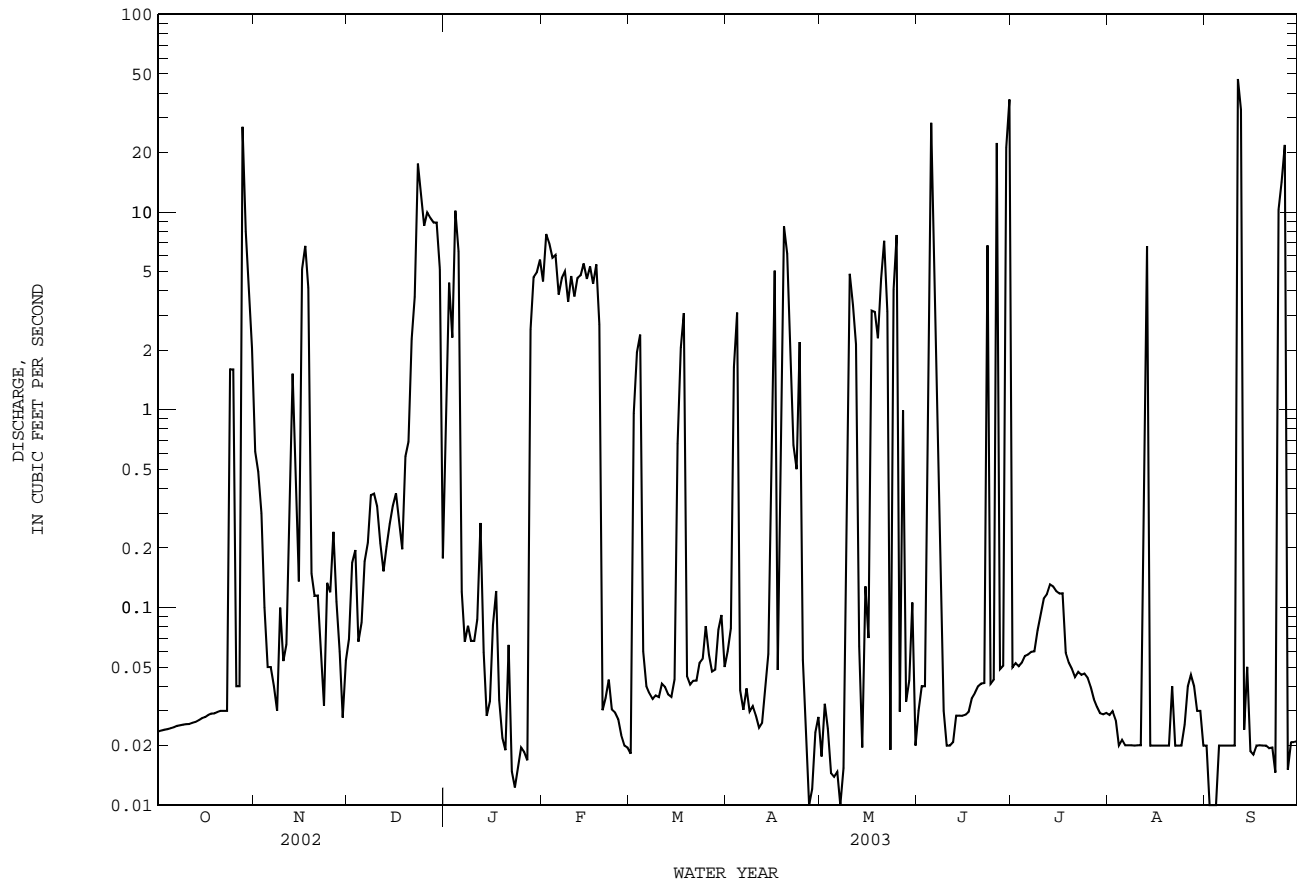
FOR 2003 WATER YEAR

WATER YEARS 1986 - 2003

ANNUAL MEAN	1.45	1.79	4.39
HIGHEST ANNUAL MEAN			20.8
LOWEST ANNUAL MEAN			0.75
HIGHEST DAILY MEAN	27	Oct 28	47
LOWEST DAILY MEAN	0.01	Feb 26	0.00
ANNUAL SEVEN-DAY MINIMUM	0.01	Sep 12	0.01
MAXIMUM PEAK FLOW			217
MAXIMUM PEAK STAGE			5.43
ANNUAL RUNOFF (AC-FT)	1050	1290	3180
10 PERCENT EXCEEDS	5.1	5.2	7.0
50 PERCENT EXCEEDS	0.10	0.05	0.06
90 PERCENT EXCEEDS	0.03	0.02	0.02

e Estimated

07311783 South Wichita River below low-flow dam near Guthrie, TX--Continued



07311783 South Wichita River below low-flow dam near Guthrie, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: May 1987 to Sept. 1989, Oct. 1990 to Sept. 1991, Oct. 1996 to current year.
 PESTICIDE DATA: Oct. 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1987 to Sept. 1989.
 WATER TEMPERATURE: May 1987 to Sept. 1989.

INSTRUMENTATION.--Water-quality monitor May 1987 to Sept. 1989.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 41,600 microsiemens/cm, Aug. 17, 1989; minimum, 350 microsiemens/cm, May 28, 1987.
 WATER TEMPERATURE: Maximum, 34.5°C, June 8, 1988; minimum, 0.0°C, Feb. 5-8, 1989.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf, 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard-ness, wat flt field, mg/L as CaCO3 (00904)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorption ratio (00931)
OCT 21...	1340	.03	46400	7.5	18.1	6.5	82	4300	4200	1220	304	10200	68
NOV 07...	1250	.05	42400	7.6	16.4	7.6	90	4200	4000	1190	287	8570	58
DEC 30...	1120	3.7	40600	7.6	10.8	9.2	98	4000	3800	1120	283	8830	61
JAN 21...	1125	.01	41900	7.9	8.7	11.7	119	4200	4000	1190	290	8820	60
FEB 20...	1110	.03	46000	7.7	10.8	10.3	111	4400	4300	1240	307	10100	66
MAR 06...	1130	.04	44500	7.8	12.7	9.6	108	4300	4200	1220	308	9500p	63
APR 28...	1105	.01	45000	7.7	22.3	8.1	111	4700	4600	1340	329	11000	70
MAY 14...	1115	.01	48400	7.5	25.6	6.8	100	4500	4400	1290	319	10600	69
JUN 09...	1055	.02	40200	7.6	25.9	11.0	158	3700	3600	1070	257	9180	66
JUL 08...	1215	.06	44700	7.6	24.7	5.3	75	3800	3600	1040d	286d	7300d	52
AUG 07...	1250	.02	45800	7.8	30.5	10.4	164	4400	4200	1260d	300d	7780dr	51
SEP 04...	1300	.02	44200	7.7	26.4	12.4	179	6800	6600	2010d	424d	9150d	48
Date	Potassium, water, fltrd, mg/L (00935)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate water, fltrd, mg/L (00945)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)	Total nitrogen, water, unfltrd mg/L (00600)
OCT 21...	41.0	114	2960	16100	.61	10.0	30900	54	.11	.052	.16	.34	.58
NOV 07...	41.6	176	3030	14100	.62	15.7	27400	20	.15	.008	.16	.56	.91
DEC 30...	31.6	131	2690	13700	.59	8.0	26700	23	.15	.065	.22	.28	.52
JAN 21...	32.3	126	2950	14000	.58	5.4	27300	27	--	<.008	<.06	.15	--
FEB 20...	14.3	121	2890	15800	.58	5.0	30400	<10	.05	.030	.08	.30	.35
MAR 06...	36.7	115	2940	15800p	.55	4.7	29900	18	.07	.039	.10	.26	.39
APR 28...	42.4	102	3080	17200	.57	3.7	33100	15	--	<.008	<.06	.17	--
MAY 14...	50.8	97	3170	17300	.56	3.2	32800	49	--	<.008	<.06	.21	--
JUN 09...	35.5	150	2820	13400	.5	6.7	26800	40	--	E.004	<.06	.17	--
JUL 08...	60.1d	139	3150d	15200d	.6	8.9	27100	28	--	<.008	<.06	.17	--
AUG 07...	41.5d	141	3100d	15600d	.6	11.5	28200	12	--	<.008	<.06	.25	--
SEP 04...	70.8d	148	3050d	15100d	.7	12.0	29900	20	--	<.008	<.06	.22	--

07311783 South Wichita River below low-flow dam near Guthrie, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Organic nitro- gen, water, unfltrd mg/L (00605)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Phos- phorus, water, unfltrd mg/L (00665)	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Arsenic water unfltrd ug/L (01002)	Arsenic water, fltrd, ug/L (01000)	Barium, water, unfltrd recover- able, ug/L (01007)	Barium, water, fltrd, ug/L (01005)	Cadmium water, unfltrd ug/L (01027)	Cadmium water, fltrd, ug/L (01025)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Chrom- ium, water, fltrd, ug/L (01030)
OCT 21...	.08	.42	E.03	<.04	<.02	<10	<4.9	41	31	<.67	<.70	E3.5n	E3.5n
NOV 07...	.20	.75	E.03	<.04	<.02	<8	<3.9	46	40	<.53	<.56	<3.2	<3.2
DEC 30...	.02	.30p	<.04	<.04	<.02	<8	<4.4	29	34	<.59	<.63	<4.0	<4.0
JAN 21...	.16	.31	E.03	E.03	<.02	<10	<4.4	32	38	<.59	<.63	E3.5n	<4.0
FEB 20...	--	.27	E.02	.04	<.02	<10	<3.9	30	29	<.67	<.70	<4.0	<4.0
MAR 06...	.02	.28	E.02	E.03	<.02	<10	<4.7	32	29	<.63	<.67	<4.0	<4.0
APR 28...	.20	.37	E.04	<.04	E.01	<10	<4.9	32	37	<.67	<.70	<4.0	<4.0
MAY 14...	.04	.26	<.04	.04	<.02	<10	<5.2	34	39	<.70	<.74	<4.0	<4.0
JUN 09...	.22	.40	E.03	<.04	<.02	E8n	<4.4	40	40	<.59	<.63	<4.0	<4.0
JUL 08...	.07	.24	.04	E.03	<.02	E6nd	<4.9d	43d	41d	<.63d	<.70d	<4.0d	<4.0d
AUG 07...	.44	.69	E.04n	<.04	<.02	<10d	E3.1nd	38d	35d	<.67d	<.70d	<4.0d	<4.0d
SEP 04...	.37	.59	E.03n	.04	<.02	<48d	<4.7d	43d	39d	<.63d	<.67d	<4.0d	<4.0d
Date	Copper, water, unfltrd recover- able, ug/L (01042)	Copper, water, fltrd, ug/L (01040)	Iron, water, unfltrd recover- able, ug/L (01045)	Iron, water, fltrd, ug/L (01046)	Lead, water, unfltrd recover- able, ug/L (01051)	Lead, water, fltrd, ug/L (01049)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, unfltrd recover- able, ug/L (71900)	Mercury water, fltrd, ug/L (71890)	Nickel, water, unfltrd recover- able, ug/L (01067)	Nickel, water, fltrd, ug/L (01065)	Selen- ium, water, unfltrd ug/L (01147)
OCT 21...	19.7	21.4	<20	<300	<1	<1.52	79	69.3	.02	E.01	74	42.0	16.6
NOV 07...	24.9	10.2	<20	<500	<.90	<1.20	543	515	.04	E.01	60	32.1	8.9
DEC 30...	22.1	16.1	<20	<250	<1	E.92n	54	55.8	E.01	E.01	72	40.4	E7.4n
JAN 21...	16.1	13.2	<160	<300	<1	2.11	259r	240r	E.01	E.01	62	60.8	<8.2
FEB 20...	13.0	10.3	<20	<300	<1	<1.52	170	198	<.02	<.02	63p	38.9p	13.6
MAR 06...	12.4	11.0	<160	<250	<1	<1.44	119	129	<.02	E.01	53	42.0	18.9
APR 28...	29.0	11.4	<20	<250	<1	<1.52	219	248	.03	E.01	42	44.4	E5.4n
MAY 14...	40.4	15.0	<20	<300	<1	<1.60	224	230	<.02	E.01	58	54.0	12.5
JUN 09...	44.0	14.0	340	<200	<1	<1.36	511	446	<.02	<.02	47	38.0	<8.2
JUL 08...	22.4d	9.2d	480d	<200d	<1d	<1.52d	278d	261d	E.01	<.02	46d	25.5d	E7.5nd
AUG 07...	33.8d	12.1d	1140d	E147nd	<1d	E1.31nd	568d	513d	E.01	<.02	76d	35.0d	16.1d
SEP 04...	30.3d	35.5d	740d	<160d	Mnd	<1.44d	326d	297d	<.02	<.02	62d	32.9d	17.5d

RED RIVER BASIN

07311783 South Wichita River below low-flow dam near Guthrie, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

[illegible][illegible]

07311783 South Wichita River below low-flow dam near Guthrie, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	beta- HCH, water, unfltrd ug/L (39338)	cis- Chlor- dane, water, unfltrd ug/L (39062)	delta- HCH, water, unfltrd ug/L (34259)	p,p'- DDD, water, unfltrd ug/L (39310)	p,p'- DDE, water, unfltrd ug/L (39320)	p,p'- DDT, water, unfltrd ug/L (39300)	trans- Chlor- dane, water, unfltrd ug/L (39065)
OCT 21...	--	--	--	--	--	--	--
NOV 07...	--	--	--	--	--	--	--
DEC 30...	--	--	--	--	--	--	--
JAN 21...	--	--	--	--	--	--	--
FEB 20...	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--
APR 28...	<.15d	<.5d	<.45d	<.5d	<.20d	<.5d	<.5d
MAY 14...	--	--	--	--	--	--	--
JUN 09...	<.15d	<.5d	<.45d	<.5d	<.20d	<.5d	<.5d
JUL 08...	--	--	--	--	--	--	--
AUG 07...	--	--	--	--	--	--	--
SEP 04...	--	--	--	--	--	--	--

Remark codes used in this report:

< -- Less than
 E -- Estimated value
 M -- Presence verified, not quantified

Value qualifier codes used in this report:

d -- Diluted sample: method hi range exceeded
 n -- Below the NDV
 p -- Value reported is preferred
 r -- Value verified by rerun, same method

RED RIVER BASIN

07311800 South Wichita River near Benjamin, TX

LOCATION.--Lat 33°38'39", long 99°48'02", Knox County, Hydrologic Unit 11130205, on right bank at upstream side of bridge on State Highway 6, 2.0 mi downstream from Panhandle and Santa Fe Railway Co. bridge, 4.0 mi north of Benjamin, and 41.0 mi upstream from mouth.

DRAINAGE AREA.--584 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1952-57 (occasional low-flow measurements), Dec. 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,334.23 ft above NGVD of 1929. Prior to Jan. 2, 1960, nonrecording gage at same site and datum. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good except those from Oct. 1, to Feb. 12, which are fair. No known regulation. There are low flow diversions upstream on the South Wichita River at Low Flow Dam near Guthrie (station 07311782) to Truscott Brine Lake near Truscott (station 07311669). There were other minor diversions upstream from station during the year. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1903 occurred in Sept. 1919 (stage and discharge unknown), from information by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

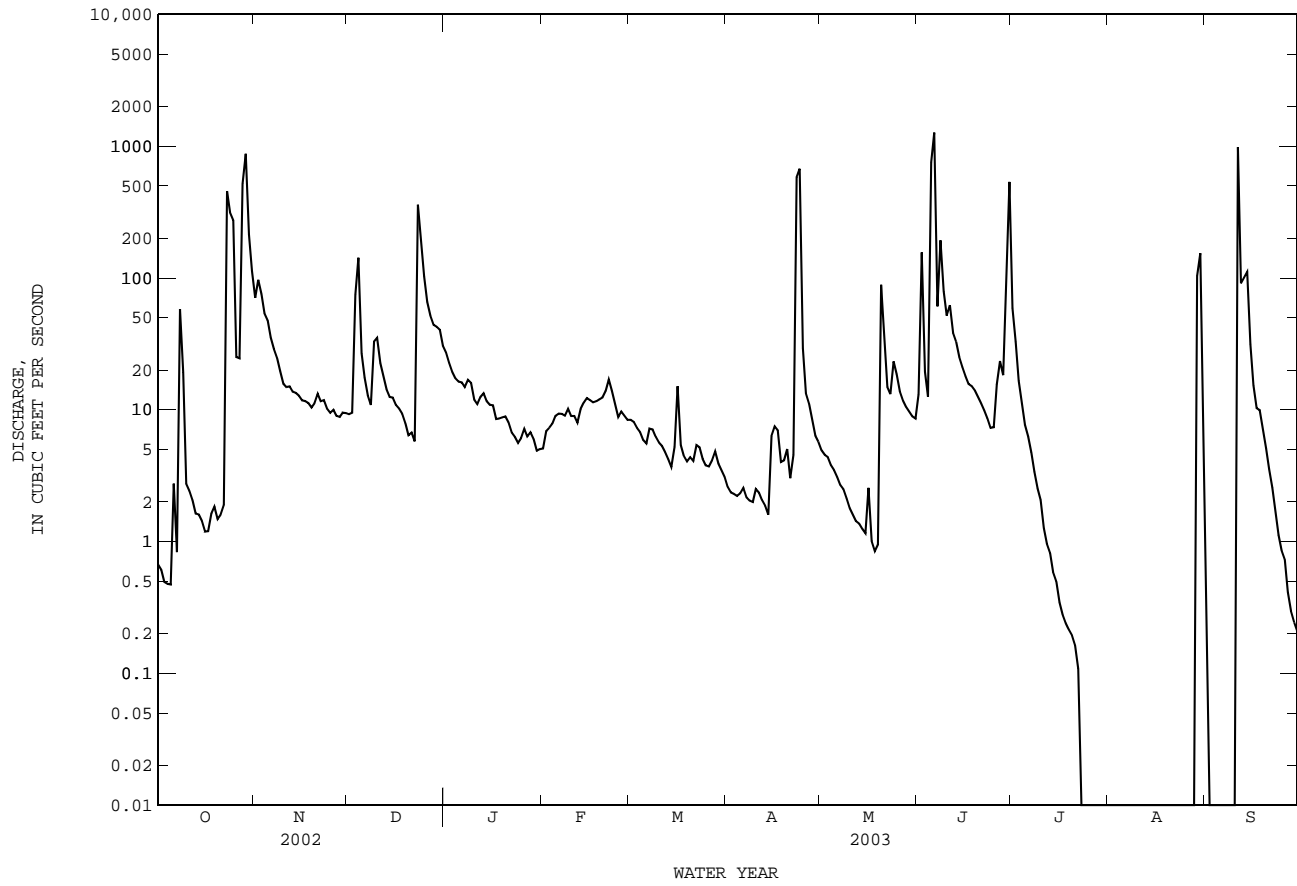
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.67	71	9.3	27	5.1	8.4	2.6	4.9	13	59	0.00	1.2
2	0.61	97	9.5	23	6.9	8.1	2.4	4.5	156	33	0.00	0.01
3	0.49	76	75	19	7.3	7.3	2.3	4.4	19	17	0.00	0.00
4	0.48	54	142	17	7.9	6.8	2.2	3.8	13	11	0.00	0.00
5	0.47	48	27	16	9.0	5.9	2.3	3.5	756	7.7	0.00	0.00
6	2.8	35	18	16	9.4	5.6	2.6	3.1	1270	6.3	0.00	0.00
7	0.83	29	13	15	9.3	7.2	2.2	2.7	61	4.7	0.00	0.00
8	58	25	11	17	9.0	7.1	2.0	2.5	193	3.4	0.00	0.00
9	19	20	33	16	10	6.3	2.0	2.1	80	2.5	0.00	0.00
10	2.7	16	35	12	9.0	5.7	2.5	1.8	52	2.1	0.00	0.00
11	2.4	15	23	11	9.0	5.3	2.4	1.6	62	1.3	0.00	985
12	2.1	15	18	13	8.0	4.8	2.1	1.4	38	0.96	0.00	91
13	1.6	14	14	13	10	4.2	1.9	1.4	33	0.82	0.00	101
14	1.6	13	13	12	11	3.7	1.6	1.3	25	0.59	0.00	111
15	1.4	13	12	11	12	5.2	6.3	1.2	21	0.50	0.00	31
16	1.2	12	11	11	12	15	7.5	2.6	18	0.35	0.00	15
17	1.2	12	10	8.5	11	5.4	7.0	1.0	16	0.28	0.00	10
18	1.6	11	9.3	8.6	12	4.5	4.0	0.85	15	0.24	0.00	10
19	1.8	10	7.9	8.8	12	4.0	4.1	0.95	14	0.22	0.00	7.1
20	1.5	11	6.4	8.9	12	4.4	5.0	89	13	0.19	0.00	5.1
21	1.6	13	6.7	8.0	14	4.1	3.0	37	11	0.16	0.00	3.5
22	1.9	12	5.8	6.7	17	5.4	4.5	15	9.9	0.11	0.00	2.6
23	456	12	360	6.2	14	5.2	582	13	8.6	0.00	0.00	1.7
24	314	10	184	5.6	11	4.2	675	23	7.3	0.00	0.00	1.1
25	275	9.5	102	6.1	8.8	3.8	29	19	7.4	0.00	0.00	0.86
26	25	10	66	7.2	9.7	3.7	13	14	16	0.00	0.00	0.73
27	25	9.0	52	6.3	9.0	4.1	11	12	23	0.00	0.00	0.41
28	519	8.8	44	6.8	8.4	4.8	8.6	11	18	0.00	0.00	0.30
29	878	9.5	43	6.0	---	3.9	6.4	9.7	140	0.00	104	0.24
30	214	9.4	40	4.9	---	3.5	5.7	8.9	536	0.00	154	0.21
31	113	---	31	5.0	---	3.1	---	8.6	---	0.00	13	---
TOTAL	2924.95	700.2	1431.9	352.6	283.8	170.7	1403.2	305.80	3645.2	152.42	271.00	1379.06
MEAN	94.4	23.3	46.2	11.4	10.1	5.51	46.8	9.86	122	4.92	8.74	46.0
MAX	878	97	360	27	17	15	675	89	1270	59	154	985
MIN	0.47	8.8	5.8	4.9	5.1	3.1	1.6	0.85	7.3	0.00	0.00	0.00
AC-FT	5800	1390	2840	699	563	339	2780	607	7230	302	538	2740
IN.	0.19	0.04	0.09	0.02	0.02	0.01	0.09	0.02	0.23	0.01	0.02	0.09

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003, BY WATER YEAR (WY)

	MEAN	68.8	19.7	12.4	11.2	17.4	24.8	29.7	71.9	78.9	24.5	43.4	72.8
MAX	656	66.4	77.5	60.3	172	147	187	256	458	162	578	502	
(WY)	1984	2001	1992	1992	1992	2000	1990	1989	1990	1986	1995	1966	
MIN	0.000	0.000	0.000	0.000	0.46	0.97	0.073	0.92	0.061	0.000	0.000	0.000	0.000
(WY)	2000	2000	1999	2000	2000	1989	1989	1988	2001	2001	1963	1998	

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR			FOR 2003 WATER YEAR			WATER YEARS 1960 - 2003		
ANNUAL TOTAL	11918.73			13020.83					
ANNUAL MEAN	32.7			35.7			40.0		
HIGHEST ANNUAL MEAN							107		
LOWEST ANNUAL MEAN							11.2		
HIGHEST DAILY MEAN	1020			1270			8260		
LOWEST DAILY MEAN	0.00			0.00			0.00		
ANNUAL SEVEN-DAY MINIMUM	0.13			0.00			0.00		
MAXIMUM PEAK FLOW				1970			14900		
MAXIMUM PEAK STAGE				14.82			17.07		
ANNUAL RUNOFF (AC-FT)	23640			25830			29010		
ANNUAL RUNOFF (INCHES)	0.76			0.83			0.93		
10 PERCENT EXCEEDS	59			56			46		
50 PERCENT EXCEEDS	4.9			7.3			6.6		
90 PERCENT EXCEEDS	0.57			0.00			0.00		

07311800 South Wichita River near Benjamin, TX--Continued



07311800 South Wichita River near Benjamin, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: July 1949 to Mar. 1959, July 1966 to current year.

PESTICIDE DATA: Oct. 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Oct. 1967 to current year.

WATER TEMPERATURE: Oct. 1967 to current year.

INSTRUMENTATION.--Water-quality monitor since Aug. 1968.

REMARKS.--Records good. Interruption in the record was caused by malfunctions of the instrument and no flow. No flow July 23 to Aug. 28 and Sept. 3-10. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and a regression relation between each chemical constituent and specific conductance. The computation of the selected constituent loads might include estimated discharge or specific conductance data. New regression equations were developed based on data from water years 1994 to 2003. The standard error of estimate for dissolved solids is 6%, chloride is 53%, sulfate is 16% and for hardness is 15%. Regression equations developed for this station may be obtained from the U.S. Geological Survey Texas District Office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 48,900 microsiemens/cm, May 13, 1971; minimum, 384 microsiemens/cm, Sept. 18, 1996.

WATER TEMPERATURE: Maximum, 39.8°C, July 15, 2003; minimum, -0.9°C, Feb. 25, 2003.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 27,100 microsiemens/cm, Oct. 1; minimum, 698 microsiemens/cm, June 6.

WATER TEMPERATURE: Maximum, 39.8°C, July 15; minimum, -0.9°C, Feb. 25.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unfld, 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorption ratio (00931)
									hardness, wat flt field, mg/L as CaCO3 (00904)				
OCT 01...	1020	.53	26000	7.8	23.3	7.2	92	4200	4100	1190	312	5120	34
NOV 21...	1530	19	14600	8.0	13.4	14.4	143	2900	2800	756	250	2270	18
DEC 11...	1330	24	8440	8.1	7.1	11.8	100	2300	2200	580	215	1120	10
JAN 14...	1115	14	12900	7.9	5.3	11.9	97	3100	2900	737	294	2020	16
FEB 27...	1210	9.0	24100	7.8	4.6	11.4	97	3800	3700	986	334	4770	34
MAR 25...	1105	3.9	21200	7.8	15.5	8.8	97	4000	3900	996	376	3880	27
APR 15...	1130	1.5	22300	7.8	20.3	7.8	93	4500	4300	1130	408	3880	25
MAY 02...	1145	4.3	15100	7.9	20.4	7.6	89	3200	3000	838	268	2300	18
JUN 07...	0955	62	2360	7.7	21.6	7.3	84	850	790	272	42.6	238	4
JUL 16...	1130	.39	13600	7.8	31.6	6.4	90	3000	2800	804d	239d	2000d	16
SEP 11...	1110	1750	693	7.8	20.6	7.4	82	280	250	94.1	11.1	25.4	.7
Date	Potassium, water, fltrd, mg/L (00935)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate, water, fltrd, mg/L (00945)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)	Nitrate, water, fltrd, mg/L as N (00618)	Nitrite, water, fltrd, mg/L as N (00613)	Nitrite + nitrate, fltrd, mg/L as N (00631)	Ammonia, water, fltrd, mg/L as N (00608)	Total nitrogen, water, unfltrd mg/L (00600)
OCT 01...	22.8	125	2810	8350	.31	5.6	17900	25	--	<.008	<.06	.19	--
NOV 21...	15.2	140	2320	3890	.32	4.4	9590	21	--	<.008	<.06	.09	--
DEC 11...	13.5	156	2040	1860	.28	6.1	5920	118	--	<.008	.14	.05	.44
JAN 14...	18.1	181	2390	3280	.36	4.9	8850	30	--	<.008	<.06	.04	--
FEB 27...	20.3	160	2580	7270	.32	<21.0	16100	<10	--	<.008	<.06	.07	--
MAR 25...	23.5	156	2830	6000	.32	4.1	14200	44	--	<.008	<.06	.07	--
APR 15...	30.6	182	3000	6290	.26	5.6	14900	29	--	<.008	<.06	.10	--
MAY 02...	23.7	157	2430	4180	.29	6.8	10100	45	--	<.008	<.06	.09	--
JUN 07...	8.34	66	832	252	.2	9.3	1690	704	.14	.010	.15	<.04	2.0
JUL 16...	22.3d	162	2340d	3500d	.2	9.1	9000	29	--	<.008	<.06	.08	--
SEP 11...	4.53	29	270	29.5	.2	7.0	460	E7260	.29	.012	.30	<.04	5.2

07311800 South Wichita River near Benjamin, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Organic nitro- gen, water, unfltrd mg/L (00605)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Phos- phorus, water, unfltrd mg/L (00665)	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Arsenic water unfltrd ug/L (01002)	Arsenic water, fltrd, ug/L (01000)	Barium, water, unfltrd recover- able, ug/L (01007)	Barium, water, fltrd, ug/L (01005)	Cadmium water, unfltrd ug/L (01027)	Cadmium water, fltrd, ug/L (01025)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Chrom- ium, water, fltrd, ug/L (01030)
OCT 01...	.23	.42	E.02	<.04	<.02	11	11.2	108	113	<.39	<.41	<2.4	<2.4
NOV 21...	.11	.21	E.04	<.04	<.02	5	2.8	60	59	<.21	<.22	<1.6	<1.6
DEC 11...	.25	.30	.09	<.04	<.02	5	4.7	86	58	<.14	<.15	4.7	<1.6
JAN 14...	--	E.09	<.04	<.04	<.02	E4n	5.8	39	37	<.21	<.22	2.3	<1.6
FEB 27...	--	E.08	E.03	<.04	<.02	<6	<2.6	32	33	<.35	E.22n	<2.4r	<2.4p
MAR 25...	.24	.31	.06	E.03	<.02	6	4.9	64	58	<.28	<.30	33.3	<2.4
APR 15...	.12	.23	E.03	<.04	<.02	7	5.2	54	44	<.32	<.33	<2.4	<2.4
MAY 02...	.16	.26	<.04	<.04	<.02	11	8.8	125	112	<.21	<.22	2.1	<1.6
JUN 07...	--	1.8	1.07	<.04	<.02	14	5.3	176	152	.07	E.02	18.4	<.8
JUL 16...	.34	.41	E.02	<.04	<.02	11	12.7d	115d	97d	<.21d	.82d	<1.6d	E.5n
SEP 11...	--	4.9d	4.36d	<.04	<.18d	37	5.7	1120d	53	.18	<.04	62.6d	<.8
Date	Copper, water, unfltrd recover- able, ug/L (01042)	Copper, water, fltrd, ug/L (01040)	Iron, water, unfltrd recover- able, ug/L (01045)	Iron, water, fltrd, ug/L (01046)	Lead, water, unfltrd recover- able, ug/L (01051)	Lead, water, fltrd, ug/L (01049)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, unfltrd recover- able, ug/L (71900)	Mercury water, fltrd, ug/L (71890)	Nickel, water, unfltrd recover- able, ug/L (01067)	Nickel, water, fltrd, ug/L (01065)	Selen- ium, water, unfltrd ug/L (01147)
OCT 01...	18.3	17.8	<20	<150	Mn	<.88	36	23.9	<.02	<.02	56	23.6	6.0
NOV 21...	24.4	7.2	300	<100	Mn	<.48	20	10.6	E.01	<.02	40	29.0	8.3
DEC 11...	13.0	8.4	2200	<50	1	.42	58	4.7	<.02	<.02	34	20.0	7.8
JAN 14...	12.1	8.0	160	<100	<.36	<.48	16	10.3	<.02	<.02	34	32.9	6.4p
FEB 27...	14.3	7.5	<20	<150	<.60	<.80	28	29.6	<.02	<.02	31	33.7	8.0
MAR 25...	16.4	13.4	850	<150	Mn	.69	58	34.6	E.01	<.02	29	15.1	12.6
APR 15...	21.7	14.3	290	<150	Mn	<.72	60	42.5	<.02	<.02	43	37.2	12.5
MAY 02...	15.8	13.9	740	<100	M	<.48	71	42.6	<.02	<.02	25	22.4	<1
JUN 07...	29.1	4.2	20	<24	13	<.08	644	13.0	E.01	<.02	44	9.23	.6
JUL 16...	15.4d	9.0d	1690d	<80d	<.36d	<.48d	52d	37.9d	<.02	<.02	29d	16.1d	6.1d
SEP 11...	44.6	2.6	32400d	E6n	42	<.08	1610d	6.9	.03	<.02	120d	1.59	1.4

RED RIVER BASIN

07311800 South Wichita River near Benjamin, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

[illegible]

07311800 South Wichita River near Benjamin, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	beta- HCH, water, unfltrd ug/L (39338)	cis- Chlor- dane, water, unfltrd ug/L (39062)	delta- HCH, water, unfltrd ug/L (34259)	p,p'- DDD, water, unfltrd ug/L (39310)	p,p'- DDE, water, unfltrd ug/L (39320)	p,p'- DDT, water, unfltrd ug/L (39300)	trans- Chlor- dane, water, unfltrd ug/L (39065)
OCT 01...	--	--	--	--	--	--	--
NOV 21...	--	--	--	--	--	--	--
DEC 11...	--	--	--	--	--	--	--
JAN 14...	--	--	--	--	--	--	--
FEB 27...	--	--	--	--	--	--	--
MAR 25...	--	--	--	--	--	--	--
APR 15...	<.15d	<.5d	<.45d	<.5d	<.20d	<.5d	<.5d
MAY 02...	--	--	--	--	--	--	--
JUN 07...	<.15d	<.5d	<.45d	<.5d	<.20d	<.5d	<.5d
JUL 16...	--	--	--	--	--	--	--
SEP 11...	--	--	--	--	--	--	--

Remark codes used in this report:

< -- Less than
 E -- Estimated value
 M -- Presence verified, not quantified

Value qualifier codes used in this report:

d -- Diluted sample: method hi range exceeded
 n -- Below the NDV
 p -- Value reported is preferred
 r -- Value verified by rerun, same method

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 2002 TO SEPTEMBER 2003

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)	HARDNESS (CA,MG) (MG/L)
OCT. 2002	2121.6	6760	4590	26290	1900	10770	1000	5920	1200
NOV. 2002	722	14010	9500	18510	4000	7820	2000	3970	2300
DEC. 2002	1666	9520	6470	29090	2600	11910	1500	6560	1700
JAN. 2003	622	16710	11320	19010	4800	8120	2400	4000	2700
FEB. 2003	551	18480	12500	18600	5400	8040	2600	3840	2900
MAR. 2003	548	19390	13110	19400	5700	8450	2700	3950	3000
APR. 2003	1099	11900	8060	23930	3400	10200	1700	5050	1900
MAY 2003	321.7	14680	9950	8640	4200	3660	2100	1840	2400
JUNE 2003	1317.8	9030	6130	21820	2500	8950	1400	4910	1600
JULY 2003	125.7	20440	13800	4680	6100	2080	2700	924	3000
AUG. 2003	235.7	20650	13920	8860	6300	4010	2600	1680	2900
SEPT 2003	604.4	12880	8730	14250	3700	6020	1900	3060	2100
TOTAL	9934.9	**	**	213100	**	90030	**	45710	**
WTD.AVG.	27	11720	7940	**	3400	**	1700	**	1900

RED RIVER BASIN

07311800 South Wichita River near Benjamin, TX--Continued

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	27100	---	e26800	2910	2900	2900	15600	15400	15500	7670	7090	7340
2	26900	11700	21800	2900	2890	2900	15500	15200	15300	8420	7670	8050
3	19500	12900	16600	2990	2890	2970	15400	2850	10900	8900	8420	8650
4	23100	15600	19700	2990	2980	2980	6100	2650	3150	9290	8900	9110
5	23900	16500	21500	4370	2980	3590	5530	3250	4290	9590	9290	9460
6	23500	1580	15800	---	---	e5500	7640	5530	6690	9980	9590	9780
7	17100	12200	14700	---	---	e7500	7930	5820	7010	10400	9980	10200
8	19300	1960	12300	---	---	e8500	5920	4760	5680	10800	10400	10600
9	9130	4460	7340	---	---	e9500	---	---	e6800	11200	10800	11000
10	8520	6340	7630	---	---	e10000	---	---	e7800	11800	11200	11500
11	8520	7720	8130	---	---	e10300	8920	---	e8610	12400	11800	12100
12	11600	8410	10100	10100	---	e10500	9790	8910	9400	12700	12400	12600
13	13900	11600	12700	11500	9640	10600	10400	9790	10200	12900	12600	12700
14	15500	13900	14700	11700	11400	11600	10600	10300	10500	13000	12400	12700
15	16700	15500	15900	11800	11600	11800	10700	10300	10600	12400	12100	12300
16	17500	16500	16900	12000	11700	11900	10600	10500	10600	12500	12100	12400
17	17800	17100	17500	12200	11900	12000	10500	10400	10500	12600	12200	12400
18	17800	15700	17200	12600	12100	12400	10800	10500	10700	12800	12300	12600
19	17700	17000	17300	12700	12400	12600	11300	10800	11000	12700	12200	12500
20	17900	17300	17700	13000	12600	12700	11600	11200	11400	12600	12100	12300
21	17900	17400	17600	13500	13000	13300	11700	11300	11500	12400	12000	12200
22	17500	17200	17300	14000	13500	13800	12000	11700	11800	12700	12300	12500
23	17400	1260	8030	14000	13800	13900	11800	1210	5210	13100	12600	12900
24	4060	2560	3460	14600	14000	14200	3210	1210	2140	13200	12900	13000
25	3650	3350	3460	14800	14600	14800	4800	3010	3790	13400	12300	13000
26	3440	3340	3350	15100	14700	14900	5100	4800	5020	13500	12600	12900
27	3540	3340	3480	15500	14800	15200	5670	5000	5240	13000	11900	12600
28	3730	3230	3490	15500	14900	15300	6620	5670	6120	13000	12400	12700
29	3230	3120	3190	15400	15200	15300	6620	6140	6400	13100	12600	12900
30	3120	3010	3070	15600	15200	15400	6420	6140	6210	13000	12600	12800
31	3010	2910	2970	---	---	---	7090	6420	6740	13200	12800	13000
MONTH	27100	---	12300	---	---	10600	---	---	8280	13500	7090	11600
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13300	13000	13100	23200	22100	22500	19900	19200	19600	---	---	e13700
2	13400	13100	13200	22200	22000	22100	20500	19600	20000	---	---	e14700
3	13800	13400	13600	22100	21200	21700	20600	19900	20300	15300	14900	15100
4	14100	13800	14000	21200	20700	21000	20600	20000	20300	15300	15000	15100
5	14700	14000	14500	21300	20800	21000	20600	20400	20500	15600	15300	15400
6	15400	14700	14900	20900	20100	20400	20700	20400	20600	15600	15400	15500
7	15800	15400	15600	20800	20200	20500	20900	20500	20600	15500	15300	15400
8	15800	15500	15600	21100	20700	20900	21100	20600	20800	15300	14600	15100
9	15700	15300	15500	21100	20800	20900	21000	20600	20900	15100	14400	14800
10	15800	15300	15500	20900	20200	20600	21200	20800	21100	14700	---	e14500
11	19000	15800	17200	20300	19800	20100	21700	21000	21400	---	---	e15100
12	21000	19000	20100	20500	20000	20200	21700	21500	21600	---	---	e15900
13	21500	21000	21200	20600	20300	20500	21800	21500	21600	---	---	e16500
14	21800	21000	21400	20600	20300	20500	21800	21400	21600	---	---	e16800
15	22300	21800	22100	20800	20300	20500	21800	3750	19800	---	---	e16500
16	22800	22300	22500	21200	6170	12000	17700	4350	9200	---	---	e10300
17	23100	22700	22900	18500	10800	15600	15700	9730	13000	---	---	e12200
18	23300	22900	23100	18200	11200	13500	9730	8630	9110	---	---	e14900
19	23300	22900	23100	15200	11300	12900	13500	8830	11800	---	---	e15000
20	23300	23100	23200	18100	15200	17100	15700	13400	14600	---	---	e5500
21	23300	21000	22200	19200	17900	18500	15100	13300	14100	---	---	e8850
22	22900	21100	22200	19200	18600	19000	17700	15100	16000	---	---	e10700
23	23600	22400	22900	20200	19000	19600	17000	1300	11500	---	---	e12100
24	23800	---	e23400	20500	20000	20200	3990	1300	2510	---	---	e10200
25	24500	23300	24000	20700	20200	20400	7390	3690	6000	---	---	e14500
26	24700	24100	24300	20500	19800	20200	7180	5180	6080	18900	---	e17300
27	24700	23400	24200	19800	19200	19600	11000	7180	9340	18800	17900	18300
28	23600	23100	23400	19200	17900	18800	11500	9870	10800	18400	17700	18000
29	---	---	---	19100	18100	18700	11200	10100	10600	18100	17600	17800
30	---	---	---	19500	18600	19000	---	---	e12000	17800	16400	16600
31	---	---	---	19900	18900	19000	---	---	---	16900	16200	16600
MONTH	24700	---	19600	23200	6170	19300	---	---	15600	---	---	14500

07311800 South Wichita River near Benjamin, TX--Continued

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	16800	2040	14500	---	5040	e6170	---	---	---	---	---	e3770
2	13100	1940	4950	---	---	e8850	---	---	---	---	---	e4700
3	5540	4400	4630	---	---	e9710	---	---	---	---	---	---
4	9100	5540	8210	---	---	e10600	---	---	---	---	---	---
5	8790	703	2720	---	---	e11100	---	---	---	---	---	---
6	2840	698	1270	---	---	e11400	---	---	---	---	---	---
7	2840	1790	1970	---	---	e11900	---	---	---	---	---	---
8	2400	1170	1730	---	---	e12000	---	---	---	---	---	---
9	---	1670	e2340	---	---	e12200	---	---	---	---	---	---
10	---	---	e4410	12500	---	e12300	---	---	---	---	---	---
11	---	---	e7870	12900	12400	12600	---	---	---	1420	807	1030
12	---	---	e9150	13100	12700	12900	---	---	---	---	---	e1930
13	10500	---	e10500	13600	13100	13300	---	---	---	---	---	e2250
14	11500	8120	9650	13900	13300	13500	---	---	---	---	---	e4120
15	12200	11500	12000	14000	13500	13800	---	---	---	---	---	e5780
16	12100	11700	11900	14000	13600	13800	---	---	---	---	---	e6580
17	12300	11900	12100	14100	13600	13800	---	---	---	---	---	e7610
18	12400	12000	12200	14300	13600	13900	---	---	---	8640	---	e8510
19	13100	12000	12500	14600	13700	14100	---	---	---	8890	8640	8730
20	13400	12600	12900	14800	13800	14200	---	---	---	9260	8830	9000
21	13300	12200	12700	14300	14200	14200	---	---	---	9420	8890	9130
22	12800	12200	12500	---	---	e14200	---	---	---	9680	9040	9300
23	12500	11900	12200	---	---	---	---	---	---	9850	9300	9560
24	12400	11700	12000	---	---	---	---	---	---	10100	9470	9740
25	12100	11500	11800	---	---	---	---	---	---	10100	9530	9760
26	11700	8490	11100	---	---	---	---	---	---	9980	9280	9640
27	13000	6740	10400	---	---	---	---	---	---	9740	9240	9520
28	11900	5950	11000	---	---	---	---	---	---	---	---	e9400
29	10500	924	7720	---	---	---	2960	1460	1700	9870	---	e9760
30	5040	1430	2550	---	---	---	2100	1780	1930	9820	9420	9580
31	---	---	---	---	---	---	---	1990	e2740	---	---	---
MONTH	---	---	8720	---	---	---	---	---	---	---	---	---

e Estimated

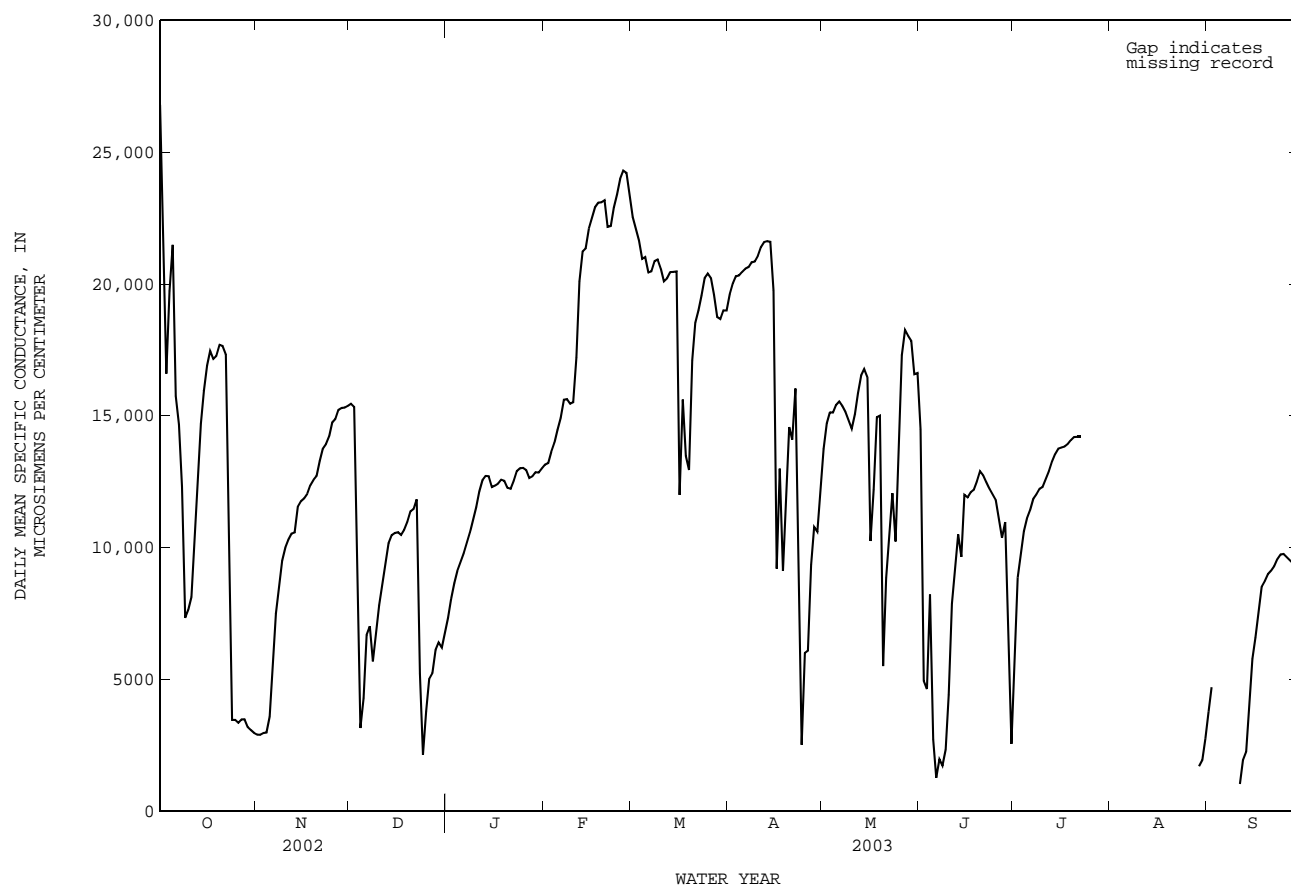
SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e26800	2900	15500	7340	13100	22500	19600	e13700	14500	e6170	---	e3770
2	21800	2900	15300	8050	13200	22100	20000	e14700	4950	e8850	---	e4700
3	16600	2970	10900	8650	13600	21700	20300	15100	4630	e9710	---	---
4	19700	2980	3150	9110	14000	21000	20300	15100	8210	e10600	---	---
5	21500	3590	4290	9460	14500	21000	20500	15400	2720	e11100	---	---
6	15800	e5500	6690	9780	14900	20400	20600	15500	1270	e11400	---	---
7	14700	e7500	7010	10200	15600	20500	20600	15400	1970	e11900	---	---
8	12300	e8500	5680	10600	15600	20900	20800	15100	1730	e12000	---	---
9	7340	e9500	e6800	11000	15500	20900	20900	14800	e2340	e12200	---	---
10	7630	e10000	e7800	11500	15500	20600	21100	e14500	e4410	e12300	---	---
11	8130	e10300	e8610	12100	17200	20100	21400	e15100	e7870	12600	---	1030
12	10100	e10500	9400	12600	20100	20200	21600	e15900	e9150	12900	---	e1930
13	12700	10600	10200	12700	21200	20500	21600	e16500	e10500	13300	---	e2250
14	14700	11600	10500	12700	21400	20500	21600	e16800	9650	13500	---	e4120
15	15900	11800	10600	12300	22100	20500	19800	e16500	12000	13800	---	e5780
16	16900	11900	10600	12400	22500	12000	9200	e10300	11900	13800	---	e6580
17	17500	12000	10500	12400	22900	15600	13000	e12200	12100	13800	---	e7610
18	17200	12400	10700	12600	23100	13500	9110	e14900	12200	13900	---	e8510
19	17300	12600	11000	12500	23100	12900	11800	e15000	12500	14100	---	8730
20	17700	12700	11400	12300	23200	17100	14600	e5500	12900	14200	---	9000
21	17600	13300	11500	12200	22200	18500	14100	e8850	12700	14200	---	9130
22	17300	13800	11800	12500	22200	19000	16000	e10700	12500	e14200	---	9300
23	8030	13900	5210	12900	22900	19600	11500	e12100	12200	---	---	9560
24	3460	14200	2140	13000	e23400	20200	2510	e10200	12000	---	---	9740
25	3460	14800	3790	13000	24000	20400	6000	e14500	11800	---	---	9760
26	3350	14900	5020	12900	24300	20200	6080	e17300	11100	---	---	9640
27	3480	15200	5240	12600	24200	19600	9340	18300	10400	---	---	9520
28	3490	15300	6120	12700	23400	18800	10800	18000	11000	---	---	e9400
29	3190	15300	6400	12900	---	18700	10600	17800	7720	---	1700	e9760
30	3070	15400	6210	12800	---	19000	e12000	16600	2550	---	1930	9580
31	2970	---	6740	13000	---	19000	---	16600	---	---	e2740	---

e Estimated

RED RIVER BASIN

07311800 South Wichita River near Benjamin, TX--Continued



WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	31.2	---	---	14.2	13.8	14.0	10.8	5.2	7.5	8.1	3.7	6.2
2	32.5	22.0	25.8	13.8	13.4	13.6	13.7	7.6	9.8	7.7	2.3	5.2
3	32.4	19.5	24.7	13.4	12.9	13.2	10.5	4.0	7.6	8.7	2.5	5.7
4	30.3	16.7	22.1	12.9	10.2	11.0	4.6	2.9	3.5	8.9	4.1	6.7
5	29.9	14.1	20.2	12.9	7.7	10.4	5.9	2.2	4.0	9.1	5.0	7.2
6	26.4	19.1	21.8	13.8	8.0	10.9	7.3	2.0	4.9	8.9	6.2	7.3
7	21.3	18.2	19.2	14.4	9.5	12.1	8.0	4.2	6.4	8.0	4.3	6.0
8	18.5	16.6	17.9	15.2	11.3	13.3	7.7	5.4	5.9	10.2	6.7	8.1
9	17.9	17.0	17.4	17.0	14.1	15.6	6.6	5.5	6.0	10.2	8.8	9.5
10	19.9	17.0	18.0	16.8	14.8	15.5	9.4	5.9	7.6	8.8	5.8	6.9
11	23.0	15.8	18.9	15.4	13.4	14.2	8.8	4.5	7.0	6.9	4.0	4.8
12	22.7	16.0	19.2	14.6	12.1	13.6	8.6	5.3	7.2	5.6	4.8	5.1
13	20.1	13.3	15.9	13.1	8.1	11.2	8.4	4.2	6.7	8.1	5.0	6.3
14	21.4	14.0	16.0	14.3	9.5	12.1	8.6	4.1	6.9	8.0	5.3	7.1
15	22.4	12.2	16.0	12.9	8.9	11.2	9.8	4.6	7.7	7.8	5.8	6.6
16	22.0	12.5	16.1	13.9	9.1	11.4	10.3	7.4	9.0	6.7	2.8	4.6
17	23.7	14.5	17.9	12.8	7.5	10.4	12.0	6.1	9.3	5.0	1.0	3.2
18	21.2	17.8	19.1	13.2	9.6	11.3	11.9	9.0	10.2	6.1	0.8	3.9
19	25.7	16.8	19.7	12.9	7.6	10.2	9.8	6.8	8.4	7.5	2.0	5.3
20	24.1	16.1	18.5	12.9	8.4	10.6	7.8	3.1	5.5	10.5	4.1	7.8
21	20.6	15.0	17.1	13.4	8.0	11.1	8.7	3.6	6.2	10.5	6.6	8.3
22	19.6	16.6	18.1	13.6	9.3	11.6	6.5	3.5	5.2	7.2	2.4	4.1
23	18.4	16.2	17.4	14.4	8.9	11.7	6.2	2.9	4.2	3.7	-0.3	1.6
24	16.4	12.6	14.2	14.7	9.6	11.7	4.6	2.7	3.5	1.6	-0.4	0.5
25	13.4	12.7	12.9	9.6	5.7	7.2	5.4	1.2	3.3	3.2	-0.6	1.1
26	14.1	13.4	13.7	8.9	5.3	6.3	6.8	3.1	4.7	3.7	1.1	2.2
27	14.8	14.1	14.4	8.1	3.2	5.0	5.5	1.7	3.7	8.1	1.2	4.6
28	14.8	14.4	14.7	9.6	3.2	5.7	7.4	1.0	4.2	11.6	5.4	8.8
29	14.8	14.4	14.6	9.5	5.2	7.0	9.0	3.3	6.2	10.2	6.5	7.7
30	15.1	14.8	15.0	11.6	6.7	8.3	11.3	8.1	9.5	9.2	3.3	6.6
31	15.1	14.2	14.7	---	---	---	9.1	5.3	7.5	11.9	6.7	9.3
MONTH	32.5	---	---	17.0	3.2	11.0	13.7	1.0	6.4	11.9	-0.6	5.8

WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

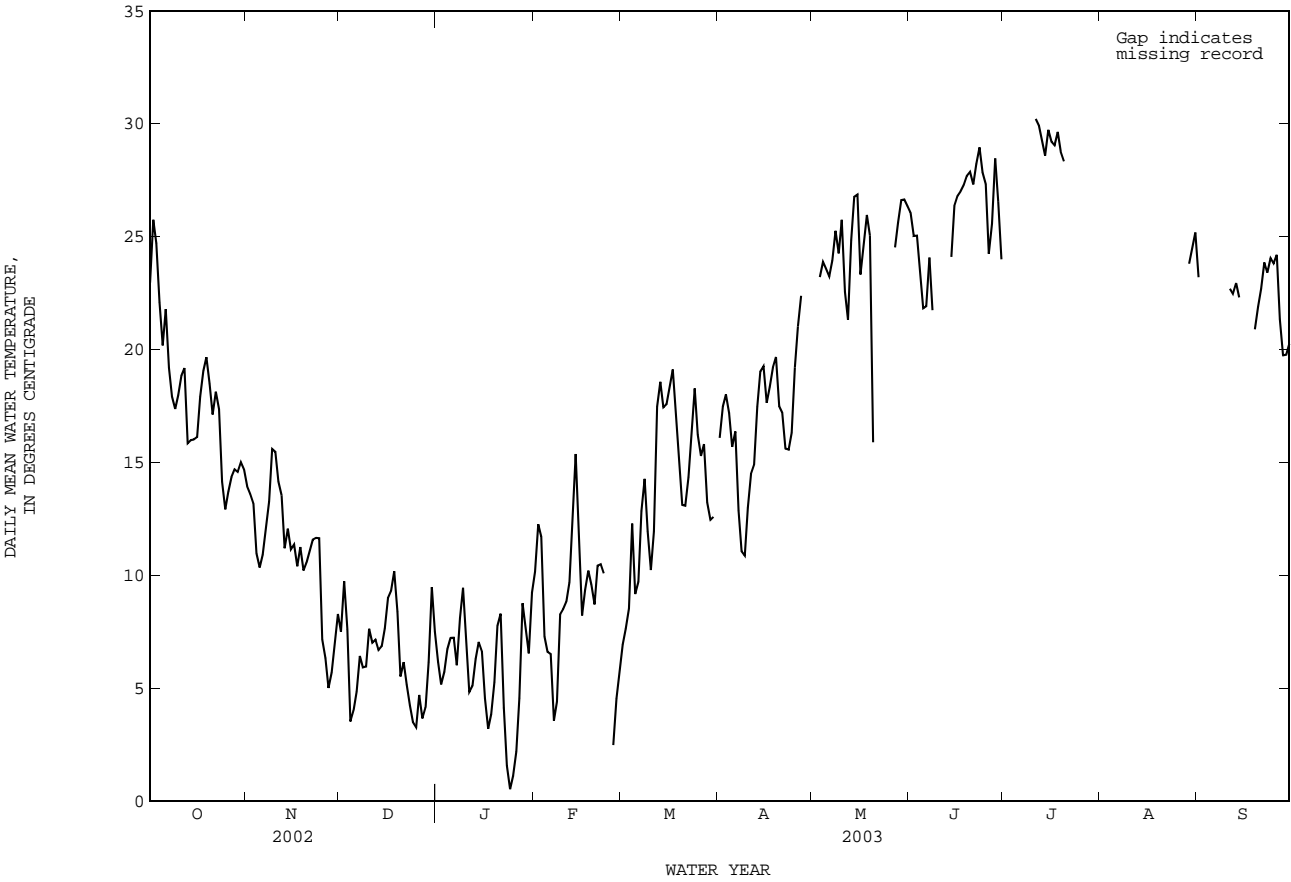
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	12.8	6.7	10.2	8.0	6.0	6.9	20.2	11.6	16.1	---	---	---
2	14.6	9.0	12.3	8.7	6.8	7.6	22.0	13.7	17.5	24.6	---	---
3	14.3	9.3	11.7	12.5	5.3	8.5	21.4	16.5	18.0	29.4	19.4	23.2
4	9.3	4.3	7.3	16.8	9.6	12.3	19.6	15.1	17.2	28.0	21.2	23.9
5	8.1	5.1	6.6	12.9	6.8	9.2	17.4	13.0	15.7	30.1	19.7	23.6
6	7.6	4.3	6.5	14.6	6.1	9.7	18.1	14.2	16.4	30.3	18.2	23.3
7	5.5	1.3	3.6	16.3	9.2	12.9	15.1	10.9	12.9	31.9	18.8	23.9
8	6.2	2.3	4.4	16.7	12.8	14.3	14.2	9.0	11.1	30.5	21.8	25.3
9	11.0	5.0	8.3	15.3	9.5	12.0	14.3	7.3	10.9	32.4	18.2	24.3
10	10.4	5.3	8.5	13.3	8.7	10.2	16.2	8.8	13.0	32.3	19.8	25.8
11	10.8	5.4	8.8	16.7	8.8	12.0	16.6	12.0	14.5	30.7	17.0	22.6
12	13.1	6.2	9.7	22.4	13.7	17.5	18.1	11.5	14.9	26.5	16.8	21.3
13	14.0	10.8	12.3	23.1	16.0	18.6	20.6	14.2	17.5	33.8	18.9	24.8
14	17.7	13.1	15.4	22.5	13.8	17.4	23.3	15.9	19.0	33.3	22.3	26.8
15	16.1	8.4	11.7	22.0	14.6	17.6	23.2	17.5	19.3	33.6	23.0	26.9
16	10.8	5.2	8.2	21.6	14.6	18.3	21.0	13.6	17.6	29.2	19.6	23.3
17	12.4	5.2	9.4	22.8	16.9	19.1	20.2	16.8	18.3	33.8	17.8	24.6
18	12.4	8.6	10.2	20.9	15.4	17.2	24.5	15.9	19.2	35.0	19.1	26.0
19	10.7	8.7	9.6	17.7	13.1	15.1	24.4	16.8	19.7	32.9	18.9	25.1
20	10.9	6.6	8.7	16.2	11.3	13.1	21.5	15.0	17.5	19.1	12.5	15.9
21	11.0	9.7	10.4	18.2	9.6	13.1	21.9	13.5	17.2	---	---	---
22	13.8	6.9	10.5	18.6	12.6	14.4	16.8	15.0	15.6	---	---	---
23	13.5	7.2	10.1	21.0	12.7	16.5	17.7	12.8	15.6	---	---	---
24	---	-0.7	---	23.1	14.7	18.3	21.2	12.7	16.3	---	---	---
25	---	-0.9	---	18.8	13.1	16.2	23.3	15.2	19.2	---	---	---
26	3.0	1.9	2.5	21.0	11.0	15.3	24.4	17.2	21.0	27.7	---	---
27	6.3	3.1	4.6	21.3	12.0	15.8	24.8	19.4	22.4	31.5	19.2	24.5
28	6.5	5.1	5.8	18.0	10.8	13.2	---	20.2	---	31.6	20.5	25.6
29	---	---	---	18.0	9.2	12.5	---	---	---	31.9	22.5	26.6
30	---	---	---	19.6	9.4	12.6	---	---	---	31.1	23.1	26.7
31	---	---	---	---	10.9	---	---	---	---	30.8	23.5	26.4
MONTH	---	-0.9	---	---	5.3	---	---	---	---	---	---	---

[illegible]

07311800 South Wichita River near Benjamin, TX--Continued

WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	14.0	7.5	6.2	10.2	6.9	16.1	---	26.1	---	---	23.2
2	25.8	13.6	9.8	5.2	12.3	7.6	17.5	---	25.0	---	---	---
3	24.7	13.2	7.6	5.7	11.7	8.5	18.0	23.2	25.1	---	---	---
4	22.1	11.0	3.5	6.7	7.3	12.3	17.2	23.9	23.4	---	---	---
5	20.2	10.4	4.0	7.2	6.6	9.2	15.7	23.6	21.8	---	---	---
6	21.8	10.9	4.9	7.3	6.5	9.7	16.4	23.3	21.9	---	---	---
7	19.2	12.1	6.4	6.0	3.6	12.9	12.9	23.9	24.1	---	---	---
8	17.9	13.3	5.9	8.1	4.4	14.3	11.1	25.3	21.7	---	---	---
9	17.4	15.6	6.0	9.5	8.3	12.0	10.9	24.3	---	---	---	---
10	18.0	15.5	7.6	6.9	8.5	10.2	13.0	25.8	---	---	---	---
11	18.9	14.2	7.0	4.8	8.8	12.0	14.5	22.6	---	30.2	---	22.7
12	19.2	13.6	7.2	5.1	9.7	17.5	14.9	21.3	---	29.9	---	22.5
13	15.9	11.2	6.7	6.3	12.3	18.6	17.5	24.8	---	29.3	---	22.9
14	16.0	12.1	6.9	7.1	15.4	17.4	19.0	26.8	24.1	28.6	---	22.3
15	16.0	11.2	7.7	6.6	11.7	17.6	19.3	26.9	26.4	29.7	---	---
16	16.1	11.4	9.0	4.6	8.2	18.3	17.6	23.3	26.8	29.2	---	---
17	17.9	10.4	9.3	3.2	9.4	19.1	18.3	24.6	27.0	29.1	---	---
18	19.1	11.3	10.2	3.9	10.2	17.2	19.2	26.0	27.3	29.6	---	---
19	19.7	10.2	8.4	5.3	9.6	15.1	19.7	25.1	27.7	28.8	---	20.9
20	18.5	10.6	5.5	7.8	8.7	13.1	17.5	15.9	27.9	28.3	---	21.9
21	17.1	11.1	6.2	8.3	10.4	13.1	17.2	---	27.3	---	---	22.7
22	18.1	11.6	5.2	4.1	10.5	14.4	15.6	---	28.2	---	---	23.9
23	17.4	11.7	4.2	1.6	10.1	16.5	15.6	---	29.0	---	---	23.4
24	14.2	11.7	3.5	0.5	---	18.3	16.3	---	27.8	---	---	24.0
25	12.9	7.2	3.3	1.1	---	16.2	19.2	---	27.3	---	---	23.8
26	13.7	6.3	4.7	2.2	2.5	15.3	21.0	---	24.2	---	---	24.2
27	14.4	5.0	3.7	4.6	4.6	15.8	22.4	24.5	25.6	---	---	21.4
28	14.7	5.7	4.2	8.8	5.8	13.2	---	25.6	28.5	---	---	19.8
29	14.6	7.0	6.2	7.7	---	12.5	---	26.6	26.5	---	23.8	19.8
30	15.0	8.3	9.5	6.6	---	12.6	---	26.7	24.0	---	24.5	20.3
31	14.7	---	7.5	9.3	---	---	---	26.4	---	---	25.2	---
MEAN	---	11.0	6.4	5.8	---	---	---	---	---	---	---	---
MAX	---	15.6	10.2	9.5	---	---	---	---	---	---	---	---
MIN	---	5.0	3.3	0.5	---	---	---	---	---	---	---	---



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RED RIVER BASIN

07311900 Wichita River near Seymour, TX

LOCATION.--Lat 33°42'01", long 99°23'18", Baylor County, Hydrologic Unit 11130206, on left bank at downstream side of bridge on Farm Road 1919, 6.0 mi upstream from the head of Lake Kemp (station 07312000), 10.0 mi downstream from the confluence of the North and South Forks of the Wichita River, and 10.5 mi northwest of Seymour.

DRAINAGE AREA.--1,874 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1952 to Sept. 1957 (occasional low-flow measurements made 4.0 mi downstream), Nov. 1959 to Sept. 1979, Oct. 1996 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,152.7 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. No known regulation or diversions.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	452	25	74	33	26	18	41	12	244	0.00	103
2	17	362	25	67	33	26	16	34	112	169	0.00	22
3	16	316	102	63	31	25	15	30	97	55	0.00	9.8
4	17	223	682	60	30	25	15	28	77	32	0.00	6.3
5	33	161	334	57	31	23	18	25	e610	21	0.00	5.7
6	20	132	e150	54	32	24	19	22	e1500	15	0.00	4.8
7	16	113	e140	53	31	24	14	20	945	12	0.00	4.1
8	85	95	e170	51	33	23	13	19	730	11	0.00	3.5
9	216	84	e143	50	34	22	13	18	535	9.1	0.00	3.2
10	151	75	107	48	32	23	14	17	244	7.4	0.00	2.7
11	59	69	90	46	32	24	14	15	133	5.9	0.00	965
12	36	64	77	47	32	25	14	14	122	5.0	0.00	672
13	26	57	68	47	32	23	15	14	89	4.2	0.00	501
14	21	51	62	45	34	22	14	13	68	e3.7	0.00	e300
15	19	47	58	45	31	e22	14	14	74	e3.1	0.00	e155
16	17	43	54	42	30	e23	17	17	45	e2.6	0.00	93
17	17	41	52	40	31	e23	21	19	36	2.3	0.00	44
18	18	38	48	40	30	26	22	13	31	2.1	0.00	25
19	37	36	46	39	30	24	23	12	27	1.9	0.00	16
20	33	34	43	39	29	22	36	236	23	1.6	0.00	12
21	22	33	41	38	e29	22	20	270	20	1.4	0.00	10
22	21	32	38	36	e28	22	27	114	17	1.2	0.00	8.8
23	266	32	424	34	e28	22	41	54	15	1.0	0.00	7.3
24	657	30	1180	33	e28	22	1020	34	14	0.97	0.00	6.0
25	1090	29	520	34	e27	21	e420	59	388	0.85	0.00	5.2
26	503	28	230	33	27	21	e300	32	296	0.76	0.00	4.9
27	280	27	157	34	24	20	e190	23	60	0.69	0.00	4.1
28	626	27	121	36	26	21	e110	19	31	0.58	0.00	3.7
29	2860	27	106	34	---	19	72	17	84	0.51	48	3.3
30	1310	26	95	34	---	19	67	15	133	0.37	530	3.0
31	746	---	84	34	---	19	---	13	---	0.26	357	---
TOTAL	9252	2784	5472	1387	848	703	2612	1271	6568	616.49	935.00	3004.4
MEAN	298	92.8	177	44.7	30.3	22.7	87.1	41.0	219	19.9	30.2	100
MAX	2860	452	1180	74	34	26	1020	270	1500	244	530	965
MIN	16	26	25	33	24	19	13	12	12	0.26	0.00	2.7
AC-FT	18350	5520	10850	2750	1680	1390	5180	2520	13030	1220	1850	5960

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003h, BY WATER YEAR (WY)

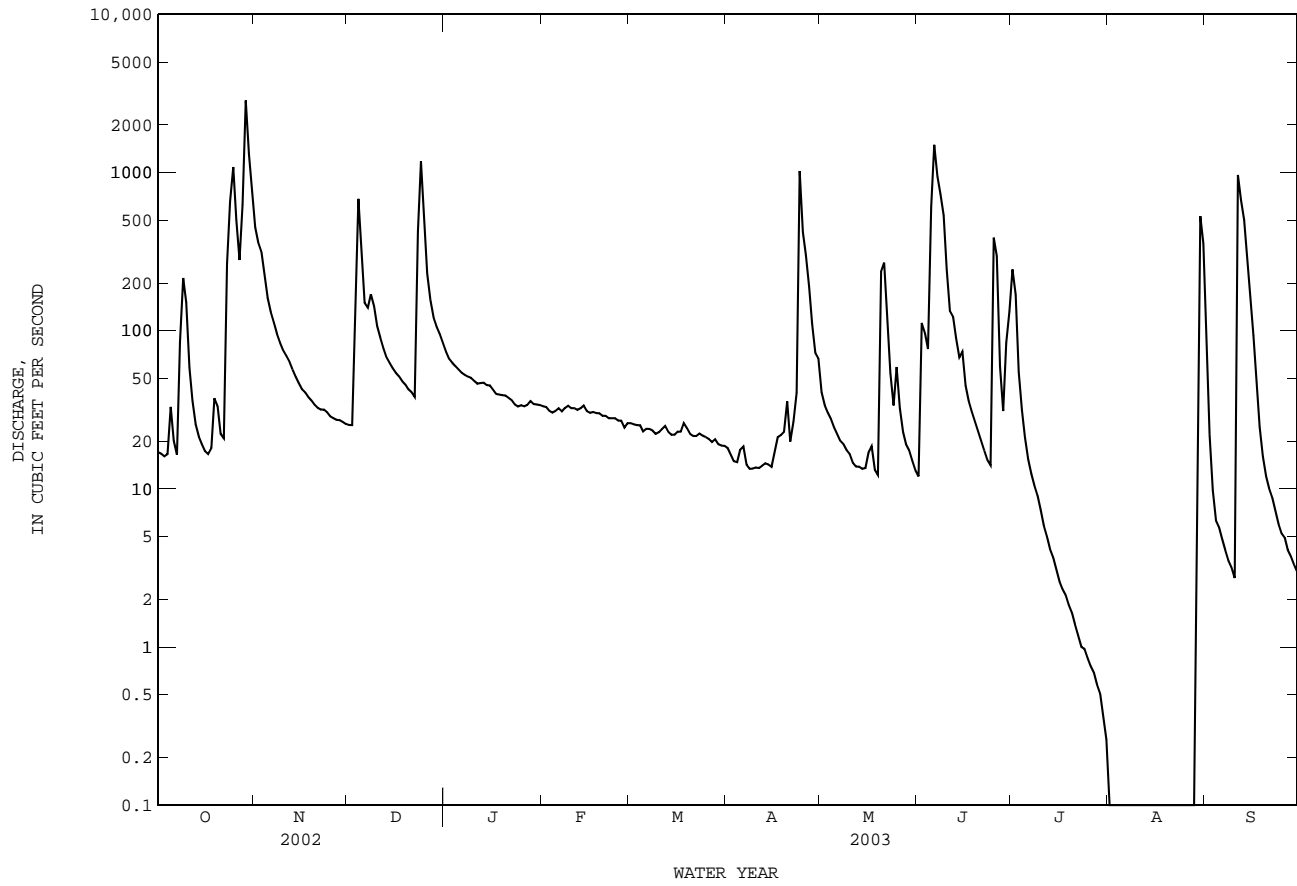
	MEAN	206	103	51.1	51.0	61.8	122	152	242	259	152	156	292
MAX	1464	342	222	375	299	486	664	778	979	853	1353	1492	
(WY)	1961	2001	1960	1968	1998	2000	1967	1999	1967	2002	1966	1966	
MIN	2.89	9.29	13.5	11.5	12.5	8.10	7.36	32.3	8.82	0.23	0.56	0.000	
(WY)	1964	1971	1971	1964	1971	1965	1964	1962	2001	2001	2000	2000	

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1960 - 2003h	
ANNUAL TOTAL	70193		35452.89			
ANNUAL MEAN	192		97.1		154	
HIGHEST ANNUAL MEAN					389	
LOWEST ANNUAL MEAN					71.6	
HIGHEST DAILY MEAN	4590	Jul 4	2860	Oct 29	16100	Oct 19 1965
LOWEST DAILY MEAN	10	Mar 16	0.00	Aug 1	0.00	Jul 18 1964
ANNUAL SEVEN-DAY MINIMUM	11	Mar 10	0.00	Aug 1	0.00	Jul 18 1964
MAXIMUM PEAK FLOW			3380	Oct 29	23100	Sep 20 1965
MAXIMUM PEAK STAGE			13.30	Oct 29	17.75	Sep 20 1965
ANNUAL RUNOFF (AC-FT)	139200		70320		111300	
10 PERCENT EXCEEDS	455		239		225	
50 PERCENT EXCEEDS	36		28		30	
90 PERCENT EXCEEDS	13		0.99		5.7	

e Estimated

h See PERIOD OF RECORD paragraph.

07311900 Wichita River near Seymour, TX--Continued



07311900 Wichita River near Seymour, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Oct. 1967 to Sept. 1979, Oct. 1996 to current year.

PESTICIDE DATA: Oct. 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Oct. 1967 to Sept. 1979, Oct. 1996 to current year.

WATER TEMPERATURE: Oct. 1967 to Sept. 1979, Oct. 1996 to current year.

INSTRUMENTATION.--Water-quality monitor Aug. 1968 to Sept. 1979, Oct. 1996 to current year.

REMARKS.--Temperature records fair. Specific conductance records poor. Interruption in the record was caused by malfunctions of the instrument. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and a regression relation between each chemical constituent and specific conductance. The computation of the selected constituent loads might include estimated discharge or specific conductance data. New regression equations were developed based on data from water years 1998 to 2003. The standard error of estimate for dissolved solids is 5%, chloride is 16%, sulfate is 12% and for hardness is 14%. Regression equations developed for this station may be obtained from the U.S. Geological Survey Texas District Office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 30,800 microsiemens/cm, Feb. 12, 1969; minimum, 160 microsiemens/cm, Sept. 19, 2002.

WATER TEMPERATURE: Maximum, 39.4°C, July 13-14, 1998; minimum, -0.6°C, Jan. 23, 2003.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 24,700 microsiemens/cm, June 2; minimum, 466 microsiemens/cm, June 25.

WATER TEMPERATURE: Maximum, 38.1°C, July 11; minimum, -0.6°C, Jan. 23.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf, uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorption ratio (00931)
									hardness, wat flt field, mg/L as CaCO3 (00904)				
OCT 17...	1350	17	14100	8.0	20.6	10.5	122	2200	2100	624	153	2490	23
NOV 13...	1250	56	9280	8.1	12.5	10.8	104	1700	1600	481	131	1380	14
DEC 10...	1400	101	6810	8.1	9.1	11.7	103	1200	1100	324	91.7	982	12
JAN 28...	1125	37	13400	8.1	9.1	11.2	102	2500	2400	678	207	2150	19
FEB 18...	1040	31	16600	7.9	9.1	11.5	106	2800	2700	751r	230	3130	26
MAR 17...	1110	23	16300	8.0	19.4	9.5	111	2800	2600	748	220	2800	23
APR 02...	1340	18	17700	8.1	24.6	8.5	109	3000	2900	817	237	3240	26
MAY 20...	1240	310	2110	8.8r	15.1	9.0	92	270	210	68.0r	24.2	307r	8
JUN 17...	1100	39	8150	7.9	26.3	7.6	96	1500	1400	431	106	1250	14
JUL 17...	1055	2.4	12000	8.0	28.3	7.4	98	2500	2400	673d	194d	1990d	17
SEP 03...	1145	11	4300	7.9	24.9	7.7	94	820	740	240d	52.3d	626d	10
Date	Potassium, water, fltrd, mg/L (00935)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate, water, fltrd, mg/L (00945)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)	Nitrate, water, fltrd, mg/L as N (00618)	Nitrite, water, fltrd, mg/L as N (00613)	Nitrite + nitrate, water, fltrd, mg/L as N (00631)	Ammonia, water, fltrd, mg/L as N (00608)	Total nitrogen, water, unfltrd mg/L (00600)
OCT 17...	11.0	114	1780	3970	.3	5.9	9100	33	--	<.008	<.06	.05	--
NOV 13...	10.0	148	1510	2310	.30	7.3	5920	25	--	<.008	.07	.05	.26
DEC 10...	7.90	126	1030	1600	.30	6.0	4120	180	--	E.007	.48	E.03	1.1
JAN 28...	12.7	180r	1990	3470	.34	5.8	8630	16	--	<.008	.17	.06	--
FEB 18...	13.5	153	2200	4420	.36	4.5	10800	<10	--	<.008	E.04	.06	--
MAR 17...	14.2	136	2250	4530	.37	4.2	10600	<10	--	<.008	<.06	.06	--
APR 02...	19.5	138	2460	5030	.36	5.1	11900	<10	--	<.008	<.06	.05	--
MAY 20...	3.21	60	279d	492d	.4	4.1	1220	E16900	.55	.017	.56	.10	8.3
JUN 17...	11.7	123	1210	1980	.3	8.7	5080	178	--	<.008	.07	E.03	.58
JUL 17...	17.2d	131	1670d	3120d	.3	9.9	7760	<10	--	<.008	<.06	.06	--
SEP 03...	8.28d	79	746d	946d	.5	8.9	2680	118	--	<.008	.12	E.02n	.51

07311900 Wichita River near Seymour, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Organic nitro- gen, water, unfltrd mg/L (00605)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Phos- phorus, water, unfltrd mg/L (00665)	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Arsenic water unfltrd ug/L (01002)	Arsenic water, fltrd, ug/L (01000)	Barium, water, unfltrd recover- able, ug/L (01007)	Barium, water, fltrd, ug/L (01005)	Cadmium water, unfltrd ug/L (01027)	Cadmium water, fltrd, ug/L (01025)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Chrom- ium, water, fltrd, ug/L (01030)
OCT 17...	.16	.21	E.03	<.04	<.02	4	3.6	114	124	<.21	<.22	E1.1n	<1.6
NOV 13...	.13	.18	E.02	E.03	<.02	5	3.3	110	117	<.14	<.15	E.7	<.8
DEC 10...	--	.58	.18	<.04	<.02	4	3.5	144	106	<.10	<.11	6.1	<1.6
JAN 28...	--	E.09	<.04	<.04	<.02	<4	3.6	45	45	<.21	<.22	<1.6	<4.0
FEB 18...	.05	.11	<.04	<.04	<.02	<4	3.7	43	43	<.24	<.26	<6.4	<1.6
MAR 17...	--	E.09	<.04	<.04	<.02	<4	3.5	44	42	<.24	<.26	<3.2	<1.6
APR 02...	--	E.09n	E.02n	E.03n	<.02	<4	2.2	41	45	<.24	E.13n	<1.6	<1.6
MAY 20...	7.6	7.7r	7.43r	<.04	<.02	25	6.5	310	345	.33	E.02n	63.0d	<.8
JUN 17...	--	.51	.12	<.04	<.02	7	6.8	199	193	<.14	<.15	3.3	<.8
JUL 17...	.18	.25	<.04	<.04	<.02	5d	5.2d	92d	84d	<.17d	.66d	<1.6d	<.8
SEP 03...	--	.40	.08	<.04	<.18d	6	6.0d	148d	123d	<.07d	E.04nd	2.6	<.8
Date	Copper, water, unfltrd recover- able, ug/L (01042)	Copper, water, fltrd, ug/L (01040)	Iron, water, unfltrd recover- able, ug/L (01045)	Iron, water, fltrd, ug/L (01046)	Lead, water, unfltrd recover- able, ug/L (01051)	Lead, water, fltrd, ug/L (01049)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, unfltrd recover- able, ug/L (71900)	Mercury water, fltrd, ug/L (71890)	Nickel, water, unfltrd recover- able, ug/L (01067)	Nickel, water, fltrd, ug/L (01065)	Selen- ium, water, unfltrd ug/L (01147)
OCT 17...	9.3	10.7	340	<100	Mn	<.48	84	71.9	.02	<.02	30	27.6	E2.0n
NOV 13...	16.3	4.5	370	<50	M	<.32	36	25.2	E.01	<.02	25	18.6	7.8
DEC 10...	9.4	5.2	2850	<50	2	.28	68	7.4	<.02	<.02	24	11.1	5.0
JAN 28...	21.4	7.8	<20	<100	<.36	.48	45	37.5	<.02	<.02	52	44.6	8.3
FEB 18...	25.8	12.8	<20	E62n	<.42	E.32n	48	48.8	E.01	<.02	52	32.9	15.3
MAR 17...	11.0	9.7	<80	<100	<.42	<.56	56	56.0	<.02	<.02	23	25.1	9.5
APR 02...	24.4	10.2	<20	<100	<.42	<.56	58	59.4	<.02	<.02	30	9.38	4.7
MAY 20...	24.1	3.2	24600	<8	102d	.17	3750d	10.8	.04	<.02	130d	3.36	3.1
JUN 17...	8.3	5.7	2290	<8	2	<.32	77	17.0	.02	E.01	17	7.57	E1.5n
JUL 17...	8.5d	5.9d	310d	<80d	<.30d	<.40d	258d	236d	<.02	<.02	20d	10.8d	2.9d
SEP 03...	8.3d	8.6d	2320d	<24d	1d	<.16d	68d	17.4d	<.02	<.02	11d	5.93d	2.1d

07311900 Wichita River near Seymour, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

[illegible]

07311900 Wichita River near Seymour, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	beta- HCH, water, unfltrd ug/L (39338)	cis- Chlor- dane, water, unfltrd ug/L (39062)	delta- HCH, water, unfltrd ug/L (34259)	p,p'- DDD, water, unfltrd ug/L (39310)	p,p'- DDE, water, unfltrd ug/L (39320)	p,p'- DDT, water, unfltrd ug/L (39300)	trans- Chlor- dane, water, unfltrd ug/L (39065)
OCT 17...	--	--	--	--	--	--	--
NOV 13...	--	--	--	--	--	--	--
DEC 10...	--	--	--	--	--	--	--
JAN 28...	--	--	--	--	--	--	--
FEB 18...	--	--	--	--	--	--	--
MAR 17...	--	--	--	--	--	--	--
APR 02...	<.03	<.1	<.09	<.1	<.04	<.1	<.1
MAY 20...	--	--	--	--	--	--	--
JUN 17...	<.03	<.1	<.09	<.1	<.04	<.1	<.1
JUL 17...	--	--	--	--	--	--	--
SEP 03...	--	--	--	--	--	--	--

Remark codes used in this report:

< -- Less than
 E -- Estimated value
 M -- Presence verified, not quantified

Value qualifier codes used in this report:

d -- Diluted sample: method hi range exceeded
 n -- Below the NDV
 r -- Value verified by rerun, same method

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 2002 TO SEPTEMBER 2003

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)	HARDNESS (CA, MG) (MG/L)
OCT.	2002	9252	2760	1810	45110	670	16640	490	12260	580
NOV.	2002	2784	6300	4160	31240	1600	12060	1100	7900	1200
DEC.	2002	5472	5070	3330	49260	1300	18720	860	12780	1000
JAN.	2003	1387	12080	8040	30100	3300	12240	1900	6930	2200
FEB.	2003	848	15600	10450	23920	4400	10100	2200	5100	2600
MAR.	2003	703	15360	10280	19520	4300	8230	2200	4170	2600
APR.	2003	2612	7450	4930	34760	1900	13710	1200	8470	1400
MAY	2003	1271	7970	5270	18100	2100	7160	1300	4380	1500
JUNE	2003	6568	3800	2500	44300	950	16850	650	11480	760
JULY	2003	616.49	4070	2680	4450	1000	1680	700	1170	820
AUG.	2003	935	5390	3540	8930	1300	3350	940	2370	1100
SEPT	2003	3004.4	4220	2770	22430	1000	8310	750	6060	880
TOTAL		35452.89	**	**	332100	**	129000	**	83060	**
WTD.AVG.		97	5260	3470	**	1300	**	870	**	1000

RED RIVER BASIN

07311900 Wichita River near Seymour, TX--Continued

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

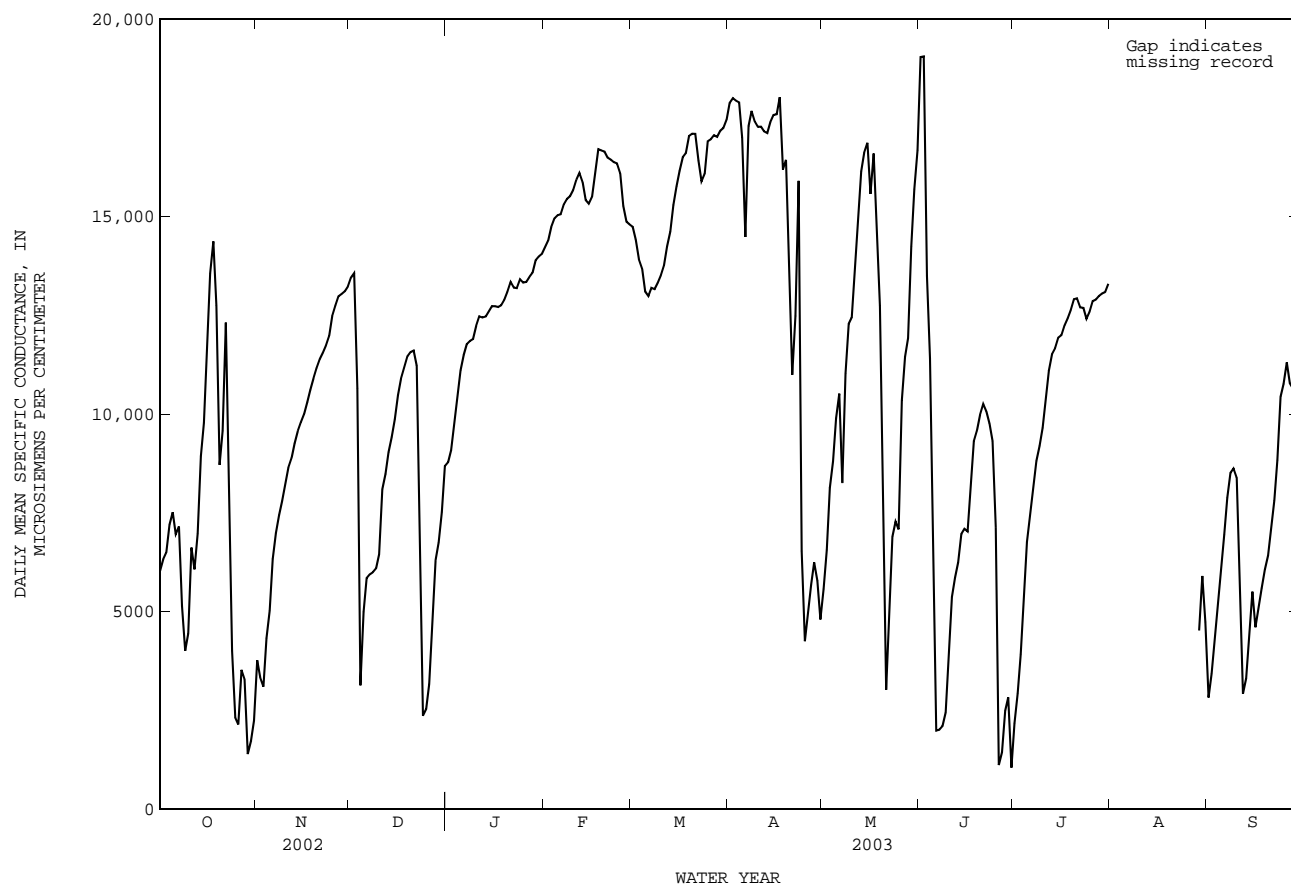
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	6200	5870	6040	4210	3470	3780	13600	13400	13500	8870	8700	8780
2	6410	6200	6330	4210	2500	3340	13600	13500	13600	9470	8840	9090
3	6960	6320	6500	3790	2500	3110	13600	2530	10700	10100	9470	9830
4	7410	6960	7210	4660	3790	4330	5570	1780	3140	10800	10100	10400
5	7630	7410	7520	5680	4390	5030	---	---	e5000	11400	10800	11100
6	7490	6680	6960	6970	5580	6330	---	---	e5850	11700	11300	11500
7	7350	6940	7160	7150	6810	6990	---	---	e5950	11900	11700	11800
8	7390	1300	5150	7700	7110	7450	---	---	e6000	11900	11800	11900
9	5850	1240	4020	8010	7700	7810	---	---	e6100	12100	11900	11900
10	5730	2660	4450	8470	8010	8230	7350	5770	6450	12400	12100	12200
11	7070	5730	6620	8760	8470	8650	8620	7350	8100	12600	12300	12500
12	6370	5760	6070	9080	8750	8890	8680	8360	8490	12600	12300	12400
13	7950	6340	6980	9480	9080	9260	9380	8640	9040	12500	12400	12500
14	9830	7950	8940	9720	9480	9570	9600	9100	9430	12700	12000	12600
15	10500	9540	9780	9890	9720	9790	10200	9440	9870	12800	12500	12700
16	12500	10500	11500	10200	9890	10000	10800	10200	10500	12900	12700	12700
17	14500	12500	13600	10500	10200	10300	11000	10800	10900	12800	12500	12700
18	14600	13800	14400	10800	10500	10600	11400	11000	11200	13000	12600	12800
19	14000	11400	12700	11000	10800	10900	11600	11400	11500	13000	12800	12900
20	11400	7540	8720	11300	11000	11200	11600	11500	11600	13300	12900	13100
21	10800	8460	9580	11500	11300	11400	11700	11200	11600	13400	13200	13300
22	13800	10800	12300	11700	11500	11500	11800	9950	11200	13300	12800	13200
23	14100	1660	8570	11900	11700	11700	11800	1840	6090	13500	12400	13200
24	6080	1980	4010	12300	11900	12000	4090	1430	2370	13500	13100	13400
25	3590	1100	2330	12600	12300	12500	3170	2350	2540	13500	12900	13300
26	2490	1660	2150	12900	12600	12700	4210	2510	3170	13500	13200	13300
27	4760	2490	3530	13000	12900	13000	5660	4210	4830	13600	13400	13500
28	4930	825	3300	13100	13000	13000	6650	5660	6310	13700	13500	13600
29	1860	1020	1400	13200	13100	13100	6940	6650	6750	14000	13700	13900
30	2000	1510	1730	13400	13200	13200	8260	6940	7520	14100	13800	14000
31	3470	1640	2240	---	---	---	8890	8260	8680	14200	14000	14100
MONTH	14600	825	6830	13400	2500	9320	---	---	8000	14200	8700	12400
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	14300	14100	14200	14800	14600	14700	18100	17600	17900	6510	4390	5580
2	14600	14300	14400	14600	14100	14400	18300	17600	18000	7640	4760	6570
3	14900	14600	14700	14100	13600	13900	18100	17700	17900	8880	6550	8130
4	15100	14800	15000	14000	13100	13700	18100	17600	17900	9830	7180	8810
5	15100	14900	15000	13600	12600	13100	18300	7290	17000	10700	9110	9900
6	15200	15000	15100	13700	12400	13000	16900	7390	14500	11600	7780	10500
7	15400	15200	15300	13900	12700	13200	17800	16700	17300	10600	7570	8260
8	15500	15200	15400	13600	12800	13200	18200	17100	17700	12900	9710	11000
9	15600	15400	15500	---	---	e13300	17800	17000	17400	13200	10900	12300
10	15800	15600	15700	---	---	e13500	17600	16900	17300	13700	11500	12400
11	16100	15800	15900	---	---	e13800	17500	17000	17300	15500	10700	14000
12	16200	16000	16100	---	---	e14300	17500	16800	17200	16100	12800	15200
13	16100	15600	15900	---	---	e14600	17300	16700	17100	17800	14800	16100
14	15600	15300	15400	---	---	e15300	17600	17100	17400	18400	14500	16600
15	15400	15300	15300	---	---	e15800	17800	17100	17600	18700	13600	16900
16	15700	15400	15500	---	---	e16200	18300	17000	17600	16900	13900	15600
17	---	---	e16100	---	---	e16500	18600	17000	18000	17700	14800	16600
18	---	---	e16700	16800	16400	16600	17100	14800	16200	16600	13300	14400
19	---	---	e16700	17100	16800	17000	17700	13100	16400	14100	11000	12700
20	---	---	e16600	17200	17000	17100	17900	9880	13300	15800	1560	8090
21	---	---	e16500	17300	16800	17100	12200	9690	11000	5660	1660	3030
22	---	---	e16400	17200	15700	16400	16700	10300	12500	7400	2650	5240
23	---	---	e16400	16000	15700	15900	17300	10700	15900	8730	5680	6900
24	---	---	e16300	16500	15800	16100	---	---	e6540	8830	6600	7290
25	---	---	e16100	17200	16500	16900	---	---	e4260	10300	2070	7090
26	15700	14800	15300	17200	16600	17000	---	---	e4970	12200	8930	10300
27	15000	14700	14900	17400	16800	17100	---	---	e5680	11900	9740	11400
28	14900	14700	14800	17300	16700	17000	6350	---	e6250	13800	11000	11900
29	---	---	---	17400	16900	17200	6240	2460	5790	15600	13600	14200
30	---	---	---	17500	16900	17200	5500	3540	4810	16600	14900	15700
31	---	---	---	17700	17200	17500	---	---	---	18900	14200	16700
MONTH	---	---	15600	---	---	15400	---	---	14000	18900	1560	11300

07311900 Wichita River near Seymour, TX--Continued

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	21700	16200	19000	---	1320	e2180	---	---	---	---	---	e2830
2	24700	15400	19100	---	---	e2940	---	---	---	---	---	e3430
3	19500	6980	13500	---	---	e3930	---	---	---	4970	3960	4400
4	14700	10000	11400	---	---	e5520	---	---	---	5880	4970	5390
5	13300	---	e5000	---	---	e6770	---	---	---	6680	5880	6190
6	---	1920	e2000	---	---	e7490	---	---	---	7410	6560	6950
7	2370	1860	2020	---	---	e8140	---	---	---	8460	7410	7880
8	2590	1900	2110	---	---	e8820	---	---	---	8760	8230	8520
9	2810	2240	2460	---	---	e9200	---	---	---	8750	8420	8630
10	4550	2810	3690	10300	---	e9650	---	---	---	8720	7460	8390
11	6410	4550	5370	11000	9870	10300	---	---	---	8810	879	4920
12	6890	3830	5880	11600	10900	11100	---	---	---	---	1490	e2930
13	6840	5100	6250	11600	11400	11500	---	---	---	---	---	e3320
14	7650	5660	6970	---	---	e11700	---	---	---	---	---	e4420
15	8270	5880	7100	---	---	e11900	---	---	---	---	---	e5510
16	7680	6260	7030	12200	11700	12000	---	---	---	4820	4480	4610
17	8770	7580	8180	12500	12000	12200	---	---	---	5500	4820	5090
18	9610	8770	9310	12600	12200	12400	---	---	---	6190	4670	5590
19	9820	8650	9570	13000	12500	12600	---	---	---	6550	5230	6070
20	10300	9500	9990	13100	12600	12900	---	---	---	6960	6140	6430
21	10700	9700	10300	13100	12700	12900	---	---	---	7530	6880	7140
22	10400	9580	10100	13000	12400	12700	---	---	---	8080	7530	7820
23	10100	9140	9760	13000	12400	12700	---	---	---	10500	7660	8840
24	9670	8720	9320	13000	11200	12400	---	---	---	10800	10100	10400
25	9140	466	7140	12900	12100	12600	---	---	---	11300	9670	10800
26	2060	566	1120	13000	12600	12900	---	---	---	11500	10800	11300
27	1850	1060	1450	13100	12600	12900	---	---	---	11800	9280	10800
28	3050	1850	2500	13200	12800	13000	---	---	---	12100	9900	10600
29	3550	631	2840	13200	12900	13100	---	---	e4530	11400	9900	10800
30	1430	725	1060	13600	12400	13100	---	---	e5910	11900	10400	10900
31	---	---	---	13600	12800	13300	---	---	e4740	---	---	---
MONTH	---	---	7050	---	---	10500	---	---	---	---	---	7030

e Estimated



RED RIVER BASIN

07311900 Wichita River near Seymour, TX--Continued

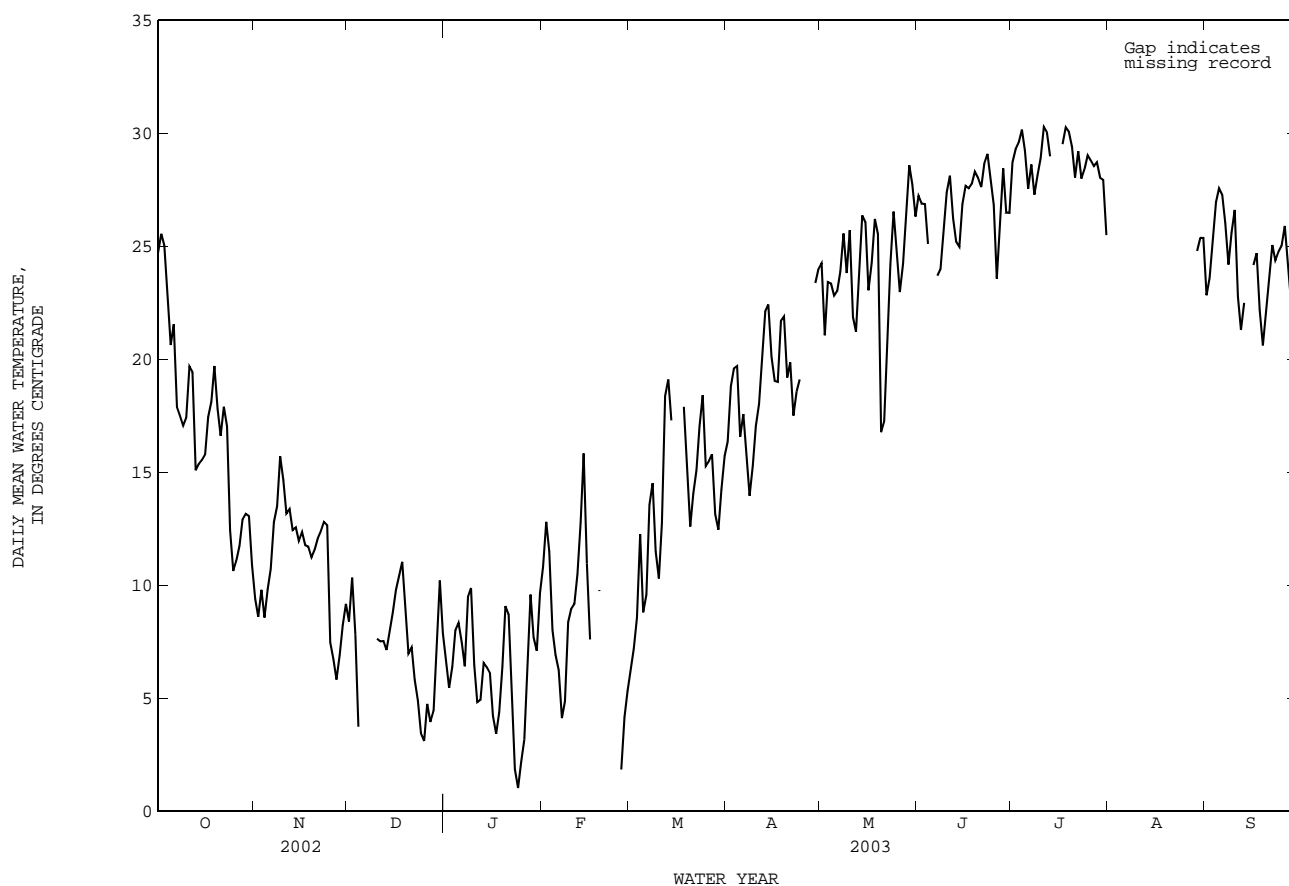
WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	29.0	21.3	24.7	10.2	8.7	9.4	11.9	5.4	8.4	9.5	4.9	6.7
2	30.6	22.2	25.6	9.1	8.2	8.6	14.2	7.7	10.3	8.6	2.8	5.5
3	29.5	21.4	25.0	10.7	9.1	9.8	10.5	4.8	7.8	9.8	3.3	6.4
4	27.2	19.4	23.1	9.3	7.7	8.6	4.9	3.1	3.7	11.3	5.2	8.0
5	24.9	17.3	20.6	12.7	7.3	9.8	---	2.6	---	11.5	5.4	8.3
6	25.9	19.2	21.6	13.8	7.6	10.7	---	---	---	9.0	5.8	7.5
7	20.9	16.6	17.9	15.6	9.2	12.8	---	---	---	10.0	3.0	6.4
8	18.1	16.9	17.5	16.0	10.6	13.5	---	---	---	13.2	6.2	9.5
9	17.4	16.6	17.1	18.9	13.0	15.7	---	---	---	12.0	7.2	9.9
10	18.3	16.7	17.4	16.2	13.1	14.7	10.0	6.3	7.6	9.5	3.9	6.5
11	24.1	16.1	19.7	15.1	11.4	13.2	10.0	5.3	7.5	5.9	3.3	4.8
12	22.1	16.0	19.4	16.3	11.2	13.4	9.5	6.0	7.5	5.3	4.3	4.9
13	17.8	12.7	15.1	15.6	9.6	12.4	10.1	4.6	7.1	9.4	4.7	6.6
14	19.4	13.2	15.4	16.0	10.0	12.6	11.3	5.2	7.9	8.3	4.6	6.4
15	20.9	11.3	15.5	14.9	9.4	12.0	12.3	5.5	8.8	7.3	5.3	6.1
16	20.9	11.8	15.8	15.8	9.8	12.4	12.0	8.1	9.8	6.7	1.9	4.2
17	22.4	13.8	17.4	15.3	8.8	11.8	13.8	7.5	10.4	6.3	1.1	3.4
18	20.5	16.6	18.1	14.7	9.6	11.7	12.8	9.1	11.0	8.8	0.9	4.4
19	25.7	16.3	19.7	14.9	7.9	11.2	11.2	6.9	9.2	10.8	2.7	6.4
20	21.6	15.1	17.8	15.2	8.6	11.6	10.4	4.2	7.0	13.6	5.3	9.1
21	18.9	14.2	16.6	16.0	8.6	12.1	10.6	4.6	7.2	11.4	6.4	8.7
22	19.6	16.2	17.9	15.8	9.5	12.4	7.4	3.7	5.8	6.4	2.0	4.5
23	18.2	15.3	17.0	16.8	9.7	12.8	6.4	3.4	4.9	5.4	-0.6	1.9
24	15.3	10.8	12.4	16.6	9.7	12.7	4.0	3.0	3.5	2.2	-0.4	1.0
25	11.4	9.8	10.6	9.7	6.0	7.5	4.4	1.5	3.1	4.6	-0.1	2.2
26	11.7	10.4	11.1	9.2	5.3	6.7	6.7	3.3	4.7	5.8	1.7	3.2
27	12.4	11.1	11.8	9.2	3.1	5.8	5.4	2.2	4.0	11.0	1.9	5.7
28	13.7	12.3	12.9	11.0	3.7	6.9	7.5	1.4	4.4	14.6	5.6	9.6
29	13.6	12.6	13.2	11.1	5.5	8.2	9.8	4.8	7.4	9.8	5.7	7.7
30	13.6	12.2	13.1	12.4	7.0	9.2	12.5	9.0	10.2	11.8	3.1	7.1
31	12.2	10.2	10.9	---	---	---	10.0	5.6	7.9	14.4	6.2	9.7
MONTH	30.6	9.8	17.2	18.9	3.1	11.0	---	---	---	14.6	-0.6	6.2
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	15.6	6.9	10.8	8.1	5.2	6.3	23.5	10.5	16.4	30.1	19.3	24.3
2	17.6	9.0	12.8	9.1	6.1	7.2	26.5	12.8	18.8	23.9	19.3	21.1
3	14.1	7.9	11.5	14.3	4.1	8.6	25.4	16.5	19.6	30.3	19.0	23.4
4	12.5	4.4	8.0	18.4	8.5	12.3	26.4	15.2	19.7	27.5	20.5	23.4
5	8.4	5.5	6.9	13.9	4.2	8.8	23.3	9.3	16.6	29.7	17.7	22.8
6	7.2	3.6	6.2	16.4	4.2	9.6	23.3	9.8	17.6	29.8	17.3	23.0
7	8.8	0.4	4.1	20.2	7.7	13.6	22.1	10.8	15.8	31.8	18.3	23.9
8	7.5	3.1	4.9	18.6	12.1	14.5	20.8	8.9	14.0	30.2	22.8	25.6
9	13.7	5.0	8.4	16.8	7.8	11.5	24.4	7.8	15.3	30.7	17.8	23.8
10	13.5	5.2	9.0	14.5	7.3	10.3	25.1	10.1	17.0	31.8	21.2	25.7
11	14.0	5.3	9.2	19.5	7.6	12.8	24.9	12.6	18.0	29.2	15.9	21.9
12	15.7	6.0	10.5	25.0	13.3	18.4	29.0	12.7	20.1	25.6	17.0	21.2
13	14.7	11.1	12.8	24.1	14.9	19.1	29.2	16.5	22.1	31.9	18.9	24.2
14	19.6	13.3	15.8	24.5	12.1	17.3	29.8	16.7	22.4	32.4	22.2	26.4
15	14.8	6.3	11.0	---	13.4	---	22.5	18.5	20.1	31.6	22.9	26.1
16	13.0	4.5	7.6	---	---	---	25.8	12.6	19.0	27.0	19.1	23.1
17	---	---	---	25.2	---	---	22.2	15.5	19.0	32.0	18.2	24.3
18	13.3	---	---	22.0	14.9	17.9	28.3	16.5	21.7	34.0	20.0	26.2
19	11.3	8.6	9.8	17.3	13.1	15.1	26.4	17.9	21.9	32.6	21.0	25.5
20	---	---	---	14.9	11.2	12.6	25.2	14.6	19.2	21.0	14.4	16.8
21	---	---	---	20.4	8.7	14.0	26.4	14.6	19.9	19.6	15.7	17.2
22	---	---	---	19.5	12.3	15.1	19.4	16.4	17.5	23.9	17.9	20.5
23	---	---	---	23.9	11.6	17.0	22.2	16.0	18.6	29.7	20.0	24.2
24	---	---	---	24.9	13.1	18.4	20.6	17.7	19.1	32.8	21.3	26.5
25	4.4	---	---	17.6	12.5	15.3	---	---	---	28.7	20.6	24.6
26	3.2	0.6	1.8	22.9	9.4	15.5	---	---	---	28.6	19.2	23.0
27	6.4	2.5	4.2	21.6	11.6	15.8	---	---	---	30.3	18.7	24.2
28	6.5	4.0	5.3	18.8	9.6	13.1	26.8	---	---	34.4	20.0	26.5
29	---	---	---	19.0	7.5	12.5	30.0	18.7	23.4	36.5	22.5	28.6
30	---	---	---	21.8	8.4	14.2	30.1	19.1	24.0	34.1	22.3	27.7
31	---	---	---	22.8	9.9	15.7	---	---	---	31.9	22.7	26.3
MONTH	---	---	---	---	---	---	---	---	---	36.5	14.4	23.9

07311900 Wichita River near Seymour, TX--Continued

WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	35.6	20.5	27.2	31.7	26.6	28.7	---	---	---	24.5	21.9	22.8
2	30.9	23.1	26.9	33.8	25.7	29.3	---	---	---	27.8	21.0	23.6
3	30.8	23.4	26.9	35.8	25.1	29.6	---	---	---	30.0	22.4	25.4
4	29.4	22.2	25.1	36.4	25.5	30.2	---	---	---	32.8	23.1	27.0
5	---	19.8	---	35.2	25.2	29.2	---	---	---	34.7	22.3	27.6
6	23.5	---	---	32.6	24.2	27.6	---	---	---	34.8	22.3	27.3
7	26.7	21.2	23.7	34.9	24.4	28.6	---	---	---	33.0	21.5	26.0
8	26.3	21.6	24.0	31.3	24.0	27.3	---	---	---	30.5	19.8	24.2
9	28.6	23.6	25.9	34.7	23.2	28.2	---	---	---	31.8	20.5	25.6
10	31.1	24.4	27.4	35.7	24.2	28.9	---	---	---	32.3	21.8	26.6
11	33.7	24.7	28.1	38.1	24.5	30.3	---	---	---	25.5	21.8	22.8
12	30.4	22.6	26.2	37.2	24.9	30.1	---	---	---	22.0	20.4	21.3
13	27.7	22.9	25.2	36.1	24.3	29.0	---	---	---	25.2	20.5	22.5
14	31.5	21.5	25.0	---	---	---	---	---	---	---	---	---
15	31.8	22.6	26.9	---	---	---	---	---	---	25.1	---	---
16	32.0	23.8	27.7	37.7	---	---	---	---	---	28.9	20.5	24.2
17	32.5	23.2	27.6	36.0	24.0	29.5	---	---	---	29.7	20.9	24.7
18	33.2	23.1	27.8	38.0	24.6	30.3	---	---	---	24.6	18.8	22.2
19	33.9	24.1	28.3	37.8	24.1	30.1	---	---	---	25.8	17.0	20.6
20	34.6	23.7	28.0	37.2	23.4	29.4	---	---	---	28.6	17.0	22.1
21	34.0	22.3	27.6	34.3	23.2	28.1	---	---	---	28.1	20.5	23.7
22	35.5	23.7	28.7	37.7	23.4	29.2	---	---	---	30.5	20.4	25.1
23	35.7	24.3	29.1	33.9	23.6	28.0	---	---	---	29.3	21.8	24.4
24	32.9	24.9	28.0	36.0	22.7	28.4	---	---	---	30.8	20.4	24.8
25	33.3	23.5	26.8	35.8	24.3	29.0	---	---	---	28.9	22.4	25.0
26	25.0	22.1	23.6	35.1	23.6	28.8	---	---	---	32.3	20.9	25.9
27	32.8	20.3	25.9	35.2	23.8	28.6	---	---	---	28.4	21.2	24.3
28	35.3	22.9	28.5	35.2	23.3	28.7	---	---	---	29.2	17.8	22.4
29	33.2	21.6	26.5	33.5	22.9	28.0	25.4	24.5	24.8	25.5	17.3	20.8
30	33.5	21.2	26.5	31.6	24.6	27.9	26.8	24.0	25.4	27.1	16.2	21.0
31	---	---	---	27.3	24.3	25.5	26.6	24.2	25.4	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---



07312000 Lake Kemp near Mabelle, TX

LOCATION.--Lat 33°45'30", long 99°09'03", Baylor County, Hydrologic Unit 11130206, in outlet gate tower near center of dam on Wichita River, 6.2 mi north of Mabelle, 13 mi northeast of Seymour, and 126.7 mi upstream from mouth.

DRAINAGE AREA.--2,086 mi².

PERIOD OF RECORD.--Oct. 1922 to Sept. 2002 (daily mean contents). Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1972, nonrecording gage at same site and at datum 2.40 ft higher. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 8,890 ft long. The original dam was completed Aug. 25, 1923, but deliberate impoundment had begun Oct. 1, 1922. Enlargement of the dam was completed in Nov. 1973. The 3,000-foot-wide uncontrolled spillway is located approximately 600 ft to right and slightly upstream from right end of dam. The controlled outlet works near center of dam consist of two hydraulically operated slide gates 5 ft 8-in by 13 ft with a 13-foot-diameter conduit and spillway basin. The dam and lake are owned by the Wichita County Water Improvement District No. 2. Water is used for irrigation in the Wichita River Valley, oil field operation, municipal, and industrial uses. The capacity table is based on a resurvey made in 1973. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	1,183.0
Crest of spillway.....	1,160.0
Top of flood-control pool.....	1,156.0
Top of conservation pool.....	1,147.1
Lowest gated outlet (invert).....	1,090.0

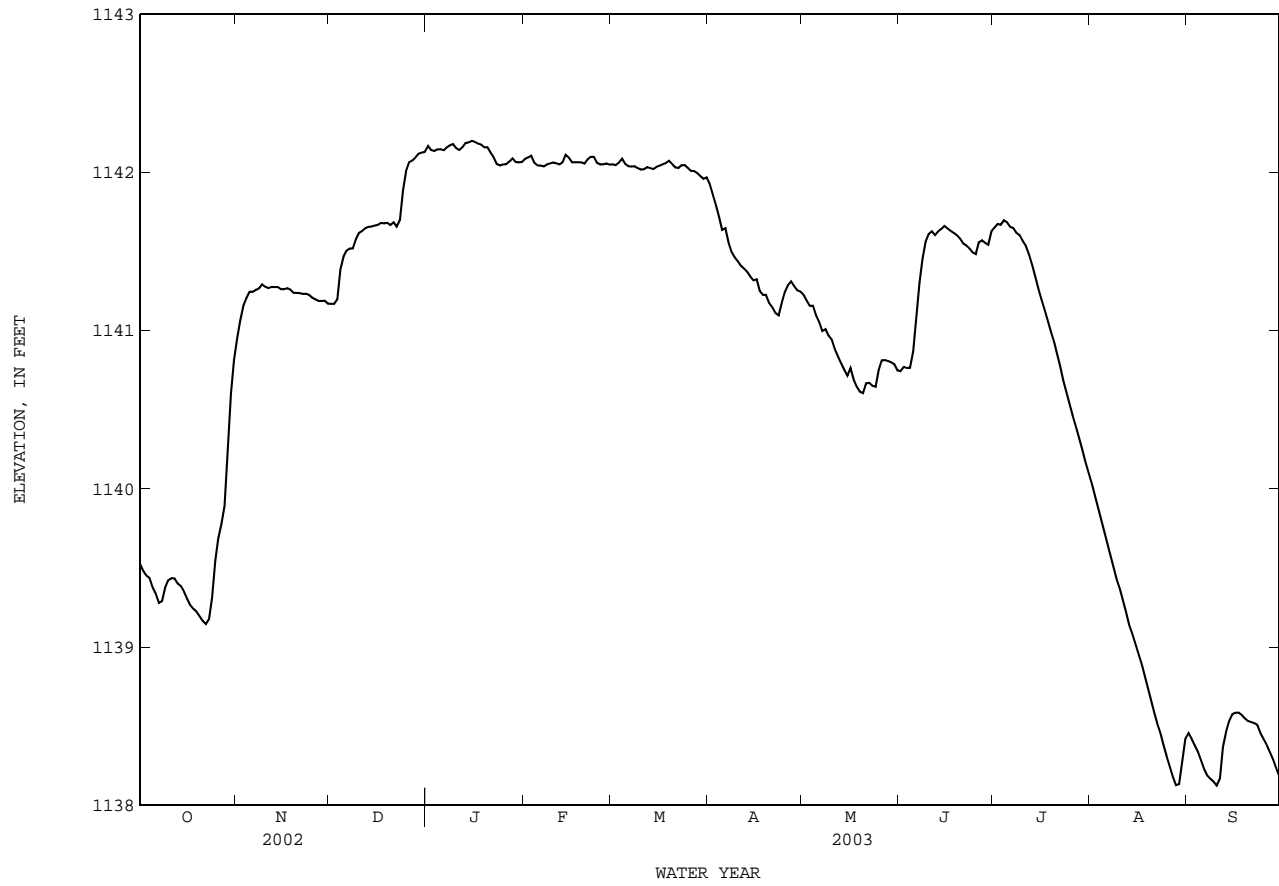
COOPERATION.--Capacity table No. 4-C was provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 420,900 acre-ft, June 30, 1941, elevation, 1,152.0 ft, present datum; minimum since first appreciable storage, 26,160 acre-ft, June 30, 1953, elevation, 1,108.0 ft, present datum.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,142.25 ft, Jan. 1, 9, 16; minimum elevation, 1,138.07 ft, Aug. 29.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

07312000 Lake Kemp near Mabelle, TX--Continued



RED RIVER BASIN

07312100 Wichita River near Mabelle, TX

LOCATION.--Lat 33°45'36", long 99°08'33", Baylor County, Hydrologic Unit 11130206, near left bank at downstream side of bridge on U.S. Highways 183 and 283, 0.3 mi downstream from Lake Kemp Dam, 6.2 mi north of Mabelle, and 13 mi northeast of Seymour.

DRAINAGE AREA.--2,086 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1952-58 (occasional discharge measurements), Oct. 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,062.72 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. Since installation of gage in Oct. 1959, at least 10% of contributing drainage area has been regulated. Water is released from Lake Kemp (station 07312000) to supply Lake Diversion, 12.5 mi downstream. Water from Lake Diversion is released for mining, recreation, and for irrigation in the vicinity of Wichita Falls.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	118	1.4	0.85	0.74	0.68	0.64	309	139	1.1	3.4	257	168
2	118	2.1	0.89	0.71	0.64	0.64	382	140	1.1	3.6	256	168
3	117	1.5	2.4	0.71	0.74	0.56	382	139	1.1	3.6	253	165
4	118	1.1	1.4	0.77	0.79	0.52	381	137	1.1	3.9	253	166
5	119	1.00	0.94	0.83	0.83	0.58	386	139	1.6	3.4	254	165
6	119	0.94	0.87	0.92	0.93	0.55	381	138	2.1	3.5	259	150
7	193	0.94	0.85	0.88	0.75	0.56	370	141	1.2	3.4	257	0.80
8	152	0.89	0.91	0.73	0.68	0.56	185	131	1.5	3.5	260	0.50
9	1.7	0.84	2.6	0.74	0.71	0.60	144	126	1.1	3.6	261	0.38
10	1.4	0.98	1.0	0.71	0.75	0.58	142	126	1.1	3.7	259	0.31
11	1.3	1.1	0.79	0.78	1.1	0.56	144	127	1.1	96	257	0.45
12	1.5	1.1	0.78	0.87	0.76	0.56	143	126	1.3	215	257	0.26
13	1.6	1.0	0.75	0.84	0.72	0.62	141	126	2.8	254	254	0.22
14	80	1.0	0.75	0.90	0.59	0.62	141	128	1.5	250	246	0.24
15	128	1.0	0.74	0.94	0.69	0.63	141	128	1.8	250	248	0.20
16	126	0.94	0.74	1.3	0.67	0.59	140	126	1.2	250	248	0.20
17	124	0.90	0.69	80	0.58	0.58	140	127	1.3	250	247	0.20
18	122	0.92	0.73	123	0.61	0.63	140	126	1.3	249	245	0.25
19	123	0.93	0.76	123	0.66	0.66	139	126	1.4	251	246	0.25
20	122	0.99	0.74	123	0.62	0.69	139	128	1.5	250	247	0.24
21	80	0.91	0.71	124	0.68	0.69	140	126	1.5	250	246	0.29
22	55	0.92	0.74	125	0.61	0.69	140	126	1.6	252	245	0.32
23	56	0.92	1.1	124	0.65	0.73	141	78	1.8	253	244	60
24	51	1.0	0.83	43	0.68	0.68	141	1.1	2.1	252	242	143
25	1.3	1.1	0.68	1.2	0.64	0.90	141	1.4	1.9	250	217	140
26	1.0	1.0	0.69	1.2	0.63	0.81	140	1.1	2.3	253	165	140
27	0.96	0.86	0.70	1.1	0.61	0.68	139	1.1	2.3	255	165	140
28	4.1	0.91	0.69	0.78	0.62	0.80	140	0.99	2.6	254	165	140
29	1.5	0.88	0.66	0.90	---	0.74	140	1.0	3.5	254	166	139
30	1.1	0.92	0.70	0.68	---	0.77	139	0.98	3.4	257	166	139
31	1.2	---	0.71	0.72	---	114	---	1.1	---	256	167	---
TOTAL	2139.66	30.99	28.39	884.95	19.62	133.42	5871	2962.77	51.2	5136.6	7252	2028.11
MEAN	69.0	1.03	0.92	28.5	0.70	4.30	196	95.6	1.71	166	234	67.6
MAX	193	2.1	2.6	125	1.1	114	386	141	3.5	257	261	168
MIN	0.96	0.84	0.66	0.68	0.58	0.52	139	0.98	1.1	3.4	165	0.20
AC-FT	4240	61	56	1760	39	265	11650	5880	102	10190	14380	4020

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003, BY WATER YEAR (WY)

	MEAN	132	93.5	37.6	59.1	61.2	132	156	163	284	304	280	175
MAX	952	1271	247	648	769	659	659	1246	1810	923	1742	915	
(WY)	1987	1987	1987	1992	1992	1968	1968	1990	1992	1967	1995	1986	
MIN	0.66	0.39	0.24	0.34	0.50	0.50	0.23	0.64	1.71	51.8	30.9	1.66	
(WY)	1985	1974	1997	2001	2002	1989	2001	2001	2003	2002	1978	1974	

SUMMARY STATISTICS

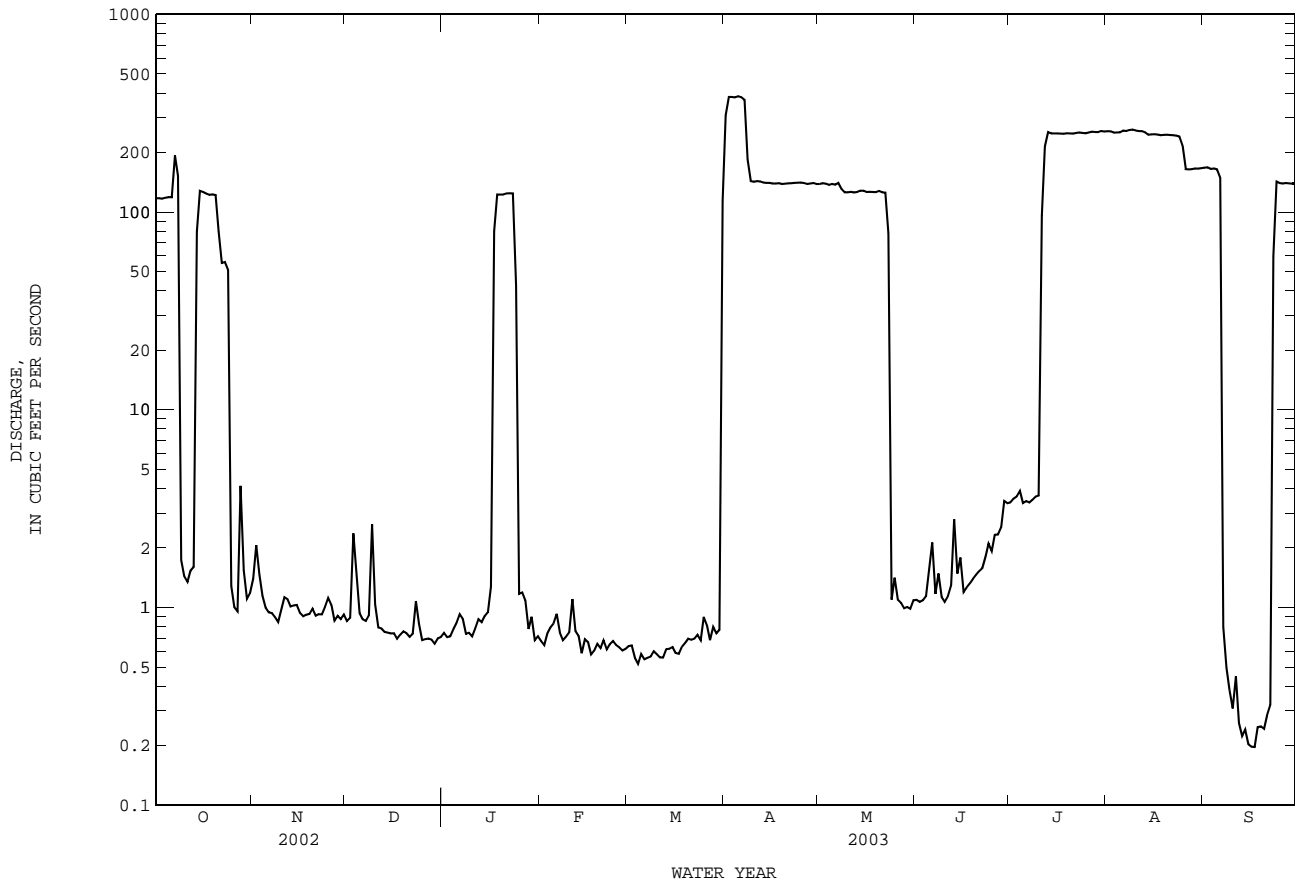
FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1960 - 2003

ANNUAL TOTAL	18677.87	26538.71	
ANNUAL MEAN	51.2	72.7	157
HIGHEST ANNUAL MEAN			522
LOWEST ANNUAL MEAN			59.9
HIGHEST DAILY MEAN	381	Aug 6	3530
LOWEST DAILY MEAN	0.16	Jun 12	0.05
ANNUAL SEVEN-DAY MINIMUM	0.24	Jun 8	0.07
MAXIMUM PEAK FLOW			4290
MAXIMUM PEAK STAGE			10.47
ANNUAL RUNOFF (AC-FT)	37050	52640	113700
10 PERCENT EXCEEDS	198	250	383
50 PERCENT EXCEEDS	0.94	1.5	12
90 PERCENT EXCEEDS	0.34	0.63	0.64

07312100 Wichita River near Mabelle, TX--Continued



07312100 Wichita River near Mabelle, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Dec. 1965 to May 1993, Oct. 1994 to current year.

PESTICIDE DATA: Oct. 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1968 to May 1993 (local observer), Oct. 1994 to current year.

WATER TEMPERATURE: July 1968 to May 1993 (local observer), Oct. 1994 to current year.

INSTRUMENTATION.--Water-quality monitor since Oct. 1994.

REMARKS.--Records fair. Interruption in the water temperature record caused by malfunction of the instrument. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and a regression relation between each chemical constituent and specific conductance. The computation of the selected constituent loads might include estimated discharge or specific conductance data. New regression equations were developed based on data from water years 1994 to 2003. The standard error of estimate for dissolved solids is 2%, chloride is 3%, sulfate is 7% and for hardness is 4%. Regression equations developed for this station may be obtained from the U.S. Geological Survey Texas District Office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 7,110 microsiemens/cm, May 13, 14, 1980; minimum daily, 561 microsiemens/cm, May 28, 1975.

WATER TEMPERATURE: Maximum, 36.2°C, June 27, 2001; minimum daily, 0.0°C, Dec. 20, 1973, Feb. 9, 17, 1980.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 5,090 microsiemens/cm, Sept. 22; minimum, 1,540 microsiemens/cm, Oct. 28.

WATER TEMPERATURE: Maximum, 33.6°C, July 2; minimum, 1.9°C, Feb. 25.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard-ness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorption ratio (00931)
OCT													
09...	1320	1.4	4300	7.6	18.5	6.9	74	770	630	212	58.8	612	10
NOV													
13...	1510	.94	4670	8.3	17.7	13.4	142	810	670	215	66.8	661	10
DEC													
02...	1045	.89	4810	7.8	10.6	9.9	91	920	740	248	73.4	699	10
JAN													
31...	1210	.80	4670	7.8	12.1	9.7	90	890	700	241	70.5	717	10
FEB													
13...	1215	.69	4710	7.6	14.0	7.9	77	910	730	244	73.3	745	11
MAR													
18...	1345	.63	4800	7.8	22.0	12.8	151	910	740	241	75.1	694	10
APR													
09...	1135	143	4230	8.3	14.8	10.6	104	770	670	213	56.5	637	10
MAY													
07...	1310	140	4400	8.2	21.8	9.7	112	780	690	218	58.0	647	10
JUN													
18...	1145	1.4	4750	7.5	27.1	6.9	87	880	730	240	68.8	711	10
JUL													
29...	1010	255	4620	8.2	28.1	8.2	106	760	670	209d	58.1d	653d	10
AUG													
22...	1200	243	4660	8.1	27.7	8.0	103	810	720	223dp	61.5dp	679dp	10
SEP													
22...	1125	.33	4910	7.8	22.4	9.5	111	990	790	266d	79.3d	736d	10

07312100 Wichita River near Mabelle, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Potas- sium, water, fltrd, mg/L (00935)	Alka- linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate water, fltrd, mg/L (00945)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue total at 105 deg. C, sus- pended, mg/L (00530)	Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)	Total nitro- gen, water, unfltrd mg/L (00600)	Organic nitro- gen, water, unfltrd mg/L (00605)
OCT 09...	5.91	144	604	932	.40	9.5	2520	<10	E.006	.07	.17	.56	.32
NOV 13...	5.88	141	669	1040	.38	7.9	2750	<10	<.008	<.06	.10	--	.17
DEC 02...	5.58	181	680	1090	.38	10.2	2920	<10	E.005	E.04	.35	--	.19
JAN 31...	5.52	189	663	1070	.39	10.2	2900	15	<.008	E.05	.29	--	.12
FEB 13...	5.83	180	676	1060	.40	9.7	2920	<10	<.008	E.04	.21	--	.15
MAR 18...	5.85	176	669	1080	.37	10.0	2880	<10	<.008	E.04	.13	--	.12
APR 09...	7.99	98	637	976	.34	5.4	2590	<10	<.008	<.06	<.04	--	--
MAY 07...	7.70	92	663	995	.33	4.7	2650	<10	E.006	<.06	E.02	--	--
JUN 18...	6.68	154	668	1080	.4	8.4	2870	15	<.008	<.06	.12	--	.29
JUL 29...	24.6d	93	686d	1060d	.3	4.5	2750	13	<.008	<.06	<.04	--	--
AUG 22...	12.6d	93	701d	1080d	.3	4.7	2810	<10	<.008	<.06	<.04	--	--
SEP 22...	6.91d	202	678d	1130d	.4	12.0	3030	<10	E.004n	E.04n	.26	--	.21
Date	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Phos- phorus, water, unfltrd mg/L (00665)	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Arsenic water unfltrd ug/L (01002)	Arsenic water, fltrd, ug/L (01000)	Barium, water, unfltrd recover- able, ug/L (01007)	Barium, water, fltrd, ug/L (01005)	Cadmium water, unfltrd ug/L (01027)	Cadmium water, fltrd, ug/L (01025)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Chrom- ium, water, fltrd, ug/L (01030)	Copper, water, unfltrd recover- able, ug/L (01042)
OCT 09...	.49	E.03	<.04	<.02	5	3.9	94	91	<.07	<.07	<.8	<.8	3.4
NOV 13...	.28	<.04	E.02	<.02	3	3.0	63	71	<.07	<.07	<.8	<.8	8.2
DEC 02...	.54	<.04	<.04	<.02	2	3.0	44	46	<.07	<.07	<.8	<.8	5.0
JAN 31...	.42	<.04	<.04	<.02	3	3.4	43	42	<.07	<.07	E.5	<.8	6.8
FEB 13...	.37	<.04	<.04	<.02	4	3.1	46	45	<.07	<.07	<1.6	<.8	7.1
MAR 18...	.26	<.04	<.04	<.02	4	3.8	24	22	<.07	<.07	<.8	<.8	3.6
APR 09...	.35	<.04	E.03	<.02	4	2.9	120	122	<.07	<.07	<.8	<.8	5.0
MAY 07...	.37	<.04	<.04	<.02	3	3.7	126	143	<.07	<.07	<.8	<.8	5.3
JUN 18...	.41	<.04	<.04	<.02	5	3.8	68	72	<.07	<.07	E.5	<.8	3.9
JUL 29...	.36	<.04	<.04	<.02	3	3.7d	130d	121d	<.07d	.22d	<.8	<.8	5.7d
AUG 22...	.31	<.04	<.04	<.18d	3	3.0d	137d	127d	<.07d	<.07d	E.4n	<.8	4.5d
SEP 22...	.47	<.04	<.04	<.02	4	3.8d	26d	24d	<.07d	<.07d	.9	<.8	6.9d

RED RIVER BASIN

07312100 Wichita River near Mabelle, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, fltrd, ug/L (01040)	Iron, water, unfltrd recover-able, ug/L (01045)	Iron, water, fltrd, ug/L (01046)	Lead, water, unfltrd recover-able, ug/L (01051)	Lead, water, fltrd, ug/L (01049)	Mangan-ese, water, unfltrd recover-able, ug/L (01055)	Mangan-ese, water, fltrd, ug/L (01056)	Mercury water, unfltrd recover-able, ug/L (71900)	Mercury water, fltrd, ug/L (71890)	Nickel, water, unfltrd recover-able, ug/L (01067)	Nickel, water, fltrd, ug/L (01065)	Selen-ium, water, unfltrd ug/L (01147)	Selen-ium, water, fltrd, ug/L (01145)
OCT 09...	3.6	110	<30	Mn	<.16	180	169	.03	E.01	9	5.06	1.1	<1.0
NOV 13...	2.2	40	<30	<.12	<.16	104	112	<.02	<.02	11	7.59	2.9	<1.0
DEC 02...	1.8	40	<30	<.12	.38	270	296	<.02	<.02	14	8.18	1.5	<1.0
JAN 31...	2.5	310	<30	Mn	<.16	357	298	<.02	<.02	22	15.3	2.5	1.6
FEB 13...	4.1	320	<30	Mn	<.16	283	250	<.02	<.02	16	9.20	2.7	E.5n
MAR 18...	2.6	250	<30	<.12	E.09n	198	192	.03	E.01	6	8.83	1.1	1.7
APR 09...	3.3	<20	<30	<.12	<.16	5	3.0	<.02	<.02	8	7.30	2.2	E.6n
MAY 07...	4.7	120	<30	Mn	<.16	8	7.7	<.02	<.02	7	7.79	1.4	3.1
JUN 18...	2.8	330	E4	M	<.16	166	141	<.02	<.02	7	4.06	E.9n	1.2
JUL 29...	2.3d	40	<24d	<.12d	<.16d	14d	1.7d	<.02	<.02	7d	4.38d	1.5d	1.7d
AUG 22...	3.3d	20d	<40d	<.12d	<.16d	18d	1.3d	--	--	11d	6.33d	2.0d	<1.0d
SEP 22...	2.4d	130	29d	Md	<.16d	123d	97.2d	<.02	<.02	7d	3.72d	1.2d	E.8nd

[illegible]

07312100 Wichita River near Mabelle, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Endo-sulfan sulfate water unfltrd ug/L (34351)	Endrin, water, unfltrd ug/L (39390)	Endrin aldehyde, water, unfltrd ug/L (34366)	Hepta-chlor, water, unfltrd ug/L (39410)	Hepta-chlor epoxide water unfltrd ug/L (39420)	Lindane water, unfltrd ug/L (39340)	PCB 207, surrog, Schl608 water, unfltrd pct rcv (99781)	Toxa-phene, water, unfltrd ug/L (39400)	alpha-Endo-sulfan, water, unfltrd ug/L (34361)	alpha-HCH, water, unfltrd ug/L (39337)	alpha-HCH-d6, surrog, Schl608 water, unfltrd pct rcv (99778)	beta-Endo-sulfan, water, unfltrd ug/L (34356)	beta-HCH, water, unfltrd ug/L (39338)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 31...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 09...	<.6	<.06	<.2	<.03	<.8	<.03	12.4	<2	<.1	<.03	18.6	<.04	<.03
MAY 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 18...	<.6	<.06	<.2	<.03	<.8	<.03	75.3	<2	<.1	<.03	42.2	<.04	<.03
JUL 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 22...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 22...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	cis-Chlor-dane, water, unfltrd ug/L (39062)	delta-HCH, water, unfltrd ug/L (34259)	p,p'-DDD, water, unfltrd ug/L (39310)	p,p'-DDE, water, unfltrd ug/L (39320)	p,p'-DDT, water, unfltrd ug/L (39300)	trans-Chlor-dane, water, unfltrd ug/L (39065)
OCT 09...	--	--	--	--	--	--
NOV 13...	--	--	--	--	--	--
DEC 02...	--	--	--	--	--	--
JAN 31...	--	--	--	--	--	--
FEB 13...	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--
APR 09...	<.1	<.09	<.1	<.04	<.1	<.1
MAY 07...	--	--	--	--	--	--
JUN 18...	<.1	<.09	<.1	<.04	<.1	<.1
JUL 29...	--	--	--	--	--	--
AUG 22...	--	--	--	--	--	--
SEP 22...	--	--	--	--	--	--

Remark codes used in this report:

< -- Less than
E -- Estimated value
M -- Presence verified, not quantified

Value qualifier codes used in this report:

d -- Diluted sample: method hi range exceeded
n -- Below the NDV
p -- Value reported is preferred

RED RIVER BASIN

07312100 Wichita River near Mabelle, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 2002 TO SEPTEMBER 2003

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)	HARDNESS (CA, MG) (MG/L)
OCT.	2002	2139.66	3780	2320	13430	840	4850	620	3550	710
NOV.	2002	30.99	4350	2670	224	980	81.7	700	58.2	820
DEC.	2002	28.39	4300	2640	202	960	73.8	690	52.7	810
JAN.	2003	884.95	3980	2440	5830	890	2110	640	1540	750
FEB.	2003	19.62	4750	2910	154	1100	56.8	750	39.8	890
MAR.	2003	133.42	4630	2840	1020	1000	376	740	265	870
APR.	2003	5871	4250	2610	41390	950	15080	680	10820	800
MAY	2003	2962.77	4410	2710	21670	990	7920	700	5640	830
JUNE	2003	51.2	4010	2460	340	890	124	650	89.3	760
JULY	2003	5136.6	4420	2710	37610	990	13750	710	9780	830
AUG.	2003	7252	4640	2850	55730	1000	20450	740	14410	870
SEPT	2003	2028.11	4620	2830	15520	1000	5690	730	4010	870
TOTAL		26538.71	**	**	193100	**	70570	**	50260	**
WTD.AVG.		73	4390	2700	**	980	**	700	**	830

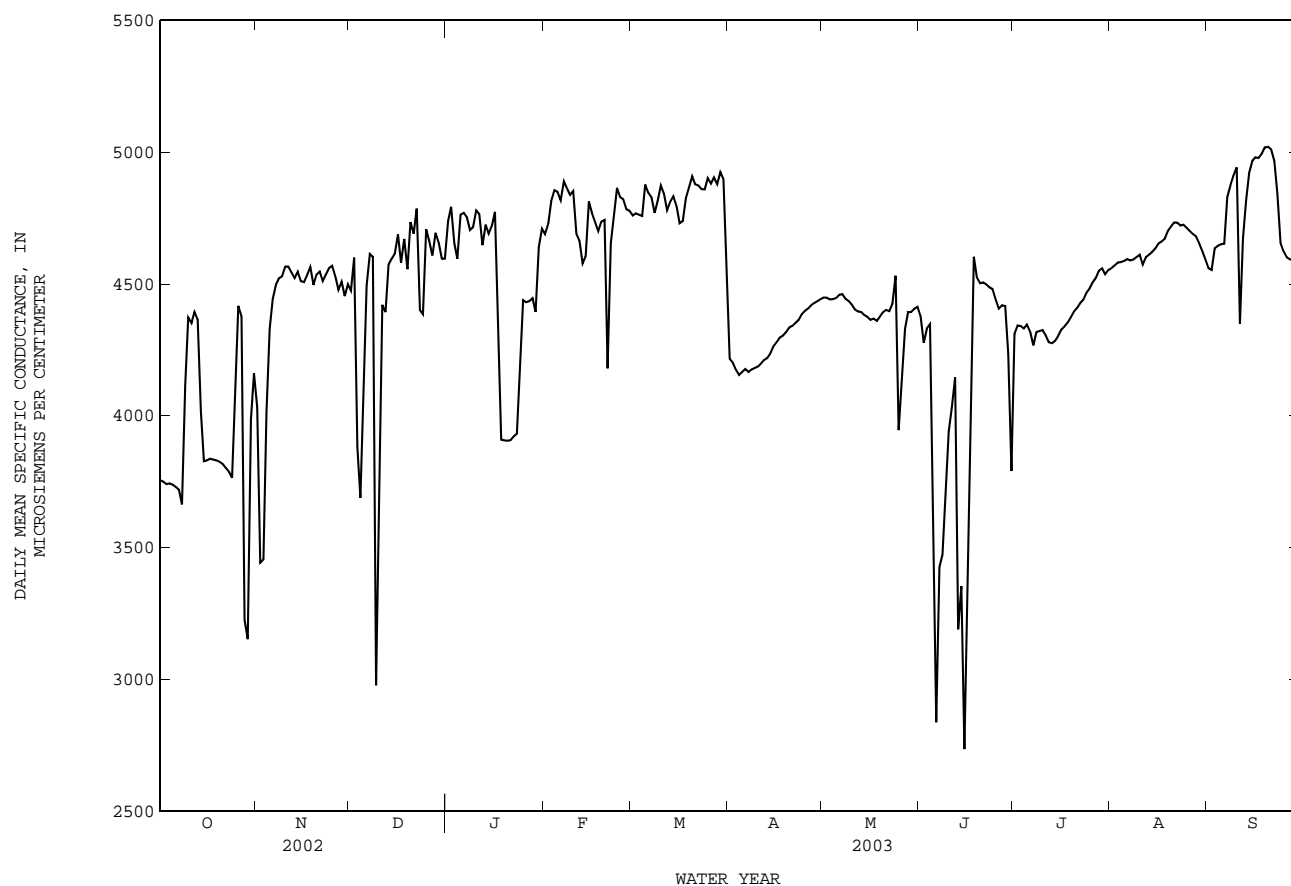
SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	3770	3750	3760	4250	3860	4030	4550	4350	4480	4840	4650	4740
2	3760	3740	3750	3870	3020	3440	4830	4440	4600	4840	4630	4790
3	3760	3700	3740	3760	3050	3460	4830	1870	3880	4810	4360	4650
4	3760	3720	3740	4190	3660	4010	4270	2140	3690	4780	4240	4600
5	3750	3730	3740	4420	4190	4330	4600	3560	4170	4820	4680	4760
6	3740	3720	3730	4490	4370	4440	4650	4300	4500	4830	4690	4770
7	3730	3710	3720	4560	4440	4500	4740	4410	4610	4840	4630	4750
8	3720	3330	3660	4570	4460	4520	4720	4090	4600	4760	4500	4710
9	4370	3580	4110	4560	4480	4530	4090	2240	2980	4840	4570	4720
10	4520	4230	4370	4610	4530	4570	4480	2970	3910	4830	4700	4780
11	4510	4220	4350	4650	4490	4570	4640	4070	4420	4860	4600	4770
12	4560	4280	4390	4610	4490	4540	4570	4020	4390	4780	4260	4650
13	4540	4230	4370	4630	4380	4520	4700	4370	4570	4760	4660	4720
14	4400	3820	4020	4700	4340	4550	4700	4420	4600	4750	4620	4690
15	3830	3820	3830	4710	4380	4510	4730	4480	4620	4800	4620	4720
16	3850	3830	3830	4620	4390	4510	4770	4550	4690	4850	4640	4770
17	3850	3830	3840	4660	4380	4540	4710	4240	4580	4800	3910	4260
18	3840	3820	3830	4710	4350	4560	4760	4320	4670	3910	3900	3910
19	3840	3820	3830	4630	4380	4500	4780	4340	4560	3910	3900	3910
20	3850	3820	3830	4680	4440	4540	4810	4400	4730	3910	3900	3910
21	3840	3810	3820	4670	4410	4550	4820	4380	4690	3920	3900	3910
22	3820	3800	3800	4700	4410	4510	4850	4710	4790	3930	3900	3920
23	3800	3740	3790	4680	4380	4540	4760	4120	4400	3940	3920	3930
24	3800	3660	3760	4700	4370	4560	4630	3920	4380	4570	3930	4190
25	4350	3700	4150	4690	4340	4570	4790	4580	4710	4600	4320	4440
26	4500	4290	4420	4690	4360	4530	4790	4500	4660	4650	4300	4430
27	4440	4320	4380	4670	4350	4480	4730	4480	4610	4550	4300	4440
28	4510	1540	3230	4600	4360	4510	4780	4190	4690	4550	4300	4450
29	3720	2250	3150	4500	4400	4450	4830	4160	4660	4570	4000	4390
30	4090	3720	3990	4620	4300	4500	4800	4330	4600	4770	4400	4640
31	4310	4060	4160	---	---	---	4800	4400	4600	4780	4610	4710
MONTH	4560	1540	3910	4710	3020	4410	4850	1870	4450	4860	3900	4480

SPECIFIC CONDUCTANCE, IN US/CM @ 25c, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

RED RIVER BASIN

07312100 Wichita River near Mabelle, TX--Continued

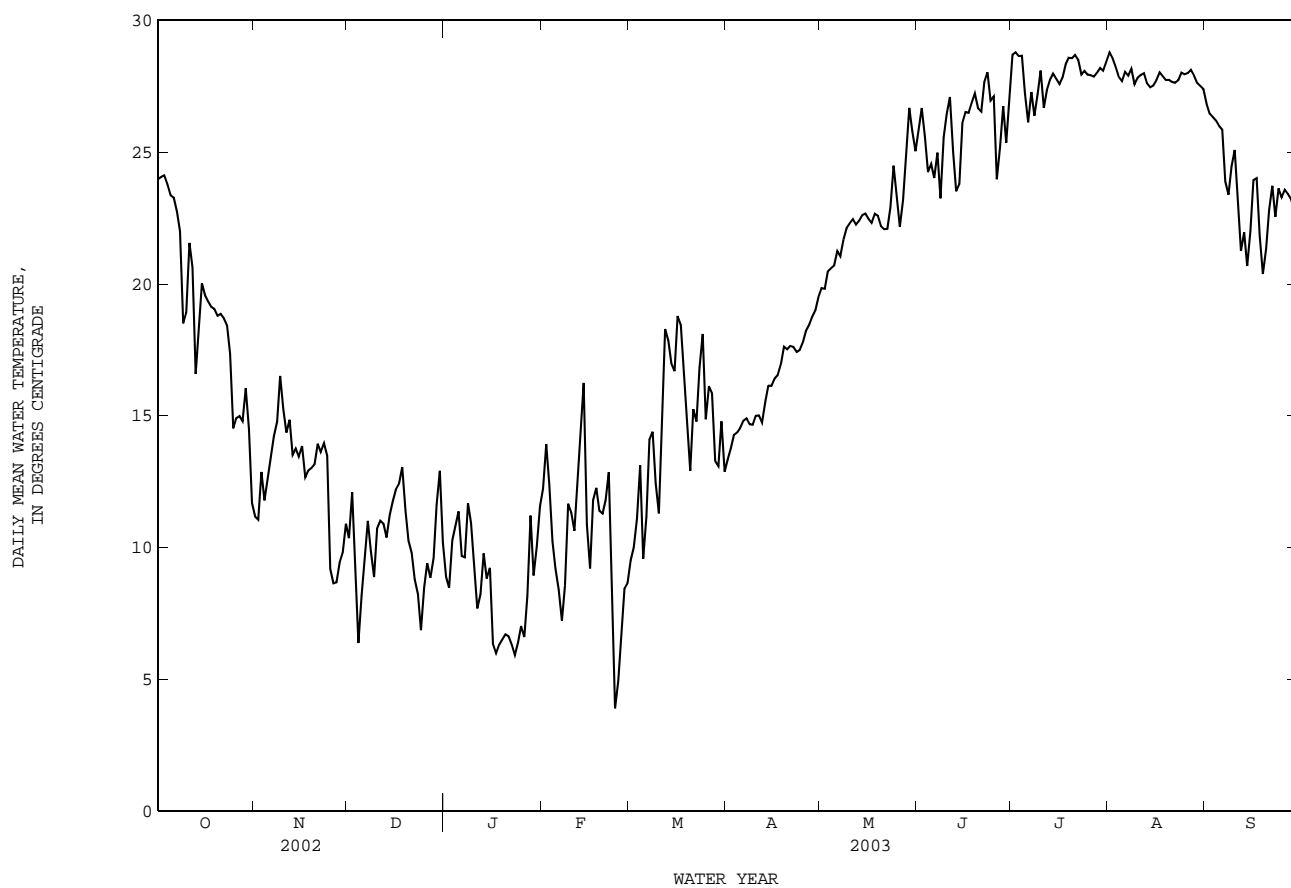


WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	24.2	23.7	24.0	11.9	10.6	11.2	15.3	7.1	10.4	12.8	6.2	8.9
2	24.4	23.8	24.1	11.9	10.2	11.1	18.0	8.8	12.1	14.2	5.1	8.5
3	24.6	23.8	24.1	14.6	11.5	12.9	11.6	5.9	9.3	16.8	6.0	10.3
4	24.1	23.4	23.8	13.2	10.0	11.8	7.3	5.6	6.4	17.1	6.9	10.8
5	23.7	23.0	23.4	16.7	9.8	12.5	13.6	4.2	8.2	16.1	8.7	11.4
6	23.7	23.1	23.3	19.0	9.3	13.3	15.3	5.6	9.5	11.2	7.9	9.7
7	23.1	22.6	22.7	18.7	10.9	14.2	16.0	7.7	11.0	14.9	5.3	9.6
8	22.7	19.5	22.0	18.1	11.7	14.8	10.9	9.0	9.9	16.6	8.1	11.7
9	19.5	18.0	18.5	20.2	13.8	16.5	9.5	8.0	8.9	12.8	8.5	10.9
10	20.5	17.8	18.9	18.1	13.5	15.2	14.7	8.7	10.7	12.9	6.6	9.1
11	25.8	18.4	21.6	17.1	12.4	14.4	15.6	8.2	11.0	8.9	6.6	7.7
12	23.2	17.9	20.6	19.3	12.3	14.9	14.0	8.9	10.9	9.1	7.6	8.2
13	19.3	14.2	16.6	17.4	10.4	13.5	16.2	7.0	10.4	13.1	8.5	9.8
14	20.7	14.6	18.4	18.4	11.2	13.8	17.7	7.8	11.2	11.1	7.0	8.8
15	20.3	19.7	20.0	17.4	10.7	13.4	16.4	7.9	11.8	10.2	8.4	9.2
16	19.8	19.3	19.6	18.6	11.3	13.8	16.1	10.1	12.2	8.6	3.6	6.3
17	19.6	19.1	19.3	17.8	9.3	12.7	17.0	9.1	12.4	6.6	4.9	6.0
18	19.2	19.0	19.1	17.0	10.5	12.9	17.2	10.4	13.1	6.6	6.1	6.3
19	19.6	18.8	19.1	18.3	9.5	13.0	14.4	9.2	11.4	7.0	6.2	6.5
20	19.1	18.6	18.8	18.1	10.1	13.2	16.0	6.9	10.3	7.2	6.3	6.7
21	19.2	18.6	18.9	19.5	10.2	13.9	13.4	7.2	9.8	6.9	6.4	6.6
22	19.0	18.6	18.7	18.3	10.6	13.6	10.3	6.8	8.8	6.4	6.1	6.3
23	18.8	18.0	18.4	19.6	10.5	14.0	9.3	7.1	8.2	6.1	5.8	5.9
24	18.0	15.1	17.4	19.3	10.9	13.5	9.8	4.5	6.9	8.1	5.4	6.4
25	16.0	13.2	14.5	10.9	7.7	9.2	13.2	5.3	8.5	9.3	4.7	7.0
26	16.6	13.7	14.9	10.4	7.3	8.6	13.2	7.5	9.4	8.7	5.2	6.6
27	16.0	14.2	15.0	13.4	5.5	8.7	13.9	5.7	8.8	13.6	4.1	8.2
28	15.4	13.6	14.8	15.8	5.8	9.4	15.6	5.0	9.6	15.8	7.8	11.2
29	20.6	13.6	16.0	13.0	6.7	9.8	15.0	8.3	11.6	10.9	7.8	8.9
30	15.7	12.2	14.5	14.6	9.0	10.9	15.7	10.2	12.9	15.5	6.4	10.1
31	12.2	10.8	11.7	---	---	---	14.9	7.1	10.2	17.6	8.1	11.6
MONTH	25.8	10.8	19.1	20.2	5.5	12.7	18.0	4.2	10.2	17.6	3.6	8.6

WATER TEMPERATURE, IN (DEGREES C), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

07312100 Wichita River near Mabelle, TX--Continued



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RED RIVER BASIN

07312110 South Side Canal near Dundee, TX

LOCATION.--Lat 33°48'50", long 98°55'57", Archer County, Hydrologic Unit 11130206, on left bank, 125 ft downstream from Lake Diversion headgates, and 5.3 mi northwest of Dundee.

DRAINAGE AREA.--2,194 mi² (for Lake Diversion on Wichita River, provided by Wichita County Water Improvement District No. 2).

PERIOD OF RECORD.--Oct. 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,039.70 ft above NGVD of 1929 (Wichita County Water Improvement District benchmark). Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Records of discharge are of water released from Lake Diversion into a canal system for mining, industrial, recreation, and irrigation use. No flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	118	1.7	1.1	0.46	1.0	1.7	57	67	73	50	152	163
2	116	1.6	1.4	0.22	1.1	1.7	61	68	73	50	154	165
3	112	1.7	1.4	0.31	1.1	1.7	61	69	74	50	156	165
4	102	1.7	1.6	0.19	1.0	1.8	62	68	76	49	155	142
5	e102	1.6	1.6	0.16	1.2	1.7	63	68	64	62	156	90
6	e102	1.5	1.6	0.14	1.4	1.8	63	72	28	72	157	88
7	e104	1.5	1.6	0.19	1.5	1.9	64	77	3.4	73	158	88
8	85	1.5	1.6	0.16	1.4	1.9	65	77	3.4	73	159	87
9	64	1.5	1.7	0.17	1.4	1.9	67	78	3.2	80	161	87
10	64	1.4	1.8	0.28	1.4	1.9	71	80	3.2	86	161	88
11	63	1.4	1.8	0.24	1.3	1.9	70	83	3.1	94	163	57
12	62	1.4	1.7	0.44	1.3	2.0	71	84	3.0	101	164	10
13	62	1.4	1.5	0.49	1.3	2.0	71	85	2.9	101	160	8.9
14	61	1.4	1.5	0.83	1.4	1.9	71	86	3.0	101	157	8.5
15	61	1.4	1.6	0.88	1.4	1.9	72	87	2.9	110	156	8.2
16	62	1.4	1.6	0.80	1.5	1.9	70	88	2.8	118	154	7.7
17	62	1.2	1.6	0.83	1.4	1.8	68	89	2.6	119	147	7.5
18	62	1.1	1.5	0.82	1.4	1.8	65	91	2.6	118	148	7.2
19	62	0.92	1.4	0.81	1.4	1.8	65	92	2.7	119	148	26
20	62	0.98	1.2	0.84	1.4	1.7	65	74	2.7	120	148	66
21	63	1.00	1.1	0.71	1.5	1.7	66	47	2.7	121	148	67
22	63	1.1	0.81	0.82	1.5	1.5	66	47	2.8	127	149	76
23	63	1.0	0.85	0.80	1.5	1.4	67	23	2.8	132	150	89
24	62	1.2	0.79	0.84	1.5	1.1	66	3.1	2.8	133	151	90
25	46	1.2	0.69	0.94	1.8	0.90	66	2.8	20	137	151	91
26	1.9	1.1	0.69	0.98	1.8	0.65	67	2.9	49	147	151	91
27	1.6	1.0	e0.69	0.93	1.7	0.59	67	2.9	50	147	158	94
28	1.5	1.2	0.63	0.99	1.7	0.60	67	2.8	50	148	163	103
29	1.5	1.2	0.75	1.0	---	0.74	67	2.7	51	151	165	103
30	1.5	1.2	0.75	1.1	---	16	67	2.6	50	152	167	103
31	1.6	---	0.53	1.0	---	52	---	37	---	152	167	---
TOTAL	1894.6	39.50	39.08	19.37	39.3	113.88	1988	1756.8	710.6	3293	4834	2277.0
MEAN	61.1	1.32	1.26	0.62	1.40	3.67	66.3	56.7	23.7	106	156	75.9
MAX	118	1.7	1.8	1.1	1.8	52	72	92	76	152	167	165
MIN	1.5	0.92	0.53	0.14	1.0	0.59	57	2.6	2.6	49	147	7.2
AC-FT	3760	78	78	38	78	226	3940	3480	1410	6530	9590	4520

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2003, BY WATER YEAR (WY)

	MEAN	77.8	10.4	13.0	18.5	10.6	25.0	57.9	78.5	121	194	182	123
MAX	141	41.0	76.3	66.1	52.2	127	150	218	240	344	282	219	
(WY)	1978	1978	1978	1989	1975	1996	1972	1984	1984	1974	1980	1983	
MIN	3.10	0.000	0.000	0.000	0.000	0.000	1.38	17.6	20.1	90.5	50.8	3.39	
(WY)	1977	1985	1985	1985	1985	1985	2002	1982	1982	2002	1989	1996	

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

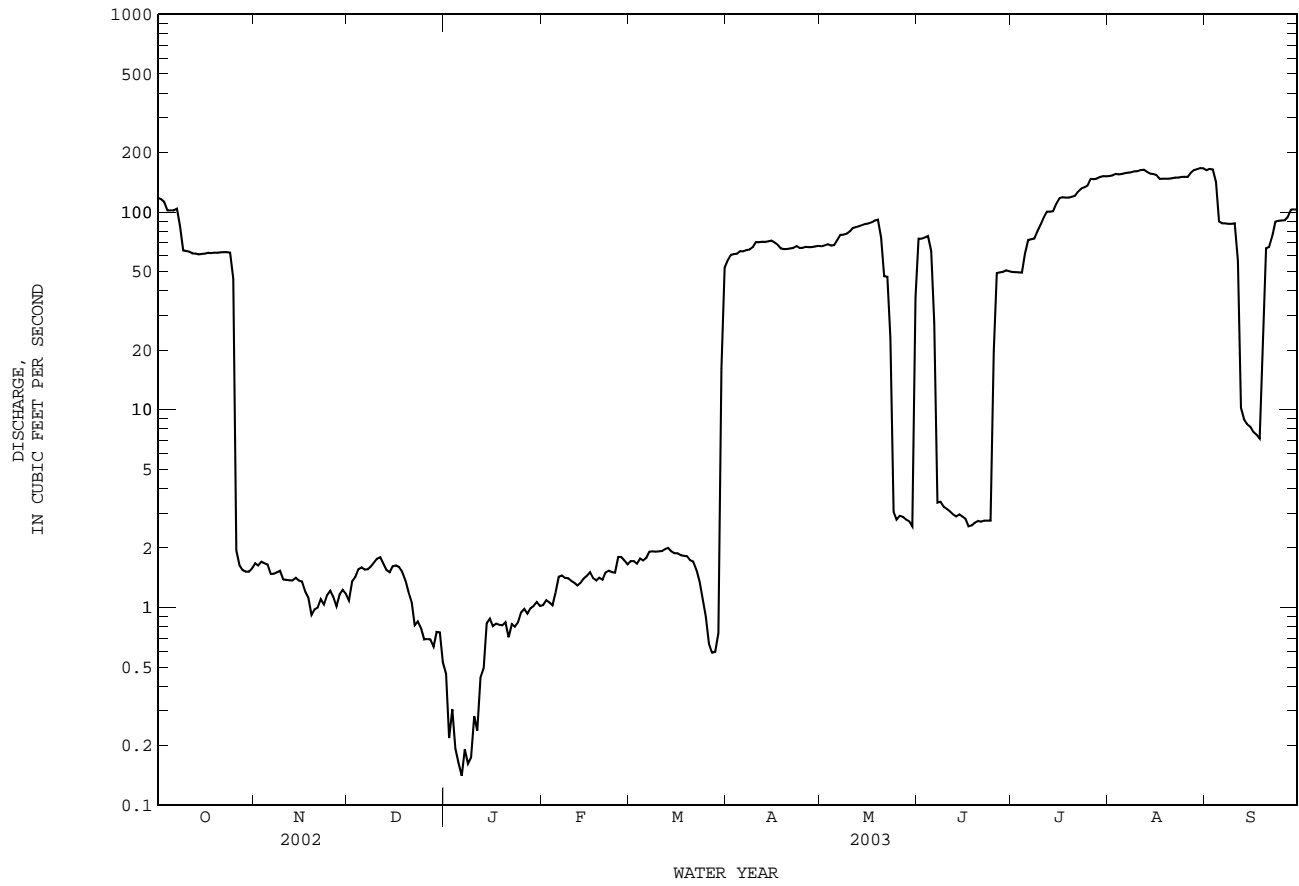
FOR 2003 WATER YEAR

WATER YEARS 1972 - 2003

ANNUAL TOTAL	19210.30	17005.13	
ANNUAL MEAN	52.6	46.6	76.4
HIGHEST ANNUAL MEAN			120
LOWEST ANNUAL MEAN			46.6
HIGHEST DAILY MEAN	215	167	374
LOWEST DAILY MEAN	0.53	0.14	0.00
ANNUAL SEVEN-DAY MINIMUM	0.60	0.18	0.00
MAXIMUM PEAK FLOW		172	374
MAXIMUM PEAK STAGE		6.74	8.31
ANNUAL RUNOFF (AC-FT)	38100	33730	55340
10 PERCENT EXCEEDS	175	148	197
50 PERCENT EXCEEDS	1.8	7.7	52
90 PERCENT EXCEEDS	0.90	0.85	0.33

e Estimated

07312110 South Side Canal near Dundee, TX--Continued



07312180 Lake Electra near Electra, TX

LOCATION.--Lat 33°58'30", long 99°01'24", Wilbarger County, Hydrologic Unit 11130207, on northern bank near left end of dam on Camp Creek, 8.0 mi west of Electra.

DRAINAGE AREA.--14.5 mi².

PERIOD OF RECORD.--Oct. 1998 to Sept. 2002 (contents). Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good except those for the period of Oct 1 to May 8, which are fair, and the period of May 9-23, which are poor. The lake is formed by a rolled earthfill dam. The dam was completed in 1950, and storage began shortly thereafter. The lake is owned by the city of Electra, which uses the water for their municipal supply. Conservation pool storage is 8,055 acre-ft. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	1,121.00
Lowest gated outlet (invert).....	1,110.00

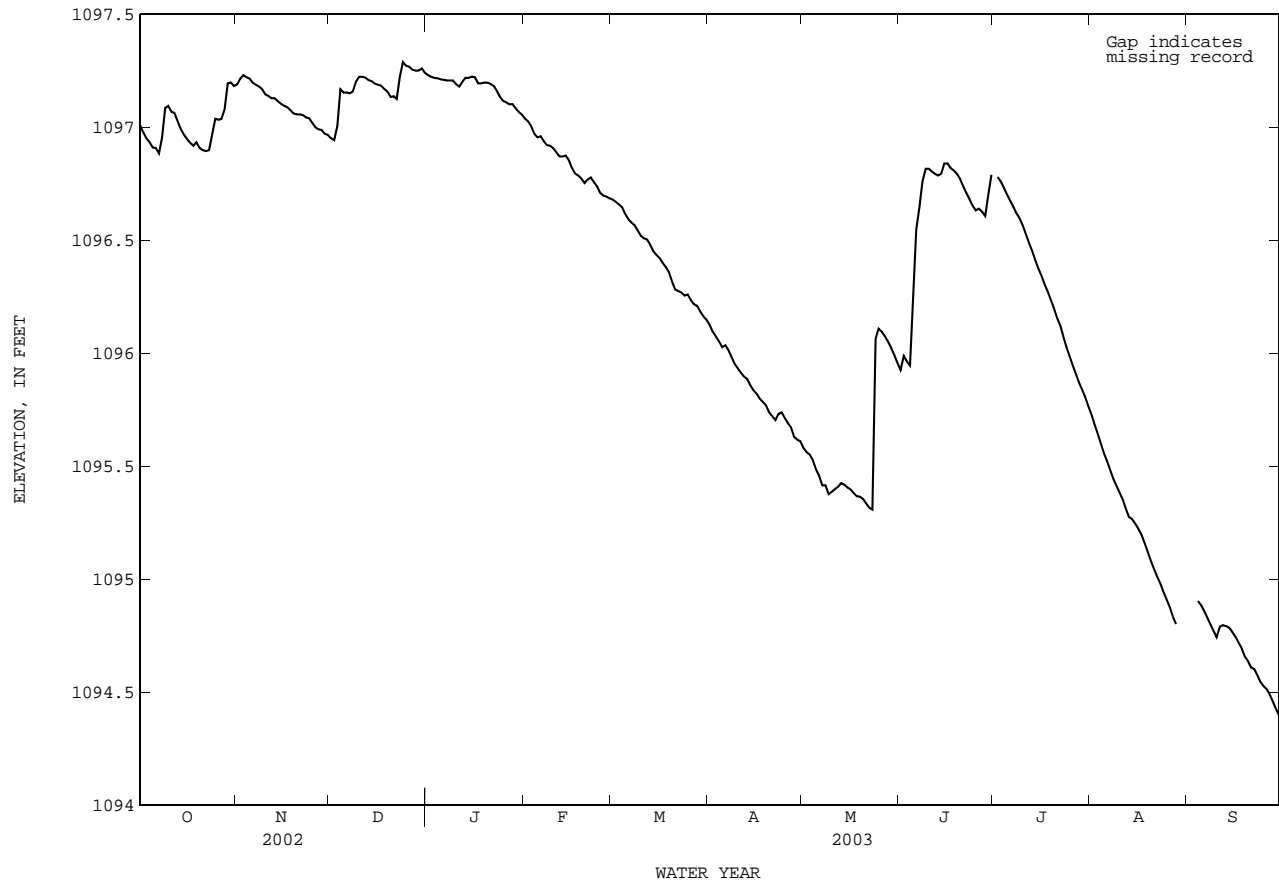
COOPERATION.--City of Electra.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,960 acre-ft, Oct. 2, 1998, elevation, 1,103.52 ft; minimum estimated daily contents, 235 acre-ft, Oct. 15, 2000; minimum elevation 1,094.38 ft, Sept. 30, 2003.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,097.32 ft, Dec. 24; minimum elevation, 1,094.38 ft, Sept. 30.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

07312180 Lake Electra near Electra, TX--Continued



RED RIVER BASIN

07312200 Beaver Creek near Electra, TX

LOCATION.--Lat 33°54'21", long 98°54'17", Wichita County, Hydrologic Unit 11130207, near right bank at downstream side of bridge on Farm Road 2326, 6.5 mi northwest of Kamay, 8.0 mi upstream from Wichita River, and 9.0 mi south of Electra.

DRAINAGE AREA.--652 mi².

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

Water-quality records.--Chemical data: Oct. 1968 to June 1970 (local observer), June 1996 to Sept. 2002. Sediment data: Apr. 1966 to Sept. 1975. Specific conductance: Oct. 1968 to June 1970 (local observer), June 1996 to Sept. 2002. Water temperature: Oct. 1968 to June 1970 (local observer), June 1996 to Sept. 2002.

GAGE.--Water-stage recorder. Datum of gage is 991.3 ft above NGVD of 1929 (Texas Department of Transportation reference point). Satellite telemeter at station.

REMARKS.--Records fair. Since installation of gage in Feb. 1960, at least 10% of contributing drainage area has been regulated. There are several diversions above station. No flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	9.3	5.9	e285	7.4	5.3	3.2	2.7	4.5	35	4.3	14
2	2.6	15	5.9	e95	7.3	5.3	3.2	3.3	43	12	5.1	5.2
3	2.7	54	9.0	e44	7.3	5.1	3.0	3.6	24	7.7	5.5	3.0
4	4.9	25	32	e37	7.0	5.0	3.3	3.2	10	5.9	5.8	0.56
5	3.2	22	e38	e31	6.6	4.7	2.9	2.6	331	5.1	4.8	0.43
6	2.8	21	e18	e27	6.4	4.7	7.5	2.5	733	4.0	2.6	0.36
7	2.9	21	13	e23	6.3	4.7	4.3	4.5	578	3.1	1.2	0.33
8	5.2	20	13	22	5.7	4.3	3.0	5.9	220	3.1	1.2	0.28
9	90	20	48	21	5.4	4.1	3.0	6.6	95	3.1	1.3	0.28
10	29	20	67	e19	5.5	3.6	2.8	7.4	33	3.0	1.5	0.29
11	9.1	19	e25	e16	5.2	3.3	3.3	6.7	21	2.9	1.4	0.91
12	6.4	16	18	16	4.9	e2.4	3.7	5.2	20	2.4	0.99	4.6
13	4.5	14	15	14	4.8	e1.4	4.0	3.2	45	2.3	0.57	4.8
14	3.3	14	e14	14	5.1	e0.96	3.3	3.5	49	2.3	0.58	2.0
15	3.0	13	e13	13	4.8	1.3	3.6	3.7	58	2.2	0.78	0.56
16	3.1	11	13	e11	4.5	1.8	4.7	10	35	4.3	0.60	0.45
17	3.0	9.9	13	e11	4.3	3.2	10	11	16	5.5	0.36	0.39
18	3.4	9.5	12	15	4.1	4.0	5.6	7.1	10	5.6	0.12	0.39
19	4.5	8.9	11	11	3.8	4.4	4.2	4.0	8.1	5.6	0.07	0.29
20	9.2	8.5	e10	11	3.4	3.8	4.2	16	6.2	5.4	0.04	0.22
21	6.2	7.9	9.6	10	3.3	3.9	6.7	43	4.7	5.4	0.00	0.14
22	5.2	7.6	e9.2	10	3.8	3.8	5.0	15	4.2	4.8	0.00	0.09
23	5.0	7.3	e42	e8.7	4.4	3.8	4.6	7.3	3.9	3.3	0.00	0.10
24	23	7.2	e174	7.5	e4.1	3.7	10	678	3.7	1.3	0.00	0.09
25	122	6.7	e70	8.1	e3.6	3.8	13	939	3.8	1.0	0.02	0.10
26	26	6.3	e33	8.6	3.6	3.8	6.6	482	12	2.2	0.05	0.20
27	10	5.9	e40	8.6	4.1	3.6	4.8	86	12	2.3	0.07	0.21
28	57	5.7	e55	8.4	5.0	3.2	4.1	19	6.6	2.2	0.13	0.22
29	450	5.9	e89	8.4	---	3.0	3.5	11	383	2.2	0.47	0.18
30	99	5.9	131	8.4	---	2.8	3.0	7.9	204	2.1	110	0.29
31	19	---	e126	7.4	---	2.9	---	6.1	---	2.8	68	---
TOTAL	1017.7	417.5	1172.6	830.1	141.7	111.66	144.1	2407.0	2977.7	150.1	217.55	40.96
MEAN	32.8	13.9	37.8	26.8	5.06	3.60	4.80	77.6	99.3	4.84	7.02	1.37
MAX	450	54	174	285	7.4	5.3	13	939	733	35	110	14
MIN	2.5	5.7	5.9	7.4	3.3	0.96	2.8	2.5	3.7	1.0	0.00	0.09
AC-FT	2020	828	2330	1650	281	221	286	4770	5910	298	432	81

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003, BY WATER YEAR (WY)

	MEAN	104	40.9	28.4	22.0	52.1	79.9	58.3	133	137	66.7	64.6	98.5
MAX	1108	319	385	185	553	592	760	921	1435	727	1324	1108	
(WY)	1987	1973	1992	1985	1993	1961	1990	1987	1995	1975	1995	1986	
MIN	0.14	0.82	0.71	0.27	0.84	0.65	0.89	2.26	3.37	1.84	0.87	1.06	
(WY)	1964	1966	1971	1966	1963	1965	1982	1996	1966	1964	1998	1998	

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

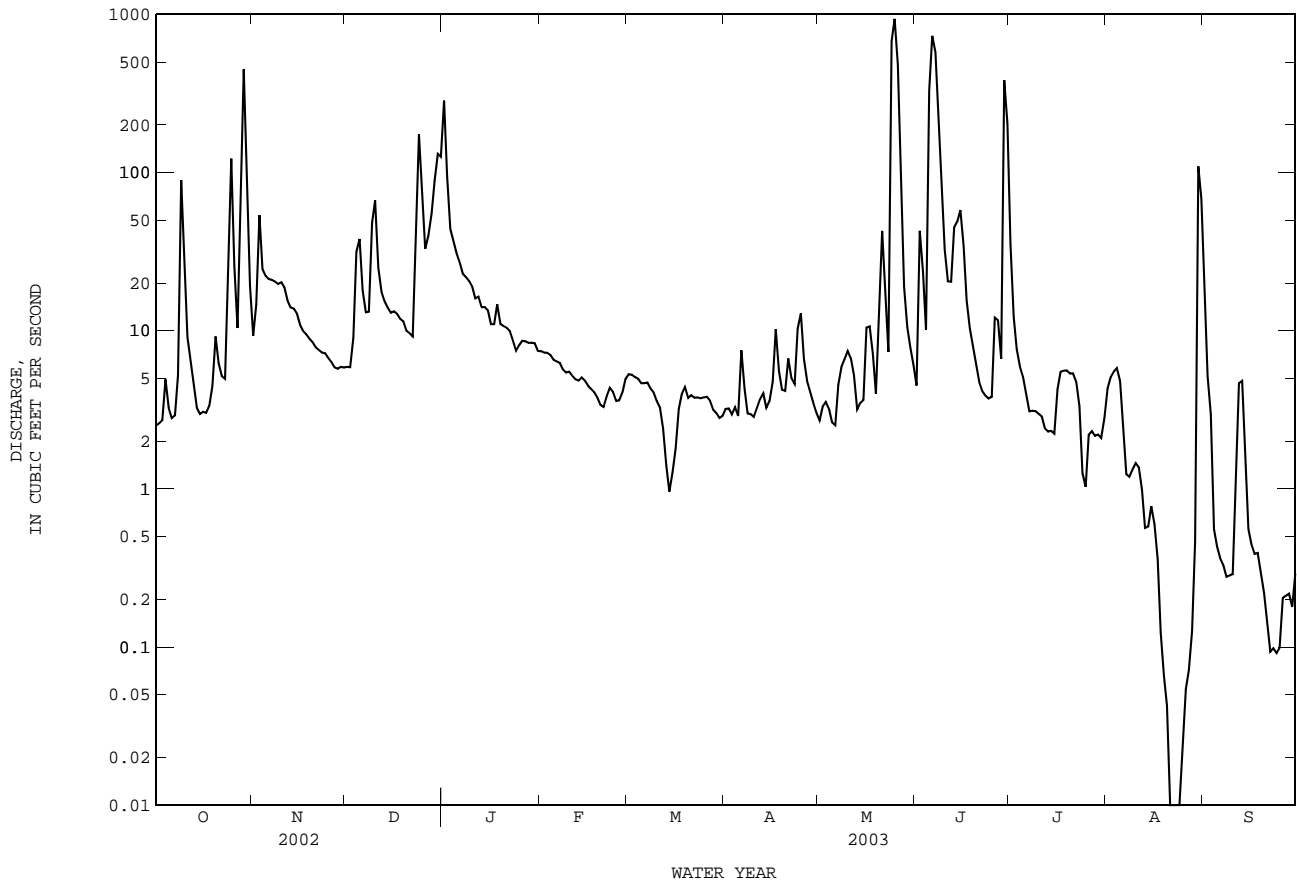
FOR 2003 WATER YEAR

WATER YEARS 1960 - 2003

ANNUAL TOTAL	24753.6	9628.67	
ANNUAL MEAN	67.8	26.4	74.4
HIGHEST ANNUAL MEAN			300
LOWEST ANNUAL MEAN			11.4
HIGHEST DAILY MEAN	2770	Jul 12	11000
LOWEST DAILY MEAN	1.6	Mar 6	0.00
ANNUAL SEVEN-DAY MINIMUM	2.2	Mar 11	0.00
MAXIMUM PEAK FLOW			1360
MAXIMUM PEAK STAGE			21.73
ANNUAL RUNOFF (AC-FT)	49100	19100	53880
10 PERCENT EXCEEDS	93	41	106
50 PERCENT EXCEEDS	6.2	5.2	5.6
90 PERCENT EXCEEDS	2.5	0.57	0.71

e Estimated

07312200 Beaver Creek near Electra, TX--Continued



LOCATION.--Lat 33°59'12", long 98°45'06", Wichita County, Hydrologic Unit 11130206, on south bank near right end of dam on North Fork Buffalo Creek, 5.0 mi northwest of Iowa park.

PERIOD OF RECORD.--Oct. 1998 to Sept. 2002 (daily mean contents). Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 4,452 feet long. The dam was completed in Nov. 1964 and storage began shortly thereafter. The lake is owned by the city of Iowa Park, which uses the water for their municipal supply. The capacity curve was developed by Freese and Nichols Inc. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	1056.3
Crest of spillway	1048.0
Emergency spillway.....	1051.7

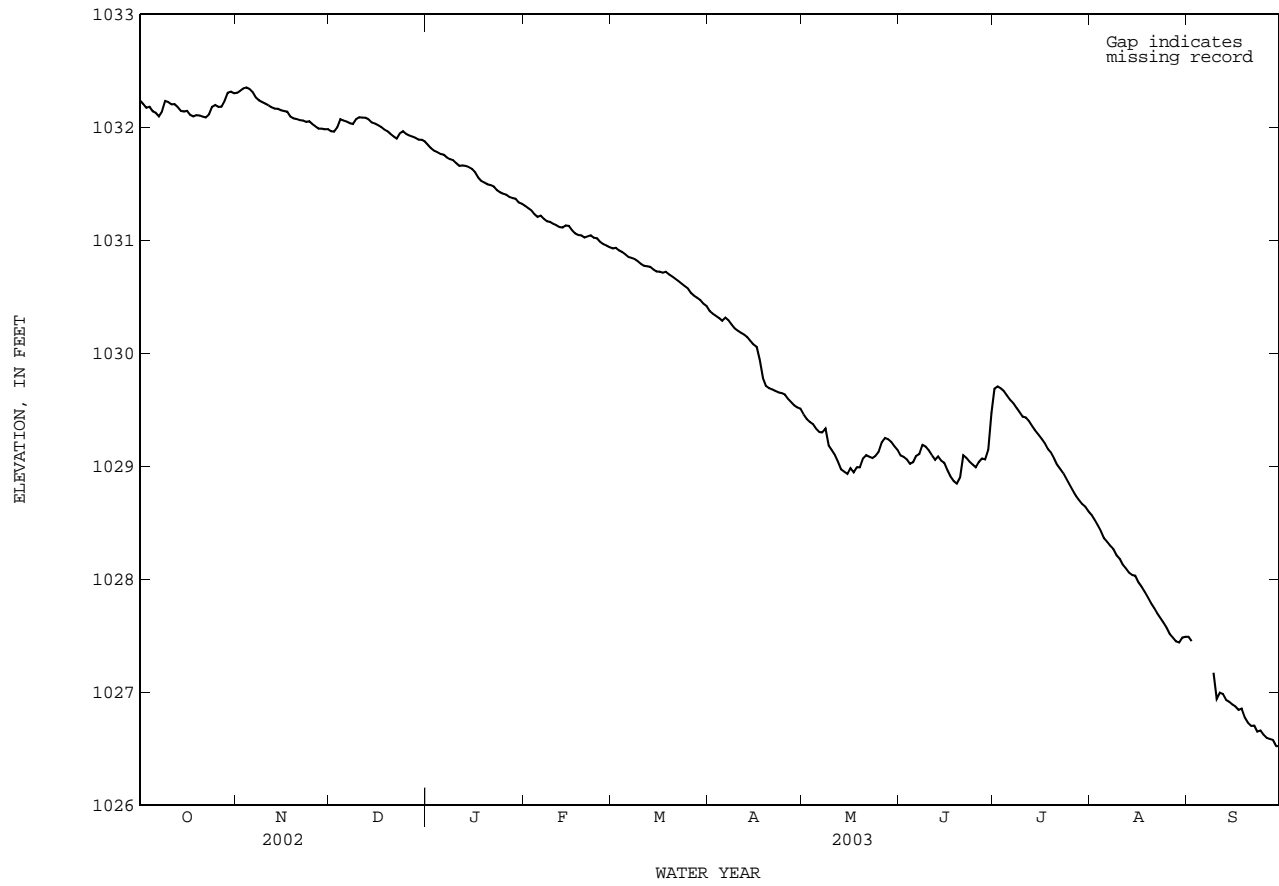
COOPERATION.--Capacity curve is provided by the city of Iowa Park.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 4,950 acre-ft, May 6, 7, 2001, elevation, 1,038.78 ft; minimum contents, 728 acre-ft, Oct. 13, 2000, elevation, 1,028.01 ft; minimum elevation, 1,026.43 ft, Sept. 30, 2003.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,032.38 ft, Nov. 5; minimum elevation, 1,026.43 ft, Sept. 30.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

07312380 North Fork Buffalo Creek Reservoir near Iowa Park, TX--Continued



07312500 Wichita River at Wichita Falls, TX

LOCATION.--Lat 33°54'34", long 98°32'00", Wichita County, Hydrologic Unit 11130206, near center of stream at downstream side of bridge on Beverly Drive in Wichita Falls, 4.0 mi upstream from Fort Worth and Denver Railway Co. bridge, 8.4 mi upstream from Holliday Creek, and 55.3 mi upstream from mouth.

DRAINAGE AREA.--3,140 mi², of which 2,086 mi² is above Lake Kemp Dam.

PERIOD OF RECORD.--Feb. 1901 to Jan. 1902 (monthly discharge only, published in WSP 1311), Oct. 1910 to Dec. 1911 (gage heights only), Mar. 1938 to current year.

Water-quality records.--Chemical data: Apr. 1966 to July 1975, Oct. 1981 to Sept. 1989, June 1996 to Sept. 1997. Biochemical data: Nov. 1981 to Aug. 1989, June 1996 to Sept. 1997. Sediment data: Apr. 1966 to July 1975. Specific conductance: Oct. 1981 to Sept. 1989, June 1996 to Sept. 2002. Water temperature: Oct. 1981 to Sept. 1989, June 1996 to Sept. 2002.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 924.26 ft above NGVD of 1929. Feb. 1901 to Jan. 1902 and Oct. 1, 1910, to Dec. 31, 1911, nonrecording gages at site 4.0 mi downstream at different datum. Mar. 30, 1938, to Dec. 1, 1959, nonrecording gage at present site and datum. Satellite telemeter at station.

REMARKS.--Records good. Since installation of gage in Mar. 1938, at least 10% of contributing drainage area has been regulated. Since completion of Lake Kemp (station 07312000) in 1923, no outflow has passed over the spillway. Water is diverted from Lake Diversion (conservation pool storage 40,000 acre-ft) 41 mi upstream for the irrigation of 42,000 acres under permit in the vicinity of Wichita Falls. The Wichita County Water Improvement District No. 2 diverts water from Lake Diversion for mining, industrial, irrigation, and recreational uses.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 50,000 ft³/s June 8, 1915, computed by Vernon L. Sullivan, engineer for Big Wichita River Irrigation Co.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	94	30	138	24	e17	9.5	39	49	603	39	190
2	35	102	30	115	24	e16	23	26	46	277	38	137
3	32	152	37	101	24	e16	28	27	60	113	38	124
4	36	150	56	87	23	16	20	25	97	69	43	121
5	34	110	209	76	24	e18	19	24	181	53	43	118
6	35	84	140	70	25	18	17	21	550	47	42	84
7	30	75	78	64	25	18	22	21	908	42	45	61
8	66	69	57	59	23	18	26	25	725	40	44	46
9	187	66	61	55	25	18	23	29	316	36	41	39
10	156	64	103	53	24	18	21	36	193	34	44	27
11	112	64	137	51	23	18	24	32	163	32	48	67
12	68	62	97	49	23	19	21	30	138	34	50	72
13	50	57	71	47	24	18	19	30	140	36	55	63
14	44	54	61	46	27	17	20	27	164	32	82	46
15	40	51	51	44	27	16	15	23	712	32	105	38
16	36	53	47	44	24	16	26	34	325	29	93	27
17	33	59	44	42	22	17	23	44	173	28	74	18
18	30	55	45	43	23	17	18	41	113	30	53	15
19	38	50	45	38	22	17	22	41	77	37	42	14
20	73	46	44	36	22	17	19	60	59	42	38	14
21	44	45	42	36	28	18	18	108	53	40	48	14
22	43	42	41	35	35	18	16	88	45	38	49	14
23	43	40	50	34	31	18	29	54	39	37	44	13
24	68	40	81	32	e29	18	68	46	34	40	36	13
25	107	37	242	30	e22	16	63	723	42	40	32	18
26	154	35	139	28	e18	15	42	1050	92	42	28	20
27	97	33	86	27	e19	14	47	550	70	41	30	17
28	67	32	73	28	e17	17	41	204	69	45	35	16
29	160	31	81	26	---	15	40	107	50	41	46	18
30	411	31	109	25	---	12	47	76	453	41	82	21
31	181	---	142	25	---	11	---	57	---	39	171	---
TOTAL	2545	1883	2529	1584	677	517	826.5	3698	6136	2090	1658	1485
MEAN	82.1	62.8	81.6	51.1	24.2	16.7	27.6	119	205	67.4	53.5	49.5
MAX	411	152	242	138	35	19	68	1050	908	603	171	190
MIN	30	31	30	25	17	11	9.5	21	34	28	28	13
AC-FT	5050	3730	5020	3140	1340	1030	1640	7330	12170	4150	3290	2950

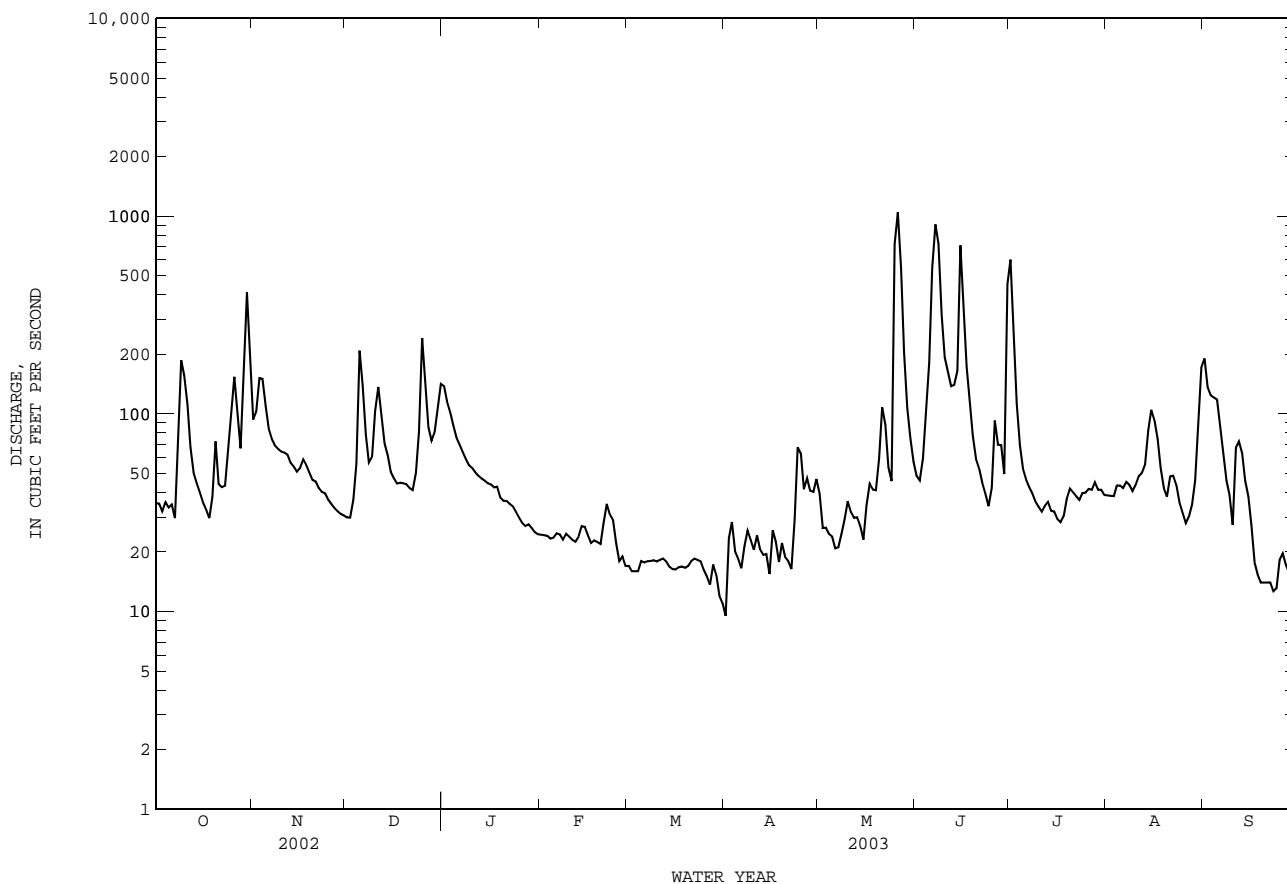
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2003, BY WATER YEAR (WY)

	MEAN	389	206	114	89.3	150	197	223	536	495	233	251	304
MAX	4017	1784	1091	859	1252	1412	1450	4105	4475	1201	2791	2619	
(WY)	1942	1973	1992	1992	1992	1993	1990	1941	1941	1975	1950	1950	
MIN	49.2	23.5	25.3	14.8	14.7	16.7	27.6	35.4	53.8	46.5	53.3	39.9	
(WY)	2002	1998	1979	2002	2002	2003	2003	2000	2001	2000	2000	2000	

07312500 Wichita River at Wichita Falls, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1938 - 2003	
ANNUAL TOTAL	42930.2		25628.5		263	
ANNUAL MEAN	118		70.2		977	
HIGHEST ANNUAL MEAN					49.5	
LOWEST ANNUAL MEAN					17300	
HIGHEST DAILY MEAN	2020	Jul 14	1050	May 26	17300	Oct 3 1941
LOWEST DAILY MEAN	8.8	Mar 13	9.5	Apr 1	7.7	Apr 9 1978
ANNUAL SEVEN-DAY MINIMUM	9.1	Mar 10	13	Mar 26	9.1	Mar 10 2002
MAXIMUM PEAK FLOW			1290	May 26	17800	Oct 3 1941
MAXIMUM PEAK STAGE			7.88	May 26	24.00	Oct 3 1941
ANNUAL RUNOFF (AC-FT)	85150		50830		190400	
10 PERCENT EXCEEDS	181		137		522	
50 PERCENT EXCEEDS	53		41		80	
90 PERCENT EXCEEDS	12		18		34	

e Estimated



RED RIVER BASIN

07312700 Wichita River near Charlie, TX

LOCATION.--Lat 34°03'11", long 98°17'47", Clay County, Hydrologic Unit 11130206, on right bank at upstream side of bridge on Farm Road 810, 3.0 mi southeast of Charlie, and 5.7 mi northwest of Petrolia.

DRAINAGE AREA.--3,439 mi², of which 2,086 mi² is above Lake Kemp Dam and 143 mi² is above Lake Wichita Dam.

PERIOD OF RECORD.--Oct. 1967 to current year.

Water-quality records.--Chemical data: Oct. 1967 to Sept. 1981. Biochemical data: Oct. 1967 to Sept. 1981, Oct. 1989 to Sept. 1997. Specific conductance: Oct. 1967 to Sept. 1981 (local observer), June 1996 to Sept. 2002. Water temperature: Oct. 1967 to Sept. 1981 (local observer), June 1996 to Sept. 2002.

GAGE.--Water-stage recorder. Datum of gage is 872.71 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. Since installation of gage in Oct. 1967, at least 10% of contributing drainage area has been regulated.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

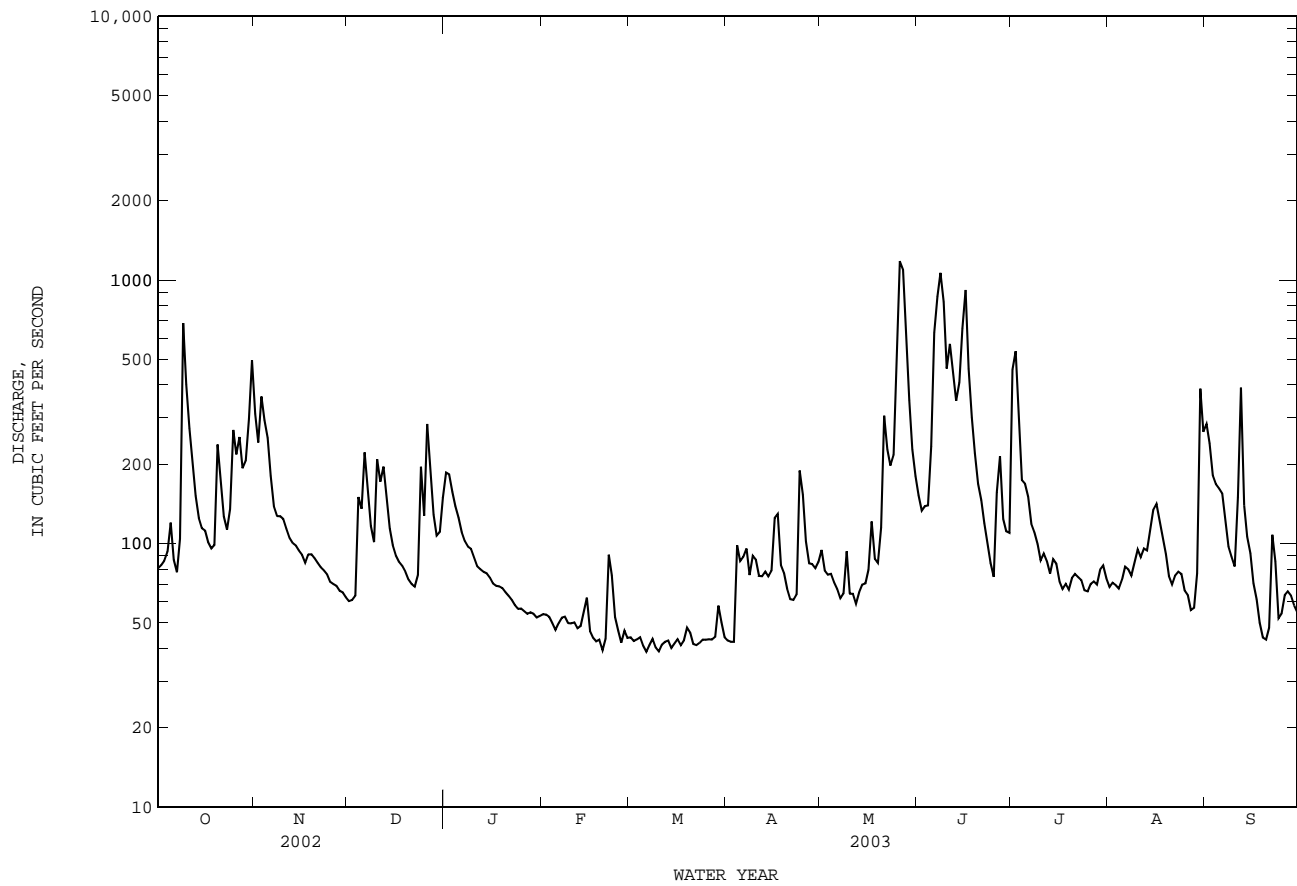
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	81	311	60	186	54	44	43	95	153	457	69	284
2	83	242	61	183	54	43	42	79	133	537	71	240
3	86	361	63	157	53	43	42	76	139	313	70	182
4	93	294	150	139	50	44	99	77	140	174	68	168
5	120	251	136	125	47	41	86	71	234	169	73	162
6	87	181	222	110	50	39	89	67	631	151	82	155
7	78	139	162	102	52	41	96	62	866	119	80	125
8	104	127	117	97	53	43	76	65	1060	110	76	98
9	686	127	101	96	50	40	90	94	827	100	85	89
10	402	124	209	88	50	39	87	65	461	86	95	82
11	274	114	172	82	50	41	75	64	572	92	89	150
12	209	105	196	80	48	42	75	59	438	86	96	390
13	152	101	149	78	49	43	78	65	348	77	94	140
14	125	98	114	77	55	40	75	70	409	87	113	106
15	114	94	99	74	62	42	79	71	656	84	134	92
16	112	91	90	71	47	43	125	80	917	72	141	71
17	101	85	85	69	44	41	129	121	461	67	123	61
18	96	91	82	69	43	43	83	88	301	70	106	50
19	99	91	78	68	43	48	77	84	220	67	91	44
20	237	88	73	65	39	46	67	115	169	74	75	43
21	178	84	70	63	44	42	62	306	146	77	70	48
22	127	81	69	61	91	41	61	227	119	75	76	108
23	113	79	76	58	76	42	64	198	100	73	78	86
24	135	76	196	57	53	43	189	217	84	67	77	52
25	270	72	128	57	47	43	153	460	75	66	66	54
26	218	70	284	55	42	43	102	1180	157	70	64	64
27	254	69	191	54	47	43	84	1100	215	72	56	66
28	193	66	129	55	44	44	84	661	124	70	57	64
29	206	65	107	54	---	58	81	350	111	80	77	58
30	298	62	111	52	---	50	85	228	110	83	387	55
31	496	---	149	53	---	44	---	180	---	74	266	---
TOTAL	5827	3839	3929	2635	1437	1339	2578	6675	10376	3799	3105	3387
MEAN	188	128	127	85.0	51.3	43.2	85.9	215	346	123	100	113
MAX	686	361	284	186	91	58	189	1180	1060	537	387	390
MIN	78	62	60	52	39	39	42	59	75	66	56	43
AC-FT	11560	7610	7790	5230	2850	2660	5110	13240	20580	7540	6160	6720

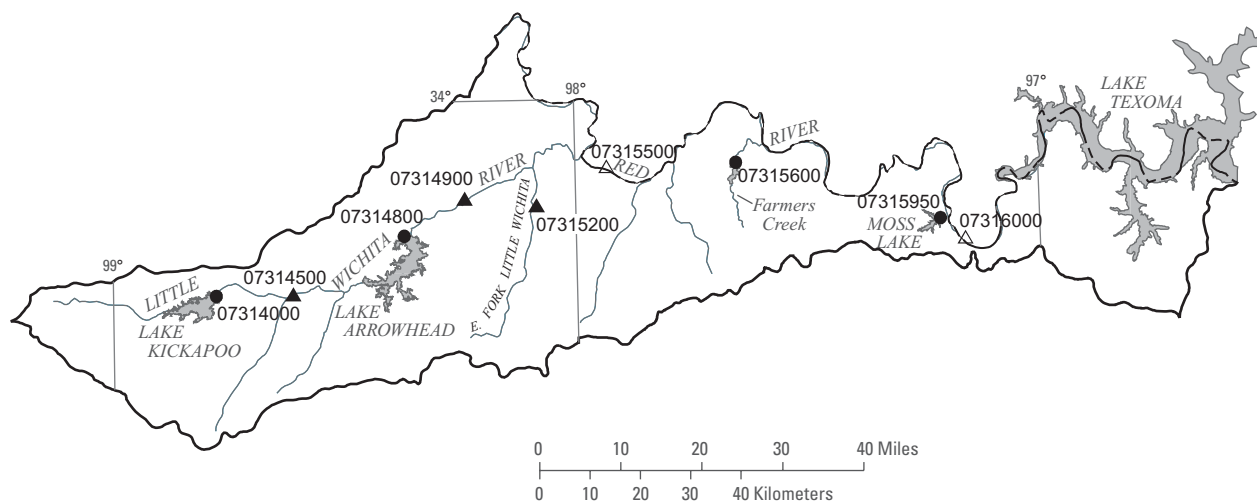
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2003, BY WATER YEAR (WY)

	MEAN	346	304	187	167	267	391	325	530	623	284	294	384
MAX	2032	2194	1556	1005	1411	1832	2377	3094	2815	1330	2766	2598	
(WY)	1987	1973	1992	1992	1992	1993	1990	1990	1995	1992	1995	1986	
MIN	89.7	50.3	51.5	43.7	45.6	43.2	61.2	94.4	96.6	80.1	72.6	68.2	
(WY)	2002	1998	1979	2002	1995	2003	1989	2000	2001	2000	2000	2000	

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1968 - 2003	
ANNUAL TOTAL	71783		48926			
ANNUAL MEAN	197		134		342	
HIGHEST ANNUAL MEAN					986	
LOWEST ANNUAL MEAN					90.2	
HIGHEST DAILY MEAN	2080		1180		7740	
LOWEST DAILY MEAN	35		39		21	
ANNUAL SEVEN-DAY MINIMUM	36		41		24	
MAXIMUM PEAK FLOW			1330		7760	
MAXIMUM PEAK STAGE			8.12		25.80	
ANNUAL RUNOFF (AC-FT)	142400		97040		247500	
10 PERCENT EXCEEDS	385		259		789	
50 PERCENT EXCEEDS	108		84		134	
90 PERCENT EXCEEDS	39		44		60	

07312700 Wichita River near Charlie, TX--Continued





EXPLANATION

- 07315200 ▲ Surface-water continuous station and number
- 07316000 △ Surface-water continuous/water-quality station and number
- 07314800 ● Reservoir station and number



Figure 6.--Map showing location of gaging stations in the third section of the Red River Basin

07314000	Lake Kickapoo near Archer City, TX	216
07314500	Little Wichita River near Archer City, TX	218
07314800	Lake Arrowhead near Henrietta, TX	220
07314900	Little Wichita River above Henrietta, TX	222
07315200	East Fork Little Wichita River near Henrietta, TX	224
07315500	Red River near Terral, OK	226
07315600	Lake Nocona near Nocona, TX	230
07315950	Moss Lake near Gainesville, TX	232
07316000	Red River near Gainesville, TX	234

07314000 Lake Kickapoo near Archer City, TX

LOCATION.--Lat 33°39'47", long 98°46'43", Archer County, Hydrologic Unit 11130209, on intake tower near left end of dam on North Fork Little Wichita River, 8.2 mi south of Mankins, and 9.2 mi northwest of Archer City.

DRAINAGE AREA.--275 mi².

PERIOD OF RECORD.--Feb. 1946 to Sept. 2002 (daily mean contents). Oct. 2002 to current year. Prior to Oct. 1965, end of month contents only.

Water-quality records.--Chemical data: Oct. 1969 to Sept. 1984.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (levels by city of Wichita Falls). Oct. 8, 1946 to Mar. 3, 1999, nonrecording gage at same site and datum. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 8,200 ft long, including a 483-foot-wide reinforced concrete ogee-type uncontrolled spillway near right end of dam. The dam was completed Dec. 15, 1945, and storage began Feb. 1, 1946. The service outlet consists of two gate-controlled 4- by 5-foot conduits. The dam and lake are owned by the city of Wichita Falls, which uses the water for their municipal supply. The capacity table is based on U.S. Geological Survey topographic maps, dated 1929. The capacity curve, dated Nov. 1946, was entitled "Lake Kickapoo Area & Capacity Curve". Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	1,062.00
Design flood (2-foot freeboard).....	1,060.00
Crest of spillway	1,045.00
Lowest gated outlet (invert).....	1,000.92

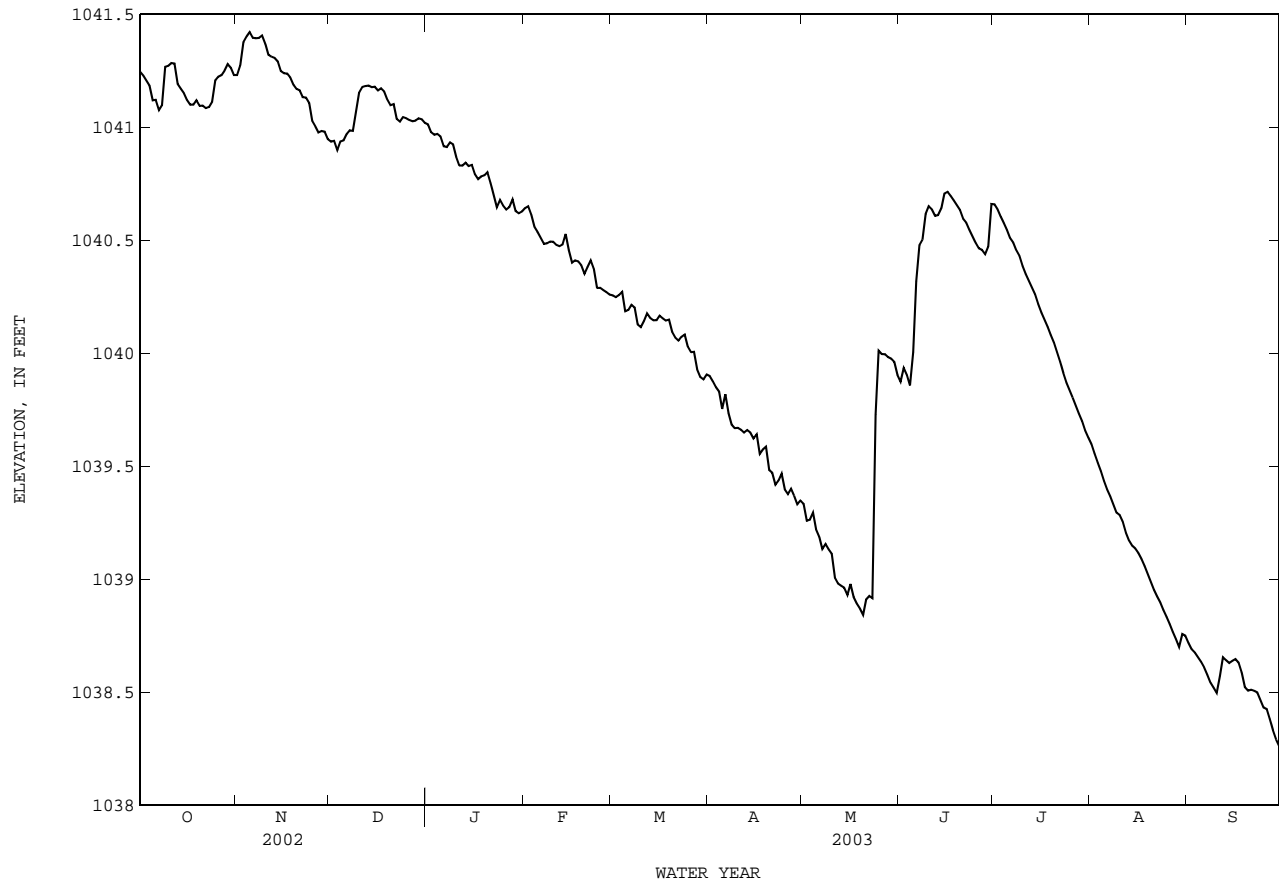
COOPERATION.--Capacity curve was provided by the city of Wichita Falls.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 134,300 acre-ft, Aug. 2, 1950, elevation, 1,049.2 ft; minimum observed since first filling in July 1950, 35,660 acre-ft, June 30, 1953, elevation, 1,029.8 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,041.47 ft, Nov. 5; minimum elevation, 1,038.23 ft, Sept. 30.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

07314000 Lake Kickapoo near Archer City, TX--Continued



07314500 Little Wichita River near Archer City, TX

LOCATION.--Lat 33°39'45", long 98°36'46", Archer County, Hydrologic Unit 11130209, on left bank at downstream side of bridge on State Highway 79, 1.5 mi downstream from confluence of North and Middle Forks, and 4.8 mi north of Archer City.

DRAINAGE AREA.--481 mi², of which 275 mi² is above Lake Kickapoo.

PERIOD OF RECORD.--May. 1932 to Jan. 1956, Aug. 1966 to current year.

Water-quality records.--Chemical data: Jan. 1953 to Jan. 1956. Sediment data: May 1968 to Sept. 1975. Water temperature: Jan. 1953 to Jan. 1956.

REVISED RECORDS.--WSP 827: 1932-35. WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 934.72 ft above NGVD of 1929. Aug. 17, 1954, to Jan. 6, 1956, nonrecording gage at present site and datum. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. Since water year 1946, at least 10% of contributing drainage area has been regulated. The city of Wichita Falls diverts water from Lake Kickapoo (station 07314000) for municipal use and wholesale customers. No flow at times.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--13 years (water years 1933-45), 110 ft³/s (79,700 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1933-45).--Maximum discharge, 17,900 ft³/s Oct. 31, 1941 (gage height, 21.80 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1930 reached a stage of about 28 ft, from information by Texas Department of Transportation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	10	0.25	118	0.06	0.02	0.00	0.00	1.3	222	0.00	36
2	0.00	9.3	0.27	24	0.06	0.02	0.00	0.00	0.71	34	0.00	12
3	0.00	146	0.32	14	0.06	0.02	0.00	0.00	0.53	10	0.00	3.8
4	0.02	161	0.41	7.9	0.04	0.02	0.00	0.00	0.46	4.9	0.00	2.1
5	0.00	41	0.39	4.8	0.04	0.02	0.00	0.00	15	2.5	0.00	0.98
6	0.01	14	0.42	3.2	0.04	0.02	0.00	0.00	158	1.5	0.00	0.56
7	13	4.9	1.3	2.1	0.04	0.02	0.00	0.00	301	0.80	0.00	0.50
8	19	2.2	0.84	1.2	0.03	0.02	0.00	0.00	101	0.69	0.00	0.46
9	257	1.3	1.3	0.79	0.03	0.02	0.00	0.00	229	0.50	0.00	0.38
10	96	0.98	13	0.53	0.03	0.01	0.00	0.00	66	0.45	0.00	0.35
11	22	0.81	47	0.41	0.02	0.01	0.00	0.00	18	0.23	0.00	4.7
12	9.9	0.64	24	0.36	0.02	0.0	0.00	0.00	13	0.17	0.00	68
13	4.6	0.48	9.9	0.31	0.02	0.0	0.00	0.00	13	0.17	0.00	34
14	3.0	0.38	3.4	0.26	0.02	0.00	0.00	0.00	36	0.15	0.00	7.9
15	1.8	0.34	1.8	0.23	0.02	0.00	0.00	0.00	88	0.08	0.00	4.0
16	1.1	0.34	1.3	0.19	0.01	0.00	0.00	0.00	54	0.04	0.00	2.2
17	0.78	0.31	1.0	0.14	0.01	0.00	0.00	0.00	18	0.02	0.00	1.5
18	0.58	0.29	0.80	0.12	0.01	0.00	0.00	0.00	8.4	0.00	0.00	0.98
19	0.60	0.26	0.60	0.11	0.01	0.00	0.00	0.00	4.0	0.00	0.00	0.56
20	9.7	0.25	0.48	0.11	0.01	0.00	0.00	0.00	2.2	0.00	0.00	0.29
21	55	0.26	0.42	0.10	0.02	0.00	0.00	10	1.4	0.00	0.00	0.11
22	20	0.28	0.37	0.08	0.02	0.00	0.00	23	0.99	0.00	0.00	0.05
23	7.0	0.29	0.40	0.07	0.02	0.00	0.00	6.6	0.71	0.00	0.00	0.04
24	6.0	0.29	0.52	0.07	0.01	0.00	0.00	283	0.54	0.00	0.00	0.02
25	141	0.28	0.85	0.07	0.01	0.00	0.00	1030	0.42	0.00	0.00	0.01
26	154	0.28	1.5	0.08	0.01	0.00	0.00	915	0.59	0.00	0.00	0.01
27	33	0.28	1.0	0.08	0.02	0.00	0.00	108	0.33	0.00	0.00	0.00
28	14	0.28	0.73	0.08	0.02	0.00	0.00	17	0.19	0.00	0.00	0.00
29	22	0.28	0.59	0.07	---	0.00	0.00	8.5	0.12	0.00	0.02	0.00
30	70	0.27	26	0.06	---	0.00	0.00	5.0	37	0.00	52	0.00
31	30	---	304	0.06	---	0.00	---	2.6	---	0.00	214	---
TOTAL	991.09	397.57	445.16	179.58	0.71	0.20	0.00	2408.70	1169.89	278.20	266.02	181.50
MEAN	32.0	13.3	14.4	5.79	0.025	0.006	0.000	77.7	39.0	8.97	8.58	6.05
MAX	257	161	304	118	0.06	0.02	0.00	1030	301	222	214	68
MIN	0.00	0.25	0.25	0.06	0.01	0.00	0.00	0.00	0.12	0.00	0.00	0.00
AC-FT	1970	789	883	356	1.4	0.4	0.00	4780	2320	552	528	360

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2003hz, BY WATER YEAR (WY)

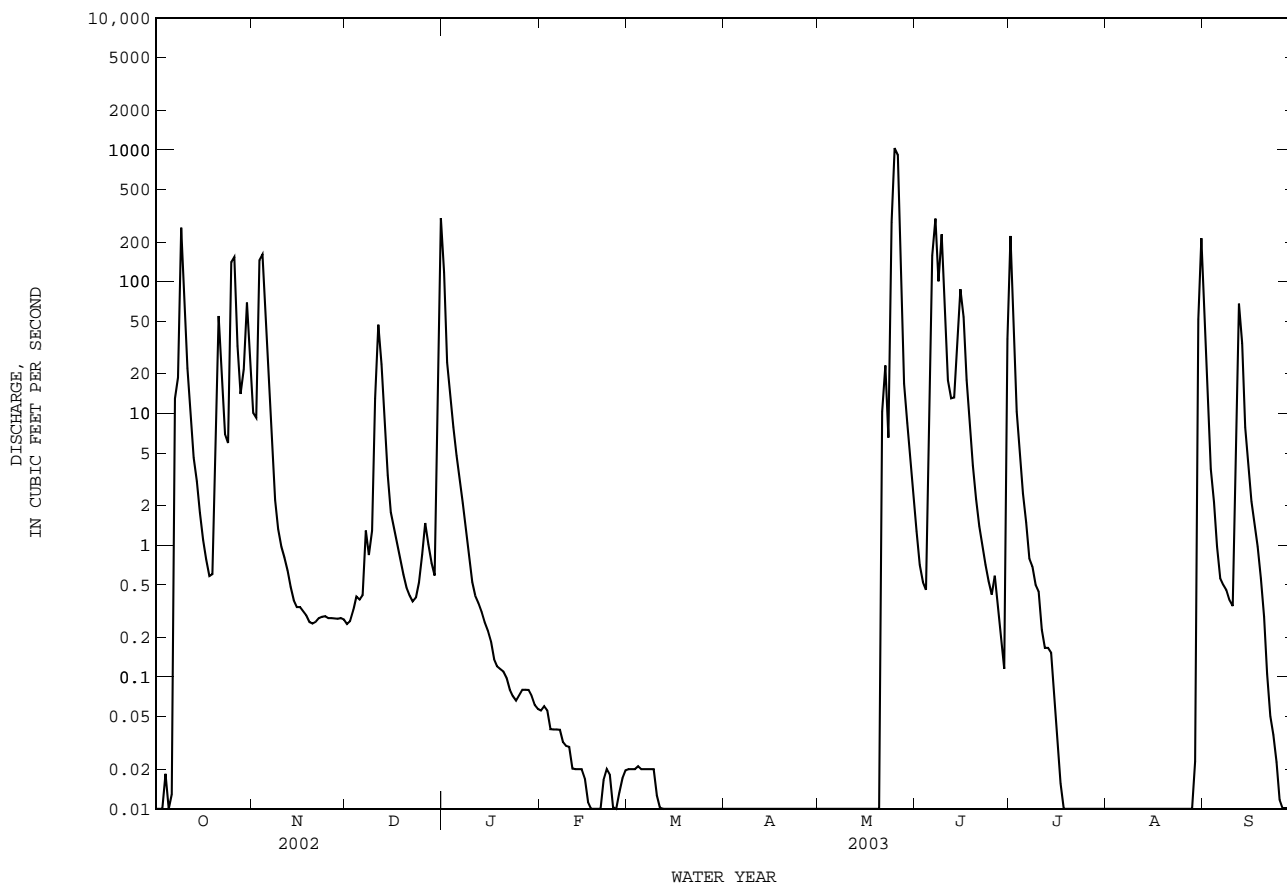
MEAN	50.6	17.7	20.3	13.7	26.8	45.1	38.1	143	108	21.7	40.5	59.1
MAX	771	160	194	154	254	309	637	1224	944	282	1337	624
(WY)	1982	1987	1992	1990	2001	1990	1990	1982	1985	1950	1950	1989
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	1953	1946	1946	1953	1947	1950	1971	1984	1953	1974	1967	1954

07314500 Little Wichita River near Archer City, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1946 - 2003hz	
ANNUAL TOTAL	7885.33		6318.62		48.3	
ANNUAL MEAN	21.6		17.3		252	
HIGHEST ANNUAL MEAN					1990	
LOWEST ANNUAL MEAN					2.27	
HIGHEST DAILY MEAN	1060	Jun 6	1030	May 25	9550	Aug 2 1950
LOWEST DAILY MEAN	0.00	Jan 16	0.00	Oct 1	0.00	Oct 31 1945
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 21	0.00	Mar 12	0.00	Oct 31 1945
MAXIMUM PEAK FLOW			1190	May 25	20100	May 16 1989
MAXIMUM PEAK STAGE			19.35	May 25	27.03	May 16 1989
ANNUAL RUNOFF (AC-FT)	15640		12530		34990	
10 PERCENT EXCEEDS	43		24		53	
50 PERCENT EXCEEDS	0.48		0.11		0.29	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

h See PERIOD OF RECORD paragraph.

z Period of regulated streamflow.



07314800 Lake Arrowhead near Henrietta, TX

LOCATION.--Lat 33°45'51", long 98°22'17", Clay County, Hydrologic Unit 11130209, at intake tower near center of dam on Little Wichita River, 2.3 mi upstream from Lake Creek, 11 mi southwest of Henrietta, and 12.3 mi southeast of Wichita Falls.

DRAINAGE AREA.--822 mi².

PERIOD OF RECORD.--June 1967 to Sept. 2002 (daily mean contents). Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is 0.40 ft below NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 15,900 ft long, including an uncontrolled reinforced concrete ogee spillway 1,581 ft wide located near the left end of dam. The dam was completed in Dec. 1966 and storage began in June 1967. The service outlet works, located in a cylindrical service tower at upstream side of dam, consist of two gated 5-foot-diameter inlets that can be used for controlled releases. The dam was built by the city of Wichita Falls to impound water for municipal, industrial, and recreational uses. The area-capacity curves are based on U.S. Geological Survey topographic maps. Data regarding the dam are given in the following table:

	Gage height (feet)
Top of dam.....	944.40
Design flood.....	939.95
Crest of spillway	926.40
Lowest gated outlet (invert).....	874.10

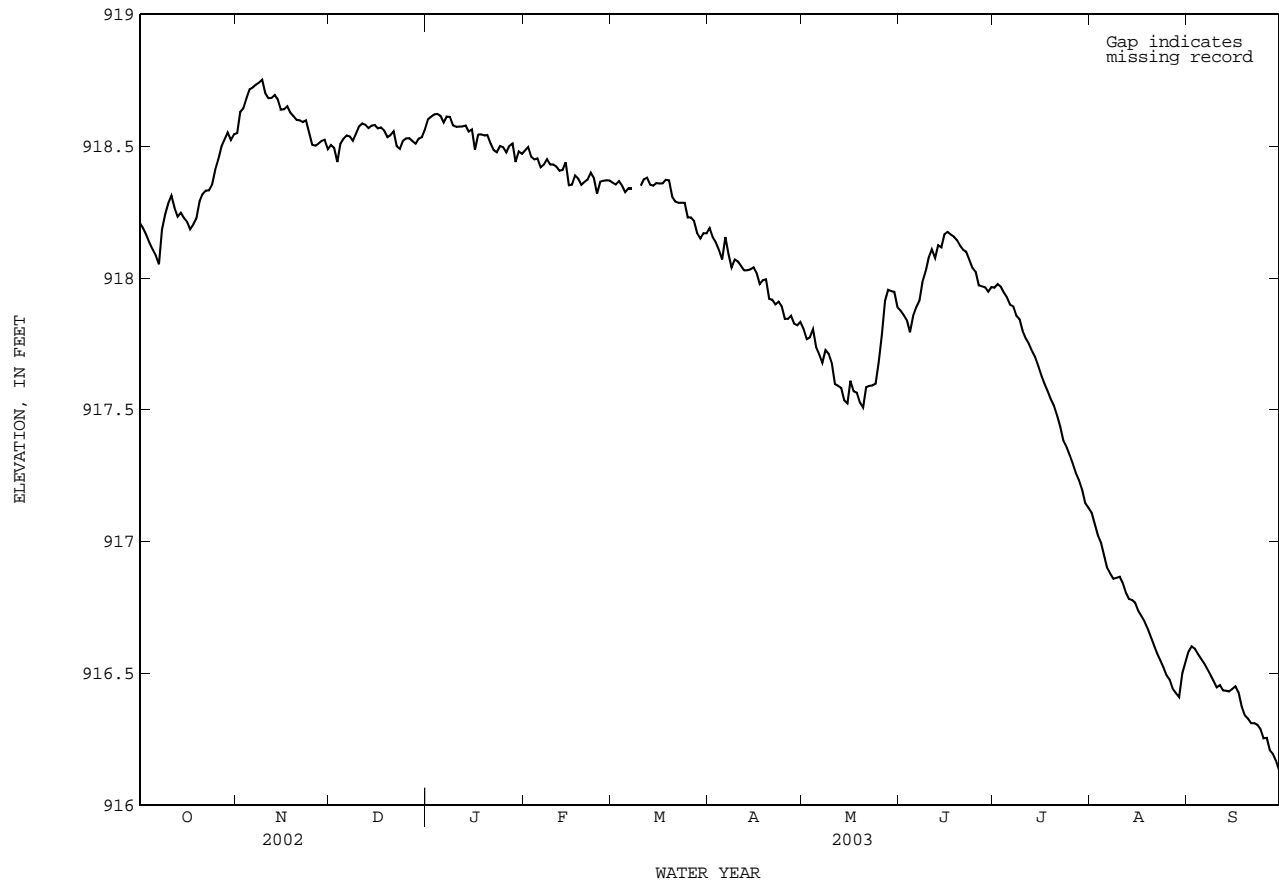
COOPERATION.--Capacity table provided by Homer Hunter and Associates and Biggs and Mathews, Consulting Engineers, for the city of Wichita Falls. Area-capacity curves provided by Homer Hunter and Associates.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 287,500 acre-ft, May 4, 1990, gage height, 927.92 ft; minimum contents after initial filling, 74,600 acre-ft, Aug. 11, 1971, gage height, 909.63 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 918.80 ft, Nov. 9; minimum elevation, 916.08 ft, Sept. 30.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

07314800 Lake Arrowhead near Henrietta, TX--Continued



07314900 Little Wichita River above Henrietta, TX

LOCATION.--Lat 33°49'36", long 98°14'23", Clay County, Hydrologic Unit 11130209, on right bank at downstream side of bridge on U.S. Highways 822 and 287, 1.0 mi downstream from Duck Creek, 2.8 mi west of Henrietta, 6.6 mi upstream from Turkey Creek, and 7.6 mi upstream from Dry Fork Little Wichita River.

DRAINAGE AREA.--1,037 mi².

PERIOD OF RECORD.--Jan. 1953 to current year. Prior to Oct. 1974, published as "station 07315000 Little Wichita River near Henrietta".

Water-quality records.--Chemical data: Dec. 1952 to Jan. 1956, Nov. 1959 to Sept. 1966, Jan. 1968 to Sept. 1985. Dissolved oxygen: Aug. 1999 to Sept. 1999.

REVISED RECORDS.--WDR TX-93-1: Daily discharge.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 831.57 ft above NGVD of 1929. Prior to June 26, 1953, nonrecording gage, and June 27, 1953 to July 11, 1975 water-stage recorder, all at site 2.6 mi downstream at same datum. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records poor. Since installation of gage in Jan. 1953, at least 10% of contributing drainage area has been regulated. The city of Wichita Falls returns waste water/filter-plant wash water to the river below Wichita River at Wichita Falls (station 07312500) and above Wichita River near Charlie (station 07312700). The city of Henrietta diverts water from pool below gage for municipal use. Records of diversions are furnished by the cities of Wichita Falls and Henrietta. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1908 reached a stage of 21 ft at former site, from information by Texas Department of Transportation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

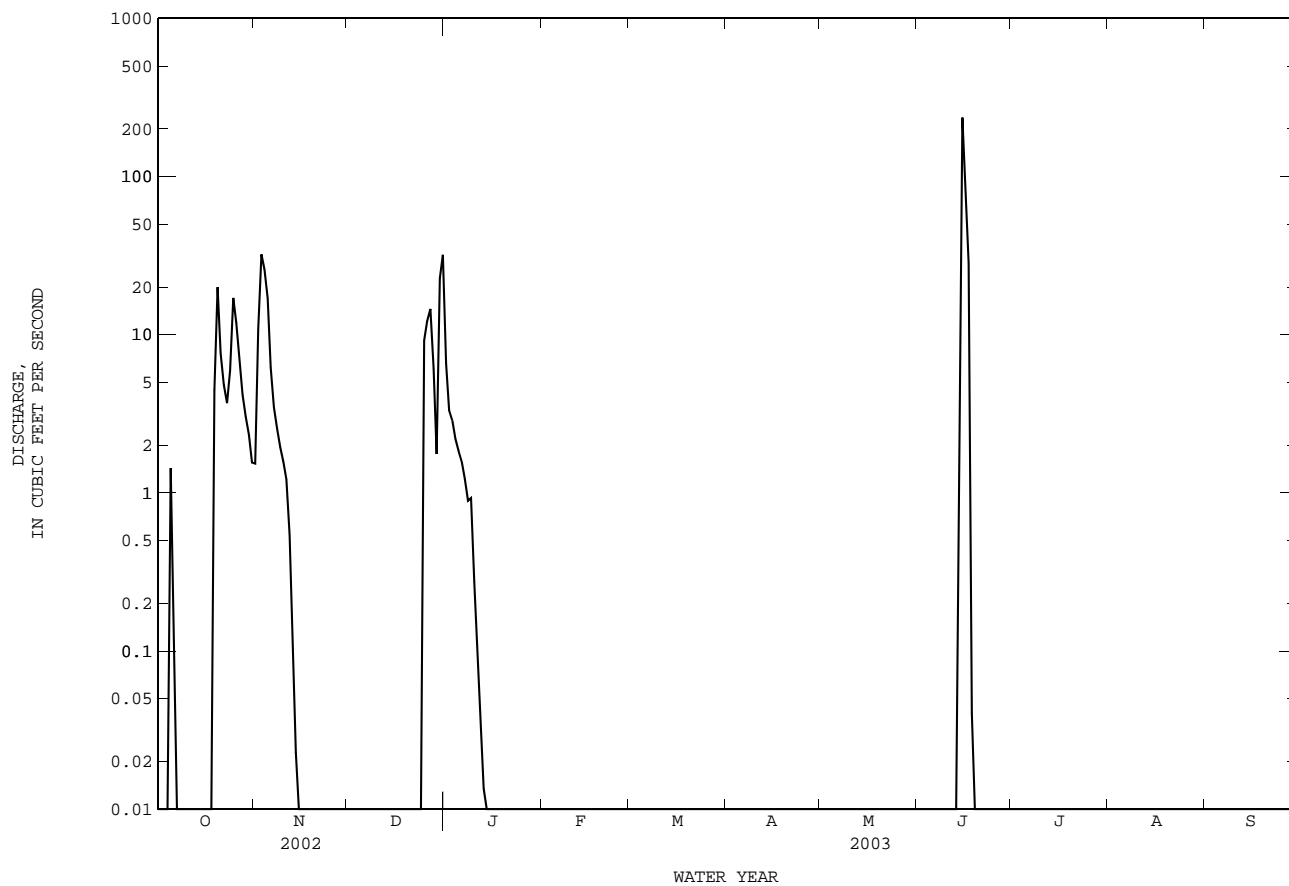
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	1.5	0.00	6.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	11	0.00	3.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	32	0.00	2.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	26	0.00	2.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	1.4	17	0.00	1.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.07	6.2	0.00	1.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	3.5	0.00	1.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	2.5	0.00	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	2.0	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	1.6	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	1.2	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.54	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.09	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	1.6	0.00	0.00	0.00
15	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	236	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00
19	4.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	7.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	4.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	3.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	5.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	17	0.00	9.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	12	0.00	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	7.2	0.00	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	4.2	0.00	6.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	3.0	0.00	1.8	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	2.3	0.00	23	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	1.6	---	32	0.00	---	0.00	---	0.00	---	0.00	0.00	---
TOTAL	95.27	105.16	99.20	21.89	0.00	0.00	0.00	0.00	359.64	0.00	0.00	0.00
MEAN	3.07	3.51	3.20	0.71	0.000	0.000	0.000	0.000	12.0	0.000	0.000	0.000
MAX	20	32	32	6.6	0.00	0.00	0.00	0.00	236	0.00	0.00	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	189	209	197	43	0.00	0.00	0.00	0.00	713	0.00	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2003, BY WATER YEAR (WY)

	MEAN	70.1	39.7	32.3	12.5	33.3	63.0	95.2	261	180	26.2	9.05	74.3
MAX	1050	854	622	131	305	937	2169	3279	1652	549	157	656	
(WY)	1954	1958	1963	1992	2001	1990	1990	1957	1992	1992	1966	1955	
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	1953	1953	1953	1953	1953	1954	1953	1971	1953	1956	1954	1954	

07314900 Little Wichita River above Henrietta, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1953 - 2003	
ANNUAL TOTAL	5185.77		681.16		74.8	
ANNUAL MEAN	14.2		1.87		498	
HIGHEST ANNUAL MEAN					0.84	
LOWEST ANNUAL MEAN					10500	
HIGHEST DAILY MEAN	717	Apr 28	236	Jun 15	May 3	1990
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	Oct 1	1952
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Oct 7	Oct 1	1952
MAXIMUM PEAK FLOW			304	Jun 15	May 3	1990
MAXIMUM PEAK STAGE			12.03	Jun 15	May 3	1990
ANNUAL RUNOFF (AC-FT)	10290		1350		54160	
10 PERCENT EXCEEDS	13		1.6		59	
50 PERCENT EXCEEDS	0.00		0.00		0.00	
90 PERCENT EXCEEDS	0.00		0.00		0.00	



RED RIVER BASIN

07315200 East Fork Little Wichita River near Henrietta, TX

LOCATION.--Lat 33°48'46", long 98°05'05", Clay County, Hydrologic Unit 11130209, at downstream side of bridge on U.S. Highway 82, 5.8 mi upstream from Little Wichita River, 6.4 mi east of Henrietta, and 8.9 mi west of Ringgold.

DRAINAGE AREA.--178 mi².

PERIOD OF RECORD.--Nov. 1963 to current year.

REVISED RECORDS.--WRD TX-72-1: 1966(M).

GAGE.--Water-stage recorder. Datum of gage is 825.32 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. No known regulation or diversions. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in Oct. 1941 reached a stage of 28.8 ft, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.07	0.00	6.8	0.00	0.00	0.00	0.00	0.20	0.00	0.00	6.4
2	0.00	0.07	0.00	2.6	0.00	0.00	0.00	0.00	0.11	0.00	0.00	26
3	0.00	0.06	0.00	1.6	0.00	0.00	0.00	0.00	0.07	0.00	0.00	9.3
4	0.00	0.02	0.00	1.1	0.00	0.00	0.00	0.00	0.05	0.00	0.00	2.7
5	0.00	0.00	0.00	0.68	0.00	0.00	0.00	0.00	0.05	0.00	0.00	1.4
6	0.00	0.07	0.00	0.43	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.85
7	0.00	0.27	0.00	0.25	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.48
8	0.00	0.14	0.00	0.17	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.23
9	0.00	0.04	0.00	0.10	0.00	0.00	0.00	0.00	2.7	0.00	0.40	0.12
10	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	1.8	0.00	0.03	0.07
11	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	3.7	0.00	0.00	1.6
12	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	6.2	0.00	0.00	30
13	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	2.2	0.00	0.00	17
14	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.5	0.00	0.00	6.4
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.2	0.00	0.00	2.0
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17	0.00	0.00	3.9
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.4	0.00	0.00	2.5
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.1	0.00	0.00	1.3
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.7	0.00	0.00	0.88
20	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.4	0.00	0.00	0.63
21	4.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.00	0.37
22	1.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.00	0.00	0.15
23	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.09
24	0.10	0.00	0.05	0.00	0.00	0.00	0.00	0.37	0.21	0.00	0.00	0.05
25	0.10	0.00	0.25	0.00	0.00	0.00	0.00	9.5	0.11	0.00	0.00	0.03
26	7.3	0.00	0.19	0.00	0.00	0.00	0.00	13	0.08	0.00	0.00	0.00
27	16	0.00	0.07	0.00	0.00	0.00	0.00	3.2	0.05	0.00	0.00	0.00
28	5.3	0.00	0.0	0.00	0.00	0.00	0.00	1.5	0.01	0.00	0.00	0.00
29	1.8	0.00	0.00	0.00	---	0.00	0.00	0.96	0.00	0.00	0.00	0.00
30	0.67	0.00	38	0.00	---	0.00	0.00	0.55	0.00	0.00	0.00	0.00
31	0.16	---	49	0.00	---	0.00	---	0.32	---	0.00	0.00	---
TOTAL	38.25	0.74	87.56	13.97	0.00	0.00	0.00	29.40	55.68	0.00	0.43	114.45
MEAN	1.23	0.025	2.82	0.45	0.000	0.000	0.000	0.95	1.86	0.000	0.014	3.81
MAX	16	0.27	49	6.8	0.00	0.00	0.00	13	17	0.00	0.40	30
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	76	1.5	174	28	0.00	0.00	0.00	58	110	0.00	0.9	227

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2003, BY WATER YEAR (WY)

MEAN	32.7	12.9	19.6	11.8	32.6	50.1	37.5	96.8	59.0	5.40	4.86	11.2
MAX	902	97.3	303	139	411	295	686	453	508	123	48.7	102
(WY)	1982	1974	1992	1985	1997	1985	1990	1989	1992	1973	1995	1980
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	1979	1972	1966	1966	1966	1967	1971	1971	1971	1964	1969	1979

SUMMARY STATISTICS

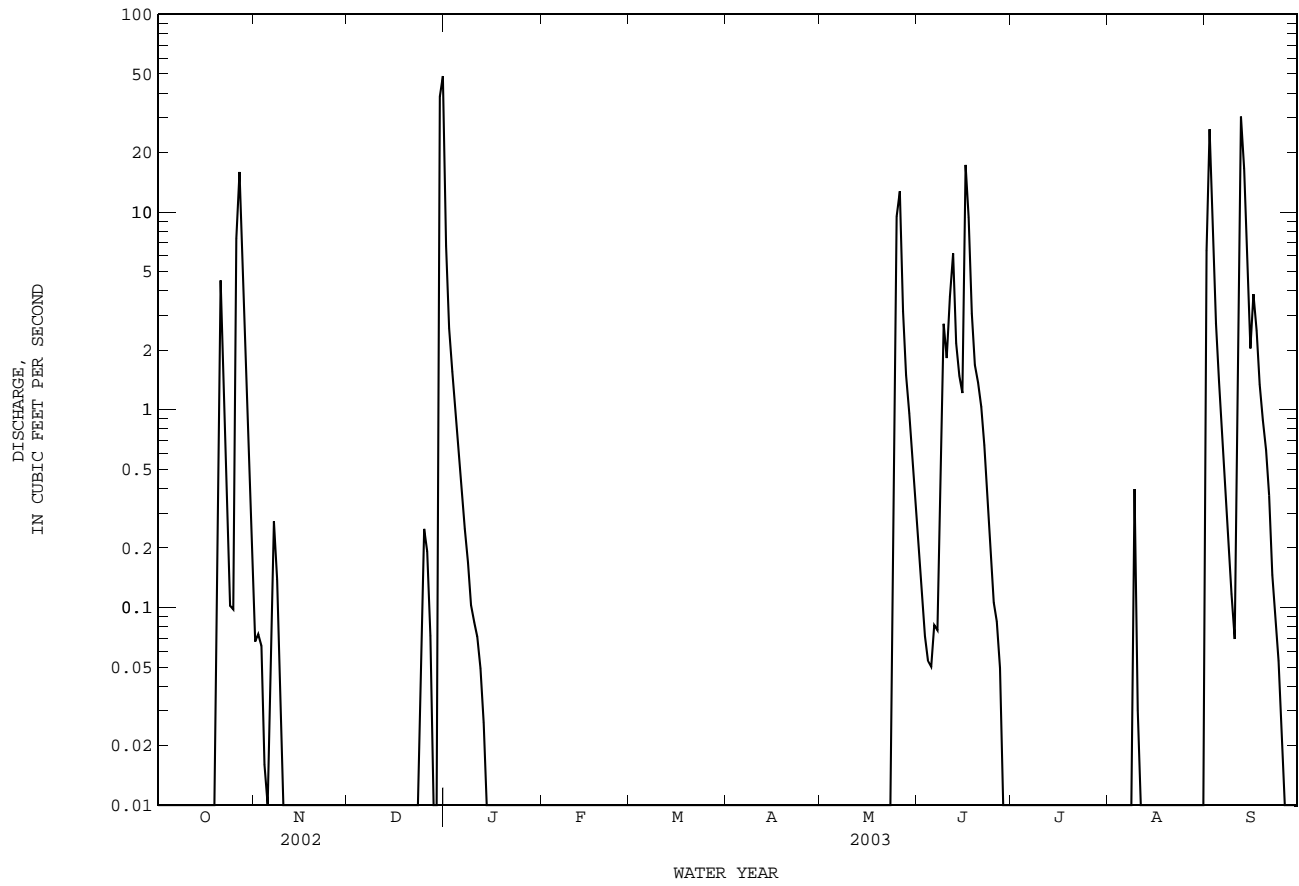
FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1964 - 2003

ANNUAL TOTAL	2522.75	340.48	
ANNUAL MEAN	6.91	0.93	31.8
HIGHEST ANNUAL MEAN			128
LOWEST ANNUAL MEAN			0.44
HIGHEST DAILY MEAN	755	49	16900
LOWEST DAILY MEAN	0.00	0.00	0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	0.00	0.00
MAXIMUM PEAK FLOW		113	32500
MAXIMUM PEAK STAGE		9.26	31.70
ANNUAL RUNOFF (AC-FT)	5000	675	23040
10 PERCENT EXCEEDS	4.5	1.4	16
50 PERCENT EXCEEDS	0.00	0.00	0.12
90 PERCENT EXCEEDS	0.00	0.00	0.00

07315200 East Fork Little Wichita River near Henrietta, TX--Continued



07315500 Red River near Terral, OK

LOCATION.--Lat 33°52'43", long 97°56'03", Jefferson County, Hydrologic Unit 11130201, on left bank at downstream side of bridge abutment on U.S. Highway 81, 0.5 mi downstream from Chicago and Rock Island 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.--Apr. 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 NGVD of 1929. Prior to Jan. 12, 1939, nonrecording gage at same site and datum. Satellite telemeter at station.

REMARKS.--Records good. Since installation of gage in Apr. 1938, at least 10% of contributing drainage area has been regulated. There are many small diversions upstream from station for irrigation, oil field operations, and for municipal uses.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	230	5250	333	1130	402	374	297	346	943	3260	67	834
2	232	2870	327	977	399	362	292	335	730	3780	63	630
3	233	2170	338	891	394	376	280	330	612	2940	63	722
4	236	2530	376	806	389	378	272	296	547	1640	63	1030
5	233	2530	396	745	382	374	265	275	630	1190	63	914
6	241	1840	823	710	393	375	287	256	1560	950	64	610
7	244	1410	1320	673	390	365	298	245	3020	753	67	462
8	247	1190	1040	634	381	359	284	231	10400	586	70	366
9	252	1020	885	613	389	357	270	216	4600	473	85	289
10	264	887	781	582	406	345	260	212	4300	390	102	230
11	294	789	794	558	405	342	263	241	2490	324	102	245
12	332	712	801	540	390	343	260	200	2310	277	100	322
13	405	636	771	535	397	344	248	190	2730	245	119	435
14	514	587	706	538	419	332	241	187	2840	219	116	363
15	570	547	628	532	424	323	239	173	2540	207	115	256
16	507	511	570	511	e415	308	272	195	4010	202	126	277
17	403	488	528	497	e406	303	253	177	5820	190	142	1260
18	346	472	489	483	e397	327	288	178	3020	169	158	1080
19	332	452	458	472	385	330	279	191	1840	153	157	722
20	342	443	435	452	369	349	255	269	1420	138	134	519
21	310	432	419	439	382	347	252	678	1130	121	123	439
22	404	419	408	429	400	332	245	768	959	119	114	380
23	323	404	444	415	411	318	427	536	836	111	104	327
24	308	e388	534	415	452	312	735	478	774	104	100	322
25	333	e367	5980	425	425	356	732	3670	2520	96	97	285
26	473	348	6050	420	398	352	739	5320	2010	87	95	250
27	758	341	3070	407	373	321	686	5820	2510	82	94	229
28	878	341	2090	409	392	311	552	2910	8250	77	82	220
29	1670	338	1640	403	---	310	469	2310	5600	76	95	204
30	5850	341	1620	397	---	305	399	1890	2860	75	133	195
31	10000	---	1580	400	---	302	---	1310	---	73	317	---
TOTAL	27764	31053	36634	17438	11165	10532	10639	30433	83811	19107	3330	14417
MEAN	896	1035	1182	563	399	340	355	982	2794	616	107	481
MAX	10000	5250	6050	1130	452	378	739	5820	10400	3780	317	1260
MIN	230	338	327	397	369	302	239	173	547	73	63	195
AC-FT	55070	61590	72660	34590	22150	20890	21100	60360	166200	37900	6610	28600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2003, BY WATER YEAR (WY)

MEAN	2927	1532	1140	954	1392	2024	2585	6353	6081	1636	1287	1938
MAX	23900	9713	11810	5306	9320	14710	18080	43580	37460	8077	14730	9653
(WY)	1987	1987	1992	1992	1987	1998	1990	1957	1941	1950	1995	1986
MIN	108	102	91.2	76.5	136	66.1	142	134	517	158	107	100
(WY)	1953	1940	1939	1940	1953	1940	1971	1971	1966	1964	2003	2000

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

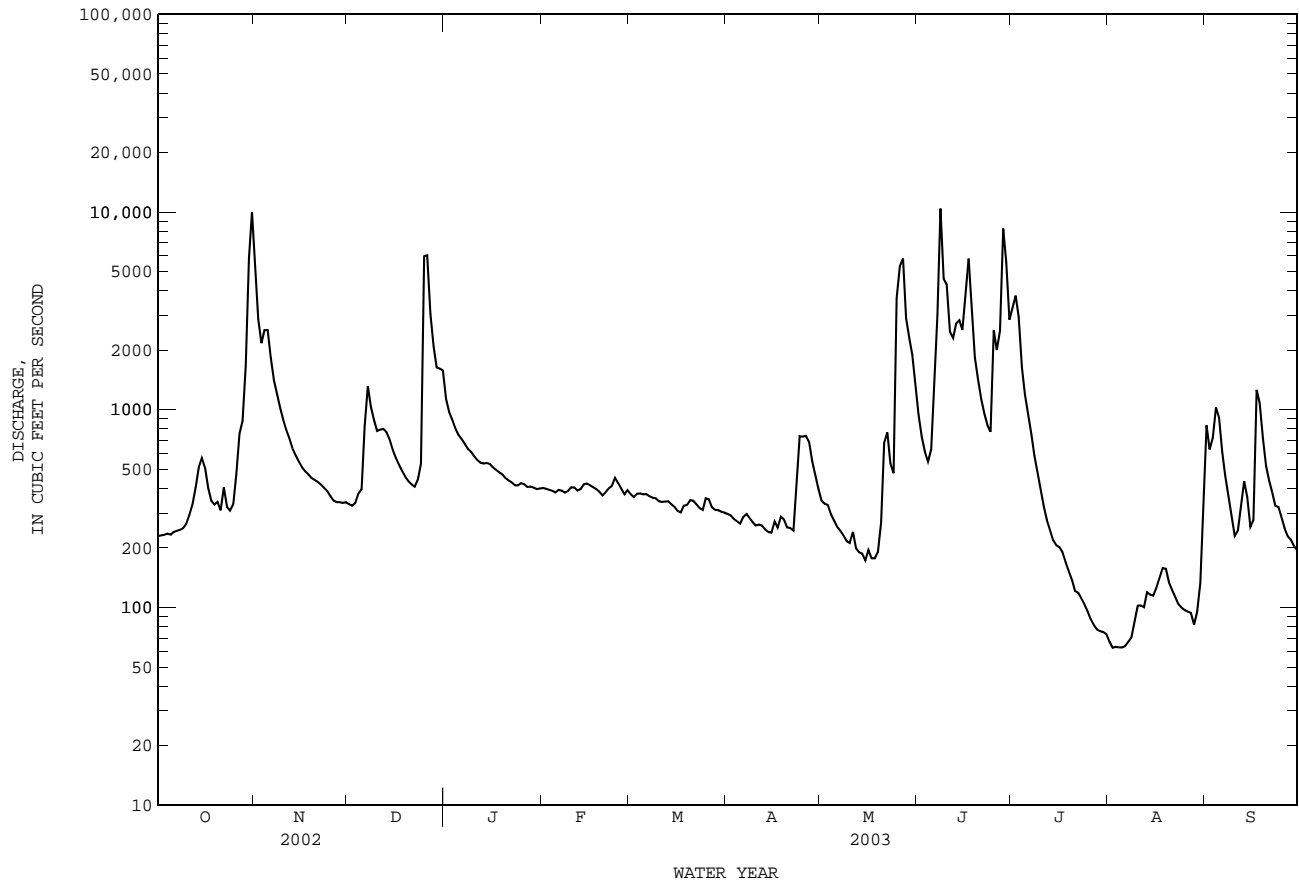
FOR 2003 WATER YEAR

WATER YEARS 1938 - 2003

ANNUAL TOTAL	375801	296323	
ANNUAL MEAN	1030	812	2485
HIGHEST ANNUAL MEAN			8925
LOWEST ANNUAL MEAN			523
HIGHEST DAILY MEAN	13900	Apr 15	215000
LOWEST DAILY MEAN	46	Sep 7	46
ANNUAL SEVEN-DAY MINIMUM	56	Sep 3	47
MAXIMUM PEAK FLOW			13600
MAXIMUM PEAK STAGE			14.32
ANNUAL RUNOFF (AC-FT)	745400	587800	1801000
10 PERCENT EXCEEDS	2270	2040	5440
50 PERCENT EXCEEDS	444	390	595
90 PERCENT EXCEEDS	233	130	177

e Estimated

07315500 Red River near Terral, OK--Continued



RED RIVER BASIN

07315500 Red River near Terral, OK--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Oct. 1967 to Sept. 1997, Oct. 2002 to current year.

BIOLOGICAL DATA: May 1997 to Sept. 1997, Oct. 1999 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf, uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Fecal coliform, M-FC 0.7u MF 100 mL (31625)	E coli, m-TEC MF, water, col/100 mL (31633)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water, fltrd, mg/L as N (00631)
OCT 29...	1225	1780	4410	7.9	13.6	8.8	86	6700k	3600k	--	.96	.038	1.00
MAR 11...	1110	341	7050	8.4	11.2	13.9	130	E9k	10k	100	--	E.004	<.06
JUN 03...	0930	627	5910	8.1	25.1	6.4	82	280	<3i	110	.50	.008	.50
AUG 20...	1225	135	4650	8.4	38.5	8.3	127	22k	28k	59	--	<.008	<.06

Date	Ammonia water, fltrd, mg/L as N (00608)	Total nitrogen, water, unfltrd mg/L (00600)	Organic nitrogen, water, unfltrd mg/L (00605)	Organic nitrogen, water, fltrd, mg/L (00607)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Phosphorus, water, unfltrd mg/L (00665)	Phosphorus, water, fltrd, mg/L (00666)	Orthophosphate, water, fltrd, mg/L as P (00671)	Orthophosphate, water, fltrd, mg/L (00660)
OCT 29...	.20	4.7	3.5	.30	.50	3.7	1.46	.062	.05	.166
MAR 11...	<.04	--	--	--	.38	1.4	.186	.016	<.02	--
JUN 03...	<.04	1.9	--	--	.40	1.4	.39	.083	.06	.193
AUG 20...	<.04	--	--	--	.56	1.7	.24oc	.024	<.02	--

Remark codes used in this report:

< -- Less than
E -- Estimated value

Value qualifier codes used in this report:

c -- See laboratory comment
i -- Result may be affected by interference
k -- Counts outside acceptable range
o -- Result determined by alternate method

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07315600 Lake Nacona near Nacona, TX

LOCATION.--Lat 33°52'57", long 97°39'09", Montague County, Hydrologic Unit 11130201, on western bank near left end of dam on Farmer's River, 6.0 mi northeast of Nocona.

DRAINAGE AREA.--94.0 mi².

PERIOD OF RECORD.--Mar. 1999 to Sept. 2002 (daily mean contents). Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by an earthfill dam 3,720 ft long, including a 483-foot-wide reinforced concrete ogee-type uncontrolled spillway near right end of dam. The dam was completed Oct. 1960, and storage began spring 1961. The service outlet consists of two gate-controlled 4- by 5-foot conduits. The dam and lake are owned by the North Montague County Water Supply District, which uses the water for their municipal supply. The capacity table is based on U.S. Geological Survey topographic maps, dated 1929. The capacity curve was entitled "Initial Lake Nocona Area & Capacity Characteristics". Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	847.00
Crest of spillway.....	827.50
Lowest gated outlet (invert).....	795.00

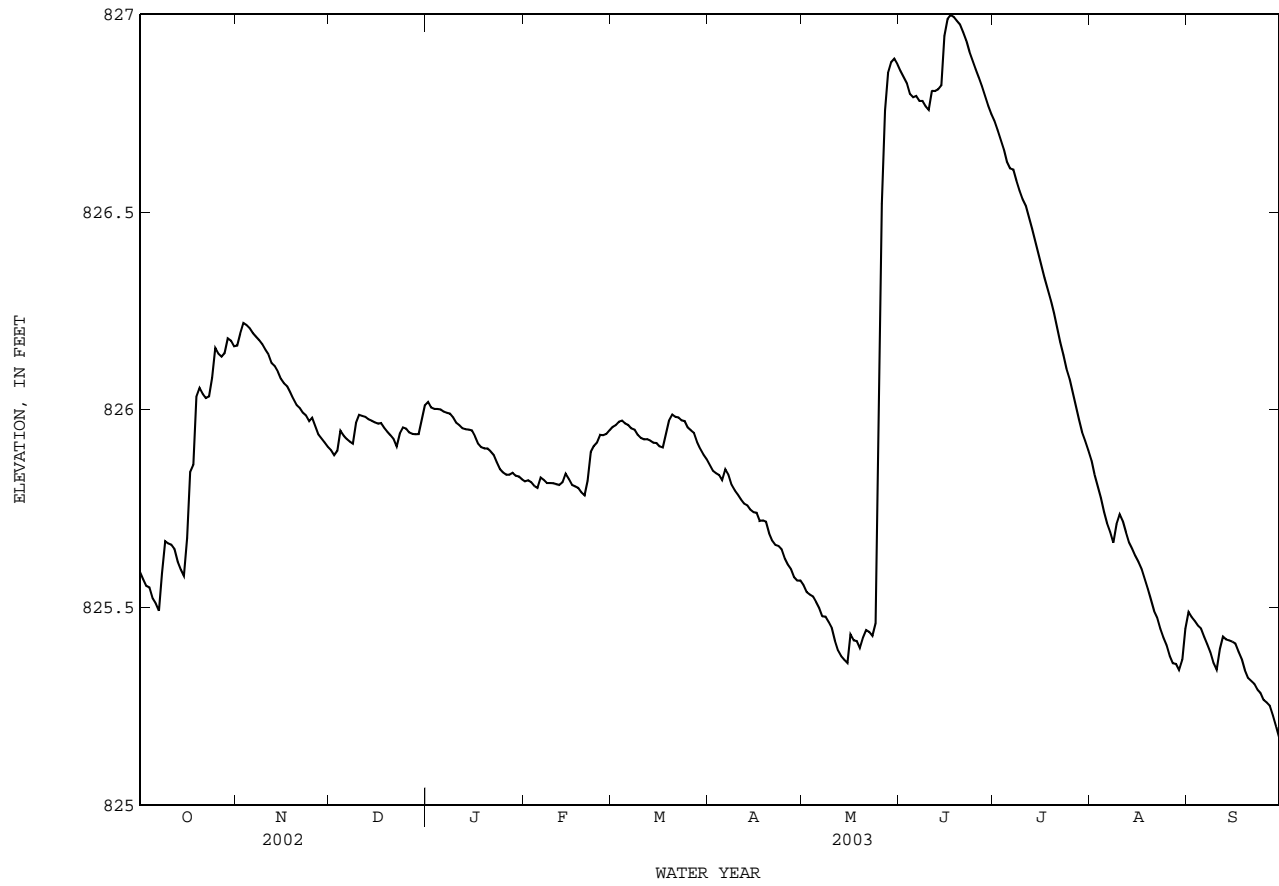
COOPERATION.--Capacity curve was provided by the North Montague County Water Supply District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 29,540 acre-ft, Feb. 28, Mar. 1, 2001, elevation, 829.51 ft; minimum contents, 13,240 acre-ft, Oct. 5, 2000, elevation, 816.95 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 827.01 ft, June 19; minimum elevation, 825.15 ft, Sept. 30.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

07315600 Lake Nacona near Nacona, TX--Continued



07315950 Moss Lake near Gainesville, TX

LOCATION.--Lat 33°46'26", long 97°12'50", Cooke County, Hydrologic Unit 11130201, on upstream side of dam about 250 ft from right end of Fish Creek dam on Fish Creek, 1.6 mi upstream from Bearhead Creek, 3.7 mi upstream from mouth, and 10.0 mi northwest of Gainesville.

DRAINAGE AREA.--65.0 mi².

PERIOD OF RECORD.--Oct. 1967 to current year.

Water-quality records.--Chemical data: Oct. 1969 to Sept. 1984.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Apr. 20, 1979, recording gage at site about 150 ft upstream from same datum. Satellite telemeter at station.

REMARKS.--No estimated daily contents. Records good. The lake is formed by a rolled earthfill dam, 1,460 ft long. The dam was completed and storage began Dec. 2, 1966. An uncontrolled morning-glory-type spillway with a 7- by 7-foot opening is designed to discharge 2,500 ft³/s at a 10-foot head. A 400-foot-wide spillway has been cut through natural ground, and is located about 100 ft to left of the left end of dam. The dam was built by the city of Gainesville to impound water for municipal use. Conservation pool storage is 24,155 acre-ft. Data regarding the dam is given in the following table:

	Elevation (feet)
Top of dam.....	740.0
Top of design flood pool.....	736.0
Crest of spillway.....	725.0
Crest of spillway morning-glory type (top of conservation pool).....	715.0
Lowest gated outlet (invert).....	666.0

COOPERATION.--Capacity Table No. 1, prepared by Freese, Nichols, and Endress, Consulting Engineers, Fort Worth, for the city of Gainesville, was replaced by Capacity Table No. 2. Table No. 2 was furnished by the Texas Water Development Board, and put into effect Oct. 27, 1999.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 50,990 acre-ft, Oct. 13, 1981, elevation, 733.72 ft; minimum contents since lake filled in May 1968, 11,490 acre-ft, Jan. 18, 1990, elevation, 702.08 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 24,680 acre-ft, Dec. 31, gage height, 715.51 ft; minimum contents, 22,440 acre-ft, Sept. 30, gage height, 713.38 ft.

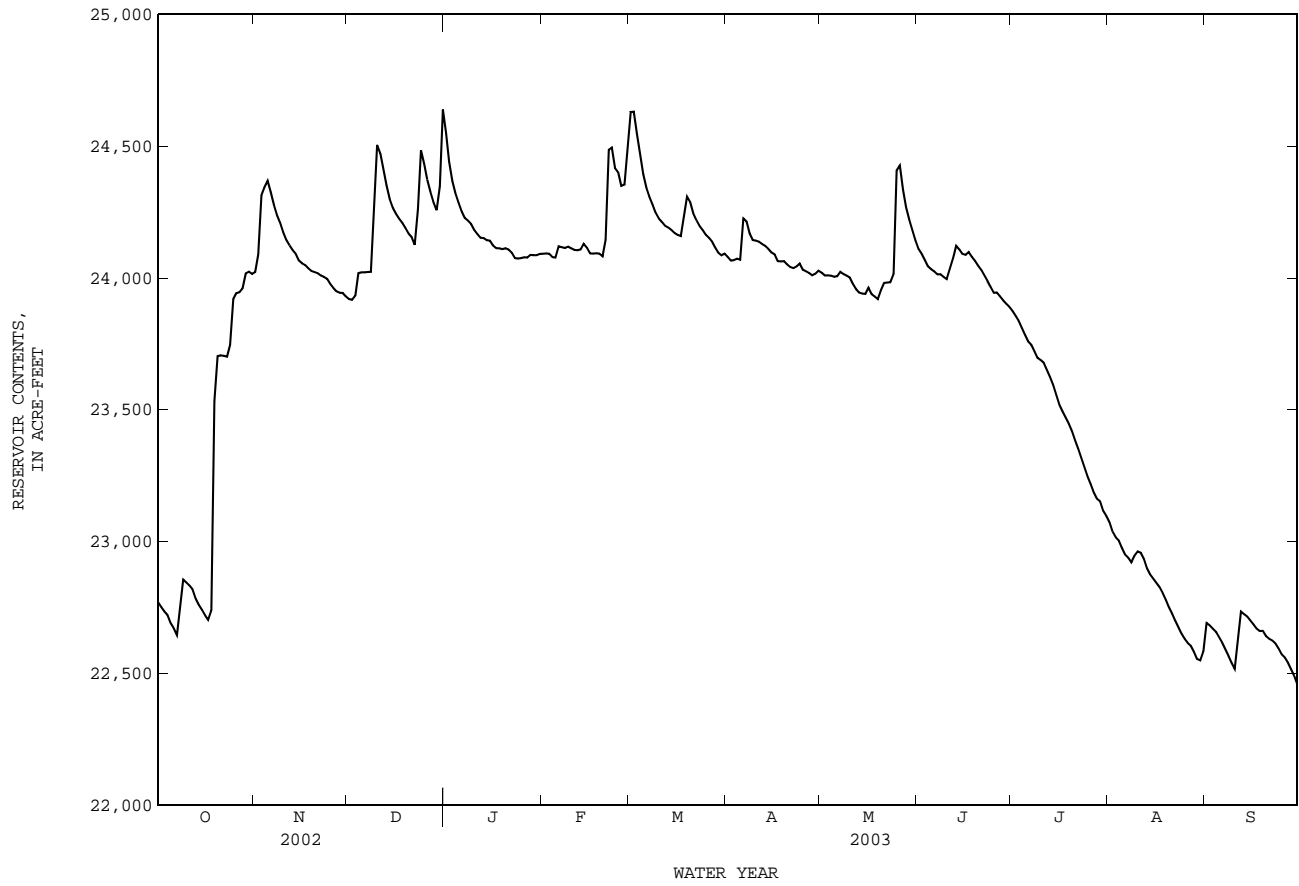
RESERVOIR STORAGE, IN (ACRE-FEET), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22770	24020	23920	24550	24090	24630	24080	24020	24110	23880	23070	22690
2	22750	24090	23920	24440	24090	24630	24070	24010	24090	23860	23040	22680
3	22740	24310	23930	24370	24090	24550	24070	24010	24070	23840	23020	22670
4	22720	24340	24020	24320	24080	24470	24070	24010	24040	23810	23000	22660
5	22690	24370	24020	24290	24080	24400	24070	24000	24030	23790	22980	22640
6	22670	24330	24020	24250	24120	24340	24230	24010	24030	23760	22950	22620
7	22650	24280	24020	24230	24120	24310	24210	24020	24010	23750	22940	22590
8	22750	24240	24020	24220	24110	24280	24170	24020	24010	23720	22920	22570
9	22860	24210	24270	24210	24120	24250	24140	24010	24000	23700	22950	22540
10	22850	24170	24510	24180	24110	24230	24140	24000	24000	23690	22960	22520
11	22830	24140	24470	24170	24110	24210	24140	23980	24040	23680	22960	22630
12	22820	24120	24410	24150	24110	24200	24130	23960	24080	23650	22930	22740
13	22780	24110	24350	24150	24110	24190	24120	23940	24120	23620	22900	22720
14	22760	24090	24300	24140	24130	24180	24110	23940	24110	23600	22880	22720
15	22740	24070	24270	24140	24120	24170	24100	23940	24090	23560	22860	22700
16	22720	24060	24240	24120	24090	24160	24090	23960	24090	23520	22840	22690
17	22700	24050	24230	24110	24090	24160	24060	23940	24100	23490	22830	22670
18	22740	24040	24210	24110	24090	24230	24060	23930	24080	23470	22800	22660
19	23530	24030	24190	24110	24090	24310	24060	23920	24070	23450	22780	22660
20	23700	24020	24170	24110	24080	24290	24050	23950	24050	23420	22750	22640
21	23710	24020	24160	24110	24140	24250	24040	23980	24030	23390	22730	22630
22	23700	24010	24130	24100	24490	24220	24040	23980	24010	23350	22700	22620
23	23700	24000	24260	24080	24490	24200	24040	23980	23990	23320	22680	22610
24	23750	24000	24490	24070	24420	24180	24050	24010	23970	23280	22650	22590
25	23920	23980	24430	24080	24400	24160	24030	24410	23940	23250	22630	22570
26	23940	23960	24370	24080	24350	24150	24030	24430	23950	23220	22610	22560
27	23950	23950	24330	24080	24350	24140	24020	24330	23930	23190	22600	22540
28	23960	23940	24290	24090	24480	24120	24010	24270	23920	23160	22580	22520
29	24020	23940	24260	24090	---	24100	24020	24220	23900	23150	22550	22490
30	24020	23930	24350	24090	---	24090	24030	24180	23890	23120	22550	22460
31	24020	---	24640	24090	---	24090	---	24140	---	23100	22580	---
MEAN	23210	24090	24230	24170	24180	24250	24080	24050	24020	23510	22810	22620
MAX	24020	24370	24640	24550	24490	24630	24230	24430	24120	23880	23070	22740
MIN	22650	23930	23920	24070	24080	24090	24010	23920	23890	23100	22550	22460
(+)	714.87	714.79	715.47	714.94	715.31	714.94	714.88	714.99	714.75	714.01	713.52	713.40
(@)	+1230	-90	+710	-550	+390	-390	-60	+110	-250	-790	-520	-120
CAL YR 2002	MAX 26540	MIN 22320	(@) +2270									
WTR YR 2003	MAX 24640	MIN 22460	(@) -330									

(+) Elevation, in feet, at end of month.

(@) Change in contents, in acre-feet.

07315950 Moss Lake near Gainesville, TX--Continued



07316000 Red River near Gailesville, TX

LOCATION.--Lat 33°43'40", long 97°09'35", in SW ¼ 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 sea level. 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.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 24,000 ft³/s and maximum (*):

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 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e180	8,670	329	3,880	454	995	377	585	2,360	6,590	190	408
2	e178	7,150	323	2,920	454	866	377	499	1,820	4,490	183	1,290
3	e177	4,640	344	1,960	467	775	372	422	1,350	4,850	184	2,200
4	e176	3,070	430	1,410	451	681	366	382	1,040	5,290	186	1,660
5	e174	2,620	465	1,210	437	620	351	376	873	4,040	e180	1,260
6	e170	2,880	428	1,060	491	582	414	355	758	2,720	e178	1,440
7	e165	2,580	405	947	524	547	393	325	753	2,150	e176	1,550
8	208	1,890	534	878	499	532	340	288	2,360	1,740	e175	1,100
9	338	1,500	1,480	836	491	508	330	268	7,220	1,430	e174	845
10	338	1,270	1,560	765	484	491	337	278	10,200	1,220	184	693
11	282	1,090	1,200	713	479	474	334	264	6,490	1,040	213	828
12	255	944	988	669	481	467	322	248	5,980	906	226	734
13	700	842	901	636	493	458	310	240	4,340	796	218	594
14	1,290	765	879	615	534	445	301	280	3,960	708	202	524
15	995	696	820	603	535	435	292	393	4,070	632	225	727
16	819	635	776	593	498	425	295	486	3,970	562	220	771
17	675	593	696	588	489	412	286	1,290	3,680	506	196	555
18	675	556	635	565	499	494	287	850	5,790	466	e182	467
19	1,520	517	575	554	501	866	299	414	7,120	442	e180	1,210
20	846	490	530	552	487	922	272	1,070	3,980	404	178	1,780
21	613	467	489	543	569	709	281	3,280	2,650	364	e176	1,280
22	557	447	453	519	1,020	596	266	2,080	2,180	336	e175	997
23	509	434	642	483	981	559	273	1,760	1,690	310	e174	805
24	534	428	1,090	473	801	542	274	1,410	1,410	287	e173	676
25	1,070	406	1,020	466	760	512	282	3,670	1,210	274	e172	588
26	706	400	2,560	468	761	458	516	8,900	1,140	258	e171	518
27	719	375	7,300	469	835	438	720	9,560	3,190	251	e168	481
28	639	355	4,790	486	993	451	754	11,100	2,930	237	e167	409
29	930	343	2,990	488	---	432	800	8,720	4,520	217	e166	359
30	1,120	337	2,410	464	---	392	688	4,200	9,420	206	186	322
31	1,940	---	3,690	457	---	391	---	e2,990	---	198	216	---
TOTAL	19,498	47,390	41,732	27,270	16,468	17,475	11,509	66,983	108,454	43,920	5,794	27,071
MEAN	629	1,580	1,346	880	588	564	384	2,161	3,615	1,417	187	902
MAX	1,940	8,670	7,300	3,880	1,020	995	800	11,100	10,200	6,590	226	2,200
MIN	165	337	323	457	437	391	266	240	753	198	166	322
AC-FT	38,670	94,000	82,780	54,090	32,660	34,660	22,830	132,900	215,100	87,120	11,490	53,700

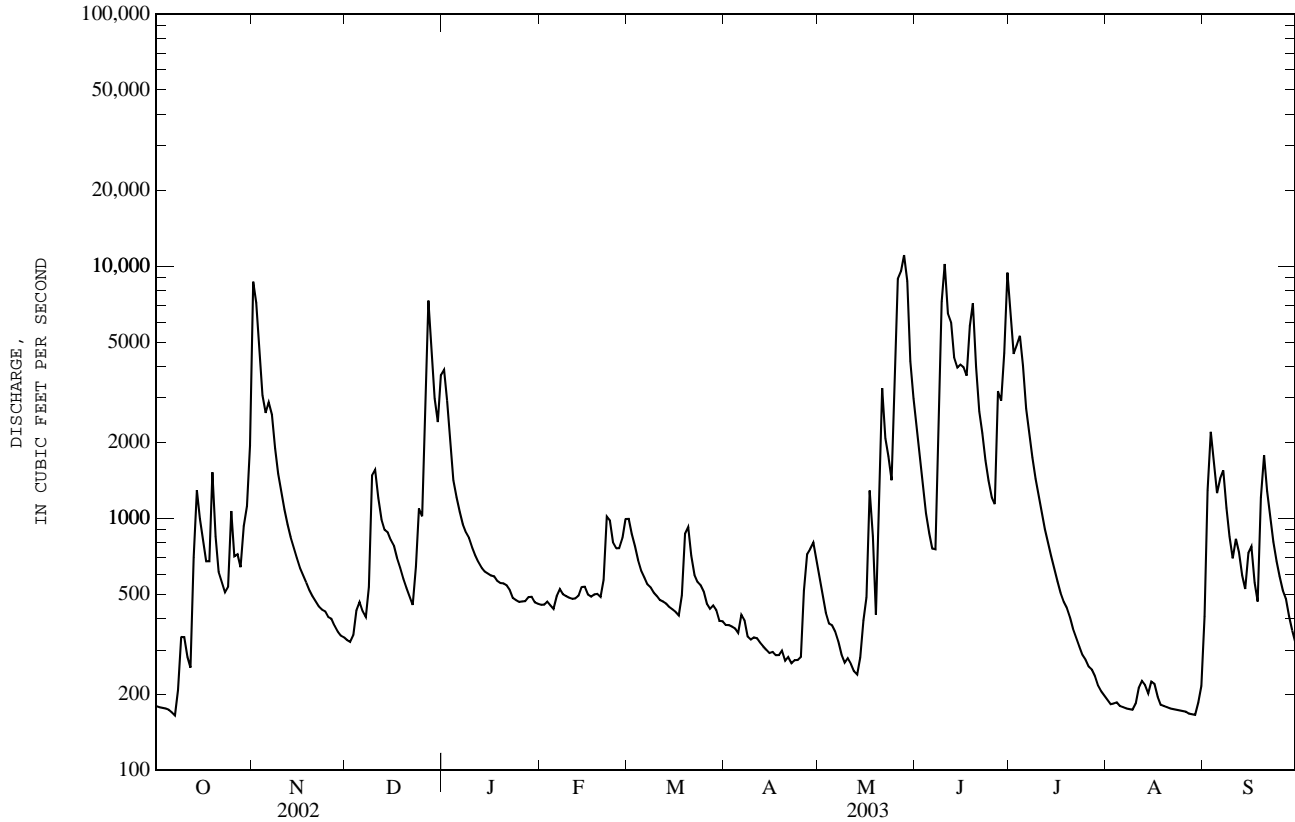
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2003, BY WATER YEAR (WY)

MEAN	3,670	2,040	1,610	1,280	1,940	2,881	3,538	7,811	8,068	2,144	1,550	2,401
MAX	31,080	14,020	14,990	7,258	10,920	19,590	27,400	47,780	43,510	9,857	20,730	12,880
(WY)	(1942)	(1942)	(1992)	(1998)	(2001)	(1998)	(1990)	(1957)	(1941)	(1950)	(1995)	(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)

e Estimated

07316000 Red River near Gainesville, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1937 - 2003	
ANNUAL TOTAL	592,635		433,564		3,246	
ANNUAL MEAN	1,624		1,188		11,890	
HIGHEST ANNUAL MEAN					651	
LOWEST ANNUAL MEAN					1953	
HIGHEST DAILY MEAN	23,500	Apr 15	11,100	May 28	232,000	May 31, 1987
LOWEST DAILY MEAN	164	Sep 24	165	Oct 7	48	Jan 18, 1940
ANNUAL SEVEN-DAY MINIMUM	174	Oct 1	170	Aug 23	48	Jan 18, 1940
MAXIMUM PEAK FLOW			12,800	May 28	265,000	May 31, 1987
MAXIMUM PEAK STAGE			15.23	May 28	40.08	May 31, 1987
ANNUAL RUNOFF (AC-FT)	1,175,000		860,000		2,351,000	
10 PERCENT EXCEEDS	3,520		2,990		7,200	
50 PERCENT EXCEEDS	675		543		849	
90 PERCENT EXCEEDS	262		215		216	



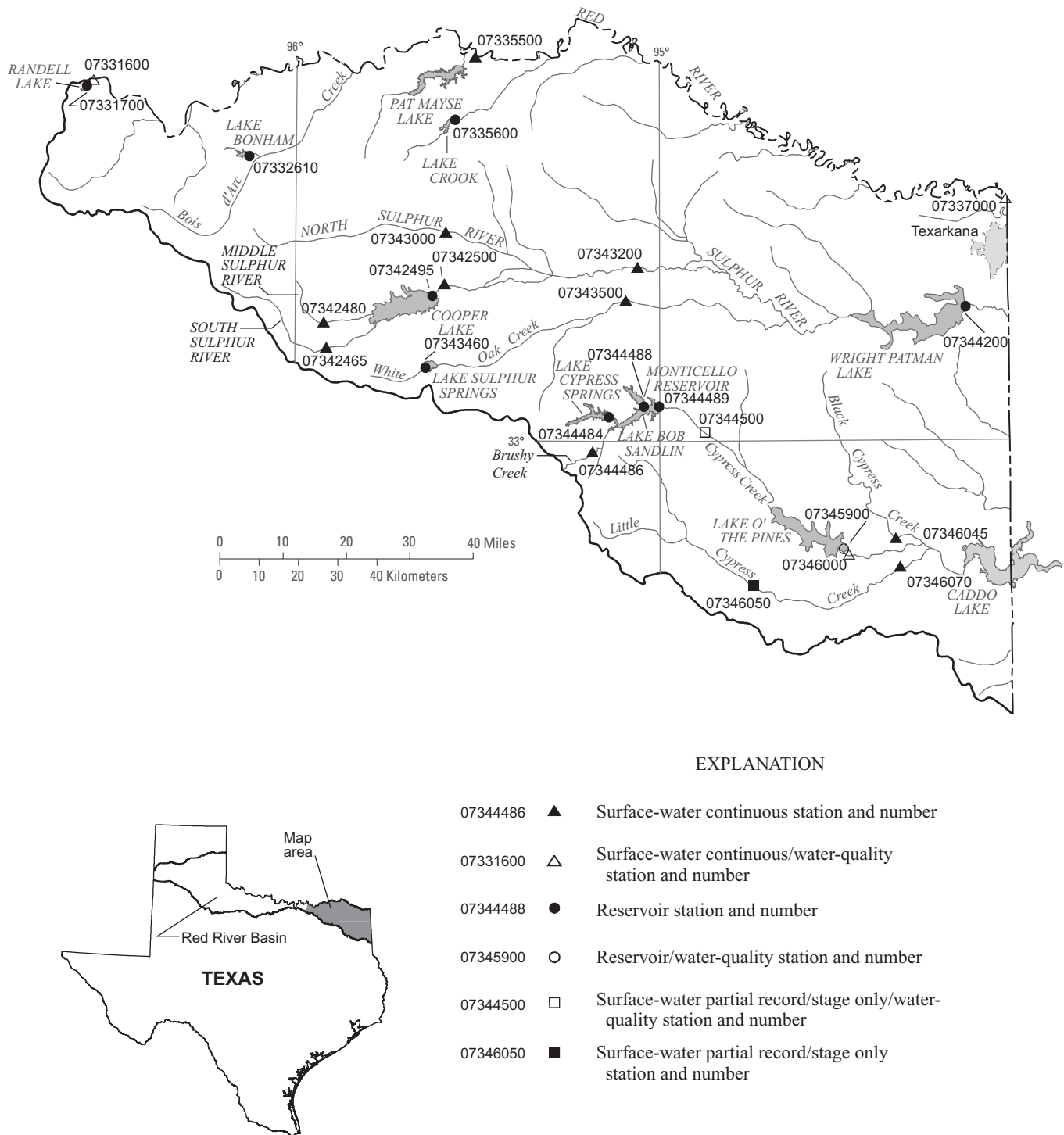


Figure 7.--Map showing location of gaging stations in the fourth section of the Red River Basin

07331600	Red River at Denison Dam near Denison, TX	238
07331700	Randell Lake near Denison, TX	240
07332610	Lake Bonham near Bonham, TX	242
07335500	Red River at Arthur City, TX	244
07335600	Lake Crook near Paris, TX	246
07337000	Red River at Index, AR	248
07342465	South Sulphur River at Commerce, TX	252
07342480	Middle Sulphur River at Commerce, TX	254
07342495	Jim L. Chapman Lake near Cooper, TX	256
07342500	South Sulphur River near Cooper, TX	258
07343000	North Sulphur River near Cooper, TX	260
07343200	Sulphur River near Talco, TX	262
07343460	Lake Sulphur Springs near Sulphur Springs, TX	264
07343500	White Oak Creek near Talco, TX	266
07344200	Wright Patman Lake near Texarkana, TX	268
07344484	Lake Cypress Springs near Mount Vernon, TX	270
07344486	Brushy Creek at Scroggins, TX	272
07344488	Monticello Reservoir near Mount Pleasant, TX	274
07344489	Lake Bob Sandlin near Mount Pleasant, TX	276
07344500	Big Cypress Creek near Pittsburg, TX	278
07345900	Lake O' the Pines near Jefferson, TX	282
07346000	Big Cypress Creek near Jefferson, TX	292
07346045	Black Cypress Bayou at Jefferson, TX	296
07346050	Little Cypress Creek near Ore City, TX	298
07346070	Little Cypress Creek near Jefferson, TX	300

07331600 Red River at Denison Dam near Denison, TX

LOCATION.--Lat 33°49'08", long 96°33'47", Grayson County, Hydrologic Unit 11140101, on right bank 1,800 ft downstream from Denison Dam powerhouse, 0.4 mi upstream from Shawnee Creek (spillway flow return), 4.5 mi north of Denison, and at mile 725.5.

DRAINAGE AREA.--39,720 mi², of which 5,936 mi² is probably noncontributing. At site used prior to October 1961 drainage area was 39,777 mi², of which 5,936 mi² probably was noncontributing.

PERIOD OF RECORD.--October 1923 to September 1989; December 1996 to current year. Monthly discharge only for some periods, published in WSP 1311. Prior to October 1934, published as "near Denison, TX", and October 1934 to September 1961, published as "near Colbert, OK". Gage-height records collected at various sites in this vicinity 1892-93, 1906-28, 1931-49 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 807: 1935 (M). WSP 1211: Drainage area. WSP 1241: 1924-29, 1932-33, 1934 (M), 1935.

GAGE.--Water-stage recorder. Datum of gage is 495.00 ft above National Geodetic Vertical Datum of 1929. Oct. 9, 1923, to Sept. 24, 1934, nonrecording gage, and July 29, 1942, to Sept. 30, 1961, water-stage recorder, at county road bridge 2.5 mi downstream. Prior to Oct. 1, 1931, at datum 11.85 ft higher; Oct. 1, 1931, to Sept 24, 1934, at datum 12.07 ft higher; and July 29, 1942, to Sept. 30, 1961, at datum 2.36 ft higher; Sept. 25, 1934, to July 28, 1942, water-stage recorder at railway bridge 1.9 mi downstream at datum 12.36 ft higher. July 29, 1942 to Sept. 30, 1989, at same site and datum 5.00 ft higher.

REMARKS.--Records fair except for discharges less than 100 ft³/s which are poor. Flow regulated since October 1943 by Lake Texoma (station 07331500). U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 26, 1908, reached a stage of 45.5 ft (at site and datum used July 29, 1942, to Sept. 30, 1961); from record of National Weather Service.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4,410	757	1,840	1,140	1,770	4,880	801	4,300	3,630	2,550	5,550	3,170
2	5,450	180	1,570	8,190	21	1,260	842	2,650	2,740	2,680	3,810	2,940
3	4,210	31	1,080	10,800	5,860	3,220	852	3,420	2,910	6,370	1,080	2,930
4	4,940	724	4,770	10,900	5,990	931	852	339	1,890	6,760	5,110	2,920
5	242	874	6,410	10,900	4,010	5,790	224	1,780	1,170	5,640	3,990	2,930
6	1,060	871	2,390	11,000	3,520	4,260	85	3,900	1,110	4,660	7,050	2,130
7	2,520	1,410	2,530	9,780	3,340	2,230	714	7,300	340	6,290	5,820	2,080
8	69	853	2,330	9,810	3,280	74	968	4,100	63	3,820	5,610	3,220
9	45	3,220	4,500	10,600	23	31	2,500	2,600	821	5,520	243	3,330
10	898	4,550	4,960	8,670	2,670	1,310	3,680	424	345	5,500	2,120	2,060
11	939	943	4,050	9,040	1,130	2,310	1,170	77	e3,630	5,690	4,270	2,150
12	72	847	7,460	9,080	1,120	1,330	309	2,140	e3,750	3,580	2,290	2,040
13	32	2,360	4,030	8,980	1,150	1,560	83	2,460	e4,030	4,740	2,140	204
14	884	2,320	1,900	9,020	1,140	1,370	927	2,480	e875	6,240	2,180	46
15	921	2,280	23	4,580	75	100	1,190	5,580	e48	4,030	3,600	1,510
16	911	144	2,340	4,150	16	43	1,160	3,870	e5,060	4,950	155	207
17	915	20	4,400	10,900	1,690	684	1,140	2,890	1,320	5,080	19	2,440
18	4,020	707	4,590	8,180	1,170	885	1,170	3,190	5,180	5,320	6,210	2,560
19	1,080	2,760	5,320	4,880	1,140	880	372	3,140	3,750	5,260	4,280	3,240
20	66	2,300	6,670	3,770	1,150	861	81	2,030	4,940	4,090	3,730	187
21	2,140	2,280	713	4,060	1,150	868	924	2,450	875	3,270	4,230	54
22	919	2,270	20	7,090	79	114	1,150	3,520	48	2,210	5,560	2,890
23	900	145	3,540	10,900	20	48	1,180	2,440	5,060	2,160	297	2,990
24	909	21	6,630	7,900	7,350	1,450	1,130	2,720	1,080	2,160	2,170	3,000
25	958	1,460	3,610	5,150	11,300	1,460	1,120	1,060	3,340	4,710	4,340	3,020
26	62	2,520	5,380	7,340	11,500	1,440	298	2,230	2,250	4,990	3,840	3,010
27	28	3,770	3,160	2,890	10,800	1,600	84	2,380	5,590	657	5,870	208
28	834	1,170	231	5,120	5,750	1,150	921	2,420	2,670	2,100	4,520	57
29	861	1,890	20	5,060	---	139	1,150	2,440	100	4,970	6,560	2,880
30	870	151	1,390	6,450	---	57	1,180	3,140	5,340	2,230	6,680	3,050
31	590	---	2,860	2,560	---	1,200	---	2,030	---	5,010	6,730	---
TOTAL	42,755	43,828	100,717	228,890	88,214	43,535	28,257	85,500	73,955	133,237	120,054	63,453
MEAN	1,379	1,461	3,249	7,384	3,150	1,404	942	2,758	2,465	4,298	3,873	2,115
MAX	5,450	4,550	7,460	11,000	11,500	5,790	3,680	7,300	5,590	6,760	7,050	3,330
MIN	28	20	20	1,140	16	31	81	77	48	657	19	46
AC-FT	84,800	86,930	199,800	454,000	175,000	86,350	56,050	169,600	146,700	264,300	238,100	125,900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2003, BY WATER YEAR (WY)

	MEAN	MAX	MIN	AC-FT
(WY)	4,714	27,860	66.7	84,800
(WY)	3,644	18,880	79.6	86,930
(WY)	3,427	13,320	569	199,800
(WY)	3,748	20,630	271	454,000
(WY)	3,561	13,800	678	175,000
(WY)	4,680	24,760	614	86,350
(WY)	4,928	20,400	789	56,050
(WY)	7,382	34,710	712	169,600
(WY)	10,990	66,960	1,449	146,700
(WY)	5,436	21,820	1,580	264,300
(WY)	3,506	25,570	953	238,100
(WY)	2,597	10,330	325	125,900

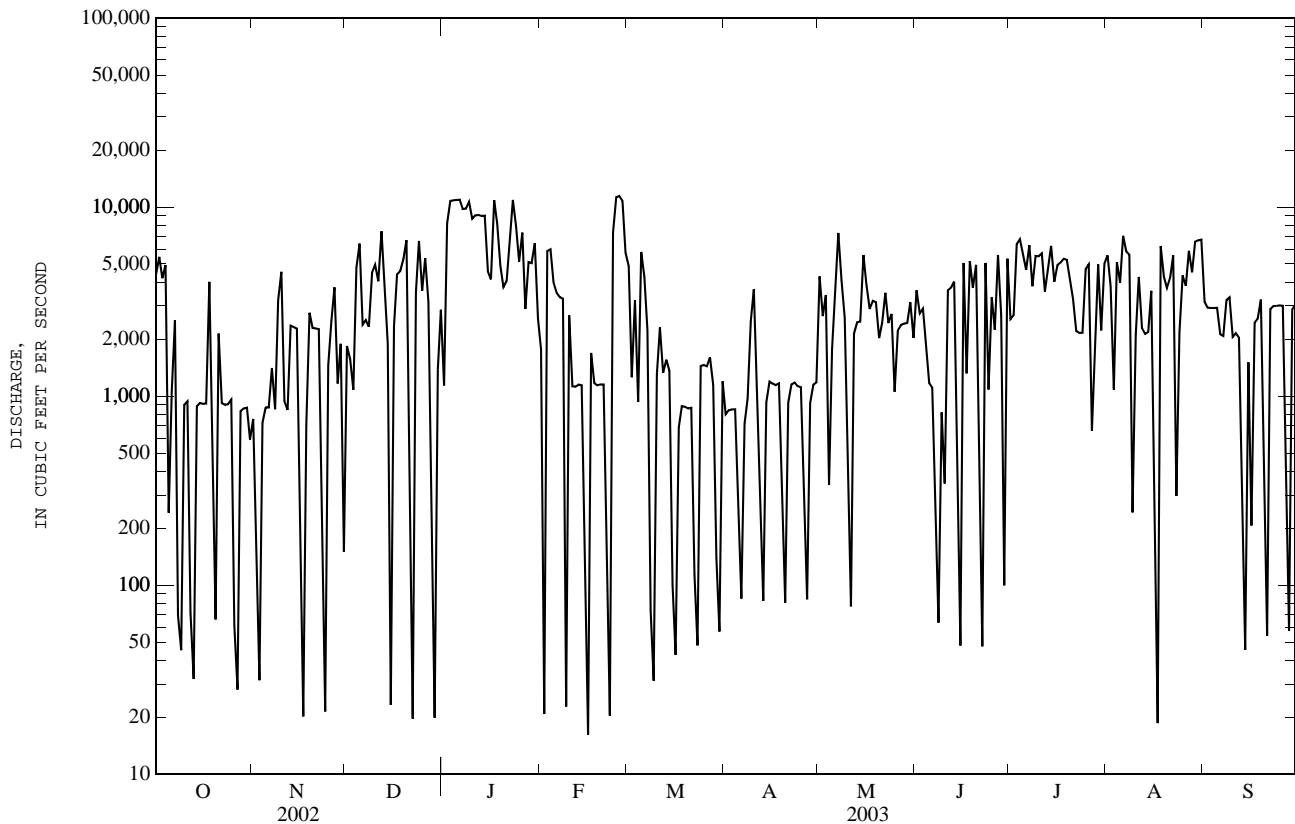
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07331600 Red River at Denison Dam near Denison, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1945 - 2003	
ANNUAL TOTAL	1,420,111		1,052,395		a4,831	
ANNUAL MEAN	3,891		2,883		16,030	
HIGHEST ANNUAL MEAN					1,510	
LOWEST ANNUAL MEAN					96,200	
HIGHEST DAILY MEAN	27,000	Apr 21	11,500	Feb 26	16	Jun 5, 1957
LOWEST DAILY MEAN	20	Nov 17	16	Feb 16	16	Feb 16, 2003
ANNUAL SEVEN-DAY MINIMUM	420	Oct 8	420	Oct 8	25	Mar 8, 2000
MAXIMUM PEAK FLOW			11,700	Aug 30,31	b102,000	Jun 5, 1957
MAXIMUM PEAK STAGE			11.10	Aug 30	c26.26	Jun 5, 1957
ANNUAL RUNOFF (AC-FT)	2,817,000		2,087,000		3,500,000	
10 PERCENT EXCEEDS	7,270		6,260		10,600	
50 PERCENT EXCEEDS	2,850		2,310		2,780	
90 PERCENT EXCEEDS	182		94		188	

a Prior to regulation, water years 1924-43, 5,684 ft³/s.b Maximum discharge for period of record, 201,000 ft³/s May 21, 1935.

c Maximum gage height for period of record, 32.00 ft Apr. 25, 1942, site and datum then in use.



07331700 Randell Lake near Denison, TX

LOCATION.--Lat 33°48'06", long 96°34'48", Grayson County, Hydrologic Unit 11140101, on right bank near the right end of the dam on Shawnee Creek, 5.6 mi northeast of Denison.

DRAINAGE AREA.--11 mi².

PERIOD OF RECORD.--Mar. 1999 to Sept. 2002 (contents), Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 2,100 ft long. The outlet works consist of twenty-three 8 by 12-ft tainter gates and two 8-ft wide open concrete spillways. Dam was completed and impoundment began in 1909. The lake was built and owned by the city of Denison. Data regarding the dam are given in the following table:

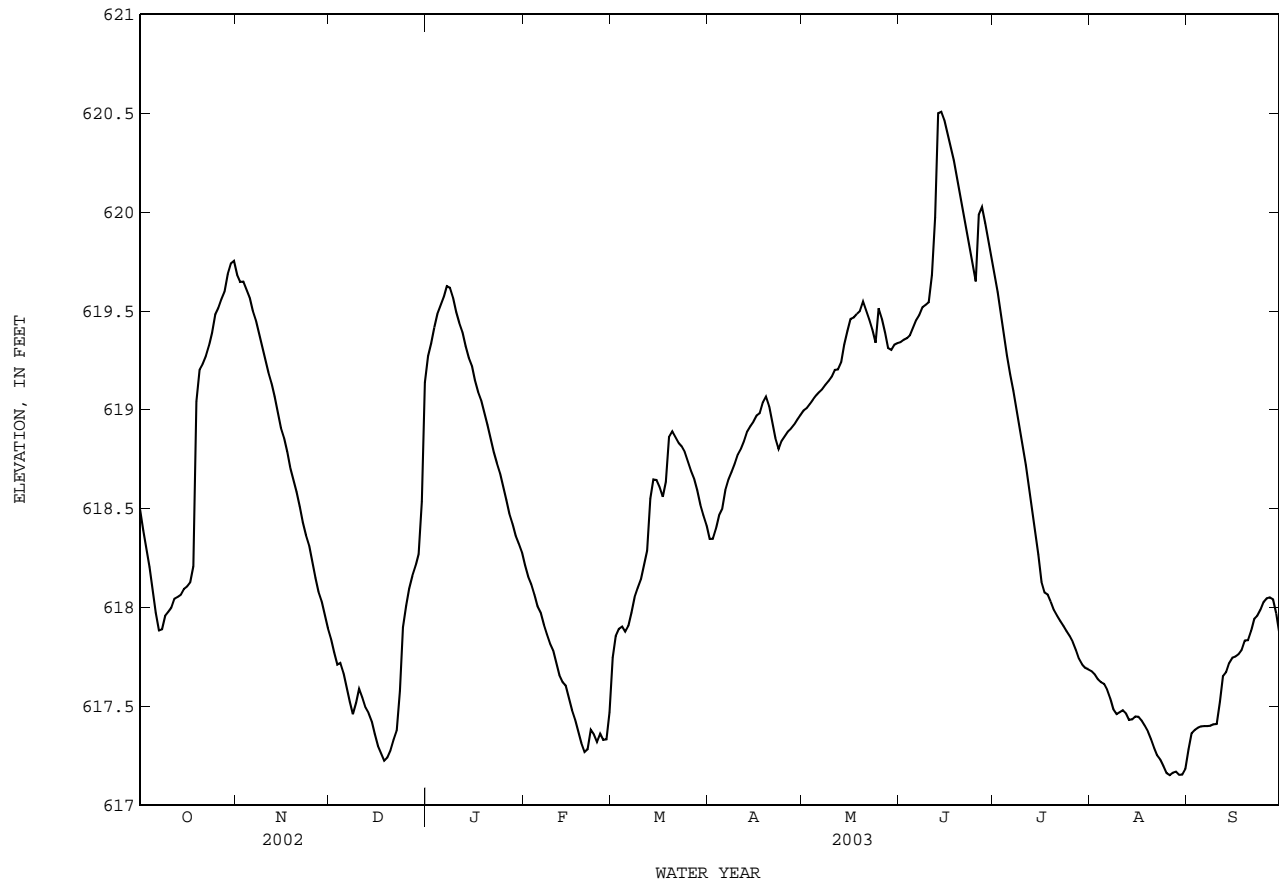
	Elevation (feet)
Top of dam.....	640.00
Top of tainter gates.....	628.00
Crest of concrete spillway.....	630.00

EXTREMES FOR PERIOD OF RECORD.--Maximum contents 6,360 acre-ft, Apr. 7, 2002, elevation 623.77 ft; minimum contents, 2,250 acre-ft, Sept. 3, 4, 5, 1999, elevation, 608.04 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 620.52 ft, June 13, 14; minimum elevation, 617.13 ft, Aug. 29, 30.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

07331700 Randell Lake near Denison, TX--Continued



07332610 Lake Bonham near Bonham, TX

LOCATION.--Lat 33°39'06", long 96°07'48", Fannin County, Hydrologic Unit 11140101, on south shore of lake near raw water intake structure, 42.0 mi west of Paris, TX, and approximately 98 miles from Fort Worth, TX.

DRAINAGE AREA.--29.0 mi².

PERIOD OF RECORD.--Mar. 1999 to Sept. 2002 (contents), Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is unknown. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam. The dam was completed and storage began Apr. 28, 1970. A spillway has been cut through natural ground. The dam was built by the city of Bonham Water Authority to impound water for municipal use. There was no known diversion from the lake during the current water year. Data regarding the dam are given in the following table:

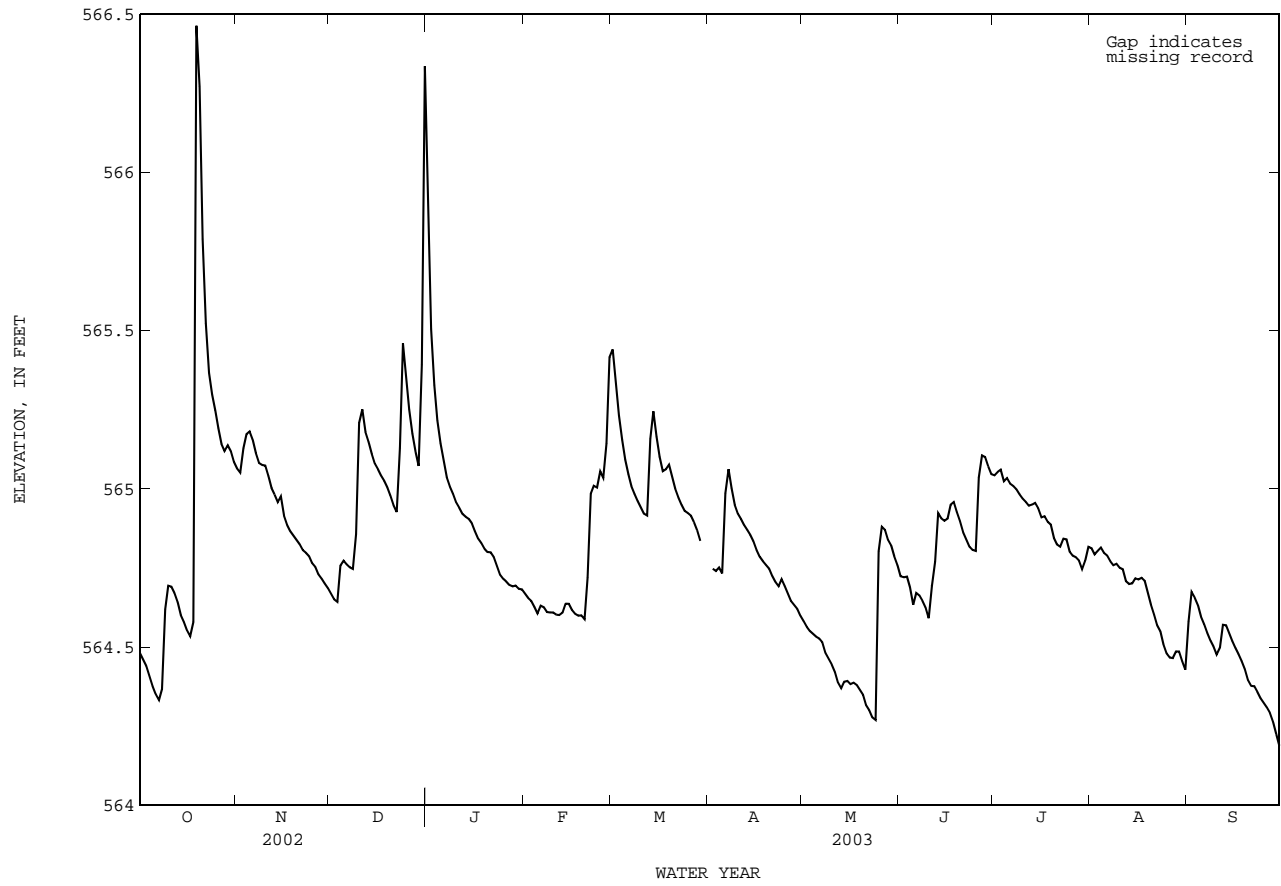
	Elevation (feet)
Top of dam.....	580.0
Crest of Spillway.....	565.0
Emergency Spillway.....	571.0

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 16,950 acre-ft, Feb. 16, 2001, elevation, 568.50 ft; minimum contents, 9,920 acre-ft, Oct. 9, 2000, elevation, 562.02 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 567.00 ft, Oct. 19; minimum elevation, 564.15 ft, Sept. 30.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

07332610 Lake Bonham near Bonham, TX--Continued



07335500 Red River at Arthur City, TX

LOCATION.--Lat 33°52'30", long 95°30'06", in NW ¼ 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 sea level. 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 poor. 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 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e900	3,260	e2,200	20,600	7,060	20,700	e1,700	e1,740	e1,630	4,110	3,960	7,520
2	840	e2,710	e2,020	19,800	4,570	14,600	e1,710	e2,660	3,020	4,170	3,850	8,940
3	1,950	e2,600	e2,050	12,300	3,610	11,300	e1,710	2,850	2,570	4,880	5,450	6,980
4	4,860	3,300	2,740	13,500	e2,210	7,420	e1,700	3,700	3,440	3,360	5,380	5,490
5	4,450	3,310	e2,170	14,100	e4,720	7,320	e1,680	3,300	3,680	5,540	3,410	4,790
6	4,700	3,120	4,200	13,500	6,970	5,930	e1,670	e3,300	4,890	7,270	5,080	4,240
7	3,240	3,280	7,500	13,200	5,620	8,260	e1,670	e2,600	4,660	6,610	5,800	3,920
8	2,120	e3,010	5,630	12,900	4,320	7,240	e1,800	e3,100	e2,870	5,930	7,240	3,460
9	2,830	e2,610	4,130	11,200	4,470	5,020	e2,000	e4,090	e2,000	6,190	6,670	2,790
10	2,710	e2,490	3,550	11,500	4,980	3,440	e2,380	5,660	1,270	5,430	6,390	3,000
11	2,100	3,330	7,530	11,500	e2,460	e2,690	e2,120	4,140	e1,600	5,510	4,170	3,680
12	e1,750	4,890	8,720	10,500	e3,200	e2,640	e2,200	2,990	e2,260	6,220	1,820	3,420
13	e1,530	3,890	7,020	10,200	e2,540	3,770	3,150	e2,360	3,170	5,590	3,590	3,000
14	e1,340	e2,450	8,990	10,100	e2,380	4,070	e2,600	e2,090	6,070	4,900	3,930	3,760
15	e1,120	2,140	6,780	10,100	e2,270	6,500	e2,470	e2,500	6,580	4,690	2,770	3,050
16	e909	3,010	5,060	8,940	e2,120	4,950	e1,740	3,300	5,250	6,310	2,600	1,710
17	e1,250	3,000	2,940	6,410	e1,990	3,640	e1,330	5,080	3,300	5,480	2,990	1,240
18	1,600	e2,500	e2,100	7,100	e1,820	3,090	e1,140	4,870	4,660	4,710	3,040	1,850
19	2,870	e2,310	5,170	10,300	e1,600	5,040	e1,080	4,190	4,870	5,420	1,180	1,350
20	15,300	e2,050	5,720	8,780	2,550	7,450	e1,070	4,410	4,260	5,710	2,900	2,730
21	15,300	2,200	6,280	6,430	2,600	7,190	e1,040	5,050	4,880	5,690	5,130	3,500
22	9,180	2,910	7,210	5,430	3,780	6,180	e1,010	4,370	4,960	5,110	4,100	3,060
23	4,930	2,920	4,270	5,490	5,730	5,130	947	3,870	4,370	3,960	4,240	1,380
24	3,620	2,890	8,260	8,860	6,960	4,290	e945	4,070	e2,400	3,150	5,150	1,280
25	2,990	e2,500	18,800	10,900	5,460	3,580	e940	3,560	e2,790	2,490	3,960	3,170
26	3,270	e2,280	18,000	7,780	9,970	3,260	e942	5,590	4,430	2,380	1,530	3,530
27	5,140	e2,050	11,700	6,740	14,500	3,270	e931	6,410	12,500	3,330	3,360	3,550
28	3,900	1,900	10,300	8,070	19,200	e2,620	e931	3,900	16,400	4,920	4,110	3,510
29	2,770	3,810	7,030	5,000	---	e2,280	e921	3,020	11,600	3,830	5,340	2,910
30	2,600	3,130	4,810	5,710	---	e2,080	e921	e2,250	6,980	1,690	5,570	1,250
31	3,200	---	10,600	6,280	---	e1,750	---	e1,910	---	3,390	5,950	---
TOTAL	115,269	85,850	203,480	313,220	139,660	176,700	46,448	112,930	143,360	147,970	130,660	104,060
MEAN	3,718	2,862	6,564	10,100	4,988	5,700	1,548	3,643	4,779	4,773	4,215	3,469
MAX	15,300	4,890	18,800	20,600	19,200	20,700	3,150	6,410	16,400	7,270	7,240	8,940
MIN	840	1,900	2,020	5,000	1,600	1,750	921	1,740	1,270	1,690	1,180	1,240
AC-FT	228,600	170,300	403,600	621,300	277,000	350,500	92,130	224,000	284,400	293,500	259,200	206,400

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2003, BY WATER YEAR (WY)

	MEAN	MAX	MIN	(WY)	(WY)	(WY)	(WY)	(WY)	(WY)	(WY)	(WY)	(WY)
MEAN	6,691	7,342	7,491	7,113	8,719	11,180	11,860	16,460	17,420	7,692	4,866	4,720
MAX	40,240	37,170	32,340	39,930	32,130	39,430	55,500	103,900	83,820	27,700	34,840	19,010
(WY)	(1982)	(1975)	(1992)	(1992)	(2001)	(2001)	(1990)	(1990)	(1957)	(1989)	(1950)	(1950)
MIN	263	242	894	1,126	1,138	1,118	1,344	2,837	2,074	1,586	1,108	859
(WY)	(1957)	(1957)	(1957)	(1964)	(1959)	(1967)	(1956)	(1980)	(1956)	(1956)	(1972)	(1988)

e Estimated

07335500 Red River at Arthur City, TX--Continued

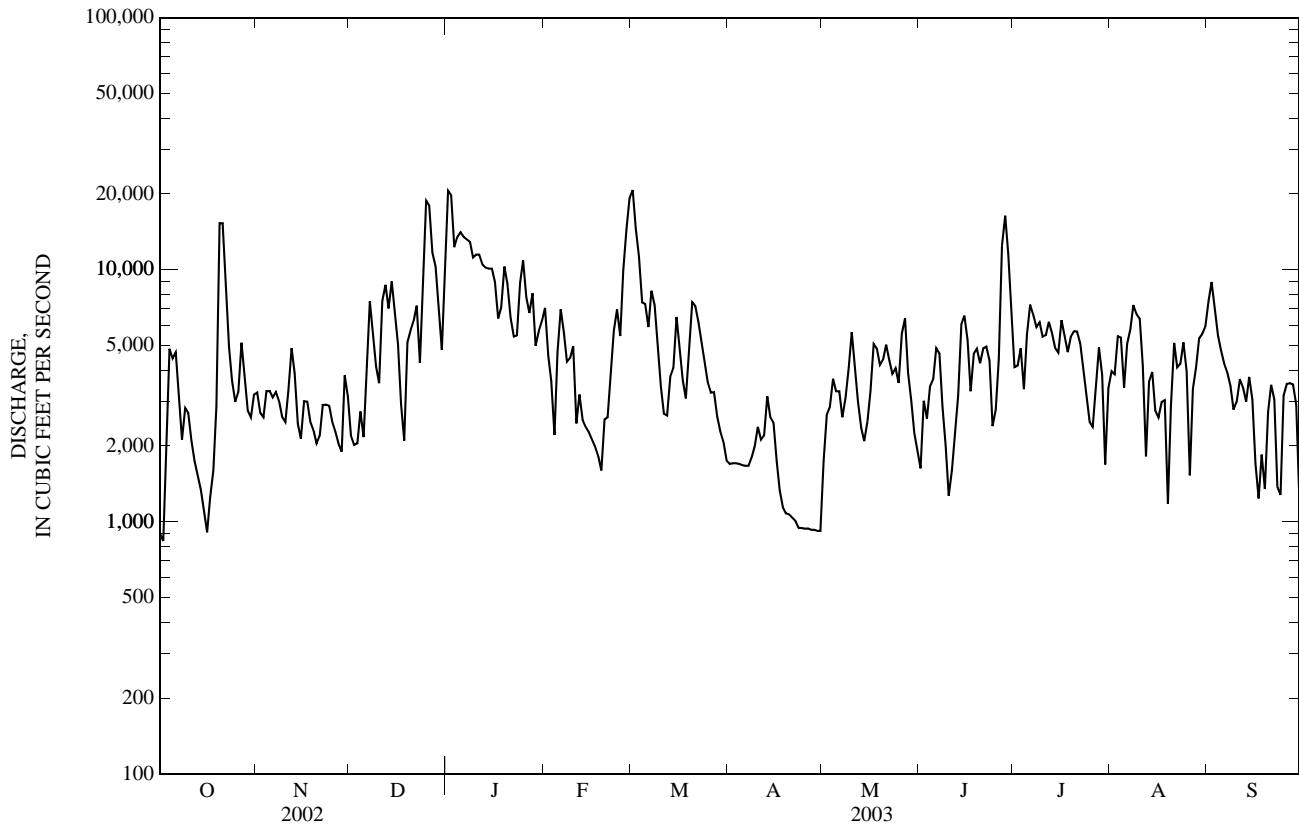
SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1945 - 2003	
ANNUAL TOTAL	3,108,769		1,719,607		a9,289	
ANNUAL MEAN	8,517		4,711		23,290	
HIGHEST ANNUAL MEAN					2,754	
LOWEST ANNUAL MEAN					1990	
HIGHEST DAILY MEAN	63,200	Mar 21	20,700	Mar 1	269,000	May 4, 1990
LOWEST DAILY MEAN	840	Oct 2	840	Oct 2	134	bDec 11, 1956
ANNUAL SEVEN-DAY MINIMUM	1,360	Oct 12	933	Apr 24	134	Dec 11, 1956
MAXIMUM PEAK FLOW			22,800	Jan 1	c275,000	May 4, 1990
MAXIMUM PEAK STAGE			10.34	Jan 1	d34.21	May 4, 1990
ANNUAL RUNOFF (AC-FT)	6,166,000		3,411,000		6,730,000	
10 PERCENT EXCEEDS	18,800		8,940		23,900	
50 PERCENT EXCEEDS	4,820		3,700		4,310	
90 PERCENT EXCEEDS	2,200		1,690		1,380	

a Prior to regulation, water years 1906-11, 1937-43, 9,266 ft³/s.

b Also occurred Dec. 12, 1956.

c Maximum discharge for period of record, 400,000 ft³/s, May 28, 1908.

d Maximum gage height for period of record, 43.2 ft, May 28, 1908.



07335600 Lake Crook near Paris, TX

LOCATION.--Lat 33°43'42", long 95°34'00", Lamar County, Hydrologic Unit 11140101, 3.0 mi from city of Paris, 1.0 mi from Lamar County Road 31700. Gage is located on intake structure.

DRAINAGE AREA.--52 mi².

PERIOD OF RECORD.--Mar. 1999 to Sept. 2002 (contents), Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records fair. Lake Crook dam is an earthfill 3,100 ft long with a maximum height of 38 ft and a crown width of 20 ft. A concrete overflow type spillway 300 ft long is located near the center of the dam. Lake Crook is about 2.7 miles in length with an average width of 0.6 mi, and the shoreline is approximately 12 miles in length. The lake is owned by the City of Paris. Conservation pool storage is 9,964 acre-ft. Data regarding the dam are given in the following table:

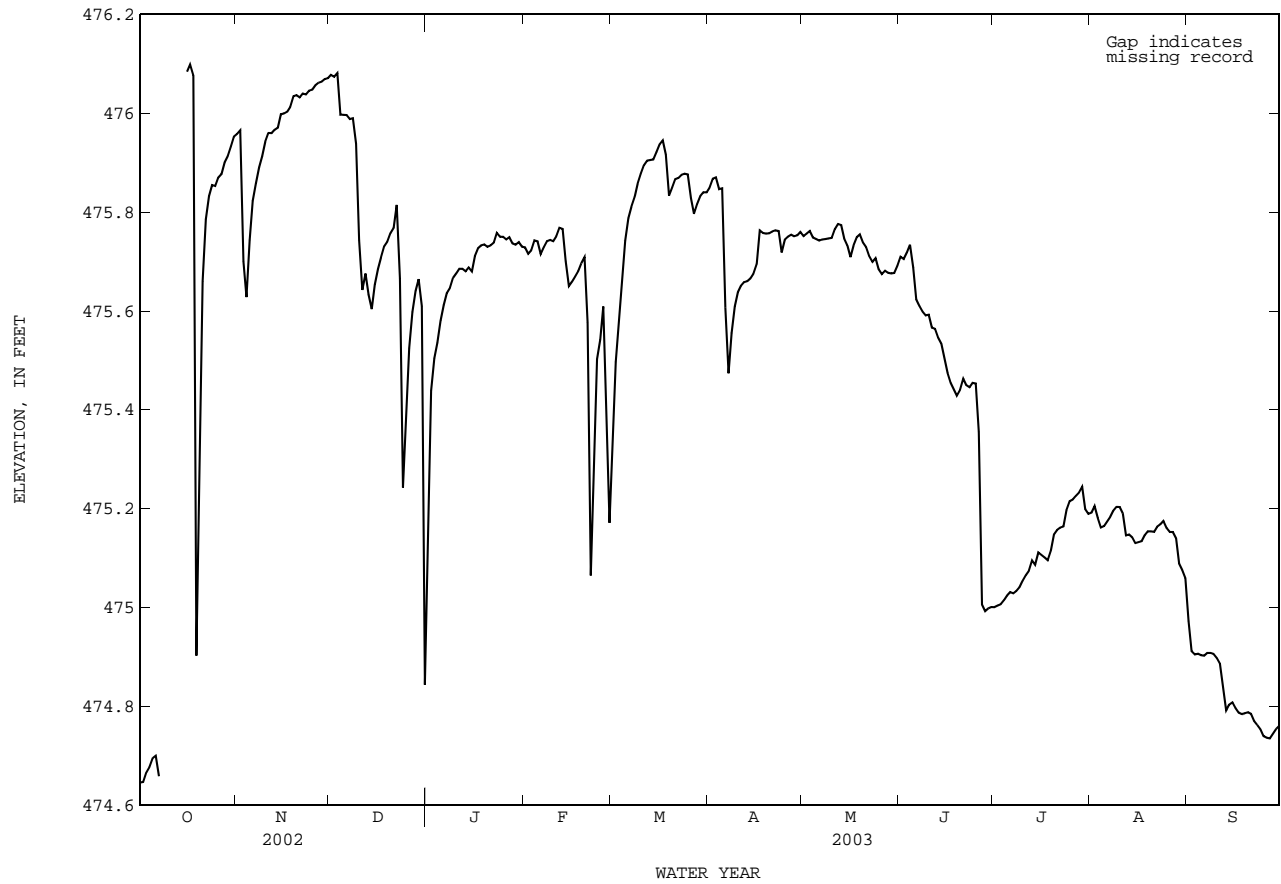
	Elevation (feet)
Top of dam.....	488.0
Crest of spillway.....	476.0
Stream bed.....	450.0

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 11,820 acre-ft, Dec. 26, 2000, elevation, 478.30 ft; minimum contents, 5,940 acre-ft, Dec. 8, 1999, elevation, 473.49 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 476.14 ft, Oct. 17; minimum elevation, 474.25 ft, Oct. 19.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

07335600 Lake Crook near Paris, TX--Continued



07337000 Red River at Index, AR

LOCATION.--Lat 33°33'07", long 94°02'28", in NW1/4SW1/4 sec.7, T.14 S., R.28 W., Miller County, Hydrologic Unit 11140106, near right bank on downstream side of southbound bridge on U.S. Highway 71 at Index, 2.2 mi south of Ogden, 20.6 mi upstream from Little River, and at mile 485.3.

DRAINAGE AREA.--48,030 mi², of which 5,936 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1936 to current year. Gage-height records collected at same site since 1917 are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 246.87 ft above NGVD of 1929. Prior to Dec. 12, 1939, nonrecording gage, and Dec. 12, 1939, to July 19, 1979, water-stage recorder, at site 500 ft downstream at present datum.

REMARKS.--No estimated daily discharges. Water-discharge records good. Some regulation since Oct. 31, 1943, by Lake Texoma (Texas), 241 mi upstream, capacity, 5,392,900 acre-ft, since Sept. 28, 1967, by Pat Mayse Lake (Texas), capacity, 352,700 acre-ft, and since Jan. 18, 1974, by Hugo Lake (Oklahoma) capacity, 966,700 acre-ft. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2260	3710	1920	14300	5510	16600	6270	2010	3740	12400	4050	4030
2	2190	3210	2640	18500	5540	20700	4550	2350	3210	10500	2910	5000
3	2290	3360	3400	27200	6110	20600	3540	2730	2990	7520	2540	5040
4	2210	3960	3120	26100	6360	17000	3060	2010	2940	5170	3720	5990
5	1860	4550	2840	20200	4970	14200	2800	1860	3190	4350	4180	6830
6	1680	4560	2740	18500	4060	12200	2720	2100	3120	4870	5060	6660
7	2800	4600	2680	19100	3360	10600	2770	3510	3830	4120	5530	5450
8	4340	4530	3000	18600	4470	9900	2750	4180	5220	4360	4850	4690
9	4650	4150	3440	17800	6260	9400	2680	3720	5180	5770	4660	4170
10	4690	3850	5670	16300	5830	10300	2820	3010	4760	5970	5720	3810
11	4000	3680	5920	13600	4850	9300	3140	2460	4110	5510	6000	3550
12	3490	3360	4920	12100	4630	7680	3050	4630	3160	5320	6220	3280
13	3980	3120	4790	11300	4770	6620	2690	5390	2560	5240	5980	3260
14	3460	3010	6940	10600	3970	6070	2840	4700	2200	4800	5170	3670
15	2830	3850	8890	10200	4570	6020	3700	4200	2020	5270	3580	3750
16	2490	4290	8700	9950	5120	7240	4040	4000	2460	5120	3260	3240
17	2360	3330	8810	9810	4750	8320	3350	2970	4600	4830	3730	3280
18	2220	2780	7930	9510	4050	9570	2600	2800	6060	4220	3210	3260
19	2770	2980	6380	8050	3590	9850	2250	3270	6740	4860	2850	2680
20	3350	3110	4770	6770	3410	9750	2120	4000	5780	5050	2760	2140
21	4680	3010	3890	7990	3390	10700	2150	4800	5130	4380	3070	1950
22	7630	2570	4740	9010	5800	11400	2210	4410	5210	4600	2460	2020
23	15400	2200	5990	8030	8510	12500	2220	4460	4310	4860	2050	2050
24	14000	2030	8370	6420	9890	12200	2330	5230	4600	4960	3580	2740
25	9960	2600	10400	5500	10100	11300	2320	5140	4510	4760	3930	3080
26	6990	3010	10500	5990	10500	11400	2150	4790	4740	4010	3750	2530
27	5230	3040	16200	8430	10900	12600	1990	4780	3750	3440	4030	1880
28	4160	2910	19600	9130	11200	12700	1950	4730	2850	2920	4280	2010
29	3900	2480	16700	7640	---	9840	2030	5140	4210	2640	3080	2790
30	4590	2070	14100	7090	---	7750	2020	5980	8890	2710	2570	3060
31	4510	---	13900	7050	---	7020	---	4840	---	3690	3420	---
TOTAL	140970	99910	223890	380770	166470	341330	85110	120200	126070	158220	122200	107890
MEAN	4547	3330	7222	12280	5945	11010	2837	3877	4202	5104	3942	3596
MAX	15400	4600	19600	27200	11200	20700	6270	5980	8890	12400	6220	6830
MIN	1680	2030	1920	5500	3360	6020	1950	1860	2020	2640	2050	1880
AC-FT	279600	198200	444100	755300	330200	677000	168800	238400	250100	313800	242400	214000

07337000 Red River at Index, AR--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2003, BY WATER YEAR (WY)

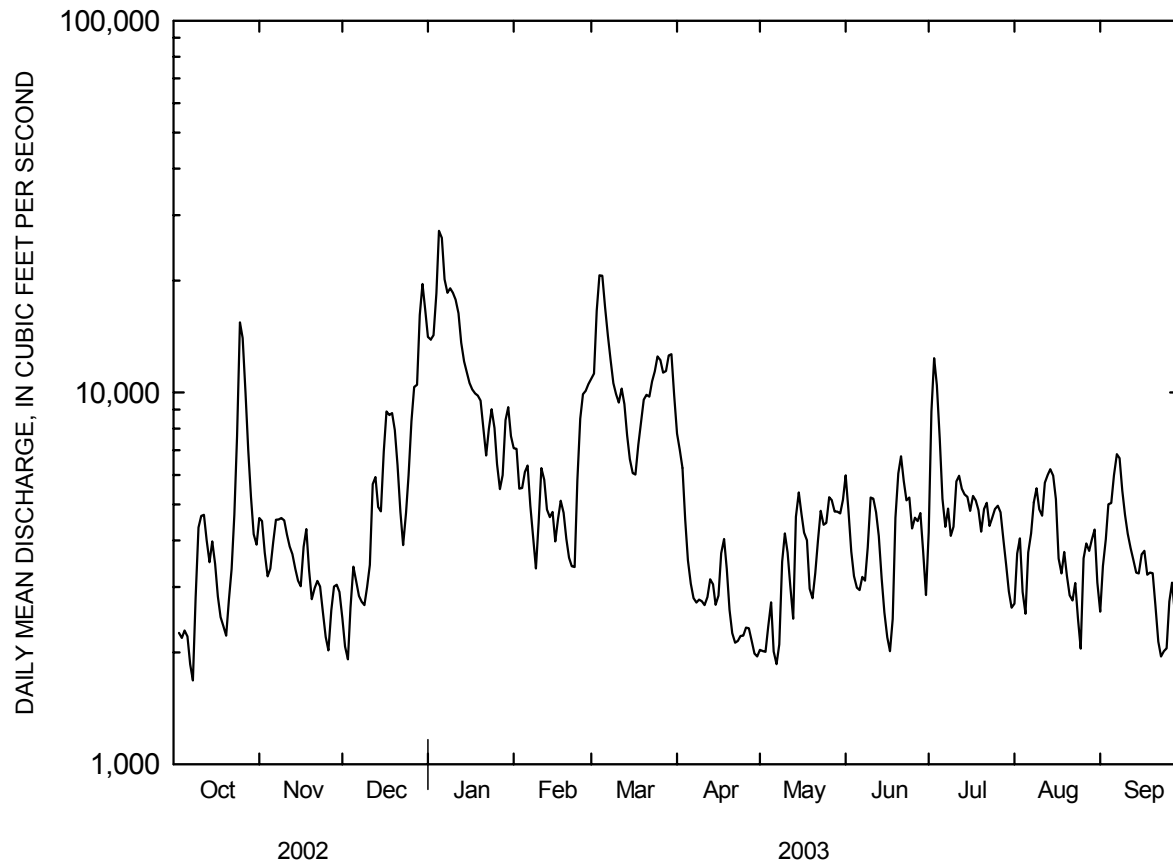
MEAN	8000	10640	12230	11350	14200	17530	17620	23220	21410	9633	5758	5855
MAX	41690	47140	47910	60160	38960	67730	61460	121000	94400	33990	39230	30340
(WY)	1946	1975	1992	1998	1946	1945	1990	1990	1957	1989	1950	1950
MIN	716	642	1206	1360	2127	2233	2096	3877	3098	1162	1025	909
(WY)	1957	1957	1957	1964	1964	1967	1956	2003	1988	1944	1944	1944

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR			FOR 2003 WATER YEAR			¹ WATER YEARS 1944 - 2003		
ANNUAL TOTAL	4798260			2073030					
ANNUAL MEAN	13150			5680			13100		
HIGHEST ANNUAL MEAN							30420		
LOWEST ANNUAL MEAN							4383		
HIGHEST DAILY MEAN	90700	Mar 23		27200	Jan 3		268000	May 10	1990
LOWEST DAILY MEAN	1680	Oct 6		1680	Oct 6		384	Nov 28	1956
ANNUAL SEVEN-DAY MINIMUM	2150	Sep 30		2070	Apr 25		397	Oct 19	1956
MAXIMUM PEAK FLOW				28500	Jan 3		² 270000	May 10	1990
MAXIMUM PEAK STAGE				8.35	Jan 3		³ 32.30	May 10	1990
INSTANTANEOUS LOW FLOW				1620	Oct 6		378	Nov 28	1956
ANNUAL RUNOFF (AC-FT)	9517000			4112000			9494000		
10 PERCENT EXCEEDS	38500			10800			35000		
50 PERCENT EXCEEDS	6080			4460			5940		
90 PERCENT EXCEEDS	3010			2340			2300		

¹Prior to regulation, water years 1937-43, 11,970 ft³/s

²Maximum discharge for period of record 297,000 ft³/s February 23, 1938

³Maximum gage height for period of record 34.25 ft February 23, 1938, from graph based on gage readings



WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1947-1956, April 1980 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency col- lecting sample, code (00027)	Agency ana- lyzing sample, code (00028)	Depth at sample loca- tion, feet (81903)	Sample loc- ation, cross section ft from rt bank (72103)	Sam- pling depth, feet (00003)	Stream width, feet (00004)	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat unf us/cm 25 degC (00095)	Temper- ature, water, deg C (00010)
OCT 17...	1445	80513	81213	--	--	--	--	760	8.8	93	8.2	960	17.9
DEC 04...	1330	80513	81213	--	--	--	--	773	9.3	79	8.4	1070	8.4
FEB 05...	1000	80513	80513	--	690.0	1.00	380	779	--	--	--	--	9.6
05...	1005	80513	80513	--	728.0	1.00	380	779	--	--	--	--	9.6
05...	1008	80513	80513	--	766.0	1.00	380	779	--	--	--	--	9.6
05...	1012	80513	80513	--	804.0	1.00	380	779	--	--	--	--	9.6
05...	1014	80513	80513	--	842.0	1.00	380	779	--	--	--	--	9.6
05...	1016	80513	80513	--	880.0	1.00	380	779	--	--	--	--	9.6
05...	1018	80513	80513	--	918.0	1.00	380	779	--	--	--	--	9.6
05...	1020	80513	80513	--	956.0	1.00	380	779	--	--	--	--	9.6
05...	1022	80513	80513	--	994.0	1.00	380	779	--	--	--	--	9.6
05...	1024	80513	80513	--	1032	1.00	380	779	--	--	--	--	9.6
05...	1030	80513	81213	--	--	--	--	779	10.7	93	8.5	1370	9.6
APR 16...	0800	80513	81213	--	--	--	--	754	7.2	81	7.9	782	20.5
JUN 25...	1408	80513	80513	3.00	689.0	1.00	380	770	--	--	--	--	32.2
25...	1410	80513	80513	3.00	727.0	1.00	380	770	--	--	--	--	32.0
25...	1414	80513	80513	3.00	765.0	1.00	380	770	--	--	--	--	31.9
25...	1416	80513	80513	5.00	803.0	1.00	380	770	--	--	--	--	31.9
25...	1418	80513	80513	17.0	841.0	1.00	380	770	--	--	--	--	31.9
25...	1420	80513	80513	15.0	879.0	1.00	380	770	--	--	--	--	31.9
25...	1422	80513	80513	12.0	917.0	1.00	380	770	--	--	--	--	31.9
25...	1424	80513	80513	12.0	955.0	1.00	380	770	--	--	--	--	31.9
25...	1426	80513	80513	10.0	993.0	1.00	380	770	--	--	--	--	31.9
25...	1429	80513	80513	8.00	1031	1.00	380	770	--	--	--	--	31.9
25...	1430	80513	81213	--	--	--	--	770	7.3	100	8.4	1110	31.9
AUG 27...	1442	80513	80513	2.30	709.0	1.00	380	760	8.1	111	8.2	1530	31.7
27...	1445	80513	80513	1.40	746.0	1.00	380	760	8.0	108	8.2	1540	31.1
27...	1447	80513	80513	2.00	783.0	1.00	380	760	7.9	108	8.2	1530	31.6
27...	1449	80513	80513	6.00	820.0	1.00	380	760	7.7	105	8.3	1530	31.2
27...	1451	80513	80513	10.0	857.0	1.00	380	760	7.3	100	8.3	1530	31.2
27...	1454	80513	80513	12.0	894.0	1.00	380	760	7.8	106	8.3	1530	31.2
27...	1457	80513	80513	14.0	937.0	1.00	380	760	8.0	108	8.3	1530	31.2
27...	1500	80513	80513	15.0	968.0	1.00	380	760	8.0	110	8.4	1520	31.2
27...	1503	80513	80513	15.0	1005	1.00	380	760	8.0	109	8.4	1530	31.2
27...	1506	80513	80513	8.00	1042	1.00	380	760	7.8	106	8.4	1520	31.2
27...	1545	80513	81213	--	--	--	--	760	8.0	109	8.3	1530	31.2
Date	Time	Instantaneous dis- charge, cfs (00061)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	Chlor- ide, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
OCT 17...	1445	2390	230	62.0	19.0	4.70	3	100	48	130	120	554	1.2
DEC 04...	1330	3060	270	74.0	21.0	5.40	3	110	46	130	140	624	1.2
FEB 05...	1030	5160	290	76.0	24.0	5.00	4	150	53	220	180	783	.80
APR 16...	0800	4130	220	61.0	16.0	4.20	2	69.0	40	86.0	92.0	463	.90
JUN 25...	1430	4470	250	66.0	21.0	5.00	3	120	50	180	150	662	1.1
AUG 27...	1545	4040	320	82.0	28.0	5.30	4	180	55	270	210	904	.90
Date	Ammonia water, fltrd, mg/L (71846)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (71851)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (71856)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro- gen, water, unfltrd mg/L (00605)	Ortho- phos- phate, water, fltrd, mg/L (00660)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Total nitro- gen, water, unfltrd mg/L (00600)
OCT 17...	.04	.03	--	--	<.02	--	<.010	1.2	--	<.01	<.02	.10	--
DEC 04...	.06	.05	--	--	<.02	--	<.010	1.1	--	<.01	<.02	.11	--
FEB 05...	.09	.07	1.20	.27	.28	.033	.010	.73	.031	.01	<.02	.07	1.1
APR 16...	.09	.07	--	--	<.02	--	<.010	.83	--	<.01	<.02	.09	--
JUN 25...	.04	.03	--	--	<.02	--	<.010	1.1	--	<.01	<.02	.11	--
AUG 27...	--	<.01	--	--	<.02	--	<.010	--	--	<.01	<.02	.13	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	E coli, m-TEC MF, water, col/ 100 mL (31633)	Fecal coli- form, M-FC 0.7u MF col/ 100 mL (31625)	Fecal strep- tococci KF MF, col/ 100 mL (31673)	Suspnd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment load, tons/d (80155)
OCT 17...	43	E25	80	87	129	832
DEC 04...	97	E70	140	97	107	884
FEB 05...	E2	E14	E23	97	157	2190
APR 16...	E29	42	E19	93	137	1530
JUN 25...	E31	E22	150	96	205	2470
AUG 27...	E30	E35	96	54	242	2640

Remark codes used in this report:

< -- Less than

E -- Estimated value

RED RIVER BASIN

07342465 South Sulphur River at Commerce, TX

LOCATION.--Lat 33°12'42", long 95°54'50", Hunt County, Hydrologic Unit 11140301, on right bank at downstream side of bridge on south-bound State Highway 50, 13 mi upstream from Dunbar Creek, and 2.8 mi south of Commerce.

DRAINAGE AREA.--150 mi².

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 460.74 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records fair. No known regulation or diversions. No flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.79	8.0	3.1	407	0.87	286	3.0	2.0	3.3	3.9	0.89	0.90
2	0.78	5.5	3.1	84	0.91	136	2.7	2.3	2.7	2.8	0.87	0.91
3	0.73	4.6	2.8	35	0.96	76	2.8	2.2	2.4	2.4	0.79	0.70
4	0.59	8.3	4.2	18	0.90	47	e3.0	2.1	2.1	1.7	0.70	0.61
5	0.48	36	5.6	10	0.88	33	e3.1	2.1	2.4	1.4	0.64	0.46
6	0.37	97	7.6	7.0	1.3	24	16	2.5	2.5	1.6	0.62	0.52
7	0.50	42	6.4	5.1	1.5	19	11	2.3	1.8	19	0.56	0.51
8	0.63	18	5.1	4.1	1.6	14	5.2	1.9	2.3	24	0.54	0.52
9	470	9.0	147	3.4	1.6	12	3.4	1.2	2.3	6.8	0.62	0.54
10	668	5.8	610	2.7	1.5	9.5	2.9	1.9	2.1	3.8	0.65	0.60
11	73	4.0	262	2.4	1.7	8.1	2.9	1.7	2.6	5.1	0.67	0.65
12	23	3.0	94	2.2	1.6	6.9	2.9	1.0	16	4.0	0.61	1.0
13	9.1	2.4	111	2.1	1.5	401	2.5	1.1	791	2.3	0.87	1.1
14	4.8	2.1	73	1.9	1.6	526	2.4	0.95	404	1.6	1.4	1.0
15	2.9	1.8	41	1.9	1.7	114	2.4	1.0	317	1.2	1.0	0.92
16	1.9	1.4	23	1.7	2.4	53	2.4	1.3	127	1.0	0.99	0.88
17	1.4	1.5	15	1.5	4.9	31	2.0	1.5	51	0.88	0.92	0.94
18	135	1.6	11	1.4	3.5	30	1.7	0.99	68	0.77	0.89	0.86
19	9070	4.1	8.6	1.3	2.5	79	1.6	1.1	39	0.74	0.85	0.69
20	4930	3.7	6.4	1.5	2.2	85	1.5	1.6	16	0.77	0.74	0.57
21	223	3.0	5.2	1.5	407	41	1.6	1.4	9.1	0.69	0.75	0.57
22	62	2.5	4.2	1.3	1400	24	1.5	1.1	6.8	0.72	0.71	0.55
23	26	2.5	78	1.2	306	16	1.5	1.1	5.5	53	0.68	0.48
24	14	1.8	401	1.1	107	11	2.1	1.9	4.3	33	0.75	0.51
25	9.3	1.5	208	1.1	60	8.7	2.0	201	3.4	7.4	0.65	0.53
26	6.3	1.4	78	1.0	74	7.0	2.2	419	40	3.4	0.55	0.52
27	4.8	1.2	37	0.98	411	6.2	1.9	60	236	2.1	0.63	0.56
28	5.1	1.2	20	0.98	672	6.2	1.5	21	50	1.5	0.67	0.55
29	5.2	1.5	13	0.98	---	4.8	1.7	10	17	1.4	0.63	0.52
30	4.8	2.4	145	0.98	---	e4.1	1.9	6.4	6.9	1.2	0.59	0.61
31	9.7	---	1640	0.96	---	e3.7	---	4.2	---	1.0	0.56	---
TOTAL	15764.17	278.8	4069.3	606.28	3472.62	2123.2	93.3	759.84	2234.5	191.17	22.99	20.28
MEAN	509	9.29	131	19.6	124	68.5	3.11	24.5	74.5	6.17	0.74	0.68
MAX	9070	97	1640	407	1400	526	16	419	791	53	1.4	1.1
MIN	0.37	1.2	2.8	0.96	0.87	3.7	1.5	0.95	1.8	0.69	0.54	0.46
AC-FT	31270	553	8070	1200	6890	4210	185	1510	4430	379	46	40

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2003, BY WATER YEAR (WY)

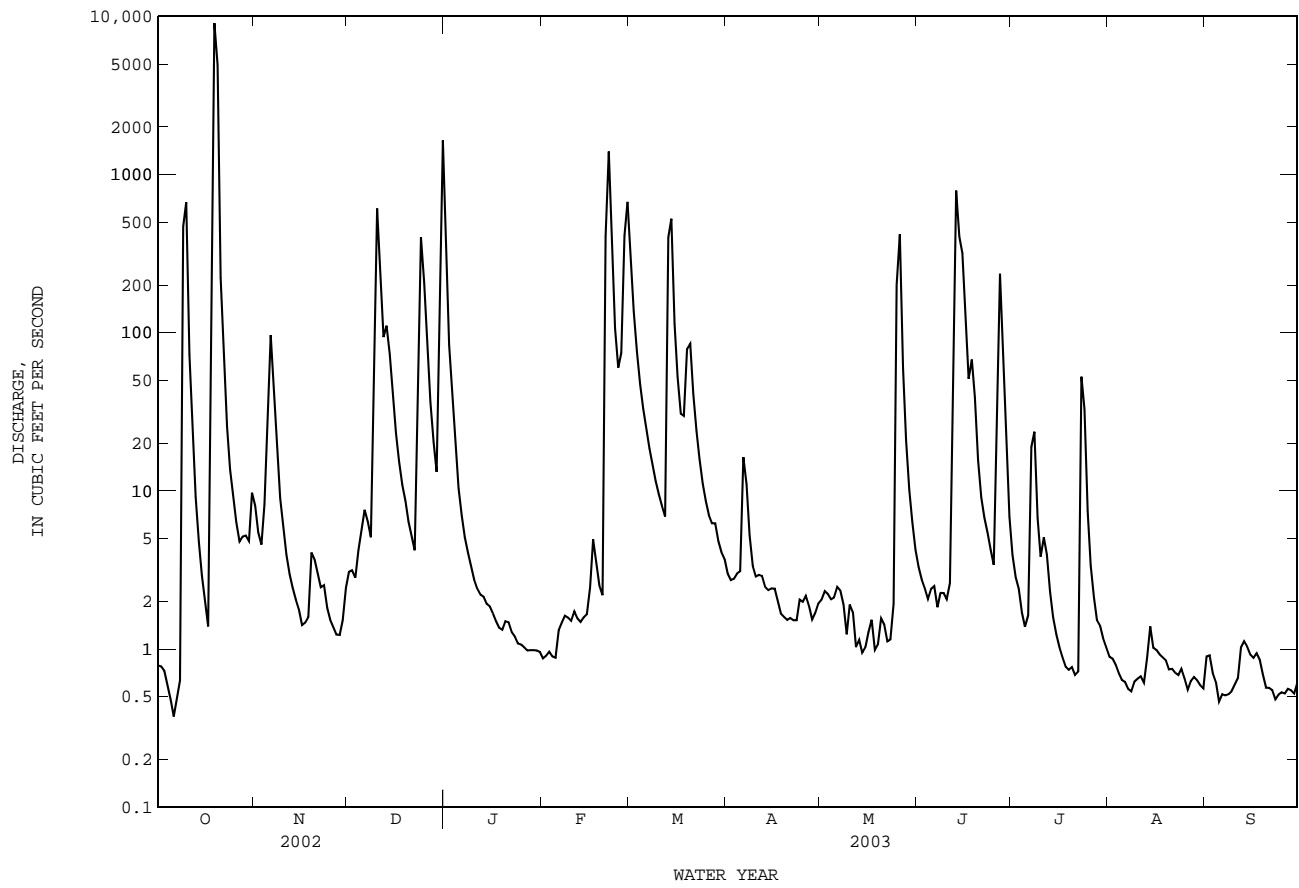
	MEAN	165	171	341	134	235	226	155	178	86.4	43.4	4.29	14.3
MAX	509	646	804	513	693	581	425	734	433	333	32.0	91.5	
(WY)	2003	1997	1992	1998	2001	2001	2002	1992	1992	1994	1992	1994	
MIN	0.008	0.093	0.33	5.83	0.12	8.01	3.11	2.53	0.50	0.000	0.005	0.002	
(WY)	1993	1996	1996	2000	1996	1996	2003	1998	2001	1998	1993	1993	

SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1992 - 2003

ANNUAL TOTAL	60333.34	29636.45	
ANNUAL MEAN	165	81.2	146
HIGHEST ANNUAL MEAN			297
LOWEST ANNUAL MEAN			7.81
HIGHEST DAILY MEAN	9070	Oct 19	9880
LOWEST DAILY MEAN	0.22	Aug 8	0.00
ANNUAL SEVEN-DAY MINIMUM	0.32	Aug 2	0.00
MAXIMUM PEAK FLOW			12100
MAXIMUM PEAK STAGE			27.98
ANNUAL RUNOFF (AC-FT)	119700	58780	105700
10 PERCENT EXCEEDS	169	84	206
50 PERCENT EXCEEDS	5.3	2.4	2.7
90 PERCENT EXCEEDS	0.74	0.65	0.01

e Estimated

07342465 South Sulphur River at Commerce, TX--Continued



07342480 Middle Sulphur River at Commerce, TX

LOCATION.--Lat 33°15'59", long 95°54'55", Hunt County, Hydrologic Unit 11140301, at right end of bridge on State Highway 11 at downstream side of highway embankment, 1.5 mi upstream from Willow Creek and 1.5 mi northwest of post office in Commerce.

DRAINAGE AREA.--44.1 mi².

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

Water-quality records.--Chemical data: Oct. 1987 to Sept. 2001. Biochemical data: Oct. 1987 to Sept. 2001.

GAGE.--Water-stage recorder and crest-stage gage. Datum is 476.15 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records fair. No known regulation or diversions. No flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	1.4	0.04	65	0.29	47	0.02	0.00	0.00	0.20	0.00	0.00
2	0.00	0.74	0.05	19	0.32	21	0.03	0.00	0.00	0.70	0.00	0.00
3	0.00	0.86	0.17	9.4	0.44	12	0.13	0.00	0.00	3.3	0.00	0.00
4	0.00	2.7	1.6	6.8	0.45	7.3	0.18	0.00	0.00	0.39	0.00	0.00
5	0.00	5.6	6.0	5.1	0.26	5.3	0.11	0.00	0.00	0.10	0.00	0.00
6	0.00	11	3.5	3.4	0.29	3.5	0.19	0.00	0.00	0.11	0.00	0.00
7	0.00	6.9	2.2	2.8	0.85	2.5	0.11	0.00	0.00	0.08	0.00	0.00
8	0.00	3.4	1.5	2.9	0.42	2.0	0.01	0.00	0.00	0.02	0.00	0.00
9	211	1.9	69	2.1	0.63	1.6	0.01	0.00	0.00	0.00	0.00	0.00
10	192	1.3	233	1.8	0.80	1.3	0.01	0.00	0.00	0.03	0.00	0.00
11	7.9	0.80	63	1.5	0.45	1.1	0.00	0.00	0.00	2.5	0.00	0.00
12	0.77	0.52	22	1.3	0.33	0.93	0.01	0.00	3.3	0.79	0.00	0.00
13	0.01	0.32	50	1.2	0.41	137	0.00	0.00	217	0.17	0.00	0.00
14	0.00	0.23	30	1.2	1.00	110	0.00	0.00	125	0.02	0.00	0.00
15	0.00	0.18	14	1.2	1.6	20	0.01	0.00	18	0.00	0.00	0.00
16	0.00	0.16	7.8	1.3	1.8	9.4	0.00	0.00	6.5	0.00	0.00	0.00
17	0.00	0.22	5.3	1.3	1.5	5.3	0.00	0.00	6.7	0.00	0.00	0.00
18	55	0.23	3.3	1.2	1.1	7.2	0.00	0.00	56	0.00	0.00	0.00
19	3280	0.22	2.2	1.1	1.00	25	0.00	0.00	14	0.00	0.00	0.00
20	660	0.19	1.6	1.0	1.1	15	0.00	0.00	2.4	0.00	0.00	0.00
21	25	0.21	1.3	1.1	107	7.4	0.00	0.00	2.5	0.00	0.00	0.00
22	8.1	0.23	0.70	1.1	306	3.8	0.00	0.00	1.1	0.00	0.00	0.00
23	2.8	0.19	56	0.94	59	2.3	0.00	0.00	0.69	0.00	0.00	0.00
24	1.6	0.22	142	0.90	18	1.5	0.03	0.00	0.34	0.00	0.00	0.00
25	1.2	0.18	53	0.76	10	1.1	0.02	1.8	0.38	0.00	0.00	0.00
26	0.83	0.15	18	0.59	19	0.87	0.00	13	50	0.00	0.00	0.00
27	0.83	0.08	9.0	0.46	132	0.48	0.01	3.0	42	0.00	0.00	0.00
28	0.71	0.08	5.7	0.77	147	0.31	0.00	0.54	6.4	0.00	0.00	0.00
29	0.49	0.06	3.6	0.69	---	0.12	0.00	0.18	2.3	0.00	0.00	0.00
30	3.2	0.04	58	0.49	---	0.06	0.00	0.04	0.90	0.00	0.00	0.00
31	2.3	---	530	0.38	---	e0.04	---	0.00	---	0.00	0.00	---
TOTAL	4453.74	40.31	1393.56	138.78	813.04	452.41	0.88	18.56	555.51	8.41	0.00	0.00
MEAN	144	1.34	45.0	4.48	29.0	14.6	0.029	0.60	18.5	0.27	0.000	0.000
MAX	3280	11	530	65	306	137	0.19	13	217	3.3	0.00	0.00
MIN	0.00	0.04	0.04	0.38	0.26	0.04	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	8830	80	2760	275	1610	897	1.7	37	1100	17	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2003, BY WATER YEAR (WY)

	MEAN	45.5	56.2	111	45.6	80.7	70.4	57.4	54.9	34.2	17.4	2.95	2.67
MAX	179	212	257	144	290	147	171	247	126	119	31.6	11.5	
(WY)	1994	1997	1992	1998	1997	2001	1993	1992	1992	1994	1992	1995	
MIN	0.000	0.033	0.000	0.98	0.10	5.41	0.029	0.60	0.000	0.000	0.000	0.000	
(WY)	2000	2000	1996	2000	1996	1996	2003	2003	2002	1993	1993	1993	

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

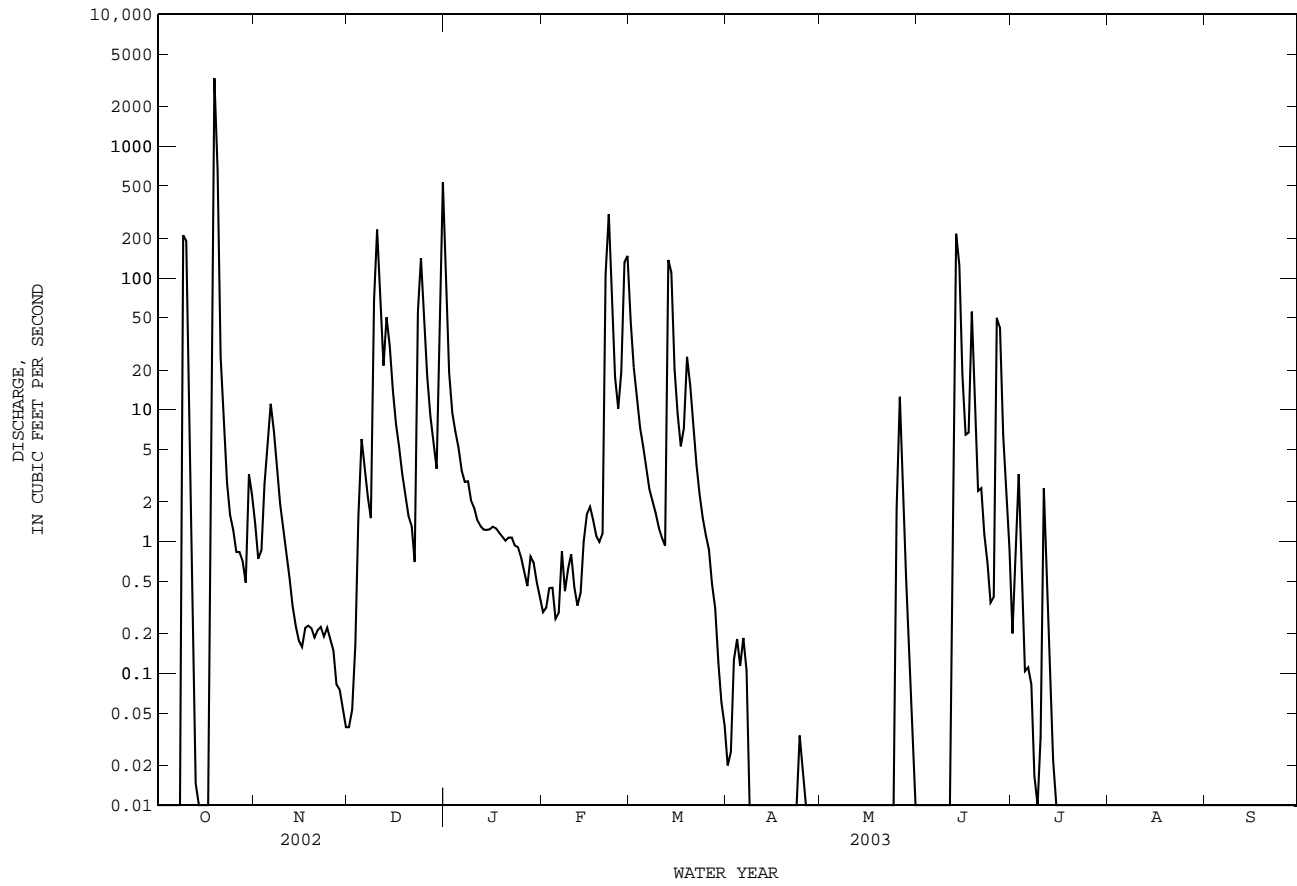
WATER YEARS 1992 - 2003

ANNUAL TOTAL	15522.59	7875.20	
ANNUAL MEAN	42.5	21.6	48.1
HIGHEST ANNUAL MEAN			99.8
LOWEST ANNUAL MEAN			2.37
HIGHEST DAILY MEAN	3280	Oct 19	3630
LOWEST DAILY MEAN	0.00	Jan 3	0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 14	0.00
MAXIMUM PEAK FLOW			5860
MAXIMUM PEAK STAGE			16.38
ANNUAL RUNOFF (AC-FT)	30790		15620
10 PERCENT EXCEEDS	38		18
50 PERCENT EXCEEDS	0.19		0.19
90 PERCENT EXCEEDS	0.00		0.00

e Estimated

a From floodmark.

07342480 Middle Sulphur River at Commerce, TX--Continued



07342495 Jim L. Chapman Lake near Cooper, TX

LOCATION.--Lat 33°20'00", long 95°37'30", Delta-Hopkins County line, Hydrologic Unit 11140301, in control room near center of dam on South Sulphur River, about 4.0 mi southeast of Cooper, and at river mile 23.2.

DRAINAGE AREA.--479.0 mi².

PERIOD OF RECORD.--Oct. 1991 to Sept. 2000 (U.S. Army Corps of Engineers furnished contents), Oct. 2000 to Sept. 2002 (contents), Oct. 2002 to current year. Prior to Oct. 2000, published as "Cooper Lake near Cooper".
Precipitation records: Oct. 2001 to Sept. 2002.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records fair. The lake is formed by a rolled earthen dam, 28,070 ft long, including the dike. Closure of dam and deliberate impoundment of water began Sept. 28, 1991. The spillway is a 700-foot wide vertical-faced uncontrolled ogee-weir located near the right abutment of the dam. The service spillway (outlet works) consists of both service and emergency gates and low-flow release facilities. The outlet works structures is 452 feet long, and consists of an approach channel, approach channel U-frame structure, intake structure and service bridge, over 10.5-foot diameter conduits, and a stilling basin and discharge channel. The emergency part of the outlet structure consists of five 40- x 20-foot tainter gates. The dam was built, and is owned by the U.S. Army Corps of Engineers in cooperation with the North Texas Municipal Water District, the Sulphur River Municipal Water District, and the city of Irving. The principal uses of the dam and lake are for flood control, water supply, and recreation. Data regarding the dam are given in the following table:

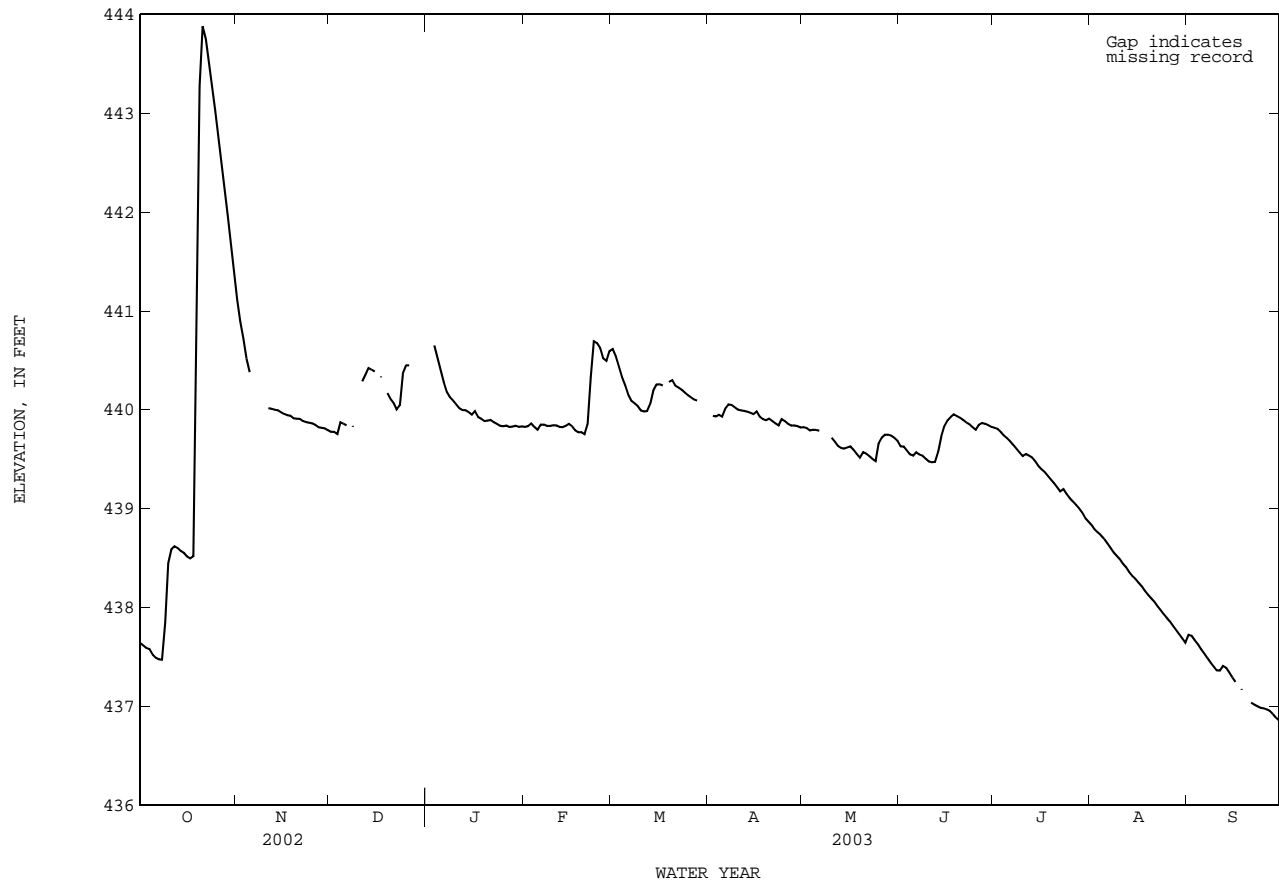
	Elevation (feet)
Top of dam.....	459.0
Top of flood control pool.....	446.2
Invert, lowest gated outlet.....	398.0

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 461,400 acre-ft, Dec. 18, 2001, elevation, 447.03 ft; minimum contents after initial filling, 191,100 acre-ft, May 11, 1992, elevation, 432.66 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 443.91 ft, Oct. 21; minimum elevation, 436.83 ft, Sept. 30.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

07342495 Jim L. Chapman Lake near Cooper, TX--Continued



07342500 South Sulphur River near Cooper, TX

LOCATION.--Lat 33°21'23", long 95°35'41", Delta County, Hydrologic Unit 11140301, on levee on left bank 110 ft downstream from bridge on State Highways 19 and 154, 1.0 mi downstream from Big Creek, 1.0 mi upstream from Brushy Creek, 4.5 mi downstream from Doctors Creek, and 5.6 mi southeast of Cooper.

DRAINAGE AREA.--527 mi².

PERIOD OF RECORD.--June 1942 to current year. Monthly discharge only for some periods, published in WSP 1311.

Water-quality records.--Chemical data: Oct. 1958 to Sept. 1966, Oct. 1967 to Sept. 2001. Biochemical data: Dec. 1979 to Sept. 2001. Specific conductance data: Oct. 1958 to Sept. 1966, Oct. 1967 to Sept. 1989. Water temperature data: Oct. 1958 to Sept. 1966, Oct. 1967 to Sept. 1989.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 371.91 ft above NGVD of 1929. Prior to Feb. 15, 1985, at site 360 ft to right and 90 ft upstream at same datum. Prior to Oct. 1, 1970, at datum 3.00 ft higher. May 9, 1942, to Nov. 8, 1949, nonrecording gage, and Nov. 9, 1949, to May 13, 1955, water-stage recorder at site 1,060 ft to right of present gage. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Since Sept. 28, 1991, at least 10% of contributing drainage area has been regulated. No known diversions. No flow at times.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--49 years (water years 1943-91), 416 ft³/s, 301,400 acre-ft/yr.

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1943-1991).--Maximum discharge 47,200 ft³/s May 13, 1982 (gage height, 27.21 ft, from floodmark). No flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e7.0	2570	5.8	1760	1.3	1300	31	19	3.9	8.6	9.7	6.6
2	e7.0	2000	6.5	1670	1.3	1250	29	21	5.5	8.7	7.9	3.6
3	e7.0	1990	7.7	1470	1.3	1220	28	23	6.3	8.6	8.9	3.3
4	e7.0	1820	16	1270	1.3	1130	25	23	6.9	8.2	8.0	2.9
5	e7.0	1610	15	1250	1.9	850	24	24	10	8.8	8.7	3.8
6	e7.0	1440	11	1150	3.3	658	28	20	8.9	9.1	8.8	3.3
7	e7.0	905	9.3	723	2.1	376	26	15	8.6	8.9	8.9	2.4
8	e9.0	276	8.9	412	2.2	274	26	9.7	9.4	8.2	8.0	2.6
9	511	21	12	236	2.7	272	26	6.5	8.0	8.0	7.9	3.0
10	181	17	166	104	2.6	149	25	8.3	7.8	6.8	7.7	3.5
11	42	14	44	17	2.9	24	26	12	46	8.0	7.8	6.7
12	24	10	214	14	3.0	20	25	15	20	7.8	6.6	6.3
13	15	9.7	595	14	3.4	29	23	17	23	7.9	7.5	2.8
14	e7.0	8.9	545	15	3.8	136	22	13	16	8.0	6.6	2.7
15	e5.0	8.9	518	10	5.5	242	22	12	11	8.0	2.6	2.2
16	3.7	9.1	507	8.6	7.6	241	22	14	9.2	8.4	3.7	2.2
17	2.3	8.9	508	12	8.8	240	21	11	22	7.7	7.9	3.7
18	9.7	7.4	503	7.1	8.0	246	22	12	13	7.7	7.6	11
19	4290	7.5	493	4.1	7.4	253	22	8.2	8.9	6.3	7.3	10
20	1650	6.9	400	6.0	11	249	23	15	7.2	6.3	6.9	9.5
21	938	6.3	294	3.6	251	242	21	12	6.7	6.3	6.5	9.5
22	2500	7.1	294	3.8	534	237	17	12	6.1	7.1	5.9	9.0
23	3020	4.0	427	3.8	150	236	19	4.3	6.4	7.1	3.9	7.5
24	3010	3.9	623	3.5	562	238	19	4.0	5.8	6.7	2.8	6.8
25	2980	5.4	401	4.8	1250	236	20	32	7.8	6.7	4.0	6.8
26	2940	5.6	418	2.6	1270	235	20	23	9.4	6.7	5.4	7.2
27	2930	5.6	517	1.4	1470	235	22	9.8	8.3	6.5	5.4	6.9
28	2910	5.7	506	1.4	1410	235	19	7.5	8.2	8.2	4.5	9.2
29	2890	5.6	499	1.4	---	238	17	5.9	8.4	8.1	3.9	6.8
30	2870	5.6	586	1.4	---	238	17	2.5	8.4	8.9	2.5	5.1
31	2840	---	1620	1.3	---	e236	---	3.0	---	9.5	3.5	---
TOTAL	36626.7	12795.1	10770.2	10181.8	6978.4	11765	687	414.7	327.1	241.8	197.3	166.9
MEAN	1182	427	347	328	249	380	22.9	13.4	10.9	7.80	6.36	5.56
MAX	4290	2570	1620	1760	1470	1300	31	32	46	9.5	9.7	11
MIN	2.3	3.9	5.8	1.3	1.3	20	17	2.5	3.9	6.3	2.5	2.2
AC-FT	72650	25380	21360	20200	13840	23340	1360	823	649	480	391	331

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2003z, BY WATER YEAR (WY)

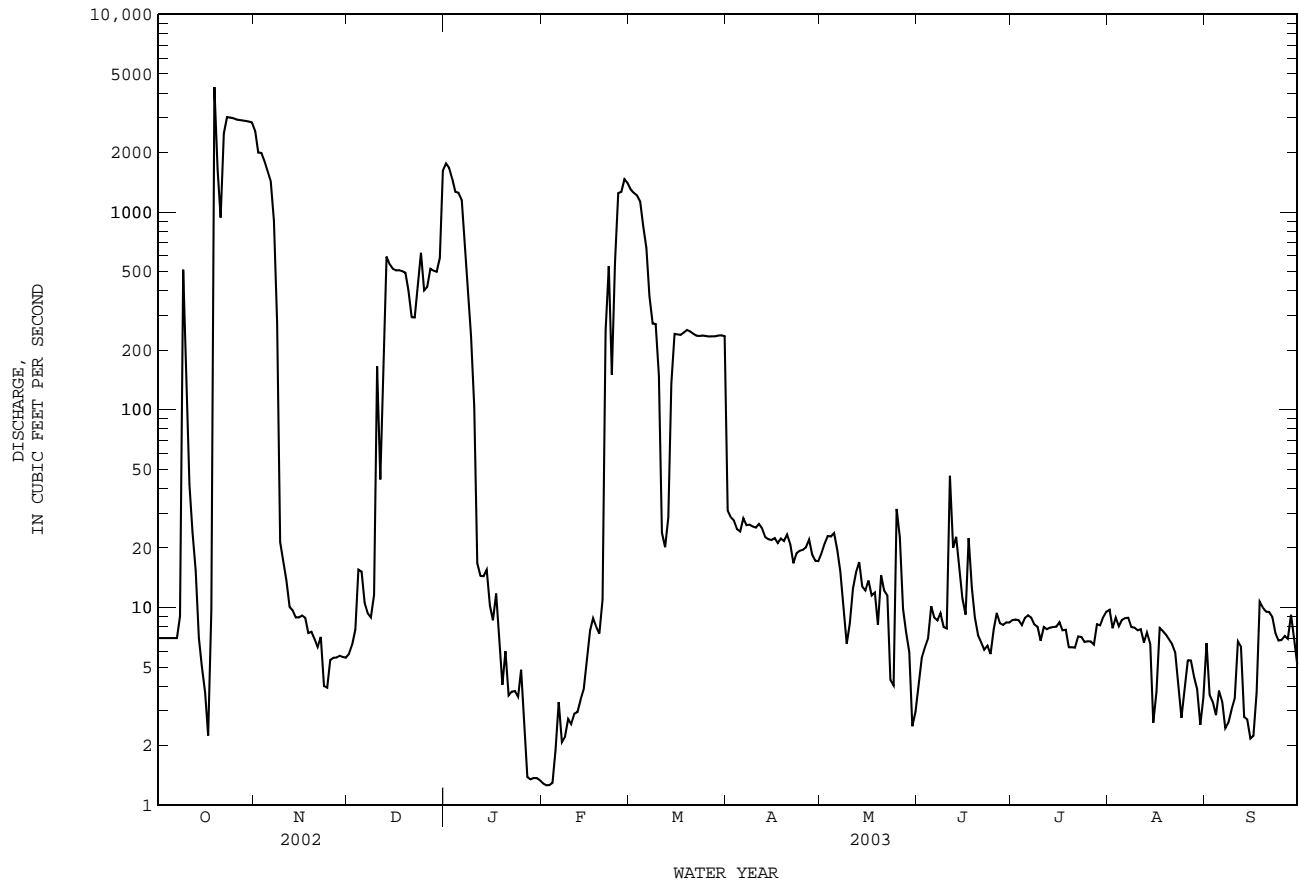
	MEAN	208	492	1003	749	742	1171	763	418	276	159	122	16.6
MAX	1182	1280	2167	2281	1748	3118	2159	1902	939	839	1205	99.5	
(WY)	2003	1995	1999	1998	1999	2001	2002	1995	1995	1992	1992	1994	
MIN	1.58	2.11	3.39	3.68	0.71	4.17	5.16	13.4	5.49	2.32	0.74	0.47	
(WY)	2000	2000	1996	1996	1996	1996	1996	2003	2002	1996	1999	1999	

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR			FOR 2003 WATER YEAR			WATER YEARS 1992 - 2003z		
ANNUAL TOTAL	246761.1			91152.0					
ANNUAL MEAN	676			250			510		
HIGHEST ANNUAL MEAN							901		
LOWEST ANNUAL MEAN							5.52		
HIGHEST DAILY MEAN							6300		
LOWEST DAILY MEAN	4290			Oct 19			Dec 17 2001		
ANNUAL SEVEN-DAY MINIMUM	2.3			Oct 17			0.00		
MAXIMUM PEAK FLOW	4.8			Jul 19			0.00		
MAXIMUM PEAK STAGE							8020		
ANNUAL RUNOFF (AC-FT)	489500			180800			369100		
10 PERCENT EXCEEDS	2770			774			1800		
50 PERCENT EXCEEDS	26			9.3			18		
90 PERCENT EXCEEDS	5.5			3.5			1.8		

e Estimated

z Period of regulated streamflow.

07342500 South Sulphur River near Cooper, TX--Continued



07343000 North Sulphur River near Cooper, TX

LOCATION.--Lat 33°28'29", long 95°35'15", Lamar County, Hydrologic Unit 11140301, on right bank at upstream side of highway embankment near right end of upstream bridge on State Highways 19 and 24, 2.3 mi upstream from Auds Creek, 5.5 mi upstream from Hickory Creek, 8.7 mi northeast of Cooper, and 15.6 mi upstream from mouth.

DRAINAGE AREA.--276 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 372.42 ft above NGVD of 1929. Prior to Nov. 8, 1949, nonrecording gage, Nov. 8, 1949, to May 21, 1960, water-stage recorder at site 50 ft upstream at datum 9.00 ft higher, and from May 22, 1960, to Sept. 30, 1970, at datum 5.00 ft higher. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. No known regulation or diversions. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 2, 1944, reached a stage of 35.6 ft, present datum, and flood in 1932 reached about same stage, from information by U.S. Army Corps of Engineers and local residents. In 1928-29, the channel was rectified for a distance of 28 mi upstream and 18 mi downstream from this station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.87	65	e9.5	e368	154	e687	9.3	0.54	0.58	25	0.14	104
2	0.75	52	9.5	e205	9.1	338	9.3	0.47	0.39	19	0.12	372
3	0.53	1660	9.9	e115	8.2	168	10	0.34	0.28	16	0.20	71
4	0.67	554	e179	e81	e225	124	12	0.36	0.10	9.9	0.34	28
5	0.49	594	e875	79	e744	94	19	0.45	1.3	9.5	0.29	13
6	0.51	351	e52	e65	e1490	73	32	0.50	17	7.8	0.28	7.1
7	0.52	140	30	82	551	57	20	0.67	7.2	12	0.21	4.0
8	1.0	90	24	749	583	48	11	0.46	3.0	44	0.17	2.3
9	10600	56	149	38	899	40	7.4	0.24	1.6	19	0.15	1.3
10	806	50	2170	60	825	35	6.1	0.15	0.68	15	0.14	0.97
11	191	45	446	e209	173	30	5.9	0.13	1790	26	0.11	0.88
12	69	39	217	e1350	224	28	5.6	0.03	502	14	0.17	5.9
13	35	27	799	e45	17	1420	4.7	0.00	1570	8.7	0.28	19
14	20	19	e294	29	60	375	3.8	0.31	319	5.1	0.40	27
15	15	18	149	e30	90	120	3.0	2.5	124	3.1	9.8	15
16	12	16	94	e26	e852	71	2.3	3.4	222	1.9	8.3	8.7
17	10	16	72	34	310	54	2.0	2.3	449	1.1	4.1	5.3
18	476	15	61	e64	24	286	1.7	1.1	634	0.85	2.1	3.2
19	28800	15	58	30	19	639	1.6	0.34	124	0.59	1.1	2.1
20	1470	14	49	13	18	148	2.1	0.58	51	0.41	0.68	1.2
21	463	15	e70	16	2090	79	2.0	1.4	28	0.26	0.47	0.99
22	246	13	69	19	2740	50	1.5	3.9	18	0.22	0.31	0.83
23	154	11	e1510	66	e436	38	1.5	2.2	12	0.25	0.22	0.65
24	102	13	e6320	e15	e319	30	5.0	13	8.6	0.21	0.18	0.54
25	100	12	832	e239	e160	28	5.1	3120	6.2	0.19	0.19	0.45
26	128	e11	378	e70	e212	27	4.1	214	1200	0.17	0.23	0.38
27	82	e11	e271	38	e1950	23	2.2	33	339	0.15	0.28	0.32
28	60	17	332	13	e1440	19	1.6	12	103	0.12	0.31	0.24
29	205	e9.6	69	16	---	17	1.2	6.0	56	0.11	0.24	0.18
30	219	11	3010	17	---	15	0.80	2.9	33	0.10	0.19	0.15
31	99	---	4130	14	---	e13	---	1.5	---	0.13	0.19	---
TOTAL	44367.34	3959.6	22737.9	4195	16622.3	5174	193.80	3424.77	7620.93	240.86	31.89	696.68
MEAN	1431	132	733	135	594	167	6.46	110	254	7.77	1.03	23.2
MAX	28800	1660	6320	1350	2740	1420	32	3120	1790	44	9.8	372
MIN	0.49	9.6	9.5	13	8.2	13	0.80	0.00	0.10	0.10	0.11	0.15
AC-FT	88000	7850	45100	8320	32970	10260	384	6790	15120	478	63	1380

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2003, BY WATER YEAR (WY)

MEAN	240	264	344	233	397	375	384	451	298	92.4	23.7	107
MAX	1784	1406	1692	1172	2099	1697	3017	2461	1792	872	165	584
(WY)	1972	1958	2002	1950	2001	2002	1966	1982	1989	1976	2001	1973
MIN	0.000	0.000	0.000	0.16	0.81	4.43	2.97	2.43	0.28	0.000	0.000	0.000
(WY)	1953	1956	1956	1964	1976	1954	1972	1972	1988	1954	1952	1952

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

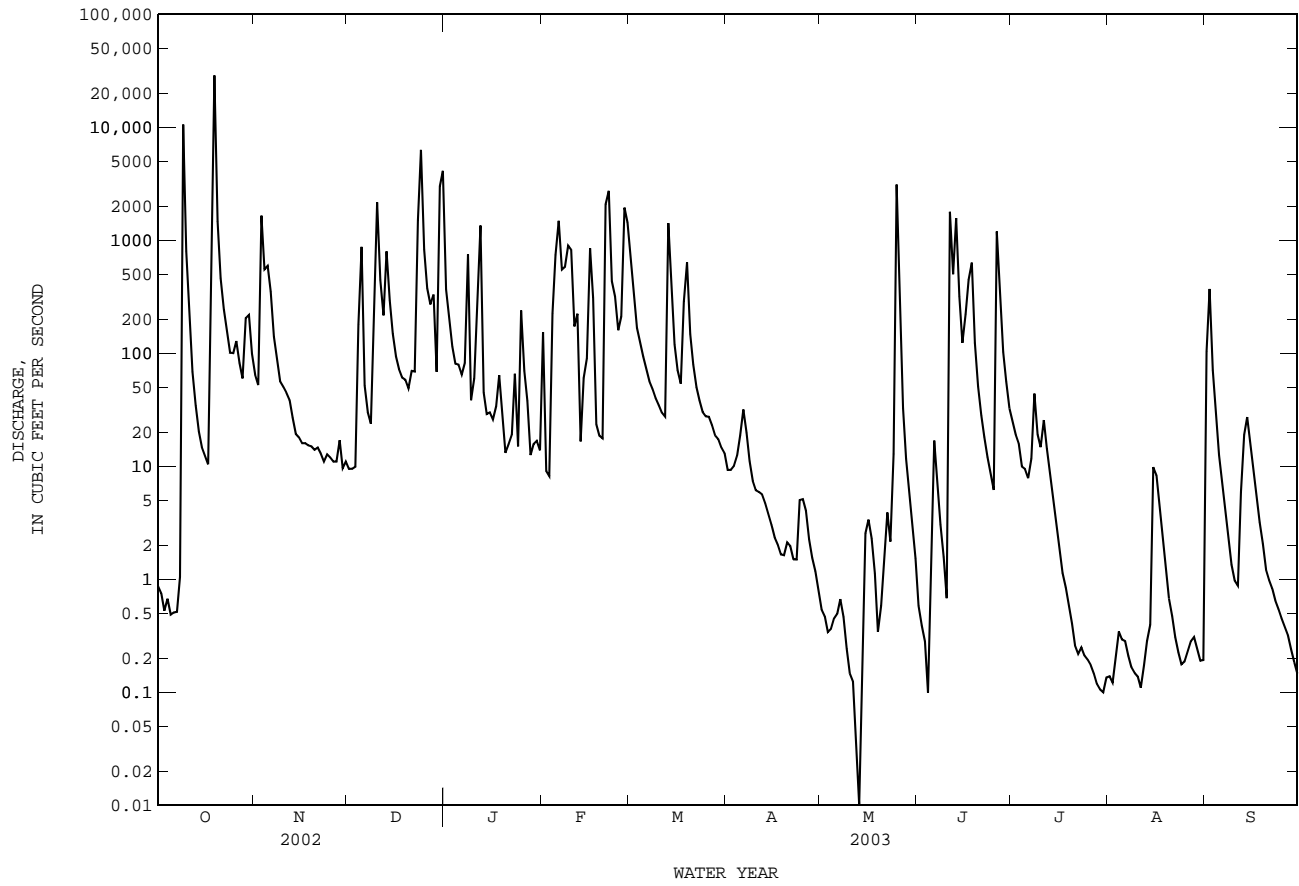
FOR 2003 WATER YEAR

WATER YEARS 1950 - 2003

ANNUAL TOTAL	201980.96	109265.07	
ANNUAL MEAN	553	299	
HIGHEST ANNUAL MEAN			267
LOWEST ANNUAL MEAN			548
HIGHEST DAILY MEAN	28800	Oct 19	40900
LOWEST DAILY MEAN	0.00	Jul 30	0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	Jul 30	0.12
MAXIMUM PEAK FLOW			72200
MAXIMUM PEAK STAGE			34.76
ANNUAL RUNOFF (AC-FT)	400600	216700	193100
10 PERCENT EXCEEDS	822	522	318
50 PERCENT EXCEEDS	36	16	12
90 PERCENT EXCEEDS	0.08	0.27	0.00

e Estimated

07343000 North Sulphur River near Cooper, TX--Continued



07343200 Sulphur River near Talco, TX

LOCATION.--Lat 33°23'26", long 95°03'44", Red River County, Hydrologic Unit 11140302, downstream side at left end of bridge on County Road 2152, 1.0 mi downstream from Little Mustang Creek, 2.3 mi downstream from U.S Highway 271, 2.8 mi northeast of Talco.

DRAINAGE AREA.--1,405 mi².

PERIOD OF RECORD.--Dec. 1956 to Sept. 1996, Oct. 2000 to current year. Oct. 1997 to Sept. 2000, published as "below Talco" (station 07343210).

Water-quality records.--Chemical data: Mar. 1965 to Sept. 1995, Oct. 1996 to Jan. 2002. Biochemical data: Jan. 1968 to Sept. 1995, Oct. 1996 to Jan. 2002. Pesticide data: Jan. 1968 to Sept. 1995. Specific conductance data: Oct. 1966 to Sept. 1991. Water temperature data: Oct. 1966 to Sept. 1991.

REVISED RECORDS.--WDR TX-76-1: (P).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 275.48 ft above NGVD of 1929. Prior to May 21, 1997, at site 2.3 mi upstream at datum 15.34 ft higher. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Since Sept. 1991, at least 10% of contributing drainage area has been regulated. The River Crest Steam Electric Generating Plant diverts an unknown amount of water upstream from station. Flow may be slightly affected at times by floodwater-retarding structures. These structures control runoff in the Auds and Depot Creek drainage basin.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--35 years (water years 1957-91) prior to regulation by Jim L. Chapman Lake (station 07342495), 1,408 ft³/s (1,020,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1957-91).--Maximum discharge 48,000 ft³/s Dec. 11, 1971 (gage height, 21.20 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in 1908 and 1914 each reached a stage of 27.5 ft, and flood in 1945 reached a stage of 26.5 ft, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	2870	34	e3580	68	5870	155	31	29	44	8.5	14
2	12	2750	34	e4990	67	4210	110	30	24	34	8.5	17
3	12	2240	34	e4210	66	2610	72	29	21	32	8.6	123
4	12	2680	58	3030	64	1700	58	28	18	34	8.8	92
5	13	2920	76	1840	63	1330	53	28	17	29	8.9	49
6	13	2170	114	1380	64	919	55	28	17	23	8.9	31
7	14	1800	90	1120	65	647	61	42	22	20	9.1	21
8	14	1190	70	723	66	364	66	35	39	19	9.3	16
9	63	471	60	384	70	232	60	30	36	16	9.1	12
10	2770	176	187	242	71	202	55	28	30	17	9.1	10
11	4500	96	1600	173	70	180	51	25	30	17	9.6	10
12	1640	71	1020	125	70	120	47	23	718	16	9.9	13
13	435	60	564	95	65	90	46	21	475	17	9.9	13
14	175	53	1170	83	64	653	45	21	795	17	9.9	15
15	104	48	1050	77	92	414	44	21	342	15	9.9	21
16	66	45	617	77	106	232	43	29	132	14	9.5	20
17	46	43	452	82	102	207	41	36	176	12	9.4	18
18	37	42	389	84	87	200	40	33	264	11	9.5	15
19	1300	41	354	83	76	463	39	30	313	10	9.5	13
20	10900	40	325	82	69	896	40	27	149	10	9.5	12
21	23600	39	287	81	192	533	40	25	84	9.7	9.5	11
22	13000	38	215	79	3460	317	37	24	53	9.4	9.5	11
23	7490	38	354	78	7410	238	36	26	38	9.2	9.3	11
24	5230	38	2700	77	5730	207	37	27	29	8.7	9.1	11
25	4350	38	5930	74	2580	191	38	179	21	8.5	9.3	12
26	3820	37	3870	73	2020	184	40	1350	22	8.4	9.3	12
27	3400	36	1730	71	2690	181	40	433	450	8.3	8.9	11
28	3130	35	987	71	4870	178	37	117	341	8.2	8.9	10
29	3010	35	663	70	---	169	35	68	125	8.4	8.9	10
30	2910	34	e1340	69	---	163	33	46	67	8.6	8.8	9.8
31	2920	---	e2540	69	---	e161	---	35	---	8.5	9.3	---
TOTAL	94998	20174	28914	23272	30417	24061	1554	2905	4877	502.9	286.2	643.8
MEAN	3064	672	933	751	1086	776	51.8	93.7	163	16.2	9.23	21.5
MAX	23600	2920	5930	4990	7410	5870	155	1350	795	44	9.9	123
MIN	12	34	34	69	63	90	33	21	17	8.2	8.5	9.8
AC-FT	188400	40020	57350	46160	60330	47720	3080	5760	9670	998	568	1280

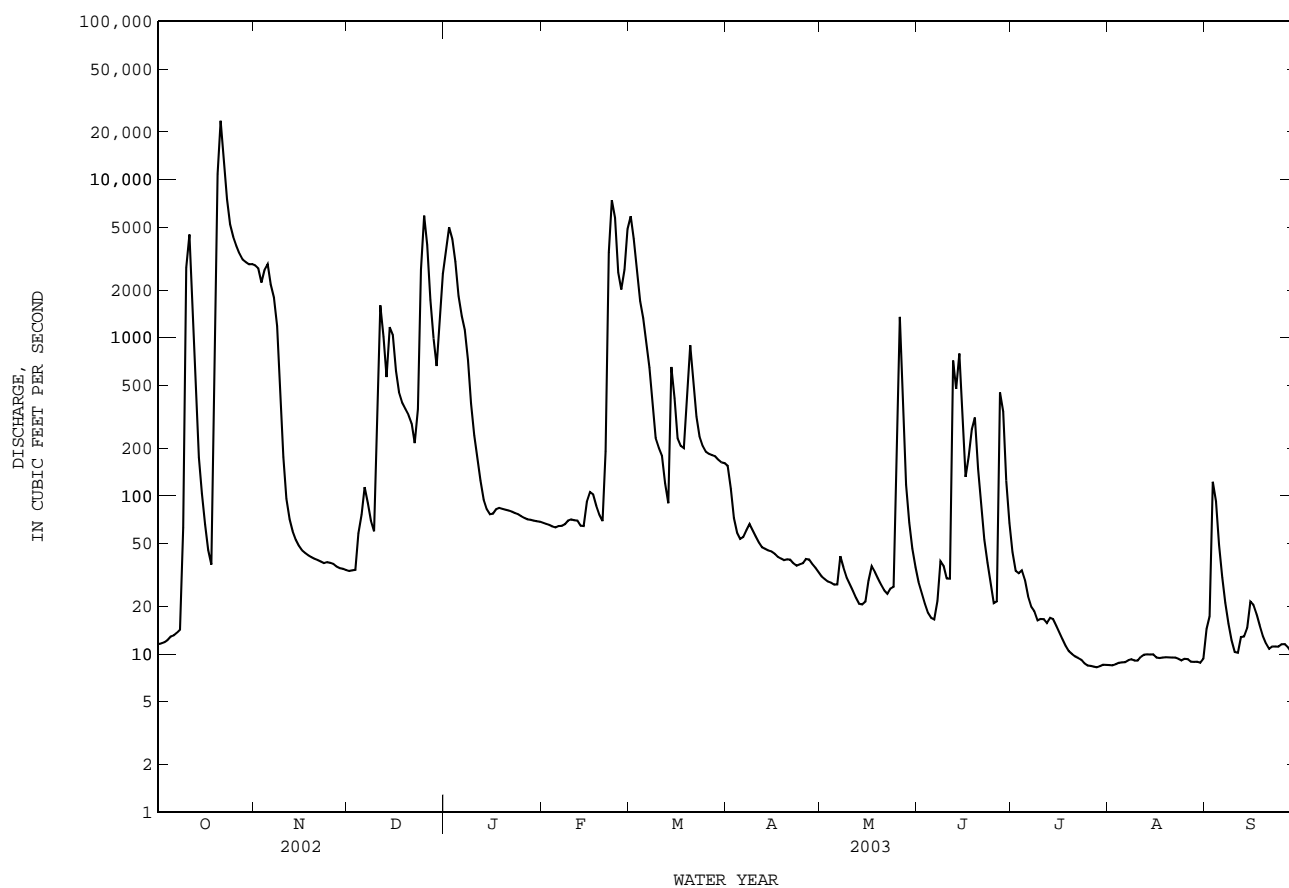
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2003hz, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
MEAN	796	1734	3025	1619	2248	2589	1692	1326	755	479	232	177
MAX	3064	5798	7249	4052	6470	7354	5144	6191	2279	3164	1832	1086
(WY)	2003	1997	2002	1998	1997	2001	2002	1995	2000	1992	1992	2001
MIN	0.80	9.52	24.0	21.9	12.7	50.3	51.8	88.6	13.3	4.39	0.42	0.65
(WY)	2000	2000	1996	2000	1996	1996	2003	1998	1998	1993	1999	1999

07343200 Sulphur River near Talco, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1992 - 2003hz	
ANNUAL TOTAL	597241		232604.9		1386	
ANNUAL MEAN	1636		637		2642	
HIGHEST ANNUAL MEAN					161	
LOWEST ANNUAL MEAN					64100	
HIGHEST DAILY MEAN	28900	Mar 21	23600	Oct 21	64100	Dec 18 2001
LOWEST DAILY MEAN	11	Sep 28	8.2	Jul 28	0.09	Sep 7 1999
ANNUAL SEVEN-DAY MINIMUM	12	Sep 27	8.4	Jul 25	0.11	Sep 1 1999
MAXIMUM PEAK FLOW			27100	Oct 21	79800	Dec 18 2001
MAXIMUM PEAK STAGE			27.51	Oct 21	30.99	Dec 18 2001
ANNUAL RUNOFF (AC-FT)	1185000		461400		1004000	
10 PERCENT EXCEEDS	4740		2200		3770	
50 PERCENT EXCEEDS	175		53		186	
90 PERCENT EXCEEDS	17		9.6		9.3	

e Estimated
 z Period of regulated streamflow.
 h See PERIOD OF RECORD paragraph.



LOCATION.--Lat 33°10'04", long 95°38'30", Hopkins County, Hydrologic Unit 11140303, on White Oak Dam, next to spillway on White Oak Creek, 2.4 mi from Sulphur Springs.

PERIOD OF RECORD.--Mar. 1999 to Sept. 2002 (contents), Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by an earthfill dam 6,232 ft long (including service spillway) with an uncontrolled emergency spillway located at left end of dam. The dam was completed and storage began in Jan. 1974. The lake is the property of the Sulphur Springs Water District, and was built to impound water for municipal use. Data regarding the dam are given in the following table:

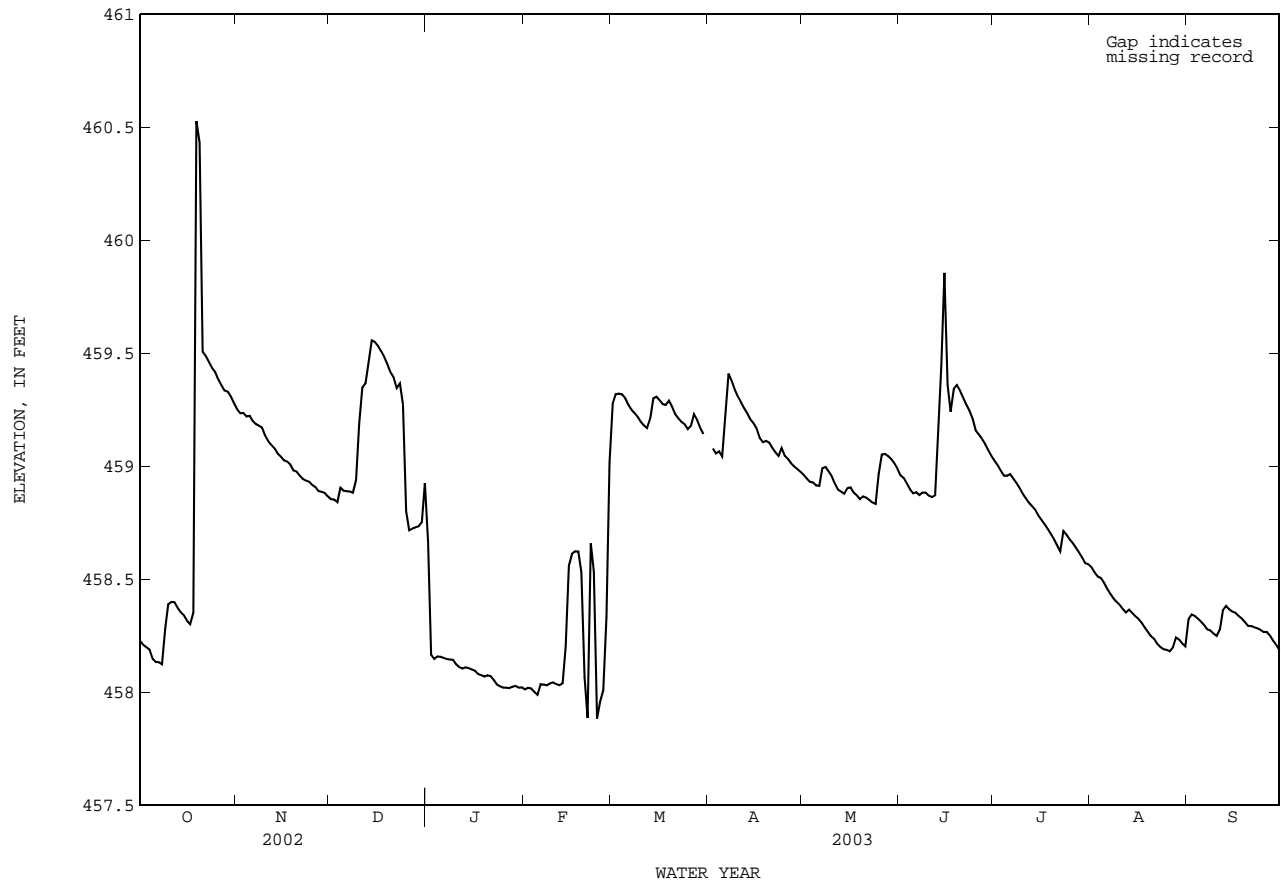
	Elevation (feet)
Top of dam.....	474.0
Crest of spillway.....	462.0
Lowest gated outlet (invert).....	441.0

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 30,660 acre-ft, June 4, 2000, elevation, 464.41 ft; minimum contents, 13,660 acre-ft, Aug. 25, 2001, elevation 456.52 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 461.93 ft, Oct. 19; minimum elevation, 457.75 ft, Feb. 21.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

07343460 Lake Sulphur Springs near Sulphur Springs, TX--Continued



07343500 White Oak Creek near Talco, TX

LOCATION.--Lat 33°19'20", long 95°05'33", Titus County, Hydrologic Unit 11140303, near center of main channel at downstream side of bridge on U.S. Highway 271, 0.8 mi downstream from Lewis Creek, 2.4 mi upstream from Ripley Creek, 2.7 mi south of Talco, and 38.4 mi upstream from mouth.

DRAINAGE AREA.--494 mi².

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

Water-quality records.--Chemical data: Oct. 1967 to Sept. 1998. Biochemical data: Nov. 1982 to Sept. 1985, Oct. 1991 to Sept. 1998. Specific conductance: Oct. 1967 to Sept. 1989. Water temperature: Oct. 1967 to Sept. 1989.

REVISED RECORDS.--WSP 1711: Elevation of historical maximum.

GAGE.--Water-stage recorder. Datum of gage is 286.45 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records poor. Since water year 1973, at least 10% of contributing drainage area has been regulated. There are several small diversions upstream from station for municipal supply. The cities of Sulphur Springs and Mount Vernon discharged wastewater effluent into tributaries above this station. No flow at times.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--22 years (water years 1951-72) prior to regulation by Lake Sulphur Springs 405 ft³/s (293,400 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1950-72).--Maximum discharge 48,000 ft³/s Dec. 11, 1971 (gage height, 21.20 ft). No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1870, 22.9 ft Mar. 31, 1945, from floodmarks and from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	62	16	1770	44	e2300	62	35	28	31	8.8	8.1
2	3.2	57	16	2120	45	e2320	59	32	23	28	7.6	9.1
3	3.6	47	15	2030	44	e2050	56	31	21	23	6.7	8.6
4	3.6	41	51	2080	42	e1040	56	29	19	28	6.4	8.2
5	3.2	39	269	2030	41	646	58	29	18	35	8.0	13
6	3.1	37	308	1400	44	322	61	78	19	28	12	22
7	3.1	35	255	469	44	226	101	207	17	20	11	16
8	3.6	36	137	190	45	182	378	393	17	16	9.8	12
9	5.3	36	72	129	57	151	499	221	16	14	8.4	9.8
10	6.0	34	59	104	71	130	414	121	15	13	7.8	8.4
11	6.6	31	174	83	65	117	181	67	17	12	8.5	7.7
12	81	26	427	69	60	106	98	45	17	12	9.0	11
13	158	23	638	64	60	102	76	35	25	12	8.2	14
14	72	25	702	58	73	104	64	32	20	11	7.1	11
15	32	26	538	54	411	121	58	32	25	11	7.0	9.6
16	19	26	398	52	716	170	53	29	273	11	6.3	10
17	14	22	267	51	734	154	49	26	451	9.8	5.9	14
18	12	19	163	50	545	127	46	29	562	9.2	6.3	17
19	243	17	114	49	258	216	46	41	631	8.7	6.5	15
20	1020	17	89	49	148	481	54	41	605	8.8	6.1	14
21	4920	18	76	47	233	496	67	33	338	9.4	6.2	12
22	9560	19	65	47	e970	327	60	28	111	9.9	6.8	9.8
23	6030	20	103	46	e1980	188	52	26	60	9.2	6.6	8.3
24	4240	19	827	45	e2350	128	51	28	43	8.3	6.8	7.3
25	2830	18	1360	44	e2580	101	46	36	34	7.8	7.1	6.8
26	1530	21	1700	43	e2190	133	54	33	34	7.9	6.2	6.2
27	400	21	1670	42	e1870	104	68	27	33	20	5.7	5.8
28	126	20	1690	43	e1980	89	65	25	28	23	6.2	6.4
29	89	18	1740	42	---	82	49	59	28	16	8.4	6.9
30	79	16	1300	43	---	73	39	47	31	12	9.8	6.8
31	66	---	1320	43	---	69	---	35	---	9.9	8.0	---
TOTAL	31565.9	846	16559	13386	17700	12855	3020	1930	3559	474.9	235.2	314.8
MEAN	1018	28.2	534	432	632	415	101	62.3	119	15.3	7.59	10.5
MAX	9560	62	1740	2120	2580	2320	499	393	631	35	12	22
MIN	3.1	16	15	42	41	69	39	25	15	7.8	5.7	5.8
AC-FT	62610	1680	32840	26550	35110	25500	5990	3830	7060	942	467	624

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 2003z, BY WATER YEAR (WY)

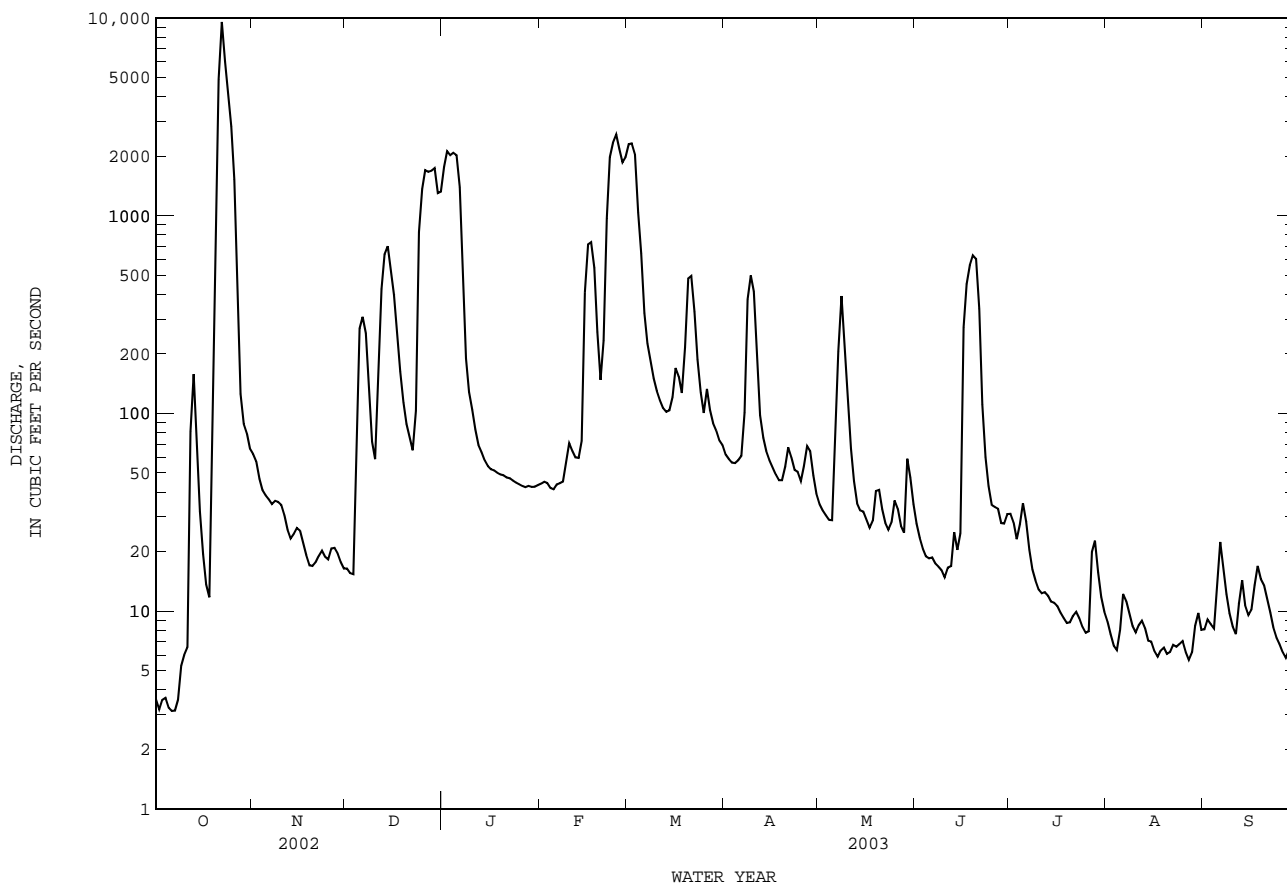
	MEAN	285	709	983	624	875	957	715	638	490	290	72.0	68.1
MAX	1744	2984	3166	3222	3381	3491	2329	3166	2620	3743	898	867	
(WY)	1982	1975	2002	1980	1997	1990	1973	1990	1981	1992	1992	1974	
MIN	0.000	0.34	3.22	2.27	5.90	12.2	29.0	7.35	0.83	0.39	0.000	0.000	
(WY)	1979	1976	1990	1976	1996	1996	1981	1988	1988	1978	1978	1978	

07343500 White Oak Creek near Talco, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1973 - 2003z	
ANNUAL TOTAL	190095.0		102445.8			
ANNUAL MEAN	521		281			
HIGHEST ANNUAL MEAN					557	1992
LOWEST ANNUAL MEAN					55.8	1996
HIGHEST DAILY MEAN	11200	Mar 22	9560	Oct 22	31700	Jan 24 1980
LOWEST DAILY MEAN	3.1	Oct 6	3.1	Oct 6	0.00	Aug 30 1973
ANNUAL SEVEN-DAY MINIMUM	3.3	Oct 1	3.3	Oct 1	0.00	Jul 24 1978
MAXIMUM PEAK FLOW			12200	Oct 22	34600	Jan 24 1980
MAXIMUM PEAK STAGE			18.17	Oct 22	19.86	Jan 24 1980
ANNUAL RUNOFF (AC-FT)	377100		203200		403700	
10 PERCENT EXCEEDS	1610		641		1600	
50 PERCENT EXCEEDS	55		42		56	
90 PERCENT EXCEEDS	5.6		7.7		1.8	

e Estimated

z Period of regulated streamflow.



07344200 Wright Patman Lake near Texarkana, TX

LOCATION.--Lat 33°18'16", long 94°09'38", Bowie-Cass County line, Hydrologic Unit 11140302, in intake structure of Wright Patman Dam on the Sulphur River, 0.5 mi upstream from U.S. Highway 59, 10.0 mi southwest of Texarkana, and 44.5 mi upstream from mouth.

DRAINAGE AREA.--3,443 mi².

PERIOD OF RECORD.--July 1953 to Sept. 2000 (U.S. Army Corps of Engineers furnished contents), Oct. 2000 to Sept. 2002 (contents), Oct. 2002 to current year. Published as Texarkana Reservoir prior to Oct. 1970 and as Lake Texarkana from Oct. 1970 to Sept. 1972.

Water-quality Records.--Chemical data: Mar. 1967 to Sept. 1984, Feb. 1992 to Sept. 1998.

REVISED RECORDS.--WSP 1561: 1957(M). WSP 1711: 1959(M).

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. July 19 to Dec. 31, 1953, nonrecording gage at site about 125 ft upstream at datum 200 ft higher. Satellite telemeter at station.

REMARKS.--Records fair. The lake is formed by a rolled earthfill dam 18,500 ft long, including a 200-foot uncontrolled spillway and a 1-mile long dike. Temporary impoundment of water began July 2, 1953, and deliberate impoundment began June 27, 1956. The dam was completed in Dec. 1957. The flood-control outlet works consist of two 20.0-foot-diameter conduits controlled by four 10.0- by 20.0-foot electrically driven broome-type gates. Flow is affected at times by discharge from the flood-detention pools of 25 floodwater-retarding structures with a combined detention capacity of 13,450 acre-ft. These structures control runoff from 40.0 mi² in the Sulphur River and Langford Creek drainage basins. Outflow discharging over the spillway passes into an outlet channel and then to the Sulphur River. The dam is owned by the U.S. Army Corps of Engineers. The lake was built for flood control and for conservation. An unknown amount of water is diverted for industrial and municipal uses. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	286.0
Crest of spillway.....	259.5
Top of conservation pool.....	220.6
Lowest gated outlet (invert).....	200.0

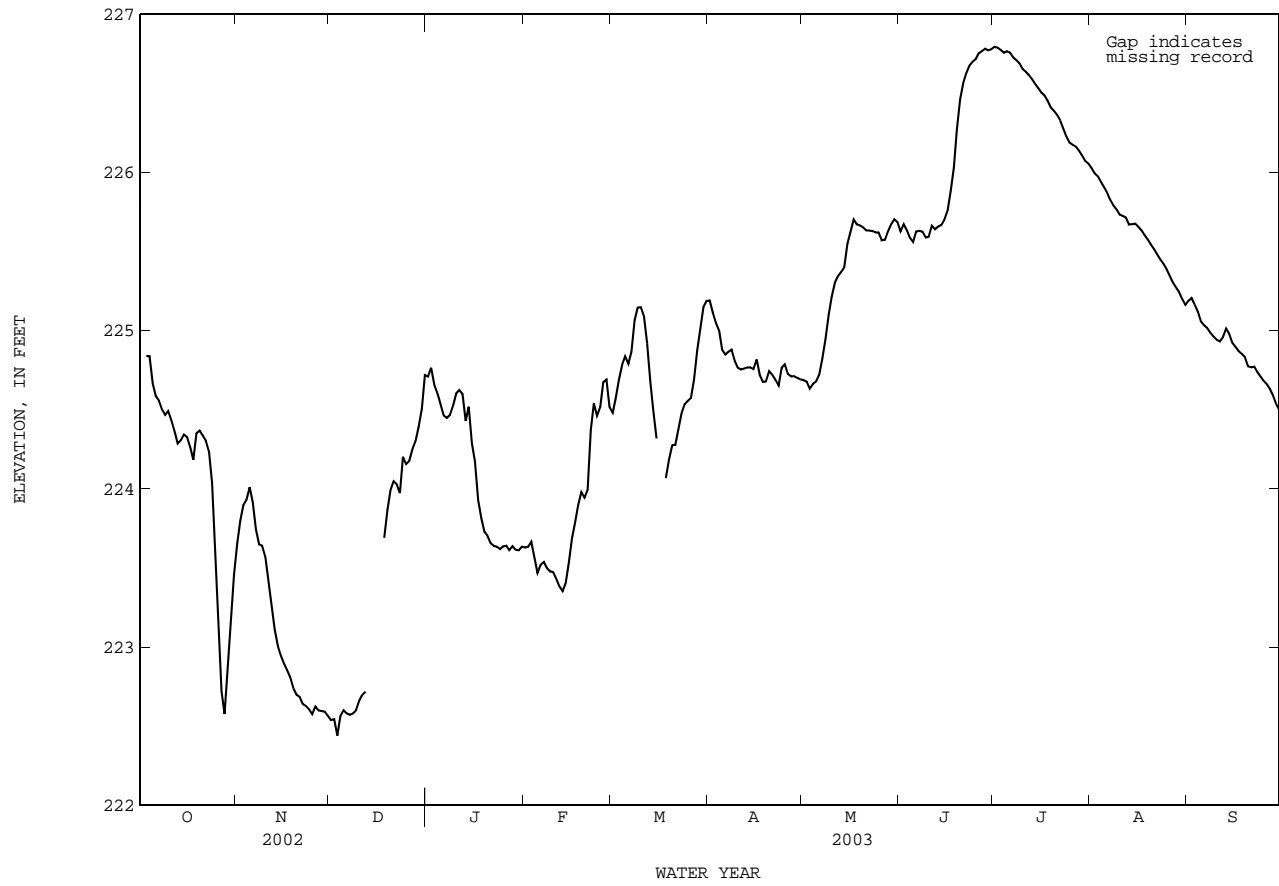
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,912,100 acre-ft, May 9, 1966, elevation, 252.64 ft; minimum since first appreciable storage and after deliberate impoundment began, 3,460 acre-ft, June 27, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 226.83 ft, July 5; minimum elevation, 222.35 ft, Dec. 3.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	223.65	222.54	224.71	223.63	224.48	225.19	224.69	225.63	226.80	226.03	225.19
2	---	223.80	222.54	224.77	223.63	224.57	225.11	224.68	225.67	226.79	226.00	225.21
3	224.84	223.90	222.44	224.66	223.67	224.69	225.05	224.63	225.63	226.78	225.98	225.17
4	224.84	223.93	222.56	224.61	223.56	224.78	225.00	224.66	225.59	226.76	225.94	225.12
5	224.67	224.01	222.60	224.53	223.47	224.84	224.88	224.68	225.56	226.77	225.91	225.06
6	224.59	223.92	222.58	224.46	223.52	224.79	224.85	224.72	225.63	226.76	225.87	225.03
7	224.56	223.74	222.57	224.45	223.54	224.87	224.87	224.82	225.63	226.73	225.83	225.02
8	224.50	223.65	222.58	224.47	223.50	225.07	224.88	224.95	225.63	226.71	225.79	224.99
9	224.47	223.64	222.60	224.52	223.48	225.15	224.81	225.10	225.59	226.69	225.77	224.96
10	224.49	223.57	222.66	224.60	223.47	225.15	224.77	225.22	225.59	226.65	225.73	224.94
11	224.43	223.41	222.70	224.63	223.43	225.09	224.75	225.30	225.66	226.64	225.73	224.93
12	224.37	223.26	222.72	224.60	223.38	224.92	224.76	225.34	225.64	226.62	225.72	224.96
13	224.29	223.11	---	224.43	223.35	224.68	224.77	225.37	225.66	226.59	225.67	225.01
14	224.31	223.01	---	224.52	223.40	224.49	224.77	225.40	225.67	226.56	225.67	224.98
15	224.34	222.95	---	224.29	223.53	224.32	224.76	225.55	225.70	226.53	225.68	224.92
16	224.33	222.90	---	224.17	223.69	---	224.82	225.62	225.76	226.51	225.66	224.90
17	224.27	222.85	---	223.93	223.79	---	224.72	225.70	225.88	226.49	225.63	224.87
18	224.18	222.81	223.69	223.82	223.90	224.07	224.68	225.67	226.03	226.45	225.60	224.85
19	224.35	222.74	223.87	223.73	223.98	224.19	224.68	225.67	226.27	226.41	225.58	224.83
20	224.37	222.70	223.99	223.71	223.94	224.28	224.74	225.65	226.46	226.39	225.54	224.77
21	224.34	222.68	224.05	223.66	223.99	224.28	224.72	225.63	226.57	226.37	225.52	224.77
22	224.30	222.64	224.03	223.64	224.37	224.38	224.69	225.63	226.63	226.33	225.48	224.77
23	224.23	222.63	223.97	223.63	224.54	224.48	224.65	225.63	226.68	226.28	225.45	224.74
24	224.04	222.61	224.20	223.62	224.46	224.54	224.77	225.62	226.70	226.23	225.42	224.71
25	223.63	222.58	224.16	223.64	224.52	224.56	224.79	225.62	226.72	226.19	225.39	224.68
26	223.12	222.62	224.18	223.64	224.67	224.57	224.73	225.57	226.75	226.18	225.35	224.66
27	222.72	222.60	224.25	223.61	224.69	224.69	224.71	225.58	226.77	226.16	225.31	224.63
28	222.58	222.60	224.30	223.64	224.52	224.87	224.71	225.63	226.78	226.14	225.27	224.59
29	222.88	222.59	224.39	223.61	---	225.02	224.70	225.67	226.77	226.11	225.25	224.53
30	223.17	222.56	224.51	223.61	---	225.15	224.69	225.70	226.78	226.07	225.20	224.50
31	223.46	---	224.72	223.63	---	225.19	---	225.69	---	226.06	225.16	---
MEAN	---	223.12	---	224.11	223.84	---	224.80	225.34	226.07	226.48	225.62	224.88
MAX	---	224.01	---	224.77	224.69	---	225.19	225.70	226.78	226.80	226.03	225.21
MIN	---	222.56	---	223.61	223.35	---	224.65	224.63	225.56	226.06	225.16	224.50
CAL YR 2002	MAX	239.37	MIN	222.44								
WTR YR 2003	MAX	226.80	MIN	222.44								

07344200 Wright Patman Lake near Texarkana, TX--Continued



07344484 Lake Cypress Springs near Mount Vernon, TX

LOCATION.--Lat 33°03'22", long 95°08'21", Franklin County, Hydrologic Unit 11140305, in brick meter house located on upstream side and near center of dam on Big Cypress Creek, 1.5 mi upstream from Andy's Creek, 2.6 mi downstream from Panther Creek, and 10.3 mi southeast of Mount Vernon.

DRAINAGE AREA.--75.0 mi².

PERIOD OF RECORD.--Feb. 1974 to Sept. 1991, June 1998 to Sept. 2002 (contents), Oct. 2002 to current year.
Water-quality records.--Chemical data: Oct. 1974 to Sept. 1984.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 5,230 ft long. The dam is owned by the Franklin County Water District and the Texas Water Development Board. Deliberate impoundment began July 7, 1970, and the dam was completed Feb. 15, 1971. The spillway is an excavated channel through natural ground 1,000 ft wide located to the left of left end of dam. The service spillway is a rectangular 23x23 ft drop inlet located near the right end of dam. the low-flow outlet works consist of an 18 in diameter concrete pipe that has duplicate valve controls and discharges into the service spillway conduit. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	397.0
Crest of spillway.....	385.0
Lowest gated outlet (invert).....	317.75

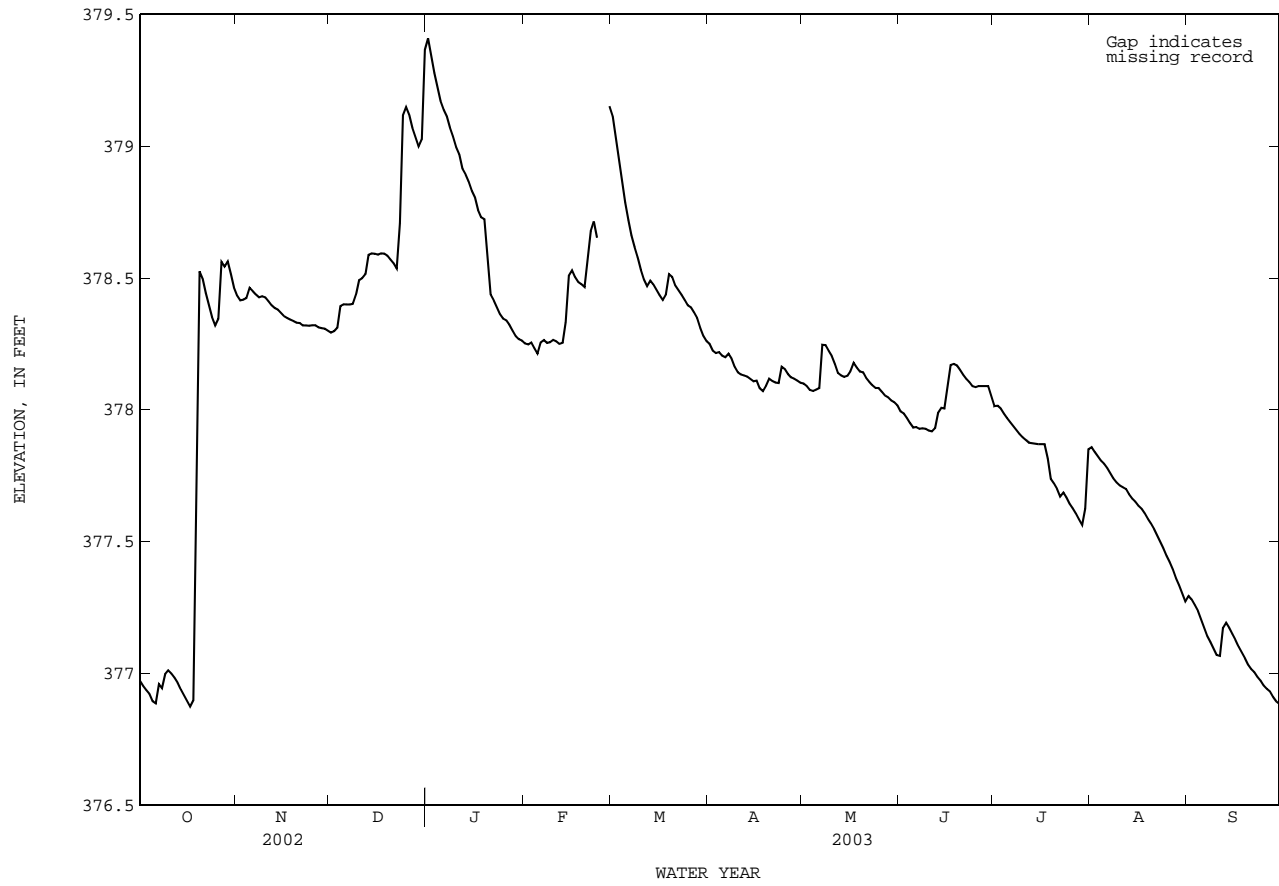
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 85,050 acre-ft, Dec. 26, 1988, elevation, 381.33 ft; minimum contents, 59,440 acre-ft, Nov. 12-14, 1978, elevation, 373.79 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 379.43 ft, Dec. 31, Jan. 1; minimum elevation, 376.83 ft, Jan. 28, 29.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	376.97	378.43	378.29	379.41	378.25	379.11	378.25	378.10	377.99	378.01	377.86	377.29
2	376.95	378.42	378.30	379.35	378.25	379.03	378.22	378.09	377.99	378.02	377.84	377.28
3	376.94	378.42	378.31	379.28	378.26	378.94	378.21	378.08	377.97	378.01	377.82	377.26
4	376.92	378.42	378.39	379.23	378.23	378.86	378.22	378.07	377.95	377.99	377.81	377.24
5	376.89	378.46	378.40	379.17	378.21	378.79	378.21	378.08	377.93	377.97	377.80	377.21
6	376.89	378.45	378.40	379.14	378.26	378.72	378.20	378.08	377.93	377.95	377.78	377.17
7	376.96	378.44	378.40	379.11	378.26	378.66	378.21	378.25	377.93	377.94	377.76	377.14
8	376.94	378.43	378.40	379.07	378.25	378.62	378.19	378.25	377.93	377.92	377.74	377.12
9	377.00	378.43	378.44	379.04	378.26	378.58	378.16	378.22	377.93	377.91	377.72	377.10
10	377.01	378.43	378.49	379.00	378.26	378.53	378.14	378.20	377.92	377.90	377.71	377.07
11	377.00	378.41	378.50	378.97	378.26	378.50	378.13	378.17	377.92	377.89	377.71	377.07
12	376.98	378.40	378.51	378.91	378.25	378.47	378.13	378.14	377.93	377.88	377.70	377.17
13	376.96	378.39	378.59	378.89	378.25	378.49	378.13	378.13	377.99	377.87	377.68	377.19
14	376.94	378.38	378.59	378.87	378.33	378.48	378.12	378.12	378.01	377.87	377.66	377.17
15	376.92	378.37	378.59	378.83	378.51	378.45	378.11	378.13	378.01	377.87	377.65	377.15
16	376.90	378.36	378.59	378.81	378.53	378.44	378.11	378.15	378.09	377.87	377.64	377.13
17	376.87	378.35	378.59	378.76	378.50	378.42	378.08	378.18	378.17	377.87	377.62	377.10
18	376.90	378.34	378.59	378.73	378.48	378.44	378.07	378.16	378.17	377.82	377.61	377.08
19	377.95	378.34	378.58	378.72	378.48	378.51	378.09	378.15	378.17	377.74	377.59	377.06
20	378.53	378.33	378.57	378.60	378.47	378.50	378.12	378.14	378.15	377.72	377.57	377.03
21	378.50	378.33	378.56	378.44	378.58	378.47	378.11	378.12	378.13	377.70	377.55	377.02
22	378.44	378.32	378.54	378.42	378.68	378.45	378.10	378.11	378.12	377.67	377.52	377.00
23	378.40	378.32	378.71	378.39	378.71	378.44	378.10	378.09	378.10	377.69	377.50	377.99
24	378.35	378.32	379.12	378.36	378.65	378.42	378.16	378.08	378.09	377.67	377.47	376.97
25	378.32	378.32	379.15	378.35	---	378.40	378.15	378.08	378.09	377.64	377.45	376.95
26	378.34	378.32	379.12	378.34	---	378.39	378.14	378.07	378.09	377.63	377.42	376.94
27	378.56	378.31	379.07	378.32	---	378.37	378.12	378.05	378.09	377.61	377.39	376.93
28	378.54	378.31	379.03	378.30	379.15	378.35	378.12	378.05	378.09	377.58	377.36	376.91
29	378.56	378.31										

07344484 Lake Cypress Springs near Mount Vernon, TX--Continued



07344486 Brushy Creek at Scroggins, TX

LOCATION.--Lat 32°58'32", long 95°11'03", Franklin County, Hydrologic Unit 11140305, at downstream side of highway embankment near left end of bridge on Farm Road 115, 0.1 mi north of Scroggins, 0.3 mi downstream from Briary Creek, 2.5 mi upstream from South Brushy Creek, and 9.5 mi upstream from mouth.

DRAINAGE AREA.--23.4 mi².

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

REVISED RECORDS.--WDR TX-89-1: 1983-88 (M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 343.90 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records poor. No known regulation or diversions. No flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1.3	5.6	8.8	48	14	27	11	0.46	0.08	4.6	18	4.9
2	e1.8	6.1	9.2	24	14	20	10	0.66	0.08	5.7	11	7.5
3	e2.5	7.0	11	20	14	17	9.8	0.81	0.11	4.9	8.3	6.1
4	e2.1	7.7	31	18	13	16	11	0.93	0.08	2.8	13	5.0
5	e1.6	18	15	18	12	15	11	2.7	0.09	3.0	7.5	5.8
6	e1.2	11	9.8	17	23	14	11	9.5	0.23	14	4.8	4.2
7	e0.90	7.3	8.5	16	19	14	10	45	0.29	6.8	2.6	2.3
8	e0.90	7.9	8.4	17	16	13	9.5	11	0.19	4.5	1.6	0.99
9	e160	9.0	13	17	17	13	8.7	5.5	0.22	2.8	0.94	0.75
10	e144	8.8	28	15	19	12	9.0	2.2	0.16	2.2	1.1	0.60
11	e85	8.3	14	15	16	11	9.2	1.2	0.19	1.7	1.2	0.27
12	e55	7.7	12	15	15	12	8.5	0.53	2.7	1.7	2.2	12
13	e25	8.2	35	16	15	23	7.9	0.54	44	2.1	3.5	6.4
14	e12	8.3	16	16	46	19	8.6	2.3	24	3.6	3.5	0.80
15	e8.1	8.7	11	16	69	14	7.7	13	9.1	3.5	3.2	0.48
16	e6.9	8.1	10	17	21	13	6.9	18	158	2.5	2.1	0.46
17	6.9	8.1	9.6	16	16	12	5.8	87	152	1.7	1.3	0.46
18	e4.0	8.3	7.8	16	15	31	6.1	11	22	1.4	0.91	0.49
19	400	8.2	7.0	16	14	60	8.9	5.5	17	1.3	0.75	0.43
20	149	8.1	6.7	17	14	18	13	2.2	14	1.1	0.63	0.48
21	14	8.1	6.2	17	95	14	9.4	1.9	12	1.7	0.58	0.54
22	6.6	7.8	5.8	16	217	12	6.8	1.2	8.5	1.3	0.57	0.83
23	3.7	7.9	44	14	42	12	5.6	0.62	6.3	52	0.56	0.86
24	2.0	9.0	152	14	20	11	11	0.46	5.2	19	0.55	0.88
25	2.0	7.0	25	15	179	10	8.5	0.59	3.8	10	0.70	0.96
26	2.1	7.4	16	16	103	11	3.4	0.88	25	8.4	0.93	1.0
27	4.3	7.6	13	16	161	10	1.2	0.66	20	6.2	1.4	0.93
28	2.7	8.2	11	16	47	9.7	0.63	0.33	12	7.9	2.0	0.79
29	5.0	8.7	11	16	---	9.7	0.53	0.24	7.8	3.7	1.8	0.72
30	4.9	9.0	43	15	---	10	0.49	0.15	5.6	3.4	1.6	0.61
31	4.9	---	299	15	---	e10	---	0.11	---	27	1.4	---
TOTAL	1120.40	251.1	897.8	540	1266	493.4	231.15	227.17	550.72	212.5	100.22	68.53
MEAN	36.1	8.37	29.0	17.4	45.2	15.9	7.71	7.33	18.4	6.85	3.23	2.28
MAX	400	18	299	48	217	60	13	87	158	52	18	12
MIN	0.90	5.6	5.8	14	12	9.7	0.49	0.11	0.08	1.1	0.55	0.27
AC-FT	2220	498	1780	1070	2510	979	458	451	1090	421	199	136

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2003, BY WATER YEAR (WY)

MEAN	15.5	21.7	33.3	22.8	30.5	31.0	20.8	24.3	16.7	9.17	3.46	5.13
MAX	80.5	143	103	62.7	103	97.5	54.9	68.2	70.6	32.2	24.4	41.7
(WY)	1992	1995	1983	1993	2001	2001	1990	1991	2000	1981	1997	1979
MIN	0.68	2.51	2.99	2.96	5.31	8.15	3.64	1.64	0.27	0.007	0.003	0.14
(WY)	1979	1990	1979	2000	1996	1986	1978	1988	1984	1978	1985	1984

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

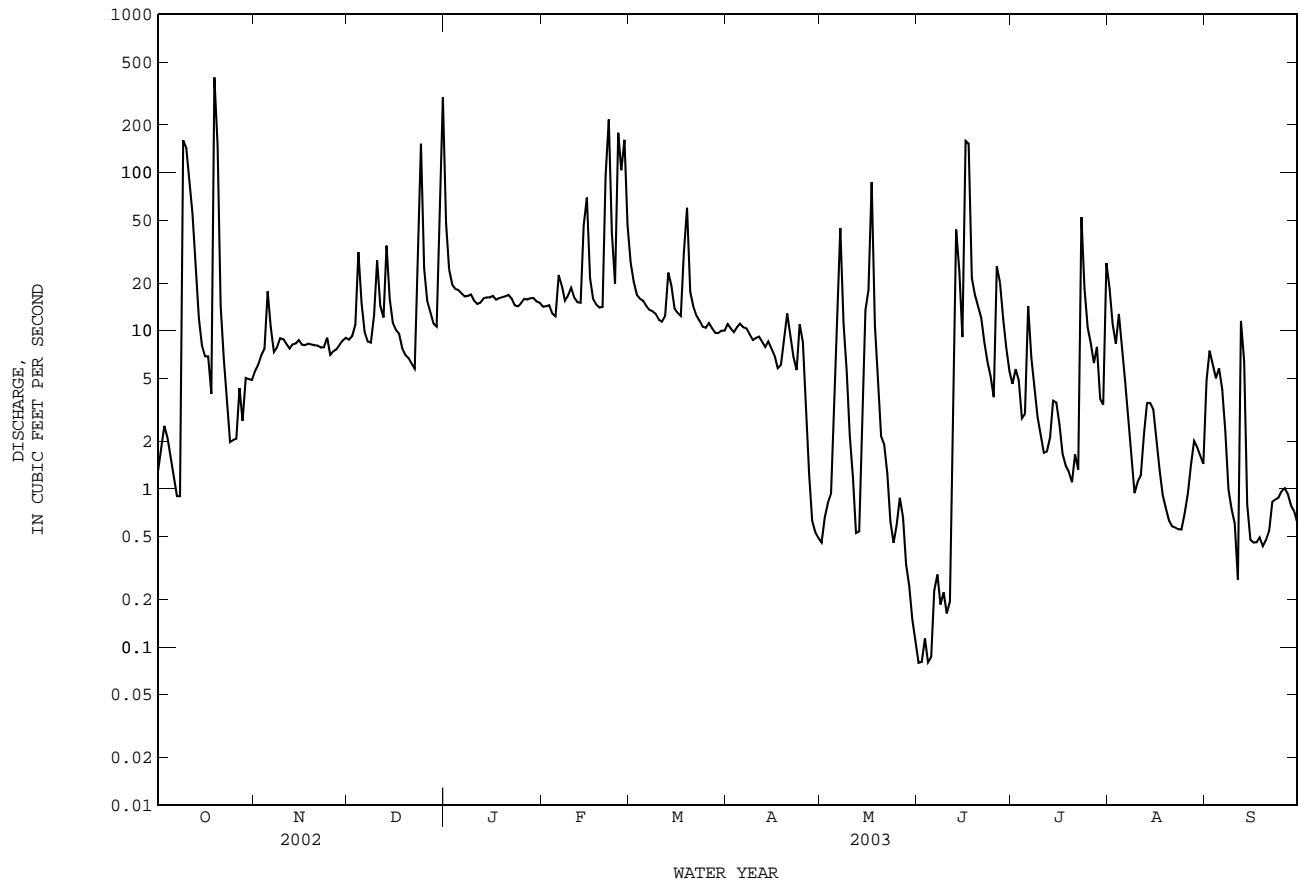
FOR 2003 WATER YEAR

WATER YEARS 1978 - 2003

ANNUAL TOTAL	9241.43	5958.99	
ANNUAL MEAN	25.3	16.3	19.9
HIGHEST ANNUAL MEAN			36.1
LOWEST ANNUAL MEAN			5.21
HIGHEST DAILY MEAN	553	Mar 20	2800
LOWEST DAILY MEAN	0.17	Sep 7	0.00
ANNUAL SEVEN-DAY MINIMUM	0.22	Sep 4	0.10
MAXIMUM PEAK FLOW			665
MAXIMUM PEAK STAGE			12.61
ANNUAL RUNOFF (AC-FT)	18330		11820
10 PERCENT EXCEEDS	53		24
50 PERCENT EXCEEDS	13		8.3
90 PERCENT EXCEEDS	0.89		0.62
			7.7
			0.55

e Estimated

07344486 Brushy Creek at Scroggins, TX--Continued



RED RIVER BASIN

07344488 Monticello Reservoir near Mount Pleasant, TX

LOCATION.--Lat 33°04'48", long 95°02'36", Titus County, Hydrologic Unit 11140305, on old intake structure 0.25 mi upstream from Monticello Dam on Blundell Creek, approximately 11.0 mi southwest of Mount Pleasant, and approximately 16.0 mi southeast of Mount Vernon.

DRAINAGE AREA.--36 mi².

PERIOD OF RECORD.--July 1998 to Sept. 2002 (contents), Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 3,200 ft long, including spillways. Construction began in 1971, and deliberate impoundment began in 1973, with lake at normal pool level in 1974. The spillway is an excavated channel cut through natural ground. The spillway is 1,000 ft wide, and located to the left of the left end of the dam. The service spillway is 204.0 ft wide with flow controlled by four 40.0 by 14.0 ft tainter gates. The dam, owned and operated by Texas Utilities Services, Inc., provides cooling water for electrical generation at the Moticello Steam Electric Station. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	352.0
Crest of uncontrolled spillway.....	343.5
Crest of gated spillway.....	340.0
Lowest gated outlet (invert).....	328.0

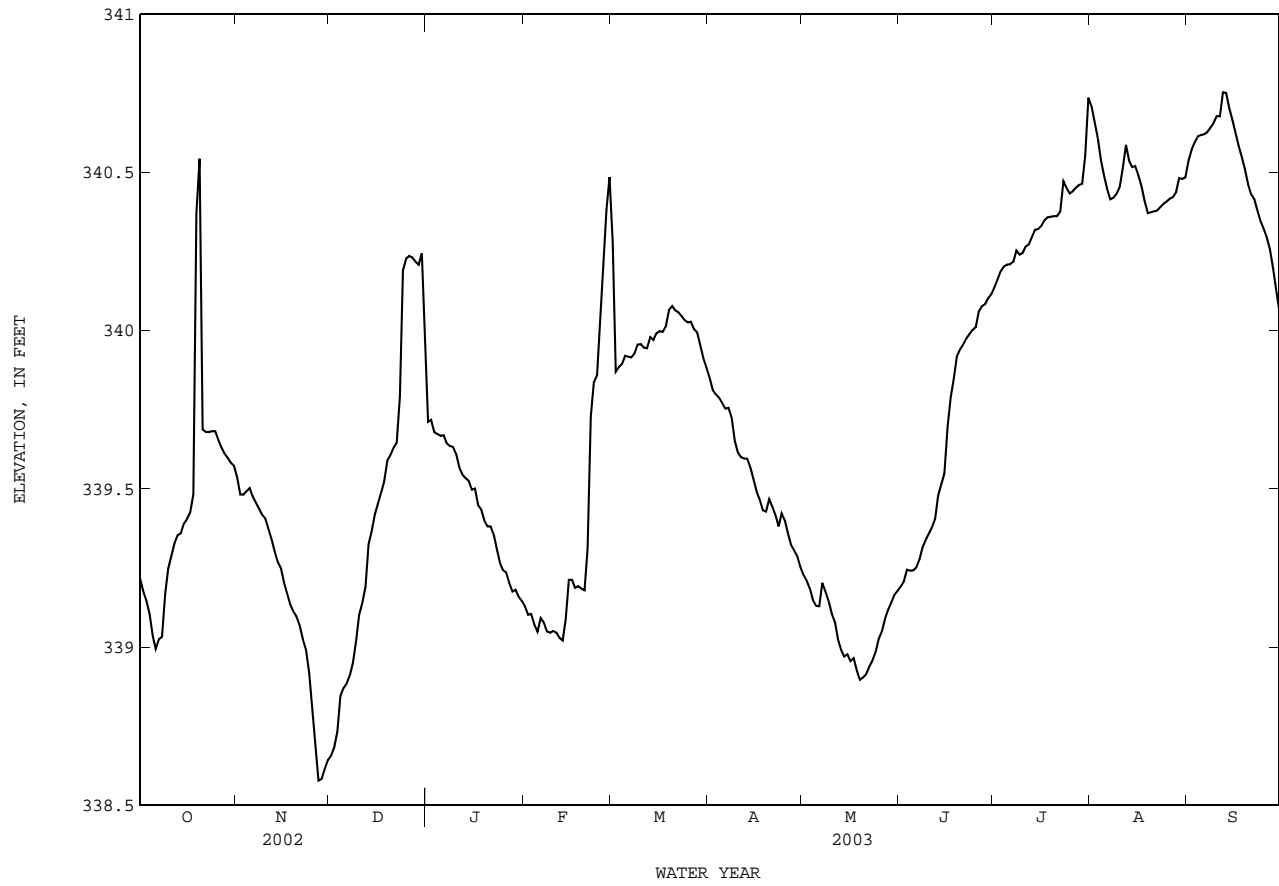
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 37,980 acre-ft, Feb. 16, 2001, elevation, 341.58 ft; minimum contents, 31,910 acre-ft, Jan. 5, 2000, and Jan. 22, 2002, elevation, 338.57 ft; minimum elevation, 338.55 ft, Nov. 27, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 340.84 ft, Oct. 20; minimum elevation, 338.55 ft, Nov. 27.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	339.22	339.54	338.65	339.71	339.13	340.28	339.85	339.23	339.19	340.14	340.71	340.54
2	339.18	339.48	338.68	339.72	339.10	339.87	339.81	339.21	339.21	340.16	340.66	340.57
3	339.15	339.48	338.73	339.68	339.10	339.89	339.80	339.19	339.24	340.19	340.61	340.60
4	339.11	339.49	338.85	339.67	339.07	339.90	339.79	339.15	339.24	340.20	340.54	340.61
5	339.04	339.50	338.87	339.67	339.05	339.92	339.77	339.13	339.24	340.21	340.49	340.62
6	338.99	339.48	338.88	339.67	339.09	339.92	339.75	339.13	339.25	340.21	340.45	340.62
7	339.02	339.46	338.91	339.64	339.08	339.92	339.76	339.20	339.28	340.22	340.42	340.63
8	339.03	339.44	338.95	339.64	339.05	339.93	339.73	339.18	339.31	340.25	340.42	340.64
9	339.17	339.42	339.02	339.63	339.05	339.96	339.65	339.14	339.34	340.24	340.43	340.66
10	339.25	339.41	339.10	339.61	339.05	339.96	339.62	339.11	339.36	340.25	340.45	340.68
11	339.29	339.37	339.14	339.57	339.05	339.95	339.60	339.08	339.38	340.27	340.51	340.68
12	339.33	339.34	339.19	339.55	339.03	339.94	339.60	339.02	339.40	340.27	340.59	340.75
13	339.35	339.30	339.32	339.53	339.02	339.98	339.60	338.99	339.48	340.30	340.54	340.75
14	339.36	339.27	339.37	339.53	339.09	339.97	339.57	338.97	339.51	340.32	340.52	340.70
15	339.39	339.25	339.42	339.50	339.21	339.99	339.53	338.98	339.55	340.32	340.52	340.67
16	339.40	339.20	339.45	339.50	339.21	340.00	339.49	338.96	339.70	340.33	340.49	340.63
17	339.42	339.17	339.49	339.45	339.19	340.00	339.47	338.96	339.79	340.35	340.45	340.59
18	339.48	339.13	339.52	339.43	339.19	340.01	339.43	338.93	339.85	340.36	340.41	340.55
19	340.37	339.11	339.59	339.40	339.18	340.07	339.43	338.90	339.92	340.36	340.37	340.51
20	340.54	339.10	339.61	339.38	339.18	340.08	339.47	338.90	339.94	340.36	340.37	340.46
21	339.69	339.07	339.63	339.38	339.31	340.06	339.45	338.91	339.96	340.36	340.38	340.43
22	339.68	339.03	339.65	339.35	339.73	340.06	339.42	338.94	339.98	340.38	340.38	340.42
23	339.68	338.99	339.79	339.31	339.84	340.05	339.38	338.96	339.99	340.47	340.39	340.38
24	339.68	338.92	340.19	339.27	339.86	340.03	339.42	338.98	340.00	340.45	340.40	340.35
25	339.68	338.82	340.23	339.24	340.08	340.03	339.40	339.02	340.01	340.43	340.41	340.32
26	339.66	338.70	340.24	339.24	340.24	340.03	339.36	339.05	340.06	340.44	340.42	340.30
27	339.63	338.58	340.23	339.20	340.38	340.01	339.32	339.09	340.08	340.45	340.42	340.26
28	339.61	338.58	340.22	339.18	340.49	339.99	339.31	339.12	340.08	340.46	340.44	340.20
29	339.60	338.61	340.21	339.18	---	339.95	339.29	339.14	340.10	340.46	340.48	340.13
30	339.58	338.64	340.25	339.16	---	339.91	339.25	339.16	340.12	340.55	340.48	340.06
31	339.57	---	340.03	339.15	---	339.88	---	339.18	---	340.74	340.48	---
MEAN	339.46	339.16	339.46	339.46	339.36	339.99	339.54	339.06	339.65	340.34	340.47	340.51
MAX	340.54	339.54	340.25	339.72	340.49	340.28	339.85	339.23	340.12	340.74	340.71	340.75
MIN	338.99	338.58	338.65	339.15	339.02	339.87	339.25	338.90	339.19	340.14	340.37	340.06
CAL YR 2002	MAX 340.72		MIN 338.58									
WTR YR 2003	MAX 340.75		MIN 338.58									

07344488 Monticello Reservoir near Mount Pleasant, TX--Continued



07344489 Lake Bob Sandlin near Mount Pleasant, TX

LOCATION.--Lat 33°04'48", long 95°00'07", Titus County, Hydrologic Unit 11140305, in control room in left abutment of service spillway at left end of Fort Sherman Dam on Big Cypress Creek, 1.7 mi upstream from Tankersley Creek, 3.5 mi upstream from bridge on U.S. Highway 271, 5.7 mi southwest of the county courthouse in Mount Pleasant, and 129.2 mi upstream from mouth.

DRAINAGE AREA.--239 mi².

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

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Apr. 12, 1978, a nonrecording gage was located at same site and datum. Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily contents, which are fair. The lake is formed by a rolled earthfill dam 10,800 ft long, including spillways. Deliberate impoundment began Aug. 8, 1977, and dam was completed by Apr. 1978. The spillway is an excavated channel cut through natural ground. The spillway is 4,500 ft wide, located to the left end of the dam. The service spillway is 289.5 ft wide with 160 ft of net flow width controlled by four 40- by 22.5-foot tainter gates. The dam was built, and is owned, maintained, and operated by the Titus County Fresh Water Supply District No. 1 to provide water for municipal use. Flow from 75.0 mi² above this station is controlled by Lake Cypress Springs on Big Cypress Creek and 36.0 mi² is controlled by Monticello Reservoir on Blundell Creek, a tributary to Big Cypress Creek. Conservation pool storage is 192,350 acre-ft. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	349.0
Crest of uncontrolled spillway.....	341.3
Crest of gated spillway.....	316.5
Lowest gated outlet (invert).....	294.5

COOPERATION.--Capacity Table 1-C was provided by URS/Forest and Cotton, Inc., Consulting Engineers. Capacity Table 2-C, provided by the U.S. Army Corps of Engineers, was put into effect Oct. 1, 1996. Capacity Table 3-C, provided by the Texas Water Development Board, was put into effect Oct. 1, 2000.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 224,400 acre-ft, Nov. 5, 1994, elevation, 338.65 ft; minimum contents after initial filling, 133,100 acre-ft, Nov. 25, 1982, elevation, 327.92 ft, using Table 1-C.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 208,900 acre-ft, Dec. 31, elevation, 337.96 ft; minimum contents, 187,100 acre-ft, Sept. 30, elevation, 335.52 ft.

RESERVOIR STORAGE, IN (ACRE-FEET), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

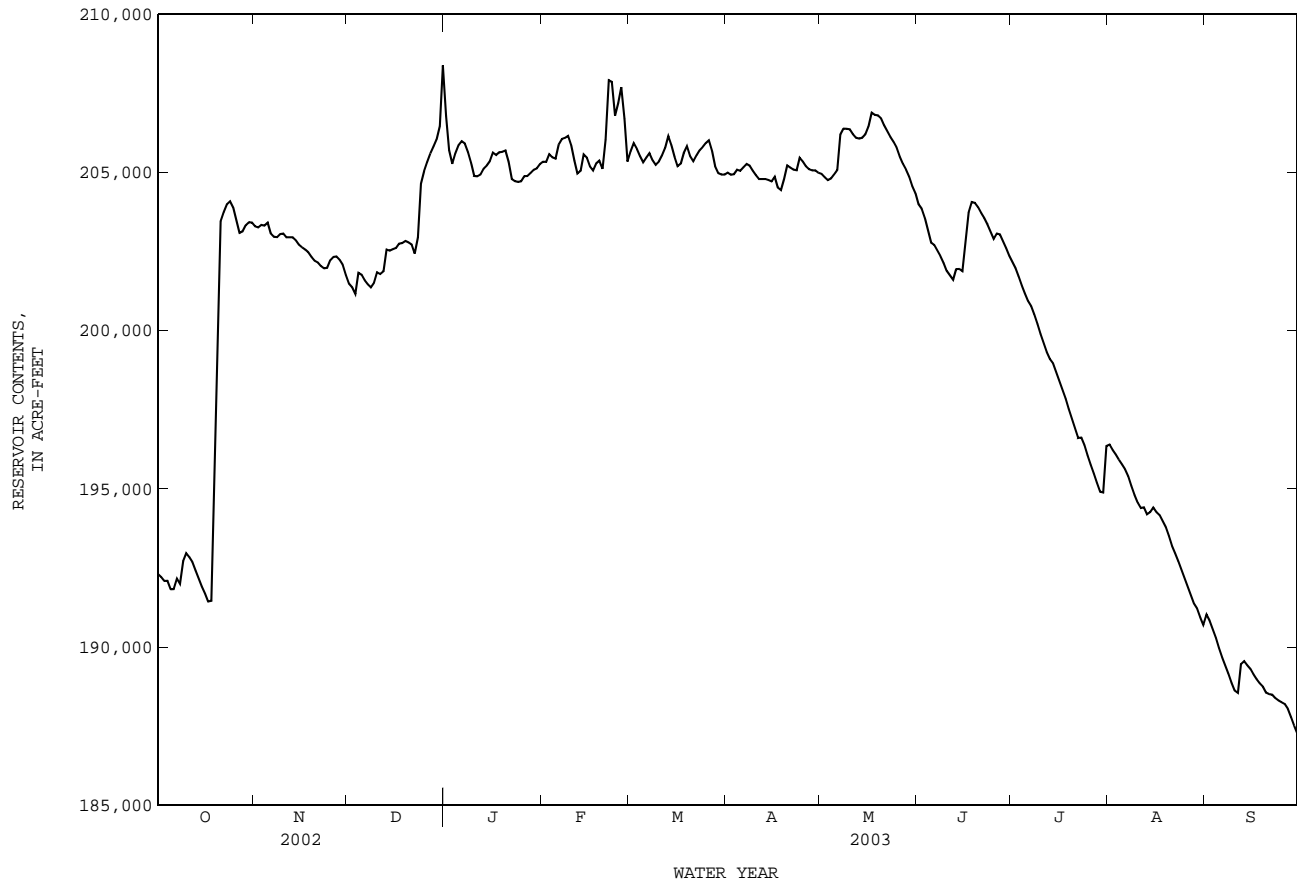
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	192300	203300	201500	206800	205300	205700	205000	205000	204000	202200	196400	191000
2	192200	203300	201400	205700	205300	205900	204900	204900	203900	202000	196200	190800
3	192100	203300	201200	205300	205600	205700	204900	204800	203600	201700	196100	190600
4	192100	203300	201800	205600	205500	205500	205100	204800	203200	201400	195900	190300
5	191800	203400	201800	205900	205400	205300	205100	204900	202800	201200	195800	190000
6	191800	203100	201600	206000	205900	205500	205200	205100	202700	200900	195600	189700
7	192200	203000	201500	205900	206100	205600	205300	206200	202500	200800	195400	189400
8	192000	203000	201400	205700	206100	205400	205200	206400	202400	200500	195100	189200
9	192700	203100	201500	205300	206200	205200	205100	206400	202100	200200	194800	188900
10	193000	203100	201800	204900	205900	205300	204900	206400	201900	199900	194600	188600
11	192800	203000	201800	204900	205400	205500	204800	206200	201800	199600	194400	188500
12	192700	203000	201900	204900	205000	205800	204800	206100	201600	199300	194400	189500
13	192400	203000	202600	205100	205100	206200	204800	206100	201900	199100	194200	189600
14	192200	202900	202500	205200	205600	205900	204800	206100	202000	199000	194300	189400
15	191900	202700	202600	205400	205500	205500	204700	206200	201900	198700	194400	189300
16	191700	202600	202600	205600	205200	205200	204900	206500	202800	198400	194300	189100
17	191400	202600	202800	205600	205100	205300	204500	206900	203700	198100	194200	189000
18	191500	202500	202800	205600	205300	205600	204400	206800	204100	197900	194000	188900
19	197400	202300	202800	205700	205400	205800	204800	206800	204000	197500	193800	188700
20	201000	202200	202800	205700	205100	205500	205200	206700	203900	197200	193500	188600
21	203500	202200	202700	205300	206000	205400	205200	206500	203700	196900	193200	188500
22	203800	202000	202400	204800	207900	205500	205100	206300	203600	196600	193000	188500
23	204000	202000	202900	204700	207900	205700	205100	206100	203400	196600	192700	188400
24	204100	202000	204600	204700	206800	205800	205500	206000	203100	196400	192400	188300
25	203900	202200	205000	204700	207200	205900	205300	205800	202900	196100	192200	188300
26	203500	202300	205300	204900	207700	206000	205200	205500	203100	195800	191900	188200
27	203100	202300	205600	204900	206700	205700	205100	205300	203000	195500	191600	188100
28	203100	202200	205800	205000	205300	205200	205100	205100	202800	195200	191400	187800
29	203300	202100	206100	205100	---	205000	205100	204900	202600	194900	191200	187500
30	203400	201800	206500	205100	---	204900	205000	204600	202400	194900	190900	187300
31	203400	---	208400	205300	---	204900	---	204300	---	196400	190700	---
MEAN	196700	202700	203100	205300	205900	205500	205000	205800	202900	198400	193800	189000
MAX	204100	203400	208400	206800	207900	206200	205500	206900	204100	202200	196400	191000
MIN	191400	201800	201200	204700	205000	204900	204400	204300	201600	194900	190700	187300
(+)	337.36	337.18	337.90	337.56	337.57	337.53	337.53	337.46	337.24	336.57	335.93	335.54
(@)	+10800	-1600	+6600	-3100	0	-400	+100	-700	-1900	-6000	-5700	-3400

CAL YR 2002 MAX 211400 MIN 191400 (@) +2900
WTR YR 2003 MAX 208400 MIN 187300 (@) -5300

e Estimated

(+) Elevation, in feet, at end of month.
(@) Change in contents, in acre-feet.

07344489 Lake Bob Sandlin near Mount Pleasant, TX--Continued



07344500 Big Cypress Creek near Pittsburg, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 33°01'15", long 94°52'55", Camp-Titus County line, Hydrologic Unit 11140305, near center of stream at downstream side of bridge on State Highway 11, 0.5 mi upstream from Louisiana & Arkansas Railway Co. bridge, 1.4 mi upstream from Williamson Creek, 5.2 mi east of Pittsburg, 19.2 mi downstream from Lake Bob Sandlin, and 110.0 mi upstream from mouth.

DRAINAGE AREA.--366 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Apr. 1943 to Dec. 1962, published as "Cypress Creek near Pittsburg", Oct. 1967 to Sept. 1989 (daily mean discharge), Oct. 1989 to current year, (peak discharges greater than base discharge). Gage-height records collected at this site from Sept. 1963 to Dec. 1967, are published in reports by the U.S. Army Corps of Engineers.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 247.49 ft above NGVD of 1929. Prior to Nov. 12, 1954, water-stage recorder at site 1,900 ft downstream at present datum. Satellite telemeter at station.

REMARKS.--Records fair. Since July 1970, at least 10% of contributing drainage area has been regulated. Wastewater effluent was returned to a tributary above this station by the city of Mount Pleasant, and wastewater effluent was returned to a tributary below this station by the city of Pittsburg. No known diversions.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--22 years (water years 1944-62, 1968-70), prior to regulation by Lake Cypress Springs, 349 ft³/s, 253,000 acre-ft/ yr.

AVERAGE DISCHARGE FOR REGULATED PERIOD.--19 years (water years 1971-89) regulated, 237 ft³/s (171,900 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1944-62, 1968-70).--Maximum discharge, 58,500 ft³/s Mar. 30, 1945, gage height, 28.3 ft, from floodmark, and adjusted to present site on basis of record for flood of Apr. 27, 1958, from rating curve extended above 20,000 ft³/s; no flow Aug. 20 to Oct. 3, 1954, July 19 to Nov. 4, 1956.

EXTREMES FOR REGULATED PERIOD.--Maximum discharge, 50,400 ft³/s, Mar. 17, 1987, gage height, 23.65 ft; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in Jan. 1938 reached a stage of about 25 ft from information by local resident. Maximum stage since at least 1895, that of Mar. 30, 1945.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan 1	1715	*3,380	*13.93	Feb 28	0100	2,970	13.68

07344500 Big Cypress Creek near Pittsburg, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Mar. 1965 to Aug. 1989, Oct. 1998 to current year.

BIOCHEMICAL DATA: Jan. 1983 to Sept. 1985, Oct. 1998 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Oct. 1968 to Sept. 1989.

WATER TEMPERATURE: Oct. 1968 to Sept. 1989.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 989 microsiemens/cm, Aug. 29, 1987; minimum daily, 48 microsiemens/cm, Nov. 27, 1988.

WATER TEMPERATURE: Maximum daily, 32.0°C, Aug. 20, 1969; minimum daily, 0.0°C on several days during winter months of 1982-84.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf, uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	BOD, water, unfltrd 5 day, 20 degC mg/L (00310)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard-ness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	
FEB														
11...	1524	295	174	7.2	9.0	13.4	116	<2.0	41	20	9.46	4.29	13.1	
MAY														
07...	0935	126	265	--e	22.0	5.6	65	E7.9	43	17	11.7	3.35	19.9	
JUL														
10...	1245	12	679	7.1	27.5	6.3	80	<2.0	150	73	46.8	7.40	71.2	
AUG														
20...	1040	11	829	7.1	27.0	5.9	74	<2.0	190	130	64.6	7.53	88.6	
Date		Sodium adsorption ratio (00931)	Sodium, percent (00932)	Potassium, water, fltrd, mg/L (00935)	Carbonate, wat flt incrm. titr., field, mg/L (00452)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate, water, fltrd, mg/L (00945)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue on evap. at 180degC wat flt mg/L (70300)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)
FEB														
11...	.9	37	5.04	<1	26	22	24.3	15.3	.14	5.51	109	95	13	
MAY														
07...	1	43	10.7	<1	32	26	31.0	21.5	<.17	7.57	153	134	232	
JUL														
10...	3	47	18.8	<1	90	74	97.7	63.7	.2	10.9	440	419	10	
AUG														
20...	3	46	28.8	<1	E80	66	128	75.2	.2	6.46	547	512	12	
Date		Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)	Organic nitrogen, water, fltrd, mg/L (00607)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Phosphorus, water, fltrd, mg/L (00666)	Orthophosphate, water, fltrd, mg/L as P (00671)	Orthophosphate, water, fltrd, mg/L (00660)	Organic carbon, water, unfltrd mg/L (00680)	Aluminum, water, fltrd, mg/L (01106)	Antimony, water, fltrd, ug/L (01095)	Arsenic water, fltrd, ug/L (01000)
FEB														
11...	.93	.034	.96	E.02	--	.39	.135	.11	.337	6.1	4	<.30	<2	
MAY														
07...	2.42	.039	2.46	.28	1.1	1.3	.43	.35	1.08	18.6	15	<.30	E2	
JUL														
10...	11.7	.019	11.7	<.04	--	.98	2.20	1.98	6.06	9.8	--	--	--	
AUG														
20...	15.0	.020	15.0d	<.04	--	1.2	2.36d	2.31d	7.07	8.6	E2n	E.29n	2	
Date		Barium, water, fltrd, ug/L (01005)	Beryllium, water, fltrd, ug/L (01010)	Cadmium, water, fltrd, ug/L (01025)	Chromium, water, fltrd, ug/L (01030)	Cobalt, water, fltrd, ug/L (01035)	Copper, water, fltrd, ug/L (01040)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Manganese, water, fltrd, ug/L (01056)	Mercury, water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Nickel, water, fltrd, ug/L (01065)	Selenium, water, fltrd, ug/L (01145)
FEB														
11...	33	<.06	<.04	<.8	.12	.9	38	<.08	23.7	<.02	.4	1.66	<3	
MAY														
07...	38	E.03	<.04	<.8	2.45	2.1	313	.25	344	<.02	.9	3.79	<3	
JUL														
10...	--	--	--	--	--	--	E8	--	60.4	--	--	--	--	
AUG														
20...	48	<.06	E.03n	<.8	.85	2.7	E7n	<.08	31.0	<.02	5.9	5.12	<3	

RED RIVER BASIN

07344500 Big Cypress Creek near Pittsburg, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Silver, water, fltrd, ug/L (01075)	Zinc, water, fltrd, ug/L (01090)	Uranium natural water, fltrd, ug/L (22703)
FEB			
11...	<.20	5	.02
MAY			
07...	<.20	4	.10
JUL			
10...	--	--	--
AUG			
20...	<.20	2	.21

Remark codes used in this report:

< -- Less than
E -- Estimated value

Value qualifier codes used in this report:

d -- Diluted sample: method hi range exceeded
n -- Below the NDV

Null value qualifier codes used in this report:

e -- Required equipment not functional/avail

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07345900 Lake O' the Pines near Jefferson, TX

LOCATION.--Lat 32°45'18", long 94°29'57", Marion County, Hydrologic Unit 11140305, on left bank 1,500 ft upstream from left end of Ferrell's Bridge Dam on Big Cypress Creek, on Farm Road 726, 9.0 mi west of Jefferson, and 80.1 mi upstream from mouth.

DRAINAGE AREA.--850 mi².

WATER-STAGE RECORDS

PERIOD OF RECORD.--Aug. 1957 to Sept. 2000 (U.S. Army Corps of Engineers furnished contents), Oct. 2000 to Sept. 2002 (contents), Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Nov. 12, 1957, non-recording gage at same site and datum. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 10,600 ft long, including a 200-foot-wide concrete spillway. Impoundment of water began Aug. 21, 1957, and the dam was completed June 25, 1958. Official operation began Dec. 11, 1959. The flood-control outlet works consist of two 10.0 foot-diameter conduits that are controlled by two 8.0-by-12.5-foot electrically driven broome-type gates. The low-flow outlet works consist of a controlled 14 inch pipe. Flow over the spillway is discharged into a 2,000-foot-long rectified channel and then into Cypress Creek. The lake was built for conservation, flood control, and water supply. The dam is owned by the U.S. Army Corps of Engineers. During the current year, an unknown amount of water was diverted from the lake for municipal and industrial uses. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	277.0
Crest of spillway.....	249.5
Top of conservation pool.....	228.5
Crest of intake to wet well (14 in).....	202.5
Lowest gated outlet (invert).....	200.0

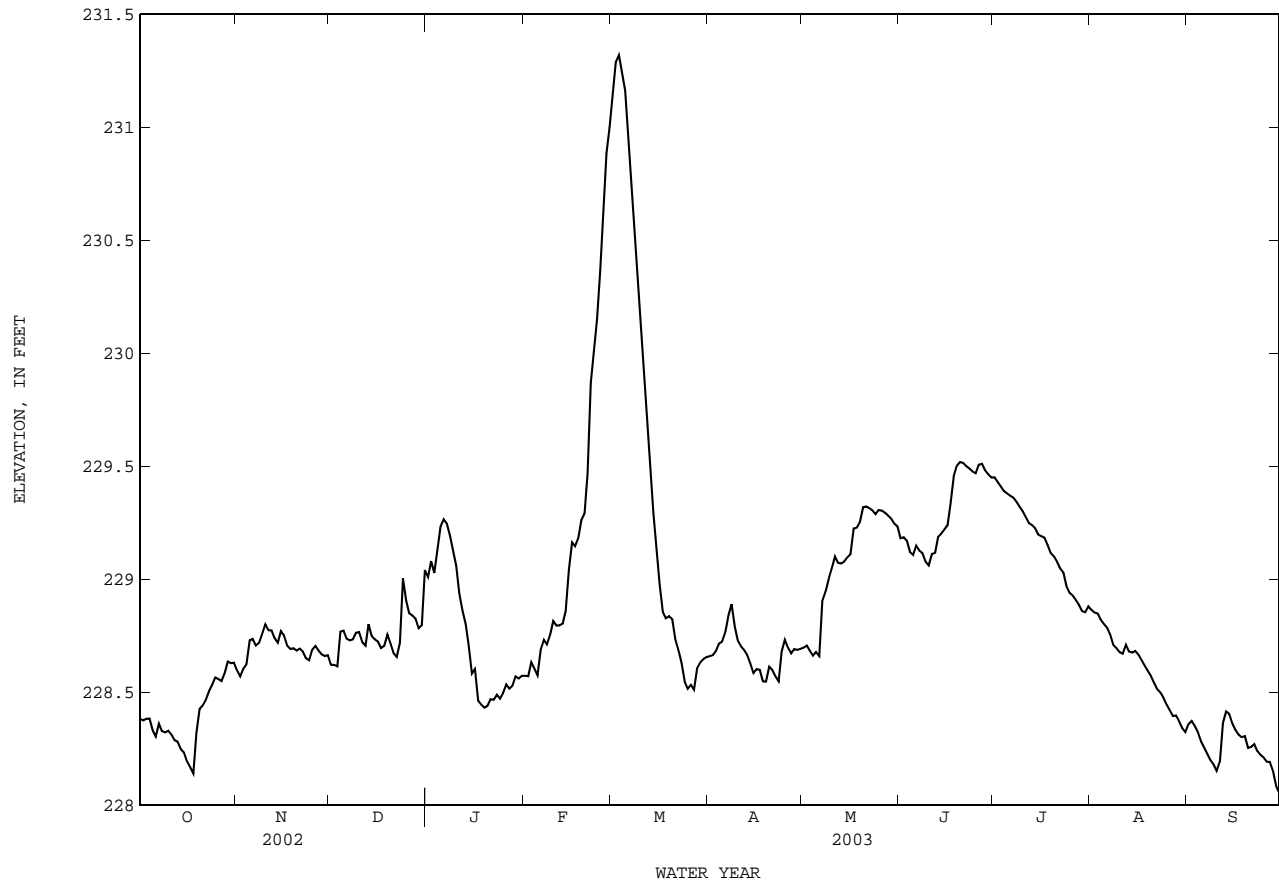
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 694,360 acre-ft, May 5, 1966, elevation, 245.41 ft; minimum since Dec. 1959, 210,100 acre-ft, Oct. 6, 1984, elevation, 225.98 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 231.35 ft, Mar. 3; minimum elevation, 228.01 ft, Sept. 30.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	228.38	228.59	228.62	229.01	228.57	231.14	228.66	228.70	229.18	229.45	228.86	228.36
2	228.37	228.57	228.62	229.08	228.57	231.29	228.66	228.71	229.19	229.43	228.85	228.37
3	228.38	228.60	228.61	229.03	228.63	231.32	228.68	228.68	229.17	229.41	228.85	228.35
4	228.38	228.62	228.77	229.13	228.60	231.24	228.72	228.66	229.12	229.39	228.82	228.32
5	228.33	228.73	228.77	229.23	228.58	231.16	228.72	228.68	229.11	229.38	228.80	228.28
6	228.30	228.74	228.74	229.26	228.69	231.00	228.77	228.66	229.15	229.37	228.79	228.25
7	228.36	228.71	228.73	229.25	228.73	230.81	228.84	228.90	229.13	229.36	228.75	228.23
8	228.33	228.72	228.73	229.19	228.71	230.64	228.89	228.94	229.12	229.34	228.71	228.20
9	228.32	228.76	228.76	229.13	228.75	230.44	228.79	229.00	229.08	229.32	228.69	228.18
10	228.33	228.80	228.77	229.06	228.81	230.19	228.73	229.05	229.06	229.30	228.68	228.15
11	228.31	228.77	228.72	228.94	228.79	229.96	228.70	229.10	229.11	229.27	228.67	228.19
12	228.29	228.77	228.71	228.86	228.80	229.74	228.69	229.07	229.12	229.25	228.71	228.36
13	228.28	228.74	228.80	228.80	228.80	229.54	228.66	229.07	229.19	229.24	228.68	228.41
14	228.25	228.72	228.75	228.71	228.86	229.29	228.63	229.08	229.20	229.23	228.68	228.40
15	228.23	228.77	228.73	228.58	229.04	229.12	228.58	229.10	229.22	229.20	228.68	228.36
16	228.19	228.75	228.72	228.60	229.16	228.98	228.60	229.11	229.24	229.19	228.67	228.33
17	228.17	228.71	228.70	228.46	229.15	228.86	228.60	229.22	229.34	229.18	228.64	228.31
18	228.14	228.69	228.70	228.45	229.18	228.83	228.55	229.23	229.46	229.15	228.62	228.30
19	228.32	228.69	228.76	228.43	229.26	228.84	228.55	229.25	229.50	229.12	228.59	228.31
20	228.43	228.68	228.72	228.44	229.29	228.82	228.61	229.32	229.52	229.10	228.57	228.25
21	228.44	228.69	228.67	228.47	229.47	228.74	228.60	229.32	229.51	229.08	228.54	228.26
22	228.47	228.68	228.66	228.47	229.87	228.69	228.57	229.31	229.50	229.05	228.51	228.24
23	228.50	228.65	228.72	228.49	230.02	228.63	228.55	229.30	229.49	229.03	228.50	228.27
24	228.53	228.64	229.00	228.47	230.15	228.55	228.68	229.29	229.48	228.97	228.48	228.22
25	228.56	228.69	228.91	228.50	230.37	228.51	228.73	229.31	229.47	228.94	228.44	228.21
26	228.56	228.70	228.85	228.53	230.66	228.53	228.70	229.30	229.51	228.93	228.42	228.19
27	228.55	228.69	228.84	228.52	230.89	228.51	228.67	229.29	229.51	228.91	228.40	228.19
28	228.58	228.67	228.82	228.53	231.00	228.61	228.69	229.28	229.48	228.89	228.40	228.15
29	228.64	228.66	228.78	228.57	---	228.63	228.69	229.27	229.46	228.86	228.37	228.08
30	228.63	228.66	228.80	228.56	---	228.65	228.69	229.25	229.45	228.85	228.34	228.05
31	228.63	---	229.04	228.57	---	228.66	---	229.23	---	228.88	228.32	---
MEAN	228.39	228.70	228.76	228.75	229.26	229.55	228.67	229.09	229.30	229.16	228.61	228.26
MAX	228.64	228.80	229.04	229.26	231.00	231.32	228.89	229.32	229.52	229.45	228.86	228.41
MIN	228.14	228.57	228.61	228.43	228.57	228.51	228.55	228.66	229.06	228.85	228.32	228.05
CAL YR 2002	MAX 236.46		MIN 227.82									
WTR YR 2003	MAX 231.32		MIN 228.05									

07345900 Lake O' the Pines near Jefferson, TX--Continued



07345900 Lake O' the Pines near Jefferson, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Oct. 1969 to Sept. 1984, Oct. 1998 to current year.

BIOCHEMICAL DATA: Oct. 1969 to Sept. 1984, Oct. 1998 to current year.

PESTICIDE DATA: Aug. 1999 to current year.

REMARKS.--Pesticide samples are composited from discrete samples collected at the surface, middle, and bottom of the reservoir.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

324518094300801 -- Lake O' the Pines Site AC

Date	Time	Reser- voir storage acre-ft (00054)	Trans- parency Secchi disc, meters (00078)	Sam- pling depth, feet (00003)	Specif. conduc- tance, wat unf uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temper- ature, water, deg C (00010)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	Fecal coli- form, M-FC 0.7u MF col/ 100 mL (31625)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard- ness, wat flt field, mg/L as CaCO3 (00904)
FEB													
11...	0936	247000	1.25	1.00	113	7.4	9.5	12.6	111	E2k	E2k	24	11
FEB													
11-11	0936	--	--	--	--	--	--	--	--	--	--	--	--
11...	0941	--	--	10.0	113	7.3	9.5	12.3	109	--	--	--	--
11...	0946	--	--	20.0	113	7.3	9.0	12.0	105	--	--	--	--
11...	0951	--	--	30.0	113	7.3	9.0	11.9	104	--	--	--	--
11...	0957	--	--	40.0	113	7.3	9.0	11.7	102	--	--	--	--
11...	1003	--	--	46.0	115	7.4	8.5	11.9	103	--	--	23	11
MAY													
07...	1028	249000	1.46	1.00	127	6.8	23.5	7.9	94	E3k	E4k	28	17
MAY													
07-07	1028	--	--	--	--	--	--	--	--	--	--	--	--
07...	1035	--	--	10.0	128	6.6	22.5	7.4	86	--	--	--	--
07...	1043	--	--	20.0	128	6.5	22.5	6.9	80	--	--	--	--
07...	1051	--	--	30.0	135	6.0	19.5	1.4	15	--	--	--	--
07...	1058	--	--	40.0	136	6.0	19.5	1.1	12	--	--	--	--
07...	1105	--	--	45.0	137	5.9	19.5	1.2	13	--	--	30	13
AUG													
20...	0922	243000	1.16	1.00	134	9.0	31.0	9.4	126	<1	<1	29	16
AUG													
20-20	0922	--	--	--	--	--	--	--	--	--	--	--	--
20...	0928	--	--	10.0	133	7.2	29.5	6.5	85	--	--	--	--
20...	0935	--	--	20.0	134	6.0	28.0	1.0	13	--	--	--	--
20...	0941	--	--	30.0	173	6.2	25.5	1.2	15	--	--	--	--
20...	0948	--	--	44.0	178	6.2	24.5	1.3	16	--	--	39	--

324518094300801 -- Lake O' the Pines Site AC

Date	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorp- tion ratio (00931)	Sodium, percent (00932)	Potas- sium, water, fltrd, mg/L (00935)	Sulfate water, fltrd, mg/L (00945)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water, fltrd, mg/L as N (00631)
FEB													
11...	4.66	2.89	8.97	.8	41	3.83	17.0	10.4	.10	6.3	62	<.008	<.06
FEB													
11-11	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	4.70	2.85	8.86	.8	41	3.75	17.0	10.4	.11	6.3	62	<.008	<.06
MAY													
07...	6.38	2.93	9.77	.8	39	3.92	22.5	10.6	<.17	4.9	68	<.008	E.04
MAY													
07-07	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--	<.008	E.04
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	6.90	3.14	10.0	.8	38	4.04	22.2	10.7	<.17	7.7	77	.010	E.04
AUG													
20...	5.77	3.42	10.4	.8	40	4.11	19.9	12.3	<.2	9.1	72	<.008	<.06
AUG													
20-20	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	<.008	<.06
20...	--	--	--	--	--	--	--	--	--	--	--	<.008	<.06
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	9.12	3.89	10.5	.7	34	4.42	7.3	11.2	<.2	14.5	107	<.008	<.06

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

324518094300801 -- Lake O' the Pines Site AC

Date	Ammonia water, fltrd, mg/L as N (00608)	Organic nitro- gen, water, fltrd, mg/L (00607)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Ortho- phos- phate, water, fltrd, mg/L (00660)	Iron, water, fltrd, ug/L (01046)	Mangan- ese, water, fltrd, ug/L (01056)	Benzene water unfltrd ug/L (34030)	Ethyl- benzene water unfltrd ug/L (34371)	Toluene water unfltrd ug/L (34010)	Xylenes water unfltrd ug/L (81551)	Methyl- t-butyl ether, water, unfltrd ug/L (78032)
FEB 11...	<.04	--	.31	.008	<.02	--	<10	<2.0	<.2	<.2	<.2	<.2	<.2
FEB 11-11	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	<.04	--	.31	.009	<.02	--	E5	30.6	--	--	--	--	--
MAY 07...	.07	.35	.42	.006	<.02	--	27	7.9	<.2	<.2	<.2	<.2	E.1
MAY 07-07	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	.09	.37	.46	.005	<.02	--	18	23.5	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	.34	.37	.71	.009	<.02	--	36	1240	--	--	--	--	--
AUG 20...	<.04	--	.33	.006	<.18d	--	E8n	2.3	<.2	<.2	<.2	<.2	<.2
AUG 20-20	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	<.04	--	.29	.004	<.18d	--	12	18.3	--	--	--	--	--
20...	.12	.33	.45	.009	<.18d	--	162	576	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	1.92d	.61	2.5	.52oc	.48d	1.48	4480	4780	--	--	--	--	--

324518094300801 -- Lake O' the Pines Site AC

[illegible]

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

324518094300801 -- Lake O' the Pines Site AC

[illegible]

324518094300801 -- Lake O' the Pines Site AC

[illegible]

07345900 Lake O' the Pines near Jefferson, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

324518094300801 -- Lake O' the Pines Site AC

Date	Pron- amide, water, fltrd 0.7u GF (82676)	Sima- zine, water, fltrd, ug/L (04035)	Tebu- thiuron water, fltrd 0.7u GF (82670)	Terba- cil, water, fltrd 0.7u GF (82665)	Terbu- fos, water, fltrd 0.7u GF (82675)	Thio- bencarb water, fltrd 0.7u GF (82681)	Tri- allate, water, fltrd 0.7u GF (82678)	Tri- flur- alin, water, fltrd 0.7u GF (82661)
FEB								
11...	--	--	--	--	--	--	--	--
FEB								
11-11	<.004	<.005	E.02	<.034	<.02	<.005	<.002	<.009
11...	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--
MAY								
07...	--	--	--	--	--	--	--	--
MAY								
07-07	<.004	.007	E.02	<.034	<.02	<.005	<.002	<.009
07...	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--
AUG								
20...	--	--	--	--	--	--	--	--
AUG								
20-20	<.004	.008	E.01n	<.034	<.02	<.005	<.002	<.009
20...	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--

324509094303901 -- Lake O' the Pines Site AR

Date	Time	Sam- pling depth, feet (00003)	Specif. conduc- tance, wat unfltrd uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temper- ature, water, deg C (00010)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)
FEB							
11...	1014	1.00	111	7.3	9.0	12.1	105
11...	1017	10.0	111	7.3	9.0	12.0	104
11...	1021	20.0	112	7.3	9.0	11.9	103
11...	1024	29.0	112	7.4	9.0	11.8	102
MAY							
07...	1115	1.00	128	6.7	23.5	8.4	100
07...	1117	10.0	128	6.3	23.0	7.8	92
07...	1120	23.0	131	6.6	21.0	4.7	53
AUG							
20...	1001	1.00	134	9.1	31.0	9.2	123
20...	1006	10.0	131	6.6	29.5	6.3	82
20...	1011	24.0	141	6.3	28.0	.9	11

324613094323001 -- Lake O' the Pines Site BC

Date	Time	Trans- parency Secchi disc, meters (00078)	Sam- pling depth, feet (00003)	Specif. conduc- tance, wat unfltrd uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temper- ature, water, deg C (00010)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)	Organic nitro- gen, water, fltrd, mg/L (00607)	Ammonia + org-N, water, fltrd, mg/L as N (00623)
FEB													
11...	1036	1.37	1.00	112	7.3	9.0	12.3	107	<.008	<.06	<.04	--	.29
11...	1040	--	10.0	112	7.2	9.0	12.1	105	--	--	--	--	--
11...	1044	--	20.0	113	7.2	9.0	11.8	102	--	--	--	--	--
11...	1049	--	30.0	116	7.2	9.0	11.4	99	--	--	--	--	--
11...	1054	--	43.0	117	7.3	9.0	11.4	99	E.007	E.03	<.04	--	.36
MAY													
07...	1134	1.40	1.00	130	6.8	24.0	8.2	98	<.008	E.03	E.02	--	.34
07...	1140	--	10.0	130	6.3	23.5	7.4	88	--	--	--	--	--
07...	1142	--	20.0	133	5.8	21.0	3.6	41	--	--	--	--	--
07...	1145	--	30.0	133	5.7	20.5	2.6	29	--	--	--	--	--
07...	1148	--	44.0	134	5.7	20.0	2.6	29	E.004	.06	.19	.37	.56
AUG													
20...	1050	1.13	1.00	136	9.2	32.0	9.1	124	<.008	<.06	<.04	--	.36
20...	1055	--	10.0	131	6.9	29.5	6.0	78	<.008	<.06	<.04	--	.32
20...	1100	--	20.0	133	6.1	28.5	1.1	14	<.008	<.06	.11	.34	.45
20...	1105	--	30.0	176	6.2	25.5	1.2	15	--	--	--	--	--
20...	1110	--	43.0	175	6.3	25.0	1.5	18	<.008	<.06	1.75d	.59	2.3

RED RIVER BASIN

07345900 Lake O' the Pines near Jefferson, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

324613094323001 -- Lake O' the Pines Site BC

Date	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Ortho- phos- phate, water, fltrd, mg/L (00660)	Iron, water, fltrd, ug/L (01046)	Mangan- ese, water, fltrd, ug/L (01056)
FEB					
11...	.008	<.02	--	E8	E1.5
11...	--	--	--	--	--
11...	--	--	--	--	--
11...	--	--	--	--	--
11...	.011	<.02	--	15	14.7
MAY					
07...	.005	<.02	--	19	10.0
07...	--	--	--	--	--
07...	--	--	--	--	--
07...	--	--	--	--	--
07...	.006	<.02	--	60	511
AUG					
20...	.006	<.18d	--	11	2.0
20...	.006	<.18d	--	13	21.9
20...	.009	<.02	--	198	502
20...	--	--	--	--	--
20...	.54oc	.50	1.53	4210	3780

324738094325101 -- Lake O' the Pines Site CC

Date	Time	Sam- pling depth, feet (00003)	Specif. conduc- tance, wat unf uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temper- ature, water, deg C (00010)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)
FEB							
11...	1110	1.00	105	7.1	9.5	11.4	100
11...	1114	10.0	106	7.2	9.5	11.5	101
11...	1117	22.0	105	7.3	9.0	11.1	96
MAY							
07...	1201	1.00	123	6.8	25.0	7.8	95
07...	1204	10.0	128	6.3	24.0	6.4	77
07...	1209	23.0	133	5.8	21.5	4.0	46
AUG							
20...	1126	1.00	134	8.8	33.0	8.4	116
20...	1129	10.0	131	6.3	30.0	3.7	49
20...	1133	22.0	147	6.4	28.5	1.0	13

324806094350001 -- Lake O' the Pines Site DC

Date	Time	Sam- pling depth, feet (00003)	Specif. conduc- tance, wat unf uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temper- ature, water, deg C (00010)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)
FEB							
11...	1136	1.00	107	7.1	9.0	11.5	100
11...	1143	10.0	106	7.0	8.5	10.9	93
11...	1150	22.0	107	7.0	8.5	11.2	96
MAY							
07...	1227	1.00	125	6.8	26.0	7.8	97
07...	1233	10.0	122	6.4	24.5	6.8	82
07...	1239	23.0	124	6.0	24.5	5.9	71
AUG							
20...	1215	1.00	136	9.1	33.5	9.0	125
20...	1220	10.0	127	6.3	30.5	4.7	62
20...	1225	20.0	137	6.2	29.0	1.1	14

07345900 Lake O' the Pines near Jefferson, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

324726094363801 -- Lake O' the Pines Site EC

Date	Time	Trans- parency Secchi disc, meters (00078)	Sam- pling depth, feet (00003)	Specif. conduc- tance, wat unf uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temper- ature, water, deg C (00010)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	Fecal coli- form, M-FC col/ 100 mL (31625)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard- ness, wat flt field, mg/L as CaCO3 (00904)	Calcium water, fltrd, mg/L (00915)
FEB													
11...	1221	--	1.00	122	7.2	9.5	12.2	107	E2k	E2k	25	13	5.23
11...	1227	--	10.0	121	7.1	9.0	12.0	104	--	--	--	--	--
11...	1233	--	20.0	125	7.1	9.0	11.6	101	--	--	--	--	--
11...	1240	--	34.0	129	7.1	8.5	11.7	100	--	--	28	15	6.02
MAY													
07...	1309	1.13	1.00	134	7.3	26.0	9.0	112	E13k	<1	30	19	6.78
07...	1315	--	10.0	133	6.4	24.5	7.9	96	--	--	--	--	--
07...	1320	--	20.0	136	6.0	24.0	5.7	68	--	--	--	--	--
07...	1326	--	30.0	141	5.7	22.5	2.9	34	--	--	31	16	7.20
AUG													
20...	1252	.88	1.00	139	9.4	33.0	10.0	138	<1	<1	27	16	5.20
20...	1258	--	10.0	129	6.4	30.5	3.5	46	--	--	--	--	--
20...	1306	--	20.0	134	6.2	29.0	1.0	13	--	--	--	--	--
20...	1314	--	32.0	195	6.7	27.5	1.2	15	--	--	40	--	9.67

324726094363801 -- Lake O' the Pines Site EC

Date	Magnes- ium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorp- tion ratio (00931)	Sodium, percent (00932)	Potas- sium, water, fltrd, mg/L (00935)	Sulfate water, fltrd, mg/L (00945)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)
FEB													
11...	2.98	9.54	.8	41	4.00	20.2	11.1	.09	6.8	67	<.008	E.05	<.04
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	3.10	10.2	.8	40	3.99	22.3	10.9	.09	7.0	72	<.008	.07	E.03
MAY													
07...	3.09	10.3	.8	39	3.88	24.7	11.3	<.17	4.9	71	<.008	<.06	<.04
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	3.25	10.4	.8	38	4.13	24.4	11.2	<.17	7.2	78	<.008	<.06	.27
AUG													
20...	3.50	11.1	.9	42	4.38	20.2	12.2	<.2	10.1	74	<.008	<.06	<.04
20...	--	--	--	--	--	--	--	--	--	--	<.008	<.06	<.04
20...	--	--	--	--	--	--	--	--	--	--	<.008	<.06	.25
20...	3.94	10.4	.7	33	4.46	6.9	12.2	<.2	14.1	123	<.008	<.06	2.25d

324726094363801 -- Lake O' the Pines Site EC

Date	Organic nitro- gen, water, fltrd, mg/L (00607)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Ortho- phos- phate, water, fltrd, mg/L (00660)	Iron, water, fltrd, ug/L (01046)	Mangan- ese, water, fltrd, ug/L (01056)
FEB							
11...	--	.30	.009	<.02	--	12	6.4
11...	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--
11...	--	.39	.009	<.02	--	27	40.4
MAY							
07...	--	.35	.006	<.02	--	30	12.2
07...	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--
07...	.35	.62	.011	<.02	--	102	808
AUG							
20...	--	.33	.007	<.18d	--	20	3.0
20...	--	.37	.006	<.02	--	39	88.3
20...	.36	.61	.018	E.01n	--	147	783
20...	.54	2.8	.21oc	.20	.601	4000d	8820d

RED RIVER BASIN

07345900 Lake O' the Pines near Jefferson, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

325100094420301 -- Lake O' the Pines Site FC

Date	Time	Trans- parency Secchi disc, meters (00078)	Sam- pling depth, feet (00003)	Specif. conduc- tance, wat unf uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temper- ature, water, deg C (00010)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	Fecal coli- form, M-FC col/ 100 mL (31625)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard- ness, wat flt field, mg/L as CaCO3 (00904)	Calcium water, fltrd, mg/L (00915)
FEB													
11...	1317	1.10	1.00	196	7.3	8.5	12.1	104	E3k	Elk	48	29	12.6
11...	1324	--	10.0	197	7.2	8.5	11.9	102	--	--	--	--	--
11...	1330	--	22.0	197	7.2	8.0	11.9	101	--	--	49	30	12.8
MAY													
07...	1407	.98	1.00	189	6.6	26.5	7.5	94	E6k	E5k	41	23	9.79
07...	1413	--	10.0	199	6.2	25.0	6.1	74	--	--	--	--	--
07...	1418	--	21.0	197	6.0	25.0	6.0	73	--	--	44	24	10.8
AUG													
20...	1341	1.28	1.00	141	6.8	31.0	6.3	84	<1	<1	23	13	3.26
20...	1347	--	10.0	173	6.2	29.0	1.4	18	--	--	--	--	--
20...	1353	--	21.0	189	6.4	28.0	1.2	15	--	--	39	3	8.57

325100094420301 -- Lake O' the Pines Site FC

Date	Magnes- ium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	Sodium adsorp- tion ratio (00931)	Sodium, percent (00932)	Potas- sium, water, fltrd, mg/L (00935)	Sulfate water, fltrd, mg/L (00945)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Nitrite water, fltrd, mg/L as N (00613)	Nitrate + nitrate water, fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)
FEB													
11...	3.93	14.2	.9	37	4.80	39.0	15.4	.09	7.0	109	E.004	.23	<.04
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	4.05	14.5	.9	37	4.73	39.0	17.4	.10	7.1	112	E.004	.22	<.04
MAY													
07...	3.97	15.4	1	42	4.61	32.5	16.6	<.17	6.9	101	<.008	E.04	.15
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	4.09	16.3	1	42	4.63	32.8	17.4	<.17	6.8	105	E.004	E.06	.19
AUG													
20...	3.63	14.9	1	53	4.27	20.6	15.4	<.2	13.2	82	<.008	<.06	<.04
20...	--	--	--	--	--	--	--	--	--	--	<.008	<.06	<.04
20...	4.29	18.3	1	48	3.77	18.4	17.3	<.2	12.0	107	<.008	<.06	.08

325100094420301 -- Lake O' the Pines Site FC

Date	Organic nitro- gen, water, fltrd, mg/L (00607)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Phos- phorus, water, fltrd, mg/L (00666)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Ortho- phos- phate, water, fltrd, mg/L (00660)	Iron, water, fltrd, ug/L (01046)	Mangan- ese, water, fltrd, ug/L (01056)
FEB							
11...	--	.29	.020	<.02	--	71	44.7
11...	--	--	--	--	--	--	--
11...	--	.34	.018	<.02	--	91	45.3
MAY							
07...	.47	.62	.034	E.01	--	49	80.8
07...	--	--	--	--	--	--	--
07...	.50	.69	.039	.02	.067	67	112
AUG							
20...	--	.39	.024	<.18d	--	24	21.6
20...	--	.40	.031	<.18d	--	72	155
20...	.49	.56	.178	E.17nd	--	1690	659

Remark codes used in this report:

< -- Less than
E -- Estimated value

Value qualifier codes used in this report:

c -- See laboratory comment
d -- Diluted sample: method hi range exceeded
k -- Counts outside acceptable range
n -- Below the NDV
o -- Result determined by alternate method
t -- Below the long-term MDL

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RED RIVER BASIN

07346000 Big Cypress Creek near Jefferson, TX

LOCATION.--Lat 32°44'58", long 94°29'55", Marion County, Hydrologic Unit 11140306, on left bank 950 ft downstream from Ferrell's Bridge Dam, 7.6 mi upstream from French Creek, and 8.5 mi west of Jefferson.

DRAINAGE AREA.--850 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Aug. 1924 to Dec. 1959, published as "Cypress Creek near Jefferson", Oct. 1979 to current year. Records of stage and discharge for the period Oct. 1959 to Sept. 1979 published by the U.S. Army Corps of Engineers, New Orleans District.

GAGE.--Water-stage recorder. Datum of gage is 180.00 ft above NGVD of 1929 (U.S. Army Corps of Engineers benchmark). Prior to Nov. 2, 1933, staff gage. Nov. 2, 1933, to Dec. 8, 1955, water-stage recorder, at site about 950 ft upstream at datum 3.70 ft higher. After Dec. 9, 1955, at site about 550 ft downstream or at present site and datum. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. Seven major reservoirs impact runoff from 100 percent of drainage area for this station. Since Aug. 1957, flow completely regulated by Lake O' the Pines (07345900). No known diversions. No flow at times.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--33 years (water years 1925-57), prior to completion of Ferrell's Bridge Dam, 660 ft³s (478,500 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION, (WATER YEARS, 1925-57).--Maximum discharge, 57,100 ft³s Apr. 1, 1945, gage height, 28.78 ft, site and datum then in use, from rating curve extended above 29,000 ft³s; no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	84	51	1370	44	2190	121	48	49	27	25	27
2	43	85	52	1390	45	2210	121	48	50	27	25	28
3	47	87	54	1390	45	2390	112	46	49	27	25	28
4	51	88	68	1400	43	2590	102	41	49	27	25	28
5	59	97	60	1400	44	2600	102	40	51	27	25	28
6	56	89	57	1400	52	2590	112	43	52	26	25	29
7	60	81	55	1400	51	2590	138	118	51	26	25	29
8	59	80	53	1390	48	2580	271	71	48	26	25	29
9	59	82	160	1390	51	2580	409	54	49	26	25	30
10	59	83	391	1390	181	2570	378	53	52	26	24	30
11	62	83	397	1390	405	2560	262	51	54	26	25	30
12	63	84	398	1390	409	2550	258	48	52	26	24	31
13	62	84	400	1390	406	2540	259	49	55	26	24	31
14	61	73	396	1390	402	2280	256	48	53	26	24	32
15	61	58	384	1390	436	2000	253	48	54	26	24	32
16	61	56	380	1170	449	1960	184	46	52	26	24	32
17	59	57	382	651	415	1750	61	45	79	26	24	33
18	59	57	380	164	405	1440	60	46	251	26	24	37
19	73	58	383	124	566	1390	62	47	92	26	24	50
20	59	57	383	122	1060	1360	62	48	54	26	23	47
21	54	57	382	121	1450	1350	61	51	53	26	24	49
22	53	57	384	122	1620	1340	58	51	53	25	24	50
23	61	57	444	73	1530	1330	54	50	44	26	24	51
24	75	56	690	27	1450	1130	59	49	33	25	25	50
25	77	55	814	47	1440	663	52	47	29	25	25	50
26	77	56	788	46	1440	347	52	46	27	25	25	50
27	77	55	775	44	1670	195	52	47	27	25	26	50
28	77	55	767	45	2060	126	53	48	27	25	26	47
29	82	54	763	45	---	123	52	48	27	25	26	46
30	83	51	765	45	---	121	50	47	27	25	27	44
31	83	---	1080	45	---	121	---	47	---	25	27	---
TOTAL	1954	2076	12536	23761	18217	51566	4126	1569	1643	802	768	1128
MEAN	63.0	69.2	404	766	651	1663	138	50.6	54.8	25.9	24.8	37.6
MAX	83	97	1080	1400	2060	2600	409	118	251	27	27	51
MIN	42	51	51	27	43	121	50	40	27	25	23	27
AC-FT	3880	4120	24870	47130	36130	102300	8180	3110	3260	1590	1520	2240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 2003hz, BY WATER YEAR (WY)

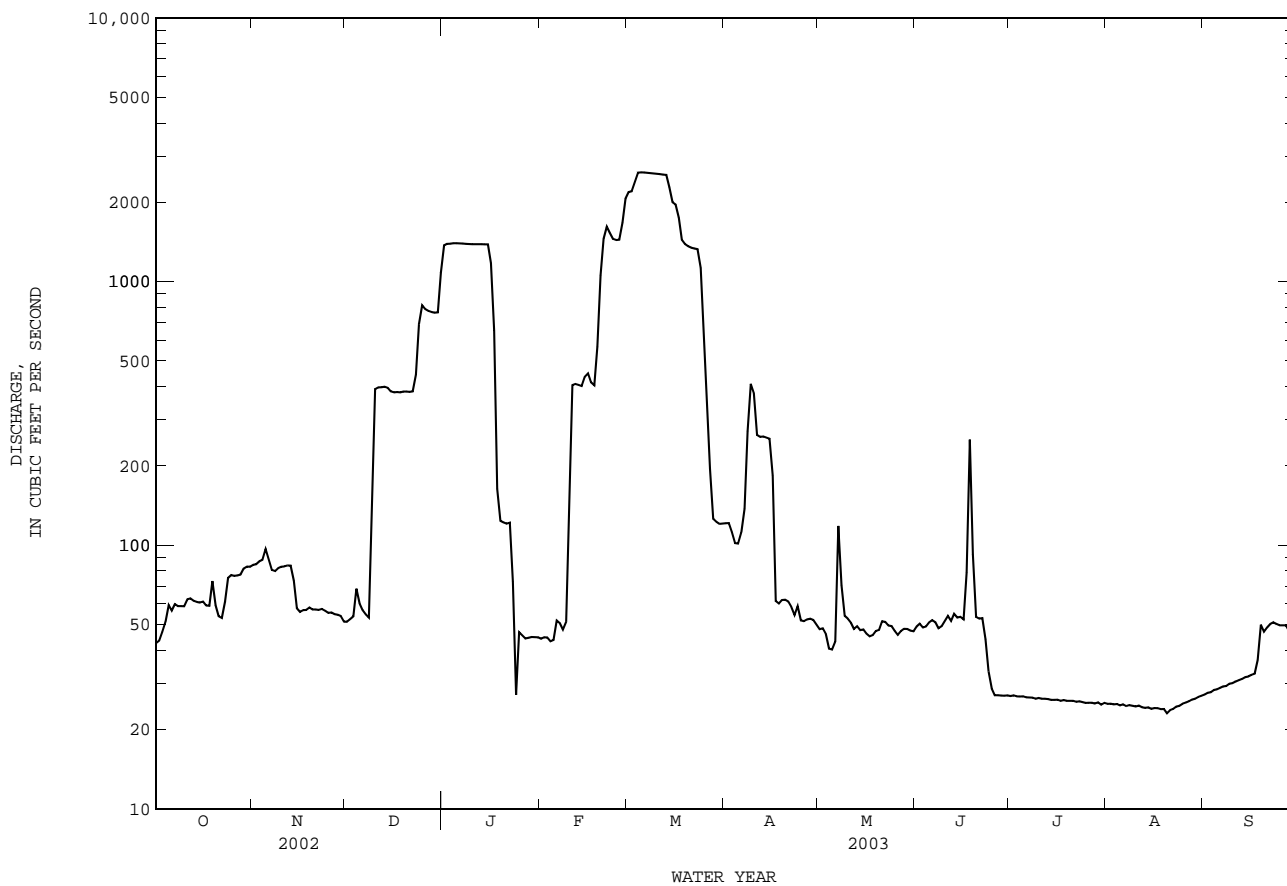
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
MEAN	212	429	725	987	1275	1280	1139	879	808	367	164	94.9
MAX	728	2690	1946	2802	2688	2983	3234	2979	3209	3057	2349	482
(WY)	1995	1958	1958	2002	1993	2001	2002	1958	1958	1958	1958	1958
MIN	3.35	4.82	4.13	4.16	30.7	37.2	47.7	32.4	32.5	18.7	16.2	8.70
(WY)	1981	1989	1982	1981	2000	1996	1996	1992	1987	1998	1982	1980

07346000 Big Cypress Creek near Jefferson, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1958 - 2003hz	
ANNUAL TOTAL	319550		120146		695	
ANNUAL MEAN	875		329		1859	
HIGHEST ANNUAL MEAN					47.9	
LOWEST ANNUAL MEAN					1958	
HIGHEST DAILY MEAN	3450	Apr 16	2600	Mar 5	4500	May 20 1958
LOWEST DAILY MEAN	19	Mar 10	23	Aug 20	0.00	Jul 26 1987
ANNUAL SEVEN-DAY MINIMUM	43	Sep 28	24	Aug 14	0.00	Jun 29 2001
MAXIMUM PEAK FLOW			2630	Mar 5	3480	Apr 14 2002
MAXIMUM PEAK STAGE			19.05	Mar 5	19.98	Mar 12 2001
ANNUAL RUNOFF (AC-FT)	633800		238300		503600	
10 PERCENT EXCEEDS	3190		1390		2540	
50 PERCENT EXCEEDS	99		54		169	
90 PERCENT EXCEEDS	58		26		24	

h See PERIOD OF RECORD paragraph.

z Period of regulated streamflow.



07346000 Big Cypress Creek near Jefferson, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Oct. 1998 to current year.

BIOCHEMICAL DATA: Oct. 1998 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	BOD, water, unfltrd 5 day, 20 degC mg/L (00310)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)	
										hardness, wat flt field, mg/L as CaCO3 (00904)				
FEB 11...	1250	261	109	7.1	16.0	11.4	116	<2.0	24	10	4.74	2.90	9.20	
MAY 07...	1330	57	143	--e	22.4	8.2	96	--	29	16	6.59	2.97	9.82	
AUG 20...	1345	13	142	--e	28.7	7.0	90	--	31	5	6.81	3.45	11.3	
Date		Sodium adsorption ratio (00931)	Sodium, percent (00932)	Potassium, water, fltrd, mg/L (00935)	Carbonate, wat flt incrm. titr., field, mg/L (00452)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)	Alkalinity, wat tit field, mg/L as CaCO3 (39086)	Sulfate, water, fltrd, mg/L (00945)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue on evap. at 180degC wat flt mg/L (70300)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)
FEB 11...	.8	41	3.73	<1	17	14	17.0	9.62	.11	6.02	73	62	<10	
MAY 07...	.8	39	3.81	<1	16	13	23.0	10.7	<.17	5.75	86	71	<10	
AUG 20...	.9	40	4.37	<1	32	26	16.9	11.7	<.2	10.4	97	83	<10	
Date		Nitrite water, fltrd, mg/L as N (00613)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)	Organic nitrogen, water, fltrd, mg/L (00607)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Phosphorus, water, fltrd, mg/L (00666)	Orthophosphate, water, fltrd, mg/L as P (00671)	Organic carbon, water, unfltrd mg/L (00680)	Aluminum, water, fltrd, ug/L (01106)	Antimony, water, fltrd, ug/L (01095)	Arsenic, water, fltrd, ug/L (01000)	Barium, water, fltrd, ug/L (01005)	Beryllium, water, fltrd, ug/L (01010)
FEB 11...	<.008	<.06	<.04	--	.33	.010	<.02	6.6	2	<.30	<2	44	<.06	
MAY 07...	E.004	.09	.17	.53	.70	.010	<.02	6.8	7	<.30	<2	51	<.06	
AUG 20...	E.005n	E.04n	.42	.41	.83	.034	<.18d	6.3	3	<.30	2	91	<.06	
Date		Cadmium, water, fltrd, ug/L (01025)	Chromium, water, fltrd, ug/L (01030)	Cobalt, water, fltrd, ug/L (01035)	Copper, water, fltrd, ug/L (01040)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Manganese, water, fltrd, ug/L (01056)	Mercury, water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Nickel, water, fltrd, ug/L (01065)	Selenium, water, fltrd, ug/L (01145)	Silver, water, fltrd, ug/L (01075)	Zinc, water, fltrd, ug/L (01090)
FEB 11...	<.04	<.8	.03	1.1	10	E.06	1.4	<.02	.5	1.08	<3	<.20	2	
MAY 07...	E.02	<.8	.64	1.4	50	E.05	172	<.02	.4	1.62	<3	<.20	4	
AUG 20...	.04	<.8	.25	2.9	295	.17	2000d	<.02	1.6	.89	E1n	<.20	1	

07346000 Big Cypress Creek near Jefferson, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Uranium natural water, fltrd, ug/L (22703)
FEB	
11...	E.01
MAY	
07...	.02
AUG	
20...	E.01n

Remark codes used in this report:

< -- Less than
E -- Estimated value

Value qualifier codes used in this report:

d -- Diluted sample: method hi range exceeded
n -- Below the NDV

Null value qualifier codes used in this report:

e -- Required equipment not functional/avail

07346045 Black Cypress Bayou at Jefferson, TX

LOCATION.--Lat 32°46'40", long 94°21'26", Marion County, Hydrologic Unit 11140306 near center of channel at downstream side of bridge on U.S. Highway 59, 1.1 mi north of Jefferson, 2.0 mi upstream from Texas and Pacific Railway Co. bridge, and 5.2 mi upstream from mouth.

DRAINAGE AREA.--365 mi².

PERIOD OF RECORD.--May 1938 to Sept. 1955 (daily gage heights), Nov. 1956 to Aug. 1968 (daily gage heights and discharge measurements) published by U.S. Army Corps of Engineers as "Black Cypress Creek at Jefferson", Sept. 1964 to Aug. 1968 (low-flow partial-record), Oct. 1968 to current year.
Water-quality records.--Chemical data: Oct. 1967 to Sept. 1981.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 171.47 ft above NGVD of 1929 (U.S. Army Corps of Engineers benchmark). Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No known regulation or diversions. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1938, 22.42 ft Apr. 29, 1958, from records by U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	60	84	e427	125	1800	337	155	66	67	6.7	0.00
2	11	46	87	418	125	1620	363	133	56	55	8.0	0.00
3	12	43	91	410	128	1450	361	116	48	45	4.4	0.00
4	13	48	137	460	129	1260	329	103	42	37	2.5	0.00
5	13	90	164	507	126	1080	283	94	36	35	1.8	0.00
6	15	103	144	579	152	911	267	90	36	37	1.9	0.00
7	33	86	137	617	193	769	282	235	33	31	1.5	0.00
8	32	96	156	563	197	667	239	306	31	26	0.71	0.00
9	7.3	125	176	461	212	575	212	221	28	22	0.27	0.00
10	7.1	125	189	368	270	503	195	215	28	19	0.08	0.00
11	7.9	107	194	292	303	455	192	273	58	16	5.6	0.00
12	7.7	104	193	230	321	416	193	291	57	13	46	0.03
13	7.4	92	226	198	320	388	191	267	73	11	7.7	0.20
14	8.1	76	251	181	316	370	186	233	79	17	3.1	2.1
15	8.7	70	251	170	400	354	175	204	96	16	2.9	1.2
16	9.7	65	261	161	578	338	161	235	109	10	4.3	0.22
17	9.4	62	286	152	554	324	147	299	155	7.5	7.6	6.9
18	4.2	60	300	144	578	332	133	367	620	5.7	12	8.2
19	26	47	307	140	592	382	122	471	416	4.3	16	5.1
20	105	45	311	137	501	382	116	503	358	3.1	8.5	2.1
21	98	45	301	135	825	377	111	503	334	2.5	4.0	0.72
22	81	43	265	132	1640	392	104	480	331	3.0	1.5	0.45
23	105	41	314	127	1770	423	101	419	319	7.8	0.30	0.15
24	121	40	e779	124	1580	441	142	337	287	5.1	0.05	0.03
25	115	42	918	124	1760	445	175	243	265	3.7	0.01	0.02
26	100	51	681	126	1960	440	176	179	239	2.7	0.00	0.01
27	90	61	562	129	2070	410	186	145	191	1.7	0.00	0.00
28	81	63	535	127	2010	372	205	123	147	0.88	0.00	0.00
29	82	68	521	126	---	334	203	105	107	0.30	0.00	0.00
30	94	77	496	125	---	313	180	91	83	3.0	0.00	0.00
31	82	---	e584	125	---	e310	---	78	---	5.3	0.00	---
TOTAL	1397.5	2081	9901	8015	19835	18633	6067	7514	4728	513.58	147.42	27.43
MEAN	45.1	69.4	319	259	708	601	202	242	158	16.6	4.76	0.91
MAX	121	125	918	617	2070	1800	363	503	620	67	46	8.2
MIN	4.2	40	84	124	125	310	101	78	28	0.30	0.00	0.00
AC-FT	2770	4130	19640	15900	39340	36960	12030	14900	9380	1020	292	54

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 2003, BY WATER YEAR (WY)

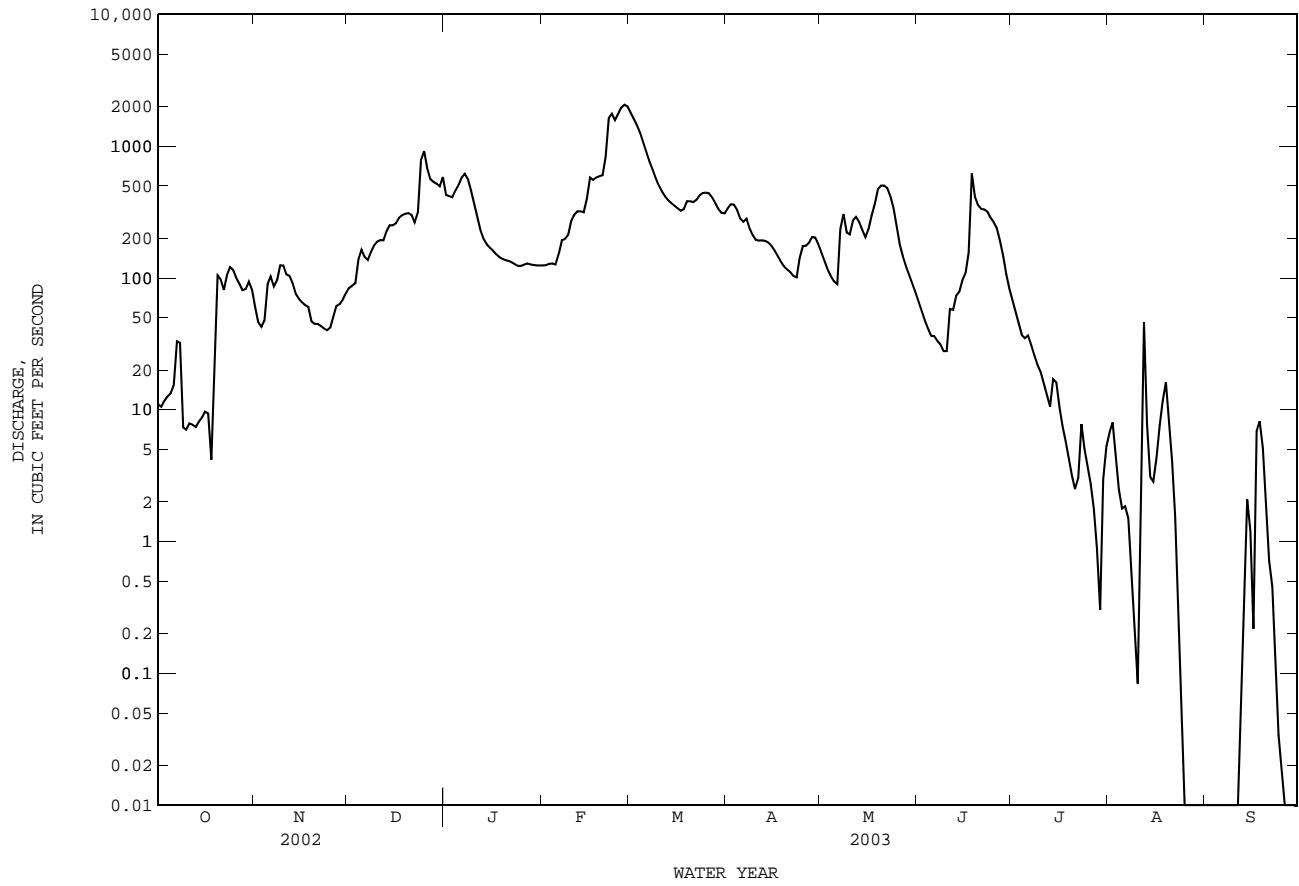
	MEAN	95.0	260	573	535	677	740	585	472	282	91.1	38.6	57.1
MAX	415	1344	2157	1508	1964	1909	2006	1934	1321	576	623	581	
(WY)	1974	1975	1988	1991	2001	2001	1973	1991	1974	1992	1979	1974	
MIN	0.009	13.6	62.1	88.6	69.6	108	109	50.8	1.86	0.000	0.060	0.000	
(WY)	1979	1984	1990	2000	1996	1996	1971	1984	1998	1998	1969	1969	

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1969 - 2003	
ANNUAL TOTAL	136538.68		78859.93			
ANNUAL MEAN	374		216		366	
HIGHEST ANNUAL MEAN					701	
LOWEST ANNUAL MEAN					78.3	
HIGHEST DAILY MEAN	4640	Mar 23	2070	Feb 27	10700	Dec 28 1987
LOWEST DAILY MEAN	0.00	Aug 28	0.00	Aug 26	0.00	Aug 10 1969
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 28	0.00	Aug 26	0.00	Aug 10 1969
MAXIMUM PEAK FLOW			2150	Feb 27	11600	Dec 28 1987
MAXIMUM PEAK STAGE			a14.53	Feb 27	19.34	Dec 28 1987
ANNUAL RUNOFF (AC-FT)	270800		156400		264800	
10 PERCENT EXCEEDS	791		503		882	
50 PERCENT EXCEEDS	176		121		168	
90 PERCENT EXCEEDS	1.7		0.72		1.6	

e Estimated

a From floodmark.

07346045 Black Cypress Bayou at Jefferson, TX--Continued



07346050 Little Cypress Creek near Ore City, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 32°40'21", long 94°45'03", Upshur County, Hydrologic Unit 11140307, on right bank at downstream side of bridge on U.S. Highway 259, 4.0 mi downstream from Clear Creek, 9.0 mi south of Ore City, and 12.0 mi north of Longview.

DRAINAGE AREA.--383 mi².

PERIOD OF RECORD.--Jan. 1963 to Sept. 1999 (daily mean discharge). Oct. 1999 to current year (peaks above base discharge).

GAGE.--Water-stage recorder. Datum of gage is 232.67 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records fair. No known regulation or diversions. During the year, the city of Gilmer discharged a small amount of wastewater effluent into a tributary above this station.

AVERAGE DISCHARGE.--36 years (water years 1964-99), 290 ft³/s (210,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,500 ft³/s, Apr. 24, 1966, gage height, 20.20 ft; no flow for many days most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1902 occurred in Mar. 1945; maximum stage since 1945, that of Apr. 24, 1966. The flood in Apr. 1958 reached a stage of 19.4 ft, or 1.3 ft lower than the flood of Mar. 1945 at a point 6.0 mi upstream, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb 26	1000	*2,110	*10.89	No other peak greater than base discharge.			

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07346070 Little Cypress Creek near Jefferson, TX

LOCATION.--Lat 32°42'46", long 94°20'45", Harrison County, Hydrologic Unit 11140307, at downstream side of upstream bridge on U.S. Highway 59, 0.3 mi downstream from Texas and Pacific Railway Co. bridge, 3.3 mi downstream from Grays Creek, 3.5 mi south of Jefferson, and 6.8 mi upstream from mouth.

DRAINAGE AREA.--675 mi².

PERIOD OF RECORD.--June 1946 to current year.

Water-quality records.--Chemical data: June 1964 to Oct. 1997. Biological data: June 1964 to Oct. 1997. Pesticide data: Jan. 1968 to June 1981. Specific conductance: Oct. 1967 to Sept. 1990. Water temperature: Oct. 1967 to Sept. 1990.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 174.60 ft above NGVD of 1929. Prior to Sept. 19, 1947, nonrecording gage at upstream side of bridge at same datum. Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily discharges, which are fair. No known regulation or diversions. Wastewater effluent is discharged into tributaries that enter Little Cypress Creek above this station. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 21.1 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	79	51	1290	252	2330	334	224	96	222	64	52
2	13	57	50	1100	250	2240	313	179	87	187	55	35
3	13	47	48	1040	249	2130	295	149	77	151	65	22
4	13	45	118	1050	241	2010	281	133	68	123	66	16
5	12	94	211	1030	236	1880	272	124	61	110	45	13
6	11	141	221	980	284	1720	371	118	68	125	30	11
7	12	154	230	916	382	1540	723	152	73	155	24	9.5
8	12	149	226	871	411	1360	704	140	69	119	21	8.8
9	16	140	218	922	438	1200	701	189	65	91	18	8.0
10	20	131	214	1070	507	1060	688	254	60	77	17	6.9
11	33	115	206	1150	516	960	619	306	59	73	18	6.7
12	35	95	210	1090	513	886	479	323	64	67	141	7.4
13	29	76	277	985	503	820	359	328	103	62	208	12
14	24	61	302	889	502	761	294	354	150	57	209	30
15	22	52	307	796	633	704	256	405	257	51	100	26
16	20	47	313	706	887	649	232	468	389	49	67	40
17	17	42	306	608	848	601	213	552	577	41	50	54
18	14	37	299	508	792	590	197	594	1020	36	34	47
19	23	33	1020	440	782	690	184	581	1110	33	30	31
20	42	31	1590	402	785	652	173	450	969	30	26	18
21	66	29	968	381	1170	610	164	291	825	28	20	12
22	73	27	741	356	2930	600	160	235	753	26	17	9.6
23	83	26	686	323	3500	598	159	226	745	24	14	7.7
24	98	26	940	294	3400	597	175	228	755	23	12	6.7
25	109	25	1040	277	3240	590	181	233	736	22	11	6.3
26	113	28	954	270	3000	576	211	232	681	34	9.8	5.8
27	115	37	963	271	2760	555	252	205	644	79	8.9	5.1
28	112	44	985	272	2490	524	287	163	540	68	8.1	4.5
29	147	49	965	269	---	479	291	135	343	52	7.3	4.4
30	142	51	915	260	---	413	269	118	247	60	7.0	4.1
31	107	---	1100	255	---	e375	---	106	---	84	23	---
TOTAL	1559	1968	16674	21071	32501	30700	9837	8195	11691	2359	1426.1	520.5
MEAN	50.3	65.6	538	680	1161	990	328	264	390	76.1	46.0	17.4
MAX	147	154	1590	1290	3500	2330	723	594	1110	222	209	54
MIN	11	25	48	255	236	375	159	106	59	22	7.0	4.1
AC-FT	3090	3900	33070	41790	64470	60890	19510	16250	23190	4680	2830	1030
CFSM	0.07	0.10	0.80	1.01	1.72	1.47	0.49	0.39	0.58	0.11	0.07	0.03
IN.	0.09	0.11	0.92	1.16	1.79	1.69	0.54	0.45	0.64	0.13	0.08	0.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2003, BY WATER YEAR (WY)

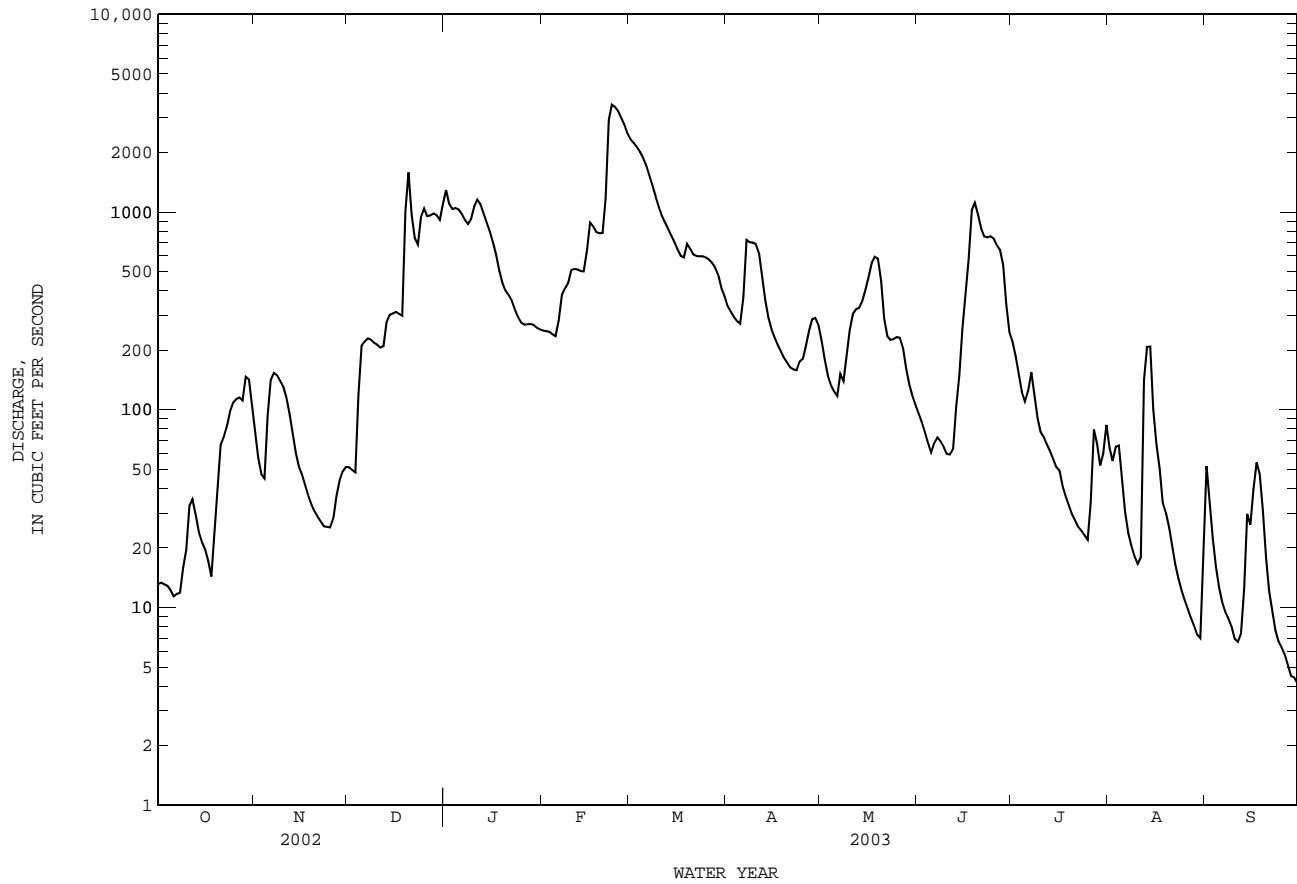
	MEAN	128	304	688	771	963	1039	995	955	445	137	44.9	98.9
MAX	927	2709	3391	2664	2918	3467	4584	4212	2525	689	667	941	
(WY)	1950	1958	1961	1991	2001	2001	1966	1958	1946	1992	1979	1979	
MIN	0.000	0.017	0.53	8.33	73.1	75.7	117	61.6	4.67	0.24	0.000	0.000	
(WY)	1953	1957	1957	1957	1996	1996	1972	1971	1971	1964	1956	1952	

SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1946 - 2003

ANNUAL TOTAL	178346	138501.6	
ANNUAL MEAN	489	379	542
HIGHEST ANNUAL MEAN			1260
LOWEST ANNUAL MEAN			67.3
HIGHEST DAILY MEAN	5610	Mar 24	32700
LOWEST DAILY MEAN	11	Aug 12	4.1
ANNUAL SEVEN-DAY MINIMUM	12	Aug 7	5.3
MAXIMUM PEAK FLOW		3680	Feb 23
MAXIMUM PEAK STAGE		12.52	Feb 23
ANNUAL RUNOFF (AC-FT)	353700	274700	392900
ANNUAL RUNOFF (CFSM)	0.72	0.56	0.80
ANNUAL RUNOFF (INCHES)	9.83	7.63	10.92
10 PERCENT EXCEEDS	1060	968	1370
50 PERCENT EXCEEDS	140	179	186
90 PERCENT EXCEEDS	21	15	1.2

e Estimated

07346070 Little Cypress Creek near Jefferson, TX--Continued



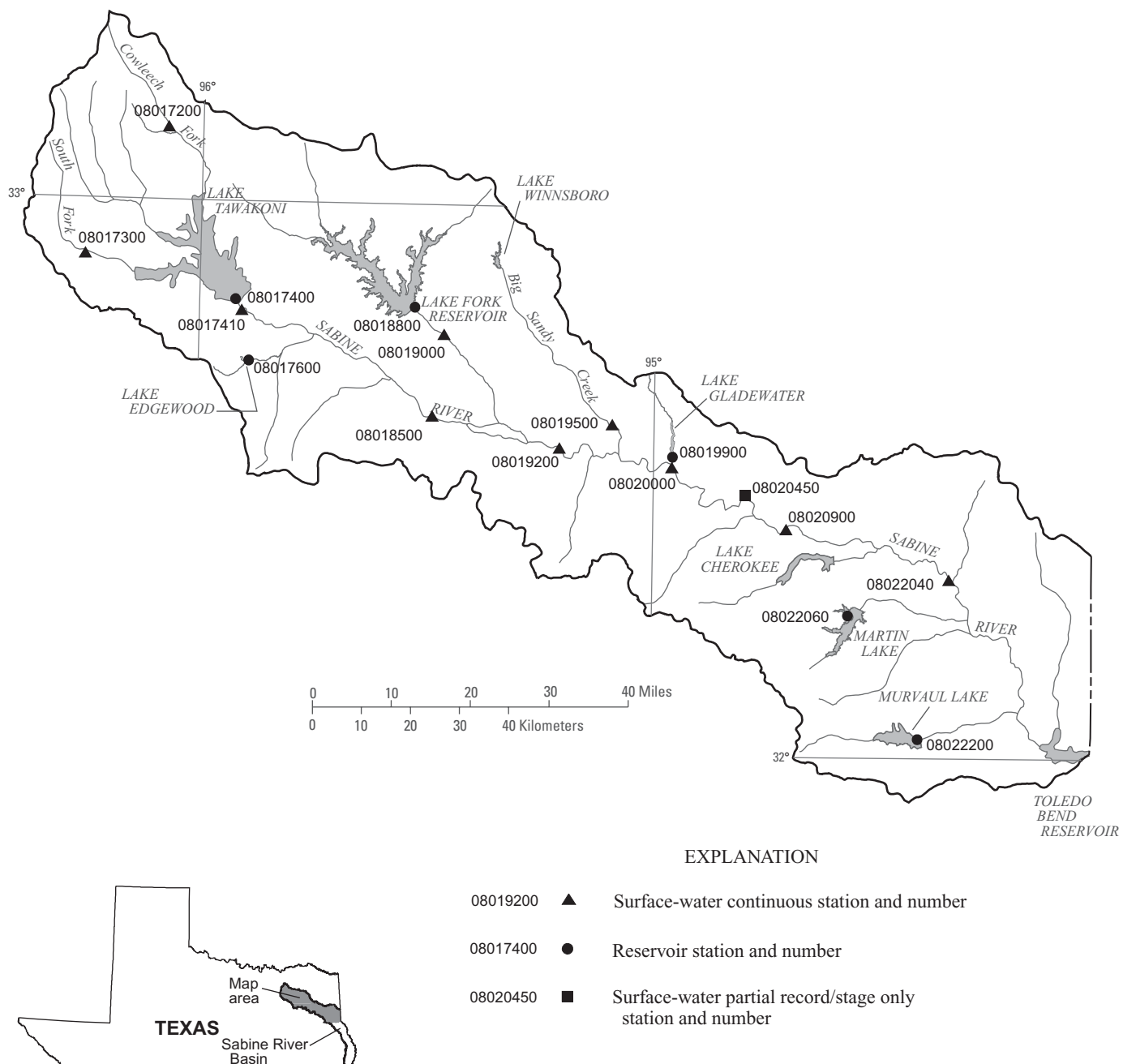


Figure 8.--Map showing location of gaging stations in the first section of the Sabine River Basin

08017200	Cowleech Fork Sabine River at Greenville, TX	304
08017300	South Fork Sabine River near Quinlan, TX	306
08017400	Lake Tawakoni near Wills Point, TX	308
08017410	Sabine River near Wills Point, TX	310
08017600	Lake Edgewood near Edgewood, TX	312
08018500	Sabine River near Mineola, TX	316
08018800	Lake Fork Reservoir near Quitman, TX	318
08019000	Lake Fork Creek near Quitman, TX	320
08019200	Sabine River near Hawkins, TX	322
08019500	Big Sandy Creek near Big Sandy, TX	324
08019900	Lake Gladewater near Gladewater, TX	326
08020000	Sabine River near Gladewater, TX	330
08020450	Sabine River above Longview, TX	332
08020900	Sabine River below Longview, TX	334
08022040	Sabine River near Beckville, TX	336
08022060	Martin Lake near Tatum, TX	338
08022200	Murval Lake near Gary, TX	340

SABINE RIVER BASIN

08017200 Cowleech Fork Sabine River at Greenville, TX

LOCATION.--Lat 33°07'58", long 96°04'36", Hunt County, Hydrologic Unit 12010001, on left bank 103 ft downstream from centerline of downstream bridge on Interstate Highway 30, 0.3 mi downstream from Horse Creek, 0.9 mi downstream from Louisiana and Arkansas Railroad Co. bridge, 1.8 mi east of Greenville, and at mile 558.3.

DRAINAGE AREA.--77.7 mi².

PERIOD OF RECORD.--Feb. 1959 to current year. Prior to Oct. 1963, published as "Sabine River at Greenville".

REVISED RECORDS.--WSP 1732: Drainage area. WSP 2122: 1960, 1963-65.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 485.07 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. No known regulation. The city of Greenville diverts water from city lakes upstream from gage and from Lake Tawakoni (station 08017400). Wastewater effluent was returned to a tributary downstream from gage. Extreme low flows are largely sustained by return water from a water treatment plant upstream. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1895, 22 ft in May 1935, from information by local resident and city engineer of Greenville. Flood of July 3, 1913, reached a stage of 20 ft, from information by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.26	3.9	1.1	101	1.6	90	3.5	2.0	1.5	1.0	0.45	3.3
2	0.26	2.7	1.2	27	1.6	36	3.2	1.9	1.4	0.88	0.63	1.2
3	0.27	3.4	1.8	9.9	1.6	16	3.1	2.0	1.4	0.72	0.73	0.70
4	0.27	2.2	10	5.7	1.5	10	4.2	2.0	1.4	0.63	0.81	0.53
5	0.21	5.0	3.2	3.7	1.4	7.0	3.7	1.9	2.0	0.65	0.52	0.57
6	0.20	7.9	3.8	2.9	5.1	5.9	74	1.9	1.5	24	0.78	0.40
7	0.30	6.6	3.1	2.6	2.8	5.2	6.5	1.9	1.4	4.5	1.8	0.36
8	1.4	6.0	2.8	2.9	1.6	4.8	3.6	1.8	1.9	1.0	0.51	0.37
9	41	4.4	153	2.4	1.4	4.5	2.7	1.8	1.3	0.69	0.53	0.37
10	37	2.9	514	2.3	1.3	4.3	2.3	1.8	1.3	1.9	0.45	0.34
11	5.5	2.3	87	2.1	1.3	4.2	2.3	1.7	1.7	1.4	0.44	1.2
12	1.6	1.2	25	2.1	1.2	4.2	2.1	1.6	10	0.69	0.47	1.1
13	0.84	0.88	20	2.2	1.2	496	2.0	4.5	19	0.49	0.69	0.69
14	0.61	0.79	9.8	2.2	1.9	117	1.9	2.2	27	0.38	0.71	0.53
15	0.39	0.75	5.6	2.2	3.3	26	1.9	1.7	693	e0.34	0.47	0.54
16	0.35	0.77	4.3	2.2	2.3	11	1.8	1.6	49	e0.47	0.44	0.47
17	0.46	0.76	3.3	2.1	1.9	7.4	2.1	1.4	29	e0.55	0.38	0.47
18	70	0.74	2.7	2.1	1.9	7.8	2.1	1.2	49	e0.67	0.23	0.44
19	6210	0.76	2.3	2.2	2.1	11	2.2	1.0	13	0.72	0.30	0.44
20	1270	0.81	2.1	2.2	5.1	13	2.2	2.4	4.8	0.68	0.58	0.43
21	34	0.93	1.9	2.1	618	8.4	2.2	1.5	2.7	0.58	0.28	0.47
22	11	0.71	1.7	1.9	2200	6.0	2.1	1.7	1.8	0.52	0.29	0.61
23	5.6	0.73	71	1.8	131	4.7	2.1	1.6	1.5	0.62	0.19	4.0
24	4.4	0.76	277	1.7	29	4.1	3.1	3.9	1.2	0.69	0.33	0.60
25	4.7	0.79	76	1.8	14	3.7	2.2	64	1.1	0.63	0.22	0.38
26	3.3	0.81	19	1.7	38	3.5	2.0	62	48	0.61	0.23	0.26
27	2.7	0.82	5.9	1.7	324	3.4	1.9	7.5	51	0.59	0.28	0.25
28	3.3	0.89	3.6	1.7	393	3.4	2.0	2.9	7.4	0.53	0.46	0.20
29	6.6	0.97	2.8	1.8	---	3.4	2.1	2.0	2.6	0.52	0.46	0.19
30	6.7	1.0	104	1.7	---	3.6	2.2	1.5	1.4	0.47	0.52	0.21
31	4.9	---	2660	1.6	---	e3.6	---	1.5	---	0.52	0.54	---
TOTAL	7728.12	63.17	4079.0	201.5	3789.1	929.1	149.3	188.4	1029.3	48.64	15.72	21.62
MEAN	249	2.11	132	6.50	135	30.0	4.98	6.08	34.3	1.57	0.51	0.72
MAX	6210	7.9	2660	101	2200	496	74	64	693	24	1.8	4.0
MIN	0.20	0.71	1.1	1.6	1.2	3.4	1.8	1.0	1.1	0.34	0.19	0.19
AC-FT	15330	125	8090	400	7520	1840	296	374	2040	96	31	43
CFSM	3.21	0.03	1.69	0.08	1.74	0.39	0.06	0.08	0.44	0.02	0.01	0.01
IN.	3.70	0.03	1.95	0.10	1.81	0.44	0.07	0.09	0.49	0.02	0.01	0.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2003, BY WATER YEAR (WY)

	MEAN	58.0	60.8	111	62.9	95.9	101	99.4	128	62.8	20.5	5.22	26.2
MAX	354	433	573	403	461	394	431	540	353	264	95.2	258	
(WY)	1972	1997	1972	1998	2001	2001	1966	1982	1981	1989	1977	1974	
MIN	0.001	0.025	0.11	0.24	0.22	0.48	0.85	0.33	0.032	0.001	0.000	0.000	
(WY)	1996	1996	1990	1986	1996	1996	1971	1988	1988	1998	1985	1999	

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

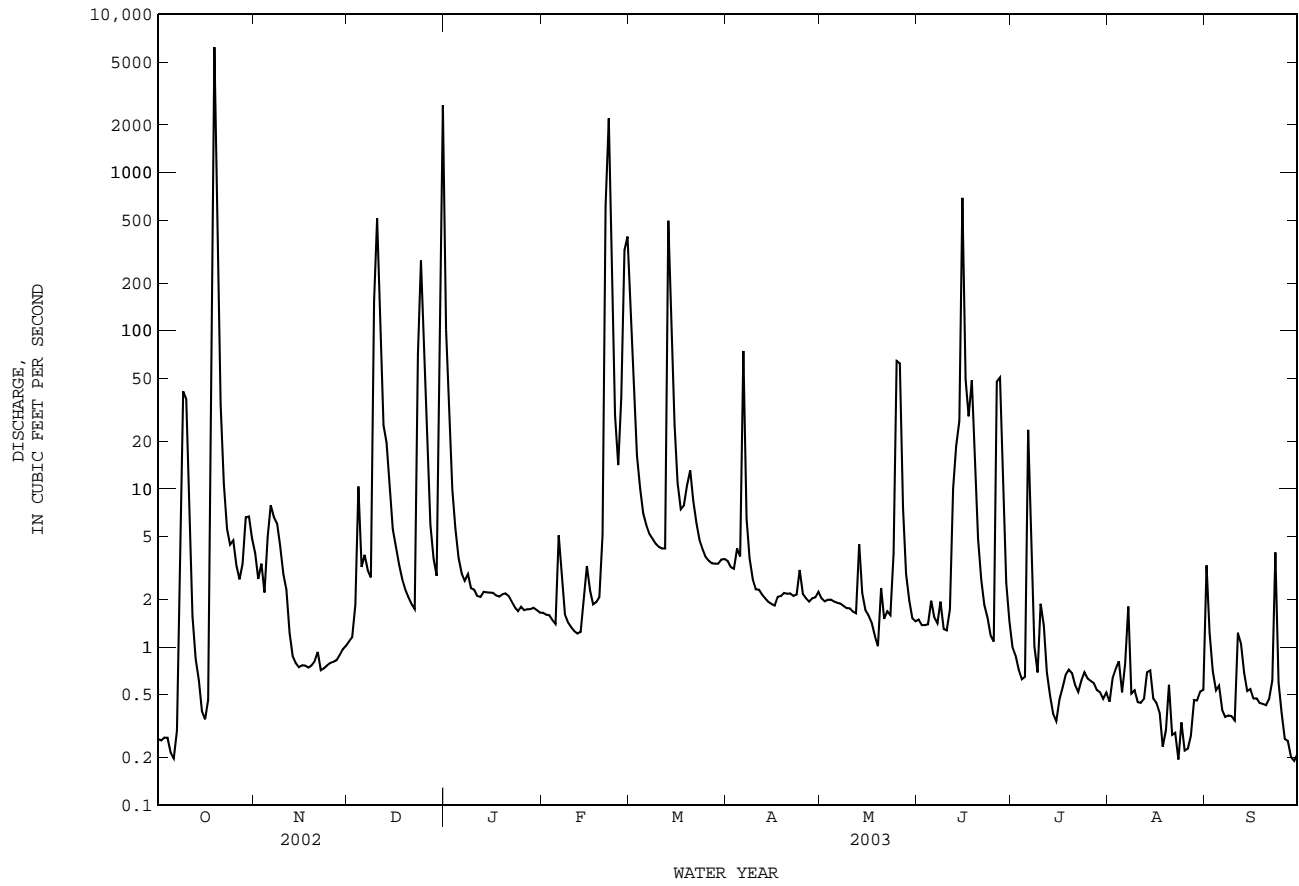
FOR 2003 WATER YEAR

WATER YEARS 1959 - 2003

ANNUAL TOTAL	35595.79	18242.97	
ANNUAL MEAN	97.5	50.0	69.9
HIGHEST ANNUAL MEAN			147
LOWEST ANNUAL MEAN			2.85
HIGHEST DAILY MEAN	6210	Oct 19	9730
LOWEST DAILY MEAN	0.20	Sep 26	0.19
ANNUAL SEVEN-DAY MINIMUM	0.22	Sep 24	0.25
MAXIMUM PEAK FLOW			10700
MAXIMUM PEAK STAGE			17.82
ANNUAL RUNOFF (AC-FT)	70600		36180
ANNUAL RUNOFF (CFSM)	1.26		0.64
ANNUAL RUNOFF (INCHES)	17.04		8.73
10 PERCENT EXCEEDS	70		27
50 PERCENT EXCEEDS	1.7		1.9
90 PERCENT EXCEEDS	0.51		0.44
			15300
			18.47
			50620
			0.90
			12.22
			58
			1.5
			0.02

e Estimated

08017200 Cowleech Fork Sabine River at Greenville, TX--Continued



SABINE RIVER BASIN

08017300 South Fork Sabine River near Quinlan, TX

LOCATION.--Lat 32°53'52", long 96°15'11", Hunt County, Hydrologic Unit 12010001, on right bank at downstream side of bridge on Farm Road 1565, 2.4 mi upstream from Dry Creek, 6.2 mi upstream from Bearpen Creek, 7.0 mi southwest of Quinlan, and 25.0 mi upstream from mouth.

DRAINAGE AREA.--78.7 mi².

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

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 461.40 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily discharges, which are fair. No known regulation or diversions.

Wastewater effluent is discharged at various periods during the water year by Royse City located approximately 10.0 mi above this station. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1890, 21 ft July 29, 1902, from information by local resident. Flood of Apr. 27, 1957, reached a stage of 17.76 ft, from floodmarks.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.75	4.5	4.5	181	3.9	195	1.1	12	1.5	1.2	0.11	0.00
2	1.5	3.5	4.6	40	3.5	61	1.0	8.8	0.99	0.64	0.07	1.3
3	1.9	5.0	5.0	14	3.1	23	1.0	6.3	0.83	0.06	0.04	0.87
4	1.7	9.6	13	8.6	2.9	16	1.6	5.5	0.61	0.04	0.01	0.37
5	1.4	15	12	6.3	2.6	12	82	4.8	0.49	0.08	0.00	0.25
6	1.1	15	8.0	4.7	28	8.8	925	3.9	3.9	0.15	0.00	0.23
7	0.98	7.8	6.3	3.6	27	7.1	727	4.4	3.2	0.14	0.00	0.15
8	0.89	6.2	5.6	3.3	8.9	5.7	68	4.6	1.0	0.11	0.00	0.10
9	288	6.6	487	3.1	5.5	4.2	30	6.4	0.38	0.07	0.00	0.07
10	220	5.4	703	2.4	4.4	3.4	18	6.1	0.24	0.05	0.00	0.05
11	39	3.7	157	2.3	3.3	2.7	14	4.4	0.42	0.10	0.00	0.16
12	24	2.5	39	2.2	2.4	2.3	11	2.8	30	0.07	0.00	0.23
13	17	2.0	21	2.7	2.2	3.5	11	1.8	201	0.02	0.00	e0.20
14	12	2.0	15	3.2	3.1	12	11	1.7	57	0.00	0.00	e0.21
15	8.8	1.7	9.7	3.3	8.2	7.2	11	2.6	25	0.00	0.00	e0.27
16	6.9	1.9	6.9	3.1	4.1	4.5	11	3.3	81	0.00	0.00	e0.87
17	5.7	1.7	5.4	3.0	2.1	2.6	9.7	2.9	16	0.00	0.00	0.66
18	86	1.2	4.6	2.8	1.5	9.5	8.8	2.4	9.8	0.00	0.00	0.63
19	12100	1.9	3.6	2.6	1.3	26	8.6	2.1	5.6	0.00	0.00	0.51
20	1510	2.5	2.7	2.7	1.7	10	8.7	10	2.4	0.06	0.00	0.38
21	125	2.1	2.4	2.6	428	5.1	7.9	16	1.3	0.09	0.00	0.31
22	36	2.0	2.3	2.4	1730	3.3	7.4	3.4	0.77	0.08	0.00	0.25
23	15	3.5	52	2.0	362	2.6	6.8	1.9	0.50	0.11	0.00	0.18
24	10	5.2	232	2.2	63	1.9	16	1.2	0.45	0.16	0.00	0.13
25	28	4.1	56	2.5	28	5.7	15	790	e0.50	0.16	0.00	0.10
26	17	3.7	18	2.8	44	147	9.5	1060	e42	0.16	0.00	0.09
27	8.3	3.7	12	2.8	402	18	6.8	90	e46	0.14	0.00	0.07
28	5.3	3.8	7.7	3.0	750	5.3	4.8	34	e3.2	0.14	0.00	0.05
29	22	3.8	6.0	3.2	---	2.7	4.1	11	e1.4	0.13	0.00	0.03
30	17	4.0	99	3.5	---	1.7	4.3	4.5	e1.4	0.12	0.00	0.01
31	6.9	---	1010	3.6	---	1.2	---	2.5	---	0.13	0.00	---
TOTAL	14618.12	135.6	3011.3	325.5	3926.7	611.0	2042.1	2111.3	538.88	4.21	0.23	8.73
MEAN	472	4.52	97.1	10.5	140	19.7	68.1	68.1	18.0	0.14	0.007	0.29
MAX	12100	15	1010	181	1730	195	925	1060	201	1.2	0.11	1.3
MIN	0.75	1.2	2.3	2.0	1.3	1.2	1.0	1.2	0.24	0.00	0.00	0.00
AC-FT	29000	269	5970	646	7790	1210	4050	4190	1070	8.4	0.5	17

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2003, BY WATER YEAR (WY)

	MEAN	103	67.7	123	62.1	122	110	117	144	89.8	25.9	5.15	23.5
MAX	656	655	562	277	556	572	693	674	1128	490	96.8	353	
(WY)	1982	1995	2002	1974	1983	1977	1966	1979	1981	1981	1974	1974	
MIN	0.000	0.000	0.000	0.000	0.000	0.11	0.062	0.038	0.000	0.000	0.000	0.000	
(WY)	1964	1964	1964	1976	1976	1972	1971	1988	1977	1964	1965	1963	

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

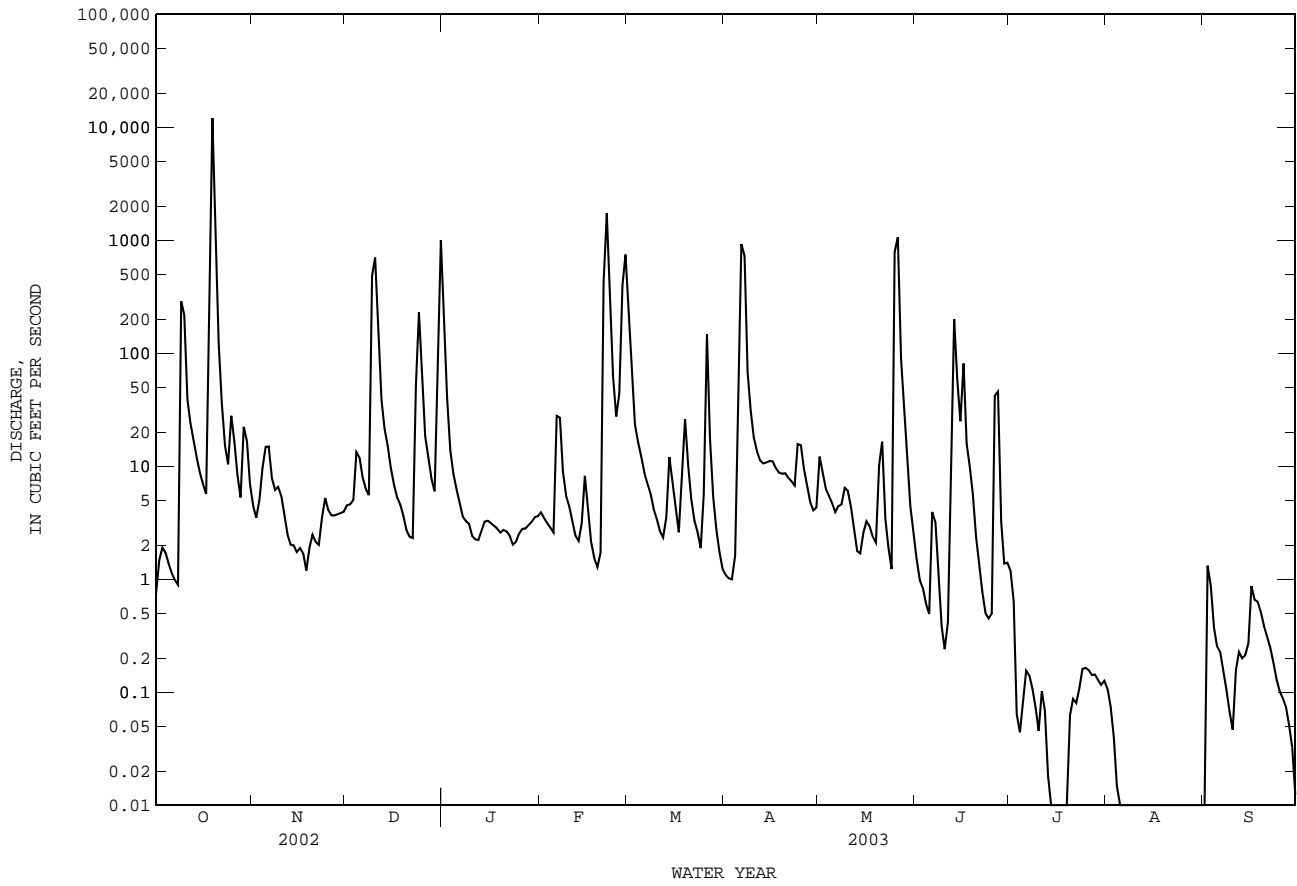
FOR 2003 WATER YEAR

WATER YEARS 1959 - 2003

ANNUAL TOTAL	36645.01	27333.67	
ANNUAL MEAN	100	74.9	83.4
HIGHEST ANNUAL MEAN			187
LOWEST ANNUAL MEAN			3.29
HIGHEST DAILY MEAN	12100	Oct 19	13300
LOWEST DAILY MEAN	0.08	Sep 30	0.00
ANNUAL SEVEN-DAY MINIMUM	0.16	Feb 22	0.00
MAXIMUM PEAK FLOW			19400
MAXIMUM PEAK STAGE			18.53
ANNUAL RUNOFF (AC-FT)	72690		54220
10 PERCENT EXCEEDS	88		43
50 PERCENT EXCEEDS	2.1		3.2
90 PERCENT EXCEEDS	0.31		0.02
			62
			0.59
			0.00

e Estimated

08017300 South Fork Sabine River near Quinlan, TX--Continued



SABINE RIVER BASIN

08017400 Lake Tawakoni near Wills Point, TX

LOCATION.--Lat 32°48'31", long 95°55'10", Rains County, Hydrologic Unit 12010001, in stairwell at left end of spillway of Iron Bridge Dam on Sabine River, 750 ft upstream from bridge on Farm Road 47, 3.8 mi upstream from McBee Creek, 9.0 mi northeast of Wills Point, and at mile 514.5.

DRAINAGE AREA.--756 mi².

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

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--No estimated daily contents. Records good. The lake is formed by a rolled earthfill dam 29,500 ft long, including a 480-foot uncontrolled concrete ogee spillway. Outlet works consist of two 4- by 6-foot sluice gates and two 20-inch steel pipes controlled by service valves. Closure of earthen dam began July 1, 1960, and deliberate impoundment of water began Oct. 7, 1960. Diversions are made for municipal use by the city of Dallas and various other users in the Sabine River basin. The dam is owned by the Sabine River Authority. The lake was built for water conservation. Conservation pool storage is 888,130 acre-ft. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	454.0
Design flood.....	446.2
Crest of spillway.....	437.5
Lowest intake to wet well (invert).....	416.5
Lowest gated outlet (invert).....	378.0

COOPERATION.--Capacity table No. 1, based on a 1984 survey was prepared by Forrest and Cotton, Inc., Consulting Engineers, for Sabine River Authority. Table No. 1 was replaced with Table No. 2, provided by the Texas Water Development Board from a survey conducted in Apr. 1997, and put into use Oct. 1, 2000.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,130,400 acre-ft, May 1, 1966, elevation, 442.58 ft; minimum contents since lake first filled in May 1965, 722,500 acre-ft, Feb. 22, elevation, 431.16 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 948,200 acre-ft, Oct. 21, elevation, 439.01 ft; minimum contents, 808,300 acre-ft, Oct. 18, elevation, 435.35 ft.

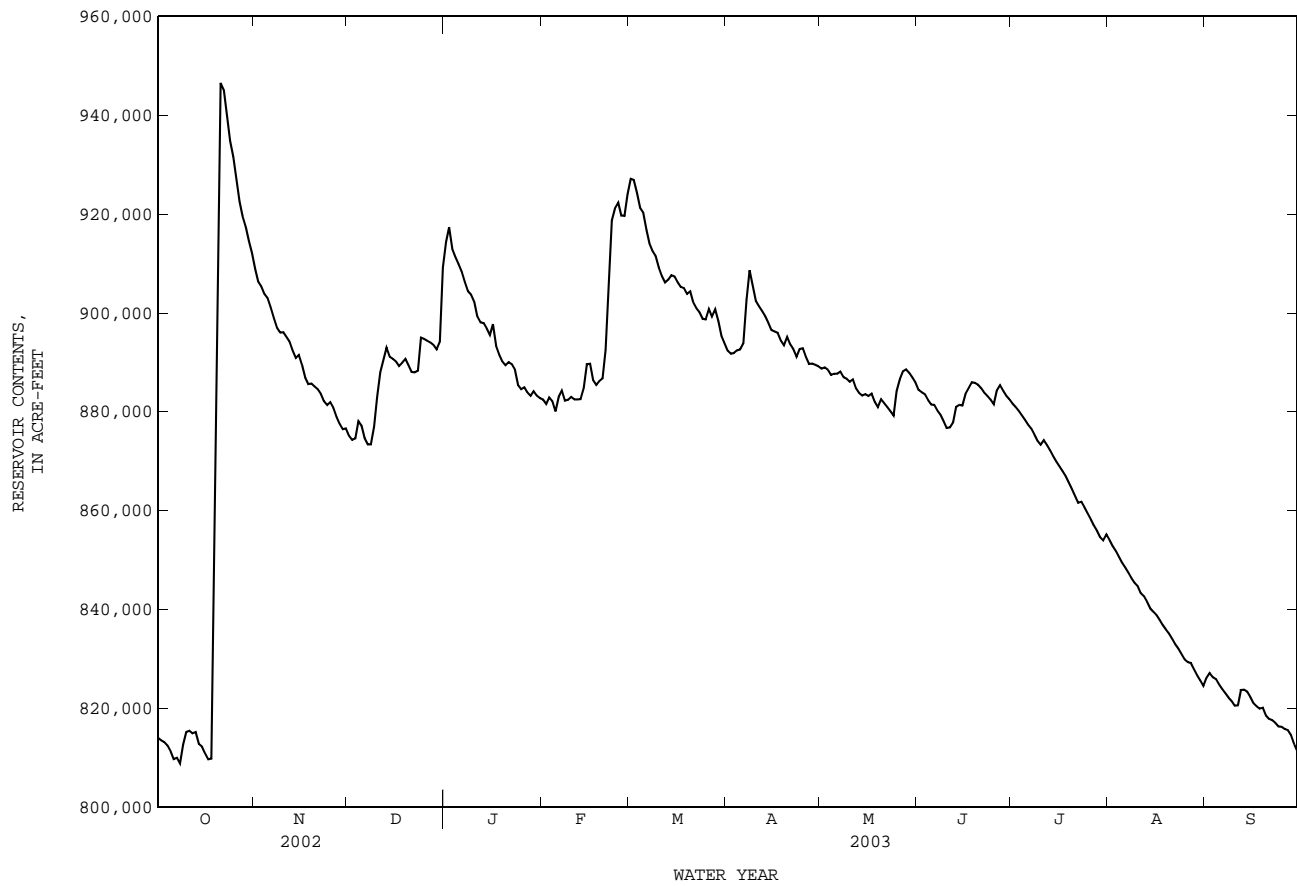
RESERVOIR STORAGE, IN (ACRE-FEET), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	814000	908900	875200	914400	882500	927200	892400	888700	884500	881700	854100	826200
2	813500	906300	874300	917400	881600	926900	891800	889000	884000	881000	852800	827100
3	813200	905300	874600	913000	882900	924300	891900	888500	883500	880200	851800	826300
4	812500	903800	878100	911400	882100	921300	892500	887500	882400	879300	850700	825900
5	811300	903000	877200	909900	880100	920300	892600	887700	881500	878400	849500	824800
6	809700	901100	874700	908400	883000	916900	893800	887700	881400	877400	848500	823900
7	810000	899000	873400	906400	884300	914100	902700	888100	880200	876600	847500	823100
8	808800	897000	873400	904400	882300	912500	908600	887000	879400	875400	846400	822200
9	812700	896000	877000	903700	882400	911500	905600	886700	878100	874100	845400	821500
10	815200	896100	883000	902300	883000	909200	902400	886100	876800	873300	844700	820500
11	815500	895200	888000	899300	882500	907500	901400	886600	876800	874200	843300	820600
12	814900	894200	890500	898100	882500	906200	900400	884800	877900	873300	842700	823700
13	815200	892400	893000	898000	882600	906800	899300	883800	881000	872200	841600	823800
14	812800	890900	891200	896900	884700	907600	898000	883300	881400	871000	840300	823400
15	812300	891500	890700	895600	889600	907400	896500	883600	881300	869900	839600	822300
16	810900	889500	890200	897700	889700	906200	896200	883200	883700	869000	838900	821100
17	809700	886900	889300	893300	886400	905300	896000	883700	884800	868000	837900	820400
18	809800	885600	889900	891600	885400	905000	894400	882000	886000	867000	836900	819900
19	841000	885700	890700	890200	886200	903900	893500	881000	885900	865700	836000	820100
20	920400	885100	889500	889500	886800	904400	895200	882500	885500	864400	835200	818500
21	946600	884600	888100	890000	892500	902100	893700	881800	884800	863000	834100	817900
22	945100	883700	888000	889600	907900	900900	892700	880900	883900	861600	833000	817600
23	939800	882200	888300	888500	918700	900200	891100	880100	883200	861800	832000	817100
24	934800	881400	895000	885400	921200	898800	892700	879200	882500	860700	831000	816300
25	931600	882000	894800	884600	922300	898700	892900	884200	881500	859400	829900	816200
26	927000	880800	894400	885000	919700	900800	891200	886600	884300	858300	829400	815800
27	922600	879000	894000	883900	919700	899300	889700	888200	885400	857000	829200	815600
28	919600	877600	893500	883300	924000	900700	889800	888600	884300	855900	827900	814600
29	917400	876500	892600	884200	---	898300	889500	887900	883300	854600	826700	812700
30	914500	876700	894200	883300	---	895400	889200	887000	882600	854000	825600	811400
31	912100	---	909200	882800	---	893800	---	885900	---	855200	824500	---
MEAN	857900	890600	887000	896200	893100	907500	895300	885200	882400	868200	838900	820400
MAX	946600	908900	909200	917400	924000	927200	908600	889000	886000	881700	854100	827100
MIN	808800	876500	873400	882800	880100	893800	889200	879200	876800	854000	824500	811400
(+)	438.12	437.20	438.04	437.36	438.41	437.65	437.52	437.44	437.35	436.63	435.80	435.44
(@)	+97400	-35400	+32500	-26400	+41200	-30200	-4600	-3300	-3300	-27400	-30700	-13100
CAL YR 2002	MAX 963700	MIN 808800	(@) -9500									
WTR YR 2003	MAX 946600	MIN 808800	(@) -3300									

(+) Elevation, in feet, at end of month.

(@) Change in contents, in acre-feet.

08017400 Lake Tawakoni near Wills Point, TX--Continued



SABINE RIVER BASIN

08017410 Sabine River near Wills Point, TX

LOCATION.--Lat 32°48'22", long 95°55'09", Van Zandt County, Hydrologic Unit 12010001, on right bank at downstream side of bridge on Farm Road 47, 750 ft downstream from Iron Bridge Dam that forms Lake Tawakoni, 3.6 mi upstream from McBee Creek, 9.0 mi northeast of Wills Point, and at mile 514.3.

DRAINAGE AREA.--756 mi².

PERIOD OF RECORD.--Oct. 1970 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 370.00 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Since installation of gage in Oct. 1970, at least 10% of contributing drainage area has been regulated. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since construction of Iron Bridge Dam in 1960, about 21,000 ft³/s, May 1, 1966, from theoretical rating curve of flow over dam 750 ft upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	730	40	1250	24	1880	121	59	35	14	10	11
2	12	585	14	1490	22	1850	110	73	26	13	10	11
3	12	550	21	1040	133	1670	107	63	26	10	10	9.9
4	12	508	186	861	202	1440	114	40	15	9.3	9.8	9.2
5	12	490	237	761	37	1400	126	37	29	9.5	8.4	8.5
6	12	478	63	707	94	1210	150	42	69	9.3	9.7	8.5
7	12	331	16	635	306	988	411	45	31	9.0	10	8.5
8	12	276	13	497	67	874	951	32	67	9.5	10	8.4
9	27	246	173	517	29	835	766	26	15	9.5	10	7.9
10	24	253	221	613	73	713	435	22	8.7	9.2	10	7.8
11	13	251	117	362	32	606	380	151	12	9.7	10	9.5
12	12	300	135	313	24	550	356	48	54	9.7	11	9.9
13	12	158	371	308	22	581	325	14	112	9.9	11	9.0
14	8.9	128	178	281	38	625	291	11	56	9.9	10	8.7
15	7.8	383	126	250	321	592	254	12	41	10	10	8.6
16	8.9	326	115	724	551	542	255	55	43	11	11	8.5
17	10	62	98	392	148	494	289	203	42	13	11	8.3
18	6.7	39	108	187	44	497	195	63	48	13	11	8.3
19	578	76	200	120	87	454	171	14	35	13	11	9.2
20	1730	26	164	96	104	571	290	152	27	13	11	8.7
21	2930	91	88	171	424	459	202	93	22	13	11	8.9
22	2790	118	176	262	1160	366	153	38	16	13	11	8.8
23	2430	20	166	381	1410	341	122	17	10	14	11	10
24	2120	11	761	100	1540	305	152	15	8.5	13	11	11
25	1940	182	428	31	1570	301	280	263	7.8	13	11	8.3
26	1640	174	234	88	1360	531	163	162	203	12	12	5.2
27	1380	152	214	76	1420	353	91	90	196	12	12	11
28	1250	22	193	28	1730	589	81	78	36	12	12	12
29	1170	13	172	112	---	539	72	61	21	12	11	13
30	1050	72	318	84	---	267	75	44	15	15	10	12
31	952	---	1540	29	---	e169	---	37	---	13	10	---
TOTAL	22186.3	7051	6886	12766	12972	22592	7488	2060	1327.0	356.5	326.9	279.6
MEAN	716	235	222	412	463	729	250	66.5	44.2	11.5	10.5	9.32
MAX	2930	730	1540	1490	1730	1880	951	263	203	15	12	13
MIN	6.7	11	13	28	22	169	72	11	7.8	9.0	8.4	5.2
AC-FT	44010	13990	13660	25320	25730	44810	14850	4090	2630	707	648	555

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 2003, BY WATER YEAR (WY)

	MEAN	196	352	609	373	594	761	703	845	535	158	31.1	44.5
MAX	1726	2539	3377	1701	2482	3319	2090	3888	2825	1229	332	868	
(WY)	1974	1975	1992	1998	1975	2001	1986	1990	1989	1981	1979	1974	
MIN	0.21	0.76	0.16	3.14	1.87	2.84	1.31	5.35	0.81	0.56	0.12	0.25	
(WY)	1991	1979	1991	1996	1976	1976	1971	1996	1972	1972	1986	1987	

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

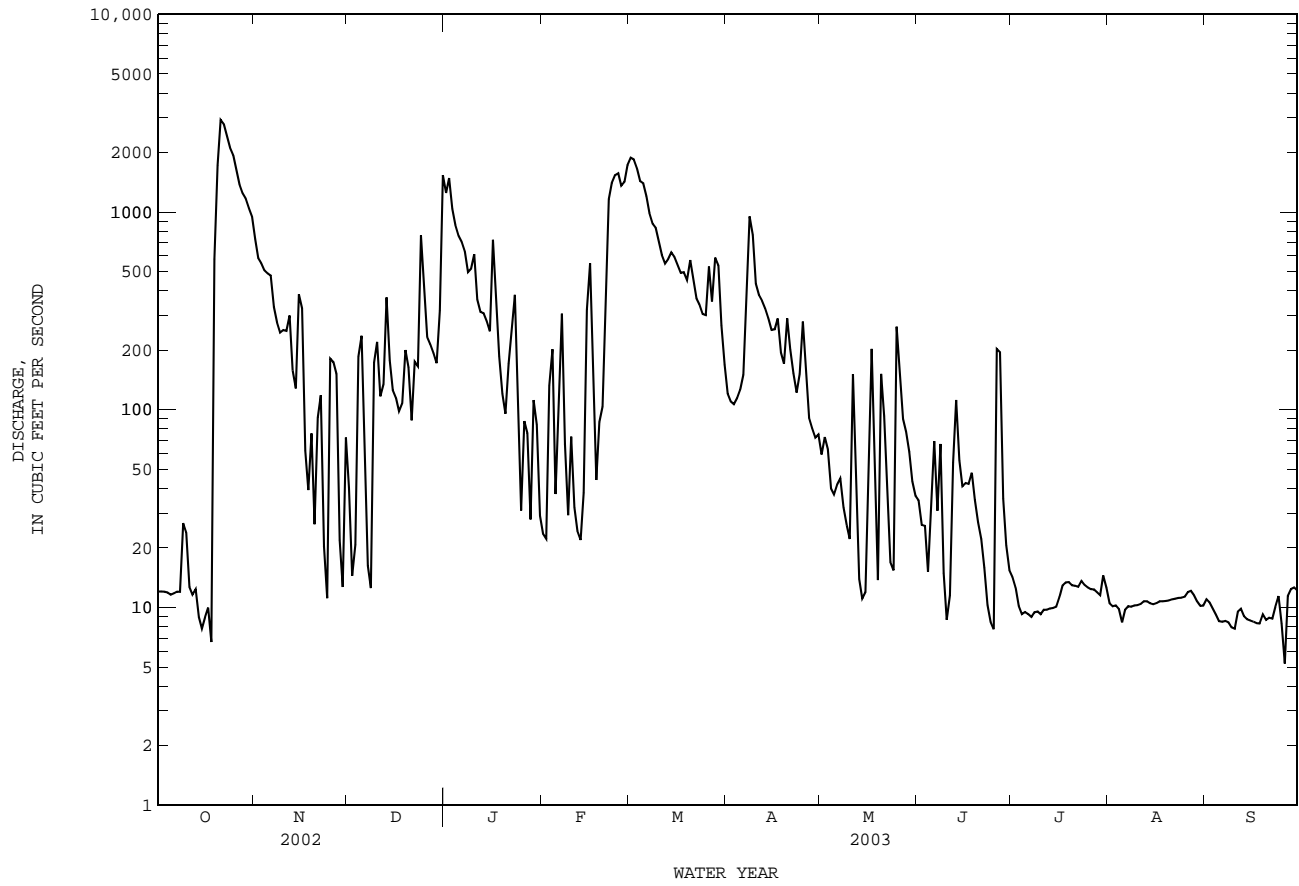
FOR 2003 WATER YEAR

WATER YEARS 1971 - 2003

ANNUAL TOTAL	181511.7	96291.3	433
ANNUAL MEAN	497	264	1064
HIGHEST ANNUAL MEAN			3.66
LOWEST ANNUAL MEAN			20000
HIGHEST DAILY MEAN	4040	Apr 1	May 4 1990
LOWEST DAILY MEAN	6.7	Jul 28	0.00 Oct 1 1971
ANNUAL SEVEN-DAY MINIMUM	8.5	Jun 24	0.00 Oct 6 1971
MAXIMUM PEAK FLOW		3040	20600
MAXIMUM PEAK STAGE		13.60	19.11
ANNUAL RUNOFF (AC-FT)	360000	191000	313400
10 PERCENT EXCEEDS	1570	761	1340
50 PERCENT EXCEEDS	166	67	21
90 PERCENT EXCEEDS	12	9.7	0.34

e Estimated

08017410 Sabine River near Wills Point, TX--Continued



SABINE RIVER BASIN

08017600 Lake Edgewood near Edgewood, TX

LOCATION.--Lat 32°42'30", long 95°54'06", Van Zandt County, Hydrologic Unit 12020101, on earthrolled dam, 1.0 mi northwest of Edgewood.

DRAINAGE AREA.--16.6 mi².

PERIOD OF RECORD.--Oct. 2000 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam. Reservoir used for City of Edgewood water supply. City of Edgewood will divert water from reservoir in extreme drought conditions.

EXTREMES FOR WATER YEAR 2001.--Maximum elevation, 392.37 ft, Feb. 16; minimum elevation, 386.49 ft, Aug. 17.

EXTREMES FOR WATER YEAR 2002.--Maximum elevation, 392.03 ft, Dec. 16; minimum elevation, 386.48 ft, Oct. 10, 11.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 391.11 ft, Feb. 27; minimum elevation, 386.76 ft, Oct. 6.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

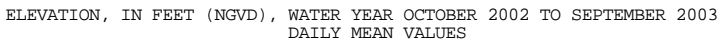
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	387.00	386.68	389.81	390.16	390.16	390.53	390.18	389.53	388.80	388.21	387.06	386.64
2	386.97	386.72	389.80	390.13	390.14	390.39	390.16	389.50	388.78	388.20	387.02	386.62
3	386.95	386.78	389.77	390.11	390.12	390.37	390.15	389.47	388.74	388.17	386.97	386.60
4	386.92	386.84	389.75	390.10	390.10	390.46	390.14	389.45	388.71	388.14	386.93	386.67
5	386.90	386.87	389.75	390.09	390.07	390.29	390.12	389.46	388.67	388.11	386.88	386.65
6	386.92	387.92	389.74	390.07	390.06	390.21	390.10	389.46	388.65	388.08	386.83	386.65
7	386.95	387.99	389.72	390.05	390.05	390.18	390.07	389.46	388.63	---	386.80	386.66
8	386.92	388.31	389.70	390.03	390.05	390.17	390.05	389.43	388.61	---	386.76	386.64
9	386.89	388.45	389.70	390.01	390.07	390.35	390.03	389.41	388.58	---	386.71	386.67
10	386.86	388.45	389.69	390.01	390.03	390.27	390.00	389.39	388.55	---	386.67	386.66
11	386.84	388.44	389.69	390.05	390.04	390.32	389.98	389.36	388.53	---	386.63	386.63
12	386.82	388.55	389.66	390.06	390.10	390.99	389.97	389.34	388.49	---	386.60	386.60
13	386.80	388.79	389.72	390.07	390.17	390.40	389.99	389.31	388.46	---	386.60	386.57
14	386.78	388.78	389.75	390.08	390.21	390.28	389.97	389.27	388.43	---	386.58	386.54
15	386.77	388.77	389.74	390.07	390.61	390.27	389.95	389.23	388.49	---	386.55	386.55
16	386.86	388.76	389.74	390.09	391.68	390.19	389.93	389.19	388.46	---	386.52	386.70
17	386.85	388.75	389.72	390.35	390.52	390.16	389.89	389.16	388.43	387.66	386.52	386.97
18	386.84	388.73	389.71	390.54	390.28	390.14	389.86	389.13	388.40	387.62	386.70	386.95
19	386.82	388.72	389.69	390.46	390.21	390.12	389.84	389.10	388.36	387.58	386.84	386.99
20	386.80	388.70	389.68	390.27	390.18	390.11	389.82	389.08	388.33	387.54	386.81	386.99
21	386.81	388.68	389.66	390.21	390.16	390.09	389.80	389.05	388.31	387.51	386.79	387.00
22	386.82	388.67	389.64	390.18	390.13	390.08	389.78	389.00	388.30	387.46	386.74	386.99
23	386.81	388.77	389.62	390.16	390.12	390.07	389.76	388.97	388.27	387.42	386.70	386.97
24	386.79	389.60	389.61	390.13	390.13	390.10	389.74	388.93	388.24	387.38	386.67	386.95
25	386.77	389.86	389.79	390.11	390.14	390.14	389.70	388.90	388.21	387.34	386.65	386.91
26	386.75	389.87	390.91	390.10	390.13	390.12	389.67	388.87	---	387.30	386.62	386.88
27	386.75	389.86	390.62	390.09	390.42	390.13	389.64	388.85	---	387.26	386.59	386.85
28	386.73	389.85	390.51	390.09	390.80	390.33	389.61	388.90	---	387.22	386.56	386.82
29	386.72	389.84	390.32	390.29	---	390.31	389.58	388.88	388.19	387.18	386.53	386.80
30	386.70	389.82	390.22	390.27	---	390.25	389.55	388.86	388.19	387.14	386.56	386.78
31	386.67	---	390.18	390.20	---	390.20	---	388.84	---	387.10	386.64	---
MEAN	386.83	388.56	389.86	390.15	390.25	390.26	389.90	389.19	---	---	386.71	386.76
MAX	387.00	389.87	390.91	390.54	391.68	390.99	390.18	389.53	---	---	387.06	387.00
MIN	386.67	386.68	389.61	390.01	390.03	390.07	389.55	388.84	---	---	386.52	386.54
CAL YR 2000	MAX unknown MIN unknown											
WTR YR 2001	MAX 391.68 MIN 386.52											

The graph displays the elevation of a specific location over the 2000-2001 water year. The y-axis represents elevation in feet, ranging from 386 to 392. The x-axis represents the water year, with months labeled from October (O) to September (S). The data shows a significant rise in elevation starting in late 1999, peaking in early 2000 at approximately 391.7 feet. Following this peak, the elevation fluctuates, with another notable peak in late 2000. A gap in the record is indicated between June and July 2000. After the gap, the elevation continues to decline, reaching a low of about 386.5 feet in late 2001, before showing a slight recovery.

Month	Elevation (feet)
Oct 1999	387.0
Nov 1999	386.8
Dec 1999	386.7
Jan 2000	386.8
Feb 2000	386.7
Mar 2000	386.8
Apr 2000	388.5
May 2000	389.5
Jun 2000	389.8
Jul 2000	389.7
Aug 2000	389.6
Sep 2000	389.5
Oct 2000	389.7
Nov 2000	389.6
Dec 2000	389.7
Jan 2001	389.6
Feb 2001	389.5
Mar 2001	389.6
Apr 2001	389.5
May 2001	389.4
Jun 2001	389.3
Jul 2001	389.2
Aug 2001	389.1
Sep 2001	389.0
Oct 2001	388.9
Nov 2001	388.8
Dec 2001	388.7
Jan 2002	388.6
Feb 2002	388.5
Mar 2002	388.4
Apr 2002	388.3
May 2002	388.2
Jun 2002	388.1
Jul 2002	388.0
Aug 2002	387.9
Sep 2002	387.8
Oct 2002	387.7
Nov 2002	387.6
Dec 2002	387.5
Jan 2003	387.4
Feb 2003	387.3
Mar 2003	387.2
Apr 2003	387.1
May 2003	387.0
Jun 2003	386.9
Jul 2003	386.8
Aug 2003	386.7
Sep 2003	386.6
Oct 2003	386.5
Nov 2003	386.6
Dec 2003	386.7
Jan 2004	386.8
Feb 2004	386.9
Mar 2004	387.0
Apr 2004	387.1
May 2004	387.2
Jun 2004	387.3
Jul 2004	387.4
Aug 2004	387.5
Sep 2004	387.6
Oct 2004	387.7
Nov 2004	387.8
Dec 2004	387.9
Jan 2005	388.0
Feb 2005	388.1
Mar 2005	388.2
Apr 2005	388.3
May 2005	388.4
Jun 2005	388.5
Jul 2005	388.6
Aug 2005	388.7
Sep 2005	388.8
Oct 2005	388.9
Nov 2005	389.0
Dec 2005	389.1
Jan 2006	389.2
Feb 2006	389.3
Mar 2006	389.4
Apr 2006	389.5
May 2006	389.6
Jun 2006	389.7
Jul 2006	389.8
Aug 2006	389.9
Sep 2006	390.0
Oct 2006	390.1
Nov 2006	390.2
Dec 2006	390.3
Jan 2007	390.4
Feb 2007	390.5
Mar 2007	390.6
Apr 2007	390.7
May 2007	390.8
Jun 2007	390.9
Jul 2007	391.0
Aug 2007	391.1
Sep 2007	391.2
Oct 2007	391.3
Nov 2007	391.4
Dec 2007	391.5
Jan 2008	391.6
Feb 2008	391.7
Mar 2008	391.8
Apr 2008	391.9
May 2008	392.0
Jun 2008	392.1
Jul 2008	392.2
Aug 2008	392.3
Sep 2008	392.4
Oct 2008	392.5
Nov 2008	392.6
Dec 2008	392.7
Jan 2009	392.8
Feb 2009	392.9
Mar 2009	393.0
Apr 2009	393.1
May 2009	393.2
Jun 2009	393.3
Jul 2009	393.4
Aug 2009	393.5
Sep 2009	393.6
Oct 2009	393.7
Nov 2009	393.8
Dec 2009	393.9
Jan 2010	394.0
Feb 2010	394.1
Mar 2010	394.2
Apr 2010	394.3
May 2010	394.4
Jun 2010	394.5
Jul 2010	394.6
Aug 2010	394.7
Sep 2010	394.8
Oct 2010	394.9
Nov 2010	395.0
Dec 2010	395.1
Jan 2011	395.2
Feb 2011	395.3
Mar 2011	395.4
Apr 2011	395.5
May 2011	395.6
Jun 2011	395.7
Jul 2011	395.8
Aug 2011	395.9
Sep 2011	396.0
Oct 2011	396.1
Nov 2011	

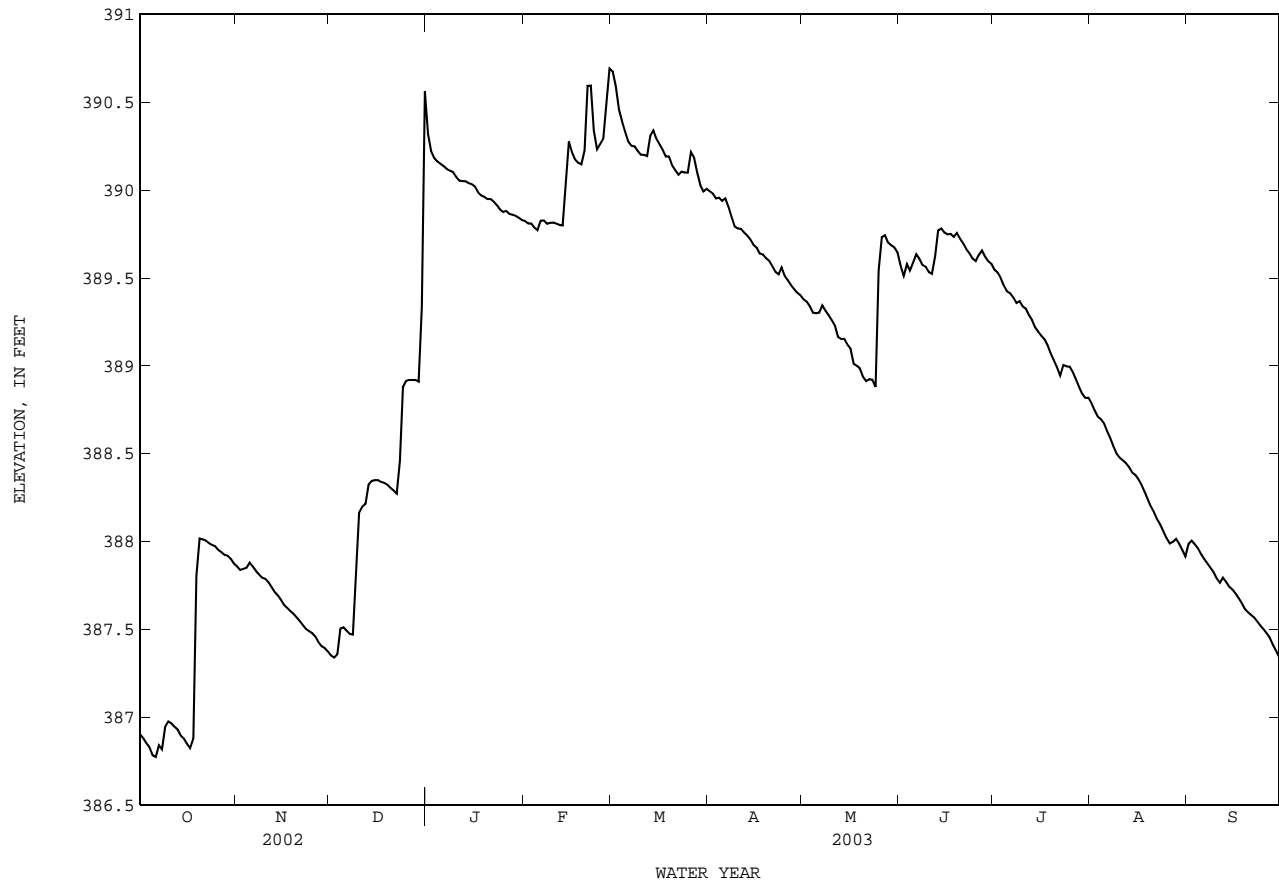
ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	386.74	389.13	390.19	390.00	389.99	389.97	390.30	389.96	389.92	389.20	388.46	387.65
2	386.71	389.11	390.17	389.99	389.97	389.98	390.23	389.93	389.89	389.21	388.43	387.62
3	386.69	389.10	390.16	389.98	389.97	389.94	390.17	390.02	389.86	389.22	388.39	387.59
4	386.66	389.09	390.15	389.97	389.96	389.91	390.13	390.09	389.82	389.20	388.35	387.56
5	386.63	389.08	390.14	389.97	390.12	389.89	390.12	390.21	389.79	389.18	388.32	387.54
6	386.59	389.07	390.14	389.96	390.39	389.87	390.11	390.22	389.77	389.14	388.28	387.52
7	386.56	389.06	390.16	389.94	390.33	389.86	390.11	390.17	389.74	389.11	388.24	387.49
8	386.53	389.04	390.14	389.92	390.25	389.85	390.39	390.14	389.71	389.09	388.21	387.46
9	386.50	389.04	390.11	389.91	390.21	389.84	390.28	390.12	389.70	389.06	388.17	387.44
10	386.48	389.03	390.09	389.91	390.17	389.82	390.22	390.91	389.71	389.03	388.13	387.42
11	386.54	389.01	390.10	389.89	390.14	389.81	390.18	390.42	389.68	388.99	388.11	387.39
12	386.55	389.25	390.19	389.88	390.12	389.81	390.15	390.24	389.65	388.96	388.08	387.36
13	389.18	389.53	390.22	389.86	390.10	389.80	390.16	390.54	389.62	388.94	388.04	387.34
14	389.50	389.53	390.26	389.85	390.09	389.78	390.21	390.30	389.58	388.91	388.03	387.31
15	389.50	389.53	390.45	389.83	390.08	389.77	390.18	390.20	389.54	388.89	388.02	387.28
16	389.46	389.52	391.62	389.81	390.07	389.75	390.16	390.16	389.54	388.96	387.99	387.26
17	389.43	389.51	390.70	389.81	390.06	389.74	390.25	390.30	389.50	389.00	387.96	387.23
18	389.40	389.49	390.32	389.80	390.04	389.77	390.22	390.31	389.46	388.97	387.92	387.19
19	389.38	389.63	390.23	389.80	390.17	389.85	390.17	390.21	389.44	388.95	387.89	387.21
20	389.37	389.73	390.18	389.79	390.25	390.69	390.16	390.18	389.41	388.92	387.85	387.22
21	389.36	389.72	390.16	389.78	390.20	390.38	390.14	390.15	389.38	388.89	387.81	387.19
22	389.34	389.71	390.15	389.78	390.18	390.23	390.12	390.13	389.34	388.85	387.78	387.17
23	389.33	389.71	390.14	389.80	390.16	390.19	390.09	390.11	389.31	388.82	387.74	387.13
24	389.31	389.71	390.12	389.84	390.14	390.16	390.08	390.08	389.29	388.78	387.70	387.10
25	389.28	389.70	390.10	389.87	390.13	390.16	390.04	390.06	389.25	388.75	387.67	387.06
26	389.25	389.68	390.09	389.86	390.08	390.12	390.05	390.04	389.23	388.70	387.64	387.03
27	389.23	389.67	390.07	389.85	390.03	390.11	390.04	390.01	389.21	388.66	387.72	387.00
28	389.21	390.07	390.06	389.84	389.99	390.10	390.03	389.98	389.20	388.61	387.76	386.98
29	389.18	390.29	390.05	389.84	---	390.10	390.01	389.98	389.19	388.57	387.73	386.95
30	389.15	390.23	390.03	389.83	---	390.59	389.99	389.97	389.19	388.53	387.70	386.93
31	389.14	---	390.02	389.91	---	390.53	---	389.95	---	388.50	387.68	---
MEAN	388.26	389.47	390.22	389.87	390.12	390.01	390.15	390.16	389.53	388.92	387.99	387.29
MAX	389.50	390.29	391.62	390.00	390.39	390.69	390.39	390.91	389.92	389.22	388.46	387.65
MIN	386.48	389.01	390.02	389.78	389.96	389.74	389.99	389.93	389.19	388.50	387.64	386.93
CAL YR 2001	MAX 391.68		MIN 386.48									
WTR YR 2002	MAX 391.62		MIN 386.48									



DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	386.90	387.86	387.35	390.32	389.82	390.68	389.99	389.38	389.57	389.55	388.79	387.99
2	386.88	387.84	387.34	390.22	389.81	390.59	389.98	389.37	389.51	389.53	388.75	388.01
3	386.85	387.84	387.36	390.18	389.81	390.46	389.95	389.34	389.58	389.50	388.71	387.99
4	386.83	387.85	387.50	390.16	389.79	390.39	389.96	389.30	389.54	389.46	388.70	387.96
5	386.78	387.88	387.51	390.15	389.77	390.33	389.94	389.30	389.59	389.42	388.67	387.93
6	386.77	387.86	387.49	390.14	389.83	390.28	389.95	389.30	389.63	389.41	388.63	387.90
7	386.84	387.83	387.47	390.12	389.83	390.25	389.91	389.34	389.61	389.39	388.59	387.88
8	386.82	387.81	387.47	390.11	389.81	390.25	389.85	389.31	389.57	389.36	388.54	387.85
9	386.95	387.79	387.87	390.10	389.81	390.22	389.79	389.29	389.56	389.37	388.50	387.83
10	386.98	387.79	388.16	390.07	389.82	390.20	389.78	389.26	389.53	389.34	388.48	387.79
11	386.97	387.77	388.20	390.05	389.81	390.20	389.78	389.23	389.52	389.33	388.46	387.77
12	386.95	387.74	388.21	390.05	389.80	390.19	389.76	389.17	389.62	389.29	388.45	387.80
13	386.93	387.71	388.32	390.05	389.80	390.31	389.74	389.15	389.77	389.26	388.42	387.77
14	386.90	387.69	388.35	390.04	390.01	390.34	389.72	389.15	389.78	389.22	388.39	387.74
15	386.88	387.67	388.35	390.03	390.28	390.29	389.69	389.12	389.76	389.19	388.38	387.73
16	386.85	387.64	388.35	390.02	390.22	390.26	389.67	389.10	389.75	389.17	388.35	387.71
17	386.82	387.62	388.34	389.99	390.17	390.23	389.64	389.01	389.75	389.15	388.32	387.68
18	386.88	387.60	388.33	389.97	390.16	390.19	389.63	389.00	389.73	389.12	388.28	387.65
19	387.80	387.59	388.32	389.96	390.15	390.19	389.61	388.99	389.76	389.07	388.24	387.62
20	388.02	387.57	388.31	389.95	390.23	390.14	389.60	388.94	389.72	389.03	388.20	387.60
21	388.01	387.55	388.29	389.95	390.59	390.11	389.57	388.91	389.70	388.99	388.17	387.58
22	388.01	387.53	388.27	389.93	390.60	390.09	389.54	388.92	389.66	388.94	388.13	387.57
23	387.99	387.50	388.46	389.92	390.34	390.11	389.52	388.92	389.64	389.00	388.10	387.55
24	387.98	387.49	388.88	389.89	390.23	390.10	389.56	388.88	389.61	389.00	388.06	387.52
25	387.97	387.48	388.91	389.88	390.26	390.10	389.51	389.54	389.60	389.00	388.02	387.50
26	387.95	387.46	388.92	389.88	390.29	390.22	389.49	389.73	389.63	388.97	387.99	387.48
27	387.94	387.43	388.92	389.87	390.52	390.19	389.46	389.74	389.66	388.92	388.00	387.45
28	387.92	387.40	388.92	389.86	390.69	390.10	389.44	389.70	389.62	388.88	388.02	387.41
29	387.92	387.39	388.91	389.85	---	390.03	389.42	389.69	389.60	388.84	387.99	387.38
30	387.90	387.37	389.34	389.84	---	389.99	389.40	389.67	389.58	388.82	387.95	387.34
31	387.87	---	390.56	389.83	---	390.01	---	389.65	---	388.82	387.92	---
MEAN	387.32	387.65	388.29	390.01	390.08	390.23	389.69	389.27	389.64	389.17	388.33	387.70
MAX	388.02	387.88	390.56	390.32	390.69	390.68	389.99	389.74	389.78	389.55	388.79	388.01
MIN	386.77	387.37	387.34	389.83	389.77	389.99	389.40	388.88	389.51	388.82	387.92	387.34
CAL YR 2002	MAX 390.91		MIN 386.77									
WTR YR 2003	MAX 390.69		MIN 386.77									

08017600 Lake Edgewood near Edgewood, TX--Continued



SABINE RIVER BASIN

08018500 Sabine River near Mineola, TX

LOCATION.--Lat 32°36'49", long 95°29'08", Wood County, Hydrologic Unit 12010001, on left bank at downstream side of highway embankment 3 ft downstream from left end of bridge on U.S. Highway 69, 3.5 mi south of Mineola, 4.5 mi upstream from Missouri Pacific Railway Lines bridge, 16.2 mi upstream from Lake Fork Creek, and at mile 461.1.

DRAINAGE AREA.--1,357 mi².

PERIOD OF RECORD.--June 1939 to Sept. 1959, Oct. 1967 to current year. Gage-height records collected at this site since July 1946 are contained in reports published by the National Weather Service.

Water-quality records.--Chemical data: Oct. 1967 to Sept. 1996. Biochemical data: Oct. 1973 to Sept. 1996.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 304.16 ft above NGVD of 1929. May 12, 1939 to Dec. 11, 1955, at site 55 ft upstream from downstream side of bridge at same datum. Dec. 12, 1955 to Dec. 12, 1959, at downstream side of bridge at same datum. Oct. 1, 1967 to Sept. 12, 1968, nonrecording gage at downstream side of bridge at same datum. Sept. 13, 1968 to Oct. 23, 1974, water-stage recorder at downstream side of bridge at same datum. Oct. 24, 1974 to Oct. 16, 1975, at site on right bank 75 ft downstream from bridge at same datum. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records fair. Since Oct. 1960, at least 10% of contributing drainage area has been regulated. Flow may also be slightly affected at times by discharge from floodwater-retarding structures controlling runoff from a 9.70 mi² area in the Mill Creek drainage basin.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--20 years (water years 1940-59) prior to regulation by Lake Tawakoni, 1,054 ft³/s (763,600 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1940-59).--Maximum discharge 76,000 ft³/s Apr. 1, 1945 (gage height, 24.00 ft); maximum gage height, 24.37 ft June 8, 1943; no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	1770	46	1790	155	3430	596	100	183	108	16	20
2	16	1560	28	2290	96	3160	351	91	124	68	15	19
3	14	1380	57	2940	69	2990	246	80	100	53	26	17
4	14	1170	117	3660	61	2790	215	76	79	48	39	22
5	14	979	116	3620	124	2540	208	78	64	37	25	25
6	14	846	364	2840	274	2340	214	67	64	36	17	21
7	20	763	427	2090	223	2120	229	354	54	39	14	17
8	21	704	243	1550	321	1900	291	586	60	66	12	14
9	27	546	140	1250	460	1710	563	245	102	47	11	12
10	36	397	243	984	293	1520	879	144	87	30	10	11
11	82	318	769	838	194	1370	1030	89	86	24	11	14
12	141	303	990	829	181	1240	860	59	65	20	12	79
13	96	308	759	669	158	1130	627	99	123	18	13	52
14	57	331	550	521	155	1150	513	102	459	17	14	31
15	39	237	643	472	716	1320	448	54	595	18	16	24
16	30	172	523	429	1230	1370	390	30	464	17	14	26
17	27	383	312	414	1350	1280	328	27	1000	15	13	24
18	24	409	217	673	1330	1130	328	23	1240	14	12	19
19	66	207	174	680	894	1050	341	151	932	13	12	15
20	541	80	149	380	372	1060	270	118	492	13	11	14
21	1090	57	216	222	689	1010	244	58	284	13	11	13
22	1390	63	231	166	1860	965	335	94	178	14	11	14
23	1570	46	176	223	2590	888	276	173	125	24	10	13
24	1710	116	854	377	3440	741	269	99	95	30	10	13
25	1840	95	1420	438	4290	635	252	216	73	24	9.9	12
26	2000	48	1660	229	4630	579	264	1160	55	20	11	12
27	2140	75	1800	110	4320	834	354	1490	49	20	13	11
28	2220	203	1590	91	3820	1140	247	1700	388	25	20	11
29	2230	211	1030	143	---	1060	142	1650	466	21	14	11
30	2150	103	541	103	---	935	110	1100	214	18	13	10
31	1990	---	1170	105	---	902	---	411	---	18	14	---
TOTAL	21623	13880	17555	31126	34295	46289	11420	10724	8300	928	449.9	596
MEAN	698	463	566	1004	1225	1493	381	346	277	29.9	14.5	19.9
MAX	2230	1770	1800	3660	4630	3430	1030	1700	1240	108	39	79
MIN	14	46	28	91	61	579	110	23	49	13	9.9	10
AC-FT	42890	27530	34820	61740	68020	91810	22650	21270	16460	1840	892	1180

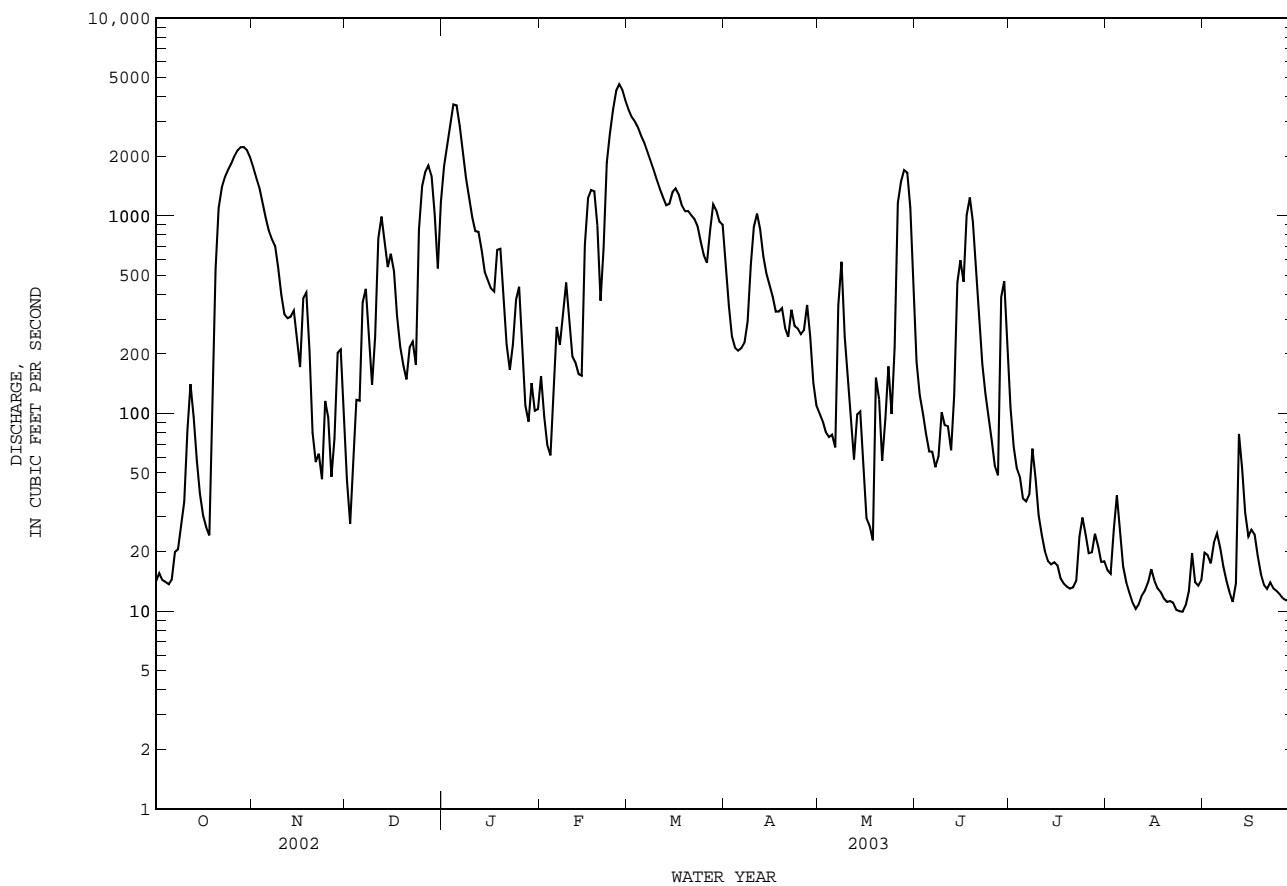
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2003z, BY WATER YEAR (WY)

	MEAN	299	758	1256	975	1415	1736	1350	1863	991	245	55.0	62.5
MAX	2158	5296	5873	4097	5179	6885	4086	6934	4083	1626	419	616	
(WY)	1974	1975	1992	1998	2001	2001	1990	1968	1973	1992	1979	1974	
MIN	3.42	9.88	10.9	26.2	20.3	28.0	31.8	29.6	5.72	4.87	0.071	0.048	
(WY)	1988	1990	1990	2000	1996	1996	1971	1988	1971	1969	1987	1987	

08018500 Sabine River near Mineola, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1967 - 2003z	
ANNUAL TOTAL	308985.9		197185.9		915	
ANNUAL MEAN	847		540		1904	
HIGHEST ANNUAL MEAN					29.8	
LOWEST ANNUAL MEAN					36200	
HIGHEST DAILY MEAN	4740	Mar 22	4630	Feb 26	Dec 11	1971
LOWEST DAILY MEAN	9.9	Aug 4	9.9	Aug 25	Aug 13	1970
ANNUAL SEVEN-DAY MINIMUM	12	Aug 1	11	Aug 20	Sep 15	1971
MAXIMUM PEAK FLOW			4670	Feb 26	37700	Dec 11 1971
MAXIMUM PEAK STAGE			17.19	Feb 26	21.53	Dec 11 1971
ANNUAL RUNOFF (AC-FT)	612900		391100		662600	
10 PERCENT EXCEEDS	2350		1610		2810	
50 PERCENT EXCEEDS	351		176		138	
90 PERCENT EXCEEDS	16		14		8.8	

z Period of regulated streamflow.



SABINE RIVER BASIN

08018800 Lake Fork Reservoir near Quitman, TX

LOCATION.--Lat 32°48'48", long 95°31'40", Wood County, Hydrologic Unit 12010003, in room at left-end of gated concrete spillway structure of Lake Fork Dam on Lake Fork Creek, 2,000 ft upstream from bridge on State Highway 182, 2.3 mi upstream from Alum Branch, and 4.4 mi west-northwest of the county courthouse in Quitman.

DRAINAGE AREA.--490 mi².

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

Water-quality records.--Chemical data: Oct. 1980 to Sept. 1984.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--No estimated daily contents. Records good. The lake is formed by a rolled earthfill dam 12,660 ft long, including a 260-foot gated concrete spillway. The outlet works consist of two 5- by 8-foot low-flow sluice gates, five 40- by 20-foot tainter gates, and two 5- by 6-foot sluice gates that open into a wet well where there are two 36-inch and one 10-inch valve-controlled and metered-outlet pipes. Deliberate impoundment began June 29, 1979, and closure of the dam was completed in Jan. 1980. The lake was built for water conservation and is owned by the Sabine River Authority. No known diversions were made from the lake this year. Flow is affected at times by discharge from the flood-detention pools of 21 floodwater-retarding structures with a combined detention capacity of 20,270 acre-ft. These structures control runoff from 60 mi² above the lake. Conservation pool storage is 675,820 acre-ft. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	419.5
Top of tainter gates.....	405.0
Crest of gated spillway.....	385.0
Invert of upper sluice gate.....	383.0
Invert of lower sluice gate.....	360.5
Invert of sluice gate in two center pieces.....	360.0

COOPERATION.--Capacity table 1-A was provided by URS/Forest and Cotton, Inc., Consulting Engineers for the Sabine River Authority. Observed elevations for the period Oct. 31, 1979, to Jan. 31, 1980, were provided by the Sabine River Authority. Capacity table, Table 2-C, provided by the Sabine River Authority was put into effect Oct. 1, 1996. A new capacity table, provided by the Sabine River Authority was put in effect Oct. 1, 2002.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 737,400 acre-ft, Feb. 16, 2001, elevation, 405.15 ft; minimum contents after initial filling, 81,550 acre-ft, Sept. 27, 1980, elevation, 366.86 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 683,100 acre-ft, Feb. 23, elevation, 403.26 ft; minimum contents, 622,600 acre-ft, Oct. 18, elevation, 401.02 ft.

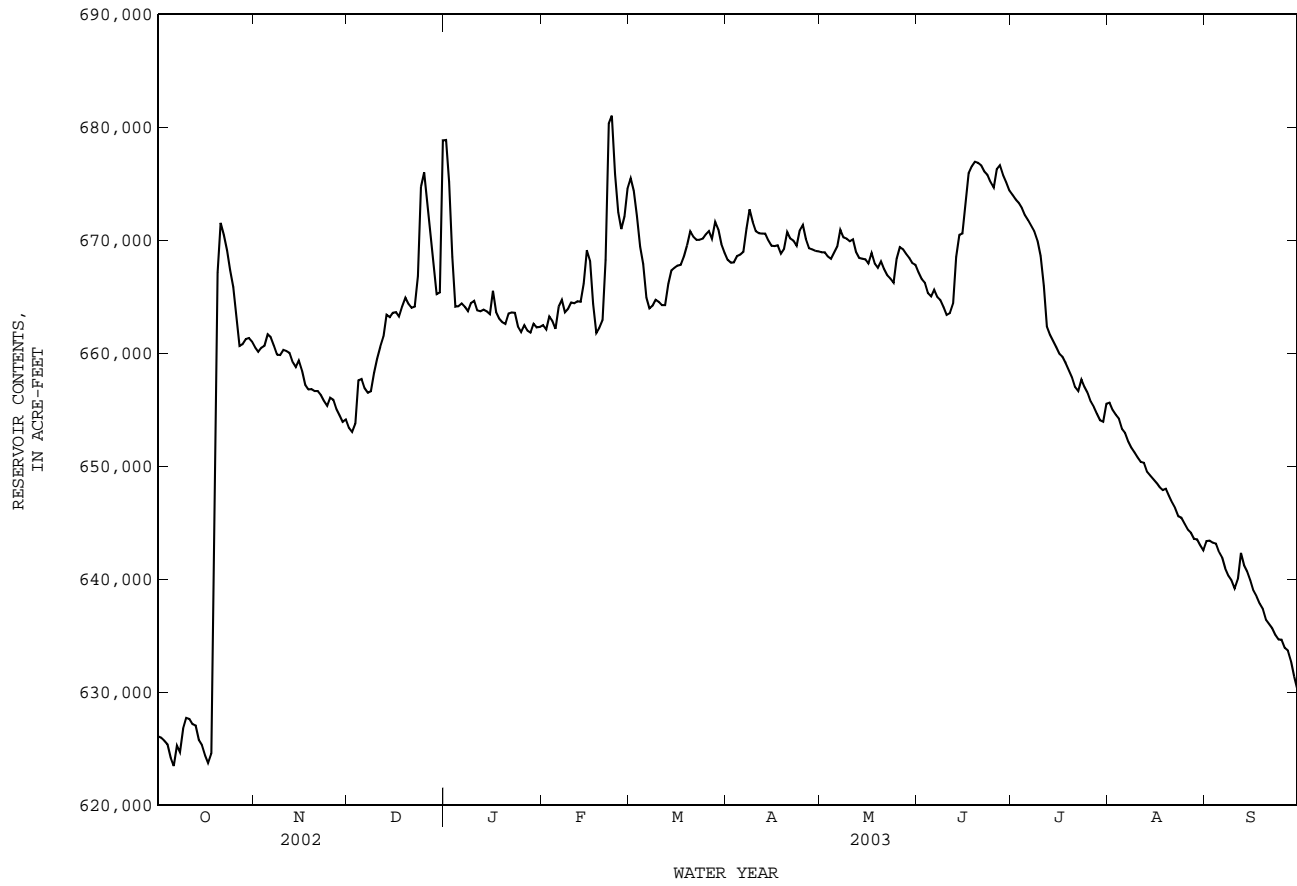
RESERVOIR STORAGE, IN (ACRE-FEET), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	626100	660500	653400	678900	662500	675500	668300	668900	667200	674000	655600	643400
2	626000	660100	653000	675200	662100	674400	668000	668900	666600	673600	655000	643400
3	625700	660500	653800	668500	663300	672100	668100	668600	666200	673300	654600	643200
4	625400	660700	657600	664100	662900	669400	668600	668400	665300	672900	654200	643100
5	624200	661700	657700	664200	662200	667900	668700	668900	665000	672200	653300	642400
6	623500	661400	656900	664400	664100	664900	669000	669500	665600	671800	653000	641900
7	625300	660700	656500	664100	664700	664000	671100	670900	665000	671300	652200	641000
8	624700	659900	656600	663700	663600	664200	672700	670300	664700	670800	651700	640300
9	626800	659900	658300	664500	663900	664700	671600	670200	664100	670000	651200	639900
10	627700	660300	659500	664600	664500	664600	670800	669900	663400	668600	650800	639200
11	627600	660200	660600	663800	664400	664300	670600	670100	663600	666000	650400	640000
12	627200	660000	661500	663700	664600	664300	670600	669000	664400	662400	650300	642300
13	627000	659200	663400	663900	664600	666200	670600	668400	668500	661600	649500	641200
14	625800	658800	663200	663700	666200	667300	670000	668400	670500	661100	649200	640700
15	625300	659400	663600	663500	669100	667600	669500	668300	670600	660500	648900	639900
16	624400	658500	663600	665500	668200	667800	669500	668000	673100	660000	648500	639000
17	623700	657200	663200	663600	664400	667800	669600	668900	675900	659700	648100	638500
18	624600	656800	664200	663100	661800	668600	668800	667900	676600	659100	647900	637800
19	645200	656800	664900	662700	662300	669500	669200	667600	677000	658500	648000	637400
20	667100	656700	664400	662600	662900	670800	670700	668100	676900	657900	647400	636400
21	671600	656700	664000	663500	668300	670300	670200	667500	676600	657000	646800	636000
22	670500	656300	664100	663600	680400	670000	670000	666900	676100	656700	646300	635600
23	669100	655800	666800	663600	681000	670000	669500	666600	675800	657700	645600	635100
24	667400	655400	674700	662300	675900	670200	670900	666300	675200	657000	645500	634700
25	665900	656100	676000	661900	672500	670500	671400	668400	674700	656500	644900	634600
26	663200	655900	673700	662500	671000	670800	670100	669400	676300	655700	644400	633900
27	660700	655100	671000	662000	672100	670100	669300	669200	676700	655200	644100	633700
28	660800	654500	668100	661800	674600	671600	669200	668800	675800	654700	643600	632700
29	661300	653900	665200	662600	---	671000	669100	668500	675200	654100	643500	631400
30	661400	654100	665400	662300	---	669700	669000	668000	674400	653900	643000	630300
31	661000	---	678800	662300	---	668900	---	667800	---	655500	642500	---
MEAN	641500	658100	663300	664400	667100	668700	669800	668600	670900	662600	648700	638300
MAX	671600	661700	678800	678900	681000	675500	672700	670900	677000	674000	655600	643400
MIN	623500	653900	653000	661800	661800	664000	668000	666300	663400	653900	642500	630300
(+)	402.46	402.21	403.11	402.51	402.95	402.75	402.75	402.71	402.95	402.26	401.78	401.31
(@)	+34200	-6900	+24700	-16500	+12300	-5700	+100	-1200	+6600	-18900	-13000	-12200
CAL YR 2002	MAX 695900	MIN 623500	(@) +20300									
WTR YR 2003	MAX 681000	MIN 623500	(@) +3500									

(+) Elevation, in feet, at end of month.

(@) Change in contents, in acre-feet.

08018800 Lake Fork Reservoir near Quitman, TX--Continued



08019000 Lake Fork Creek near Quitman, TX

LOCATION.--Lat 32°45'47", long 95°27'46", Wood County, Hydrologic Unit 12010003, at downstream side of highway embankment near left end of bridge on State Highway 37, 0.3 mi downstream from Dry Creek, 2.4 mi south of Quitman, and 23.4 mi upstream from mouth.

DRAINAGE AREA.--585 mi².

PERIOD OF RECORD.--June 1924 to Apr. 1926, Feb. 1939 to current year. Discharge from some high-water periods in 1925-26 published in WSP 1342. Monthly discharge only for some periods, published in WSP 1312. Prior to Oct. 1961, published as "Lake Fork Sabine River near Quitman".

Water-quality records.--Chemical data: Dec. 1961 to Sept. 1989. Specific conductance: Nov. 1967 to Sept. 1989. Water temperature: Dec. 1967 to Sept. 1989.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 317.42 ft above NGVD of 1929. From June 27, 1924, to Apr. 30, 1926, a nonrecording gage was located at site 1,000 ft downstream at same datum. Prior to Sept. 5, 1978, nonrecording gage at present site and datum. Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Since water year 1980, at least 10% of contributing drainage area has been regulated. Construction of Lake Fork Reservoir located about 5 mi upstream from this station, began in 1975. Deliberate impoundment began June 29, 1979, and the dam was completed in Jan. 1980. Lake Fork Reservoir controls runoff from 490 mi² above this station. The city of Quitman discharges wastewater effluent into a tributary above this station.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--41 years (water years 1925, 1940-79), prior to regulation by Lake Fork Reservoir, 432 ft³/s (313,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1925, 1940-79).--Maximum discharge, 75,600 ft³/s, Mar. 30, 1945, gage height, 29.85 ft, from floodmark, from rating curve extended above 49,000 ft³/s; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1895 reached a stage of about 25.9 ft, from information by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	141	11	3040	25	1800	20	6.5	90	75	65	67
2	47	54	11	3780	24	1670	20	6.3	91	74	65	66
3	47	23	14	3660	24	1580	18	5.7	91	75	65	67
4	68	20	31	3410	25	1550	18	5.6	90	70	65	64
5	75	37	31	1520	22	1530	18	5.9	91	68	65	63
6	77	33	21	535	43	1520	20	11	94	68	64	63
7	80	24	16	152	77	1250	19	549	93	67	65	63
8	79	18	13	76	51	429	18	388	92	66	65	65
9	84	16	20	63	45	95	17	72	92	64	65	66
10	82	16	51	55	61	61	14	33	92	63	65	64
11	79	17	56	47	56	53	13	22	92	62	67	68
12	78	15	e51	42	48.0	48	12	18	97	62	71	127
13	78	14	e103	43	41	73	11	16	145	62	68	138
14	79	21	90	43	e324	144	10	14	270	63	67	75
15	81	20	71	42	1180	96	9.8	13	154	62	68	64
16	79	15	62	39	1630	71	8.7	13	175	61	65	65
17	80	15	54	44	1680	58	8.3	14	498	61	65	59
18	84	14	40	33	1610	73	8.2	16	510	60	64	58
19	276	14	36	29	1030	265	8.6	14	401	60	64	58
20	424	12	33	29	291	205	12	15	253	60	64	57
21	563	12	32	29	377	112	9.9	14	180	60	64	58
22	1130	12	27	29	1330	76	8.4	13	132	60	64	59
23	1500	11	87	27	4000	61	7.7	11	110	83	64	62
24	1760	11	414	25	4390	51	9.1	11	96	152	63	57
25	1840	12	493	22	4620	43	9.1	17	86	83	63	59
26	1850	12	1120	23	3410	38	7.6	22	84	72	64	62
27	1820	12	1530	25	2240	35	9.4	17	88	69	63	57
28	1340	12	1700	26	2000	31	7.5	16	85	68	63	57
29	468	12	1720	26	---	27	7.2	14	77	67	64	56
30	194	12	1740	27	---	23	6.4	14	74	66	62	56
31	155	---	1570	26	---	21	---	69	---	66	63	---
TOTAL	14645	657	11248	16967	30654.0	13089	365.9	1456.0	4523	2149	2009	2000
MEAN	472	21.9	363	547	1095	422	12.2	47.0	151	69.3	64.8	66.7
MAX	1850	141	1740	3780	4620	1800	20	549	510	152	71	138
MIN	47	11	11	22	22	21	6.4	5.6	74	60	62	56
AC-FT	29050	1300	22310	33650	60800	25960	726	2890	8970	4260	3980	3970

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2003z, BY WATER YEAR (WY)

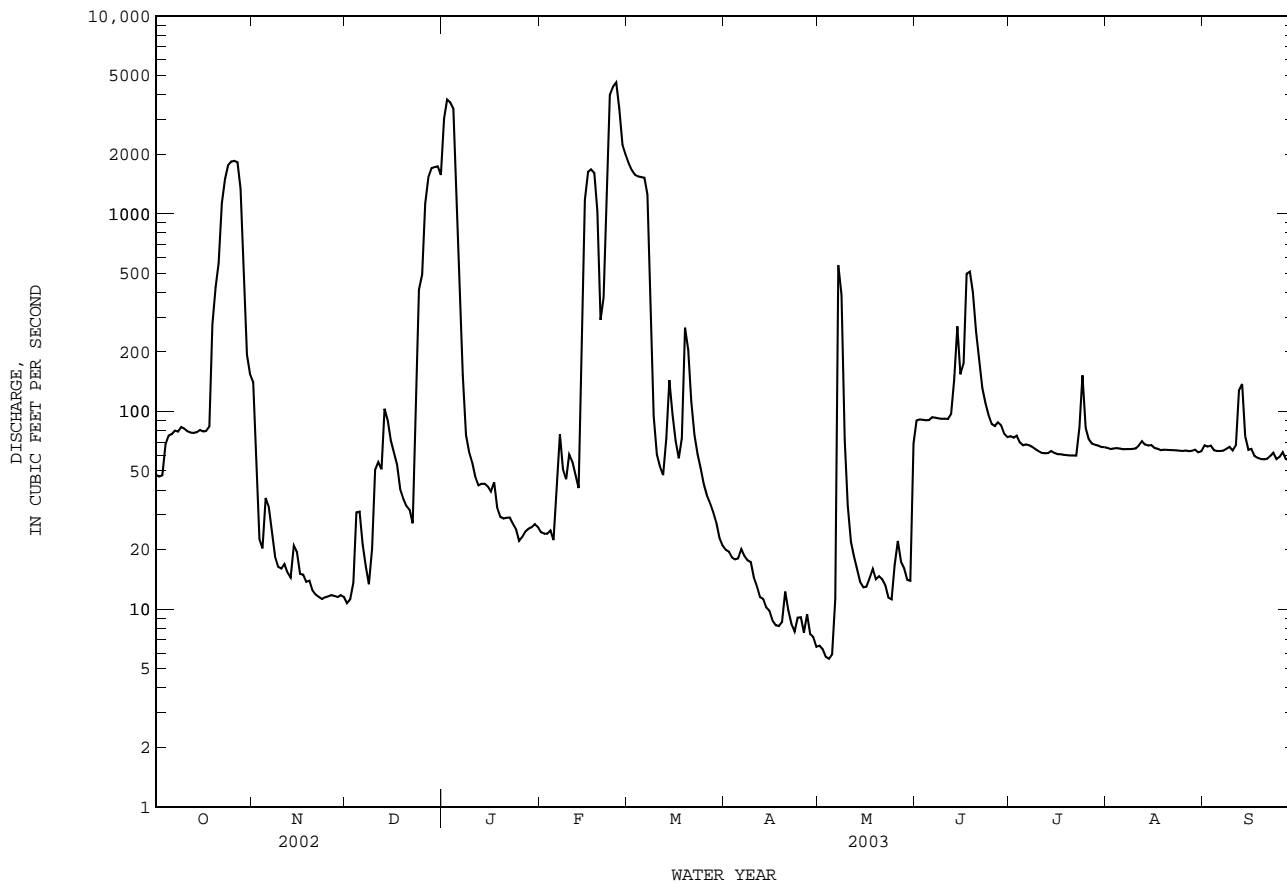
MEAN	151	313	772	509	937	923	521	600	388	235	87.3	43.3
MAX	1068	1552	3668	1786	3198	3811	1991	2807	2771	1795	940	167
(WY)	1999	1989	2002	1998	2001	2001	1990	1990	2000	1994	1992	1992
MIN	1.23	2.92	9.31	4.43	14.1	25.3	4.29	9.51	8.51	1.43	0.13	0.76
(WY)	1983	1981	1982	1981	1981	1996	1981	1998	1984	1985	1980	1982

08019000 Lake Fork Creek near Quitman, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1980 - 2003z	
ANNUAL TOTAL	167475		99762.9			
ANNUAL MEAN	459		273		455	
HIGHEST ANNUAL MEAN					1006 1992	
LOWEST ANNUAL MEAN					43.2 1984	
HIGHEST DAILY MEAN	10200	Mar 21	4620	Feb 25	26300	Dec 17 2001
LOWEST DAILY MEAN	11	Jun 5	5.6	May 4	0.00	Aug 23 1980
ANNUAL SEVEN-DAY MINIMUM	12	Nov 20	6.2	Apr 29	0.00	Aug 23 1980
MAXIMUM PEAK FLOW			4710	Feb 25	27300	Dec 17 2001
MAXIMUM PEAK STAGE			16.86	Feb 25	22.35	Dec 17 2001
ANNUAL RUNOFF (AC-FT)	332200		197900		329300	
10 PERCENT EXCEEDS	1760		1070		1280	
50 PERCENT EXCEEDS	50		63		50	
90 PERCENT EXCEEDS	18		12		6.3	

e Estimated

z Period of regulated streamflow.



SABINE RIVER MAIN STEM

08019200 Sabine River near Hawkins, TX

LOCATION.--Lat 32°33'35", long 95°12'23", Wood County, Hydrologic Unit 12010002, on downstream side of Farm Road 14 bridge, 2.2 mi south of Hawkins.

DRAINAGE AREA.--2,259 mi².

PERIOD OF RECORD.--Sept. 1997 to current year.

GAGE.--Water-stage recorder. Datum of gage is 266.59 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Since installation of gage in Oct. 1997, at least 10% of contributing drainage area has been regulated. There are many diversions above station for oil field operations and municipal supply.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	123	2700	240	2590	271	7970	940	229	539	267	81	73
2	87	2300	179	2840	294	7790	762	211	266	183	75	78
3	79	1950	147	3070	281	7180	549	196	216	143	73	79
4	78	1630	183	3390	245	6460	454	182	187	123	71	76
5	77	1360	323	3850	238	5950	438	169	170	115	78	72
6	83	1100	319	4480	265	5500	454	170	158	108	83	70
7	96	894	382	5030	448	5060	436	169	162	103	80	71
8	100	762	450	5130	448	4640	422	476	154	102	78	69
9	115	678	361	4570	479	4230	434	889	145	113	66	66
10	137	565	300	3420	600	3770	604	601	160	114	63	64
11	157	460	352	1960	520	3020	836	342	168	102	67	63
12	163	389	682	1070	410	2160	955	233	181	96	70	90
13	186	361	919	884	374	1640	882	174	234	92	64	161
14	181	355	859	751	415	1470	705	157	356	88	66	196
15	149	357	687	625	615	1410	596	188	657	83	67	161
16	127	321	681	564	1180	1460	535	161	832	82	67	114
17	116	264	597	520	1700	1500	485	144	832	81	68	91
18	110	350	447	500	1990	1480	436	161	1290	79	66	84
19	124	407	353	651	2200	1500	424	137	1550	76	65	77
20	199	314	310	693	2270	1430	441	181	1460	73	63	71
21	573	219	289	513	2360	1370	396	222	1070	71	61	67
22	1030	169	299	387	2870	1260	362	172	561	75	60	67
23	1350	161	341	328	3300	1160	403	149	358	99	60	67
24	1640	155	475	331	3380	1080	422	226	267	104	60	67
25	1900	166	1060	431	3680	955	436	211	218	107	59	68
26	2130	209	1470	492	4540	867	396	287	184	117	59	67
27	2320	182	1690	396	5950	835	368	876	162	100	59	66
28	2520	155	1970	308	7330	948	409	1190	149	87	60	65
29	2720	227	2200	278	---	1140	355	1400	284	82	61	62
30	2880	288	2260	294	---	1140	273	1500	404	85	64	60
31	2920	---	2330	301	---	e1030	---	1250	---	97	63	---
TOTAL	24470	19448	23155	50647	48653	87405	15608	12653	13374	3247	2077	2482
MEAN	789	648	747	1634	1738	2820	520	408	446	105	67.0	82.7
MAX	2920	2700	2330	5130	7330	7970	955	1500	1550	267	83	196
MIN	77	155	147	278	238	835	273	137	145	71	59	60
AC-FT	48540	38580	45930	100500	96500	173400	30960	25100	26530	6440	4120	4920

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2003, BY WATER YEAR (WY)

	MEAN	612	775	2937	2861	3140	4058	1630	1402	326	95.0	179
MAX	1735	2569	7342	6742	8451	12670	4585	2232	4797	1139	184	482
(WY)	1999	1999	2002	2001	2001	2001	2002	2002	2000	2000	2001	2001
MIN	88.5	113	173	149	204	266	512	115	87.0	47.9	49.5	82.7
(WY)	2000	2000	2000	2000	2000	2000	2000	1998	1998	1998	1998	2003

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

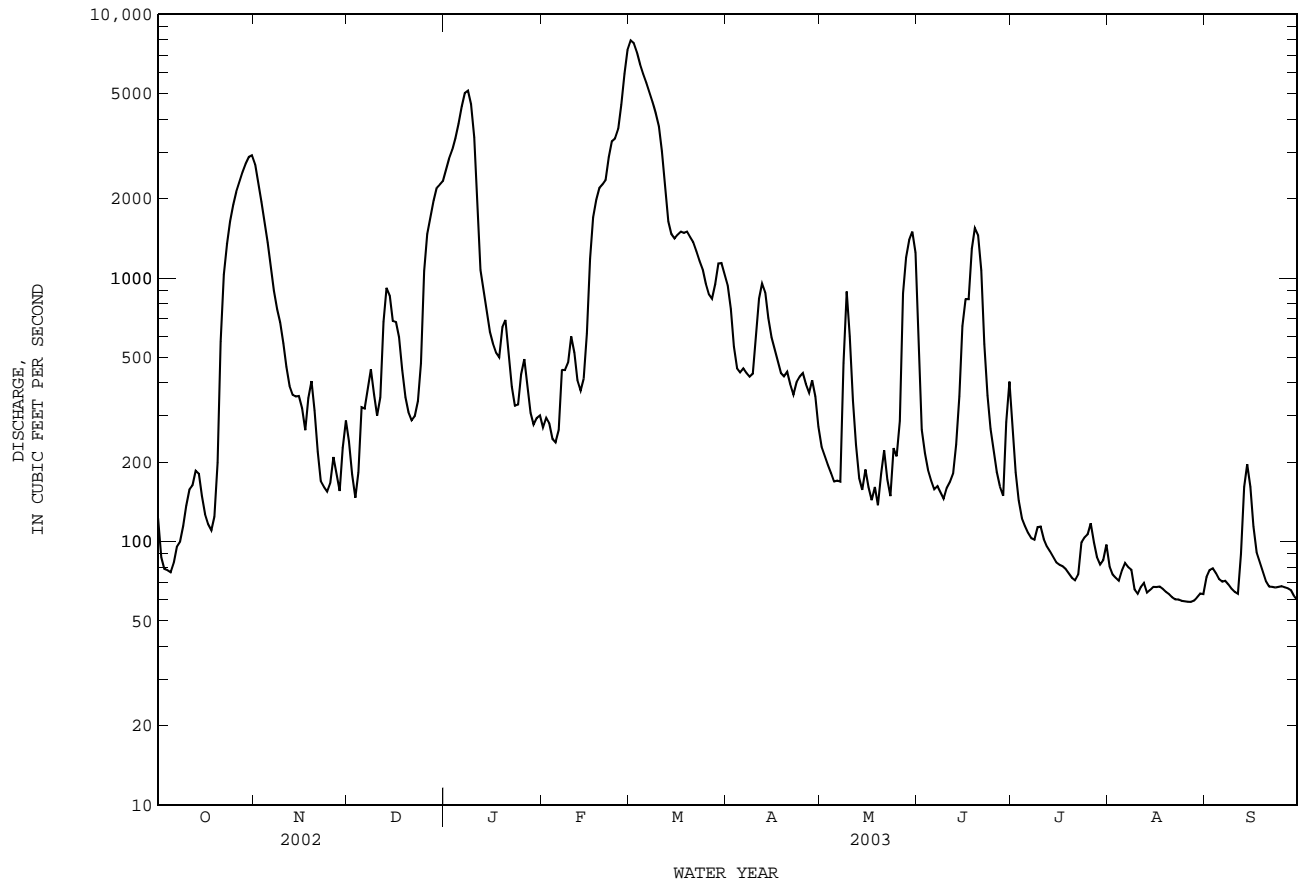
FOR 2003 WATER YEAR

WATER YEARS 1997 - 2003

ANNUAL TOTAL	513012	303219		
ANNUAL MEAN	1406	831		1571
HIGHEST ANNUAL MEAN				2828
LOWEST ANNUAL MEAN				673
HIGHEST DAILY MEAN	11600	Mar 25	7970	Mar 1
LOWEST DAILY MEAN	77	Oct 5	59	Aug 25
ANNUAL SEVEN-DAY MINIMUM	86	Oct 2	60	Aug 22
MAXIMUM PEAK FLOW			8030	Mar 1
MAXIMUM PEAK STAGE			24.99	Mar 1
ANNUAL RUNOFF (AC-FT)	1018000		601400	
10 PERCENT EXCEEDS	3750		2310	
50 PERCENT EXCEEDS	461		314	
90 PERCENT EXCEEDS	98		70	

e Estimated

08019200 Sabine River near Hawkins, TX--Continued



SABINE RIVER BASIN

08019500 Big Sandy Creek near Big Sandy, TX

LOCATION.--Lat 32°36'14", long 95°05'29", Upshur County, Hydrologic Unit 12010002, on downstream side of highway embankment near left end of bridge on State Highway 155, 0.5 mi upstream from Saint Louis Southwestern Railway Lines bridge, 1.6 mi northeast of Big Sandy, and 6.5 mi upstream from mouth.

DRAINAGE AREA.--231 mi².

PERIOD OF RECORD.--Feb. 1939 to current year.

Water-quality records.--Chemical data: Mar. 1961 to Sept. 1986. Biochemical data: Oct. 1984 to Sept. 1986.

REVISED RECORDS.--WSP 1732: 1941(M), 1945-46, 1956, drainage area. WSP 1922: 1944(M), 1945-46(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 278.38 ft above NGVD of 1929. Prior to Oct. 5, 1940, nonrecording gage, and Oct. 5, 1940, to Nov. 26, 1951, water-stage recorder at site 1.3 mi upstream at datum 3.00 ft higher. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Since water year 1963, at least 10% of contributing drainage area has been regulated.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--24 years (water years 1940-62), 200 ft³/s (145,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1939-62).--Maximum discharge, 24,000 ft³/s Mar. 31, 1945, gage height, 24.10 ft, from floodmark, from rating curve extended above 91,000 ft³/s; minimum, 5.6 ft³/s, Aug. 16, 1939.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e24	52	e65	384	73	950	80	34	36	109	34	17
2	18	47	e74	592	72	841	75	30	33	82	30	26
3	20	48	e83	766	72	722	70	28	30	61	25	25
4	21	58	e92	982	69	587	68	29	28	50	23	22
5	24	85	105	749	66	436	69	32	26	45	21	20
6	24	91	103	486	83	329	74	32	28	45	20	19
7	28	81	102	322	106	263	79	49	33	50	18	17
8	42	77	107	229	110	216	71	87	33	48	18	15
9	46	77	105	178	123	190	65	194	30	44	18	15
10	55	73	108	146	148	170	60	347	28	44	17	14
11	46	62	114	127	139	153	56	408	27	39	22	13
12	41	54	120	115	125	141	55	288	36	36	39	17
13	41	46	136	110	124	152	52	143	87	33	36	48
14	41	41	138	107	e157	166	49	86	118	29	30	50
15	37	40	126	101	e202	154	44	66	121	28	26	41
16	34	38	118	96	200	159	41	60	174	25	24	45
17	31	37	120	92	196	171	41	74	265	24	22	42
18	29	36	110	87	276	165	38	73	472	25	21	33
19	55	35	93	83	341	190	39	64	440	24	19	28
20	94	35	80	84	300	187	52	66	254	23	19	23
21	99	36	71	84	360	207	46	75	306	22	18	21
22	102	36	68	79	694	233	42	66	435	20	15	22
23	122	37	71	73	635	230	46	55	409	88	15	23
24	166	38	107	70	608	189	82	49	290	94	14	23
25	197	41	120	69	945	152	107	51	156	72	14	22
26	180	50	144	70	1090	134	100	61	105	65	14	20
27	133	49	185	72	967	123	75	59	96	66	13	20
28	97	46	240	71	905	111	58	56	85	54	15	19
29	79	e47	279	72	---	101	46	54	87	35	15	19
30	72	e56	275	74	---	93	39	49	106	31	14	18
31	59	---	323	76	---	89	---	42	---	34	13	---
TOTAL	2057	1549	3982	6646	9186	8004	1819	2807	4374	1445	642	737
MEAN	66.4	51.6	128	214	328	258	60.6	90.5	146	46.6	20.7	24.6
MAX	197	91	323	982	1090	950	107	408	472	109	39	50
MIN	18	35	65	69	66	89	38	28	26	20	13	13
AC-FT	4080	3070	7900	13180	18220	15880	3610	5570	8680	2870	1270	1460

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2003z, BY WATER YEAR (WY)

	MEAN	63.0	143	257	235	299	335	294	263	146	82.8	30.0	52.5
MAX	469	884	884	798	881	1226	1068	796	528	416	150	441	
(WY)	1994	1975	1988	1993	2001	1973	1968	1981	1994	1979	1974	1974	
MIN	13.2	20.0	27.2	38.4	43.7	47.5	52.3	32.5	9.61	6.99	4.65	8.47	
(WY)	1979	1966	1966	1966	1996	1966	1981	1998	1984	1984	1984	2000	

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

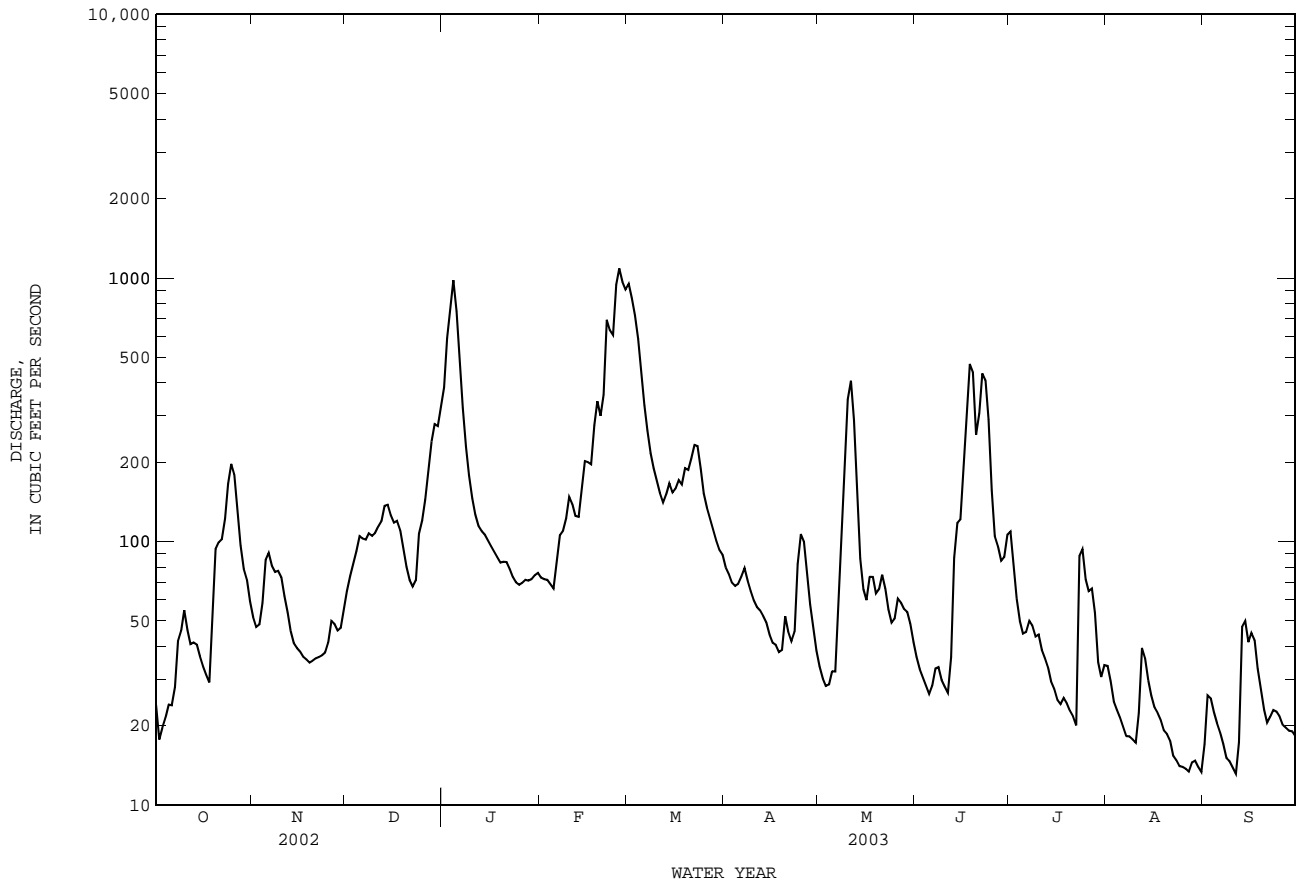
WATER YEARS 1963 - 2003z

ANNUAL TOTAL	69980	43248	
ANNUAL MEAN	192	118	183
HIGHEST ANNUAL MEAN			358
LOWEST ANNUAL MEAN			43.7
HIGHEST DAILY MEAN	3260	Mar 22	6240
LOWEST DAILY MEAN	18	Oct 2	3.5
ANNUAL SEVEN-DAY MINIMUM	23	Oct 1	4.0
MAXIMUM PEAK FLOW			6680
MAXIMUM PEAK STAGE			12.15
ANNUAL RUNOFF (AC-FT)	138800	85780	132400
10 PERCENT EXCEEDS	362	269	418
50 PERCENT EXCEEDS	107	66	78
90 PERCENT EXCEEDS	33	21	16

e Estimated

z Period of regulated streamflow.

08019500 Big Sandy Creek near Big Sandy, TX--Continued



TRINITY RIVER BASIN

08019900 Lake Gladewater near Gladewater, TX

LOCATION.--Lat 32°33'00", long 09°57'00", Upshur County, Hydrologic Unit 12010002, located in control tower 20 ft upstream from the centerline of dam, 400 ft right of left bank, approximately 1.5 mi from Gladewater.

DRAINAGE AREA.--352.0 mi².

PERIOD OF RECORD.--Feb. 1998 to Sept. 2000 (contents), Oct. 2000 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam. The dam was completed and storage began in 1952. An uncontrolled spillway has been cut through natural ground, and is located about 304 ft above mean sea level. The dam was built by the city of Gladewater to impound water for municipal use. There was no known diversion from the lake during the current water year. Data regarding the dam is given in the following table:

	Elevation (feet)
Top of dam.....	312.0
Crest of emergency spillway.....	304.0
Crest of service spillway.....	300.0

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 5,470 acre-ft, May 4, 2000, elevation, 301.51 ft; minimum contents, 3,680 acre-ft, Sept. 30, 2000, elevation, 297.67 ft.

EXTREMES FOR 2001 WATER YEAR.--Maximum elevation, 303.22 ft, Feb. 16; minimum elevation, 296.75 ft, June 26.

EXTREMES FOR 2002 WATER YEAR.--Maximum elevation, 303.14 ft, Apr. 8; minimum elevation, 299.46 ft, Sept. 18, 19.

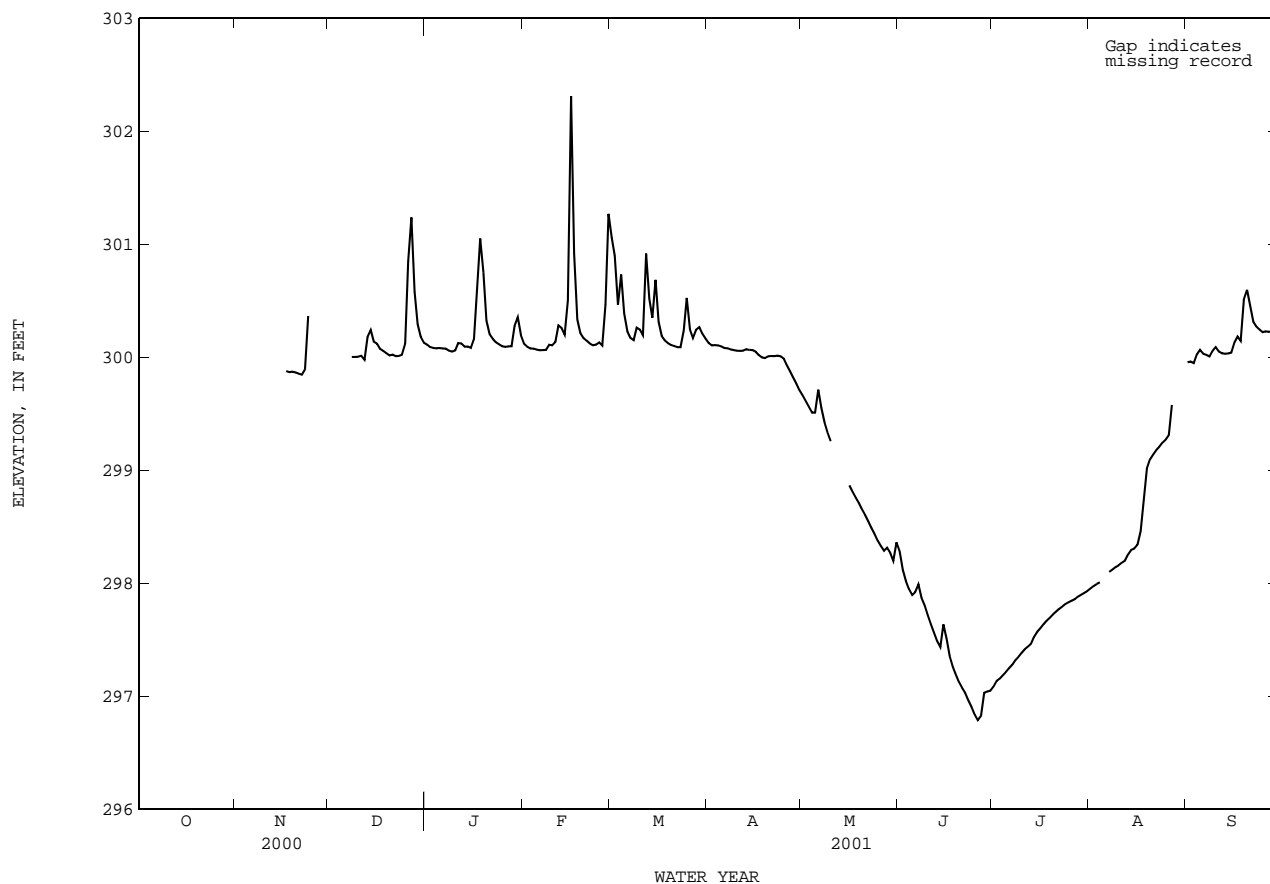
EXTREMES FOR CURRENT YEAR.--Maximum elevation, 303.00 ft, Oct. 19, 20; minimum elevation, 298.82 ft, Sept. 30.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	300.11	300.12	301.06	300.13	299.66	298.29	297.08	297.95	299.96
2	---	---	---	300.09	300.09	300.90	300.11	299.61	298.12	297.13	297.97	299.96
3	---	---	---	300.08	300.08	300.47	300.11	299.56	298.02	297.16	297.99	299.95
4	---	---	---	300.08	300.08	300.73	300.11	299.51	297.95	297.19	298.01	300.03
5	---	---	---	300.08	300.07	300.39	300.10	299.51	297.90	297.21	---	300.07
6	---	---	---	300.08	300.06	300.23	300.08	299.71	297.92	297.25	---	300.03
7	---	---	---	300.08	300.06	300.17	300.08	299.56	297.99	297.28	298.10	300.02
8	---	---	300.00	300.06	300.07	300.15	300.07	299.43	297.87	297.32	298.12	300.01
9	---	---	300.00	300.05	300.11	300.26	300.06	299.33	297.81	297.35	298.14	300.06
10	---	---	300.00	300.06	300.11	300.25	300.06	299.26	297.72	297.38	298.16	300.09
11	---	---	300.01	300.13	300.14	300.20	300.06	---	297.64	297.42	298.18	300.05
12	---	---	299.98	300.12	300.28	300.92	300.06	---	297.56	297.44	298.20	300.04
13	---	---	300.18	300.09	300.26	300.52	300.07	---	297.49	297.47	298.25	300.03
14	---	---	300.24	300.09	300.20	300.35	300.07	---	297.44	297.53	298.29	300.03
15	---	---	300.14	300.08	300.50	300.69	300.06	---	297.64	297.57	298.31	300.04
16	---	---	300.12	300.16	302.31	300.31	300.05	298.87	297.51	297.60	298.34	300.13
17	---	299.88	300.08	300.57	300.92	300.19	300.02	298.81	297.36	297.64	298.46	300.18
18	---	299.87	300.06	301.05	300.34	300.15	300.00	298.76	297.26	297.67	298.73	300.14
19	---	299.87	300.04	300.75	300.21	300.13	299.99	298.71	297.19	297.69	299.02	300.51
20	---	299.87	300.02	300.32	300.17	300.11	300.01	298.65	297.12	297.72	299.10	300.60
21	---	299.85	300.02	300.20	300.15	300.10	300.01	298.60	297.07	297.75	299.14	300.46
22	---	299.85	300.01	300.16	300.12	300.09	300.01	298.55	297.03	297.77	299.18	300.32
23	---	299.89	300.01	300.13	300.11	300.09	300.01	298.49	296.96	297.79	299.21	300.27
24	---	300.37	300.02	300.12	300.11	300.24	300.01	298.44	296.91	297.82	299.24	300.25
25	---	---	300.12	300.10	300.13	300.53	299.99	298.38	296.84	297.83	299.27	300.22
26	---	---	300.85	300.09	300.10	300.25	299.93	298.33	296.79	297.84	299.31	300.23
27	---	---	301.24	300.10	300.47	300.17	299.88	298.29	296.82	297.86	299.58	300.23
28	---	---	300.58	300.10	301.27	300.24	299.82	298.31	297.03	297.88	---	300.23
29	---	---	300.29	300.28	---	300.27	299.77	298.27	297.04	297.90	---	300.24
30	---	---	300.18	300.35	---	300.21	299.71	298.20	297.05	297.91	---	300.24
31	---	---	300.13	300.19	---	300.16	---	298.36	---	297.93	---	---
MEAN	---	---	---	300.19	300.31	300.34	300.01	---	297.44	297.56	---	300.15
MAX	---	---	---	301.05	302.31	301.06	300.13	---	298.29	297.93	---	300.60
MIN	---	---	---	300.05	300.06	300.09	299.71	---	296.79	297.08	---	299.95

CAL YR 2000 MAX unknown MIN unknown
WTR YR 2001 MAX 302.31 MIN 296.79

08019900 Lake Gladewater near Gladewater, TX--Continued



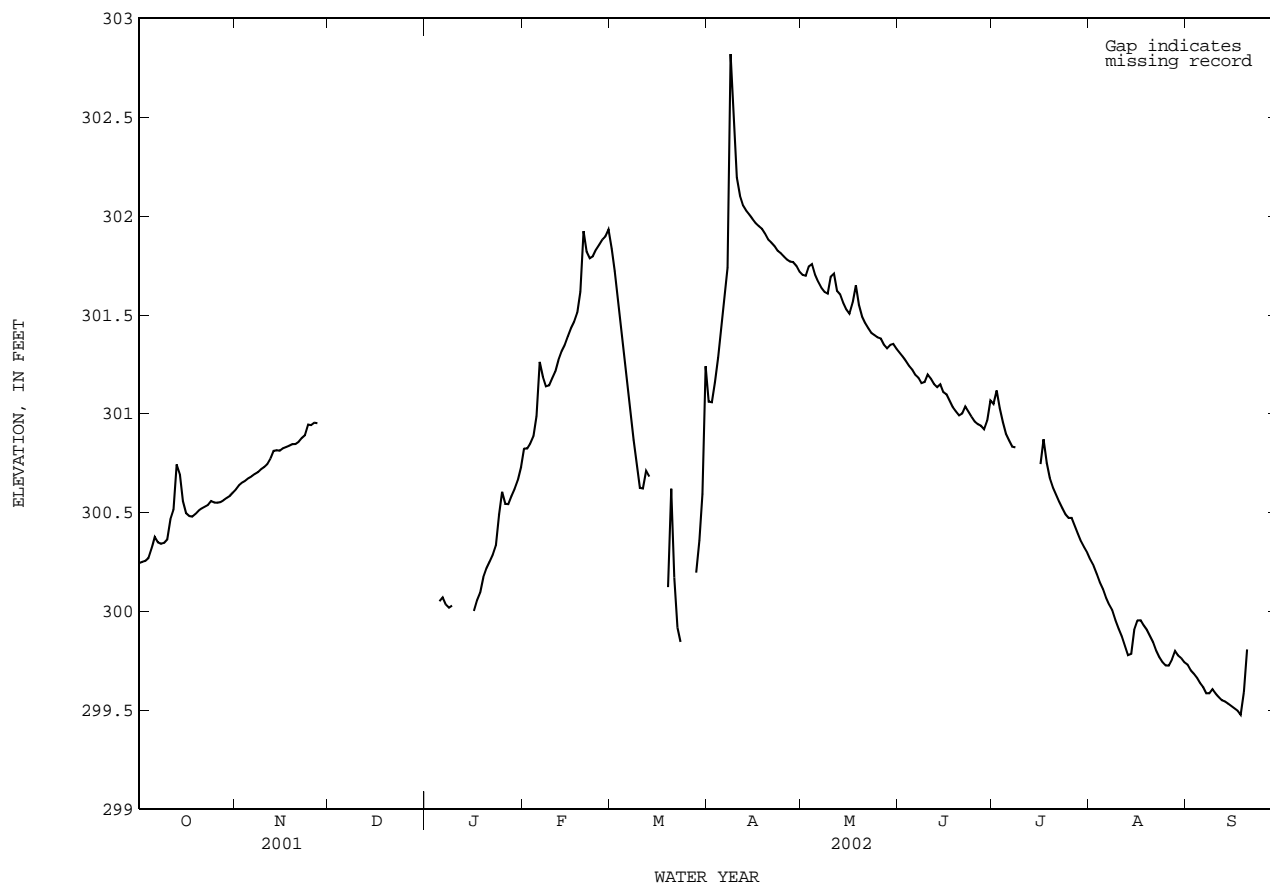
ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	300.24	300.62	---	---	300.82	301.83	301.06	301.70	301.31	301.05	300.26	299.73
2	300.25	300.64	---	---	300.82	301.72	301.06	301.70	301.29	301.12	300.23	299.70
3	300.26	300.65	---	---	300.85	301.56	301.16	301.74	301.27	301.03	300.19	299.69
4	300.27	300.66	---	---	300.89	301.41	301.28	301.76	301.24	300.96	300.15	299.66
5	300.32	300.68	---	300.05	300.99	301.28	301.43	301.70	301.22	300.90	300.11	299.64
6	300.38	300.68	---	300.07	301.26	301.14	301.58	301.67	301.20	300.87	300.07	299.62
7	300.35	300.70	---	300.04	301.19	301.00	301.74	301.64	301.18	300.83	300.03	299.59
8	300.34	300.71	---	300.02	301.14	300.87	302.82	301.62	301.16	300.83	300.01	299.59
9	300.35	300.72	---	300.03	301.14	300.76	302.49	301.61	301.16	---	299.96	299.61
10	300.36	300.73	---	---	301.18	300.63	302.20	301.69	301.20	---	299.91	299.58
11	300.47	300.75	---	---	301.21	300.62	302.10	301.71	301.18	---	299.88	299.57
12	300.51	300.77	---	---	301.27	300.71	302.05	301.62	301.15	---	299.83	299.55
13	300.74	300.81	---	---	301.32	300.68	302.03	301.60	301.13	---	299.78	299.54
14	300.69	300.82	---	---	301.35	---	302.01	301.56	301.15	---	299.79	299.53
15	300.56	300.81	---	---	301.39	---	301.99	301.53	301.11	---	299.91	299.52
16	300.50	300.83	---	300.00	301.43	---	301.96	301.51	301.10	300.75	299.95	299.51
17	300.48	300.83	---	300.06	301.47	---	301.95	301.56	301.07	300.87	299.95	299.50
18	300.48	300.84	---	300.10	301.51	---	301.94	301.65	301.03	300.75	299.93	299.48
19	300.49	300.85	---	300.17	301.62	300.12	301.91	301.55	301.01	300.68	299.91	299.59
20	300.51	300.85	---	300.22	301.92	300.62	301.88	301.49	300.99	300.63	299.88	299.81
21	300.52	300.86	---	300.25	301.82	300.17	301.87	301.46	301.00	300.59	299.84	---
22	300.53	300.88	---	300.29	301.79	299.92	301.85	301.43	301.04	300.56	299.80	---
23	300.54	300.89	---	300.33	301.80	299.85	301.83	301.41	301.01	300.52	299.77	---
24	300.56	300.95	---	300.49	301.83	---	301.81	301.40	300.99	300.49	299.74	---
25	300.55	300.94	---	300.61	301.86	---	301.80	301.39	300.96	300.47	299.73	---
26	300.55	300.95	---	300.54	301.88	---	301.78	301.38	300.95	300.47	299.73	---
27	300.55	300.95	---	300.54	301.90	---	301.77	301.35	300.94	300.43	299.76	---
28	300.56	---	---	300.58	301.93	300.20	301.77	301.33	300.92	300.39	299.80	---
29	300.57	---	---	300.62	---	300.36	301.75	301.35	300.97	300.35	299.78	---
30	300.59	---	---	300.66	---	300.59	301.72	301.35	301.07	300.32	299.76	---
31	300.60	---	---	300.73	---	301.24	---	301.33	---	300.30	299.74	---
MEAN	300.47	---	---	---	301.41	---	301.82	301.54	301.10	---	299.91	---
MAX	300.74	---	---	---	301.93	---	302.82	301.76	301.31	---	300.26	---
MIN	300.24	---	---	---	300.82	---	301.06	301.33	300.92	---	299.73	---

CAL YR 2001 MAX 302.31 MIN 296.79
WTR YR 2002 MAX 302.82 MIN 299.48

TRINITY RIVER BASIN

08019900 Lake Gladewater near Gladewater, TX--Continued

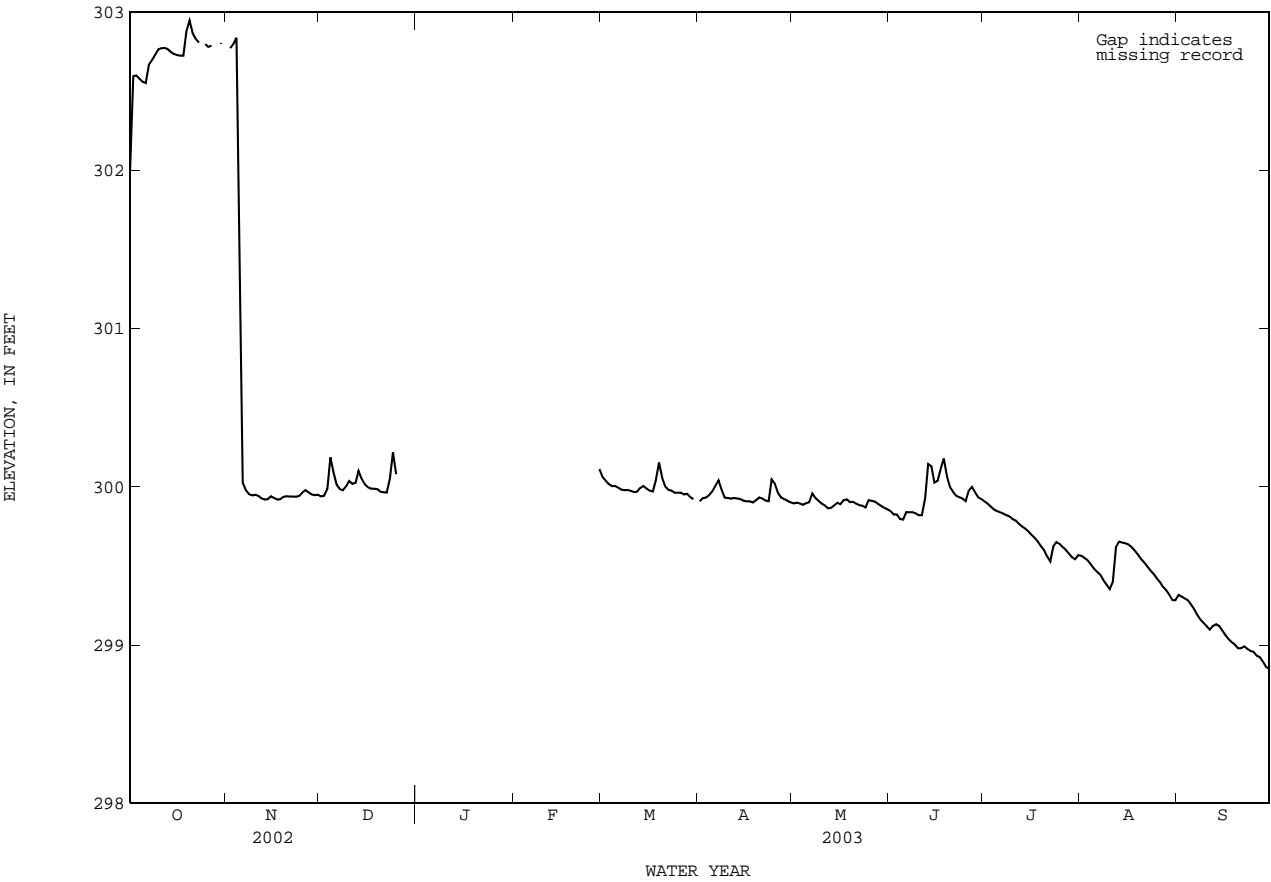


ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	302.00	---	299.94	---	---	300.06	299.91	299.90	299.85	299.91	299.56	299.32
2	302.60	302.77	299.94	---	---	300.04	299.93	299.90	299.83	299.89	299.55	299.31
3	302.60	302.80	299.99	---	---	300.02	299.93	299.89	299.83	299.88	299.53	299.29
4	302.58	302.84	300.19	---	---	300.00	299.95	299.89	299.80	299.86	299.51	299.28
5	302.56	300.87	300.09	---	---	300.01	299.97	299.90	299.79	299.85	299.48	299.26
6	302.55	300.03	300.01	---	---	299.99	300.01	299.90	299.84	299.84	299.46	299.23
7	302.67	299.98	299.99	---	---	299.98	300.04	299.96	299.84	299.83	299.44	299.19
8	302.70	299.95	299.98	---	---	299.98	299.98	299.93	299.84	299.82	299.41	299.16
9	302.73	299.95	300.00	---	---	299.98	299.93	299.91	299.83	299.81	299.38	299.14
10	302.77	299.95	300.04	---	---	299.97	299.93	299.89	299.82	299.80	299.35	299.12
11	302.77	299.94	300.02	---	---	299.97	299.93	299.88	299.82	299.79	299.40	299.10
12	302.78	299.93	300.02	---	---	299.97	299.93	299.86	299.93	299.77	299.62	299.12
13	302.77	299.92	300.10	---	---	299.99	299.93	299.87	300.14	299.75	299.65	299.13
14	302.75	299.92	300.05	---	---	300.01	299.92	299.88	300.13	299.74	299.65	299.12
15	302.74	299.94	300.02	---	---	299.99	299.91	299.90	300.03	299.72	299.64	299.09
16	302.73	299.93	300.00	---	---	299.98	299.91	299.89	300.04	299.70	299.64	299.06
17	302.73	299.92	299.99	---	---	299.97	299.91	299.92	300.11	299.68	299.62	299.04
18	302.73	299.92	299.99	---	---	300.04	299.90	299.92	300.18	299.65	299.60	299.02
19	302.88	299.94	299.99	---	---	300.15	299.91	299.90	300.07	299.63	299.57	299.00
20	302.95	299.94	299.97	---	---	300.06	299.93	299.91	300.00	299.60	299.55	298.98
21	302.87	299.94	299.97	---	---	300.00	299.93	299.89	299.97	299.56	299.52	298.98
22	302.83	299.94	299.96	---	---	299.98	299.91	299.88	299.94	299.53	299.50	298.99
23	302.81	299.94	300.05	---	---	299.98	299.91	299.88	299.93	299.63	299.47	298.98
24	---	299.94	300.22	---	---	299.96	300.05	299.87	299.93	299.65	299.45	298.96
25	302.80	299.96	300.08	---	---	299.96	300.02	299.92	299.91	299.64	299.42	298.96
26	302.78	299.98	---	---	---	299.96	299.96	299.91	299.98	299.62	299.40	298.93
27	302.79	299.97	---	---	---	299.95	299.93	299.91	300.00	299.60	299.37	298.92
28	---	299.95	---	---	300.11	299.96	299.92	299.89	299.96	299.58	299.35	298.89
29	---	299.95	---	---	---	299.94	299.91	299.88	299.93	299.55	299.32	298.86
30	302.80	299.95	---	---	---	299.92	299.90	299.87	299.92	299.54	299.28	298.85
31	---	---	---	---	---	---	---	299.86	---	299.57	299.28	---
MEAN	---	---	---	---	---	---	299.94	299.90	299.94	299.71	299.48	299.08
MAX	---	---	---	---	---	---	300.05	299.96	300.18	299.91	299.65	299.32
MIN	---	---	---	---	---	---	299.90	299.86	299.79	299.53	299.28	298.85

CAL YR 2002 MAX 302.95 MIN 299.48
WTR YR 2003 MAX 302.95 MIN 298.85

08019900 Lake Gladewater near Gladewater, TX--Continued



SABINE RIVER BASIN

08020000 Sabine River near Gladewater, TX

LOCATION.--Lat 32°31'37", long 94°57'36", Gregg County, Hydrologic Unit 12010002, on right bank 46 ft downstream from bridge on U.S. Highway 271, 0.4 mi downstream from Glade Creek, 1.2 mi southwest of Gladewater, and at mile 397.5.

DRAINAGE AREA.--2,791 mi².

PERIOD OF RECORD.--Oct. 1932 to current year.

REVISED RECORDS.--WSP 1732: Drainage area. WRD TX-73-1: 1972.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 243.85 ft above NGVD of 1929. Prior to Oct. 13, 1933, nonrecording gage at same site and datum. Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Since water year 1961, at least 10% of contributing drainage area has been regulated. There are many diversions above station for oil field operations and municipal supply.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--28 years (water years 1933-60) prior to regulation by Lake Tawakoni, 2,012 ft³/s (1,458,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1933-60).--Maximum discharge, 138,000 ft³/s, Apr. 2, 1945, gage height, 44.16 ft, from floodmark, from rating curve extended above 91,000 ft³/s; minimum, 5.6 ft³/s, Aug. 16, 1939.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1914 reached a stage of about 41.7 ft (discharge, 85,900 ft³/s), from information by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	172	3180	322	3530	446	6130	1160	446	1380	641	185	127
2	167	3030	285	3620	416	6470	1070	383	827	534	168	142
3	138	2680	240	3700	429	6820	908	354	520	397	152	171
4	116	2290	414	3830	414	7060	721	337	414	308	140	165
5	114	2020	498	4060	371	7130	629	331	372	275	133	152
6	119	1740	624	4300	426	7060	693	335	358	244	134	138
7	139	1430	567	4550	557	6870	822	359	371	236	140	131
8	147	1140	568	4800	758	6600	807	377	419	234	135	127
9	185	979	629	4960	759	6290	759	754	376	225	138	122
10	230	879	610	4950	827	5930	668	1130	337	227	123	117
11	279	749	576	4500	927	5480	797	1050	340	227	138	115
12	287	618	646	3280	832	4790	1000	856	395	208	170	125
13	275	529	1030	1900	688	3750	1100	648	640	191	195	169
14	287	480	1240	1260	651	2740	1030	472	874	179	167	312
15	284	474	1170	1030	977	2120	886	389	993	169	149	345
16	247	471	991	896	1390	1840	772	390	1380	165	140	298
17	213	427	935	805	1770	1810	688	373	1650	159	133	242
18	192	367	842	739	2130	1870	628	377	2050	155	128	199
19	274	407	689	726	2460	2050	576	381	2500	151	124	172
20	424	458	560	859	2730	2030	590	353	2430	144	118	158
21	547	381	471	882	3430	1890	617	384	2130	138	115	149
22	910	281	417	728	4690	1740	573	438	1670	132	111	144
23	1270	216	530	581	5280	1620	537	392	1200	391	107	140
24	1590	188	905	491	5300	1500	646	352	916	420	105	141
25	1890	186	1060	482	5190	1350	733	428	699	353	103	141
26	2170	209	1530	590	5300	1200	713	443	574	276	104	139
27	2400	259	1800	661	5520	1110	649	598	548	259	106	135
28	2600	244	2040	596	5800	1110	600	1120	517	234	106	127
29	2800	215	2330	502	---	1180	607	1410	432	196	107	122
30	2980	255	2610	447	---	e1310	548	1590	535	174	111	119
31	3120	---	3270	449	---	e1280	---	1660	---	174	114	---
TOTAL	26566	26782	30399	64704	60468	110130	22527	18910	27847	7816	4099	4884
MEAN	857	893	981	2087	2160	3553	751	610	928	252	132	163
MAX	3120	3180	3270	4960	5800	7130	1160	1660	2500	641	195	345
MIN	114	186	240	447	371	1110	537	331	337	132	103	115
AC-FT	52690	53120	60300	128300	119900	218400	44680	37510	55230	15500	8130	9690

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2003z, BY WATER YEAR (WY)

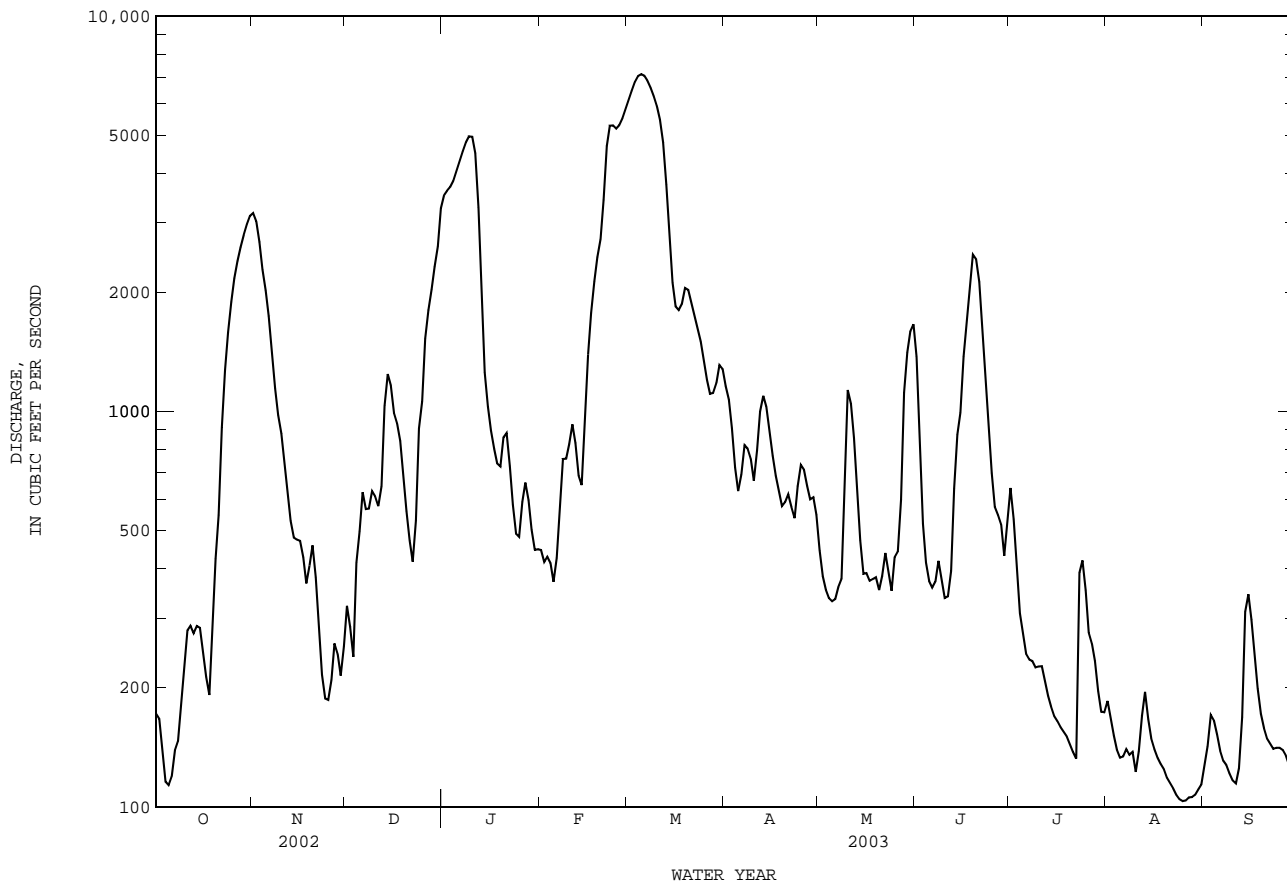
	503	1268	2654	2301	2814	3641	2810	3721	1831	674	197	288
MEAN	503	1268	2654	2301	2814	3641	2810	3721	1831	674	197	288
MAX	3361	7839	10580	8791	9664	15080	9644	17100	6745	4261	1291	2566
(WY)	1974	1975	1972	2001	1975	2001	1990	1966	1973	1994	1992	1974
MIN	29.4	86.9	101	199	174	204	241	181	49.0	17.9	18.1	27.0
(WY)	1964	1964	1966	1964	1996	1996	1971	1998	1971	1964	1964	1985

08020000 Sabine River near Gladewater, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1961 - 2003z	
ANNUAL TOTAL	681705		405132		1889	
ANNUAL MEAN	1868		1110		3831	
HIGHEST ANNUAL MEAN					209	
LOWEST ANNUAL MEAN					51000	
HIGHEST DAILY MEAN	11800	Mar 27	7130	Mar 5	7.4	May 22 1989
LOWEST DAILY MEAN	26	Aug 27	103	Aug 25	9.5	Jul 20 1971
ANNUAL SEVEN-DAY MINIMUM	34	Aug 22	105	Aug 23		Jul 16 1971
MAXIMUM PEAK FLOW			7160	Mar 5	52300	May 22 1989
MAXIMUM PEAK STAGE			28.69	Mar 5	38.98	Apr 30 1966
ANNUAL RUNOFF (AC-FT)	1352000		803600		1368000	
10 PERCENT EXCEEDS	5060		3070		5500	
50 PERCENT EXCEEDS	858		537		550	
90 PERCENT EXCEEDS	104		138		64	

e Estimated

z Period of regulated streamflow.



SABINE RIVER BASIN

08020450 Sabine River above Longview, TX
(Low-flow partial-record station)

LOCATION.--Lat 32°28'47", long 94°48'15", Gregg County, Hydrologic Unit 12010002, on left bank at city of Longview pumping station at the end of Swinging Bridge Road, 1.4 mi southwest of the intersection of Swinging Bridge Road and Farm Road 2206 in Longview, 2.5 mi downstream from Hawkins Creek, 2.6 mi upstream from U.S. Highway 259, and at mile 357.4.

DRAINAGE AREA.--2,943 mi².

PERIOD OF RECORD.--Aug. 1983 to current year (discharges below 500 ft³/s).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 230.00 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records poor. Since installation of gage in Aug. 1983, at least 10% of contributing drainage area has been regulated. There are many diversions above station for municipal and industrial supply, and for oil field operations.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 34.92 ft, Mar. 31, 2002; minimum daily discharge, 0.50 ft³/s, Sept. 4, 1985.

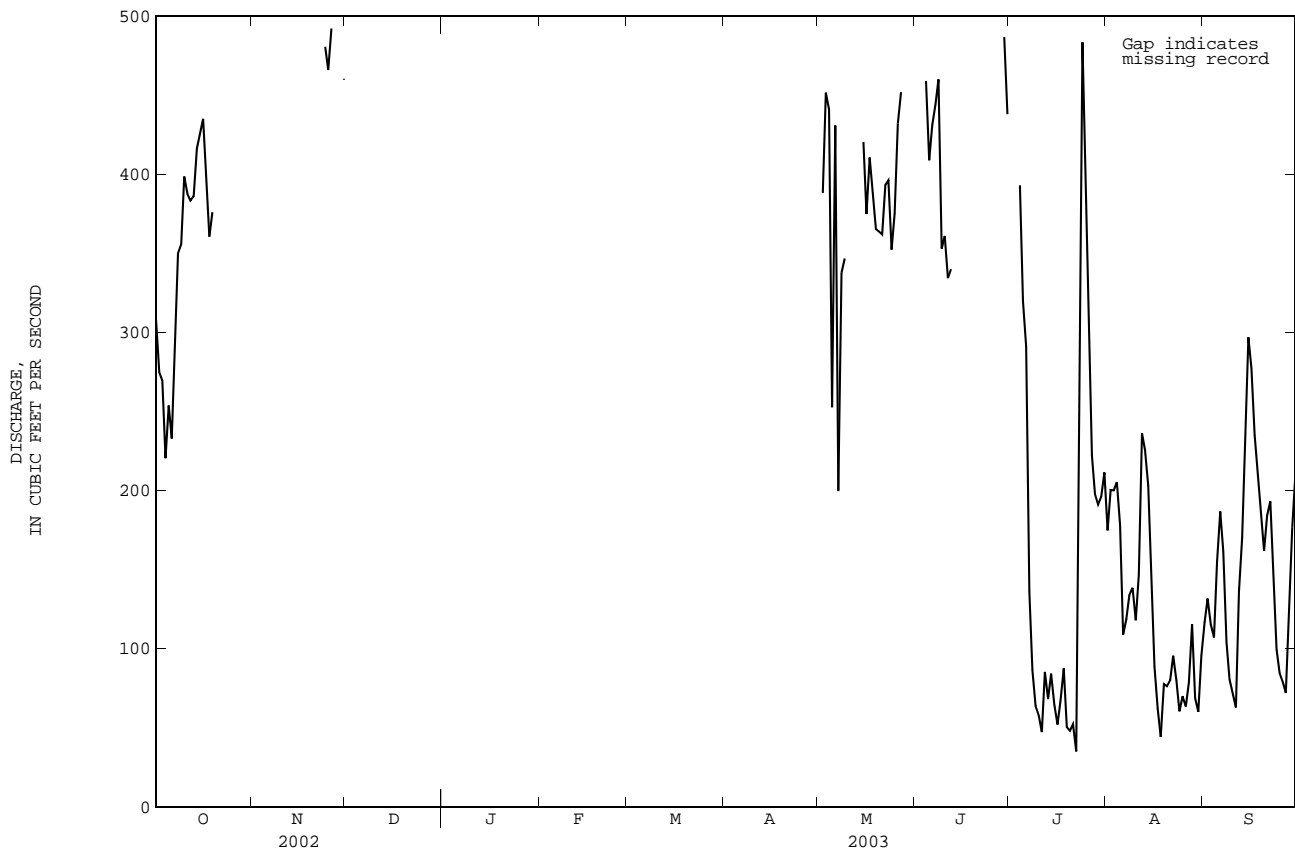
EXTREMES FOR CURRENT YEAR.--Maximum gage height, 25.83, Feb. 6; minimum daily discharge, 35 ft³/s, July 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	308	---	---	---	---	---	---	---	---	---	175	116
2	275	---	---	---	---	---	---	388	---	---	200	132
3	270	---	---	---	---	---	---	452	---	---	200	115
4	220	---	---	---	---	---	---	441	459	e393	205	107
5	254	---	---	---	---	---	---	253	409	e320	178	155
6	233	---	---	---	---	---	---	431	431	e291	109	187
7	306	---	---	---	---	---	---	200	444	e136	119	162
8	350	---	---	---	---	---	---	338	460	86	134	104
9	356	---	---	---	---	---	---	347	e353	64	139	81
10	399	---	---	---	---	---	---	---	361	58	118	72
11	388	---	---	---	---	---	---	---	334	47	147	63
12	383	---	---	---	---	---	---	---	e340	85	236	136
13	386	---	---	---	---	---	---	---	---	68	226	170
14	416	---	---	---	---	---	---	---	---	84	203	225
15	426	---	---	---	---	---	---	420	---	65	142	297
16	435	---	---	---	---	---	---	375	---	52	89	277
17	399	---	---	---	---	---	---	411	---	67	62	235
18	360	---	---	---	---	---	---	389	---	88	44	212
19	376	---	---	---	---	---	---	365	---	50	78	187
20	---	---	---	---	---	---	---	364	---	48	76	162
21	---	---	---	---	---	---	---	362	---	52	80	184
22	---	---	---	---	---	---	---	393	---	35	96	193
23	---	---	---	---	---	---	---	396	---	241	80	139
24	---	481	---	---	---	---	---	352	---	483	60	100
25	---	466	---	---	---	---	---	375	---	380	70	85
26	---	492	---	---	---	---	---	e432	---	279	63	79
27	---	---	---	---	---	---	---	e452	---	222	79	72
28	---	---	---	---	---	---	---	---	---	198	115	124
29	---	---	---	---	---	---	---	---	487	191	69	177
30	---	460	---	---	---	---	---	---	e438	196	60	209
31	---	---	---	---	---	---	---	---	---	211	95	---
TOTAL	---	---	---	---	---	---	---	---	---	---	3747	4557
MEAN	---	---	---	---	---	---	---	---	---	---	121	152
MAX	---	---	---	---	---	---	---	---	---	---	236	297
MIN	---	---	---	---	---	---	---	---	---	---	44	63
AC-FT	---	---	---	---	---	---	---	---	---	---	7430	9040

e Estimated

08020450 Sabine River above Longview, TX--Continued
(Low-flow partial-record station)



SABINE RIVER BASIN

08020900 Sabine River below Longview, TX

LOCATION.--Lat 32°25'00", long 94°42'35", Gregg County, Hydrologic Unit 12010002, on downstream side of Highway 149 bridge, 5.0 mi south of Longview, 14.0 mi northwest of Tatum.

DRAINAGE AREA.--3,155 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 220.00 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Since installation of gage in Oct. 1995, at least 10% of contributing drainage area has been regulated. There are several diversions above this station for municipal, industrial and oil field operations. Flow may also be slightly affected at times by discharge from floodwater-retarding structures controlling runoff from a 9.70 mi² area in the Mill Creek drainage basin.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	218	3040	363	5120	657	7180	1420	587	1490	524	186	192
2	215	3070	416	5040	651	7030	1330	518	1210	604	188	172
3	202	2980	468	4670	619	7020	1250	460	763	529	181	173
4	185	2700	1150	4330	628	7140	1100	416	467	429	162	182
5	160	2750	1210	4260	614	7310	964	406	367	357	155	177
6	151	2350	927	4350	812	7470	1120	392	485	333	143	165
7	180	1870	840	4520	1060	7620	1940	384	551	310	129	148
8	206	1510	754	4730	997	7700	1710	393	419	313	130	139
9	192	1240	769	4960	1100	7680	1280	405	356	302	128	134
10	219	1070	910	5150	1240	7570	1070	728	319	284	125	127
11	255	951	889	5260	1210	7370	966	1070	308	253	126	122
12	288	814	834	5120	1200	7050	1040	1000	306	246	234	266
13	311	671	1280	4080	1080	6560	1180	837	729	235	204	223
14	301	585	1490	2360	1070	5640	1250	637	1140	225	218	189
15	302	571	1480	1550	2250	4020	1170	522	1410	218	206	284
16	303	548	1340	1280	2840	2640	1020	429	2300	201	e182	327
17	280	540	1190	1130	2650	2160	917	412	2460	186	e167	299
18	254	498	1160	1030	2480	2170	830	388	2690	168	e159	259
19	493	435	2890	957	2510	2620	761	366	2810	156	e149	219
20	617	470	2250	940	2800	2620	729	366	2950	154	141	191
21	564	528	1540	1040	5070	2400	722	351	2590	146	137	181
22	599	487	982	1060	7600	2170	741	354	2200	141	137	190
23	907	403	1080	928	9120	1990	679	392	1700	284	126	172
24	1230	340	3070	778	9210	1840	666	364	1260	518	122	163
25	1560	311	2890	679	8780	1710	764	339	973	491	120	165
26	1850	378	2300	734	8290	1590	823	402	815	367	110	164
27	2110	418	2080	883	7870	1460	783	439	733	281	113	160
28	2330	428	2120	916	7480	1370	705	560	643	269	197	154
29	2760	396	2280	835	---	1340	654	1020	557	240	162	150
30	2830	359	2610	726	---	1400	651	1300	475	205	132	144
31	2930	---	4530	659	---	1460	---	1460	---	183	125	---
TOTAL	25002	32711	48092	80075	91888	135300	30235	17697	35476	9152	4794	5631
MEAN	807	1090	1551	2583	3282	4365	1008	571	1183	295	155	188
MAX	2930	3070	4530	5260	9210	7700	1940	1460	2950	604	234	327
MIN	151	311	363	659	614	1340	651	339	306	141	110	122
AC-FT	49590	64880	95390	158800	182300	268400	59970	35100	70370	18150	9510	11170

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2003, BY WATER YEAR (WY)

	1996	1997	1998	1999	2000	2001	2002	2003
MEAN	768	1079	3125	4082	4301	6008	3289	1838
MAX	2905	3519	8764	9753	9979	18530	8464	5846
(WY)	1999	1999	2002	2001	2001	2001	2002	1999
MIN	121	151	287	340	236	260	533	324
(WY)	2000	1996	1996	1996	1996	1996	1998	1998

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

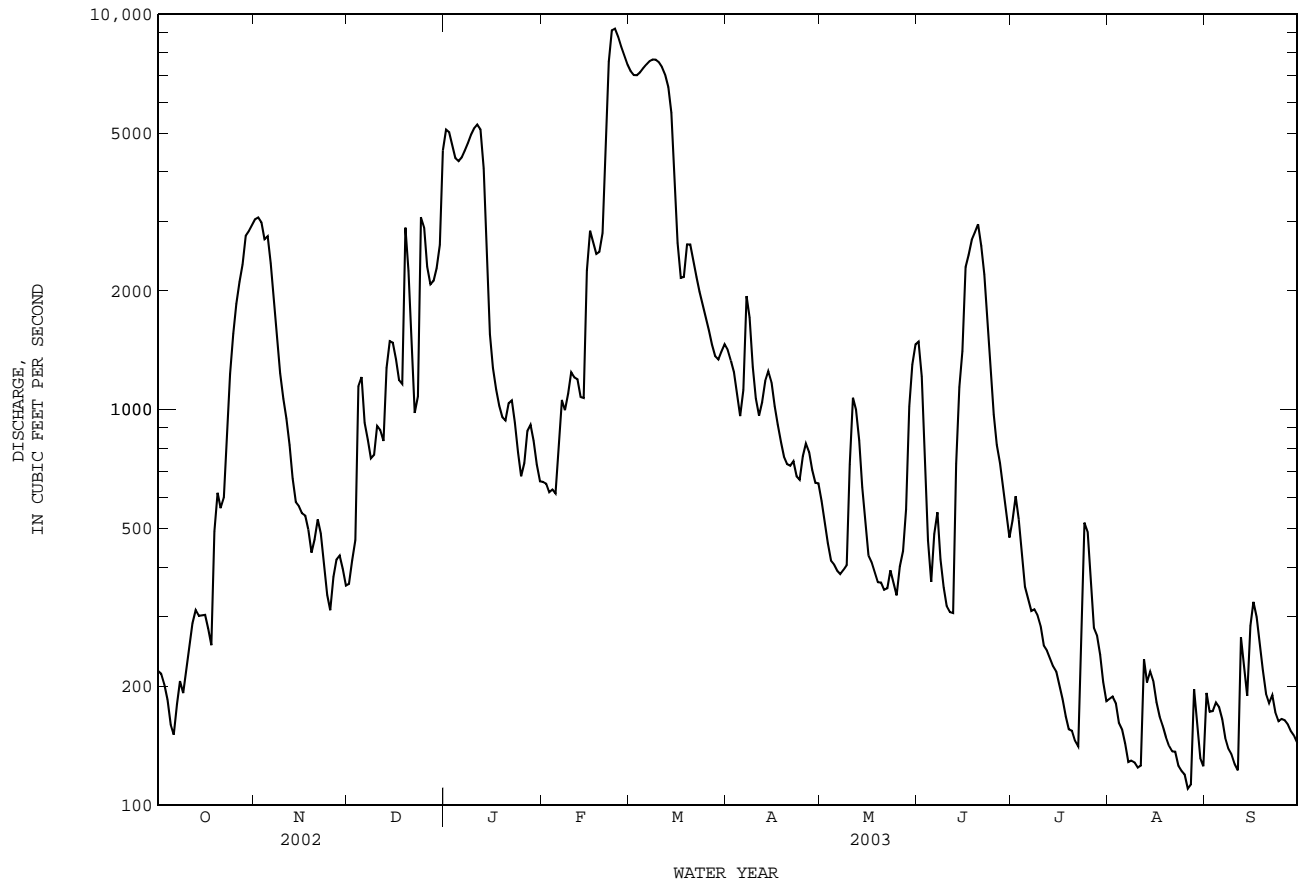
FOR 2003 WATER YEAR

WATER YEARS 1996 - 2003

ANNUAL TOTAL	888813	516053	
ANNUAL MEAN	2435	1414	
HIGHEST ANNUAL MEAN			2280
LOWEST ANNUAL MEAN			4274
HIGHEST DAILY MEAN	14900	Jan 1	294
LOWEST DAILY MEAN	106	Aug 25	25700
ANNUAL SEVEN-DAY MINIMUM	124	Aug 20	23
MAXIMUM PEAK FLOW			26
MAXIMUM PEAK STAGE			25900
ANNUAL RUNOFF (AC-FT)	1763000	1024000	34.48
10 PERCENT EXCEEDS	7940	4040	7420
50 PERCENT EXCEEDS	1160	705	644
90 PERCENT EXCEEDS	182	163	120

e Estimated

08020900 Sabine River below Longview, TX--Continued



SABINE RIVER BASIN

08022040 Sabine River near Beckville, TX

LOCATION.--Lat 32°19'38", long 94°21'12", Panola County, Hydrologic Unit 12010002, on downstream side of highway embankment near right end of downstream bridge on U.S. Highway 59, 0.9 mi upstream from Eightmile Creek, 6.0 mi upstream from Farm Road 1794, 8.4 mi northeast of Beckville, 12.4 mi downstream from State Highway 43 and at mile 327.0.

DRAINAGE AREA.--3,589 mi².

PERIOD OF RECORD.--Oct. 1938 to current year. Prior to Oct. 1978, published as "near Tatum" (station 08022000).

Water-quality records.--Chemical data: Feb. 1952 to Mar. 1999. Biochemical data: Jan. 1968 to Mar. 1999. Pesticide data: Mar. 1968 to June 1981. Specific conductance: Feb. 1952 to Sept. 1998. Water temperature: Feb. 1952 to Sept. 1998.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 190.00 ft above NGVD of 1929. Prior to Oct. 1, 1978, at site 12.4 mi upstream at datum 14.18 ft higher. Prior to Sept. 21, 1945, nonrecording gage. Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Since water year 1961, at least 10% of contributing drainage area has been regulated. There are several diversions above this station and below Lake Tawakoni for municipal, industrial and oil field operations. Low flows are sustained by wastewater effluents that are returned to the river above the station. Flow may also be slightly affected at times by discharge from floodwater retarding structures controlling runoff from 9.70 mi² in the Mill Creek drainage basin.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--22 years (water years 1939-60) prior to regulation by Lake Tawakoni, 2,663 ft³/s (1,929,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD PRIOR TO REGULATION (WATER YEARS 1939-60).--Maximum discharge, 123,000 ft³/s, Apr. 4, 1945, gage height, 33.80 ft, site and datum then in use, from graph based on gage readings, from rating curve extended above 66,000 ft³/s on basis of partly estimated discharge measurement of 88,900 ft³/s; minimum observed, 2.4 ft³/s, Aug. 11, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1884 reached a stage of about 2 ft lower than flood of Apr. 4, 1945. These dates and gage heights are based on information for Sabine River near Tatum (station 08022000) and Sabine River at Logansport, LA. (station 08022500).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	176	3030	654	9290	2070	10300	e1840	e930	e2120	e595	236	152
2	214	3160	664	9220	2070	9150	e1740	e853	e2050	e618	235	218
3	203	3160	716	8010	2060	8300	e1650	e779	e1670	e638	238	265
4	178	3000	1080	7180	2050	7730	e1510	e720	e1170	e566	218	216
5	158	2950	2100	6580	2050	7770	e1310	e689	e854	e482	191	194
6	139	2950	1960	6280	2090	8150	e1310	e680	e837	e426	181	198
7	124	2390	1590	6170	2850	8080	e1830	e746	e1010	e396	182	192
8	128	1890	1490	6270	3020	8250	e2560	e748	e1030	e387	152	160
9	179	1560	1410	6400	2870	8290	e2320	e720	e854	e389	150	146
10	209	1310	1460	6640	3240	8180	e1820	e862	e736	e371	161	156
11	220	1210	1650	6780	3390	8020	e1510	e1190	e693	e342	146	153
12	269	1090	1650	6690	3260	7900	e1430	e1440	e692	e310	416	150
13	311	941	1960	6300	3160	7240	e1480	e1260	e861	e294	748	266
14	337	813	2600	5080	2980	6520	e1580	e1080	e1460	e286	461	292
15	315	748	2580	3540	3840	5710	e1610	e906	e2010	e280	352	240
16	298	727	2370	2840	6140	3880	e1500	e879	e2650	259	316	308
17	295	729	2230	2570	4080	e3540	e1340	e792	e3740	250	258	354
18	281	720	2040	2400	2180	e2970	e1240	e739	e3920	245	194	339
19	288	667	4100	2260	1780	e3100	e1150	e726	e4000	215	179	283
20	597	620	8000	2200	1850	e3510	e1070	e719	e3900	188	178	254
21	750	672	5930	2210	3940	e3430	e1050	e691	e3600	190	155	220
22	659	763	3930	2350	9100	e3110	e1080	e687	e3120	229	150	218
23	699	698	3160	2320	11700	e2710	e1070	e728	e2530	220	162	223
24	1020	613	5490	2160	12500	e2460	e1020	e733	e1930	344	153	208
25	1350	547	7350	2000	13000	e2240	e1050	e753	e1470	641	132	181
26	1700	569	6340	1940	12600	e2130	e1140	e838	e1160	598	152	202
27	2000	658	4930	2120	11900	e2070	e1190	e881	e980	450	147	202
28	2260	753	4380	2330	11200	e1960	e1120	e1020	e925	343	124	182
29	2590	740	4240	2350	---	e1850	e1020	e1340	e810	316	195	173
30	2990	693	4260	2270	---	e1820	e973	e1780	e654	302	206	180
31	2990	---	6520	2130	---	e1870	---	e2030	---	287	152	---
TOTAL	23927	40371	98834	136880	142970	162240	42513	28939	53436	11457	6920	6525
MEAN	772	1346	3188	4415	5106	5234	1417	934	1781	370	223	218
MAX	2990	3160	8000	9290	13000	10300	2560	2030	4000	641	748	354
MIN	124	547	654	1940	1780	1820	973	680	654	188	124	146
AC-FT	47460	80080	196000	271500	283600	321800	84320	57400	106000	22720	13730	12940

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2003z, BY WATER YEAR (WY)

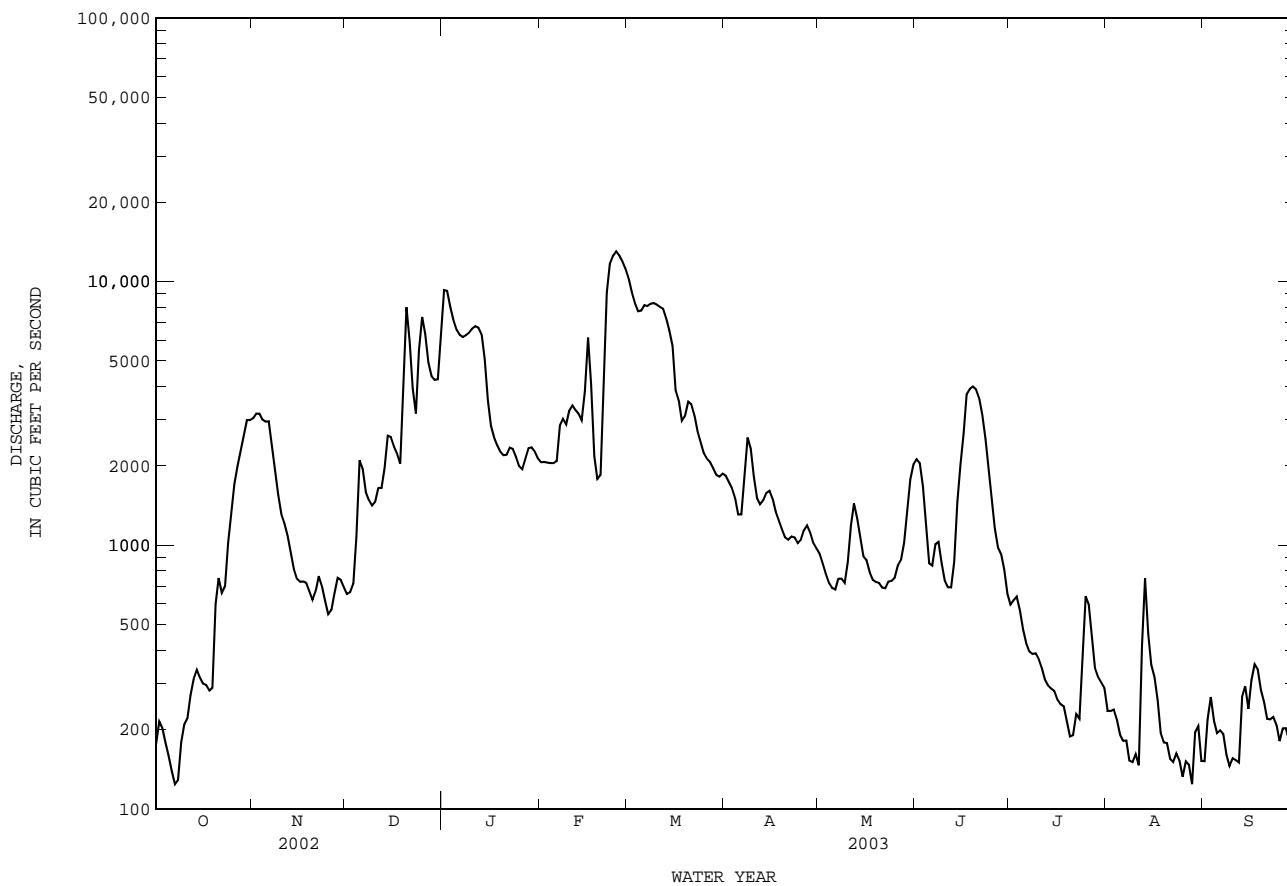
	MEAN	687	1645	3458	3660	4267	4919	4061	4495	2737	995	311	447
MAX	4325	8221	12270	10960	11930	21620	11330	21010	11580	4552	1725	3434	
(WY)	1974	1975	2002	1992	1975	2001	1990	1966	1989	2000	1979	1974	
MIN	42.5	82.1	144	239	322	317	355	317	77.5	32.1	36.7	33.8	
(WY)	1964	1964	1966	1964	1996	1996	1971	1972	1971	1964	1969	1985	

08022040 Sabine River near Beckville, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1961 - 2003z	
ANNUAL TOTAL	1331044		755012		2632	
ANNUAL MEAN	3647		2069		5103	2001
HIGHEST ANNUAL MEAN					311	1964
LOWEST ANNUAL MEAN					48100	May 2 1966
HIGHEST DAILY MEAN	33700	Jan 1	13000	Feb 25	2.4	Aug 11 1964
LOWEST DAILY MEAN	117	Aug 27	124	Oct 7	3.8	Aug 7 1964
ANNUAL SEVEN-DAY MINIMUM	138	Aug 22	146	Aug 22	49400	May 2 1966
MAXIMUM PEAK FLOW			15100	Feb 25	38.87	Mar 30 1989
MAXIMUM PEAK STAGE			27.61	Feb 25		
ANNUAL RUNOFF (AC-FT)	2640000		1498000		1907000	
10 PERCENT EXCEEDS	9770		6270		7770	
50 PERCENT EXCEEDS	1650		1080		914	
90 PERCENT EXCEEDS	171		191		99	

e Estimated

z Period of regulated streamflow.



08022060 Martin Lake near Tatum, TX

LOCATION.--Lat 32°15'42", long 94°34'23", Rusk County, Hydrologic Unit 12010002, on retaining wall, 30 ft right of intake to generating plant No. 1, 1.9 mi upstream from Martin Dam on Martin Creek, 5.8 mi southwest of Tatum and 21.9 mi upstream from mouth.

DRAINAGE AREA.--130 mi².

PERIOD OF RECORD.--Apr. 1974 to Sept. 2002 (contents), Oct. 2002 to current year.
Water-quality records.--Chemical data: Oct. 1974 to Sept. 1984.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to May 15, 1976, non-recording gage near left end of dam 1.9 mi downstream at same datum. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 8,675 ft long, including a 1,000-foot uncontrolled spillway. Deliberate impoundment began in Apr. 1974. The uncontrolled spillway is an excavated channel cut through natural ground and located at the left end of the dam. The controlled spillway is a concrete ogee design with four 14.0- by 40.0-foot-wide tainter gates located near the left end of the dam. The low-flow outlet works consist of a 3.0- by 5.0-foot conduit with a sluice gate located in one of the gate piers. There is an 8-inch pipe with sluice gate. The dam is owned by the Texas Utilities Services, Inc. There are no known diversions. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	321.5
Crest of uncontrolled spillway.....	312.0
Top of gates.....	308.0
Crest of gated spillway.....	294.0
Lowest gated outlet (invert).....	284.0

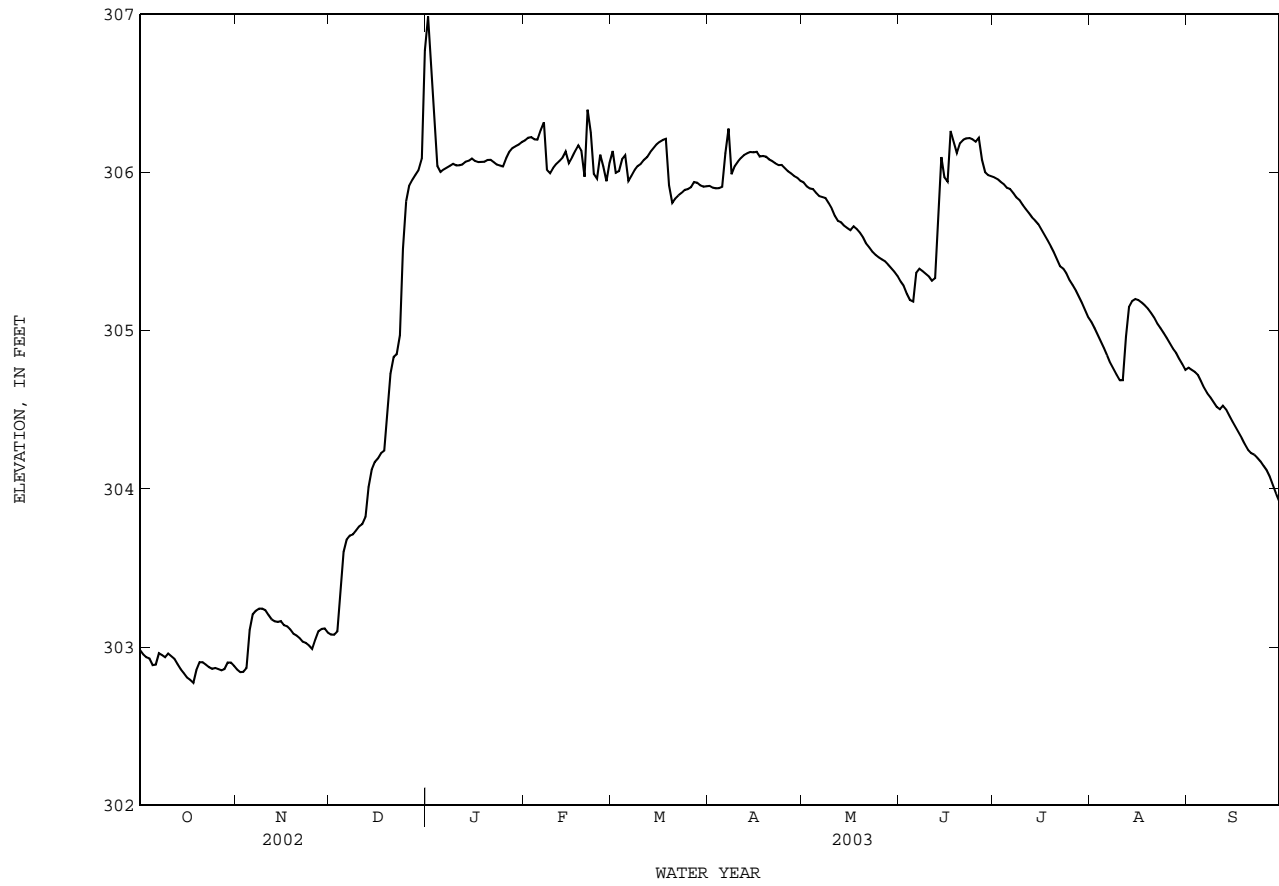
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 118,000 acre-ft, Mar. 29, 1989, elevation, 313.00 ft; minimum contents since first appreciable storage, 45,230 acre-ft, Sept. 18, 1996, elevation, 298.45 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 307.04 ft, Jan. 1; minimum elevation, 302.76 ft, Oct. 18, 19.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	302.98	302.86	303.08	306.99	306.20	306.14	305.92	305.94	305.31	305.97	305.05	304.77
2	302.95	302.84	303.08	306.71	306.22	306.00	305.90	305.91	305.28	305.96	305.02	304.75
3	302.94	302.84	303.10	306.36	306.22	306.01	305.90	305.90	305.23	305.94	304.97	304.74
4	302.93	302.87	303.36	306.04	306.21	306.09	305.90	305.90	305.19	305.93	304.93	304.72
5	302.89	303.11	303.60	306.00	306.21	306.11	305.91	305.87	305.18	305.90	304.89	304.68
6	302.89	303.21	303.68	306.02	306.27	305.95	306.12	305.85	305.37	305.90	304.85	304.64
7	302.96	303.23	303.70	306.03	306.32	305.98	306.28	305.85	305.39	305.87	304.80	304.60
8	302.95	303.24	303.71	306.04	306.02	306.02	305.99	305.84	305.38	305.84	304.76	304.58
9	302.93	303.24	303.74	306.06	306.00	306.04	306.04	305.81	305.36	305.83	304.72	304.55
10	302.96	303.23	303.76	306.05	306.03	306.06	306.07	305.77	305.34	305.80	304.69	304.52
11	302.94	303.20	303.78	306.05	306.06	306.08	306.09	305.73	305.32	305.77	304.69	304.50
12	302.93	303.17	303.82	306.05	306.07	306.10	306.11	305.69	305.33	305.75	304.96	304.53
13	302.89	303.16	304.01	306.07	306.10	306.13	306.12	305.69	305.65	305.72	305.15	304.50
14	302.86	303.16	304.12	306.07	306.13	306.15	306.13	305.66	306.10	305.70	305.19	304.47
15	302.83	303.16	304.17	306.09	306.06	306.18	306.13	305.65	305.97	305.67	305.20	304.43
16	302.81	303.14	304.19	306.07	306.10	306.19	306.13	305.64	305.94	305.64	305.19	304.39
17	302.79	303.13	304.23	306.07	306.14	306.21	306.10	305.66	306.26	305.61	305.18	304.36
18	302.77	303.11	304.24	306.07	306.17	306.21	306.11	305.64	306.19	305.57	305.16	304.32
19	302.85	303.08	304.48	306.07	306.14	305.92	306.10	305.62	306.12	305.53	305.14	304.28
20	302.90	303.07	304.73	306.08	305.97	305.81	306.08	305.59	306.19	305.50	305.11	304.25
21	302.90	303.06	304.83	306.08	306.40	305.84	306.07	305.55	306.21	305.45	305.08	304.23
22	302.89	303.03	304.85	306.07	306.25	305.86	306.06	305.53	306.22	305.41	305.05	304.22
23	302.87	303.03	304.97	306.05	305.99	305.87	306.05	305.50	306.22	305.39	305.02	304.20
24	302.86	303.01	305.52	306.04	305.96	305.89	306.05	305.48	306.21	305.36	304.99	304.17
25	302.87	302.99	305.82	306.04	306.11	305.90	306.03	305.46	306.19	305.32	304.96	304.15
26	302.86	303.05	305.92	306.09	306.04	305.91	306.01	305.45	306.22	305.29	304.92	304.12
27	302.85	303.10	305.96	306.13	305.95	305.94	305.99	305.44	306.08	305.25	304.89	304.08
28	302.86	303.11	305.99	306.16	306.06	305.94	305.98	305.42	306.00	305.22	304.86	304.02
29	302.90	303.12	306.02	306.17	---	305.92	305.97	305.40	305.98	305.17	304.82	303.97
30	302.90	303.09	306.09	306.18	---	305.91	305.95	305.37	305.98	305.13	304.79	303.92
31	302.88	---	306.77	306.19	---	305.91	---	305.35	---	305.08	304.75	---
MEAN	302.89	303.09	304.49	306.14	306.12	306.01	306.04	305.65	305.78	305.60	304.96	304.39
MAX	302.98	303.24	306.77	306.99	306.40	306.21	306.28	305.94	306.26	305.97	305.20	304.77
MIN	302.77	302.84	303.08	306.00	305.95	305.81	305.90	305.35	305.18	305.08	304.69	303.92
CAL YR 2002	MAX 306.77		MIN 302.77									
WTR YR 2003	MAX 306.99		MIN 302.77									

08022060 Martin Lake near Tatum, TX--Continued



08022200 Murval Lake near Gary, TX

LOCATION.--Lat 32°02'04", long 94°25'15", Panola County, Hydrologic Unit 12010002, at outlet structure of Murvaul Lake Dam on Murvaul Bayou (tributary to Sabine River), 3.0 mi northwest of Gary, 9.0 mi southwest of Carthage.

DRAINAGE AREA.--115.0 mi².

PERIOD OF RECORD.--Apr. 6, 1999 to Sept. 2001 (contents), Oct. 2001 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The dam is formed by a rolled earthfill structure 8,300 ft long with an uncontrolled broad-crested weir-type spillway, 270 ft in length, at right end of dam. The dam is the property of the Panola County Fresh Water Supply District No. 1, Carthage, and was built to impound water for municipal and industrial uses. Storage began in Nov. 1957 and the lake level reached the service spillway elevation in May 1958. Data regarding the dam is given in the following table:

	Elevation (feet)
Top of dam.....	280.0
Top of design flood pool.....	275.0
Crest of spillway.....	265.3
Invert of lowest sluice gate.....	235.0

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 42,600 acre-ft, May 21, 2000, elevation, 266.54 ft; minimum contents, 31,750 acre-ft, Sept. 30, 2000, elevation, 263.31 ft.

EXTREMES FOR 2001 WATER YEAR.--Maximum elevation, 267.95 ft, Mar. 2; minimum elevation, 262.99 ft, Nov. 1.

EXTREMES FOR 2002 WATER YEAR.--Maximum elevation, 267.58 ft, Dec. 12, 13, 17; minimum elevation, 263.81 ft, Sept. 30.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 267.97 ft, Feb. 22; minimum elevation, 263.75 ft, Oct. 5, 6.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	263.31	263.03	265.58	265.92	266.00	267.10	265.90	265.17	265.40	265.36	264.80	265.07
2	263.30	263.23	265.54	265.81	265.87	267.75	265.84	265.15	265.41	265.37	264.82	265.08
3	263.28	263.36	265.50	265.74	265.78	267.77	265.80	265.14	265.40	265.36	264.80	265.12
4	263.27	263.51	265.47	265.67	265.72	267.59	265.76	265.12	265.39	265.34	264.78	265.23
5	263.26	263.52	265.45	265.63	265.67	267.06	265.72	265.17	265.38	265.34	264.75	265.27
6	263.25	263.61	265.44	265.60	265.63	266.57	265.68	265.30	265.68	265.32	264.75	265.28
7	263.21	263.61	265.43	265.58	265.60	266.26	265.66	265.32	266.13	265.30	264.77	265.31
8	263.17	263.71	265.41	265.55	265.58	266.07	265.64	265.31	266.60	265.29	264.76	265.30
9	263.15	263.74	265.40	265.53	265.59	266.49	265.62	265.31	266.74	265.28	264.73	265.39
10	263.13	263.72	265.41	265.51	265.58	266.72	265.60	265.30	266.49	265.26	264.71	265.45
11	263.12	263.71	265.40	265.55	265.58	266.42	265.59	265.28	266.23	265.23	264.69	265.44
12	263.10	263.73	265.36	265.55	265.68	266.27	265.57	265.32	266.02	265.21	264.67	265.42
13	263.09	263.79	265.54	265.55	265.76	266.21	265.56	265.38	265.86	265.18	264.66	265.40
14	263.08	263.80	265.79	265.55	265.78	266.12	265.55	265.39	265.75	---	264.65	265.39
15	263.07	263.79	265.85	265.53	265.76	266.33	265.58	265.38	265.79	---	264.63	265.37
16	263.11	263.82	265.93	265.56	265.96	266.25	265.60	265.36	265.76	---	264.61	265.35
17	263.13	263.81	265.91	265.93	266.34	266.08	265.57	265.34	265.70	---	264.63	265.34
18	263.12	263.82	265.82	267.08	266.23	265.95	265.54	265.32	265.63	---	264.67	265.33
19	263.10	263.86	265.73	267.57	266.06	265.86	265.52	265.31	265.58	---	264.67	265.36
20	263.09	263.85	265.65	267.14	265.94	265.78	265.50	265.30	265.55	---	---	265.45
21	263.08	263.85	265.60	266.63	265.85	265.73	265.47	265.28	265.51	265.04	---	265.72
22	263.08	263.85	265.55	266.31	265.78	265.69	265.44	265.25	265.47	265.02	---	265.76
23	263.08	263.88	265.52	266.09	265.71	265.66	265.42	265.23	265.44	265.00	---	265.75
24	263.07	264.71	265.54	265.95	265.68	265.65	265.40	265.21	265.42	---	---	265.81
25	263.06	265.80	265.72	265.84	265.66	265.67	265.36	265.18	265.40	---	---	265.76
26	263.05	265.90	266.30	265.77	265.63	265.68	265.33	265.16	265.38	---	---	265.68
27	263.04	265.80	267.07	265.71	265.72	265.66	265.29	265.15	265.37	---	---	265.62
28	263.03	265.73	267.06	265.67	266.41	265.71	265.25	265.19	265.37	264.88	---	265.57
29	263.03	265.67	266.63	265.94	---	265.81	265.22	265.19	265.35	264.86	264.89	265.53

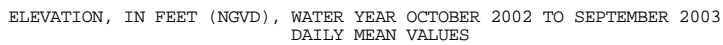
CAL YR 2000	MAX unknown	MIN unknown
WTR YR 2001	MAX 267.77	MIN 263.02

The graph displays the elevation in feet over a water year from 2000 to 2001. The y-axis represents elevation in feet, ranging from 263 to 268. The x-axis represents the water year, with labels for months (O, N, D, J, F, M, A, M, J, J, A, S) and years (2000, 2001). The data shows a sharp increase in elevation starting in late 2000, peaking at approximately 267.8 feet in mid-2000, followed by a decline and then a period of relative stability with minor fluctuations. A gap in the record is indicated by a dashed line between late 2000 and early 2001.

Month	Elevation (feet)
Oct 2000	263.3
Nov 2000	263.1
Dec 2000	263.8
Jan 2001	263.9
Feb 2001	263.9
Mar 2001	263.9
Apr 2001	263.9
May 2001	263.9
Jun 2001	263.9
Jul 2001	263.9
Aug 2001	263.9
Sep 2001	263.9
Oct 2001	263.9
Nov 2001	263.9
Dec 2001	263.9
Jan 2002	263.9
Feb 2002	263.9
Mar 2002	263.9
Apr 2002	263.9
May 2002	263.9
Jun 2002	263.9
Jul 2002	263.9
Aug 2002	263.9
Sep 2002	263.9
Oct 2002	263.9
Nov 2002	263.9
Dec 2002	263.9
Jan 2003	263.9
Feb 2003	263.9
Mar 2003	263.9
Apr 2003	263.9
May 2003	263.9
Jun 2003	263.9
Jul 2003	263.9
Aug 2003	263.9
Sep 2003	263.9
Oct 2003	263.9
Nov 2003	263.9
Dec 2003	263.9
Jan 2004	263.9
Feb 2004	263.9
Mar 2004	263.9
Apr 2004	263.9
May 2004	263.9
Jun 2004	263.9
Jul 2004	263.9
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Apr 2005	263.9
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Nov 2008	263.9
Dec 2008	263.9
Jan 2009	263.9
Feb 2009	263.9
Mar 2009	263.9
Apr 2009	263.9
May 2009	263.9
Jun 2009	263.9
Jul 2009	263.9
Aug 2009	263.9
Sep 2009	263.9
Oct 2009	263.9
Nov 2009	263.9
Dec 2009	263.9
Jan 2010	263.9
Feb 2010	263.9
Mar 2010	263.9
Apr 2010	263.9
May 2010	263.9
Jun 2010	263.9
Jul 2010	263.9
Aug 2010	263.9
Sep 2010	263.9
Oct 2010	263.9
Nov 2010	263.9
Dec 2010	263.9
Jan 2011	263.9
Feb 2011	263.9
Mar 2011	263.9
Apr 201	

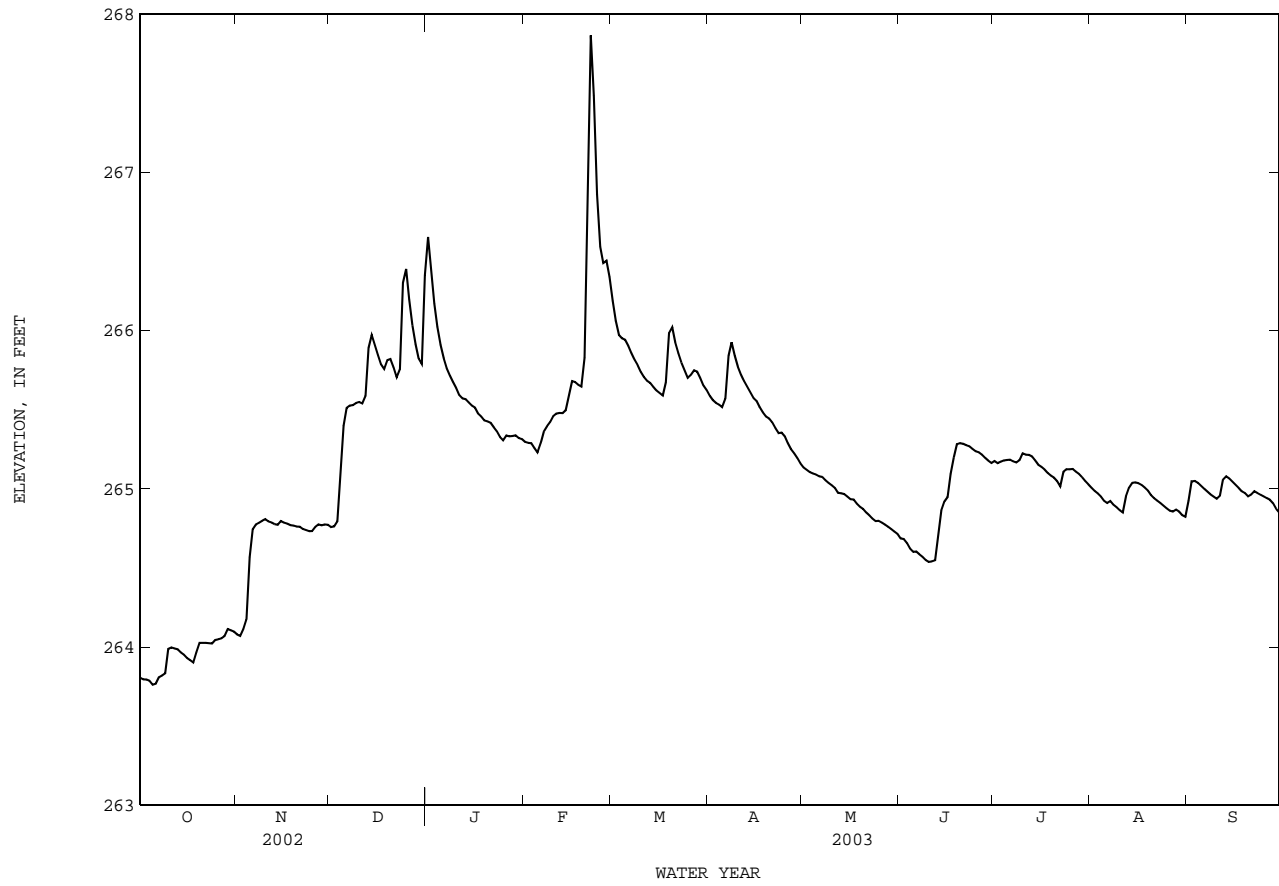
ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	265.47	265.31	265.76	---	265.67	265.69	266.85	265.55	265.04	264.96	264.80	264.30
2	265.45	265.29	265.73	---	265.66	265.73	266.53	265.52	265.03	264.99	264.78	264.28
3	265.43	265.27	265.71	---	265.65	265.70	266.27	265.49	265.01	265.04	264.76	264.26
4	265.41	265.24	265.68	---	265.64	265.67	266.09	265.45	265.00	265.05	264.73	264.24
5	265.46	265.21	265.66	265.66	265.69	265.65	265.97	265.42	264.99	265.04	264.71	264.23
6	265.80	265.18	265.65	265.87	266.05	265.64	265.89	265.39	264.97	265.02	264.69	264.23
7	265.92	265.15	265.63	265.91	266.19	265.64	265.82	265.35	264.95	265.01	264.66	264.21
8	265.82	265.12	265.68	265.87	266.11	265.64	266.54	265.32	264.93	264.99	264.63	264.22
9	265.74	265.09	265.70	265.83	266.02	265.68	266.98	265.29	264.96	264.96	264.61	264.22
10	265.70	265.07	265.68	265.80	265.94	265.65	266.65	265.25	265.13	264.94	264.58	264.22
11	266.11	265.05	265.68	265.76	265.86	265.64	266.36	265.21	265.20	264.92	264.56	264.20
12	266.17	265.02	266.77	265.74	265.82	265.70	266.17	265.18	265.21	264.89	264.53	264.18
13	266.69	265.00	267.46	265.70	265.78	265.71	266.03	265.21	265.19	264.89	264.52	264.17
14	267.22	264.97	267.15	265.68	265.75	265.72	265.94	265.17	265.17	264.91	264.53	264.15
15	266.76	264.94	266.74	265.65	265.73	265.72	265.87	265.13	265.15	264.90	264.52	264.14
16	266.39	264.91	266.60	265.63	265.72	265.70	265.81	265.08	265.13	265.00	264.50	264.13
17	266.15	264.88	267.51	265.62	265.70	265.69	265.78	265.14	265.11	265.05	264.49	264.11
18	265.99	264.86	267.13	265.61	265.68	265.71	265.75	265.22	265.09	265.05	264.48	264.10
19	265.88	264.84	266.67	265.65	265.80	265.71	265.72	265.18	265.07	265.04	264.46	264.09
20	265.81	264.79	266.36	265.66	266.26	266.07	265.69	265.15	265.06	265.02	264.44	264.11
21	265.75	264.76	266.16	265.67	266.25	266.51	265.68	265.11	265.04	265.01	264.42	264.09
22	265.70	264.75	266.03	265.66	266.12	266.35	265.66	265.06	265.02	264.99	264.40	264.06
23	265.66	264.76	265.94	265.67	266.00	266.17	265.65	265.02	265.00	264.97	264.40	263.99
24	265.62	264.78	265.86	265.69	265.93	266.03	265.64	265.01	264.98	264.95	264.38	263.91
25	265.56	264.76	265.80	265.70	265.87	265.96	265.60	265.00	264.96	264.94	264.36	263.89
26	265.51	264.77	265.76	265.69	265.81	265.88	265.58	264.99	264.96	264.94	264.36	263.87
27	265.47	264.85	---	265.68	265.73	265.82	265.58	264.98	264.97	264.91	264.37	263.86
28	265.43	265.01	---	265.67	265.70	265.79	265.59	264.99	264.98	264.89	264.38	263.84
29	265.40	265.51	---	265.67	---	265.76	265.58	265.02	264.97	264.87	264.35	263.84
30	265.37	265.73	---	265.67	---	265.77	265.56	265.04	264.97	264.85	264.33	263.82
31	265.34	---	---	265.68	---	266.60	---	265.05	---	264.83	264.31	---
MEAN	265.81	265.03	---	---	265.86	265.83	265.96	265.19	265.04	264.96	264.52	264.10
MAX	267.22	265.73	---	---	266.26	266.60	266.98	265.55	265.21	265.05	264.80	264.30
MIN	265.34	264.75	---	---	265.64	265.64	265.56	264.98	264.93	264.83	264.31	263.82
CAL YR 2001	MAX 267.77		MIN 264.61									
WTR YR 2002	MAX 267.51		MIN 263.82									



DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	263.81	264.08	264.76	266.59	265.30	266.19	265.59	265.14	264.69	265.18	265.01	264.93
2	263.80	264.07	264.76	266.40	265.29	266.06	265.56	265.12	264.68	265.16	264.99	265.05
3	263.79	264.11	264.80	266.17	265.29	265.97	265.54	265.11	264.66	265.17	264.97	265.05
4	263.79	264.18	265.09	266.02	265.26	265.95	265.53	265.10	264.62	265.18	264.95	265.04
5	263.76	264.57	265.40	265.91	265.23	265.94	265.52	265.09	264.60	265.18	264.92	265.02
6	263.77	264.74	265.51	265.83	265.29	265.90	265.57	265.08	264.60	265.19	264.91	265.00
7	263.81	264.78	265.53	265.76	265.36	265.86	265.84	265.08	264.59	265.17	264.92	264.98
8	263.82	264.79	265.53	265.72	265.39	265.82	265.93	265.05	264.57	265.17	264.90	264.96
9	263.83	264.80	265.54	265.68	265.42	265.78	265.84	265.04	264.55	265.18	264.88	264.95
10	263.99	264.81	265.55	265.64	265.46	265.74	265.77	265.02	264.54	265.22	264.87	264.94
11	264.00	264.79	265.54	265.59	265.48	265.71	265.72	265.01	264.54	265.22	264.85	264.96
12	263.99	264.79	265.59	265.57	265.48	265.68	265.68	264.97	264.55	265.21	264.95	265.06
13	263.99	264.78	265.89	265.57	265.48	265.67	265.64	264.97	264.71	265.20	265.01	265.08
14	263.97	264.77	265.97	265.55	265.50	265.64	265.61	264.97	264.86	265.18	265.04	265.07
15	263.95	264.80	265.91	265.53	265.59	265.62	265.57	264.95	264.92	265.15	265.04	265.05
16	263.93	264.79	265.85	265.51	265.68	265.61	265.56	264.94	264.95	265.14	265.04	265.03
17	263.92	264.78	265.79	265.48	265.68	265.59	265.52	264.93	265.09	265.12	265.03	265.01
18	263.90	264.77	265.76	265.46	265.66	265.67	265.48	264.91	265.20	265.10	265.01	264.99
19	263.97	264.77	265.81	265.43	265.65	265.99	265.46	264.89	265.28	265.08	264.99	264.97
20	264.03	264.76	265.82	265.43	265.83	266.02	265.44	264.87	265.29	265.07	264.96	264.95
21	264.03	264.76	265.77	265.42	267.05	265.93	265.42	264.85	265.29	265.05	264.94	264.96
22	264.03	264.75	265.71	265.39	267.87	265.86	265.38	264.83	265.28	265.02	264.93	264.99
23	264.02	264.74	265.76	265.36	267.49	265.80	265.35	264.81	265.27	265.11	264.91	264.97
24	264.02	264.73	266.30	265.33	266.86	265.75	265.36	264.80	265.25	265.12	264.89	264.96
25	264.04	264.73	266.39	265.31	266.53	265.70	265.33	264.80	265.24	265.12	264.88	264.95
26	264.05	264.76	266.20	265.34	266.43	265.72	265.29	264.79	265.23	265.13	264.86	264.94
27	264.06	264.77	266.03	265.33	266.44	265.75	265.25	264.77	265.22	265.11	264.86	264.93
28	264.07	264.77	265.91	265.33	266.34	265.74	265.22	264.76	265.20	265.09	264.87	264.91
29	264.11	264.77	265.82	265.34	---	265.70	265.19	264.75	265.18	265.07	264.86	264.87
30	264.10	264.77	265.79	265.32	---	265.65	265.16	264.73	265.16	265.05	264.83	264.85
31	264.10	---	266.35	265.31	---	265.63	---	264.72	---	265.03	264.82	---
MEAN	263.95	264.68	265.69	265.60	265.87	265.79	265.51	264.93	264.93	265.13	264.93	264.98
MAX	264.11	264.81	266.39	266.59	267.87	266.19	265.93	265.14	265.29	265.22	265.04	265.08
MIN	263.76	264.07	264.76	265.31	265.23	265.59	265.16	264.72	264.54	265.02	264.82	264.85
CAL YR 2002	MAX 266.98		MIN 263.76									
WTR YR 2003	MAX 267.46		MIN 263.76									

08022200 Murval Lake near Gary, TX--Continued



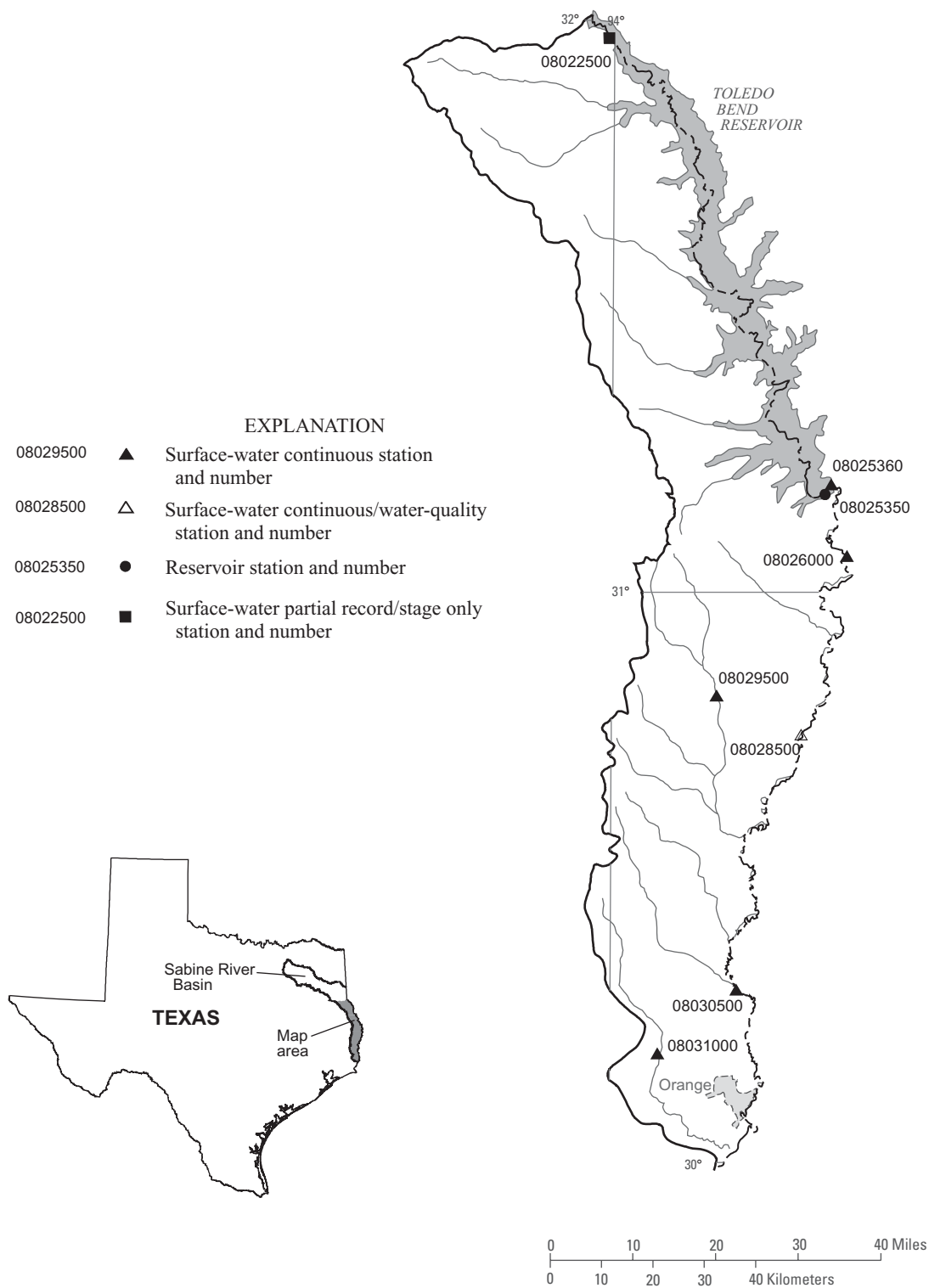


Figure 9.--Map showing location of gaging stations in the second section of the Sabine River Basin

08022500	Sabine River at Logansport, LA	346
08025350	Toledo Bend Reservoir near Burkeville, TX	348
08025360	Sabine River at Toledo Bend Reservoir near Burkeville, TX	350
08026000	Sabine River near Burkeville, TX	352
08028500	Sabine River near Bon Weir, TX	354
08029500	Big Cow Creek near Newton, TX	358
08030500	Sabine River near Ruliff, TX	360
08031000	Cow Bayou near Mauriceville, TX	362

SABINE RIVER BASIN

08022500 Sabine River at Logansport, LA

LOCATION.--Lat 31°58'20", long 94°00'22", De Soto Parish, Louisiana-Shelby County, Texas State line at Logansport, Hydrologic Unit 12010004, on left bank just upstream from bridge on U.S. Highway 84, 3.0 mi upstream from Bayou Castor, 111 mi upstream from Toledo Bend Dam and at mile 267.1.

DRAINAGE AREA.--4,842 mi².

PERIOD OF RECORD.--July 1903 to Feb. 1968 (daily mean discharge), Mar. 1968 to current year (daily maximum gage height).
Water-quality records.--Specific conductance: 1939 to 1945. Water temperature: 1939 to 1945.

REVISED RECORDS.--WSP 1312: 1903-06 (monthly and annual means). WSP 1732: 1929(M), 1933(M).

GAGE.--Water-stage recorder. Datum of gage is 147.72 ft above NGVD of 1929. July 1, 1903, to Sept. 30, 1956, nonrecording gages located in the vicinity of present gage. Oct. 1, 1956, to Jan. 16, 1964, water-stage recorder 4,600 ft upstream. Jan. 16, 1964, to Dec. 10, 1968, water-stage recorder 4,700 ft upstream. All gages to present datum except prior to Dec. 31, 1906 when datum was 2.00 ft lower. Satellite telemeter at station.

REMARKS.--Records good. Station discontinued as a daily streamflow station on Mar. 1, 1968, due to backwater from storage in Toledo Bend Reservoir. Since water year 1961, at least 10% of contributing drainage area has been regulated. Flow may also be slightly affected at times by discharge from one floodwater-retarding structure. This structure controls runoff from 9.70 mi² in the Mill Creek drainage basin. Numerous diversions above station for oil field operations, municipal and industrial uses.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--57 years (water years 1904-60), 3,325 ft³/s (2,407,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1904-60).--Maximum discharge, 92,000 ft³/s Apr. 8, 1945, gage height, 44.07 ft, from floodmark; minimum, 16 ft³/s, Sept. 26-28, Oct. 3, 4, 1939.

AVERAGE DISCHARGE FOR PERIOD AFTER REGULATION.--7 years (water years 1961-67), 2,252 ft³/s (1,632,000 acre-ft/yr).

EXTREMES FOR PERIOD AFTER REGULATION (WATER YEARS, 1961-67).--Maximum gage height, 34.78 ft Apr. 16, 1991; minimum since initial filling of Toledo Bend Reservoir in June 1968, 16.85 ft, Nov. 9, 1987. Maximum discharge, 46,800 ft³/s May 6, 1966, gage height, 38.46 ft; minimum, 25 ft³/s, Aug. 13, 1964.

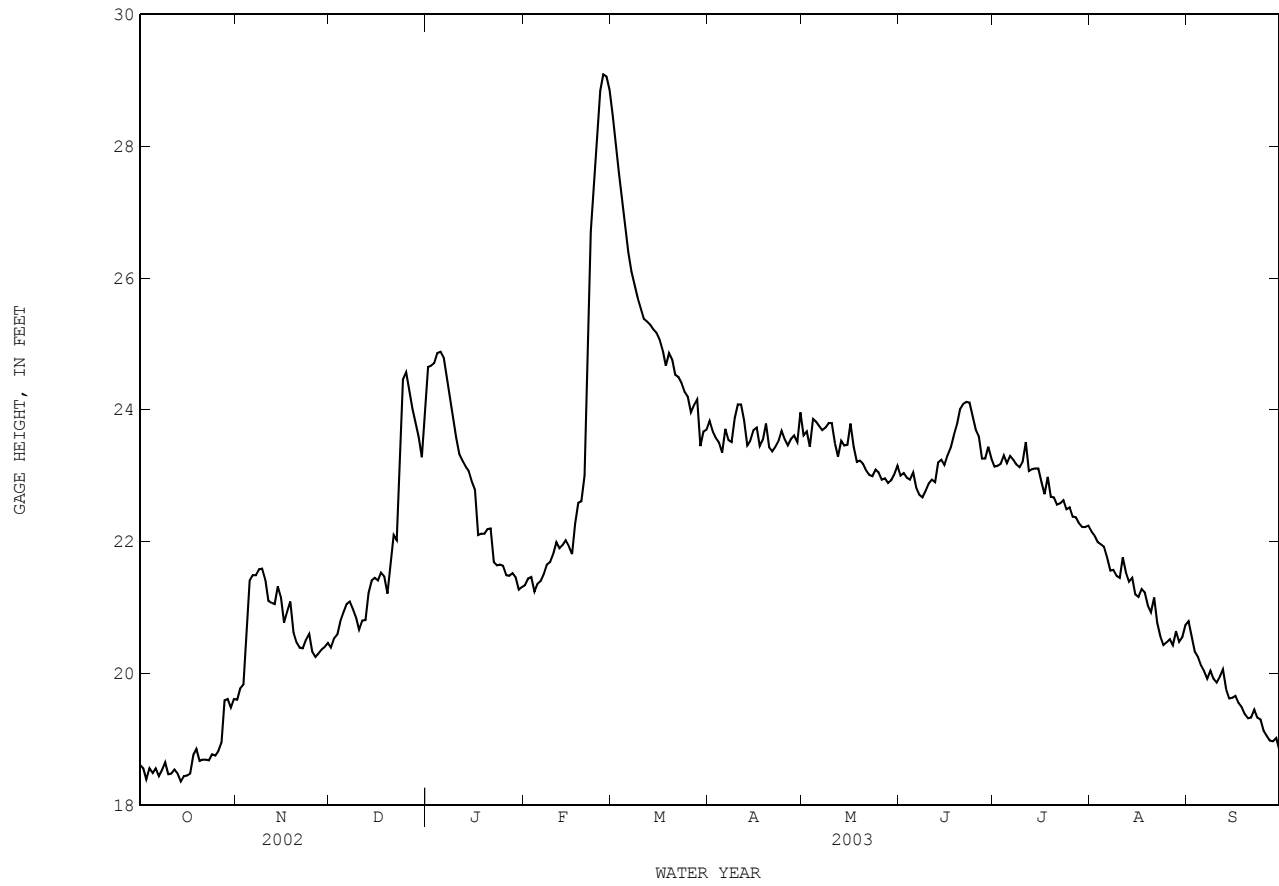
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1884 reached a stage of 39.4 ft at present site and datum. Stage determined from high-water mark.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 29.09 ft, Feb. 26; minimum gage height, 17.54 ft, Oct. 3.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.61	19.60	20.39	24.65	21.34	28.47	23.83	23.61	23.00	23.14	22.15	20.79
2	18.56	19.77	20.53	24.67	21.44	28.03	23.67	23.67	23.04	23.15	22.09	20.57
3	18.39	19.83	20.59	24.71	21.46	27.59	23.57	23.44	22.97	23.18	21.99	20.33
4	18.56	20.59	20.79	24.86	21.24	27.22	23.50	23.86	22.94	23.31	21.96	20.25
5	18.49	21.41	20.93	24.88	21.36	26.84	23.35	23.82	23.05	23.19	21.92	20.12
6	18.56	21.49	21.05	24.79	21.40	26.38	23.71	23.75	22.82	23.30	21.76	20.03
7	18.44	21.49	21.09	24.51	21.51	26.10	23.54	23.69	22.71	23.24	21.56	19.92
8	18.53	21.58	20.98	24.19	21.65	25.90	23.51	23.73	22.67	23.17	21.57	20.04
9	18.65	21.59	20.85	23.89	21.69	25.70	23.88	23.80	22.77	23.13	21.48	19.92
10	18.47	21.42	20.66	23.57	21.81	25.54	24.08	23.80	22.88	23.21	21.45	19.86
11	18.48	21.10	20.80	23.33	21.99	25.38	24.08	23.49	22.94	23.51	21.76	19.95
12	18.54	21.07	20.81	23.23	21.90	25.34	23.84	23.29	22.90	23.07	21.53	20.06
13	18.48	21.05	21.22	23.14	21.95	25.29	23.46	23.53	23.20	23.10	21.39	19.76
14	18.36	21.32	21.41	23.07	22.02	25.22	23.53	23.46	23.24	23.11	21.45	19.62
15	18.44	21.16	21.45	22.91	21.93	25.17	23.69	23.47	23.16	23.11	21.20	19.63
16	18.45	20.77	21.41	22.79	21.81	25.07	23.73	23.79	23.31	22.90	21.16	19.66
17	18.48	20.94	21.53	22.10	22.27	24.90	23.45	23.44	23.42	22.72	21.28	19.55
18	18.76	21.09	21.47	22.12	22.59	24.67	23.55	23.21	23.61	22.98	21.23	19.49
19	18.85	20.62	21.21	22.12	22.61	24.86	23.79	23.23	23.77	22.68	21.03	19.38
20	18.67	20.47	21.62	22.19	23.00	24.76	23.43	23.18	24.01	22.67	20.93	19.32
21	18.69	20.39	22.10	22.20	25.10	24.53	23.37	23.08	24.09	22.56	21.15	19.33
22	18.69	20.38	22.02	21.69	26.71	24.50	23.44	23.01	24.12	22.58	20.77	19.45
23	18.68	20.51	23.06	21.64	27.46	24.41	23.53	22.99	24.11	22.63	20.56	19.33
24	18.77	20.60	24.46	21.65	28.13	24.27	23.68	23.09	23.91	22.49	20.43	19.30
25	18.75	20.33	24.57	21.63	28.84	24.20	23.55	23.05	23.70	22.52	20.47	19.13
26	18.82	20.25	24.30	21.49	29.09	23.96	23.46	22.94	23.60	22.38	20.52	19.05
27	18.95	20.30	24.02	21.48	29.06	24.07	23.56	22.96	23.26	22.37	20.43	18.98
28	19.59	20.36	23.80	21.52	28.86	24.16	23.61	22.89	23.26	22.28	20.64	18.97
29	19.61	20.40	23.59	21.46	---	23.45	23.51	22.93	23.44	22.22	20.48	19.02
30	19.48	20.46	23.28	21.27	---	23.67	23.96	22.02	23.26	22.22	20.55	18.84
31	19.61	---	23.89	21.31	---	23.70	---	23.15	---	22.24	20.73	---
MAX	19.61	21.59	24.57	24.88	29.09	28.47	24.08	23.86	24.12	23.51	22.15	20.79
MIN	18.36	19.60	20.39	21.27	21.24	23.45	23.35	22.89	22.67	22.22	20.43	18.84
CAL YR 2002	MAX 29.39		MIN 18.36									
WTR YR 2003	MAX 29.09		MIN 18.36									

08022500 Sabine River at Logansport, LA--Continued



SABINE RIVER BASIN

08025350 Toledo Bend Reservoir near Burkeville, TX

LOCATION.--Lat 31°10'25", long 93°33'57", Newton County, Hydrologic Unit 12010004, in powerhouse at right end of Toledo Bend Dam on Sabine River, 15 mi northeast of Burkeville and at mile 156.5.

DRAINAGE AREA.--7,178 mi².

PERIOD OF RECORD.--Oct. 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (levels by Sabine River Authority). Prior to July 20, 1967, nonrecording gage at same site and datum. July 20, 1967, to June 30, 1973, recording gage at right end of spillway 1.6 mi north of present site and at same datum. Satellite telemeter at station.

REMARKS.--No estimated daily contents. Records good. The reservoir is formed by a rolled earthfill dam. Closure of embankment completed and deliberate impoundment began Oct. 3, 1966. The reservoir is operated for hydro-electric power generation and water conservation. Releases during high inflow periods are controlled by eleven 40 x 28-foot tainter gates. An 8.33 x 12-foot gated conduit through the dam is used for low-flow releases. Two additional 20-inch-diameter conduits, that bypass the larger conduit, may also be used for low-flow releases. Water for turbines is admitted through four 16.75 x 29-foot penstocks and controlled by vertically operated caterpillar-type gates. The dam is owned by the Sabine River Authority. The capacity table is based on U.S. Geological Survey topographic maps. There are many diversions above station for oil field operations and municipal supply. Conservation pool storage is 4,472,900 acre-ft. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	185.0
Design flood.....	175.3
Top of gates.....	173.0
Top of power drawdown storage (top of conservation pool).....	172.0
Top of power head storage.....	162.2
Crest of spillway (controlled).....	145.0
Lowest gated outlet (invert).....	100.0

COOPERATION.--Capacity table furnished by the Sabine River Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 4,840,000 acre-ft, May 18, 1989, elevation, 173.95 ft; minimum since initial filling of reservoir in June 1968, 3,008,000 acre-ft, Oct. 12,13, 2001, elevation, 162.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 4,677,000 acre-ft, Mar. 5, gage height, 173.09 ft; minimum contents, 3,447,000 acre-ft, Oct. 18, gage height, 165.83 ft.

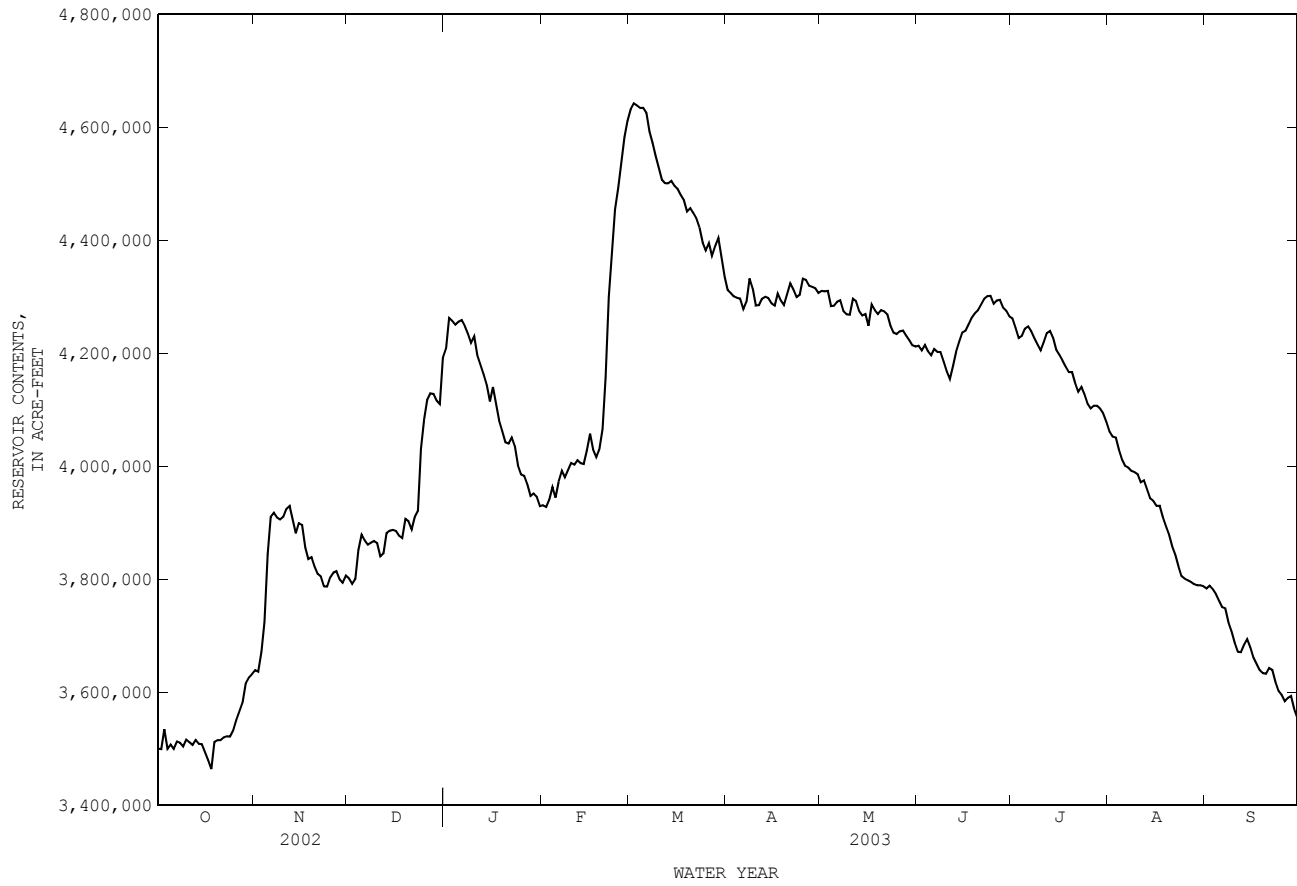
RESERVOIR STORAGE, IN (ACRE-FEET), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3500000	3639000	3801000	4209000	3931000	4633000	4312000	4311000	4214000	4262000	4061000	3784000
2	3499000	3636000	3792000	4263000	3928000	4643000	4307000	4310000	4205000	4245000	4053000	3789000
3	3534000	3672000	3801000	4257000	3941000	4639000	4301000	4311000	4215000	4227000	4051000	3783000
4	3499000	3725000	3852000	4251000	3963000	4634000	4298000	4284000	4204000	4231000	4030000	3774000
5	3507000	3844000	3879000	4256000	3945000	4635000	4297000	4284000	4196000	4244000	4012000	3762000
6	3500000	3910000	3869000	4259000	3973000	4626000	4278000	4291000	4207000	4248000	4001000	3750000
7	3512000	3918000	3861000	4249000	3992000	4593000	4292000	4294000	4203000	4239000	3998000	3749000
8	3510000	3909000	3865000	4235000	3980000	4572000	4332000	4275000	4202000	4227000	3992000	3724000
9	3504000	3906000	3867000	4219000	3994000	4549000	4314000	4269000	4186000	4216000	3990000	3708000
10	3516000	3911000	3864000	4230000	4006000	4527000	4285000	4268000	4169000	4205000	3986000	3688000
11	3511000	3925000	3841000	4197000	4003000	4507000	4286000	4297000	4155000	4220000	3972000	3672000
12	3507000	3930000	3846000	4180000	4010000	4501000	4297000	4292000	4178000	4236000	3975000	3671000
13	3516000	3905000	3882000	4163000	4005000	4501000	4300000	4275000	4203000	4240000	3959000	3684000
14	3509000	3881000	3886000	4145000	4004000	4505000	4298000	4267000	4221000	4227000	3943000	3694000
15	3508000	3899000	3887000	4115000	4028000	4497000	4289000	4270000	4237000	4206000	3939000	3679000
16	3494000	3896000	3885000	4140000	4058000	4491000	4284000	4249000	4240000	4197000	3930000	3662000
17	3480000	3856000	3877000	4109000	4030000	4480000	4306000	4287000	4251000	4187000	3930000	3650000
18	3464000	3836000	3873000	4081000	4016000	4471000	4293000	4276000	4263000	4176000	3911000	3639000
19	3512000	3839000	3907000	4061000	4030000	4451000	4286000	4270000	4271000	4167000	3894000	3634000
20	3515000	3823000	3903000	4042000	4066000	4457000	4305000	4276000	4277000	4167000	3880000	3633000
21	3515000	3809000	3889000	4040000	4157000	4449000	4324000	4274000	4287000	4148000	3859000	3643000
22	3520000	3805000	3910000	4051000	4300000	4439000	4313000	4269000	4297000	4132000	3844000	3640000
23	3522000	3787000	3921000	4036000	4374000	4423000	4300000	4249000	4301000	4141000	3823000	3619000
24	3521000	3787000	4031000	4001000	4455000	4396000	4303000	4237000	4302000	4128000	3806000	3602000
25	3532000	3803000	4083000	3985000	4493000	4382000	4332000	4234000	4288000	4110000	3801000	3596000
26	3551000	3812000	4117000	3983000	4538000	4395000	4330000	4239000	4294000	4102000	3798000	3584000
27	3567000	3814000	4129000	3968000	4583000	4372000	4320000	4240000	4295000	4107000	3795000	3590000
28	3581000	3800000	4128000	3947000	4612000	4390000	4318000	4232000	4281000	4107000	3791000	3593000
29	3616000	3794000	4117000	3952000	---	4404000	4315000	4223000	4276000	4102000	3789000	3570000
30	3626000	3806000	4110000	3946000	---	4370000	4307000	4214000	4265000	4094000	3789000	3555000
31	3632000	---	4192000	3929000	---	4336000	---	4212000	---	4079000	3788000	---
MEAN	3525000	3829000	3931000	4113000	4122000	4493000	4304000	4267000	4239000	4181000	3916000	3671000
MAX	3632000	3930000	4192000	4263000	4612000	4643000	4332000	4311000	4302000	4262000	4061000	3789000
MIN	3464000	3636000	3792000	3929000	3928000	4336000	4278000	4212000	4155000	4079000	3788000	3555000
(+)	167.02	168.11	170.40	168.86	172.74	171.22	171.05	170.51	170.82	169.74	168.00	166.53
(@)	-127000	+174000	+386000	-263000	+683000	-276000	-29000	-95000	+53000	-186000	-291000	-233000
CAL YR 2002	MAX 4619000	MIN 3464000	(@) +22000									
WTR YR 2003	MAX 4643000	MIN 3464000	(@) +50000									

(+) Elevation, in feet, at end of month.

(@) Change in contents, in acre-feet.

08025350 Toledo Bend Reservoir near Burkeville, TX--Continued



SABINE RIVER BASIN

08025360 Sabine River at Toledo Bend Reservoir near Burkeville, TX

LOCATION.--Lat 31°10'25", long 93°33'57", Newton County, Hydrologic Unit 12010005, in powerhouse at right end of Toledo Bend Dam, 10 mi upstream from Sabine River near Burkeville gage and at mile 156.5.

DRAINAGE AREA.--7,178 mi².

PERIOD OF RECORD.--Oct. 1971 to current year.

Water-quality records.--Chemical data: Oct. 1967 to Sept. 1986. Biochemical data: Oct. 1967 to Sept. 1986.

GAGE.--Water-stage recorders. Datum of gage is NGVD of 1929 (levels by Sabine River Authority). Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records fair. Daily discharges are a combination of releases from various outlets at the dam. Discharges for releases through the turbines are computed using scroll case differential relations and operation logs. Tainter gate releases, low-flow sluiceway releases, bypass gate releases, and turbine leakages are based on discharge measurements and operation logs. Since installation of gage in Oct. 1971, at least 10% of contributing drainage area has been regulated.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	176	176	176	14300	176	19600	6690	1920	176	4270	6730	847
2	176	176	176	15200	176	22200	6700	2140	2400	5740	4640	7030
3	176	176	176	15200	176	26000	6690	176	2360	6400	253	6840
4	176	176	4350	15200	176	26200	6790	176	2390	247	6640	6760
5	176	176	6990	15100	176	26300	6790	2160	2240	289	6910	6630
6	176	4550	6820	15000	176	26200	6730	2050	2680	329	5960	4980
7	812	6890	7070	15100	176	26100	6790	2090	2070	6030	4190	201
8	176	6950	7050	15100	176	25800	6770	1860	176	6480	251	6630
9	807	7010	7050	15100	176	25600	6750	2100	2380	6380	251	6470
10	176	7080	6610	14900	176	21100	6790	176	2470	6540	252	6580
11	1470	1950	6970	15100	4110	15400	4250	171	2370	6360	6140	6670
12	176	3570	6950	15100	4110	13700	176	2090	2370	4040	6100	6700
13	176	7140	6980	14800	2470	13800	176	2050	2420	242	6090	5130
14	776	7140	7110	15200	176	13800	176	2070	2080	6390	6150	201
15	176	7140	7040	15200	2200	13700	2430	2050	176	6530	6190	4590
16	771	7140	6980	10100	4160	13700	2400	2040	2350	6330	3670	4490
17	176	7140	7030	8020	4410	13700	2780	176	2400	6550	255	4530
18	1040	7230	7000	8090	2130	13700	176	176	2460	6380	6070	4490
19	176	6890	6960	8140	3990	13800	176	2070	2410	4240	6190	3900
20	176	6990	7110	8120	2870	13800	176	2070	2380	244	6150	201
21	776	7000	7010	7350	4960	13800	2610	2080	2130	6380	7720	201
22	176	2370	6970	7940	11100	13800	2530	2040	176	6440	9340	4540
23	746	176	6990	7930	14200	13800	2510	2120	2410	6360	9280	7800
24	176	176	6880	8050	14400	13800	2470	1710	2420	6420	7420	7550
25	1000	176	6880	8010	14500	9040	2470	176	6370	6760	161	4450
26	176	176	11300	7900	14400	6750	176	176	5060	4270	146	3900
27	176	176	14100	8110	14400	6740	176	2040	4800	191	146	271
28	176	176	13900	8140	18200	6760	2440	2050	4210	146	146	265
29	176	176	13900	8180	---	6740	176	176	250	3070	146	3860
30	176	176	14100	8180	---	6730	176	176	5160	3060	146	3780
31	176	---	14300	176	---	6760	---	176	---	4720	665	---
TOTAL	12070	106468	232928	348036	138546	488920	96140	42731	73744	137828	124398	130487
MEAN	389	3549	7514	11230	4948	15770	3205	1378	2458	4446	4013	4350
MAX	1470	7230	14300	15200	18200	26300	6790	2160	6370	6760	9340	7800
MIN	176	176	176	176	176	6730	176	171	176	146	146	201
AC-FT	23940	211200	462000	690300	274800	969800	190700	84760	146300	273400	246700	258800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2003, BY WATER YEAR (WY)

	MEAN	1316	2201	5556	9503	10070	11440	8313	7151	5463	4600	3767	3297
MAX	6809	13340	17720	27680	23850	44240	19270	22170	24960	18790	6732	11770	
(WY)	1992	1995	1975	1974	1999	2001	1991	1991	1989	1989	1976	2001	
MIN	59.0	50.7	74.5	90.0	339	231	247	311	508	493	470	424	
(WY)	1976	1976	1976	1978	1981	1972	1978	1984	1996	1996	1996	1983	

SUMMARY STATISTICS

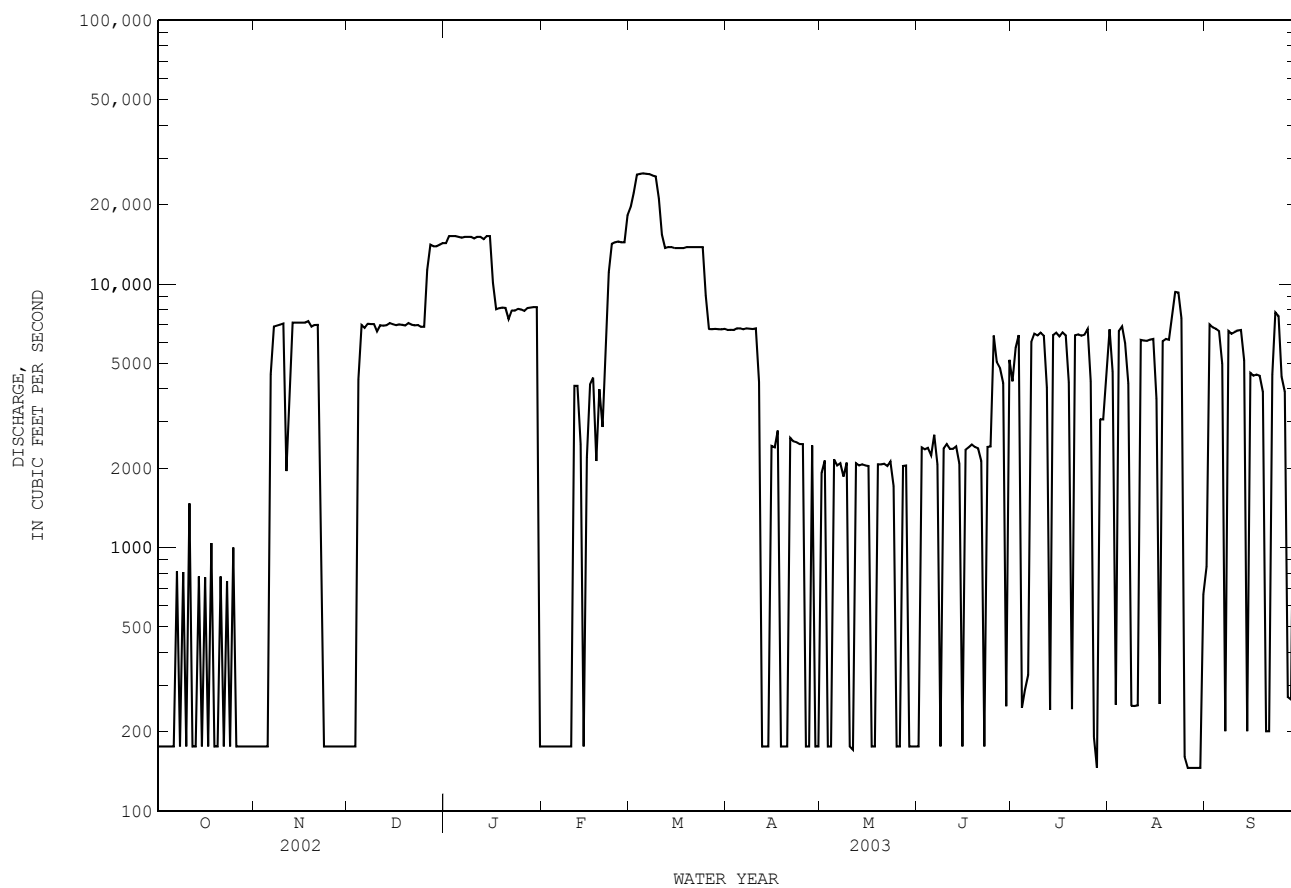
FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1972 - 2003

ANNUAL TOTAL	2187134	1932296	
ANNUAL MEAN	5992	5294	6040
HIGHEST ANNUAL MEAN			10370
LOWEST ANNUAL MEAN			517
HIGHEST DAILY MEAN	25100	26300	117000
LOWEST DAILY MEAN	161	146	11
ANNUAL SEVEN-DAY MINIMUM	176	176	25
ANNUAL RUNOFF (AC-FT)	4338000	3833000	4376000
10 PERCENT EXCEEDS	14100	13900	14800
50 PERCENT EXCEEDS	4740	4250	3900
90 PERCENT EXCEEDS	176	176	144

08025360 Sabine River at Toledo Bend Reservoir near Burkeville, TX--Continued



SABINE RIVER BASIN

08026000 Sabine River near Burkeville, TX

LOCATION.--Lat 31°03'50", long 93°31'10", Newton County, Texas-Vernon Parish, Louisiana State line, Hydrologic Unit 12010005, near left edge of low-water channel on downstream side of bridge on State Highway 63, about 200 ft downstream from Pearl Creek, 10 mi northeast of Burkeville, 16 mi downstream from Bayou Toro and at mile 139.7.

DRAINAGE AREA.--7,482 mi².

PERIOD OF RECORD.--Sept. 1955 to current year. Published as "below Toledo Bend near Burkeville" for period 1955-75.

Water-quality records.--Chemical data: May 1968 to Sept. 1986. Biochemical data: May 1968 to Sept. 1986. Pesticide data: Oct. 1972 to Sept. 1981.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 60.59 ft above NGVD of 1929. Prior to Aug. 23, 1958, nonrecording gage at current site. Prior to Jan. 1, 1989, at present site at datum 10.00 ft higher. Telephone telemeter at station. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records fair. Since water year 1961, at least 10% of contributing drainage area has been regulated.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--5 years (water years 1956-60) 5,180 ft³/s (3,749,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1956-60).--Maximum discharge, 52,900 ft³/s, May 15, 1957, gage height, 32.43 ft; minimum, 60 ft³/s, Sept. 26-30, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1860: Flood in May 1884 reached a stage of 45.9 ft, current datum, from information by local resident. Flood of Apr. 15, 1945, reached a stage of 45.8 ft, current datum. Flood of May 23, 1953, reached a stage of 45.3 ft, current datum, from floodmarks.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1270	531	351	18400	1590	20000	8110	727	343	5580	6540	1450
2	289	429	341	17600	871	20700	8100	3340	1570	5180	6110	4230
3	278	2010	358	16500	805	25000	8090	1820	2990	6800	3430	7620
4	295	7760	3950	15600	752	27500	8080	495	3000	4000	3720	7710
5	265	9700	9580	15300	716	27700	8090	1470	3010	805	7420	7590
6	272	9200	8360	15200	781	27200	8140	2790	3040	942	7170	6780
7	541	11300	7700	15200	1250	26600	8190	2730	2710	3830	6490	3150
8	584	8760	7600	15200	1390	25800	8250	2700	1630	6800	2400	4040
9	554	7750	7510	15200	1040	25600	8200	2680	1610	7100	537	7310
10	564	7570	7370	15000	1040	23900	8090	1730	2980	7220	480	7360
11	690	4790	7330	15100	3220	18400	7320	467	3080	7390	3780	7550
12	620	1430	7680	15100	5540	14500	1510	1400	3190	5990	7070	7670
13	242	5550	10200	15200	5410	14200	733	2680	4450	3000	7050	7310
14	476	5840	9150	15100	1030	15000	658	2670	5090	3860	7040	3520
15	518	5850	8130	15100	1110	14600	1610	2660	2790	7110	7070	3140
16	471	5860	7740	12900	5210	14200	3350	2650	2070	7140	5740	5300
17	512	5840	7610	8970	5470	14100	3360	1700	3180	7080	2760	5300
18	638	6220	7560	8740	4870	14200	2670	432	3440	7180	3720	5310
19	617	7320	7830	8760	3930	15200	616	1350	3760	5950	6940	4820
20	408	7210	7970	8810	4170	15100	554	2640	3230	3030	7040	2780
21	855	7280	7760	8690	7610	14500	1570	2670	2990	3830	7170	607
22	892	5020	7580	8780	18800	14200	3460	2610	1990	7090	10100	2890
23	737	667	7510	8850	20000	14100	3420	2630	1820	7090	10400	6030
24	627	438	9860	8890	18100	14000	3390	2400	3340	7090	9600	8430
25	2330	416	10400	8940	16000	12200	3960	1520	5400	7220	4760	7730
26	3150	399	11700	9040	15400	8540	3130	460	5870	6260	621	4910
27	1850	397	14600	9160	15500	8380	839	1480	5600	3060	498	2810
28	1870	379	14200	9210	17100	8300	1640	2610	5060	586	480	566
29	2480	369	14200	9250	---	8170	2280	1640	2950	2030	429	2340
30	1480	365	14200	9350	---	8110	549	387	3020	3700	408	4550
31	793	---	17800	7970	---	8100	---	351	---	4030	800	---
TOTAL	27168	136650	264130	381110	178705	518100	127959	57889	95203	157973	147773	150803
MEAN	876	4555	8520	12290	6382	16710	4265	1867	3173	5096	4767	5027
MAX	3150	11300	17800	18400	20000	27700	8250	3340	5870	7390	10400	8430
MIN	242	365	341	7970	716	8100	549	351	343	586	408	566
AC-FT	53890	271000	523900	755900	354500	1028000	253800	114800	188800	313300	293100	299100

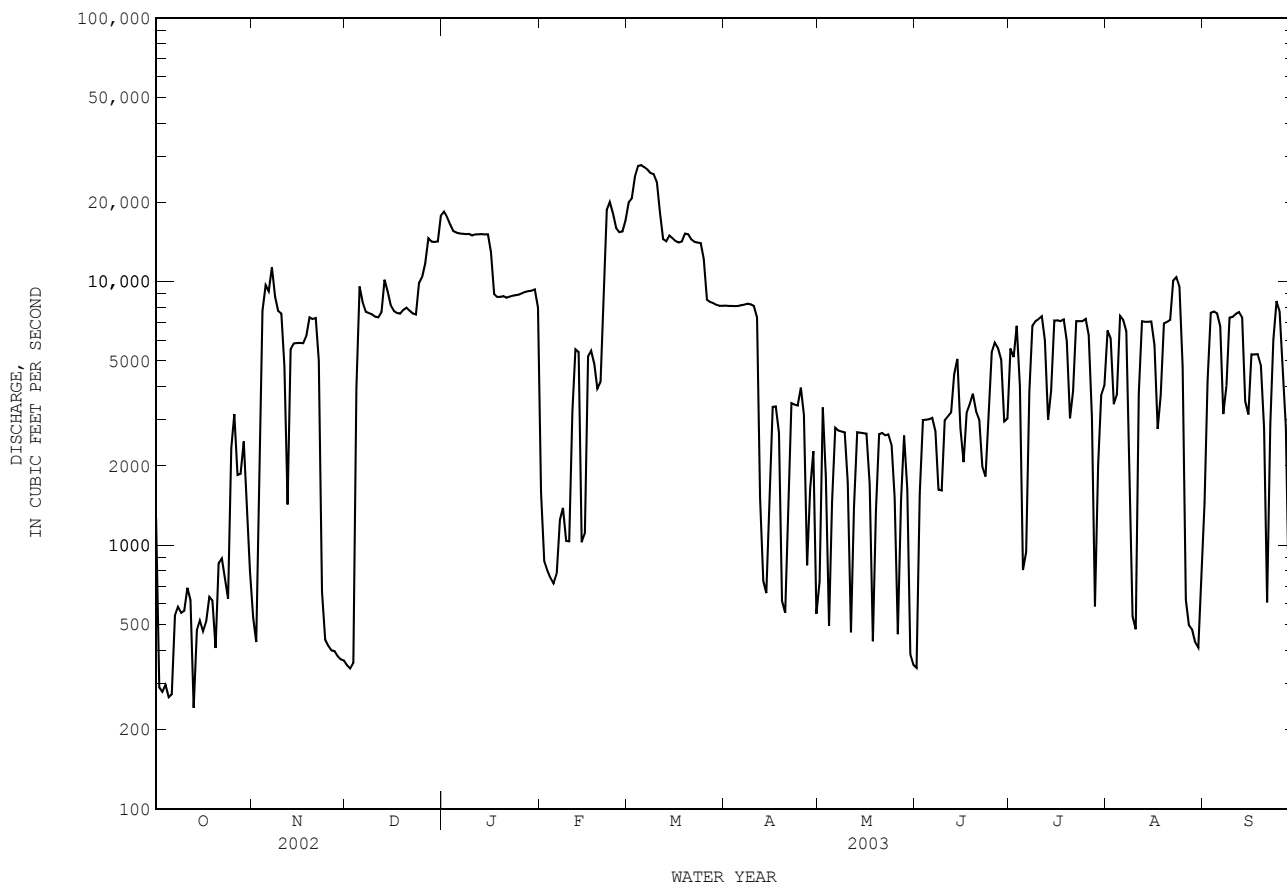
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2003z, BY WATER YEAR (WY)

	MEAN	1250	2037	5687	8619	9326	10610	8307	7644	5247	4018	3055	2926
MAX	6846	12880	17990	28510	27320	45040	26530	32070	25310	23750	6662	11660	
(WY)	1992	1995	1962	1974	1999	2001	1969	1966	1989	1989	1976	2001	
MIN	82.5	86.2	247	484	266	485	231	471	400	166	91.7	77.6	
(WY)	1968	1968	1968	1968	1968	1968	1971	1967	1970	1964	1967	1967	

08026000 Sabine River near Burkeville, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1961 - 2003z	
ANNUAL TOTAL	2214075		2243463		5712	
ANNUAL MEAN	6066		6146		11190	1995
HIGHEST ANNUAL MEAN					548	1967
LOWEST ANNUAL MEAN					117000	Feb 1 1999
HIGHEST DAILY MEAN	26200	Apr 15	27700	Mar 5	38	Sep 14 1967
LOWEST DAILY MEAN	206	Sep 2	242	Oct 13	41	Sep 9 1967
ANNUAL SEVEN-DAY MINIMUM	361	Oct 2	361	Oct 2	124000	Feb 1 1999
MAXIMUM PEAK FLOW			28000	Mar 4	48.05	Feb 1 1999
MAXIMUM PEAK STAGE			32.05	Mar 4		
ANNUAL RUNOFF (AC-FT)	4392000		4450000		4138000	
10 PERCENT EXCEEDS	13700		15000		15200	
50 PERCENT EXCEEDS	4520		5020		2780	
90 PERCENT EXCEEDS	681		539		275	

z Period of regulated streamflow.



SABINE RIVER BASIN

08028500 Sabine River near Bon Wier, TX

LOCATION.--Lat 30°44'49", long 93°36'30", Beauregard Parish, Louisiana-Newton County, Texas State line, Hydrologic Unit 12010005, near left bank on downstream side of bridge on U.S. Highway 190, 0.7 mi upstream from Quicksand Creek, 0.8 mi upstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, 2.0 mi east of Bon Wier, 2.4 mi upstream from Caney Creek and at mile 97.7.

DRAINAGE AREA.--8,229 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Oct. 1923 to current year. Monthly discharge only for some periods, published in WSP 1312. Gage-height records collected in this vicinity since 1913 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1342: 1953. WSP 1442: 1924, 1926-27(M), 1929(M), 1939. WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 33.42 ft above NGVD of 1929. Prior to July 8, 1931, nonrecording gage at site 0.8 mi downstream at datum 13.00 ft higher. July 8, 1931, to Oct. 15, 1958, nonrecording gage at present site at datum 13.00 ft higher. Oct. 16, 1958, to Sept. 30, 1975, water-stage recorder at present site at datum 13.00 ft higher. Oct. 1, 1975, to Dec. 31, 1988, at present site at datum 10.00 ft higher. Telephone telemeter at station. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. Since water year 1961, at least 10% of contributing drainage area has been regulated.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--37 years (water years 1924-60) 7,155 ft³/s (5,184,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1924-60).--Maximum discharge, 115,000 ft³/s, May 19, 1953, gage height, 38.70 ft, current datum; minimum, 160 ft³/s, Sept. 29, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1833, 43.5 ft Apr. 23 or 24, 1913, from information by Gulf, Colorado, and Santa Fe Railway Co. and local residents. Flood in May 1884 reached a stage of 39 ft. Floods occurring about 1844 and 1860 were higher than flood in May 1884, from information by local residents. All flood data referenced to current datum.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1670	6570	1100	26100	6990	20500	8910	1120	725	3950	4180	1090
2	1590	4090	1060	25000	2760	22200	8890	1500	688	5620	6480	1740
3	831	4190	1110	23400	1980	23700	8880	3200	1660	5880	5720	7000
4	787	22100	4650	21300	1800	27500	8870	2040	2980	7330	2850	7590
5	888	31300	19600	19100	1700	30200	8850	1040	3150	4730	4500	7700
6	924	28600	18900	18100	1690	31100	8830	1820	3250	2690	7150	7480
7	974	28100	16300	17600	2660	30900	8920	2900	3330	2080	6870	6280
8	1050	25500	14600	17300	3090	30000	8880	2910	2970	5250	5740	2790
9	1190	19500	11700	17100	2790	29000	8910	2880	1860	7790	2320	4670
10	1070	15100	10500	16900	2550	28400	8770	2850	1890	7950	973	6960
11	1200	11900	10000	16700	2540	25700	8680	1900	3050	8230	907	7190
12	1190	6800	9940	16700	5130	19900	6480	953	3310	8350	4400	7590
13	1210	4680	15000	16700	6100	16900	2270	1670	4130	6380	6940	8420
14	810	7890	17200	16600	4900	17200	1510	2750	6850	3180	6970	7530
15	870	7950	14600	16500	2340	17400	1350	2800	7530	5120	6930	3400
16	1010	7880	12700	16400	3520	16700	2370	2800	4350	7510	6940	3770
17	827	7700	11000	12800	6080	16200	3580	2810	3420	7480	5200	5120
18	967	7560	10200	10200	6130	16000	3780	1870	4070	7500	2490	5140
19	916	8360	10000	9810	4550	17100	2590	912	4630	7470	4300	5090
20	1130	9060	10800	9730	4790	18100	1300	1580	4930	5900	6650	4560
21	1260	8990	10600	9720	7110	17400	1160	2670	4340	2870	6820	2510
22	1790	8920	10100	9510	22500	16500	2280	2740	3930	4760	7970	1170
23	1910	5160	9670	9570	27400	16000	3730	2700	2840	7120	10200	3290
24	1710	1820	11300	9540	26800	15700	3620	2720	2750	7150	10400	6690
25	2210	1360	15200	9520	25200	15500	3790	2480	3820	7180	9000	8200
26	10900	1270	14800	9610	22700	12200	4470	1670	6280	7400	3770	6540
27	10400	1240	16600	10000	19900	9900	3010	940	6380	5950	1180	4670
28	11100	1240	17200	10100	18800	9570	1430	1810	6060	2840	995	2470
29	12300	1180	16600	10000	---	9330	2290	2720	5470	1150	1040	1030
30	12500	1130	16400	10200	---	9100	2270	1810	2910	2250	949	2540
31	9060	---	19900	10200	---	9000	---	848	---	3470	860	---
TOTAL	96244	297140	379330	452010	244500	594900	150810	65413	113553	172530	151694	150220
MEAN	3105	9905	12240	14580	8732	19190	5027	2110	3785	5565	4893	5007
MAX	12500	31300	19900	26100	27400	31100	8920	3200	7530	8350	10400	8420
MIN	787	1130	1060	9510	1690	9000	1160	848	688	1150	860	1030
AC-FT	190900	589400	752400	896600	485000	1180000	299100	129700	225200	342200	300900	298000

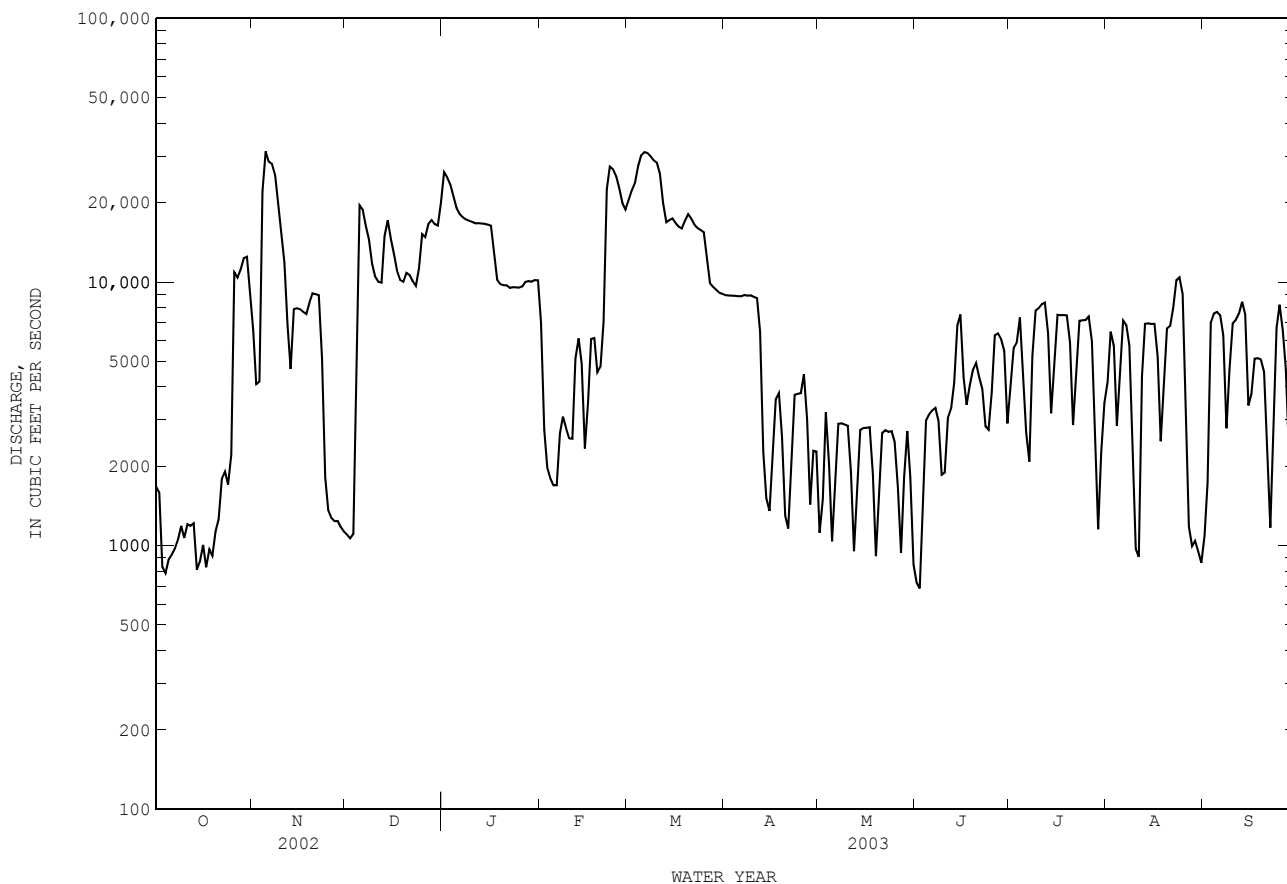
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2003z, BY WATER YEAR (WY)

MEAN	1834	2921	7167	10300	11260	12280	9903	8703	6193	4862	3592	3499
MAX	8948	13250	21420	30930	31390	46850	27370	31210	26340	31490	7288	12310
(WY)	2002	1995	1983	1974	1999	2001	1969	1966	1989	1989	1976	2001
MIN	188	217	822	994	746	1288	634	1011	663	530	211	206
(WY)	1968	1968	1981	2000	1968	1981	1971	1996	1970	1964	1967	1967

08028500 Sabine River near Bon Wier, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1961 - 2003z	
ANNUAL TOTAL	3026007		2868344		6856	
ANNUAL MEAN	8290		7858		12670	
HIGHEST ANNUAL MEAN					1172	
LOWEST ANNUAL MEAN					1172	
HIGHEST DAILY MEAN	31300	Nov 5	31300	Nov 5	98000	Jul 4 1989
LOWEST DAILY MEAN	787	Oct 4	688	Jun 2	134	Nov 9 1966
ANNUAL SEVEN-DAY MINIMUM	933	Oct 14	933	Oct 14	142	Nov 3 1966
MAXIMUM PEAK FLOW			32200	Nov 5	98200	Jul 4 1989
MAXIMUM PEAK STAGE			31.57	Nov 5	37.90	Jul 4 1989
ANNUAL RUNOFF (AC-FT)	6002000		5689000		4967000	
10 PERCENT EXCEEDS	16300		17500		17100	
50 PERCENT EXCEEDS	6950		6060		3730	
90 PERCENT EXCEEDS	1640		1170		720	

z Period of regulated streamflow.



SABINE RIVER BASIN

08028500 Sabine River near Bon Wier, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Oct. 1969 to current year.

BIOCHEMICAL DATA: Oct. 1969 to May 1973.

SEDIMENT DATA: Apr. 1957 to Sept. 1962.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Nov. 1969 to June 1983.

WATER TEMPERATURE: Nov. 1969 to June 1983.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 407 microsiemens/cm, Aug. 31, 1978; minimum daily, 33 microsiemens/cm, Dec. 14, 2001.

WATER TEMPERATURE: Maximum daily, 33.0°C, July 17, 1978, and July 14, 26, 1980; minimum daily, 4.0°C, Feb. 2, 1980.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Color, water, fltrd, Pt-Co units (00080)	Sulfate, water, fltrd, mg/L (00945)	Chloride, water, fltrd, mg/L (00940)
NOV							
07...	1035	27700	35	15.5	140	3.8	2.08
14...	1045	8000	123	18.0	55	13.0	10.2
23...	1415	4460	164	18.0	40	22.9	12.5
29...	1525	1170	183	14.5	75	30.9	9.45
JAN							
04...	1735	20700	126	13.5	35	13.6	11.4
11...	1520	16700	145	12.0	30	16.4	12.6
15...	1625	16500	138	13.0	25	14.3	12.6
22...	1550	9460	147	13.0	30	16.8	12.3
31...	1735	10100	154	13.0	40	18.9	12.4
MAR							
08...	1810	29600	133	13.0	45	14.7	12.0
14...	1730	17500	148	17.0	40	18.6	12.4
22...	1610	16400	134	16.0	40	18.6	12.7
29...	1738	9250	152	15.0	50	14.3	12.1
APR							
05...	1630	8840	154	17.0	40	18.8	12.8
12...	1925	4660	152	19.5	60	18.7	12.9
18...	1825	4580	143	21.0	55	15.7	12.3
JUN							
07...	1900	3870	140	28.0	55	18.5	13.8
14...	1520	8000	135	25.0	70	23.1	10.2
19...	0945	4130	161	26.5	70	29.1	12.1
JUL							
04...	1500	8580	137	29.0	25	16.5	13.8
12...	1825	8860	136	28.0	30	17.4	13.0
19...	2020	7580	139	30.0	25	16.6	13.0
AUG							
02...	1750	7720	140	30.0	25	16.3	14.3
09...	1940	1380	141	30.0	30	17.6	13.8
16...	1930	7300	139	29.0	30	17.0	14.3
23...	1710	11000	137	29.0	30	16.5	13.9

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SABINE RIVER BASIN

08029500 Big Cow Creek near Newton, TX

LOCATION.--Lat 30°49'08", long 93°47'08", Newton County, Hydrologic Unit 12010005, near center of span on downstream side of bridge on State Highway 87, 2.6 mi southwest of Newton, 5.0 mi downstream from Melhomes Creek, and 8.0 mi upstream from White Oak Creek.

DRAINAGE AREA.--128 mi².

PERIOD OF RECORD.--Apr. 1952 to current year.

GAGE.--Water-stage recorder. Datum of gage is 134.69 ft above NGVD of 1929. Prior to Dec. 19, 1957, nonrecording gage at same site and datum. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. No known regulation or diversions.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1907, 27.5 ft in Apr. 1922, from information by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	200	93	1720	113	214	96	62	44	46	43	105
2	37	171	90	536	107	198	95	62	43	45	46	143
3	39	708	103	247	105	197	94	66	43	47	43	107
4	41	4950	712	197	104	371	94	65	43	76	39	110
5	44	4660	1670	176	100	331	94	62	43	76	38	71
6	50	2120	570	161	176	324	94	63	56	168	37	57
7	196	678	209	148	334	252	93	62	72	99	36	50
8	334	293	160	140	185	210	92	62	54	113	35	46
9	188	227	141	138	141	192	85	60	46	115	35	45
10	112	197	157	135	212	179	81	56	43	96	34	44
11	101	173	158	127	180	168	81	54	42	98	39	44
12	102	151	210	123	132	162	80	54	51	109	76	89
13	84	135	1270	131	118	185	79	56	147	80	102	498
14	77	128	984	133	112	261	76	57	388	61	68	243
15	74	138	275	123	126	225	74	58	307	56	58	94
16	70	131	184	120	185	178	73	62	151	52	48	70
17	68	120	160	115	137	170	75	67	105	55	45	60
18	66	114	150	111	113	185	75	56	82	52	46	55
19	68	110	219	110	106	598	71	52	77	47	41	52
20	212	108	291	110	104	251	70	50	69	47	39	51
21	240	103	207	111	689	149	72	48	59	45	39	53
22	187	100	148	111	1610	125	74	48	57	43	118	73
23	272	97	135	105	748	117	74	49	54	42	53	97
24	174	95	852	100	299	111	82	47	51	43	45	66
25	310	96	966	100	238	106	79	46	51	46	42	56
26	887	100	337	116	226	111	73	49	49	45	68	52
27	859	113	197	172	272	169	67	68	70	49	72	50
28	831	113	166	149	249	151	64	66	72	63	73	50
29	1130	98	150	127	---	116	63	54	52	46	71	47
30	798	95	163	139	---	105	63	48	47	42	100	44
31	288	---	1380	128	---	98	---	46	---	40	74	---
TOTAL	7976	16522	12507	6159	7221	6209	2383	1755	2468	2042	1703	2622
MEAN	257	551	403	199	258	200	79.4	56.6	82.3	65.9	54.9	87.4
MAX	1130	4950	1670	1720	1610	598	96	68	388	168	118	498
MIN	37	95	90	100	100	98	63	46	42	40	34	44
AC-FT	15820	32770	24810	12220	14320	12320	4730	3480	4900	4050	3380	5200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 2003, BY WATER YEAR (WY)

	MEAN	72.5	121	174	192	209	176	164	146	112	70.3	55.0	71.9
MAX	278	551	489	645	743	377	533	817	414	426	221	491	
(WY)	1995	2003	1983	1974	1984	1999	1953	1953	1993	1989	1973	1998	
MIN	17.4	27.3	39.3	42.2	57.4	46.4	29.4	31.7	16.6	14.2	14.5	17.3	
(WY)	1957	1968	1982	1982	1996	1996	1971	1971	1971	1971	1956	1956	

SUMMARY STATISTICS

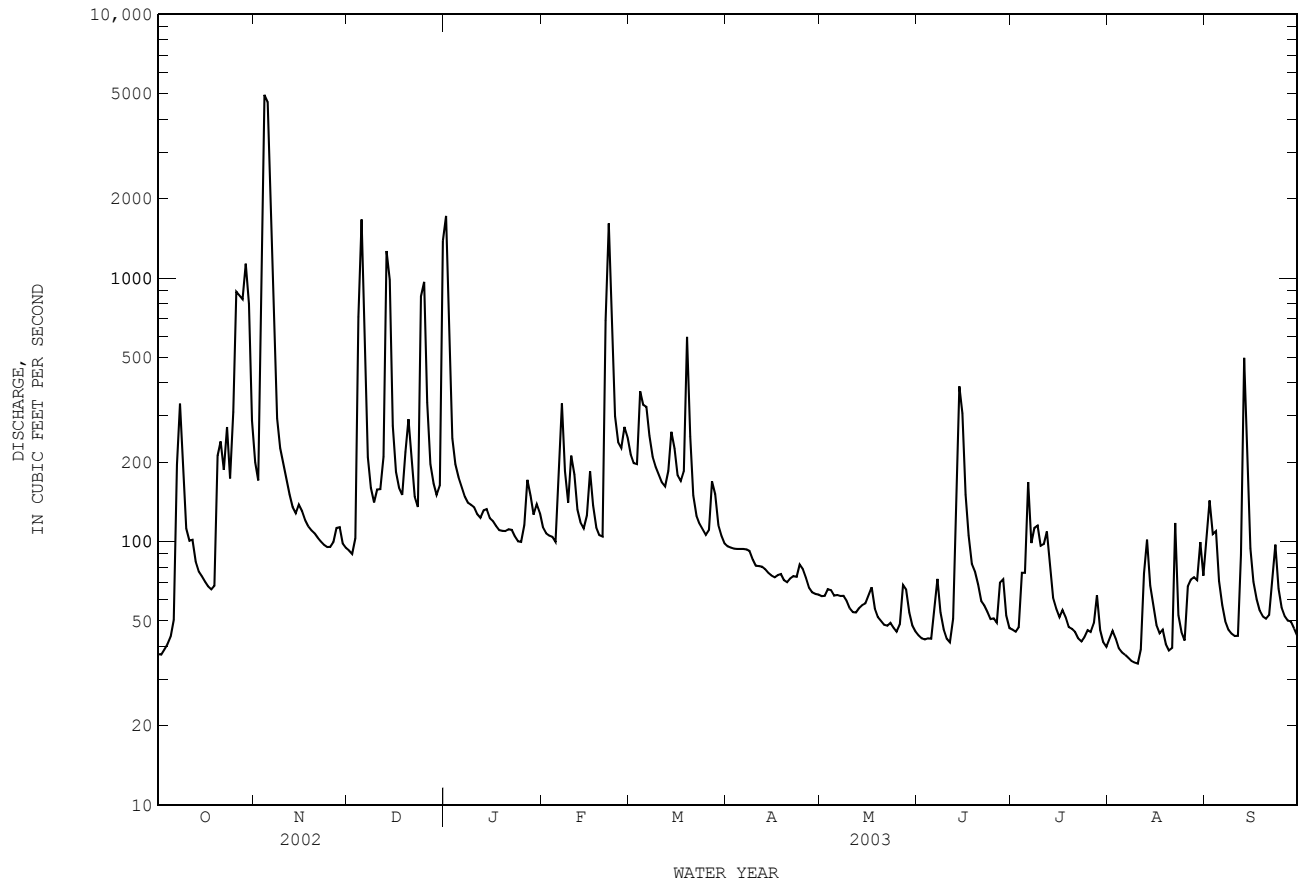
FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1952 - 2003

ANNUAL TOTAL	59999	69567	
ANNUAL MEAN	164	191	130
HIGHEST ANNUAL MEAN			266
LOWEST ANNUAL MEAN			46.1
HIGHEST DAILY MEAN	4950	4950	9720
LOWEST DAILY MEAN	33	34	10
ANNUAL SEVEN-DAY MINIMUM	34	36	11
MAXIMUM PEAK FLOW		5810	20200
MAXIMUM PEAK STAGE		16.78	19.45
ANNUAL RUNOFF (AC-FT)	119000	138000	94230
10 PERCENT EXCEEDS	273	292	226
50 PERCENT EXCEEDS	78	98	64
90 PERCENT EXCEEDS	38	45	28

08029500 Big Cow Creek near Newton, TX--Continued



08030500 Sabine River near Ruliff, TX

LOCATION.--Lat 30°18'13", long 93°44'37", Calcasieu Parish, Louisiana-Newton County, Texas State line, Hydrologic Unit 12010005, on downstream side of bridge on State Highway 12, 2.4 mi north of Ruliff, 4.2 mi upstream from the Kansas City Southern Railway Co. bridge, 4.5 mi downstream from Cypress Creek and at mile 40.2.

DRAINAGE AREA.--9,329 mi².

PERIOD OF RECORD.--Oct. 1924 to current year.

Water-quality records.--Chemical data: Sept. 1945 to Sept. 1946, Oct. 1947 to Sept. 1998. Biochemical data: Feb. 1968 to Sept. 1998. Radiochemical data: Oct. 1969 to Sept. 1995. Pesticide data: Jan. 1968 to May 1982. Sediment data: Oct. 1974 to Sept. 1995.

REVISED RECORDS.--WSP 1282: 1941(M), 1942. WSP 1442: 1925-29, 1937-39, 1943. WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5.92 ft below NGVD of 1929. Prior to Mar. 1, 1941, nonrecording gage at Kansas City Southern Railway Co. bridge, 4.2 mi downstream and at datum 7.98 ft higher than current datum. Mar. 1, 1941, to Dec. 8, 1948, nonrecording gage at present site and at datum 10.00 ft higher than current datum. Dec. 9, 1948, to Dec. 31, 1989, recording gage at present site and at datum 10.00 ft higher than current datum. Telephone telemeter at station. Satellite telemeter at station.

REMARKS.--Records good. Since water year 1961, at least 10% of contributing drainage area has been regulated.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--36 years (water years 1925-60) 8,780 ft³/s (6,359,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1925-60).--Maximum discharge, 121,000 ft³/s, May 22, 1953, gage height, 29.98 ft, current datum; minimum, 270 ft³/s, several days in Sept. and Oct. 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1835, 32.2 ft in May or June 1884 (adjusted to present site and datum on basis of slope of flood of June 8, 9, 1950); flood of Apr. 26-29, 1913, reached a stage of 29.5 ft, present site and datum, from information by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2500	22300	1780	e18500	11100	19800	9320	2420	1550	4850	3160	1530
2	1640	18600	1680	e19700	10900	18300	8930	1930	1090	3490	3770	1470
3	2080	17100	2140	23100	9200	17600	8670	1500	973	4150	4820	1820
4	1590	18300	5980	26700	6340	17700	8520	2120	1070	4810	5780	3090
5	1230	21800	11300	26200	4130	18300	8400	2560	1900	5510	5430	5250
6	1150	33700	16500	23600	3360	19600	8350	1860	2510	5910	3980	6540
7	1190	53700	18700	21200	3950	21700	8290	1480	2720	4900	5130	7240
8	1260	50200	21400	19700	4750	23600	8220	2140	2840	3430	6140	7360
9	1540	40100	22100	18600	5550	24400	8160	2570	2830	3400	6460	6390
10	2110	32400	20600	17100	5490	24100	8150	2670	2530	5140	5510	4490
11	2080	26200	17900	16700	e4950	23400	8120	2670	1790	6450	3000	5470
12	1930	20000	16900	16500	4420	22700	8060	2510	2180	7080	1800	7430
13	1680	16400	16900	16300	4650	21800	7880	1740	2760	7400	2350	8760
14	1680	13100	17000	16100	5700	21000	6450	1360	3190	7520	4680	9100
15	1420	10100	17500	16000	6410	19100	3850	1990	4270	6850	6030	9060
16	1180	8560	18800	15900	5820	17600	2450	2440	5490	5330	6610	8460
17	1240	7960	19900	15800	4770	17100	2120	2550	5820	5790	6910	6350
18	1160	7660	18900	15600	5450	16600	2880	2560	4800	6570	6840	5470
19	1180	7450	17200	15200	6170	16300	3320	2420	3960	7010	5570	5460
20	1180	7260	15200	14000	6340	15800	3340	1660	3810	7220	3780	5470
21	1410	7320	13700	12500	9840	15500	2450	1270	4080	7210	4890	5510
22	1830	7520	13200	11400	14400	e15700	1760	1870	4170	6370	5970	5440
23	4200	7730	13000	10600	17300	e15900	1750	2330	3950	4580	6580	3710
24	5760	7560	13100	10100	20000	15600	2710	2440	3630	5550	7420	2920
25	6750	5990	12500	9880	25500	15300	3260	2460	3070	6500	8280	4420
26	9420	3580	12600	9900	27700	14900	3390	2460	3180	6940	8890	6030
27	15000	2440	13500	9940	25500	14600	3540	2250	4080	7190	8550	6940
28	19200	2040	14700	9990	22300	13800	3590	1560	5130	7210	5850	6720
29	25900	1910	e15300	10400	---	12600	2640	1330	5510	6350	2810	5240
30	28300	1870	e16500	11000	---	10900	1950	1970	5520	3690	1800	2900
31	26100	---	18000	11100	---	10100	---	2210	---	2340	1600	---
TOTAL	174890	480850	454480	489310	281990	551400	160520	65300	100403	176740	160390	166040
MEAN	5642	16030	14660	15780	10070	17790	5351	2106	3347	5701	5174	5535
MAX	28300	53700	22100	26700	27700	24400	9320	2670	5820	7520	8890	9100
MIN	1150	1870	1680	9880	3360	10100	1750	1270	973	2340	1600	1470
AC-FT	346900	953800	901500	970500	559300	1094000	318400	129500	199100	350600	318100	329300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2003z, BY WATER YEAR (WY)

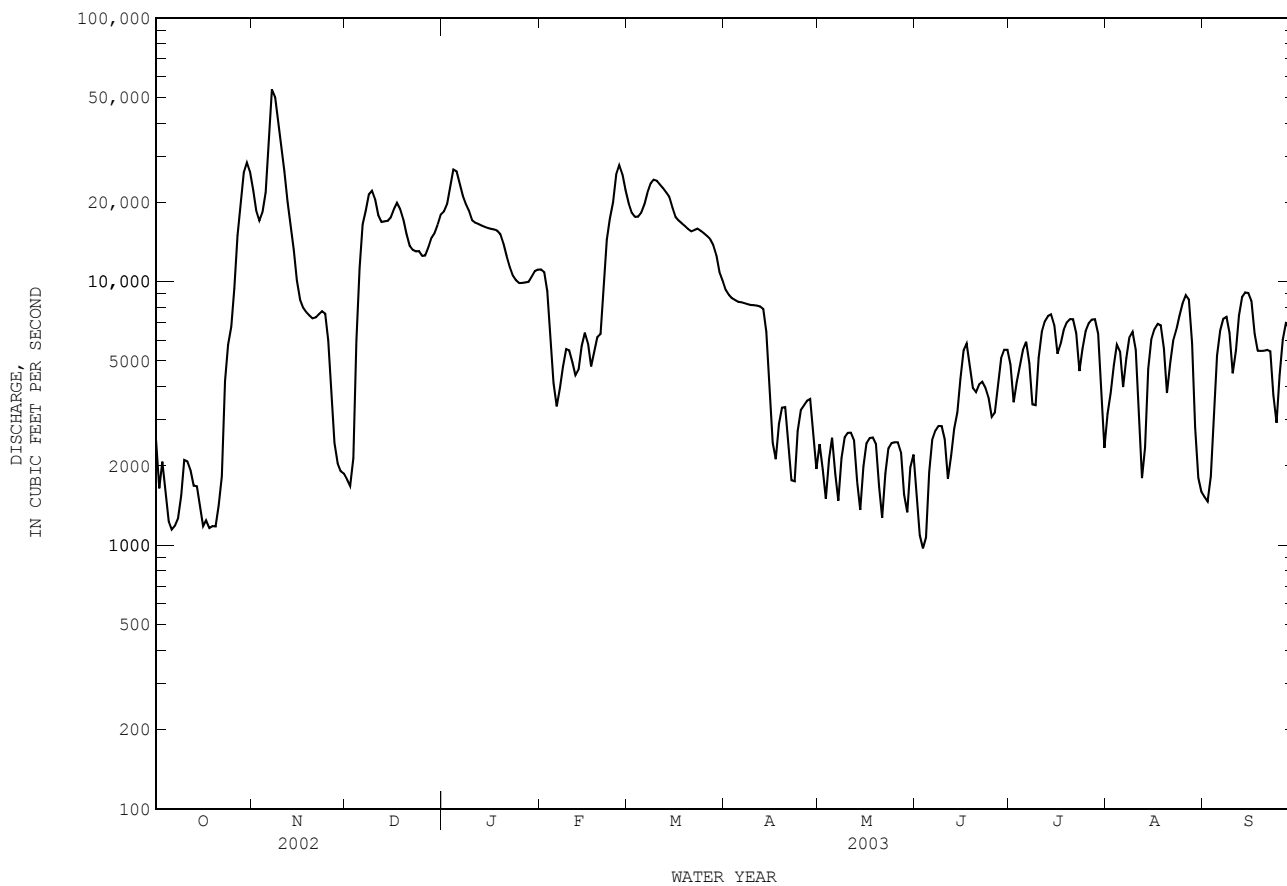
	MEAN	2672	3812	8728	12230	12940	13900	11490	9729	7541	5772	4111	4209
MAX	12860	16030	22070	35570	33170	48230	33240	32980	26240	42320	7982	12530	
(WY)	2002	2003	1983	1961	1999	2001	1969	1966	1989	1989	1975	1998	
MIN	292	327	1366	1237	1344	1679	1030	1395	1383	805	382	333	
(WY)	1968	1968	1981	2000	2000	2000	1971	1996	1963	1967	1967	1967	

08030500 Sabine River near Ruliff, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1961 - 2003z	
ANNUAL TOTAL	3356470		3262313		8072	
ANNUAL MEAN	9196		8938		14210	
HIGHEST ANNUAL MEAN					1975	
LOWEST ANNUAL MEAN					1959	
HIGHEST DAILY MEAN	53700	Nov 7	53700	Nov 7	108000	Jul 6 1989
LOWEST DAILY MEAN	1150	Oct 6	973	Jun 3	278	Oct 28 1967
ANNUAL SEVEN-DAY MINIMUM	1250	Oct 15	1250	Oct 15	282	Oct 9 1967
MAXIMUM PEAK FLOW			57400	Nov 7	109000	Jul 6 1989
MAXIMUM PEAK STAGE			26.38	Nov 7	29.15	Jul 6 1989
ANNUAL RUNOFF (AC-FT)	6658000		6471000		5848000	
10 PERCENT EXCEEDS	18100		19700		18800	
50 PERCENT EXCEEDS	7450		6340		4810	
90 PERCENT EXCEEDS	2090		1800		1180	

e Estimated

z Period of regulated streamflow.



SABINE RIVER BASIN

08031000 Cow Bayou near Mauriceville, TX

LOCATION.--Lat 30°11'10", long 95°54'30", Orange County, Hydrologic Unit 12010005, on left bank at downstream end of bridge on State Highway 12, 0.4 mi downstream from Kansas City Southern Railway Co. bridge, and 2.7 mi southwest of Mauriceville.

DRAINAGE AREA.--83.3 mi².

PERIOD OF RECORD.--Mar. 1952 to Sept. 1955 (daily mean discharge), Oct. 1956 to Sept. 1957 (monthly discharges only), Oct. 1957 to Sept. 1986, Oct. 2002 to current year.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 0.27 ft below NGVD of 1929. Prior to Oct. 23, 1957, nonrecording gage at present site and former datum. Prior to Sept. 7, 1984, at datum 5.00 ft higher. Satellite telemeter at station.

REMARKS.--No estimated discharges. Records fair. No significant diversions. Base flow is partly sustained by springs. No flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	2430	9.3	361	168	338	5.9	0.61	0.00	0.05	0.00	113
2	11	1890	9.1	345	129	223	4.1	0.71	0.00	0.03	0.01	46
3	16	1610	520	367	103	146	2.6	0.79	0.02	0.00	0.00	34
4	19	1820	1570	386	91	123	1.8	0.82	0.04	0.00	0.00	54
5	20	2220	1620	362	74	111	1.4	1.2	0.06	0.00	0.00	95
6	20	2310	1590	299	232	121	1.1	1.5	0.06	0.00	0.00	65
7	26	2080	1540	221	358	110	0.68	1.6	0.05	0.01	0.04	28
8	31	1740	1460	147	262	102	0.50	1.7	0.04	0.00	0.07	14
9	208	1440	1300	91	279	90	0.41	1.8	0.03	0.01	0.08	13
10	235	1160	1090	66	317	74	0.34	1.7	0.02	5.1	0.07	17
11	79	760	690	49	293	59	0.25	1.5	0.01	0.00	0.08	81
12	42	379	575	41	253	46	0.22	1.4	1.5	0.02	1.8	764
13	27	237	943	41	196	411	0.20	1.2	5.7	0.02	4.3	869
14	19	142	731	35	135	893	0.16	0.98	0.00	0.06	0.95	804
15	15	162	657	29	214	722	0.11	0.66	0.71	0.07	0.76	655
16	11	82	582	26	206	469	0.07	0.45	9.0	0.03	0.73	440
17	9.4	49	482	22	158	309	0.07	0.31	0.47	0.01	0.95	304
18	8.3	34	384	19	147	213	0.14	0.24	0.01	0.00	1.2	191
19	10	25	401	17	132	219	0.19	0.13	0.09	0.00	1.6	83
20	25	19	309	15	133	192	0.24	0.07	0.43	0.00	2.3	36
21	54	15	205	15	1620	152	0.27	0.06	0.76	0.00	3.0	246
22	559	12	139	14	1640	106	0.31	0.04	1.1	0.00	4.3	396
23	1070	10	100	13	1810	71	0.69	0.03	0.75	0.00	5.0	255
24	963	9.0	137	11	1840	51	0.70	0.02	0.67	0.01	3.5	175
25	1280	8.6	127	9.5	1690	37	0.66	0.02	0.48	0.34	3.4	107
26	1470	8.6	108	11	1410	29	0.75	0.01	0.47	0.35	11	64
27	1710	8.4	92	15	1130	25	0.70	0.01	0.41	0.12	30	40
28	1990	8.1	86	16	601	19	0.57	0.00	0.19	0.03	14	26
29	3110	7.6	87	134	---	16	0.57	0.00	0.08	0.00	4.8	13
30	3270	8.2	85	330	---	12	0.68	0.00	0.06	0.00	4.7	6.3
31	2950	---	373	226	---	8.9	---	0.00	---	0.00	122	---
TOTAL	19270.7	20684.5	18001.4	3733.5	15621	5497.9	26.38	19.56	23.21	6.26	220.64	6034.3
MEAN	622	689	581	120	558	177	0.88	0.63	0.77	0.20	7.12	201
MAX	3270	2430	1620	386	1840	893	5.9	1.8	9.0	5.1	122	869
MIN	8.3	7.6	9.1	9.5	74	8.9	0.07	0.00	0.00	0.00	0.00	6.3
AC-FT	38220	41030	35710	7410	30980	10910	52	39	46	12	438	11970

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 2003h, BY WATER YEAR (WY)

	MEAN	67.3	74.3	142	182	222	120	144	113	85.6	45.8	21.9	84.2
MAX	622	689	581	879	961	373	841	536	532	320	293	816	
(WY)	2003	2003	2003	1961	1959	1957	1979	1953	1968	1959	1983	1963	
MIN	0.000	0.000	0.14	5.68	5.25	3.00	0.26	0.040	0.087	0.000	0.019	0.000	
(WY)	1957	1956	1955	1970	1957	1954	1963	1978	1960	1956	1956	1954	

SUMMARY STATISTICS

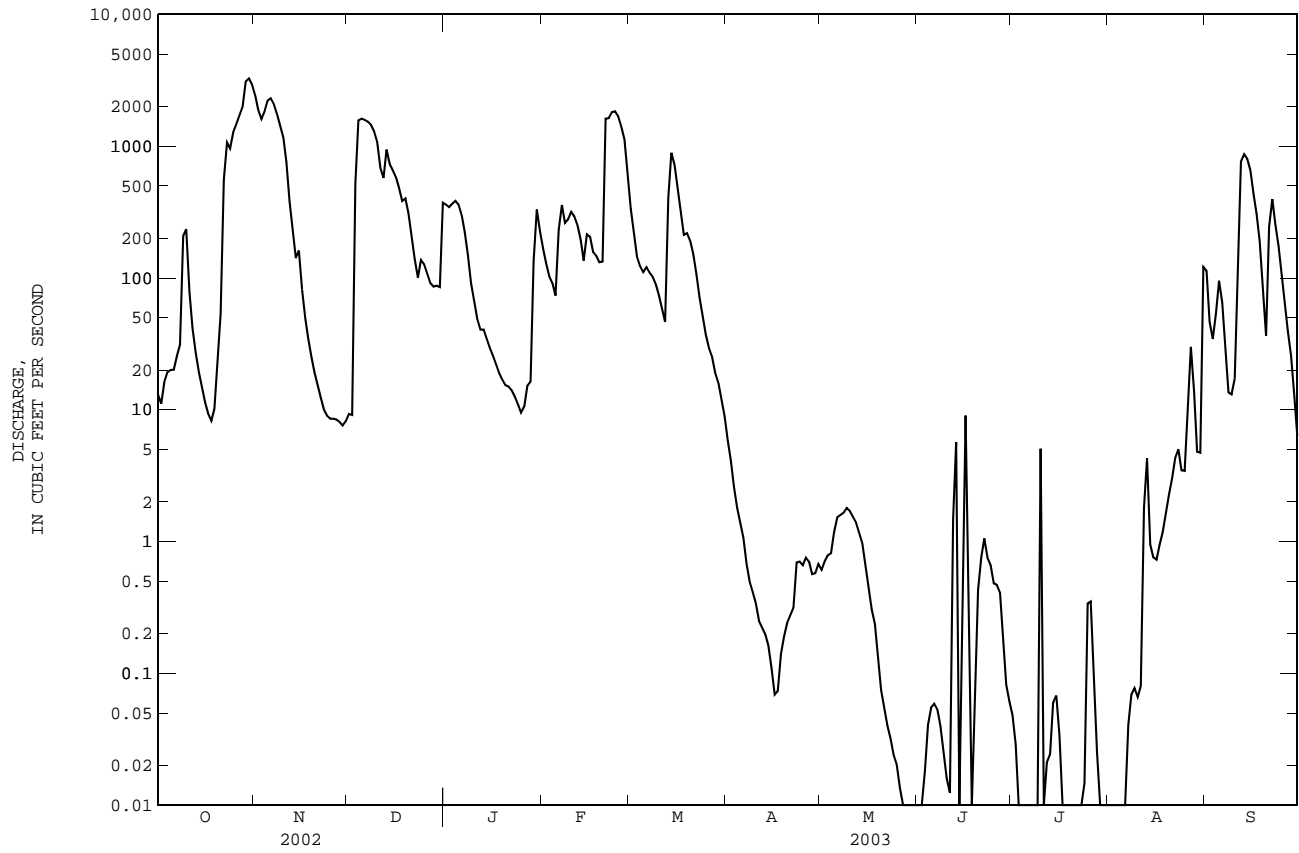
FOR 2003 WATER YEAR

WATER YEARS 1952 - 2003h

ANNUAL TOTAL	89139.35		
ANNUAL MEAN	244		
HIGHEST ANNUAL MEAN		107	
LOWEST ANNUAL MEAN		244	2003
HIGHEST DAILY MEAN		12.0	1970
LOWEST DAILY MEAN		4460	Sep 19 1963
ANNUAL SEVEN-DAY MINIMUM	0.00	0.00	Aug 15 1952
MAXIMUM PEAK FLOW	3330	0.00	Sep 21 1952
MAXIMUM PEAK STAGE	21.90	4600	Sep 19 1963
ANNUAL RUNOFF (AC-FT)	176800	18.16	Oct 28 1970
10 PERCENT EXCEEDS	830	77620	
50 PERCENT EXCEEDS	15	300	
90 PERCENT EXCEEDS	0.02	7.7	
		0.08	

h See PERIOD OF RECORD paragraph.

08031000 Cow Bayou near Mauriceville, TX--Continued



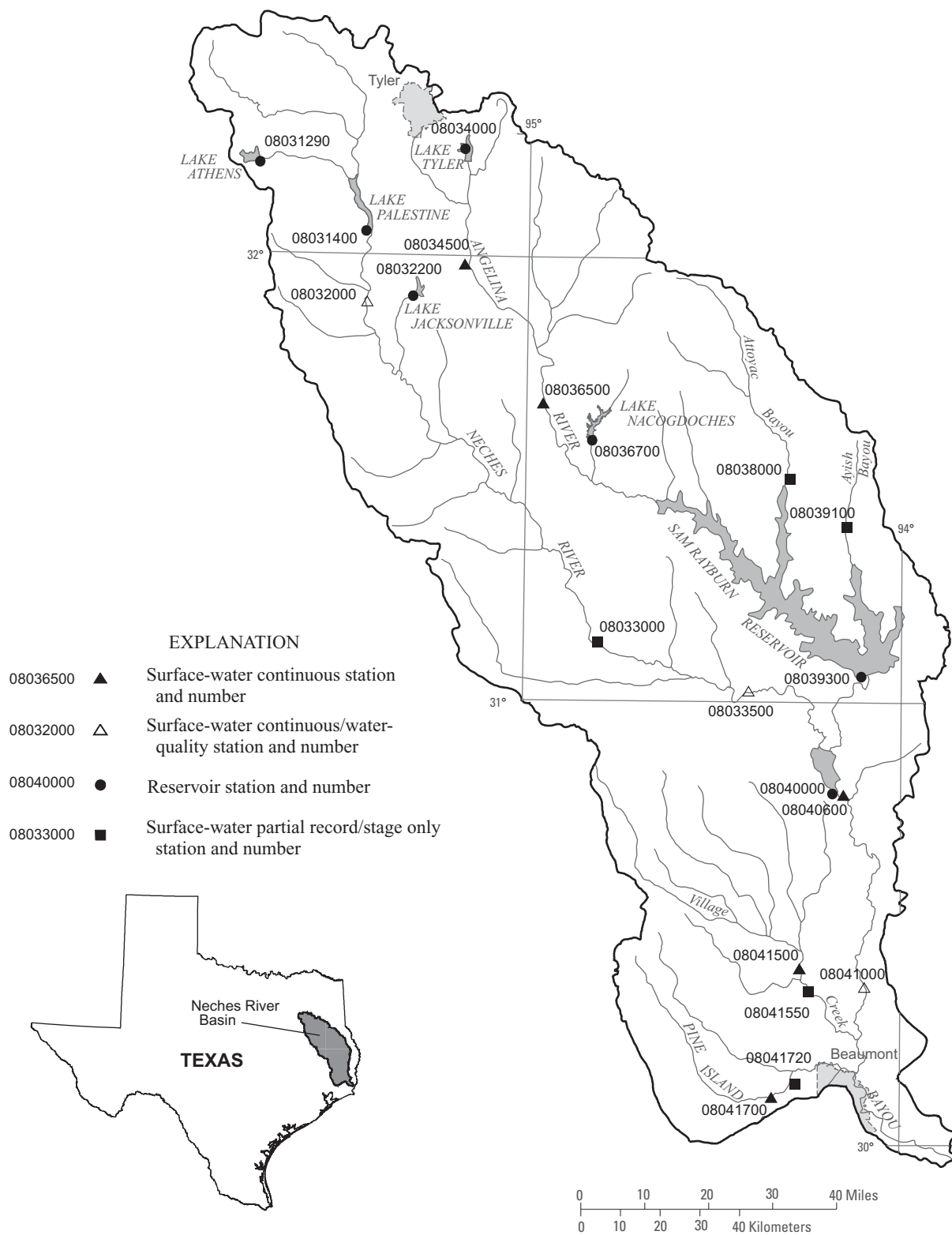


Figure 10.--Map showing location of gaging stations in the Neches River Basin

08031290	Lake Athens near Athens, TX	366
08031400	Lake Palestine near Frankston, TX	368
08032000	Neches River near Neches, TX	370
08032200	Lake Jacksonville near Jacksonville, TX	374
08033000	Neches River near Diboll, TX	376
08033500	Neches River near Rockland, TX	378
08034000	Lake Tyler near Whitehouse, TX	382
08034500	Mud Creek near Jacksonville, TX	384
08036500	Angelina River near Alto, TX	386
08036700	Lake Nacogdoches near Nacogdoches, TX	388
08038000	Attoyac Bayou near Chireno, TX	390
08039100	Ayish Bayou near San Augustine, TX	392
08039300	Sam Rayburn Reservoir near Jasper, TX	394
08040000	B.A. Steinhagen Lake at Town Bluff, TX	396
08040600	Neches River near Town Bluff, TX	398
08041000	Neches River at Evadale, TX	400
08041500	Village Creek near Kountze, TX	404
08041550	Village Creek at State Highway 327 near Silsbee, TX	415
08041700	Pine Island Bayou near Sour Lake, TX	406
08041720	Pine Island Bayou at State Highway 105 near Sour Lake, TX	415

08031290 Lake Athens near Athens, TX

LOCATION.--Lat 32°12'15", long 95°43'30", Henderson County, Hydrologic Unit 12020001, at upstream side of dam on Flat Creek, 5.0 mi downstream from Underwood Lake, 8.0 mi east of Athens, and 18.0 mi upstream from Neches River.

DRAINAGE AREA.--21.6 mi².

PERIOD OF RECORD.--Oct. 1967 to Sept. 1983, Apr. 1999 to Sept. 2002 (contents), Oct. 2002 to current year.
Water-quality records.--Chemical data: Oct. 1975 to Sept. 1983.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 3,000 ft long. Deliberate impoundment began Nov. 1, 1962, and the dam was completed in May 1963. The emergency spillway is an uncontrolled 300-foot-wide channel cut through natural ground at the left end of the dam. The service spillway is an uncontrolled 6- x 6-foot square drop inlet that is connected to a concrete conduit of the same size that extends through the dam. A 4.0- by 5.5-foot inlet box with slide valve that connects to an 18-inch diameter concrete conduit extends through the dam and serves as the low-flow service outlet. Water is used for municipal supply by the city of Athens. Data regarding the dam and lake are given in the following table:

	Elevation (feet)
Top of dam.....	453.0
Crest of spillway.....	446.0
Crest of drop inlet.....	440.0
Normal operating level.....	440.0
Lowest gated outlet (invert).....	396.5

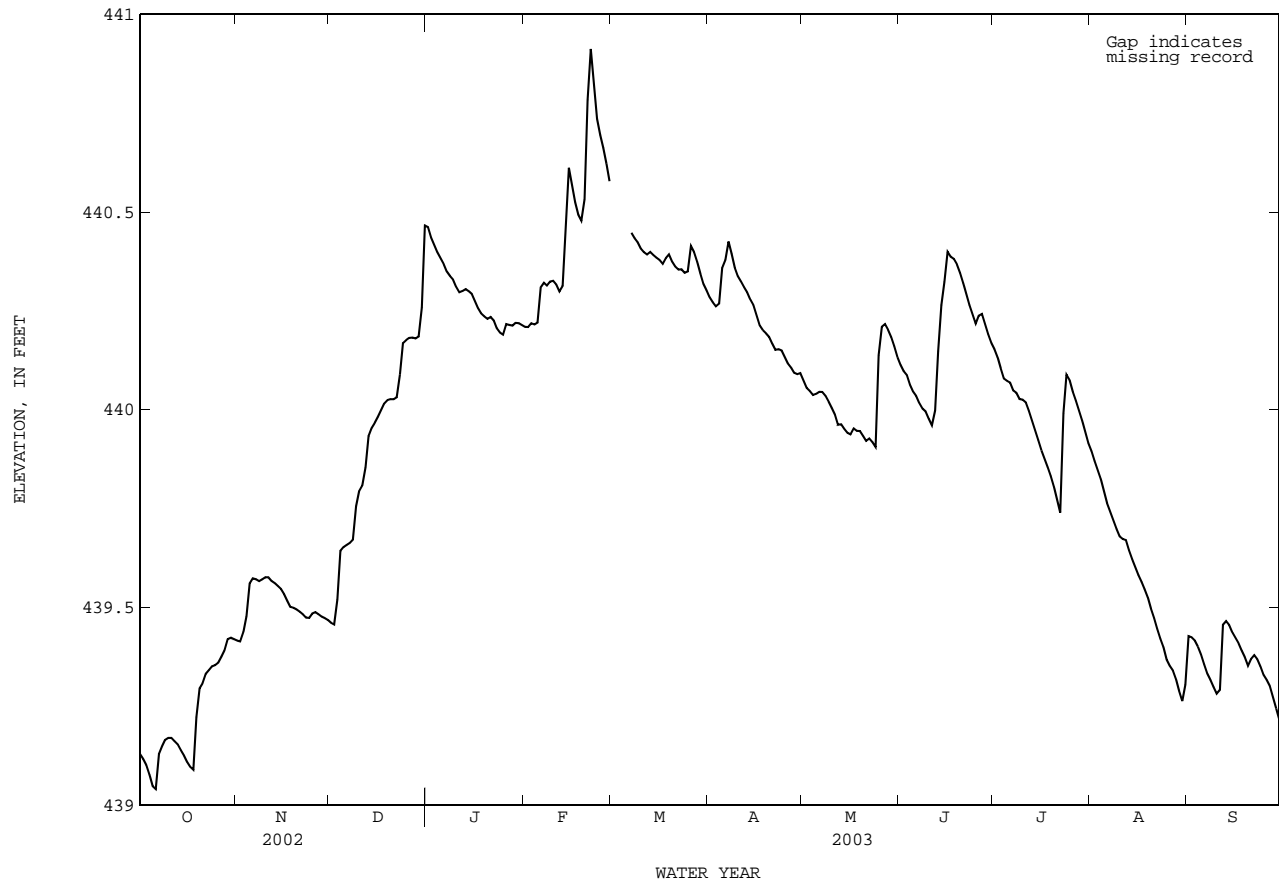
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 36,500 acre-ft, May 10, 1968, elevation, 442.37 ft; minimum contents since operating level was reached (May 7, 1968), 25,180 acre-ft, Oct. 15, 2000, elevation, 437.48 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 440.93 ft, Feb. 22; minimum elevation, 439.03 ft, Oct. 5, 6.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	439.13	439.42	439.46	440.46	440.21	---	440.28	440.07	440.11	440.15	439.90	439.43
2	439.12	439.41	439.46	440.44	440.21	---	440.27	440.06	440.10	440.13	439.87	439.42
3	439.10	439.44	439.52	440.42	440.22	---	440.26	440.05	440.09	440.11	439.85	439.42
4	439.08	439.48	439.64	440.40	440.22	---	440.27	440.04	440.06	440.08	439.82	439.40
5	439.05	439.56	439.65	440.38	440.22	---	440.36	440.04	440.05	440.07	439.79	439.38
6	439.04	439.57	439.66	440.37	440.31	---	440.38	440.05	440.03	440.07	439.76	439.36
7	439.13	439.57	439.66	440.35	440.32	440.45	440.43	440.05	440.02	440.05	439.74	439.33
8	439.15	439.57	439.67	440.34	440.31	440.43	440.40	440.04	440.00	440.04	439.72	439.32
9	439.17	439.57	439.76	440.33	440.32	440.42	440.36	440.02	440.00	440.03	439.70	439.30
10	439.17	439.58	439.79	440.31	440.33	440.41	440.34	440.00	439.98	440.03	439.68	439.28
11	439.17	439.58	439.81	440.30	440.32	440.40	440.32	439.99	439.96	440.02	439.67	439.29
12	439.16	439.57	439.85	440.30	440.30	440.39	440.31	439.96	440.00	440.00	439.67	439.46
13	439.15	439.56	439.93	440.31	440.31	440.40	440.30	439.96	440.15	439.97	439.64	439.47
14	439.14	439.55	439.95	440.30	440.47	440.39	440.28	439.95	440.26	439.95	439.62	439.46
15	439.13	439.55	439.97	440.29	440.61	440.38	440.26	439.94	440.32	439.92	439.60	439.44
16	439.11	439.53	439.98	440.27	440.57	440.38	440.24	439.94	440.40	439.90	439.58	439.42
17	439.10	439.52	440.00	440.26	440.53	440.37	440.21	439.95	440.39	439.88	439.56	439.41
18	439.09	439.50	440.02	440.24	440.49	440.38	440.20	439.95	440.38	439.86	439.55	439.39
19	439.22	439.50	440.02	440.24	440.48	440.39	440.19	439.95	440.37	439.83	439.53	439.37
20	439.30	439.49	440.03	440.23	440.53	440.37	440.18	439.93	440.35	439.81	439.50	439.35
21	439.31	439.49	440.03	440.24	440.78	440.36	440.17	439.92	440.32	439.77	439.47	439.37
22	439.33	439.48	440.03	440.23	440.91	440.35	440.15	439.93	440.29	439.74	439.45	439.38
23	439.34	439.47	440.09	440.21	440.83	440.36	440.15	439.92	440.26	439.99	439.42	439.37
24	439.35	439.47	440.17	440.20	440.74	440.35	440.15	439.91	440.24	440.09	439.40	439.35
25	439.35	439.48	440.18	440.19	440.69	440.35	440.13	440.14	440.22	440.07	439.37	439.33
26	439.36	439.49	440.18	440.22	440.66	440.41	440.12	440.21	440.24	440.05	439.35	439.32
27	439.38	439.48	440.18	440.21	440.62	440.40	440.11	440.22	440.24	440.02	439.34	439.30
28	439.39	439.48	440.18	440.21	440.58	440.37	440.09	440.20	440.22	440.00	439.32	439.27
29	439.42	439.47	440.19	440.22</								

08031290 Lake Athens near Athens, TX--Continued



08031400 Lake Palestine near Frankston, TX

LOCATION.--Lat 32°03'12", long 95°26'12", Anderson-Cherokee County line, Hydrologic Unit 12020001, in outlet tower near right bank, 140 ft upstream from Blackburn Crossing Dam on Neches River, 5.0 mi east of Frankston, 21 mi upstream from Neches River near Neches (station 08032000), and at mile 354.0.

DRAINAGE AREA.--839 mi².

PERIOD OF RECORD.--Feb. 1962 to June 1995, May 1999 to Sept. 2002 (contents). Oct. 2002 to current year.
Water-quality records.--Chemical data: Oct. 1976 to Sept. 1984.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Sept. 20, 1962, nonrecording gage read once daily. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam with a 500-foot-wide uncontrolled spillway near left end of dam. Deliberate impoundment began May 1, 1962. Enlargement of the lake began Sept. 26, 1969, and was completed on Mar. 3, 1971. The outlet works consist of two 5- x 7-foot gates located in concrete tower near center of dam and connected to an 8.5-foot-diameter concrete conduit through the dam. The low-flow outlet consists of two 3-foot iron pipes connected to the tower structure for low-flow releases. The dam is owned by the Upper Neches River Municipal Water Authority. The water is used for municipal and industrial purposes in the Palestine area. The diversion point is downstream from gage (station 08032000). There are no large diversions above station. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	364.0
Design flood.....	355.3
Crest of spillway.....	345.0
Lowest gated outlet (invert).....	298.0

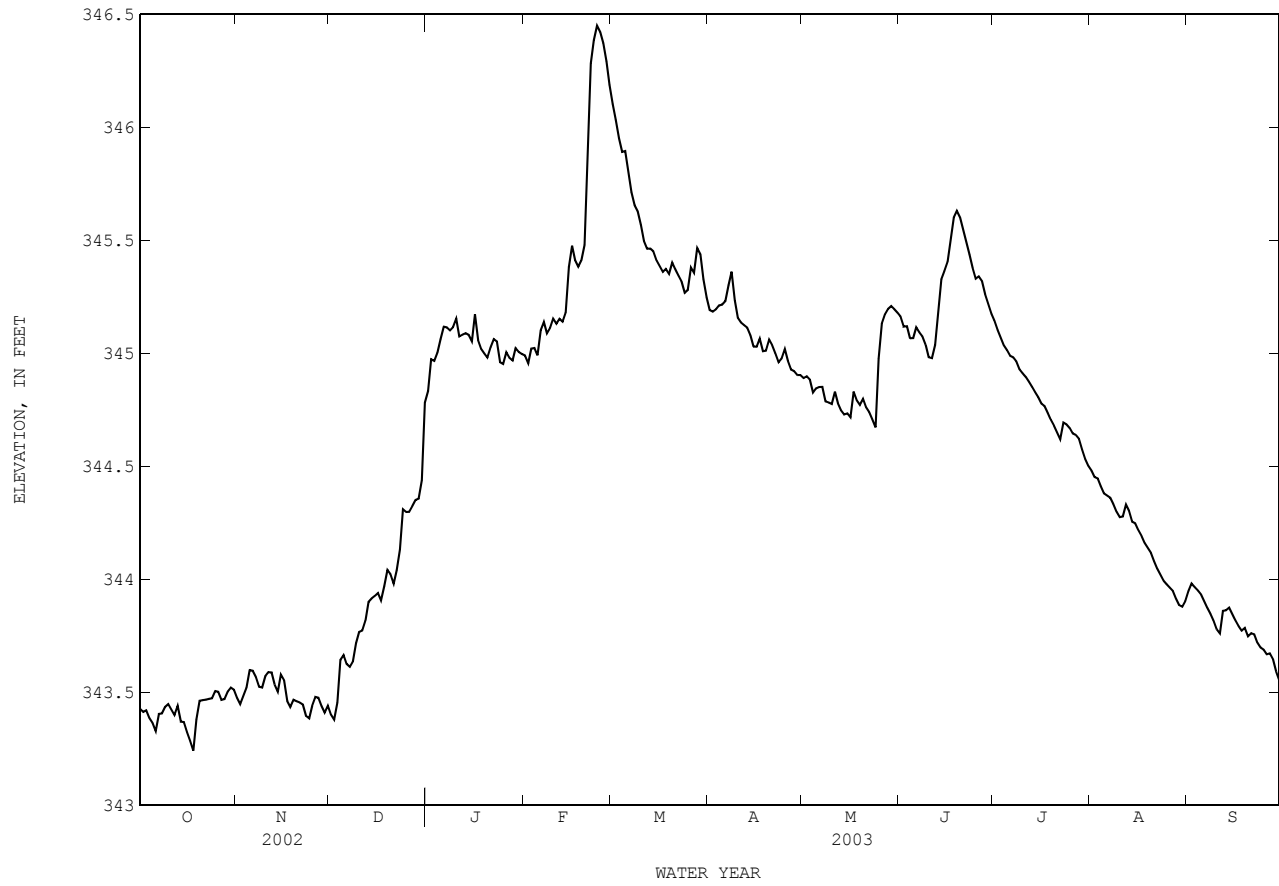
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 531,100 acre-ft, May 19, 1989, elevation, 349.31 ft; minimum since first appreciable storage, 11,450 acre-ft Nov. 28, 1970, elevation 310.00 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 346.61 ft, Feb. 23; minimum elevation, 343.17 ft, Oct. 18.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	343.43	343.47	343.40	344.83	344.99	346.10	345.19	344.89	345.16	345.14	344.48	343.95
2	343.41	343.45	343.38	344.97	344.96	346.03	345.18	344.90	345.12	345.10	344.45	343.98
3	343.42	343.48	343.45	344.97	345.02	345.95	345.19	344.88	345.12	345.07	344.45	343.96
4	343.38	343.52	343.64	345.00	345.02	345.89	345.21	344.83	345.07	345.04	344.41	343.95
5	343.36	343.60	343.66	345.06	344.99	345.90	345.22	344.84	345.07	345.01	344.38	343.93
6	343.33	343.60	343.63	345.12	345.10	345.81	345.23	344.85	345.12	344.99	344.37	343.90
7	343.40	343.57	343.61	345.12	345.14	345.71	345.30	344.85	345.09	344.98	344.36	343.87
8	343.41	343.52	343.64	345.10	345.09	345.66	345.36	344.79	345.07	344.96	344.33	343.85
9	343.44	343.52	343.72	345.12	345.11	345.63	345.23	344.78	345.04	344.93	344.30	343.82
10	343.45	343.57	343.77	345.15	345.15	345.57	345.16	344.78	344.98	344.91	344.27	343.78
11	343.42	343.59	343.77	345.07	345.13	345.50	345.14	344.83	344.98	344.90	344.28	343.76
12	343.40	343.59	343.82	345.08	345.15	345.46	345.12	344.78	345.04	344.88	344.33	343.86
13	343.44	343.53	343.90	345.09	345.14	345.46	345.11	344.75	345.18	344.85	344.30	343.86
14	343.37	343.50	343.92	345.08	345.18	345.45	345.08	344.73	345.33	344.83	344.25	343.87
15	343.37	343.58	343.93	345.05	345.38	345.41	345.03	344.73	345.36	344.81	344.25	343.85
16	343.32	343.55	343.94	345.17	345.48	345.39	345.03	344.72	345.40	344.78	344.22	343.82
17	343.29	343.46	343.91	345.06	345.41	345.36	345.06	344.83	345.50	344.77	344.19	343.79
18	343.24	343.43	343.97	345.02	345.38	345.37	345.01	344.79	345.60	344.74	344.16	343.77
19	343.38	343.47	344.04	345.00	345.41	345.35	345.01	344.77	345.63	344.71	344.14	343.78
20	343.46	343.46	344.02	344.98	345.48	345.40	345.06	344.80	345.60	344.68	344.12	343.75
21	343.46	343.45	343.98	345.03	345.84	345.37	345.04	344.76	345.55	344.65	344.08	343.76
22	343.47	343.45	344.04	345.06	346.28	345.34	345.00	344.74	345.49	344.62	344.05	343.76
23	343.47	343.40	344.13	345.05	346.39	345.32	344.96	344.71	345.44	344.69	344.02	343.72
24	343.47	343.38	344.31	344.96	346.45	345.27	344.98	344.67	345.38	344.69	343.99	343.70
25	343.51	343.44	344.30	344.95	346.42	345.28	345.02	344.98	345.33	344.67	343.98	343.69
26	343.50	343.48	344.30	345.00	346.37	345.38	344.97	345.13	345.34	344.65	343.96	343.67
27	343.47	343.48	344.32	344.98	346.29	345.36	344.93	345.17	345.32	344.64	343.95	343.67
28	343.47	343.44	344.35	344.97	346.19	345.47	344.92	345.20	345.26	344.62	343.91	343.65
29	343.											

08031400 Lake Palestine near Frankston, TX--Continued



NECHES RIVER BASIN

08032000 Neches River near Neches, TX

LOCATION.--Lat 31°53'32", long 95°25'50", Anderson-Cherokee County line, Hydrologic Unit 12020001, on left bank just downstream from bridge on U.S. Highway 79, 1.0 mi downstream from Missouri Pacific Railroad Co. bridge, 1.4 mi downstream from Walnut Creek, 4.4 mi northeast of Neches and at mile 333.2.

DRAINAGE AREA.--1,145 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Feb. 1939 to current year.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 264.06 ft above NGVD of 1929. Prior to Oct. 27, 1945, nonrecording gage at present site and datum. Satellite telemeter at station.

REMARKS.--Records fair. Since water year 1962, at least 10% of contributing drainage area has been regulated. No known diversions.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--22 years (water years 1940-61), 804 ft³/s (502,500 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1940-61).--Maximum discharge, 45,500 ft³/s, Apr. 2, 1945, gage height, 22.07 ft; no flow Oct. 3-5, 1939.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1908 (stage 24.3 ft) was the highest since flood in May 1884, which was probably higher.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	220	222	e1470	388	3820	747	242	430	486	150	155
2	120	212	215	1350	388	3310	646	235	401	428	146	190
3	121	213	241	e1100	360	3000	602	241	357	374	144	172
4	121	241	549	e900	418	2890	593	238	356	329	140	153
5	120	443	663	698	420	2660	654	227	288	297	137	149
6	120	478	494	678	423	2400	692	225	299	287	135	144
7	134	385	401	694	633	2190	964	226	347	261	133	139
8	166	325	329	675	673	2010	1090	222	326	244	131	136
9	165	278	301	633	575	1830	1050	209	312	224	129	134
10	183	272	358	641	566	1680	903	199	259	202	128	133
11	167	243	368	684	579	1540	701	194	216	190	130	134
12	149	218	339	572	552	1410	593	219	214	159	142	168
13	142	207	447	578	554	1290	548	198	341	180	146	207
14	141	203	453	589	582	1220	506	213	591	168	142	190
15	139	208	389	570	912	1180	450	206	739	158	138	175
16	137	217	360	540	1060	1120	397	205	787	153	136	157
17	135	210	349	676	1190	1040	386	218	850	152	134	147
18	134	205	338	581	1230	986	415	246	946	153	133	142
19	166	203	662	440	1140	1010	361	209	1010	148	131	139
20	287	203	760	394	1110	1020	348	189	1050	145	129	136
21	250	203	472	382	1800	1000	396	225	1080	142	129	135
22	238	209	378	427	5650	983	373	214	1060	138	130	139
23	237	208	388	487	6950	929	334	192	999	194	129	140
24	219	201	903	479	5770	875	310	179	911	253	129	138
25	207	198	e1080	357	5080	801	316	191	807	191	129	136
26	215	209	e1050	347	4980	831	356	361	715	184	129	135
27	208	261	e794	402	4700	917	298	473	722	180	130	134
28	206	256	e497	384	4290	934	262	506	701	162	138	132
29	223	238	447	372	---	975	251	502	612	152	144	130
30	252	230	440	413	---	988	241	488	546	150	138	129
31	227	---	1130	402	---	932	---	456	---	153	132	---
TOTAL	5448	7397	15817	18915	52973	47771	15783	8148	18272	6667	4191	4448
MEAN	176	247	510	610	1892	1541	526	263	609	215	135	148
MAX	287	478	1130	1470	6950	3820	1090	506	1080	486	150	207
MIN	119	198	215	347	360	801	241	179	214	138	128	129
AC-FT	10810	14670	31370	37520	105100	94750	31310	16160	36240	13220	8310	8820

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2003z, BY WATER YEAR (WY)

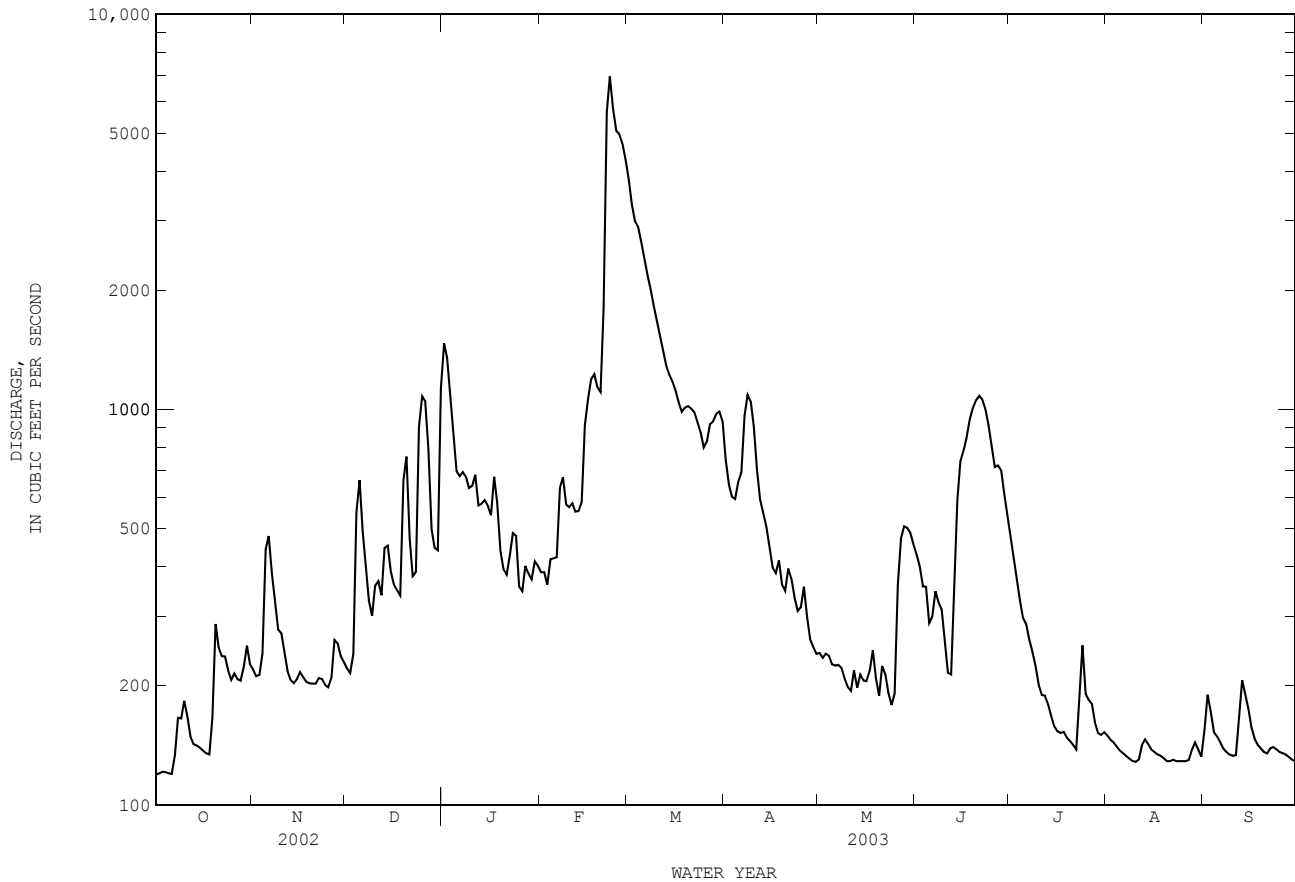
MEAN	217	411	805	929	1132	1338	1184	1197	767	222	119	191
MAX	2064	2559	3344	4389	3097	5206	4162	5289	4129	1076	617	1313
(WY)	1974	1975	1992	1998	1992	2001	1966	1968	1973	1976	1979	1973
MIN	12.8	16.0	82.1	102	180	92.0	60.1	43.3	23.7	12.5	9.70	8.37
(WY)	1964	1964	1990	1981	1981	1972	1972	1972	1971	1964	1964	1964

08032000 Neches River near Neches, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1962 - 2003z	
ANNUAL TOTAL	198858		205830		707	
ANNUAL MEAN	545		564		1358	1995
HIGHEST ANNUAL MEAN					106	1972
LOWEST ANNUAL MEAN					26200	May 13 1968
HIGHEST DAILY MEAN	3300	Mar 25	6950	Feb 23	3.3	Nov 1 1963
LOWEST DAILY MEAN	111	Aug 21	119	Oct 1	3.4	Oct 29 1963
ANNUAL SEVEN-DAY MINIMUM	113	Aug 17	122	Oct 1	26900	May 13 1968
MAXIMUM PEAK FLOW			7230	Feb 23	19.46	May 13 1968
MAXIMUM PEAK STAGE			16.26	Feb 23	512200	
ANNUAL RUNOFF (AC-FT)	394400		408300		1740	
10 PERCENT EXCEEDS	1240		1060		261	
50 PERCENT EXCEEDS	262		301		60	
90 PERCENT EXCEEDS	121		136			

e Estimated

z Period of regulated streamflow.



NECHES RIVER BASIN

08032000 Neches River near Neches, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Dec. 1969 to current year.

BIOCHEMICAL DATA: Oct. 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Dec. 1969 to Sept. 1991.

WATER TEMPERATURE: Dec. 1983 to Sept. 1991.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (1974-88): Maximum, 1,190 microsiemens/cm, Aug. 29, 1976; minimum, 65 microsiemens/cm, June 1, 1990.

WATER TEMPERATURE: Maximum, 36.0°C, July 16, 1985; minimum, 0.0°C, Dec. 24, 25, 1989.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard-ness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)
NOV 20...	1355	202	188	7.2	13.2	760	9.7	93	47	16	11.9	4.26	16.4
FEB 05...	0950	428	179	6.7	9.6	763	10.5	92	40	15	9.45	3.88	15.6
APR 30...	1240	241	180	6.6	22.3	755	7.1	83	39	15	9.47	3.77	15.0
JUN 23...	1630	984	198	7.0	28.1	766	6.6	85	47	19	12.1	4.19	15.7
AUG 05...	0850	139	213	7.2	28.5	765	6.8	87	56	30	13.7	5.20	19.6

Date	Sodium adsorption ratio (00931)	Potassium, water, fltrd, mg/L (00935)	Alkalinity, wat tit inc tit field, mg/L as CaCO3 (39086)	Sulfate, water, fltrd, mg/L (00945)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue, water, fltrd, sum of constituents mg/L (70301)	Nitrite, water, fltrd, mg/L as N (00613)	Nitrite + nitrate, water, fltrd, mg/L as N (00631)	Ammonia, water, fltrd, mg/L as N (00608)	Organic nitrogen, water, fltrd, mg/L (00607)	Ammonia + org-N, water, fltrd, mg/L as N (00623)
NOV 20...	1	4.21	31	18.3	23.4	<.17	13.6	113	<.008	.53	<.04	--	.30
FEB 05...	1	3.59	25	17.5	23.2	.1	11.7	101	<.008	.12	<.04	--	.31
APR 30...	1	3.76	24	18.0	22.2	<.17	10.9	98	E.004	.12	.04	.51	.56
JUN 23...	1	4.37	28	22.1	22.1	<.2	6.6	104	<.008	E.05	E.03	--	.44
AUG 05...	1	5.46	26	19.6	25.3	<.2	9.7	115	E.004n	.12	<.04	--	.36

Date	Phosphorus, water, fltrd, mg/L (00666)	Orthophosphate, water, fltrd, mg/L as P (00671)	Orthophosphate, water, fltrd, mg/L (00660)
NOV 20...	E.03	.02	.071
FEB 05...	<.04	<.02	--
APR 30...	<.04	<.02	--
JUN 23...	<.04	<.02	--
AUG 05...	<.04	<.02	--

Remark codes used in this report:

< -- Less than

E -- Estimated value

Value qualifier codes used in this report:

n -- Below the NDV

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08032200 Lake Jacksonville near Jacksonville, TX

LOCATION.--Lat 31°54'30", long 95°18'35", Cherokee County, Hydrologic Unit 12020001, on concrete deck of city of Jacksonville pump platform, on Gum Creek, 2.0 mi upstream of Pine Grove, and 5.0 mi southwest of Jacksonville.

DRAINAGE AREA.--34 mi².

PERIOD OF RECORD.--May 1999 to Sept. 2002 (contents). Oct. 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is NAVD od 1988 and is obtained from Texas Water Development Board Report 126, "Engineering Data on Dams and Reservoirs in Texas", Part I, Nov. 1973. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam 2,700 ft long, including a 350-ft uncontrolled spillway. Deliberate impoundment began in June 1957. The uncontrolled spillway is an excavated channel cut through natural ground and located at the right end of the dam. The low-flow outlet consists of an 18-inch concrete pressure pipe through the dam with valve on the upstream side. The dam is owned by the city of Jacksonville. The water is used for municipal and recreational purposes in the Jacksonville area. There are no known diversions. Data regarding the dam use the datum from TWDB Report 126 and are given in the following table:

	Elevation (feet)
Top of dam.....	438.0
Crest of uncontrolled spillway.....	431.0
Lowest gated outlet (invert).....	372.0

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 32,800 acre-ft, June 8, 2001, elevation, 423.43 ft; minimum contents, 26,610 acre-ft, Sept. 30, 2000, elevation, 418.84 ft.

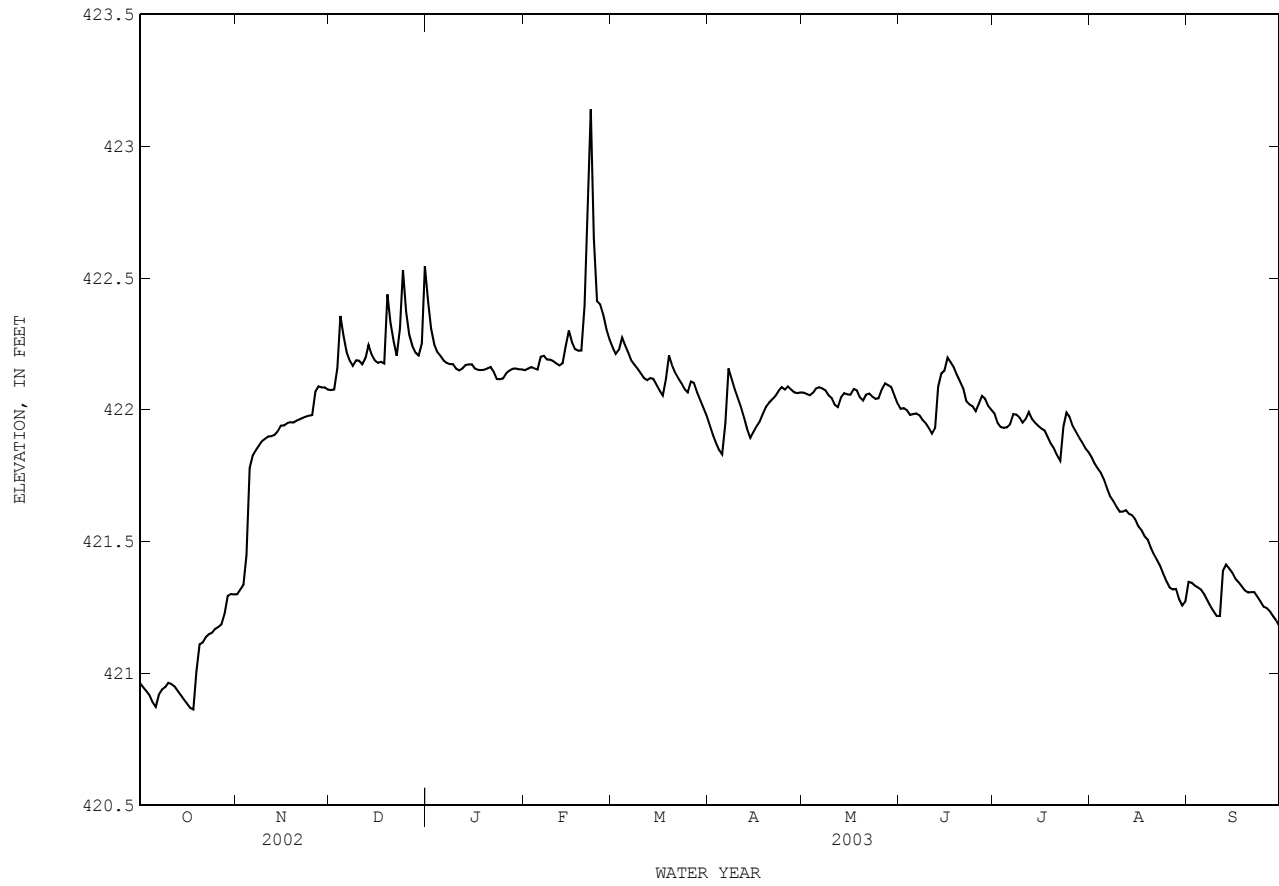
EXTREMES FOR CURRENT YEAR.--Maximum elevation, 423.31 ft, Feb. 22; minimum elevation, 420.83 ft, Oct. 19.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	420.96	421.30	422.07	422.41	422.15	422.24	421.94	422.07	422.00	421.99	421.82	421.35
2	420.95	421.32	422.08	422.31	422.16	422.21	421.91	422.06	422.01	421.95	421.80	421.34
3	420.93	421.34	422.16	422.25	422.16	422.23	421.88	422.05	422.00	421.93	421.78	421.33
4	420.92	421.45	422.36	422.22	422.16	422.27	421.85	422.06	421.98	421.93	421.76	421.33
5	420.89	421.78	422.28	422.20	422.15	422.24	421.83	422.08	421.98	421.93	421.73	421.32
6	420.87	421.83	422.22	422.19	422.20	422.22	421.95	422.09	421.99	421.95	421.70	421.30
7	420.92	421.85	422.19	422.18	422.20	422.19	422.16	422.08	421.98	421.98	421.67	421.28
8	420.94	421.87	422.17	422.17	422.19	422.17	422.12	422.07	421.96	421.98	421.65	421.25
9	420.95	421.88	422.19	422.17	422.19	422.16	422.08	422.05	421.95	421.97	421.63	421.24
10	420.96	421.89	422.19	422.16	422.18	422.14	422.04	422.04	421.93	421.95	421.61	421.22
11	420.96	421.90	422.17	422.15	422.18	422.12	422.01	422.02	421.91	421.97	421.61	421.22
12	420.95	421.90	422.20	422.16	422.17	422.11	421.97	422.01	421.93	421.99	421.62	421.39
13	420.93	421.90	422.25	422.17	422.18	422.12	421.93	422.05	422.09	421.97	421.61	421.41
14	420.92	421.92	422.21	422.17	422.24	422.12	421.89	422.06	422.14	421.95	421.60	421.40
15	420.90	421.94	422.19	422.17	422.30	422.09	421.92	422.06	422.15	421.94	421.58	421.38
16	420.88	421.94	422.18	422.16	422.26	422.07	421.94	422.06	422.20	421.93	421.56	421.36
17	420.87	421.95	422.18	422.15	422.23	422.05	421.96	422.08	422.18	421.92	421.54	421.35
18	420.86	421.95	422.18	422.15	422.22	422.11	421.99	422.07	422.16	421.90	421.52	421.33
19	421.01	421.95	422.44	422.15	422.23	422.21	422.01	422.05	422.13	421.87	421.51	421.31
20	421.11	421.96	422.33	422.16	422.39	422.17	422.03	422.04	422.11	421.85	421.48	421.31
21	421.12	421.96	422.26	422.16	422.83	422.14	422.04	422.06	422.08	421.83	421.45	421.31
22	421.14	421.97	422.20	422.14	423.14	422.12	422.05	422.06	422.03	421.81	421.43	421.31
23	421.15	421.97	422.31	422.12	422.65	422.10	422.07	422.05	422.02	421.94	421.41	421.29
24	421.15	421.98	422.53	422.12	422.41	422.08	422.09	422.04	422.01	421.99	421.38	421.27
25	421.17	421.98	422.37	422.12	422.40	422.07	422.08	422.04	421.99	421.97	421.35	421.25
26	421.18	422.07	422.29	422.14	422.36	422.11	422.09	422.08	422.02	421.94	421.33	421.25
27	421.19	422.09	422.24	422.15	422.31	422.10	422.08	422.10	422.05	421.92	421.32	421.24
28	421.23	422.08	422.22	422.16	422.27	422.07	422.07	422.09	422.04	421.90	421.32	421.22
29	421.											

CAL	YR	2002	MAX	422.44	MIN	420.86
WTR	YR	2003	MAX	423.14	MIN	420.86

08032200 Lake Jacksonville near Jacksonville, TX--Continued



NECHES RIVER BASIN

08033000 Neches River near Diboll, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 31°07'58", long 94°48'35", Angelina-Polk County line, Hydrologic Unit 12020002, near center of main span of downstream bridge on U.S. Highway 59, 700 ft downstream from Texas and New Orleans Railroad Co. bridge, 2.9 mi downstream from Alabama Creek, 3.8 mi south of Diboll and at mile 203.5.

DRAINAGE AREA.--2,724 mi².

PERIOD OF RECORD.--Oct. 1923 to Sept. 1925, Mar. 1939 to Sept. 1985 (daily mean discharge). Monthly discharge only for some periods, published in WSP 1312. Oct. 1985 to Sept. 1989 (annual maximum), Oct. 1989 to current year (peak discharges greater than base discharge).

Water-quality records.--Chemical data: Oct. 1969 to Sept. 1981. Biochemical data: Oct. 1969 to Sept. 1981. Specific conductance: Oct. 1969 to Sept. 1981. Water temperature: Oct. 1969 to Sept. 1981.

REVISED RECORDS.--WSP 1242: 1950. WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 136.46 ft above NGVD of 1929. Prior to July 10, 1925, nonrecording gage at site 630 ft upstream; July 10 to Aug. 31, 1925, and Mar. 30, 1939, to Sept. 24, 1943, nonrecording gage at site 500 ft upstream; Sept. 25, 1943, to Aug. 16, 1973, nonrecording gage at site 70 ft upstream; all at present datum. Satellite telemeter at station.

REMARKS.--Records good. Since water year 1962, at least 10% of contributing drainage area has been regulated.

AVERAGE DISCHARGE.--26 years (water years 1923-25, 1939-61) unregulated, 1,807 ft³/s (1,309,000 acre-ft/yr); 24 years (water years 1962-85) regulated, 1,353 ft³/s (980,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,900 ft³/s, May 4, 1944, gage height, 18.70 ft; no flow Aug. 15-22, 1925.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1874, 21 ft in May 1884 (discharge, about 110,000 ft³/s) from rating curve extended above 40,000 ft³/s; flood in 1900 reached a stage of 19.9 ft (discharge, about 80,000 ft³/s), from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	0000	14,400	15.15	Feb. 28	0900	14,900	15.22
Dec. 14	0300	8,110	14.04	Mar. 4	0100	11,900	14.78
Dec. 27	0200	8,650	14.16	Mar. 8	0000	8,950	14.23
Jan. 1	0800	8,820	14.20	Mar. 11	0500	6,350	13.52
Feb. 23	2300	*16,300	*15.41				

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NECHES RIVER BASIN

08033500 Neches River near Rockland, TX
(Hydrologic index station)

LOCATION.--Lat 31°01'30", long 94°23'58", Tyler County, Hydrologic Unit 12020003, on downstream side of bridge at U.S. Highway 69, 2,200 ft upstream from abandoned ferry crossing, 0.8 mi upstream from Texas and New Orleans Railway Co. bridge, 1.2 mi north of Rockland, 3.2 mi downstream from Billiams Creek and 32.4 mi upstream from Angelina River.

DRAINAGE AREA.--3,636 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1903 to current year.

REVISED RECORDS.--WSP 878: 1926-27. WSP 1342: 1922(M), 1935. WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 88.41 ft above NGVD of 1929. Prior to May 23, 1973, nonrecording gage located 2,200 ft downstream at datum 3.00 ft higher. May 23, 1973, to Sept. 30, 1975, recording gage at present site at datum 3.00 ft higher. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. Since water year 1962, at least 10% of contributing drainage area has been regulated.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--58 years (water years 1904-61), 2,362 ft³/s (1,711,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1904-61).--Maximum discharge, 49,800 ft³/s May 6, 1944 (gage height, 35.04 ft), present site; minimum observed during period of daily records, 1.6 ft³/s Sept. 28-30, and Oct. 1, 2, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Historical flood information begins with flood in May 1884, which reached a stage of 38.0 ft, present site, from information by local resident (discharge, about 62,000 ft³/s).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	198	2800	806	13500	1660	18000	2500	776	479	1280	726	219
2	185	2110	866	15000	1610	17700	2390	749	518	1200	580	502
3	175	3270	887	14900	1560	17500	2360	741	551	1100	464	2320
4	168	7770	1250	13800	1490	17800	2330	710	571	1000	386	3110
5	164	11700	3060	12400	1420	17700	2250	680	585	1050	336	2340
6	162	13300	4040	10900	1440	17400	2130	651	607	1100	321	1710
7	179	15300	3960	9640	1780	16800	2040	625	587	1130	332	1400
8	197	16800	3850	8370	2050	16000	1960	607	564	1060	328	1160
9	214	16700	4000	7220	1990	15200	1980	588	540	909	306	912
10	208	15200	4110	6270	2050	14200	2210	573	517	870	277	645
11	259	13300	4240	5520	2150	13000	2460	556	482	1170	445	508
12	276	11300	5060	5060	2120	11900	2700	541	490	1640	361	1110
13	285	9370	8150	4830	2060	10900	2800	563	1170	2140	363	2180
14	309	7380	8590	4570	2020	10100	2650	577	3170	1820	326	2140
15	320	5590	9300	4220	1990	9120	2360	542	2820	1370	310	1840
16	321	4080	9710	3750	1970	8010	2110	576	1900	982	278	1650
17	311	2590	9780	3160	1900	7080	1980	538	1770	774	263	1190
18	295	1560	9470	2620	1810	6350	1880	475	2860	633	260	798
19	287	1130	8800	2260	1730	5920	1730	462	2600	509	261	594
20	477	977	7750	2080	1760	5560	1510	465	2270	431	258	513
21	1030	896	6470	1970	5480	5240	1440	472	2160	375	250	466
22	1250	826	5240	1880	11400	4930	1400	482	1950	342	243	438
23	1320	765	4510	1780	13500	4580	1320	472	1740	325	231	410
24	1290	720	6730	1700	15100	4290	1180	457	1590	510	219	394
25	3220	690	6380	1640	17000	4050	1490	439	1450	737	209	385
26	4320	669	6150	1650	18300	3850	1380	420	1360	631	204	370
27	5020	701	5850	1780	18600	3690	1070	406	1380	649	196	350
28	4810	708	6280	1750	18400	3540	957	397	1440	760	187	331
29	4760	714	7140	1690	---	3280	891	421	1380	861	188	312
30	4970	748	8270	1680	---	2990	835	440	1340	887	185	296
31	4390	---	11000	1690	---	2710	---	446	---	844	193	---
TOTAL	41370	169664	181699	169280	154340	299390	56293	16847	40841	29089	9486	30593
MEAN	1335	5655	5861	5461	5512	9658	1876	543	1361	938	306	1020
MAX	5020	16800	11000	15000	18600	18000	2800	776	3170	2140	726	3110
MIN	162	669	806	1640	1420	2710	835	397	479	325	185	219
AC-FT	82060	336500	360400	335800	306100	593800	111700	33420	81010	57700	18820	60680

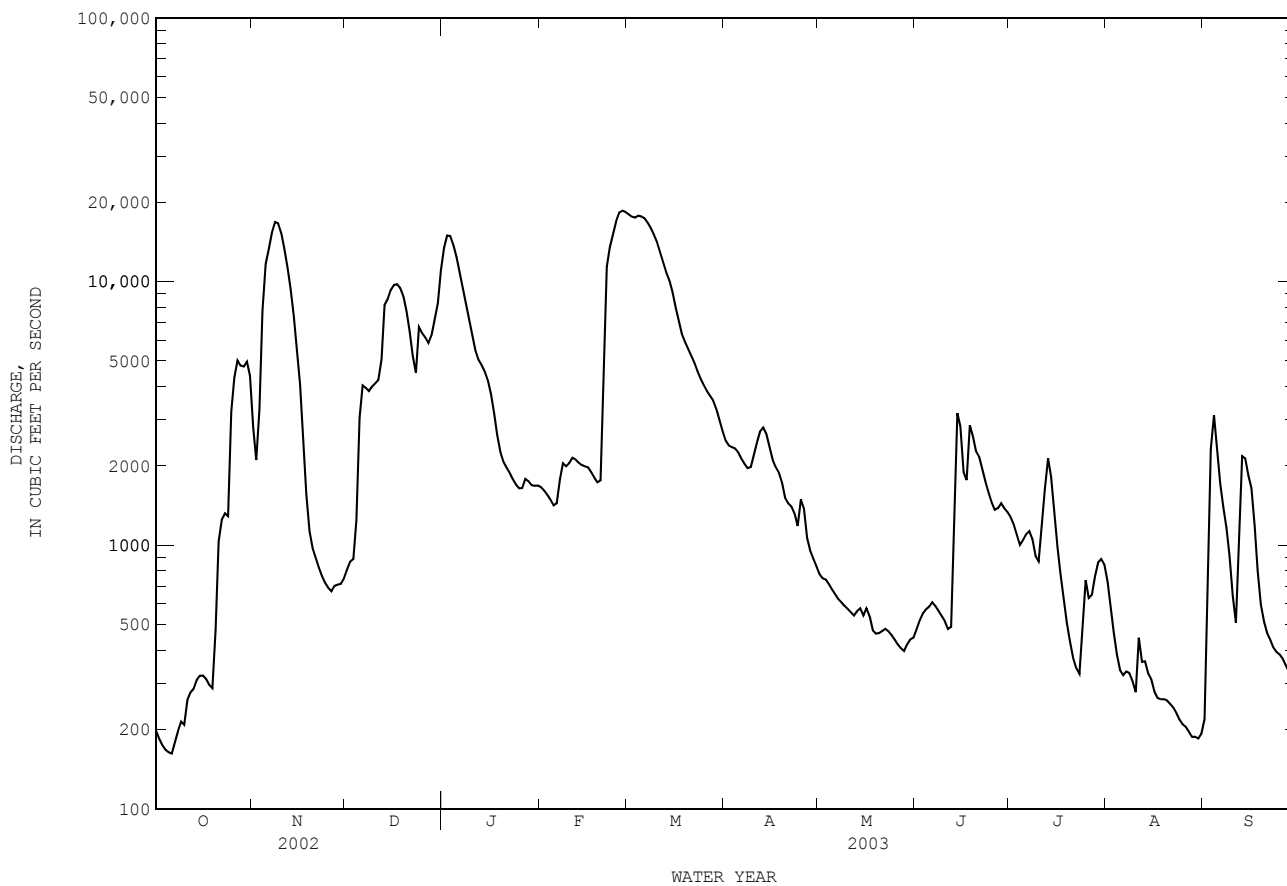
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2003z, BY WATER YEAR (WY)

	835	1401	2755	3852	4024	4389	3693	3578	2695	1104	376	492
MEAN	835	1401	2755	3852	4024	4389	3693	3578	2695	1104	376	492
MAX	10620	7673	8982	13170	13930	15890	11990	12730	10510	11260	2673	3042
(WY)	1995	1999	1995	1998	1992	2001	1979	1969	2001	1989	1991	1979
MIN	36.6	65.8	213	263	311	395	282	307	102	42.9	34.2	43.1
(WY)	1964	1965	1981	1981	2000	1996	1971	1996	1971	1971	1964	1964

08033500 Neches River near Rockland, TX--Continued
(Hydrologic index station)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1962 - 2003z	
ANNUAL TOTAL	949009		1198892		2425	
ANNUAL MEAN	2600		3285		5328	1995
HIGHEST ANNUAL MEAN					352	1971
LOWEST ANNUAL MEAN					41600	Jul 2 1989
HIGHEST DAILY MEAN	16800	Nov 8	18600	Feb 27	18	Aug 30 1970
LOWEST DAILY MEAN	162	Oct 6	162	Oct 6	23	Jul 21 1971
ANNUAL SEVEN-DAY MINIMUM	174	Sep 10	176	Oct 2	42300	Oct 20 1994
MAXIMUM PEAK FLOW			18600	Feb 27	33.29	Oct 20 1994
MAXIMUM PEAK STAGE			25.78	Feb 27		
ANNUAL RUNOFF (AC-FT)	1882000		2378000		1757000	
10 PERCENT EXCEEDS	6220		9910		6350	
50 PERCENT EXCEEDS	1130		1490		940	
90 PERCENT EXCEEDS	204		310		114	

z Period of regulated streamflow.



NECHES RIVER BASIN

08033500 Neches River near Rockland, TX--Continued
(Hydrologic index station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Apr. 1941 to Sept. 1942, Sept. 1945 to Sept. 1947, Dec. 1967 to current year.

BIOCHEMICAL DATA: Dec. 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Apr. 1941 to Sept. 1942, Sept. 1945 to Sept. 1947.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf, 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hardness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)
NOV 25...	1116	694	217	6.7	13.2	767	9.3	88	45	21	10.8	4.24	21.3
FEB 05...	1319	1410	287	7.1	11.4	765	10.7	98	52	33	12.5	5.09	23.2
MAY 01...	1135	776	220	6.6	24.1	760	7.1	84	47	18	11.1	4.64	22.7
JUN 19...	1005	2620	202	6.7	25.2	764	7.5	91	38	12	10.0	3.14	21.8
AUG 05...	1701	327	183	7.2	32.2	765	7.5	103	40	17	9.53	3.87	17.7
Date	Sodium adsorption ratio (00931)	Sodium, percent (00932)	Potassium, water, fltrd, mg/L (00935)	Bicarbonate, wat flt incrm, field, mg/L (00453)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate, water, fltrd, mg/L (00945)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue on evap. at 180degC, wat flt mg/L (70300)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)	Nitrite water, fltrd, mg/L as N (00613)
NOV 25...	1	48	3.62	--	24	27.9	26.2	<.17	20.7	152	131	14	E.005
FEB 05...	1	48	2.67	24	20	38.6	28.8	.10	17.6	--	142	--	<.008
MAY 01...	1	49	3.21	--	29	25.0	27.3	<.17	15.4	--	128	--	<.008
JUN 19...	2	53	3.37	--	26	30.8	19.1	<.2	9.48	131	114	68	<.008
AUG 05...	1	46	4.89	--	23	19.3	25.0	<.2	13.6	--	109	--	<.008
Date	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Ammonia water, fltrd, mg/L as N (00608)	Organic nitrogen, water, fltrd, mg/L (00607)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Phosphorus, water, fltrd, mg/L (00666)	Orthophosphate, water, fltrd, mg/L as P (00671)	Orthophosphate, water, fltrd, mg/L (00660)	Aluminum, water, fltrd, ug/L (01106)	Antimony, water, fltrd, ug/L (01095)	Arsenic, water, fltrd, ug/L (01000)	Barium, water, fltrd, ug/L (01005)	Beryllium, water, fltrd, ug/L (01010)	Cadmium, water, fltrd, ug/L (01025)
NOV 25...	.25	.05	.27	.32	<.04	E.01	--	6	<.30	<2	58	E.03	<.04
FEB 05...	.28	<.04	--	.27	E.02	E.01	--	--	--	--	--	--	--
MAY 01...	.26	<.04	--	.33	<.04	<.02	--	--	--	--	--	--	--
JUN 19...	.13	E.03	--	.51	.04	.03	.080	13	<.30	E1	42	.07	E.02
AUG 05...	.25	<.04	--	.34	E.02n	E.02n	--	--	--	--	--	--	--

08033500 Neches River near Rockland, TX--Continued
(Hydrologic index station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chrom- ium, water, fltrd, ug/L (01030)	Cobalt water, fltrd, ug/L (01035)	Copper, water, fltrd, ug/L (01040)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb- denum, water, fltrd, ug/L (01060)	Nickel, water, fltrd, ug/L (01065)	Selen- ium, water, fltrd, ug/L (01145)	Silver, water, fltrd, ug/L (01075)	Zinc, water, fltrd, ug/L (01090)	Uranium natural water, fltrd, ug/L (22703)
NOV 25...	<.8	.73	1.2	154	E.06	118	<.02	E.3	3.19	<3	<.20	2	.08
FEB 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 19...	<.8	.22	3.2	113	.12	41.8	<.02	.4	3.39	<3	<.20	7	.16
AUG 05...	--	--	--	--	--	--	--	--	--	--	--	--	--

Remark codes used in this report:

< -- Less than
E -- Estimated value

Value qualifier codes used in this report:

n -- Below the NDV

08034000 Lake Tyler near Whitehouse, TX

LOCATION.--Lat 32°14'30", long 95°10'33", Smith County, Hydrologic Unit 12020004, at city of Tyler pumphouse, 2.0 mi north of Whitehouse Dam on Prairie Creek, 3.0 mi northwest of Mud Creek, and 3.2 mi northeast of Whitehouse.

DRAINAGE AREA.--107 mi². Prior to May 29, 1968, 45.3 mi².

PERIOD OF RECORD.--Mar. 1949 to Sept. 1983, Apr. 1999 to Sept. 2002 (contents), Oct. 2002 to current year.
Water-quality records.--Chemical data: Oct. 1969 to Sept. 1984.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to May 3, 1949, nonrecording gage at dam. May 3, 1949, to July 11, 1951, nonrecording gage at pumphouse. July 12, 1951, to Feb. 1, 1968, water-stage recorder at intake tower in lake 660 ft south of pumphouse. All gages at same datum. Satellite telemeter at station.

REMARKS.--Records fair. Originally Lake Tyler was formed by Whitehouse Dam. Deliberate impoundment began Jan. 8, 1949, and the dam was completed May 13, 1949. The construction of Mud Creek Dam began Feb. 11, 1966, and deliberate impoundment began Nov. 22, 1966; final completion of dam was in Jan. 1967. Whitehouse Dam is a rolled earthfill dam with an uncontrolled concrete spillway 200 ft wide near left end of dam. Mud Creek Dam is a rolled earthfill dam with an uncontrolled concrete spillway 300 ft wide near center of dam. On May 29, 1968, the lakes were joined through an interconnecting canal. An 18-inch conduit through the embankment of Mud Creek Dam serves as a low-flow outlet. Water is used for municipal supply for the cities of Tyler, Troop, and Whitehouse. The dam is owned and operated by the city of Tyler. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	390.0
Design flood.....	386.0
Crest of spillway.....	375.4
Bottom of interconnecting canal between lakes.....	355.0
Lowest gated outlet (invert at Mud Creek Dam).....	350.0

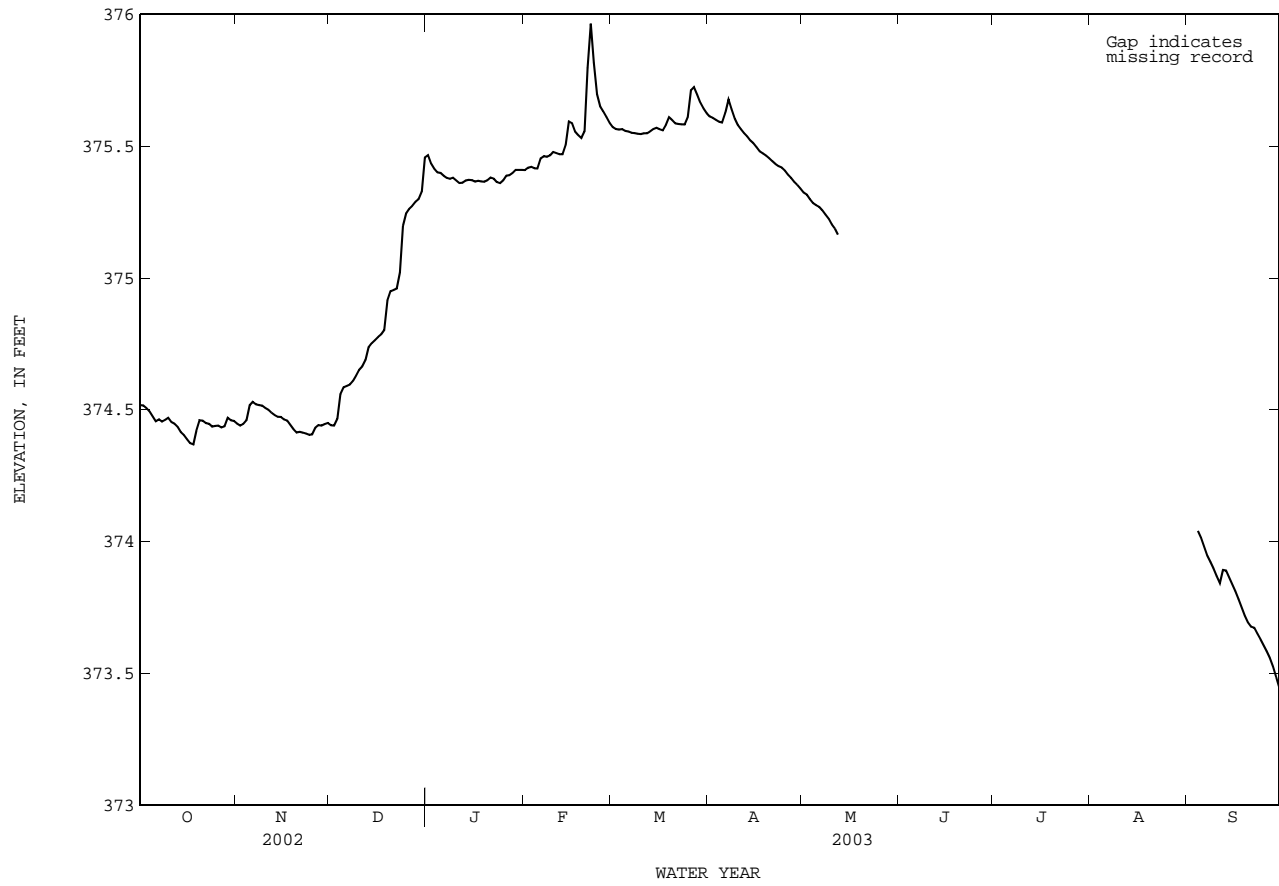
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 87,340 acre-ft, Feb. 3, 1975, elevation, 376.71 ft; maximum elevation, 378.3 ft, Apr. 24, 1966, prior to adjoining of lakes; minimum contents since joining of lakes, 53,100 acre-ft, Nov. 1, 2000, elevation, 369.00 ft)

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 376.00 ft, Feb. 22; minimum elevation, 373.43 ft, Sept. 30.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	374.52	374.45	374.44	375.47	375.41	375.57	375.61	375.32	---	---	---	---
2	374.52	374.44	374.44	375.43	375.42	375.57	375.61	375.32	---	---	---	---
3	374.51	374.45	374.47	375.41	375.42	375.56	375.60	375.30	---	---	---	---
4	374.49	374.46	374.56	375.40	375.42	375.57	375.59	375.28	---	---	---	374.04
5	374.47	374.52	374.59	375.40	375.42	375.56	375.59	375.28	---	---	---	374.01
6	374.46	374.53	374.59	375.39	375.45	375.56	375.63	375.27	---	---	---	373.98
7	374.46	374.52	374.60	375.38	375.46	375.55	375.68	375.26	---	---	---	373.95
8	374.46	374.52	374.61	375.38	375.46	375.55	375.64	375.24	---	---	---	373.92
9	374.46	374.52	374.63	375.38	375.47	375.55	375.61	375.23	---	---	---	373.90
10	374.47	374.51	374.65	375.37	375.48	375.55	375.58	375.20	---	---	---	373.87
11	374.45	374.50	374.66	375.36	375.47	375.55	375.56	375.19	---	---	---	373.84
12	374.45	374.49	374.69	375.36	375.47	375.55	375.55	375.16	---	---	---	373.89
13	374.44	374.48	374.74	375.37	375.47	375.56	375.54	---	---	---	---	373.89
14	374.42	374.47	374.75	375.37	375.50	375.57	375.52	---	---	---	---	373.86
15	374.40	374.47	374.76	375.37	375.59	375.57	375.51	---	---	---	---	373.84
16	374.39	374.46	374.78	375.37	375.59	375.56	375.50	---	---	---	---	373.81
17	374.37	374.46	374.79	375.37	375.56	375.56	375.48	---	---	---	---	373.78
18	374.37	374.44	374.80	375.37	375.54	375.58	375.47	---	---	---	---	373.75
19	374.42	374.43	374.91	375.37	375.53	375.61	375.46	---	---	---	---	373.72
20	374.46	374.41	374.95	375.37	375.56	375.60	375.45	---	---	---	---	373.69
21	374.46	374.42	374.95	375.38	375.80	375.59	375.44	---	---	---	---	373.68
22	374.45	374.41	374.96	375.38	375.97	375.58	375.43	---	---	---	---	373.67
23	374.45	374.41	375.02	375.36	375.82	375.58	375.42	---	---	---	---	373.65
24	374.44	374.40	375.20	375.36	375.70	375.58	375.42	---	---	---	---	373.63
25	374.44	374.41	375.25	375.37	375.65	375.61	375.41	---	---	---	---	373.61
26	374.44	374.43	375.26	375.39	375.63	375.71	375.39	---	---	---	---	373.58
27	374.43	374.44	375.27	375.39	375.61	375.72	375.38	---	---	---	---	373.56
28	374.44	374.44	375.29	375.40	375.59	375.70	375.37	---	---	---	---	373.53
29	374.47	374.45	375.30	375.41	---	375.67	375.35	---	---	---	---	373.49
30	374.46	374.45	375.33	375.41	---	375.64	375.34	---	---	---	---	373.45
31	374.46	---	375.46	375.41	---	375.63	---	---	---	---	---	---
MEAN	374.45	374.46	374.86	375.39	375.55	375.59	375.50	---	---	---	---	---
MAX	374.52	374.53	375.46	375.47	375.97	375.72	375.68	---	---	---	---	---
MIN	374.37	374.40	374.44	375.36	375.41	375.55	375.34	---	---	---	---	---
CAL YR	2002	MAX 376.05	MIN 374.37									
WTR YR	2003	MAX 375.97	MIN 373.45									

08034000 Lake Tyler near Whitehouse, TX--Continued



NECHES RIVER BASIN

08034500 Mud Creek near Jacksonville, TX

LOCATION.--Lat 31°58'35", long 95°09'38", Cherokee County, Hydrologic Unit 12020004, on right bank on downstream side of bridge on U.S. Highway 79, 0.6 mi downstream from Caney Creek, 3.9 mi downstream from another Caney Creek, 4.0 mi downstream from Missouri Pacific Railroad Co. bridge, 6.9 mi east of Jacksonville, and 25.9 mi upstream from mouth.

DRAINAGE AREA.--376 mi².

PERIOD OF RECORD.--May 1939 to Sept. 1979, Oct. 2001 to current year.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 271.64 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. Some regulation by Lake Tyler (station 08034000, capacity 80,900 acre-ft). Several diversions above station. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since May 1884, 20 ft, in May 1908 and Dec. 1913; flood in May 1884 was higher (stage unknown), from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	110	97	1670	167	1400	354	70	48	116	29	41
2	19	72	86	1220	153	1170	243	68	44	86	29	73
3	18	64	95	1610	149	1020	204	68	40	74	28	100
4	19	80	484	1480	146	989	191	65	38	68	28	100
5	19	368	515	1060	146	895	195	66	38	63	27	58
6	21	324	433	747	170	817	505	68	107	59	27	44
7	35	291	429	481	274	767	1390	72	185	58	27	36
8	89	278	351	338	319	644	773	70	223	67	27	33
9	102	170	182	280	378	520	734	63	235	66	25	29
10	116	100	193	242	372	420	890	57	118	60	25	28
11	122	85	220	219	295	360	847	53	66	56	24	28
12	123	77	268	216	307	328	538	49	59	53	24	33
13	73	71	490	207	266	310	292	49	161	50	26	56
14	50	67	394	208	247	375	215	54	422	43	50	92
15	42	72	372	211	544	376	184	60	706	41	37	99
16	37	75	344	196	661	390	159	59	2900	39	30	53
17	35	81	220	179	794	351	137	55	2330	37	28	37
18	31	82	163	183	1120	325	121	100	2190	36	26	33
19	54	72	1130	168	1170	583	113	103	3960	36	25	32
20	157	68	1670	148	1310	569	107	67	3580	36	24	30
21	185	66	1090	145	3550	572	108	54	2420	34	23	29
22	194	66	947	146	5990	609	111	52	1700	32	24	30
23	173	65	732	145	7430	505	100	55	1210	34	24	35
24	89	64	1710	151	5160	352	99	49	884	55	25	50
25	68	66	1590	149	3610	288	98	48	553	87	26	38
26	65	86	1240	136	2690	329	94	86	289	66	24	33
27	77	116	1330	162	2010	399	86	142	201	48	23	31
28	82	143	1080	197	1660	525	81	172	180	40	23	30
29	80	158	544	192	---	790	76	153	228	36	39	29
30	99	126	283	171	---	867	73	75	224	33	49	27
31	138	---	1450	170	---	695	---	56	---	31	39	---
TOTAL	2431	3563	20132	12827	41088	18540	9118	2258	25339	1640	885	1367
MEAN	78.4	119	649	414	1467	598	304	72.8	845	52.9	28.5	45.6
MAX	194	368	1710	1670	7430	1400	1390	172	3960	116	50	100
MIN	18	64	86	136	146	288	73	48	38	31	23	27
AC-FT	4820	7070	39930	25440	81500	36770	18090	4480	50260	3250	1760	2710

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2003h, BY WATER YEAR (WY)

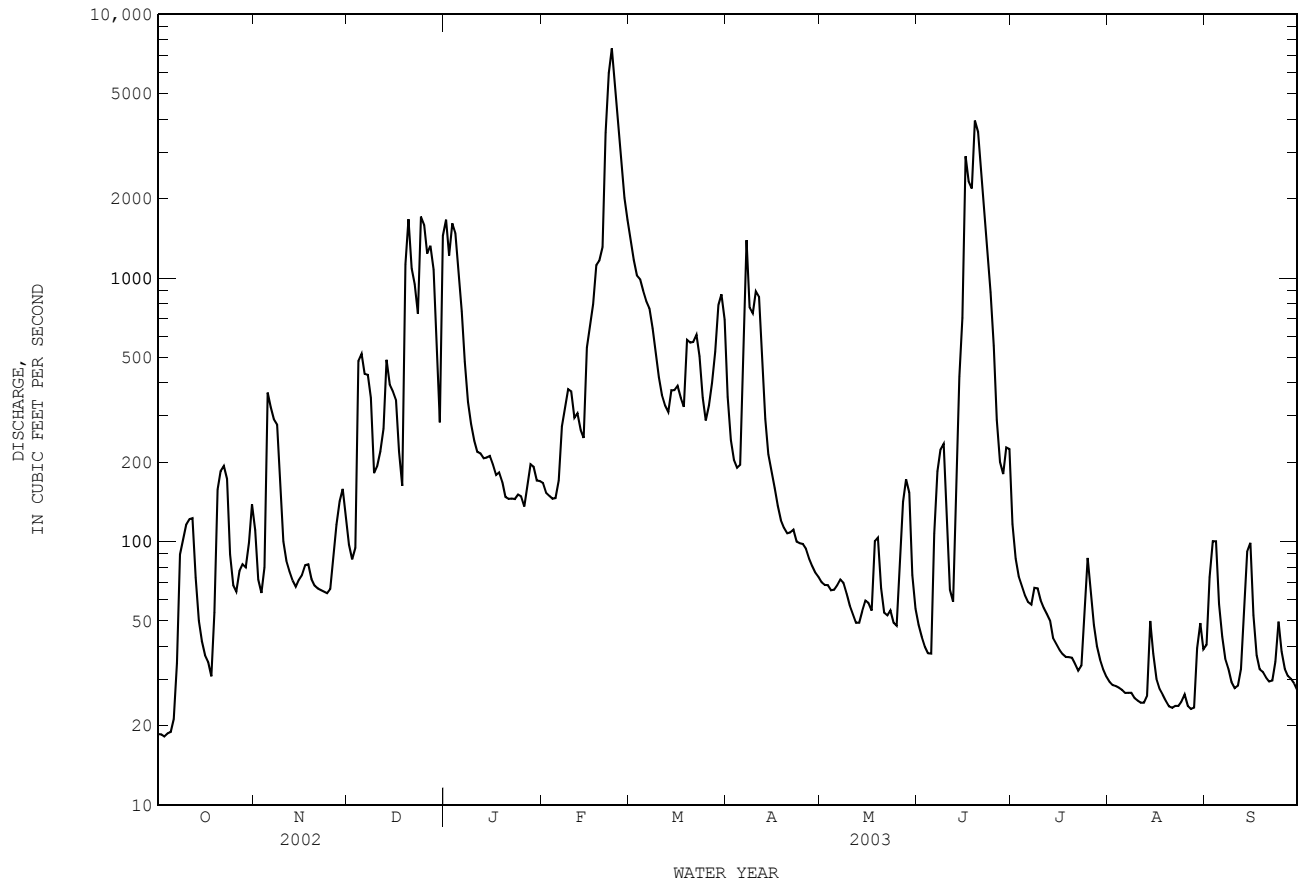
	MEAN	84.6	210	288	347	436	428	460	464	232	82.2	26.9	58.1
MAX	846	1584	1505	1294	1467	1387	2089	2326	1250	971	188	388	
(WY)	1946	1941	1961	1961	2003	1945	1966	1944	1973	1945	1940	1973	
MIN	0.000	0.21	4.77	13.3	49.0	45.0	29.0	14.8	4.89	0.15	0.000	0.000	
(WY)	1940	1940	1957	1957	1967	1967	1972	1972	1971	1954	1939	1939	

SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1939 - 2003h

ANNUAL TOTAL	88601	139188											
ANNUAL MEAN	243	381								259			
HIGHEST ANNUAL MEAN										606		1946	
LOWEST ANNUAL MEAN										33.0		1964	
HIGHEST DAILY MEAN	3660	Apr 10	7430	Feb 23	22700	Apr 25	1966						
LOWEST DAILY MEAN	18	Oct 3	18	Oct 3	0.00	Jul 19	1939						
ANNUAL SEVEN-DAY MINIMUM	19	Sep 28	21	Oct 1	0.00	Jul 19	1939						
MAXIMUM PEAK FLOW			7940	Feb 23	27500	Apr 25	1966						
MAXIMUM PEAK STAGE			10.56	Feb 23	15.20	Apr 25	1966						
ANNUAL RUNOFF (AC-FT)	175700		276100		187800								
10 PERCENT EXCEEDS	513		1040		624								
50 PERCENT EXCEEDS	114		108		75								
90 PERCENT EXCEEDS	24		29		4.1								

h See PERIOD OF RECORD paragraph.

08034500 Mud Creek near Jacksonville, TX--Continued



NECHES RIVER BASIN

08036500 Angelina River near Alto, TX

LOCATION.--Lat 31°40'10", long 94°57'24", Nacogdoches-Cherokee County line, Hydrologic Unit 12020004, on left bank of rectified channel on downstream side of bridge on State Highway 21, 0.4 mi upstream from Allen Creek, 1.5 mi upstream from Bingham Creek, 7.5 mi east of Alto, and 149.3 mi upstream from mouth.

DRAINAGE AREA.--1,276 mi².

PERIOD OF RECORD.--May to Aug. 1940 (discharge measurements only), Sept. 1940 to Mar. 1949 (fragmentary for 1941-42, 1944-49), Feb. 1959 to current year.

Water-quality records.--Chemical data: Nov. 1961 to Sept. 1963.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 204.30 ft above NGVD of 1929. May 9, 1940, to Mar. 31, 1949, nonrecording gage on bridge at natural channel 1,400 ft to right at same datum. Feb. 18 to Sept. 15, 1959, nonrecording gage at present site and datum. Satellite telemeter at station.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Since installation of gage in water year 1959, at least 10% of contributing drainage area has been regulated. No known diversions.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1905, that of Mar. 31, 1989. A flood in May 1908 reached a stage of about 22 ft, from information by local residents. Flood in 1932 reached a stage of 21.5 ft, from floodmarks and from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	365	463	3690	615	7110	1430	277	309	645	170	116
2	50	316	386	3660	647	6130	1390	268	253	522	149	161
3	46	281	356	4080	641	5260	1340	265	197	471	132	205
4	42	317	1040	4690	604	4450	1210	296	169	393	118	239
5	40	790	1370	4640	568	3820	1060	302	e156	307	108	260
6	39	803	1340	4140	575	3390	895	297	e165	284	101	235
7	53	897	1470	3660	666	3060	894	292	e206	332	95	200
8	91	1030	1630	3130	750	2790	1010	265	e270	371	89	162
9	138	1120	1730	2650	867	2520	1410	242	382	416	84	127
10	222	1110	1720	2190	975	2240	2040	229	453	379	79	105
11	246	942	1570	1770	1000	1990	2550	216	489	418	74	97
12	231	703	1400	1430	991	1760	2760	197	551	476	75	101
13	276	562	1450	1170	984	1560	2600	188	584	437	103	102
14	253	470	1280	927	947	1380	2280	185	556	370	180	107
15	220	396	1240	778	937	1230	1900	182	603	283	229	145
16	184	360	1300	763	983	1130	1480	193	832	220	265	167
17	144	345	1390	756	1070	1070	1070	209	1330	192	200	164
18	119	322	1400	725	1190	1110	762	193	1820	170	149	156
19	130	271	1350	692	1280	1340	619	183	2230	152	121	135
20	227	237	1210	659	1580	1340	547	179	2910	150	103	104
21	296	219	1150	638	3100	1390	498	199	3600	177	91	89
22	358	206	1300	623	3950	1470	457	207	4040	135	82	89
23	389	193	1690	599	7110	1540	403	187	4260	325	78	91
24	346	184	2460	574	12800	1510	372	167	4020	835	78	92
25	348	177	2570	551	15000	1410	363	160	3480	831	69	99
26	366	188	2810	552	12500	1420	353	159	2850	693	62	100
27	353	232	3130	569	10200	1620	341	161	2250	819	59	99
28	322	293	3460	554	8410	1670	325	182	1710	718	59	94
29	312	426	3660	574	---	1640	307	233	1270	493	59	85
30	305	510	3610	581	---	1600	290	283	905	314	59	75
31	322	---	3930	568	---	1540	---	316	---	197	69	---
TOTAL	6522	14265	54865	52583	90940	71490	32956	6912	42850	12525	3389	4001
MEAN	210	476	1770	1696	3248	2306	1099	223	1428	404	109	133
MAX	389	1120	3930	4690	15000	7110	2760	316	4260	835	265	260
MIN	39	177	356	551	568	1070	290	159	156	135	59	75
AC-FT	12940	28290	108800	104300	180400	141800	65370	13710	84990	24840	6720	7940

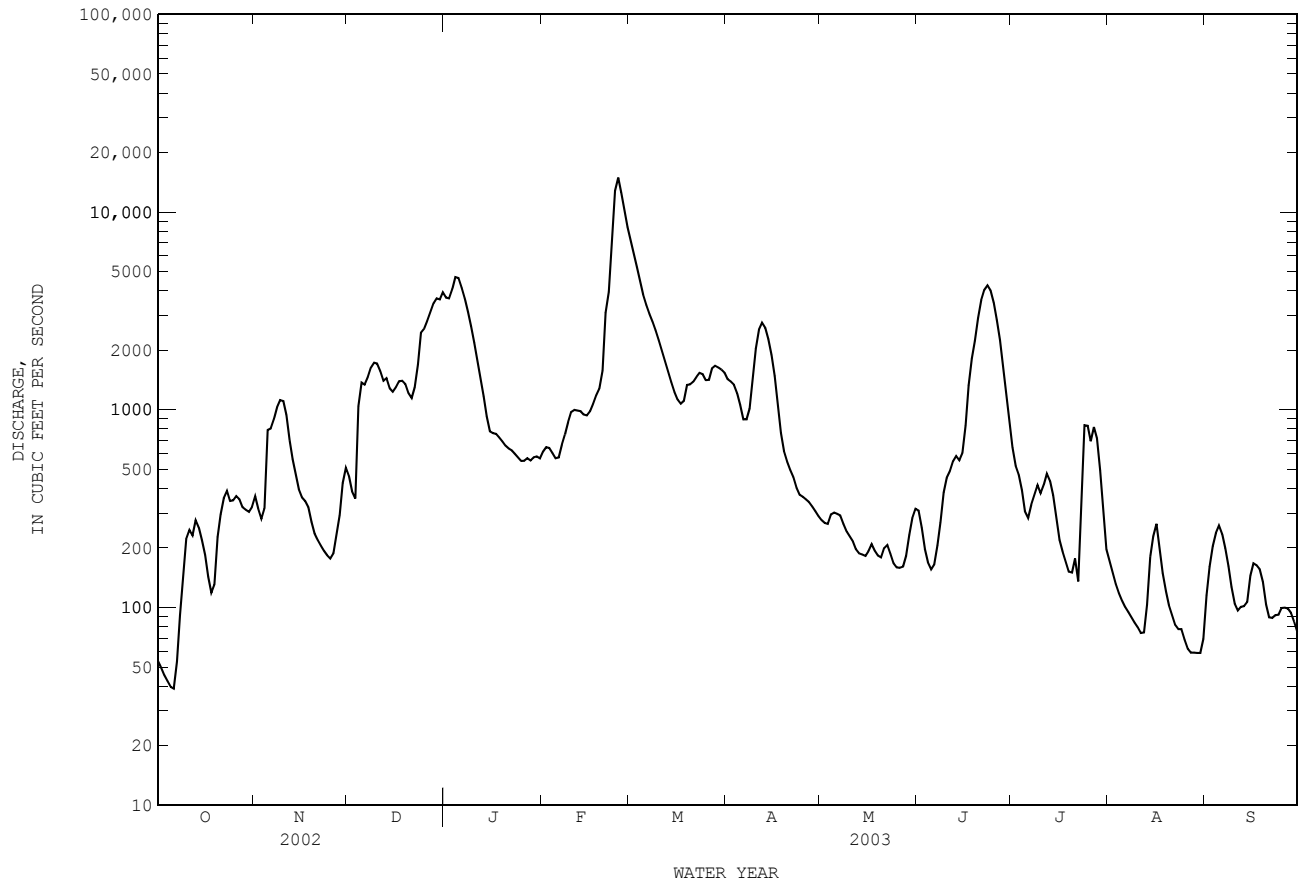
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2003, BY WATER YEAR (WY)

	MEAN	295	521	1271	1479	1703	1735	1483	1293	877	283	147	191
MAX	2350	2081	4836	4874	4642	6650	4301	4484	4316	1718	1129	950	
(WY)	1974	1986	1961	1991	1983	2001	1969	1966	1993	1976	1997	1973	
MIN	5.56	18.0	67.8	150	158	183	172	119	34.2	7.91	19.5	16.0	
(WY)	1968	1968	1965	1981	1967	1967	1972	1972	1971	1998	2000	2000	

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1959 - 2003	
ANNUAL TOTAL	285819		393298			
ANNUAL MEAN	783		1078		933	
HIGHEST ANNUAL MEAN					1917	
LOWEST ANNUAL MEAN					154	
HIGHEST DAILY MEAN	5510	Apr 14	15000	Feb 25	41600	Mar 31 1989
LOWEST DAILY MEAN	39	Oct 6	39	Oct 6	0.00	Jul 30 1998
ANNUAL SEVEN-DAY MINIMUM	46	Oct 1	46	Oct 1	0.15	Jul 28 1998
MAXIMUM PEAK FLOW			15500	Feb 25	42500	Mar 31 1989
MAXIMUM PEAK STAGE			19.66	Feb 25	23.20	Mar 31 1989
ANNUAL RUNOFF (AC-FT)	566900		780100		676200	
10 PERCENT EXCEEDS	1920		2800		2380	
50 PERCENT EXCEEDS	410		453		349	
90 PERCENT EXCEEDS	68		101		50	

e Estimated

08036500 Angelina River near Alto, TX--Continued



NECHES RIVER BASIN

08036700 Lake Nacogdoches near Nacogdoches, TX

LOCATION.--Lat 31°35'19", long 94°49'31", Nacogdoches County, Hydrologic Unit 12020004, at upstream side of dam on Bayou Loco near service outlet tower and 10 mi west of Nacogdoches.

DRAINAGE AREA.--87.9 mi².

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

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam. Deliberate impoundment began July 14, 1976. The dam is owned by the city of Nacogdoches. The water is used for industrial and municipal supply by the city of Nacogdoches. The spillway is an uncontrolled 500-foot-wide cut through natural ground located near the right end of dam. There is an uncontrolled drop inlet with a 20.5-foot-diameter top opening that is connected to an 8 x 7-foot conduit that extends through the dam. A separate multi-gated inlet tower is connected to a valve by a 30-inch conduit through the dam. The valve box directs water to a purification plant. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	303.0
Top of design flood.....	298.5
Crest of spillway.....	286.0
Crest of drop inlet.....	279.0
Lowest gated outlet (invert of 30 in. conduit).....	238.2

COOPERATION.--The capacity table, furnished by the Texas Water Development Board, dated June 16, 1994, is from a Mar. 1994 survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 58,730 acre-ft, Jan. 30, 1999, elevation, 286.67 ft; minimum contents after initial filling, 20,540 acre-ft, Nov. 26, 1977, elevation, 266.62 ft.

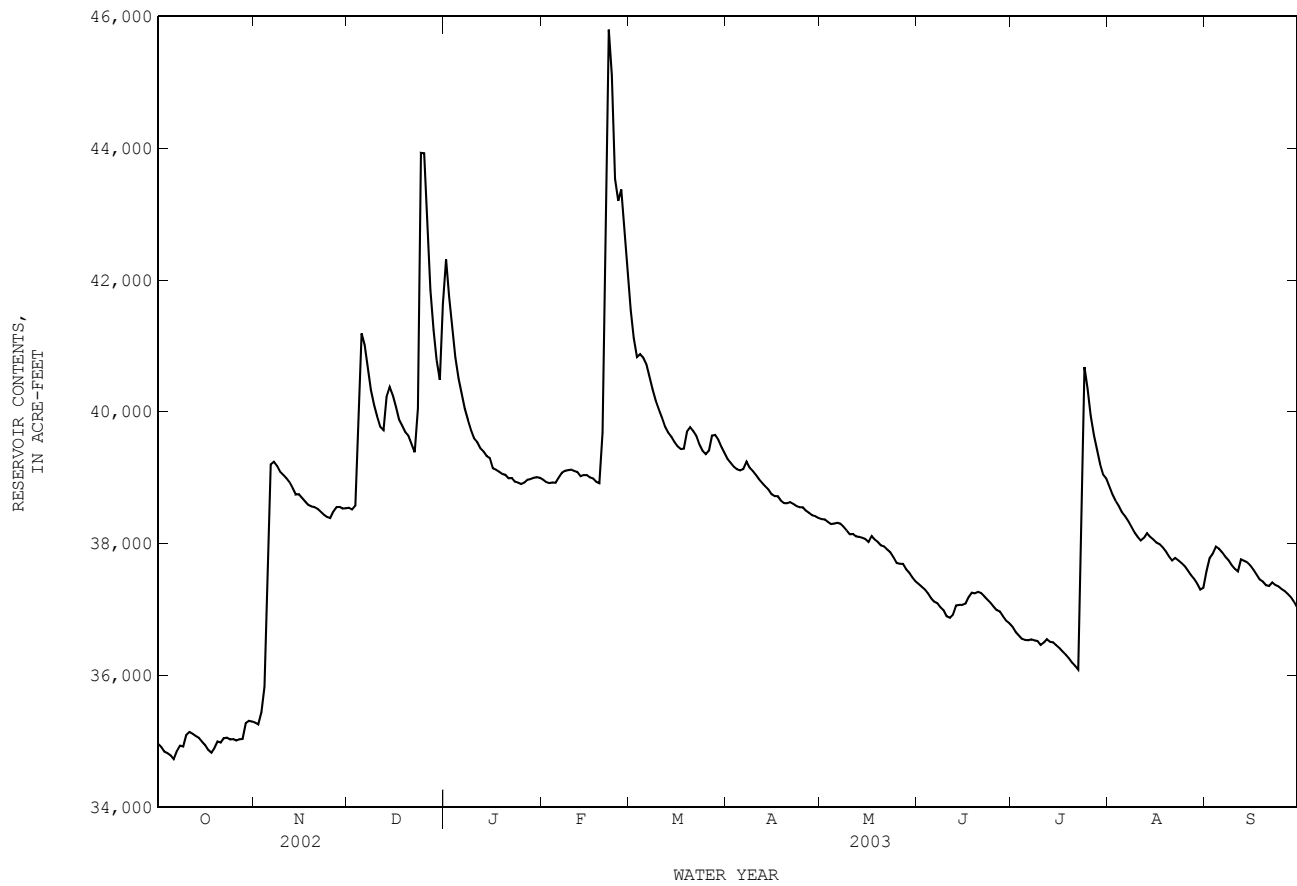
EXTREMES FOR CURRENT YEAR.--Maximum contents, 46,200 acre-ft, Feb. 22, elevation, 281.94 ft; minimum contents, 34,690 acre-ft, Oct. 6, elevation, 276.67 ft.

RESERVOIR STORAGE, IN (ACRE-FEET), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34960	35280	38540	42310	38970	41550	39280	38370	37390	36740	38860	37580
2	34910	35260	38520	41750	38930	41120	39220	38370	37350	36660	38740	37780
3	34840	35440	38570	41260	38920	40830	39170	38330	37300	36610	38640	37850
4	34820	35820	39750	40820	38930	40880	39130	38300	37250	36560	38570	37950
5	34790	38030	41190	40510	38920	40830	39110	38300	37170	36540	38470	37920
6	34730	39200	41020	40260	39000	40720	39130	38320	37120	36530	38420	37870
7	34850	39240	40650	40050	39080	40530	39240	38300	37090	36540	38340	37800
8	34930	39180	40330	39870	39100	40340	39150	38260	37030	36530	38260	37750
9	34920	39090	40110	39720	39120	40170	39100	38200	36990	36520	38170	37680
10	35100	39040	39930	39600	39120	40040	39040	38140	36900	36460	38100	37620
11	35140	38990	39770	39540	39100	39920	38980	38150	36870	36500	38050	37580
12	35110	38930	39720	39440	39090	39770	38920	38110	36920	36550	38090	37760
13	35080	38840	40220	39400	39020	39680	38870	38100	37060	36510	38160	37740
14	35050	38750	40380	39330	39040	39620	38820	38090	37070	36500	38100	37720
15	35000	38750	40250	39300	39040	39540	38750	38070	37070	36460	38060	37670
16	34940	38690	40070	39140	39000	39480	38720	38020	37090	36410	38010	37610
17	34870	38640	39880	39120	38990	39440	38720	38110	37190	36360	37990	37530
18	34830	38590	39790	39090	38940	39440	38650	38060	37260	36310	37950	37460
19	34900	38560	39690	39060	38920	39700	38610	38020	37250	36260	37880	37430
20	35000	38550	39640	39040	39680	39770	38610	37970	37270	36200	37810	37370
21	34980	38530	39510	38990	43120	39710	38630	37960	37250	36150	37740	37360
22	35050	38480	39390	39000	45800	39630	38600	37910	37200	36090	37780	37410
23	35050	38440	40050	38940	45110	39500	38570	37870	37150	37720	37750	37370
24	35030	38400	43930	38920	43530	39410	38550	37790	37100	40680	37710	37350
25	35030	38390	43920	38900	43200	39360	38550	37710	37040	40340	37660	37310
26	35010	38490	42750	38930	43370	39410	38500	37690	36990	39940	37590	37280
27	35030	38550	41850	38970	42780	39640	38470	37690	36970	39650	37520	37240
28	35030	38560	41240	38980	42130	39650	38430	37610	36890	39420	37470	37190
29	35270	38530	40780	39000	---	39580	38420	37560	36830	39210	37400	37110
30	35310	38540	40480	39010	---	39470	38390	37490	36790	39050	37300	37030
31	35300	---	41630	39000	---	39370	---	37430	---	38990	37330	---
MEAN	35000	38260	40440	39590	40360	39940	38810	38010	37100	37320	38000	37540
MAX	35310	39240	43930	42310	45800	41550	39280	38370	37390	40680	38860	37950
MIN	34730	35260	38520	38900	38920	39360	38390	37430	36790	36090	37300	37030
(+)	276.98	278.54	279.96	278.75	280.19	278.93	278.47	278.02	277.71	278.75	277.97	277.82
(@)	+280	+3240	+3090	-2630	+3130	-2760	-980	-960	-640	+2200	-1660	-300
CAL YR 2002	MAX 43930	MIN 34730	(@) +2390									
WTR YR 2003	MAX 45800	MIN 34730	(@) +2010									

(+) Elevation in feet, at end of month.
(@) Change in contents, in acre-feet.

08036700 Lake Nacogdoches near Nacogdoches, TX--Continued



NECHES RIVER BASIN

08038000 Attoyac Bayou near Chireno, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 31°30'15", long 94°18'15", Nacogdoches-San Augustine County Line, Hydrologic Unit 12020005, near right bank on downstream side of bridge on State Highway 21, 2.2 mi upstream from Amaladeros Creek, 2.8 mi east of Chireno, 5.4 mi downstream from Arenoso Creek and 41 mi upstream from mouth.

DRAINAGE AREA.--503 mi².

PERIOD OF RECORD.--Jan. 1924 to Sept. 1925, July 1939 to Nov. 1954, and Oct. 1955 to Sept. 30, 1985 (daily mean discharge). Monthly discharge only for some periods, published in WSP 1312 and 1732. Oct. 1985 to Sept. 1989 (annual maximum), Oct. 1989 to current year (peak discharges greater than base discharge).
Water-quality records.--Chemical data: Oct. 1962 to Mar. 1963, Jan. 1994 to Aug. 1999. Biochemical data: Jan. 1994 to Aug. 1999.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 169.58 ft above NGVD of 1929. Jan. 24, 1924, to Aug. 29, 1925, and Sept. 6, 1957, to Oct. 27, 1958, nonrecording gage at same site and datum. Satellite telemeter at station.

REMARKS.--Records good. Flow is affected at times by discharge from the flood-detention pools of twelve floodwater-retarding structures. These structures control runoff from 46.7 mi² above this station.

AVERAGE DISCHARGE.--45 years (water years 1940-54, 1956-1985), 479 ft³/s, 12.93 in/yr, 347,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,900 ft³/s Nov. 24, 1940 (gage height, 25.97 ft), maximum gage height, 26.01 ft on Jan. 30, 1999 (discharge, 31,700 ft³/s); minimum, 0.8 ft³/s Aug. 26-27, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1865, 29.9 ft June 29, 1902, from information by local residents. Flood in July 1933 reached a stage of 25.2 ft from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	0900	3,870	17.33	Feb. 22	1600	*10,100	*20.09
Dec. 25	1700	8,830	19.64	Feb. 26	0900	4,280	17.61
Jan. 2	2000	3,910	17.40				

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NECHES RIVER BASIN

08039100 Ayish Bayou near San Augustine, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 31°23'46", Long 94°09'03", San Augustine County, Hydrologic Unit 12020005, near center of span on downstream side of bridge on State Highway 103, 3.0 mi upstream from Turkey Creek and 9.5 mi south of San Augine.

DRAINAGE AREA.--89.0 mi².

PERIOD OF RECORD.--Feb. 1959 to Sept. 1985 (daily mean discharge), Oct. 1985 to Sept. 1989 (annual maximum), Oct. 1989 to current year (peak discharges greater than base discharge).

REVISED RECORDS.--WSP 1922: 1959(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 190.22 ft above NGVD of 1929. Prior to June 2, 1959, nonrecording gage at same site and datum. Satellite telemeter at station.

REMARKS.--Records good. No known regulation or diversions.

AVERAGE DISCHARGE.--26 years (water years 1960-85), 83.7 ft³/s, 12.77 in/yr, 60,640 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,200 ft³/s, Sept. 14, 1978, gage height, 18.02 ft; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since Oct. 1957, 15,900 ft³/s, on Sept. 21 or 22, 1958, gage height, 17.5 ft, from floodmarks.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	1400	*3,400	*13.18	Dec. 31	1800	2,120	12.44
Dec. 5	0200	1,650	12.20	Feb. 21	1300	2,930	12.93

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08039300 Sam Rayburn Reservoir near Jasper, TX

LOCATION.--Lat 31°03'38", long 94°06'21", Jasper County, Hydrologic Unit 12020005, in the powerhouse-intake structure of Sam Rayburn Dam on the Angelina River, 10 mi northwest of Jasper and 25.2 mi upstream from mouth.

DRAINAGE AREA.--3,449 mi².

PERIOD OF RECORD.--Jan. 1965 to Sept. 2000 (U.S. Army Corps of Engineers furnished contents), Oct. 2000 to Sept. 2002 (daily mean contents). Oct. 2002 to current year.

Water-quality records.--Chemical data: Oct. 1964 to Sept. 1984, Sept. 1993 to Sept. 1999. Biochemical data: Nov. 1967 to Sept. 1984, Sept. 1993 to Sept. 1999.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to Apr. 20, 1965, nonrecording gage at same site and datum. Satellite telemeter at station.

REMARKS.--Records good. The reservoir is formed by a rolled earthfill dam 19,430 ft long, including spillway and dikes. The dam was completed and deliberate impoundment began Mar. 29, 1965. The spillway is an uncontrolled broad-crested weir 2,200 ft wide, on right bank 7,000 ft to right of outlet works and is designed to discharge 125,300 ft³/s at maximum flood design. The flood-control outlet works consists of two 10.0 x 20.0-foot rectangular concrete-lined conduits controlled by two 10.0 x 20.0-foot tractor-type service gates and one 10.0 x 20.0-foot tractor-type emergency gate. Water for turbines is admitted through four 18.0 x 26.0-foot penstocks and controlled by two wheeled-leaf-type headgates. The dam is owned by the U.S. Army Corps of Engineers. The reservoir is operated for flood control and power generation. The area-capacity tables are based on topographic maps prepared by the U.S. Army Corps of Engineers and detailed sedimentation ranges established in 1961 and dated Feb. 1965. For statement regarding regulation by Natural Resource Conservation Service flood-water-retarding structures, see station 08038000. Conservation pool storage is 2,898,500 acre-ft. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam.....	190.0
Design flood.....	183.0
Crest of spillway.....	176.0
Top of flood-control pool.....	173.0
Top of conservation pool (power pool).....	164.4
Top of power head and sediment pool.....	149.0
Lowest gated outlet (invert).....	105.0

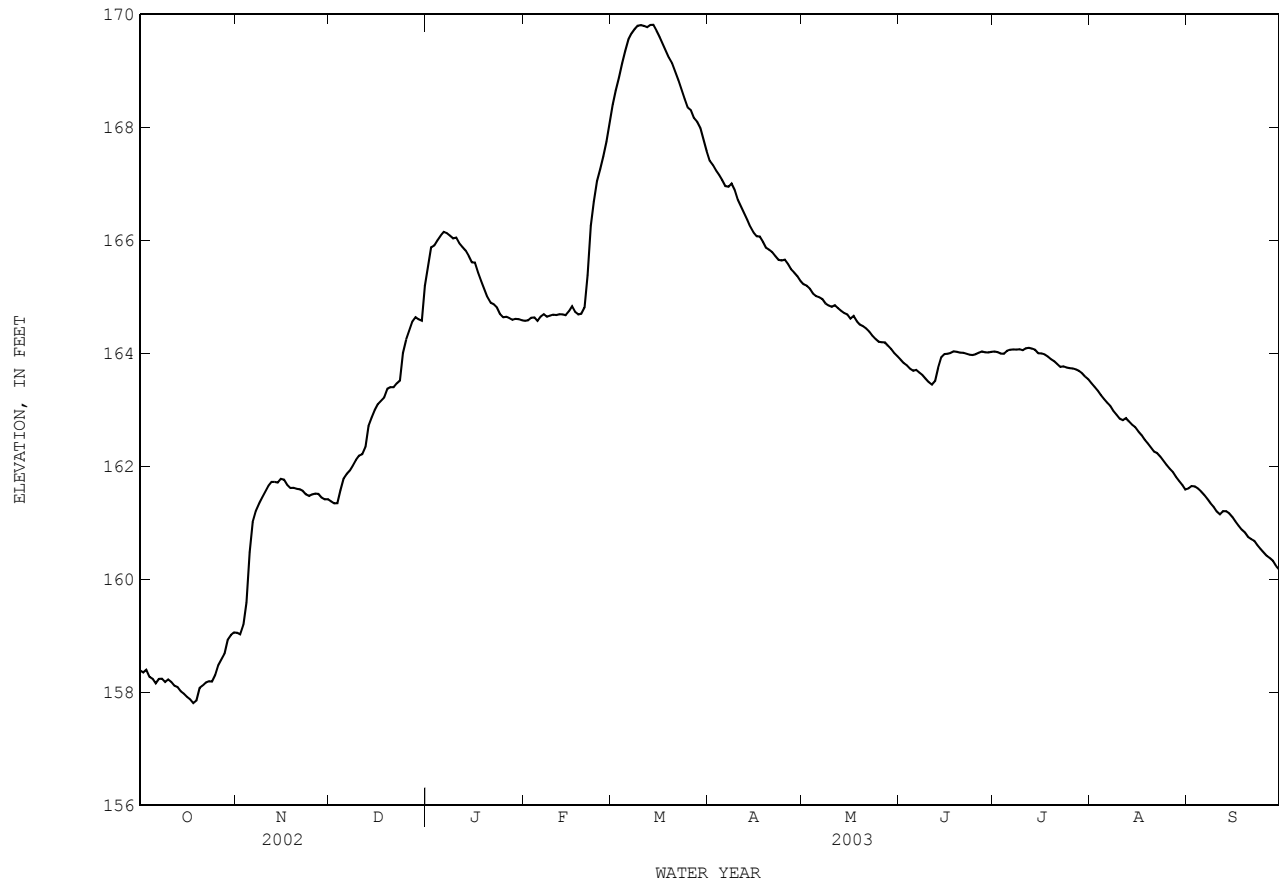
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 4,283,000 acre-ft, Mar. 9, 1992, elevation, 174.95 ft; minimum since conservation storage was reached in 1968, 1,585,000 acre-ft, Aug. 10, 1996, elevation, 150.74 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 169.88 ft, Mar. 13; minimum elevation, 157.76 ft, Oct. 18.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	158.38	159.05	161.38	165.56	164.58	168.40	167.41	165.22	163.89	164.03	163.47	161.61
2	158.35	159.02	161.34	165.88	164.59	168.66	167.34	165.20	163.83	164.02	163.41	161.65
3	158.40	159.19	161.35	165.91	164.63	168.88	167.24	165.14	163.79	164.00	163.34	161.64
4	158.27	159.59	161.57	166.00	164.64	169.14	167.16	165.06	163.73	163.99	163.26	161.61
5	158.24	160.48	161.78	166.08	164.57	169.35	167.07	165.01	163.69	164.04	163.19	161.56
6	158.16	161.01	161.86	166.15	164.65	169.56	166.96	164.99	163.71	164.06	163.13	161.50
7	158.23	161.21	161.92	166.13	164.69	169.66	166.95	164.96	163.66	164.07	163.07	161.43
8	158.24	161.34	162.01	166.08	164.65	169.74	167.01	164.88	163.62	164.07	162.98	161.35
9	158.18	161.45	162.12	166.04	164.67	169.80	166.89	164.84	163.55	164.07	162.91	161.29
10	158.23	161.55	162.19	166.05	164.69	169.81	166.72	164.82	163.49	164.06	162.84	161.20
11	158.18	161.65	162.21	165.95	164.68	169.80	166.61	164.85	163.45	164.09	162.82	161.15
12	158.12	161.72	162.34	165.88	164.69	169.78	166.49	164.80	163.51	164.10	162.85	161.21
13	158.09	161.72	162.71	165.82	164.69	169.82	166.37	164.75	163.74	164.08	162.79	161.20
14	158.01	161.71	162.87	165.73	164.68	169.82	166.24	164.71	163.93	164.06	162.73	161.17
15	157.97	161.78	163.00	165.61	164.74	169.71	166.14	164.69	163.99	164.00	162.69	161.10
16	157.92	161.76	163.10	165.61	164.83	169.61	166.07	164.61	163.99	164.00	162.62	161.02
17	157.87	161.67	163.16	165.43	164.74	169.48	166.07	164.66	164.01	163.98	162.55	160.95
18	157.81	161.62	163.22	165.28	164.69	169.36	165.98	164.57	164.03	163.94	162.47	160.88
19	157.85	161.62	163.37	165.14	164.70	169.23	165.87	164.51	164.03	163.90	162.40	160.83
20	158.07	161.60	163.40	165.00	164.81	169.13	165.84	164.48	164.01	163.86	162.33	160.75
21	158.12	161.59	163.40	164.90	165.38	168.98	165.79	164.44	164.01	163.81	162.26	160.71
22	158.17	161.56	163.46	164.87	166.26	168.84	165.72	164.38	163.99	163.76	162.23	160.68
23	158.19	161.50	163.52	164.82	166.69	168.68	165.66	164.31	163.98	163.77	162.17	160.60
24	158.19	161.48	164.01	164.70	167.05	168.50	165.64	164.25	163.97	163.75	162.10	160.54
25	158.30	161.50	164.24	164.64	167.26	168.35	165.66	164.21	163.98	163.74	162.02	160.48
26	158.48	161.52	164.40	164.65	167.48	168.30	165.58	164.20	164.01	163.73	161.95	160.42
27	158.58	161.51	164.56	164.62	167.75	168.17	165.49	164.19	164.03	163.72	161.90	160.38
28	158.68	161.45	164.64	164.59	168.08	168.10	165.43	164.14	164.02	163.69	161.81	160.32
29	158.											

08039300 Sam Rayburn Reservoir near Jasper, TX--Continued



NECHES RIVER BASIN

08040000 B.A. Steinhagen Lake at Town Bluff, TX

LOCATION.--Lat 30°47'43", long 94°10'48", Tyler County, Hydrologic Unit 12020003, near right bank 70 ft upstream from outlet structure of Town Bluff Dam on Neches River, 0.4 mi north of Town Bluff and at mile 113.7.

DRAINAGE AREA.--7,573 mi².

PERIOD OF RECORD.--Apr. 1951 to Oct. 2000 (U.S. Army Corps of Engineers furnished contents). Oct. 2000 to Sept. 2002 (mean daily contents). Oct. 2002 to current year. Prior to Oct. 1967, published as "Dam B Reservoir at Town Bluff".

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Oct. 25, 1954, at site 490 ft upstream at same datum. Satellite telemeter at station.

REMARKS.--Records good. The lake is formed by a rolled earthfill dam with concrete spillway sections. The total length of dam is 6,698 ft, including a concrete spillway and nonoverflow section. Deliberate impoundment of water began Apr. 16, 1951, and the dam was completed in June 1951. The uncontrolled spillway is 6,100 ft long. A 326-foot-long gated service spillway with six 40.0- x 35.0-foot tainter gates is located near right end of dam. The capacity of the spillways at maximum flood design is 218,300 ft³/s. The capacity table is based on a survey made in 1945. The dam is owned by the U.S. Army Corps of Engineers. The water is used for industrial, municipal and irrigation supplies. Conservation pool storage is 69,700 acre-ft. Data regarding the dam are given in the following table:

	Elevation (feet)
Top of dam (nonoverflow).....	95.0
Design flood.....	93.0
Crest of uncontrolled spillway (top of tainter gates).....	85.0
Top of conservation pool.....	81.0
Bottom of tainter gates (sill).....	50.0

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 128,400 acre-ft, May 22, 1953 elevation, 85.21 ft; no storage Sept. 18 to Oct. 13, 1954.

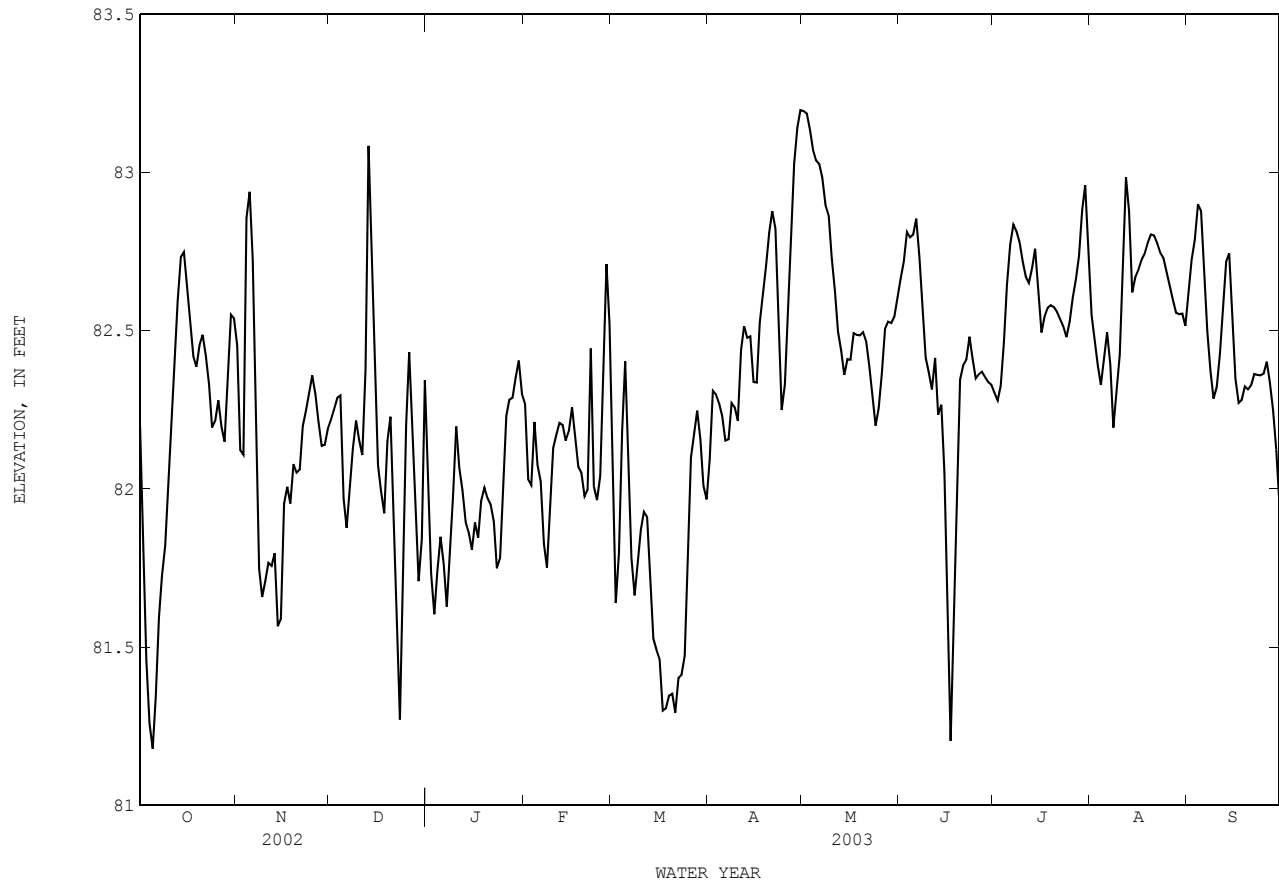
EXTREMES FOR CURRENT YEAR.--Maximum elevation, 83.34 ft, May 2; minimum elevation, 81.02 ft, June 17.

ELEVATION, IN FEET (NGVD), WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82.20	82.45	82.22	82.04	82.27	82.00	82.09	83.19	82.66	82.30	82.55	82.62
2	81.81	82.12	82.25	81.73	82.03	81.64	82.31	83.19	82.72	82.28	82.47	82.72
3	81.46	82.11	82.29	81.60	82.01	81.80	82.30	83.14	82.81	82.33	82.39	82.79
4	81.26	82.86	82.30	81.74	82.21	82.18	82.27	83.07	82.80	82.46	82.33	82.90
5	81.18	82.94	81.97	81.85	82.08	82.40	82.23	83.04	82.80	82.65	82.41	82.88
6	81.34	82.73	81.88	81.76	82.02	82.04	82.15	83.03	82.85	82.77	82.49	82.71
7	81.59	82.10	82.01	81.63	81.83	81.78	82.16	82.98	82.73	82.84	82.39	82.50
8	81.73	81.75	82.13	81.83	81.75	81.66	82.27	82.90	82.57	82.82	82.19	82.37
9	81.82	81.66	82.22	81.98	81.94	81.76	82.26	82.86	82.42	82.78	82.31	82.29
10	82.00	81.71	82.15	82.20	82.13	81.87	82.22	82.73	82.37	82.72	82.42	82.32
11	82.20	81.77	82.11	82.07	82.17	81.93	82.44	82.62	82.31	82.67	82.67	82.43
12	82.40	81.76	82.38	82.00	82.21	81.91	82.51	82.50	82.41	82.65	82.98	82.58
13	82.59	81.80	83.08	81.89	82.20	81.72	82.48	82.44	82.23	82.70	82.88	82.72
14	82.73	81.57	82.61	81.86	82.15	81.53	82.48	82.36	82.27	82.76	82.62	82.74
15	82.75	81.59	82.33	81.81	82.18	81.49	82.34	82.41	82.05	82.62	82.67	82.55
16	82.64	81.95	82.07	81.89	82.26	81.46	82.34	82.41	81.51	82.49	82.69	82.35
17	82.54	82.01	81.99	81.85	82.16	81.30	82.53	82.49	81.20	82.54	82.72	82.27
18	82.42	81.95	81.92	81.96	82.07	81.31	82.62	82.49	81.52	82.57	82.74	82.28
19	82.39	82.08	82.15	82.00	82.05	81.35	82.70	82.49	82.03	82.58	82.78	82.32
20	82.45	82.05	82.23	81.97	81.98	81.35	82.81	82.50	82.35	82.57	82.80	82.31
21	82.49	82.06	81.93	81.95	82.00	81.29	82.88	82.47	82.39	82.56	82.80	82.33
22	82.42	82.20	81.56	81.90	82.44	81.40	82.82	82.39	82.41	82.54	82.78	82.36
23	82.33	82.25	81.27	81.75	82.01	81.41	82.54	82.30	82.48	82.51	82.75	82.36
24	82.19	82.30	81.63	81.78	81.96	81.47	82.25	82.20	82.41	82.48	82.73	82.36
25	82.22	82.36	82.20	82.01	82.04	81.82	82.33	82.25	82.35	82.53	82.69	82.36
26	82.28	82.30	82.43	82.23	82.34	82.10	82.56	82.36	82.36	82.60	82.64	82.40
27	82.20	82.21	82.22	82.28	82.71	82.17	82.82	82.51	82.37	82.66	82.60	82.34
28	82.15	82.14	81.95	82.29	82.52	82.25	83.03	82.53	82.35	82.73	82.56	82.25
29	82.37	82.14	81.71	82.35	---	82.16	83.14	82.52	82.34	82.88	82.55	82.12
30	82.55	82.19	81.84	82.41	---	82.01	83.20	82.54	82.33	82.96	82.55	81.96
31	82.54	---	82.34	82.30	---	81.97	---	82.61	---	82.77	82.52	---
MEAN	82.17	82.10	82.11	81.96	82.13	81.76	82.50	82.63	82.35	82.62	82.60	82.45
MAX	82.75	82.94	83.08	82.41	82.71	82.40	83.20	83.19	82.85	82.96	82.98	82.90
MIN	81.18	81.57	81.27	81.60	81.75	81.29	82.09	82.20	81.20	82.28	82.19	81.96

CAL YR 2002 MAX 83.08 MIN 76.11
WTR YR 2003 MAX 83.20 MIN 81.18

08040000 B.A. Steinhagen Lake at Town Bluff, TX--Continued



NECHES RIVER BASIN

08040600 Neches River near Town Bluff, TX

LOCATION.--Lat 30°47'27", long 94°09'03", Jasper-Tyler County line, Hydrologic Unit 12020003, on left bank, 1.0 mi upstream from Walnut Run, 1.8 mi downstream from Town Bluff Dam, 2.0 mi northeast of Town Bluff, 6.5 mi downstream from Wolf Creek and at mile 114.9.

DRAINAGE AREA.--7,574 mi².

PERIOD OF RECORD.--Mar. 1951 to current year. Prior to Oct. 27, 1989, published as "Neches River at Town Bluff" (station 08040500).

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Dec. 4, 1954, to Oct. 27, 1989, water-stage recorder at site 1.5 mi upstream at same datum. Prior to May 21, 1953, water-stage recorder, and May 21, 1953, to Dec. 3, 1954, nonrecording gage at former site at same datum. Satellite telemeter at station.

REMARKS.--Records good. Since installation of gage in water year 1951, at least 10% of contributing drainage area has been regulated. There are some diversions upstream from station. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 1884 reached a stage about 86.8 ft (discharge, about 120,000 ft³/s) and is the highest since that date, from information by the U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3090	5980	2450	19400	4530	21200	14100	5630	3070	3550	5120	4260
2	4380	5850	2420	18500	3860	21200	12600	5120	3070	3460	4410	4260
3	3650	6810	3010	18000	3030	21100	11900	4420	3060	2830	4390	4810
4	2720	16800	5030	18200	3630	21400	11800	4400	3060	2410	3830	5920
5	2520	22900	6880	e18200	4870	21600	11800	4130	3060	2640	3200	6520
6	2310	21400	5150	e18000	5280	21500	11700	4430	3370	2770	3240	6520
7	2330	19000	4840	17800	6210	21300	11400	4440	3740	3190	4760	5940
8	2340	16900	4770	17500	4820	20900	11000	4280	3740	3560	4130	5280
9	2350	16000	4990	16400	4050	20500	11000	3860	3340	3560	2950	4690
10	2230	15900	5850	15100	4330	20500	11000	3830	2910	3550	2920	3830
11	1980	15500	5390	15000	4850	20700	9680	3800	2910	3530	2950	3490
12	1970	14200	4830	14900	4810	20900	11600	3470	2730	3530	3800	3760
13	2050	11900	10400	14700	4840	20800	11700	3130	8100	3520	5340	4930
14	2120	11000	14000	14100	4990	20800	11800	3230	7750	3710	5120	5870
15	2060	8470	11200	13700	5010	20700	11200	3280	8580	4730	3570	6460
16	1990	6070	10800	13300	5070	20700	9140	3350	8100	3950	3510	5790
17	1990	5920	10800	12600	5020	20300	8200	3390	5380	2940	3500	5080
18	1980	4820	10800	11700	4850	19400	8180	3390	3060	2740	3500	4410
19	1980	3620	11000	11600	4720	19400	8140	3390	2470	2740	3390	4030
20	2000	3270	11500	11600	5240	19300	8190	3380	3410	2740	3510	4020
21	2440	2760	11700	11700	7120	18500	8170	3370	4170	2620	3790	4020
22	3560	2400	10700	10000	12400	17500	8150	3370	3980	2730	4160	4020
23	3660	2380	9000	7520	16800	17400	8220	3370	3660	2820	4020	3870
24	3620	2370	8800	5980	17200	16400	7600	3370	4250	2820	4130	3960
25	4820	2630	8930	5230	17600	15200	5590	3370	3930	2830	4060	3700
26	8130	3340	10000	5220	17700	15600	4690	3380	3630	2830	4070	3370
27	8270	3280	11700	5280	18700	16100	4380	3390	3610	2830	4080	3470
28	8640	2840	12400	5270	20400	16400	4540	3310	3580	2890	4040	3460
29	8600	2550	14700	5260	---	16900	4990	3090	3550	3040	3750	3450
30	6530	2450	15600	5270	---	16500	5300	3070	3520	3930	4120	3160
31	6090	---	19400	5070	---	15600	---	3070	---	5530	4160	---
TOTAL	112400	259310	279040	382100	221930	596300	277760	114510	122790	100520	121520	136350
MEAN	3626	8644	9001	12330	7926	19240	9259	3694	4093	3243	3920	4545
MAX	8640	22900	19400	19400	20400	21600	14100	5630	8580	5530	5340	6520
MIN	1970	2370	2420	5070	3030	15200	4380	3070	2470	2410	2920	3160
AC-FT	222900	514300	553500	757900	440200	1183000	550900	227100	243600	199400	241000	270500

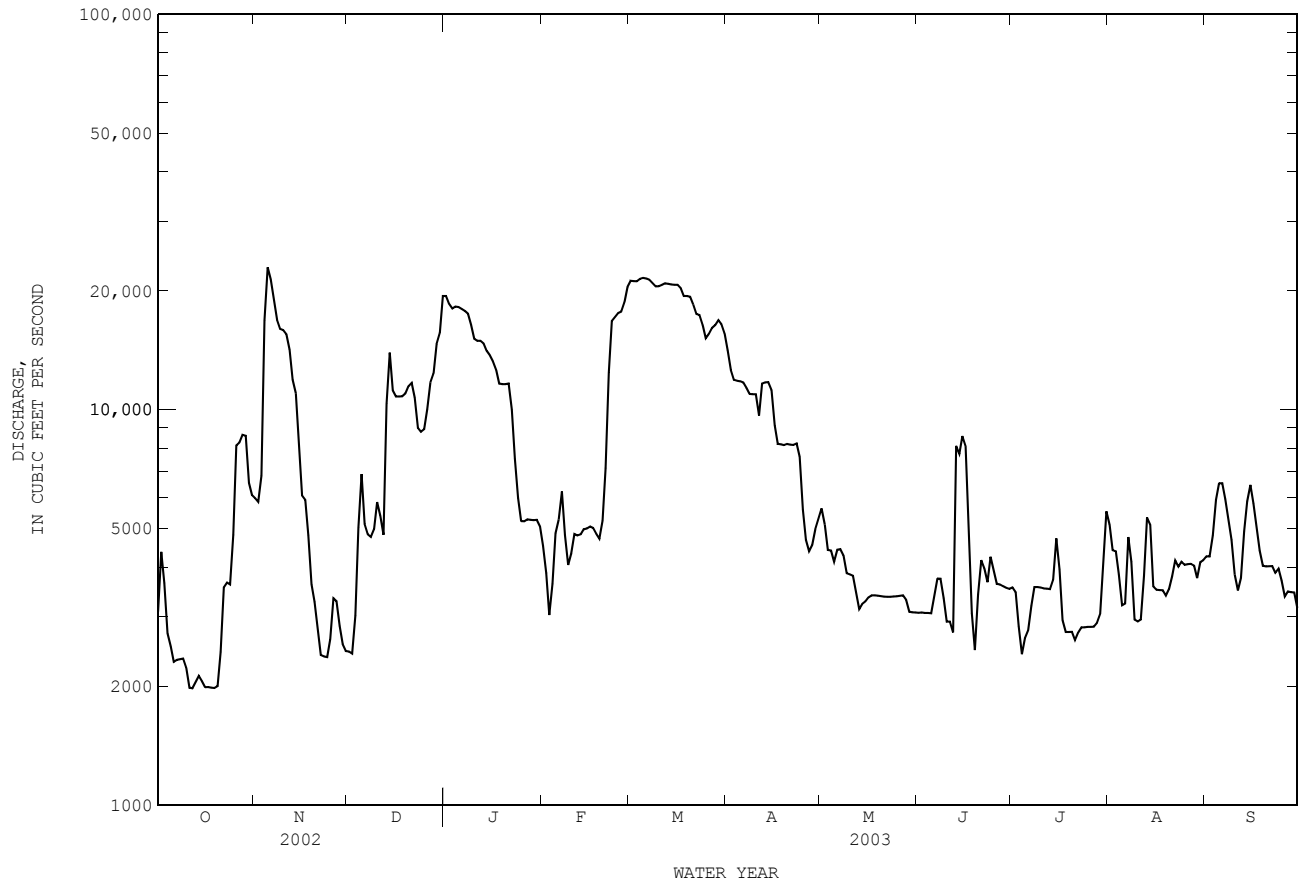
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003, BY WATER YEAR (WY)

	MEAN	2358	2964	4667	6673	7663	8864	8171	8707	5840	3859	2514	2352
MAX	13040	18490	18170	25690	20800	26430	20220	48140	17000	22870	8252	6652	
(WY)	1995	1958	1961	1961	1974	1992	1969	1953	1979	1989	1979	1973	
MIN	88.1	32.0	18.6	120	252	1038	1231	1003	856	756	288	124	
(WY)	1955	1957	1957	1957	1981	2000	1981	1971	1956	1964	1951	1956	

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR	FOR 2003 WATER YEAR	WATER YEARS 1951 - 2003
ANNUAL TOTAL	2238030	2724530	
ANNUAL MEAN	6132	7464	5410
HIGHEST ANNUAL MEAN			12010
LOWEST ANNUAL MEAN			961
HIGHEST DAILY MEAN	22900	Nov 5	90100
LOWEST DAILY MEAN	1970	Oct 12	0.00
ANNUAL SEVEN-DAY MINIMUM	2020	Oct 14	0.00
MAXIMUM PEAK FLOW		23100	90900
MAXIMUM PEAK STAGE		68.38	82.85
ANNUAL RUNOFF (AC-FT)	4439000	5404000	3919000
10 PERCENT EXCEEDS	14700	17500	15200
50 PERCENT EXCEEDS	3480	4810	3050
90 PERCENT EXCEEDS	2440	2770	587

e Estimated

08040600 Neches River near Town Bluff, TX--Continued



NECHES RIVER BASIN

08041000 Neches River at Evadale, TX

LOCATION.--Lat 30°21'20", long 94°05'35", Jasper-Hardin County line, Hydrologic Unit 12020003, near right bank on downstream side of bridge on U.S. Highway 96 at Evadale, 0.8 mi upstream from Mill Creek, 16 mi upstream from Village Creek, and at mile 55.6.

DRAINAGE AREA.--7,951 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1904 to Dec. 1906, Apr. 1921 to current year. Monthly discharge only for some periods, published in WSP 1312.

REVISED RECORDS.--WSP 718: 1929. WSP 1342: 1905-07, 1924. WSP 1732: Drainage area at former site.

GAGE.--Water-stage recorder. Datum of gage is 8.25 ft above NGVD of 1929. July 1, 1904, to Dec. 31, 1906, nonrecording gage on Gulf, Colorado, and Santa Fe Railway Co. bridge at site 1.2 mi downstream at datum 5.50 ft lower; Apr. 1, 1921, to Dec. 7, 1948, nonrecording gages at site 1.2 mi downstream at present datum; Dec. 8, 1948, to Nov. 8, 1963, water-stage recorder at site 1.2 mi downstream at present datum. Satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. Since water year 1951, at least 10% of contributing drainage area has been regulated. There are some diversions upstream for municipal use.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--31 years (water years 1905-06, 1922-50) 7,089 ft³/s (5,136,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1905-06, 1922-50).--Maximum discharge, 92,100 ft³/s May 11, 1944 (gage height, 23.58 ft, from floodmark), at site then in use; minimum daily, 148 ft³/s Sept. 10, 1925.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1884 reached a stage of 26.2 ft, at former site (discharge, about 125,000 ft³/s), and flood in Aug. 1915 reached a stage of 24.5 ft, at former site (discharge, about 102,000 ft³/s). These are the highest floods since at least 1884. Stages furnished by Gulf, Colorado, and Santa Fe Railway Co.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2620	10300	2540	20800	5550	22400	19900	5110	2920	3380	4410	4480
2	2960	7940	2470	23200	5180	23500	19200	5400	2920	3370	4840	4540
3	4040	7190	2610	24600	4680	24700	17800	5370	2940	3330	4520	4540
4	4150	9820	4520	24500	3870	25400	15900	4880	2930	3010	4290	5180
5	3370	16200	6710	23900	3720	25600	14600	4570	2920	2610	4000	5750
6	2980	24400	8720	23400	4610	25700	14000	4370	2930	2490	3360	6120
7	2690	29100	8260	23200	5400	25900	13800	4340	3060	2640	3110	6250
8	2620	29000	6710	23100	6040	25900	13600	4430	3430	2900	3820	6090
9	2640	26800	5900	22900	5820	25700	13100	4380	3540	3320	4170	5610
10	2640	24300	5640	22400	5020	25400	12700	4070	3380	3440	3290	5080
11	2560	22200	5850	21600	4710	25000	12500	3870	2930	3460	2880	4330
12	2340	20800	6040	20400	4940	24700	12000	3820	2830	3440	2870	4080
13	2250	19900	6260	19600	5040	24800	11600	3660	2940	3430	3300	4380
14	2250	18600	7680	19100	5040	25200	12400	3280	4940	3420	4380	4810
15	2320	16500	11700	18700	5190	25200	13100	3210	6290	3460	4920	5350
16	2310	13900	15200	18200	5280	25000	13300	3220	7130	4050	4140	5840
17	2230	9970	15400	17500	5310	24900	12400	3270	7740	4110	3570	5890
18	2200	7190	14300	16900	5280	24900	10400	3320	6790	3250	3420	5390
19	2210	5980	13900	15900	5150	24700	9010	3330	4620	2760	3360	4910
20	2280	4700	13600	14900	5040	24200	8510	3310	2940	2640	3290	4220
21	2340	3920	13600	14300	7720	23700	8430	3290	2900	2610	3300	4080
22	2770	3250	13900	14000	10700	23300	8430	3280	3650	2540	3520	4080
23	4080	2770	14100	13600	13200	22900	8440	3270	3860	2550	3870	4010
24	4550	2570	13600	11500	16400	22100	8400	3260	3570	2650	3940	3900
25	5340	2500	11900	8350	19600	21400	8200	3250	3820	2690	3960	3850
26	6210	2570	11100	6460	21100	20700	6940	3280	3860	2710	3990	3730
27	8920	3100	10800	5880	21700	19600	5690	3310	3560	2730	4040	3420
28	11400	3280	11700	5720	21900	19200	4950	3280	3410	2700	3950	3350
29	15400	3050	13200	5700	---	19300	4720	3210	3380	2710	3910	3330
30	15900	2730	14900	5700	---	19500	4890	3030	3390	2810	3760	3310
31	13900	---	18400	5660	---	19900	---	2940	---	3280	3900	---
TOTAL	144470	354530	311210	511670	233190	730400	338910	116610	115520	94490	118080	139900
MEAN	4660	11820	10040	16510	8328	23560	11300	3762	3851	3048	3809	4663
MAX	15900	29100	18400	24600	21900	25900	19900	5400	7740	4110	4920	6250
MIN	2200	2500	2470	5660	3720	19200	4720	2940	2830	2490	2870	3310
AC-FT	286600	703200	617300	1015000	462500	1449000	672200	231300	229100	187400	234200	277500

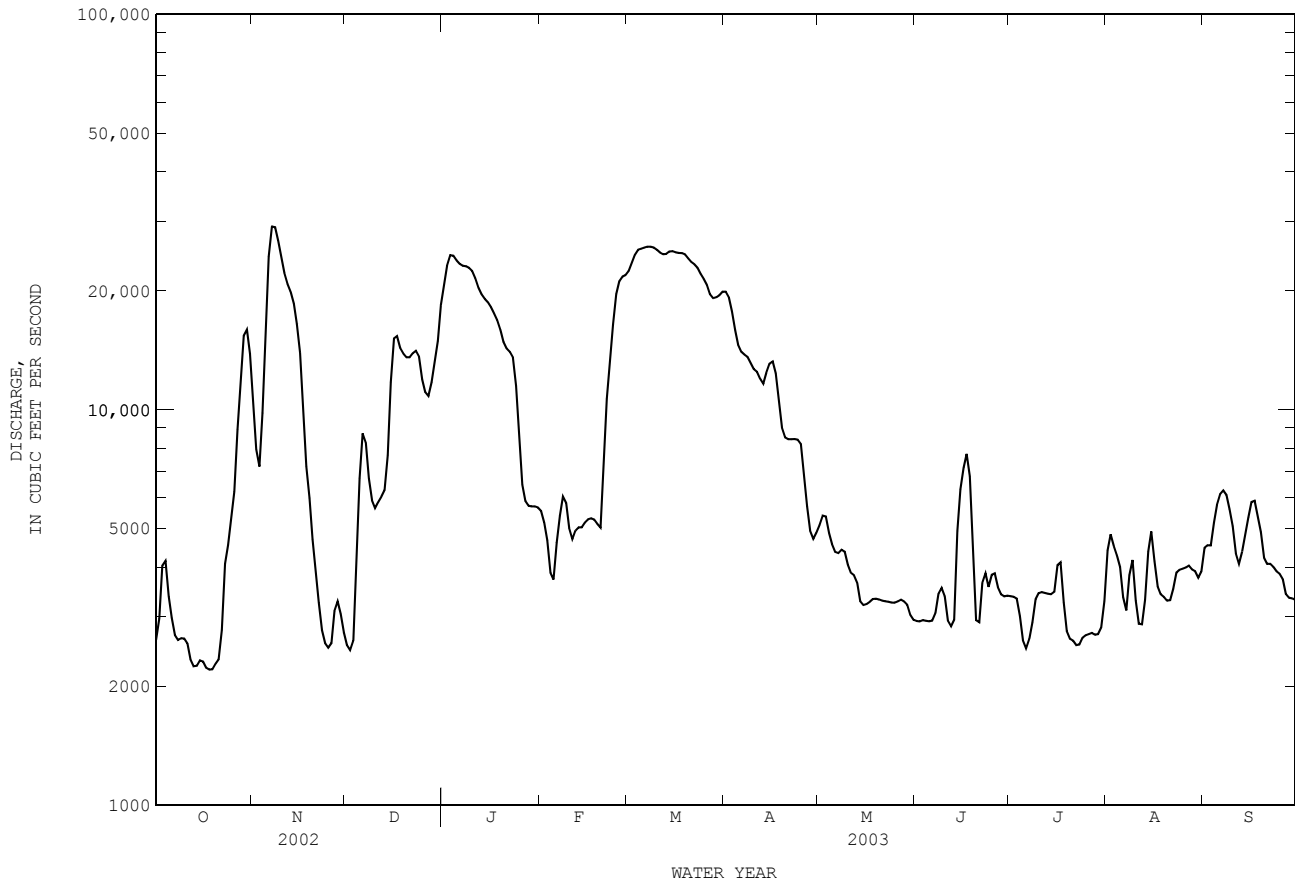
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003z, BY WATER YEAR (WY)

	MEAN	2585	3193	5148	7521	8390	9769	9141	9304	6567	4422	2757	2513
MAX	15780	16580	18680	31060	22720	28790	21440	46790	19920	25680	9644	7090	
(WY)	1995	1958	1961	1961	1995	1992	1995	1953	1991	1989	1979	1979	
MIN	169	110	143	159	394	963	1432	1220	1112	863	358	194	
(WY)	1955	1957	1957	1957	1957	2000	1981	1981	1963	1955	1951	1956	

08041000 Neches River at Evadale, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1951 - 2003z	
ANNUAL TOTAL	2686170		3208980		5930	
ANNUAL MEAN	7359		8792		13480	
HIGHEST ANNUAL MEAN					1128	
LOWEST ANNUAL MEAN					80000	
HIGHEST DAILY MEAN	29100	Nov 7	29100	Nov 7	May 24	1953
LOWEST DAILY MEAN	2200	Oct 18	2200	Oct 18	Nov 26	1956
ANNUAL SEVEN-DAY MINIMUM	2250	Oct 13	2250	Oct 13	Nov 23	1956
MAXIMUM PEAK FLOW			29600	Nov 7	Jul 6	1989
MAXIMUM PEAK STAGE			17.59	Nov 7	Jul 6	1989
ANNUAL RUNOFF (AC-FT)	5328000		6365000		4296000	
10 PERCENT EXCEEDS	18000		22400		16600	
50 PERCENT EXCEEDS	4130		4950		3270	
90 PERCENT EXCEEDS	2800		2750		722	

z Period of regulated streamflow.



NECHES RIVER BASIN

08041000 Neches River at Evadale, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: Sept. 1939 to current year.
 BIOCHEMICAL DATA: Sept. 1939 to Aug. 1994.
 PESTICIDE DATA: Feb. 1968 to July 1981.
 SEDIMENT DATA: Oct. 1960 to Aug. 1994.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Oct. 1947 to Sept. 1997.
 WATER TEMPERATURE: Oct. 1947 to Sept. 1997.

INSTRUMENTATION.--Graphic recorder with thermograph Oct. 1954 to Sept. 1963.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed for previous water years using the daily (or continuous) records of specific conductance and regression relation between each chemical constituent and specific conductance. The computation of the selected constituent loads might include estimated discharge or specific conductance data. Regression equations developed for this station may be obtained from the U.S. Geological Survey Texas District Office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 670 microsiemens/cm, Mar. 21, 25, 31, 1994; minimum daily, 23 microsiemens/cm, Sept. 19, 1963.
 WATER TEMPERATURE: Maximum daily, 36.0°C, many days in Aug. 1997; minimum daily, 3.0°C, Jan. 30, 31, 1948, Jan. 31, 1949, and Jan. 24, 1963.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, uS/cm 25 degC (00095)	pH, water, unfltrd field, std units (00400)	Temperature, water, deg C (00010)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Noncarb hard-ness, wat flt field, mg/L as CaCO3 (00904)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Sodium, water, fltrd, mg/L (00930)
NOV 20...	1152	4680	91	5.9	15.0	770	8.9	87	18	5	4.70	1.59	6.94
APR 02...	1250	19300	132	7.0	18.0	765	9.0	95	28	11	6.30	2.87	11.8
AUG 05...	1610	3910	136	7.2	32.0	765	8.9	121	32	10	7.47	3.21	13.7

Date	Sodium adsorption ratio (00931)	Sodium, percent (00932)	Potassium, water, fltrd, mg/L (00935)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Sulfate, water, fltrd, mg/L (00945)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Residue water, fltrd, sum of constituents mg/L (70301)
NOV 20...	.7	41	2.39	13	11.5	7.50	<.17	10.0	52
APR 02...	1	46	2.45	17	18.1	12.2	.07	6.0	70
AUG 05...	1	46	2.44	22	16.9	16.0	<.2	9.4	82

Remark codes used in this report:
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NECHES RIVER BASIN

08041500 Village Creek near Kountze, TX

LOCATION.--Lat 30°23'52", long 94°15'48", Hardin County, Hydrologic Unit 12020006, on downstream side of bridge on Farm Road 418, 1.6 mi upstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, 3.1 mi upstream from Cypress Creek, 3.4 mi northeast of Kountze and 4.3 mi downstream from Beech Creek.

DRAINAGE AREA.--860 mi².

PERIOD OF RECORD.--June 1924 to Oct. 1929 (discharge measurements only), Apr. 1939 to current year.

Water-quality records.--Chemical data: Nov. 1967 to Sept. 1985. Water temperature: Nov. 1967 to Sept. 1970.

REVISED RECORDS.--WSP 1732: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 25.12 ft above NGVD of 1929. Prior to Apr. 30, 1939, nonrecording gage at site 1.6 mi downstream at different datum. Apr. 30, 1939, to Sept. 30, 1966, water-stage recorder at site 2,000 ft downstream at present datum. Satellite telemeter at station.

REMARKS.--Records fair. No known regulation. There are small diversions above station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1884, about 34 ft in Aug. 1915, at site 2,000 ft downstream at present datum; stage was determined on basis of information by engineers of Gulf, Colorado, and Santa Fe Railway Co. for site 1.6 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	e16600	457	3790	1070	1890	e477	202	112	212	103	328
2	96	e18800	432	5700	945	1490	e445	195	99	197	95	535
3	93	e20600	470	6100	820	1270	411	190	92	178	89	782
4	132	e22100	1390	5820	740	1280	401	187	89	162	85	753
5	100	e22500	3200	4650	691	1490	395	192	90	180	80	500
6	92	e21800	3640	3150	672	1800	391	192	97	247	76	357
7	104	16800	3740	2020	872	2110	391	186	130	301	74	291
8	132	11200	3250	1360	1350	2110	392	176	276	395	71	275
9	106	7310	2360	1120	1850	1870	381	167	274	443	68	237
10	119	5110	1550	1010	1970	1440	360	162	203	496	65	194
11	126	3410	1190	942	1760	1100	327	153	153	469	65	171
12	117	2060	1180	890	1560	951	306	147	135	397	69	205
13	112	1230	2420	897	1300	879	297	144	125	376	106	380
14	114	928	3800	994	1070	934	286	141	159	317	347	712
15	114	776	4430	1090	951	882	279	141	414	274	449	918
16	103	733	5100	1070	1050	824	272	138	811	219	375	780
17	94	708	5340	959	1200	776	264	140	1020	185	344	620
18	88	643	4090	861	1230	731	257	136	1030	167	259	373
19	88	627	2770	790	1060	858	252	128	968	152	186	268
20	136	622	1980	742	884	975	248	120	811	141	153	219
21	374	559	1840	714	1850	1060	254	113	621	131	128	200
22	799	509	1840	700	3570	1030	276	108	559	122	115	199
23	1370	474	1590	684	3920	870	316	103	396	114	106	208
24	e1580	453	1480	655	3890	730	384	99	291	110	103	227
25	e3580	445	1900	617	5170	670	403	95	248	109	99	238
26	e5050	434	2180	596	5170	630	378	93	219	116	99	209
27	e4510	436	2390	658	3640	610	320	91	230	140	98	181
28	e4100	457	2470	839	2520	600	275	87	266	143	101	163
29	e7690	489	2160	999	---	e585	241	121	236	138	106	150
30	e10600	485	1700	1070	---	e550	218	150	211	129	105	140
31	e13900	---	1960	1060	---	e516	---	130	---	115	135	---
TOTAL	55721	179298	74299	52547	52775	33511	9897	4427	10365	6875	4354	10813
MEAN	1797	5977	2397	1695	1885	1081	330	143	346	222	140	360
MAX	13900	22500	5340	6100	5170	2110	477	202	1030	496	449	918
MIN	88	434	432	596	672	516	218	87	89	109	65	140
AC-FT	110500	355600	147400	104200	104700	66470	19630	8780	20560	13640	8640	21450
CFSM	2.09	6.95	2.79	1.97	2.19	1.26	0.38	0.17	0.40	0.26	0.16	0.42
IN.	2.41	7.76	3.21	2.27	2.28	1.45	0.43	0.19	0.45	0.30	0.19	0.47

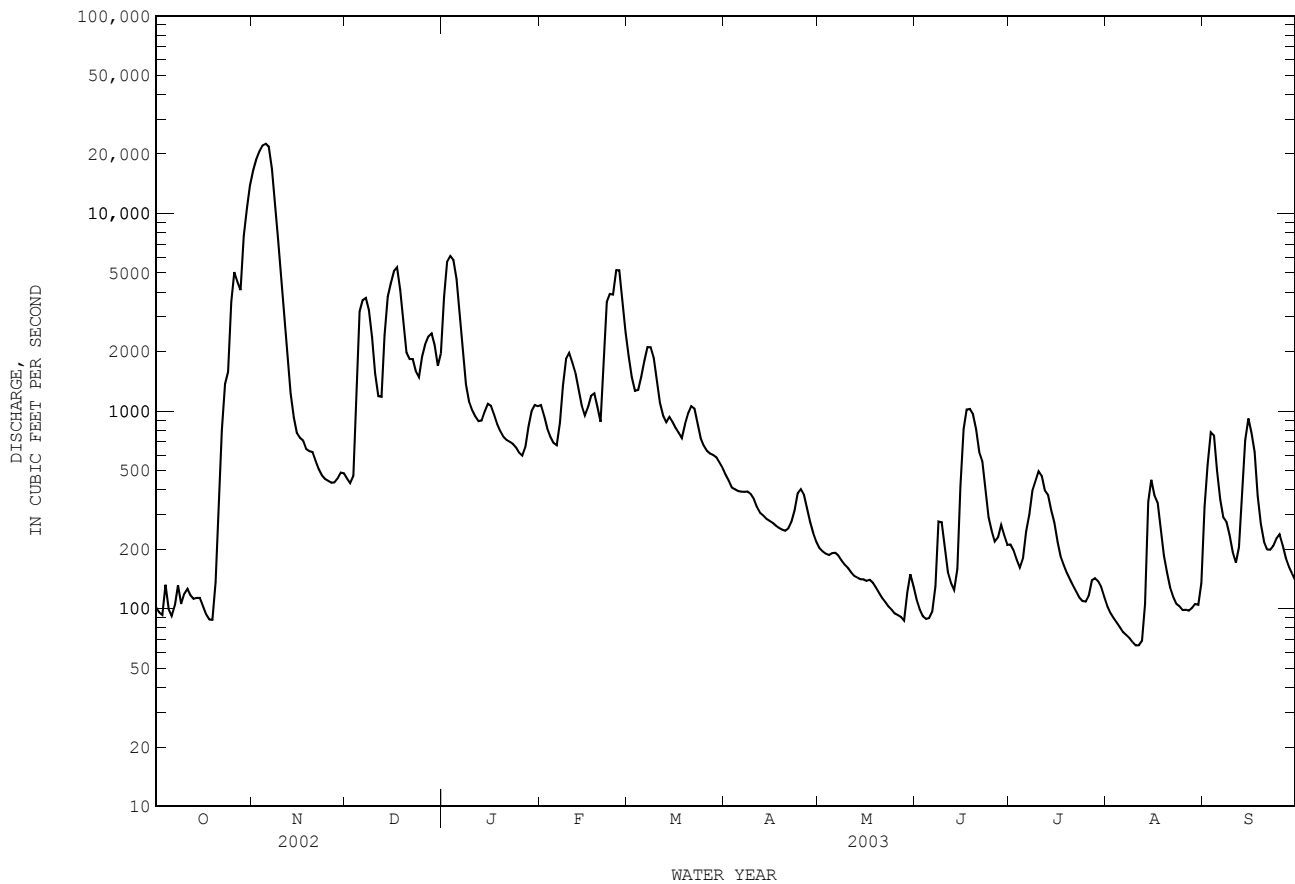
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2003, BY WATER YEAR (WY)

	MEAN	426	786	1157	1475	1444	1208	1129	1123	853	483	251	331
MAX	4743	6430	5835	5693	4420	3311	6733	6932	6668	4963	1580	2111	
(WY)	1995	1941	1941	1974	1966	1992	1979	1953	1950	1989	1975	1961	
MIN	22.8	34.9	115	113	169	206	104	89.5	69.5	31.1	28.8	26.5	
(WY)	1968	1968	1955	1957	1968	1940	1971	1963	1956	1971	1956	1956	

08041500 Village Creek near Kountze, TX--Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1939 - 2003	
ANNUAL TOTAL	425945		494882		889	
ANNUAL MEAN	1167		1356		2248	
HIGHEST ANNUAL MEAN					190	
LOWEST ANNUAL MEAN					62200	
HIGHEST DAILY MEAN	22500	Nov 5	22500	Nov 5	1950	1971
LOWEST DAILY MEAN	66	Aug 12	65	Aug 10	16	Oct 1 1956
ANNUAL SEVEN-DAY MINIMUM	73	Aug 6	70	Aug 6	18	Sep 28 1956
MAXIMUM PEAK FLOW			22900	Nov 6	67200	Nov 26 1940
MAXIMUM PEAK STAGE			22.07	Nov 6	27.60	Nov 26 1940
ANNUAL RUNOFF (AC-FT)	844900		981600		644100	
ANNUAL RUNOFF (CFSM)	1.36		1.58		1.03	
ANNUAL RUNOFF (INCHES)	18.42		21.41		14.05	
10 PERCENT EXCEEDS	2250		3310		2150	
50 PERCENT EXCEEDS	368		414		337	
90 PERCENT EXCEEDS	94		103		82	

e Estimated



NECHES RIVER BASIN

08041700 Pine Island Bayou near Sour Lake, TX

LOCATION.--Lat 30°06'21", long 94°20'04", Jefferson-Hardin County line, Hydrologic Unit 12020007, on right bank on downstream side of bridge on county road and 5.1 mi southeast of Sour Lake.

DRAINAGE AREA.--336 mi².

PERIOD OF RECORD.--Oct. 1967 to current year.

Water-quality records.--Chemical data: Feb. 1968 to June 1989. Specific conductance: Feb. 1968 to Sept. 1989. Water temperature: Feb. 1968 to Sept. 1989.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. No known regulation. Low flow for period Mar. through Sept. is affected by small diversions and return flow from irrigated fields. No flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	258	12500	37	762	433	1920	31	5.7	11	12	12	1490
2	136	10100	33	1020	323	1520	26	5.0	12	10	13	1870
3	103	8970	400	1210	233	1060	22	3.9	23	14	9.3	1880
4	82	8820	3480	1320	186	682	20	5.0	20	52	8.3	1800
5	65	7780	5990	1410	180	463	16	5.7	27	214	16	1750
6	50	6890	5890	1460	204	436	13	4.9	21	139	24	1540
7	42	6770	5130	1390	383	451	13	10	24	67	18	1330
8	117	6800	4280	1210	523	447	12	6.6	e37	179	11	1050
9	257	5990	3540	903	599	413	11	3.4	e33	158	6.9	655
10	313	4890	2960	512	573	352	14	3.6	22	150	6.5	294
11	221	3920	2370	248	509	269	13	4.0	20	139	6.7	157
12	166	3080	2190	158	440	199	10	4.1	27	142	11	328
13	127	2390	2660	142	359	215	8.2	10	33	61	11	444
14	82	1910	2330	141	288	498	6.9	18	32	38	10	336
15	54	1510	2240	142	250	681	6.0	13	41	38	13	316
16	36	1060	2100	147	311	656	5.6	14	36	42	10	335
17	26	650	1940	141	372	441	6.3	14	24	33	11	345
18	21	355	1790	126	363	282	8.7	22	16	27	20	280
19	18	227	1670	107	331	222	7.3	15	18	23	13	173
20	19	175	1520	90	318	177	14	16	19	20	14	95
21	19	143	1330	76	3050	139	14	13	15	16	15	180
22	197	121	1120	66	4640	98	8.7	13	22	15	17	486
23	903	102	856	57	4790	87	7.3	13	65	13	14	371
24	1220	87	665	49	4080	111	6.3	13	30	17	13	276
25	2610	74	533	43	3360	108	5.9	11	48	24	13	209
26	4820	70	444	55	2920	90	5.4	10	78	25	13	146
27	6410	64	407	104	2590	71	6.8	8.9	88	20	10	98
28	7570	56	381	127	2260	55	13	6.5	37	17	12	66
29	12300	48	344	176	---	45	11	6.6	17	15	14	46
30	13100	42	292	378	---	40	7.3	11	13	13	11	34
31	13500	---	462	480	---	38	---	10	---	11	446	---
TOTAL	64842	95594	59384	14250	34868	12266	349.7	299.9	909	1744	822.7	18380
MEAN	2092	3186	1916	460	1245	396	11.7	9.67	30.3	56.3	26.5	613
MAX	13500	12500	5990	1460	4790	1920	31	22	88	214	446	1880
MIN	18	42	33	43	180	38	5.4	3.4	11	10	6.5	34
AC-FT	128600	189600	117800	28260	69160	24330	694	595	1800	3460	1630	36460

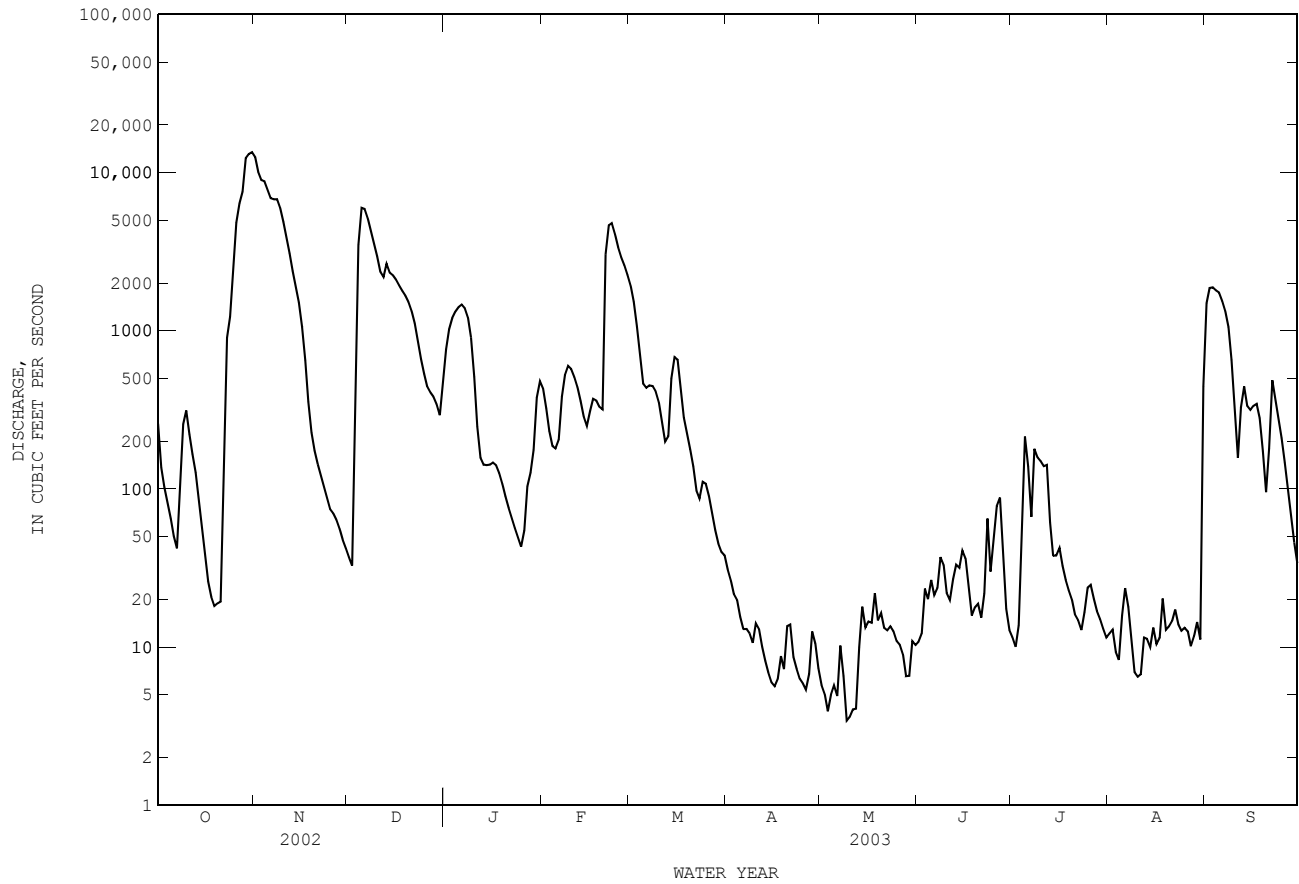
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2003, BY WATER YEAR (WY)

MEAN	520	468	643	699	595	562	551	468	650	342	165	264
MAX	8080	3186	2417	2245	1850	1838	4972	3589	3640	3291	1660	1715
(WY)	1995	2003	2002	1998	1992	1993	1979	1989	2001	1989	1983	1998
MIN	2.90	2.48	12.4	4.75	5.87	7.09	11.7	9.67	25.1	15.8	4.54	1.00
(WY)	1970	1989	1990	1971	2000	2000	2003	2003	1998	2000	2000	2000

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1968 - 2003	
ANNUAL TOTAL	283835.6		303709.3			
ANNUAL MEAN	778		832		493	
HIGHEST ANNUAL MEAN					1167	
LOWEST ANNUAL MEAN					69.2	
HIGHEST DAILY MEAN	13500	Oct 31	13500	Oct 31	47400	Oct 20 1994
LOWEST DAILY MEAN	4.6	Sep 4	3.4	May 9	0.00	Oct 21 1979
ANNUAL SEVEN-DAY MINIMUM	8.6	May 22	5.2	May 6	0.56	Sep 1 2000
MAXIMUM PEAK FLOW			13600	Oct 31	48800	Oct 20 1994
MAXIMUM PEAK STAGE			30.65	Oct 31	37.50	Oct 20 1994
ANNUAL RUNOFF (AC-FT)	563000		602400		357300	
10 PERCENT EXCEEDS	2210		2350		1380	
50 PERCENT EXCEEDS	71		90		78	
90 PERCENT EXCEEDS	11		10		8.6	

e Estimated

08041700 Pine Island Bayou near Sour Lake, TX--Continued



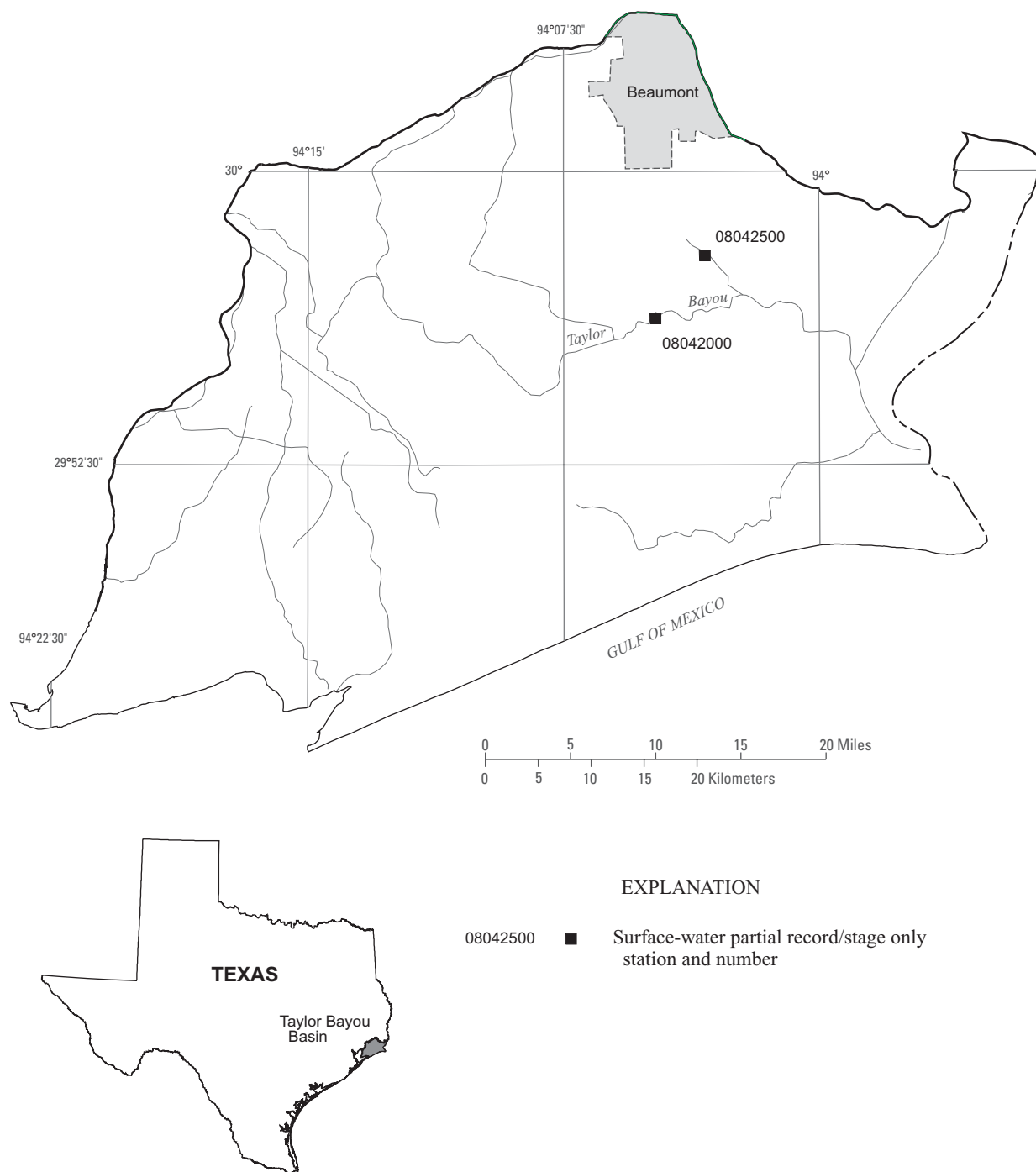


Figure 11.--Map showing location of gaging stations in the Taylor Bayou Basin

08042000	Taylor Bayou near LaBelle, TX	410
08042500	Hillebrandt Bayou near Lovell Lake, TX	412

08042000 Taylor Bayou near LaBelle, TX

LOCATION.--Lat 29°52'30", long 94°09'34", Jefferson County, Hydrologic Unit 12040201, near center of stream on downstream side of bridge on county road, 0.7 mi south of LaBelle, 6.0 mi upstream from Hillebrandt Bayou, 7.2 mi upstream from State Highway 73 and 11.2 mi upstream from saltwater gates and barge locks. Distances are measured along rectified channel.

DRAINAGE AREA.--262 mi².

PERIOD OF RECORD.--Apr. 1954 to Sept. 1984 (daily mean and peak discharge for storms of 1.0 inch or more runoff, except for period Sept. 10-22, 1961), Oct. 1984 to current year (daily maximum gage heights only).

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4.63 ft below NGVD of 1929, originally determined by several comparisons of water surface with auxiliary water-stage recorder 7.2 mi downstream during times of no flow and ideal weather conditions. Prior to Oct. 1984, auxiliary water-stage recorder 7.2 mi downstream. Satellite telemeter at station.

REMARKS.--Records good. Prior to Oct. 1984, records were computed using fall as a factor. Low flow is regulated by drainage from rice fields and operation of saltwater gates and barge locks. An unknown amount of water is diverted above and below gage for irrigation of rice fields.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharges, 9,590 ft³/s, Sept. 22, 1963, and Apr. 23, 1979; maximum gage height, 11.78 ft, Sept. 20, 1963 (backwater from Hillebrandt Bayou); minimum discharge not determined (affected by tides and pumping); minimum gage height, 2.31 ft July 17, 1954. Flood of Sept. 13, 1961 (Hurricane Carla), reached a stage of 11.51 ft.

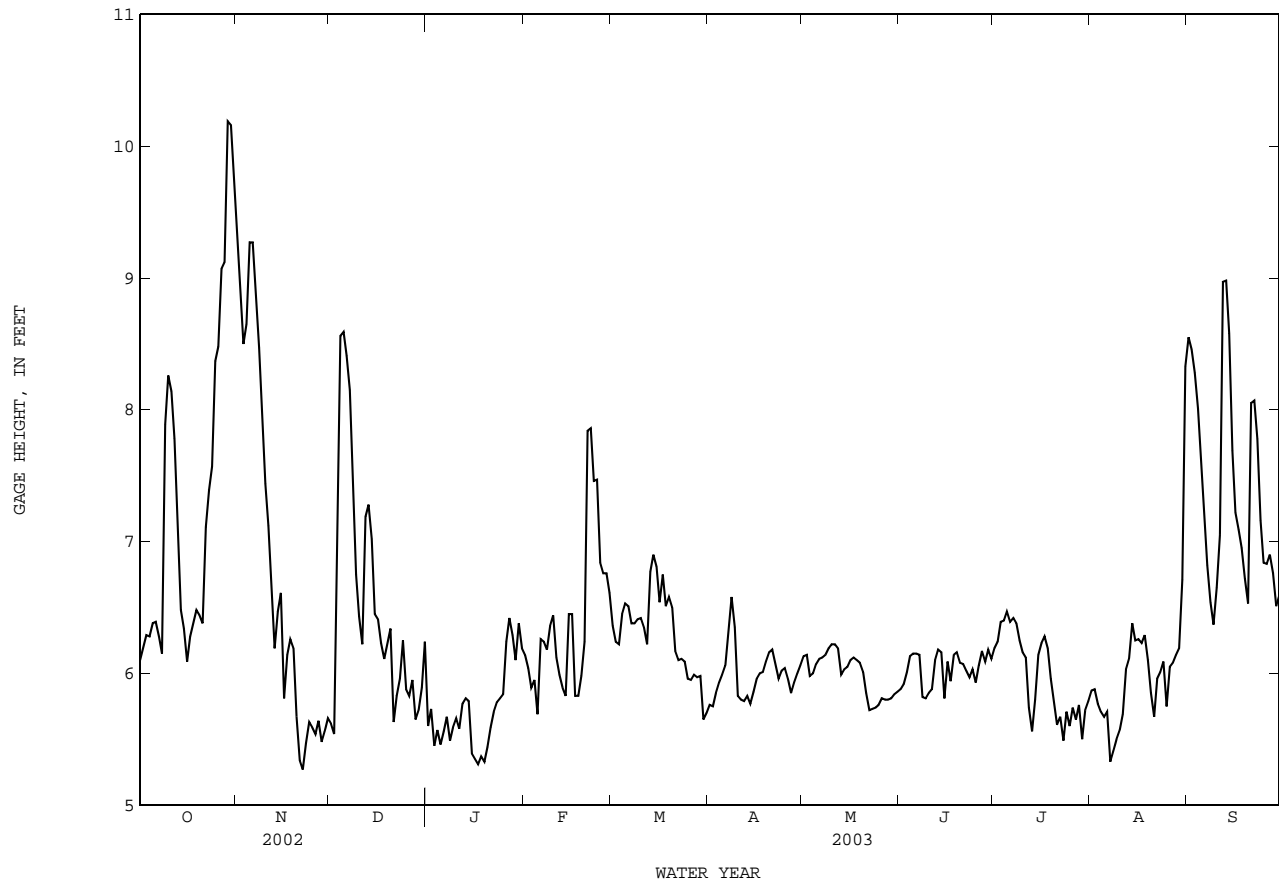
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1941 reached a stage of 11.3 ft, from information by U.S. Army Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 10.19 ft, Oct. 29; minimum gage height, 4.70 ft, Nov. 21.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.10	9.43	5.62	5.60	6.14	6.36	5.76	6.13	5.88	6.19	5.87	8.55
2	6.20	9.03	5.54	5.73	6.04	6.24	5.75	6.14	5.92	6.24	5.88	8.46
3	6.29	8.50	7.54	5.45	5.89	6.22	5.85	5.98	6.01	6.39	5.77	8.28
4	6.28	8.65	8.56	5.57	5.95	6.45	5.93	6.00	6.13	6.40	5.71	8.01
5	6.38	9.27	8.59	5.46	5.69	6.53	5.99	6.07	6.15	6.47	5.67	7.67
6	6.39	9.27	8.41	5.56	6.26	6.51	6.06	6.11	6.15	6.39	5.71	7.29
7	6.28	8.84	8.15	5.67	6.24	6.38	6.34	6.12	6.14	6.42	5.33	6.82
8	6.15	8.47	7.57	5.49	6.18	6.38	6.58	6.14	5.82	6.38	5.41	6.54
9	7.89	7.91	6.75	5.59	6.36	6.41	6.35	6.19	5.81	6.25	5.50	6.37
10	8.26	7.44	6.43	5.66	6.44	6.42	5.83	6.22	5.85	6.16	5.57	6.65
11	8.14	7.12	6.22	5.58	6.12	6.35	5.80	6.22	5.88	6.12	5.69	7.05
12	7.78	6.60	7.19	5.77	5.99	6.22	5.79	6.19	6.10	5.74	6.03	8.97
13	7.05	6.19	7.28	5.81	5.89	6.77	5.83	5.99	6.18	5.56	6.11	8.98
14	6.48	6.47	7.02	5.79	5.83	6.90	5.77	6.03	6.16	5.80	6.38	8.58
15	6.34	6.61	6.45	5.39	6.45	6.81	5.86	6.05	5.81	6.14	6.25	7.69
16	6.09	5.81	6.41	5.35	6.45	6.54	5.96	6.10	6.09	6.23	6.26	7.22
17	6.28	6.14	6.23	5.31	5.83	6.75	6.00	6.12	5.94	6.28	6.23	7.09
18	6.38	6.26	6.11	5.37	5.83	6.51	6.01	6.10	6.14	6.19	6.29	6.95
19	6.48	6.19	6.23	5.33	5.98	6.58	6.09	6.08	6.16	5.96	6.10	6.72
20	6.44	5.67	6.34	5.44	6.24	6.50	6.16	6.01	6.08	5.77	5.85	6.53
21	6.38	5.34	5.63	5.59	7.84	6.17	6.18	5.85	6.07	5.61	5.67	8.05
22	7.11	5.27	5.83	5.71	7.86	6.10	6.07	5.72	6.02	5.67	5.96	8.07
23	7.39	5.47	5.96	5.78	7.46	6.11	5.96	5.73	5.97	5.49	6.01	7.78
24	7.57	5.63	6.25	5.81	7.47	6.09	6.02	5.74	6.03	5.71	6.09	7.16
25	8.37	5.59	5.88	5.84	6.84	5.96	6.04	5.76	5.93	5.60	5.75	6.84
26	8.48	5.54	5.83	6.24	6.76	5.95	5.96	5.81	6.06	5.74	6.05	6.83
27	9.07	5.64	5.95	6.42	6.76	5.99	5.85	5.80	6.17	5.65	6.08	6.90
28	9.12	5.48	5.65	6.29	6.61	5.97	5.93	5.80	6.09	5.76	6.14	6.76
29	10.19	5.56	5.72	6.10	---	5.98	6.00	5.81	6.18	5.50	6.19	6.51
30	10.16	5.66	5.89	6.38	---	5.65	6.06	5.84	6.11	5.72	6.71	6.59
31	9.84	---	6.24	6.19	---	5.70	---	5.86	---	5.79	8.33	---
MAX	10.19	9.43	8.59	6.42	7.86	6.90	6.58	6.22	6.18	6.47	8.33	8.98

08042000 Taylor Bayou near LaBelle, TX--Continued



TAYLOR BAYOU BASIN

08042500 Hillebrandt Bayou near Lovell Lake, TX

LOCATION.--Lat 29°55'44", long 94°06'35", Jefferson County, Hydrologic Unit 12040201, near center of stream on downstream side of bridge on county road, 1.3 mi southeast of Lovell Lake and 4.4 mi upstream (along rectified channel) from Taylor Bayou.

DRAINAGE AREA.--128 mi².

PERIOD OF RECORD.--Apr. 1954 to Sept. 1984 (daily mean and peak discharge for storms of 1.0 inch or more runoff, except for the period Sept. 11-18, 1961), Oct. 1984 to Aug. 1991 and Mar. 1992 to current year (daily maximum gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 4.63 ft below NGVD of 1929, originally determined by comparisons of water surface with Taylor Bayou near LaBelle, an auxiliary gage 5.6 mi downstream, during times of no flow and calm wind conditions. Prior to Aug. 28, 1963, auxiliary water-stage recorder on Taylor Bayou, 1.2 mi downstream from Hillebrandt Bayou, nonrecording gages on Taylor Bayou 2.3 and 5.2 mi downstream from Hillebrandt Bayou; Aug. 28, 1963, to Sept. 30, 1984, auxiliary water-stage recorder 3.0 mi downstream. Satellite telemeter at gage.

REMARKS.--Records good. Prior to Oct. 1984, records were computed using fall as a factor. Low flow is regulated by drainage from rice fields and operation of saltwater gates and barge locks. An unknown amount of water is diverted above and below gage for rice irrigation.

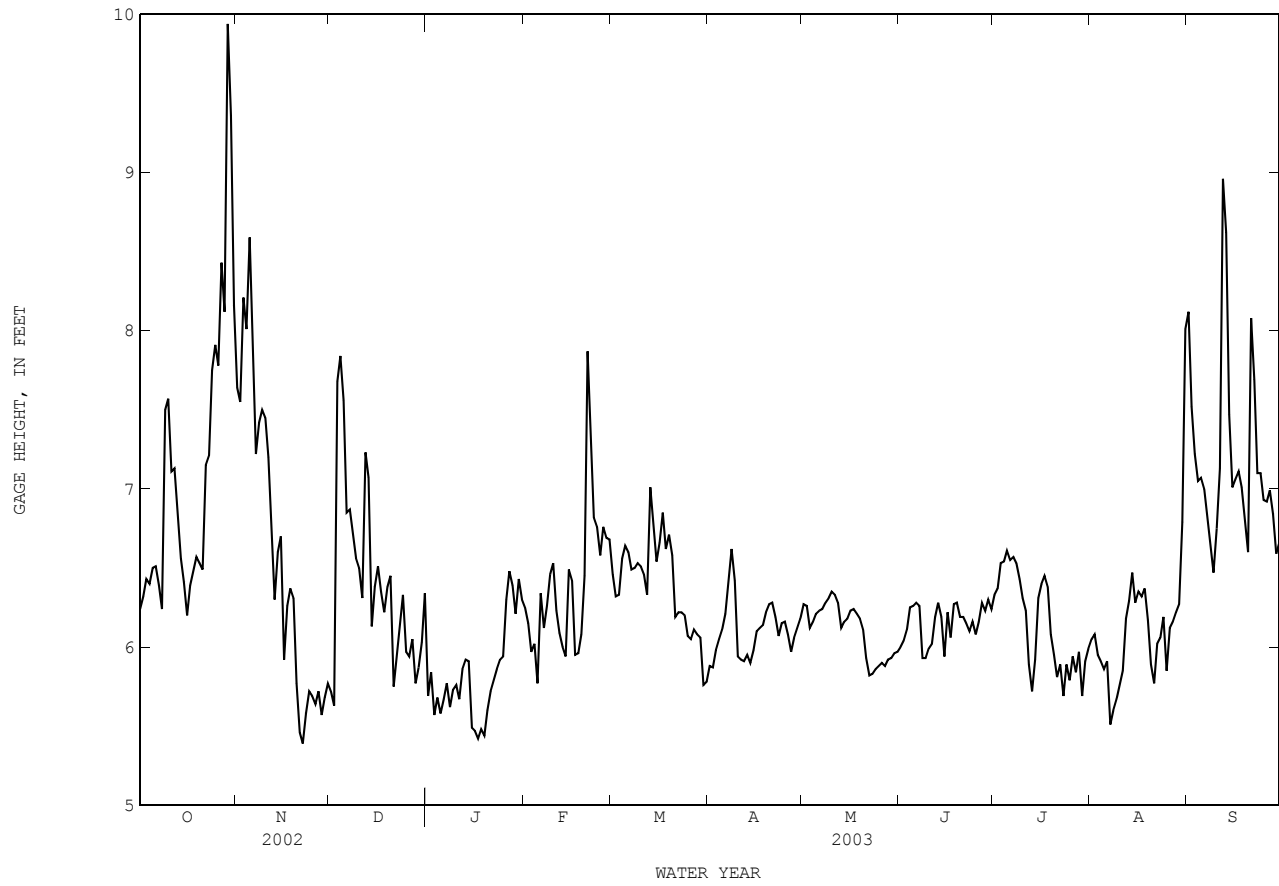
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,000 ft³/s, Sept. 18, 1963; maximum gage height, 12.34 ft, Sept. 19, 1963; minimum discharge not determined (affected by tides and pumping); minimum gage height, 2.33 ft, July 17, 1954. Maximum stage since at least 1941, 12.34 ft, Sept. 19, 1963.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 9.94 ft, Oct. 29; minimum gage height, 4.58 ft, Dec. 20.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.24	7.64	5.72	5.69	6.25	6.46	5.88	6.27	6.00	6.33	6.05	8.12
2	6.32	7.55	5.63	5.84	6.15	6.32	5.87	6.26	6.04	6.37	6.08	7.52
3	6.43	8.21	7.68	5.57	5.97	6.33	5.98	6.12	6.11	6.53	5.95	7.22
4	6.40	8.01	7.84	5.68	6.02	6.56	6.05	6.16	6.25	6.54	5.91	7.05
5	6.50	8.59	7.56	5.58	5.77	6.64	6.11	6.21	6.26	6.61	5.86	7.07
6	6.51	8.10	6.85	5.67	6.34	6.60	6.21	6.23	6.28	6.55	5.91	7.00
7	6.39	7.22	6.87	5.77	6.12	6.49	6.43	6.24	6.26	6.57	5.51	6.81
8	6.24	7.42	6.71	5.62	6.26	6.50	6.62	6.28	5.93	6.53	5.60	6.63
9	7.50	7.50	6.56	5.73	6.46	6.53	6.42	6.31	5.93	6.43	5.67	6.47
10	7.57	7.45	6.50	5.76	6.53	6.51	5.94	6.35	5.99	6.31	5.76	6.75
11	7.11	7.20	6.31	5.67	6.23	6.46	5.92	6.33	6.02	6.23	5.85	7.13
12	7.13	6.68	7.23	5.86	6.09	6.33	5.91	6.28	6.19	5.89	6.18	8.96
13	6.87	6.30	7.07	5.92	6.00	7.01	5.95	6.12	6.28	5.72	6.29	8.62
14	6.56	6.60	6.13	5.91	5.94	6.77	5.90	6.16	6.19	5.92	6.47	7.47
15	6.41	6.70	6.38	5.49	6.49	6.54	5.98	6.18	5.94	6.31	6.28	7.01
16	6.20	5.92	6.51	5.47	6.42	6.66	6.10	6.23	6.22	6.40	6.35	7.06
17	6.39	6.26	6.35	5.42	5.95	6.85	6.12	6.24	6.06	6.45	6.32	7.11
18	6.48	6.37	6.22	5.48	5.96	6.62	6.14	6.21	6.27	6.38	6.37	7.01
19	6.57	6.31	6.38	5.44	6.08	6.71	6.22	6.18	6.28	6.08	6.17	6.80
20	6.53	5.77	6.45	5.60	6.45	6.58	6.27	6.11	6.19	5.95	5.89	6.60
21	6.49	5.46	5.75	5.72	7.87	6.19	6.28	5.93	6.19	5.81	5.77	8.08
22	7.15	5.39	5.94	5.79	7.40	6.22	6.19	5.82	6.15	5.89	6.02	7.69
23	7.21	5.58	6.13	5.86	6.82	6.22	6.07	5.83	6.10	5.69	6.06	7.10
24	7.75	5.72	6.33	5.92	6.76	6.20	6.15	5.86	6.16	5.89	6.19	7.10
25	7.91	5.69	5.97	5.94	6.58	6.07	6.16	5.88	6.08	5.79	5.85	6.93
26	7.78	5.64	5.94	6.30	6.76	6.05	6.08	5.90	6.16	5.94	6.12	6.92
27	8.43	5.72	6.05	6.48	6.69	6.11	5.97	5.88	6.28	5.84	6.16	6.99
28	8.12	5.57	5.77	6.39	6.68	6.08	6.06	5.92	6.23	5.97	6.22	6.84
29	9.94	5.68	5.87	6.21	---	6.06	6.12	5.93	6.30	5.69	6.27	6.59
30	9.36	5.77	6.03	6.43	---	5.76	6.18	5.96	6.24	5.91	6.79	6.66
31	8.16	---	6.34	6.30	---	5.78	---	5.97	---	5.99	8.01	---
MAX	9.94	8.59	7.84	6.48	7.87	7.01	6.62	6.35	6.30	6.61	8.01	8.96

08042500 Hillebrandt Bayou near Lovell Lake, TX--Continued



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The U.S. Geological Survey collects limited streamflow data at sites other than continuous stream-gaging stations because 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. 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. 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 of those events. The data collected for special reasons are called measurements at miscellaneous sites.

Streamflow data collected at partial-record stations where water-quality data other than observations of water temperature are not obtained are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations; the second is a table of annual maximum stage and (or) discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low and high flows are given in a third table. Discharge measurements and water-quality data collected at partial-record stations are presented in downstream order in the section of this report entitled "Gaging-station records."

Low-flow partial-record stations

Measurements of streamflow at low-flow partial-record stations that are not published in the gaging-station section are given in the following table. Most of the measurements of low flow were made during periods when streamflow was sustained primarily by ground-water discharge. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will indicate the low-flow potential of the stream. The years listed in the column headed "Period of record" identifies the water years in which measurements were made at the same or at practically the same site.

Discharge measurements made at low-flow partial-record station during water year 2003

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Dis-charge (ft ³ /s)
Neches River Basin						
08041550	Village Creek at State Highway 327 near Silsbee, TX	Lat 30°20'48", long 94°16'44", Hardin County, at bridge on State Highway 327, about 1.6 mi upstream from Mill Creek, and 2.7 mi west of Silsbee.	1,043	1979-2003	06-12-03 07-29-03	198 147
08041720	Pine Island Bayou at State Highway 105 near Sour Lake, TX	Lat 30°08'08", long 94°16'44", Hardin-Jefferson County line, at bridge on State Highway 105, about 2.0 mi upstream from mouth of Little Pine Island Bayou, and 7.90 mi east of Sour Lake.	338	1979-2003	04-28-03	8.45

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Lake Fork Reservoir near Quitman	318		
Lake Gladewater near Gladewater	326	Sabine River, above Longview	332
Lake Jacksonville near Jacksonville	374	at Logansport, LA	346
Lake Kemp near Mabelle	188	at Toledo Bend Reservoir near Burkeville	350
Lake Kickapoo near Archer City	216	below Longview	334
Lake Meredith near Sanford	42	near Beckville	336
Lake Nacogdoches near Nacogdoches	388	near Bon Wier	354
Lake Nacona near Nacona	230	near Burkeville	352
Lake O' the Pines near Jefferson	282	near Gladewater	330
Lake Palestine near Frankston	368	near Hawkins	322
Lake Sulphur Springs near Sulphur Springs	264	near Mineola	316
Lake Tawakoni near Wills Point	308	near Ruliff	360
Lake Tyler near Whitehouse	382	near Wills Point	310
Lelia Lake Creek below Bell Creek near Hedley	74	Sabine River Basin, gaging-station records in	302-363
Little Cypress Creek, near Jefferson	300	Salt Fork Red River, at Mangum, OK	86
near Ore City	298	near Wellington	82
Little Wichita River, above Henrietta	222	Sam Rayburn Reservoir near Jasper	394
near Archer City	218	South Fork Sabine River near Quinlan	306
		South Side Canal near Dundee	202
MacKenzie Reservoir near Silverton	64	South Sulphur River, at Commerce	252
Martin Lake near Tatum	338	near Cooper	258
McClellan Creek near McLean	88	South Wichita River, at low-flow dam near Guthrie	148
		below low-flow dam near Guthrie	160

	Page		Page
near Benjamin	166	Village Creek, at State Highway 327 near Silsbee	415
Sulphur River near Talco	262	near Kountze	404
Sweetwater Creek near Kelton	94		
Taylor Bayou near LaBelle	410	White Oak Creek near Talco	266
Taylor Bayou Basin, gaging-station records in	408-413	Wichita River, at Wichita Falls	210
Tierra Blanca Creek above Buffalo Lake near Umbarger	60	near Charlie	212
Toledo Bend Reservoir near Burkeville	348	near Mabelle	190
		near Seymour	178
		Wolf Creek at Lipscomb	56
		Wright Patman Lake near Texarkana	268

CALENDAR FOR WATER YEAR 2003

2002

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

2003

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

Conversion Factors

Multiply	By	To obtain
Length		
inch (in.)	2.54×10^1	millimeter (mm)
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter (m)
mile (mi)	1.609×10^0	kilometer (km)
Area		
acre	4.047×10^3	square meter (m ²)
	4.047×10^{-1}	square hectometer (hm ²)
	4.047×10^{-3}	square kilometer (km ²)
square mile (mi ²)	2.590×10^0	square kilometer (km ²)
Volume		
gallon (gal)	3.785×10^0	liter (L)
	3.785×10^{-3}	cubic meter (m ³)
	3.785×10^0	cubic decimeter (dm ³)
million gallons (Mgal)	3.785×10^3	cubic meter (m ³)
	3.785×10^{-3}	cubic hectometer (hm ³)
cubic foot (ft ³)	2.832×10^{-2}	cubic meter (m ³)
	2.832×10^1	cubic decimeter (dm ³)
cubic-foot-per-second-per-day [(ft ³ /s/d)]	2.447×10^3	cubic meter (m ³)
	2.447×10^{-3}	cubic hectometer (hm ³)
acre-foot (acre-ft)	1.223×10^3	cubic meter (m ³)
	1.223×10^{-3}	cubic hectometer (hm ³)
	1.223×10^{-6}	cubic kilometer (km ³)
Flow rate		
cubic foot per second (ft ³ /s)	2.832×10^1	liter (L/s)
	2.832×10^{-2}	cubic meter per second (m ³ /s)
	2.832×10^1	cubic decimeter per second (dm ³ /s)
gallon per minute (gal/min)	6.309×10^{-2}	liter per second (L/s)
	6.309×10^{-5}	cubic meter per second (m ³ /s)
	6.309×10^{-2}	cubic decimeter per second (dm ³ /s)
million gallons per day (Mgal/d)	4.381×10^{-2}	cubic meter per second
	4.381×10^1	cubic decimeter per second (dm ³ /s)
Mass		
ton, short (2,000 lb)	9.072×10^{-1}	megagram (Mg) or metric ton

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$^{\circ}\text{F} = (1.8 \times ^{\circ}\text{C}) + 32$$