FLOODS IN SOUTH-CENTRAL OKLAHOMA AND NORTH-CENTRAL TEXAS OCTOBER 1981

By Harold D. Buckner and Joanne K. Kurklin

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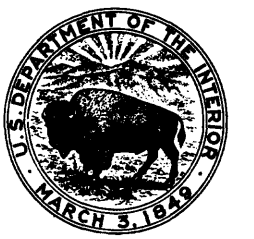

Austin, Texas
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UNITED STATES DEPARTMENT OF THE INTERIOR

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METRIC CONVERSIONS

For readers who prefer to use metric units, conversion factors for terms used in this report are listed below:

Multiply	By	To obtain
acre-foot (acre-ft)	0.001233	cubic hectometer (hm^3)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
cubic foot per second per square mile [$(ft^3/s)mi^2$]	0.01093	cubic meter per second per square kilometer [$(m^3/s)/km^2$]
degree Fahrenheit (°F)	5/9 (°F-32)	degree Celsius (°C)
foot (ft)	0.3048	meter (m)
inch (in.)	25.40	millimeter (mm)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)
ton (short, 2,000 pounds)	0.9072	megagram (Mg)

National Geodetic Vertical Datum of 1929 (NGVD of 1929): A geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called mean sea level.

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ABSTRACT

Heavy rains fell over south-central Oklahoma and north-central Texas during October 11-14, 1981, causing record flooding in both States. Six lives were lost, many people were temporarily left homeless, and damages amounted to nearly $115 million. The maximum rainfall of 23 inches occurred 5 miles north of Clyde, Texas, in about 34 hours.

Flood discharges along the East Fork Little Wichita River in Texas and along the Blue River, Clear Boggy Creek, and part of Muddy Boggy Creek in Oklahoma in the Red River basin exceeded those previously known. The Red River near Gainesville, Texas, had a record stage. Severe flooding also occurred along the West Fork and Elm Fork Trinity Rivers in Texas. The Brazos River experienced record flooding along tributaries in Abilene and Breckenridge, Texas, and the Brazos River near Glen Rose had a record stage that was almost 1.5 feet higher than any previous flood.

Substantial reductions in peak stages and discharges on the West Fork Trinity River downstream from Eagle Mountain Reservoir were attained as a result of reservoir storage. All floodwater on the Elm Fork Trinity River was contained by reservoir storage thus preventing a potentially devastating flood downstream on the Trinity River. Maximum stages and discharges and/or contents were recorded during and after this major flood at 83 gaging stations, crest-stage stations, reservoir stations, and a miscellaneous site.

INTRODUCTION

Outstanding floods occurred on rivers and streams in north-central Texas and south-central Oklahoma as a result of extreme rainfall that occurred in October 1981. These storms generally extended in a southwest to northeast direction from near Abilene, Texas, to near McAlester, Oklahoma. The affected region in Oklahoma and Texas along with gaging-station locations for the study area is shown in figure 1. The heaviest storms (rainfall) occurred during October 12-14, 1981, in north-central Texas and in south-central Oklahoma. Numerous National Weather Service reporting stations in Texas and Oklahoma indicated rainfall amounts in excess of 10 inches, but the maximum point rainfall reported during this storm was 23 inches at a gage 5 miles north of Clyde, Texas.

The October 12-14, 1981, storm event covered an extremely large area. The 5-inch precipitation isohyetal encompassed an area in Texas and Oklahoma of about 21,600 square miles; the 10-inch isohyetal encompassed about 4,880 square miles; and rainfall amounting to 15 inches or more fell on about 1,730 square miles. The total rainfall volume within the 5-inch isohyetal was approximately 7.5 million acre-feet.

Peak discharges were computed for many locations by indirect methods because of rapidly rising stages and because conditions did not facilitate direct measurement. Peak discharges were computed indirectly using flood marks and channel geometry data obtained from detailed field surveys made after the flood and from extension of stage-discharge ratings.

Six persons lost their lives and flood damages exceeded $115 million over the two-state area. Although economic losses were extensive throughout the storm area, the major economic damage occurred in Tarrant County, Texas, where flood damages exceeded $36 million.

This report was prepared to compile selected data for the floods of October 1981 in a comprehensive and readily available form. The report includes a discussion of the meteorological setting and precipitation distribution, a description of the flooding by major river basins, damage report, and detailed station data on stages, discharge, and reservoir contents at selected stations in Oklahoma and Texas.

The flood information was collected from a network of stream and reservoir gages operated as part of a continuing cooperative program of the U.S. Geological Survey with the States of Texas and Oklahoma, the U.S. Army Corps of Engineers, and cities, counties, and river authorities in Texas and Oklahoma.

The National Weather Service in Fort Worth and Lubbock provided the surface air and upper air analyses along with supplementary precipitation data and the isohyetal map for the storm of October 11-14, 1981. The satellite pictures were provided by the National Weather Service, National Oceanic and Atmospheric Administration.

Flood damage estimates were provided by the Corps of Engineers, Fort Worth District, and by the Governor's office, State of Oklahoma.

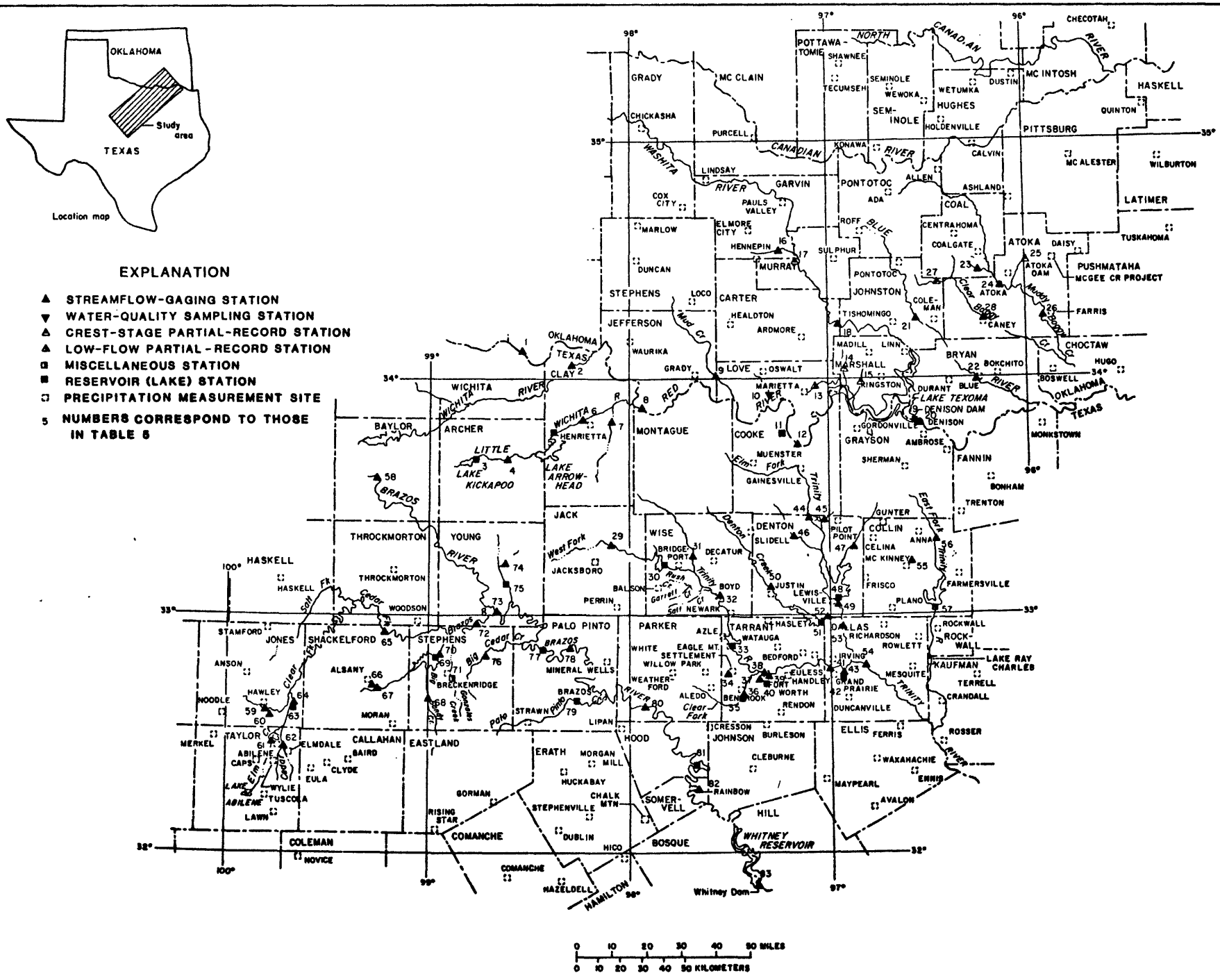

Figure 1.-Area of flooding in Oklahoma and Texas with location of flood-determination points

METEOROLOGICAL SETTING AND PRECIPITATION DISTRIBUTION

The weather pattern that began on October 10 produced the extreme rainfall over north-central Texas and south-central Oklahoma, October 11-14, 1981 (fig. 2). On October 10, a weak stationary front was established along a Del Rio-Austin-Beaumont line. Moisture at low levels was abundant on both sides of the front. At the 850-mb (millibar) level, or 5,000 feet, an area of high pressure was situated over the central Gulf of Mexico, providing a clockwise flow of moist Gulf air into Texas. A subtropical jetstream, extending from the southern tip of the Baja Peninsula in Mexico, through New Mexico, then curving eastward across Kansas, was quite persistent during this storm period. The jetstream was important in three ways: (1) It provided a continuous feed of mid- and upper-level tropical moisture into Texas and Oklahoma; (2) it provided the steering mechanism necessary for moving the remnants of Hurricane Norma from the Pacific Ocean; and (3) it provided additional dynamics which were favorable for heavy precipitation.

At sunrise on October 11, the weak stationary front was positioned along a San Antonio-Palacios line. During the day it became a warm front and moved northward to near an Abilene-Beaumont line by sunset. The air mass had become increasingly unstable during the day. As an upper level trough of low pressure began moving eastward into west Texas, heavy thunderstorms developed along the trough and moved east through west Texas into north-central Texas by nightfall. Most of these storms were located north of the warm front due to the additional lift provided by the frontal boundary. As a result, a few localities experienced repeated thunderstorm activity. As of 7:00 a.m. c.d.t. on October 12, rainfall amounts totaled 2 to 7 inches within an area bounded by Abilene, Denton, and Seymour.

By the afternoon of October 12, 1981, the warm front over central Texas had become diffuse, thus allowing dewpoint temperatures to increase to above 70°F. Because greater amounts of moisture were available for additional precipitation, the air mass became increasingly unstable. A thunderstorm outflow boundary (fig. 3), extending from Texarkana to Tyler, Fort Worth, and near Mineral Wells, was easily identifiable on satellite imagery. An outflow boundary is a small-scale front generated by the outflow of rain-cooled air from dissipating thunderstorms. These small scale fronts act like any other front in that they can provide the lifting necessary to produce convective precipitation. As the outflow boundary merged with the diffuse warm front, a weak upper level trough formed near El Paso and moved to a Hobbs, New Mexico-Del Rio, Texas line by early morning of the 13th. These meteorological conditions produced rainfalls of from 10 to 16 inches over a 100-mile-wide band that extended from Abilene, Texas, to near McAlester, Oklahoma.

The remnants of Hurricane Norma reached the west coast of Mexico near noon on October 12. Hurricane Norma was instrumental in providing a source from which mid- and upper-level tropical moisture could be transported into the storm area thus increasing the amount of atmospheric moisture available for precipitation. The most significant precipitation that could be directly attributed to the remnants of Norma fell over an area bounded by San Angelo, Junction, and Del Rio, where rains of 5 to 10 inches fell throughout the night of October 12 and the early morning of the 13th.

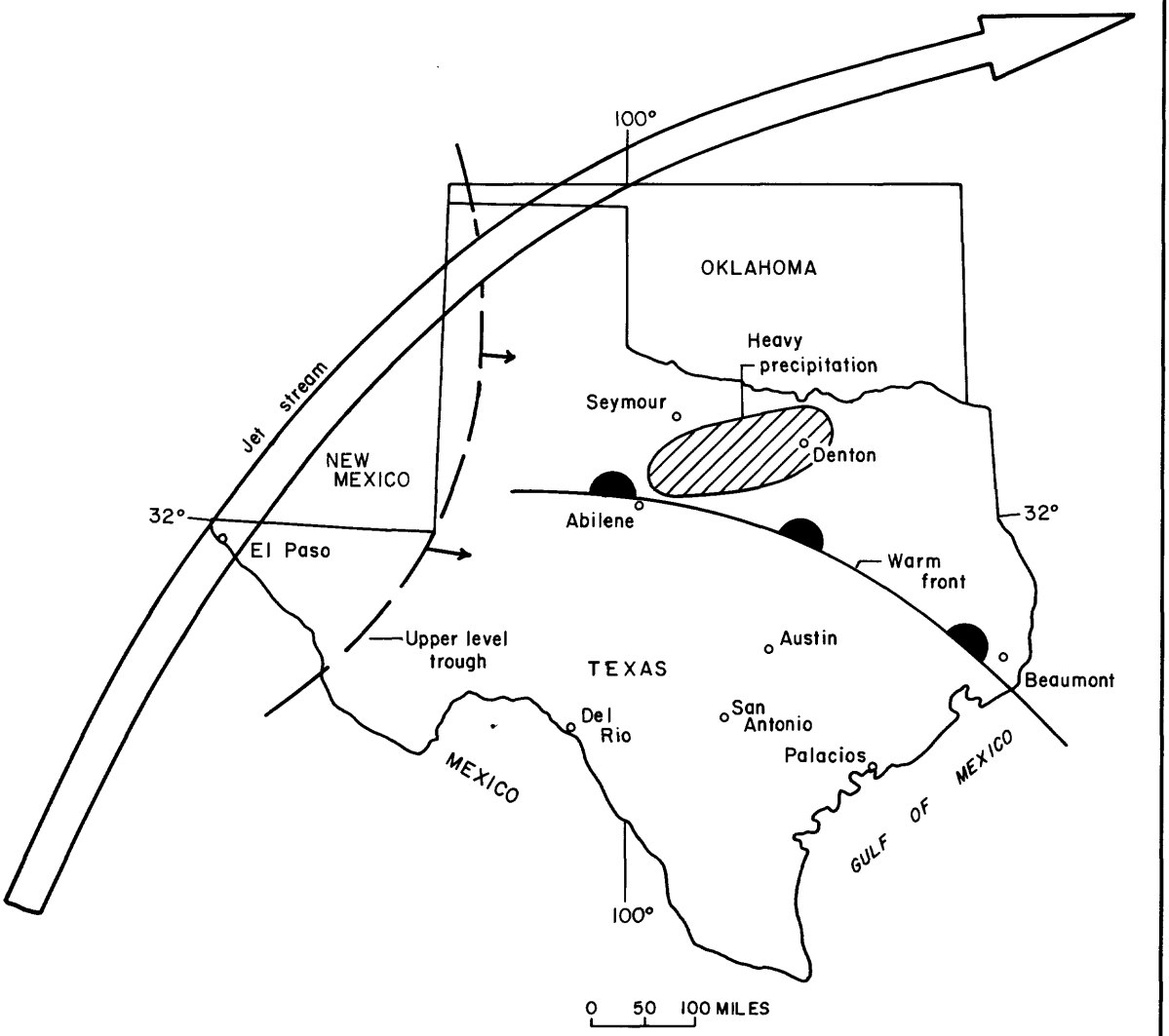

Figure 2.-Surface front, upper level trough line, and jetstream on October 11, 1981

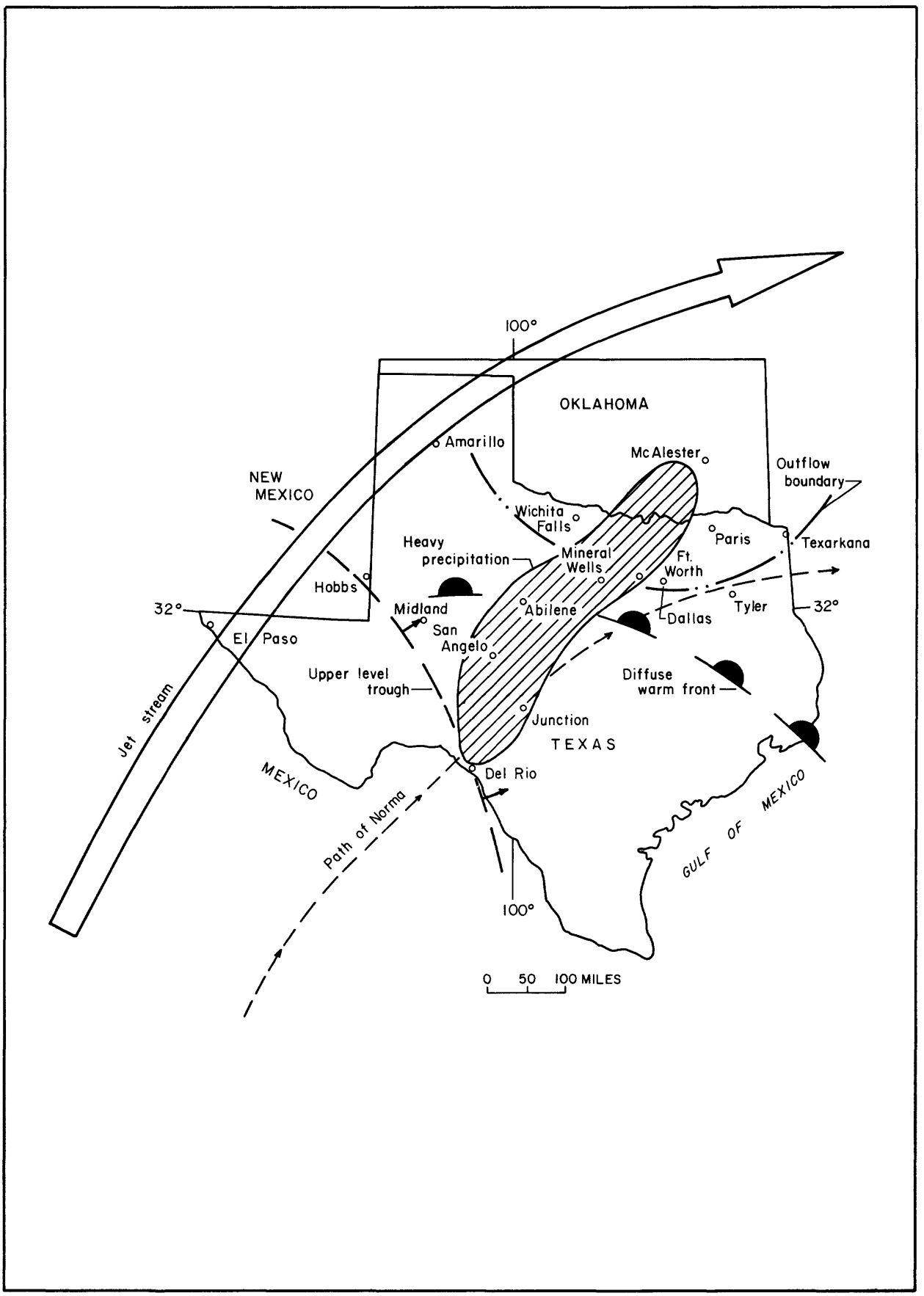

Figure 3.–Surface front, upper level trough line, outflow boundary, jetstream, and path of Hurricane Norma

A series of six selected Geostationary Operational Environmental Satellite (GOES) imagery pictures, including both enhanced infrared as well as visual and covering a 24-hour period from 1:30 a.m. c.d.t. on October 12, 1981, to 1:30 a.m. c.d.t. on October 13, 1981, is shown in figures 4a-f. Each picture is summarized separately, with all times converted from Greenwich mean time to central daylight time.

4a. An enhanced infrared picture taken at 1:30 a.m. c.d.t. on October 12, 1981. The picture shows Hurricane Norma close to the Mexican coast and intense thunderstorms from Abilene to Mineral Wells into southern Oklahoma.

4b. An enhanced infrared picture taken at 5:00 a.m. c.d.t. on October 12, 1981. Hurricane Norma is very near the west coast of Mexico with intense convection continuing over north-central Texas.

4c. A visual picture taken at 9:30 a.m. c.d.t. on October 12, 1981. Hurricane Norma is now on shore near the west coast of Mexico and beginning to dissipate. Notice the band of clouds from Norma through western Texas into Oklahoma that shows the approximate location of the jetstream. Convection continues over north Texas in an area bounded by Wichita Falls to Mineral Wells to Paris to near McAlester, Oklahoma.

4d. A visual picture taken at 1:30 p.m. c.d.t. on October 12, 1981. The remains of Hurricane Norma continue moving northeast over western Mexico. The jetstream continues in about the same position. An outflow boundary produced by the thunderstorms of the previous night can be identified by a thin band of clouds from Texarkana to south of Dallas to near Abilene.

4e. A visual picture taken at 4:30 p.m. c.d.t. on October 12, 1981. The remains of Norma are moving rapidly northeastward into central Mexico. The jetstream now extends from El Paso to north of Amarillo and into south-central Kansas. New convection is now evident from east of Midland to near Abilene, Texas.

4f. An enhanced infrared picture taken at 1:30 a.m. c.d.t. on October 13, 1981. Intense convection associated with the remains of Norma is evident near San Angelo, Texas. Also, convection has developed from south of Abilene to north of the Dallas area along and north of the outflow boundary that was visible in figure 4d.

Thunderstorms and heavy rain continued over north-central Texas during the morning of October 13. Late in the morning, the combined effects of the upper-level disturbance and remains of Norma caused a few severe thunderstorms accompanied by tornadoes. The entire system moved northeast during the afternoon and evening of the 13th, with rain ending over Texas by midnight.

An isohyetal map of total storm rainfall during October 11-14, 1981, for affected areas of Oklahoma and Texas is shown in figure 5. Rainfall mass curves for selected rain gages in Oklahoma and Texas are also shown in figure 5. Rainfall at National Weather Service substations in Oklahoma and Texas and supplementary rainfall data collected through an intensive bucket survey conducted by the National Weather Service, Fort Worth Regional Office, are listed in tables 1-4. Rainfall totals for October 1981 at selected rain gages in Oklahoma and Texas are shown in tables 1-4.

DESCRIPTION OF FLOODS

Flooding in the area covered by this report varied from minor to "maximum known" during October 1981. The floods occurred along the upper reaches of the Brazos and Trinity Rivers and along the Red River between Texas and Oklahoma. In

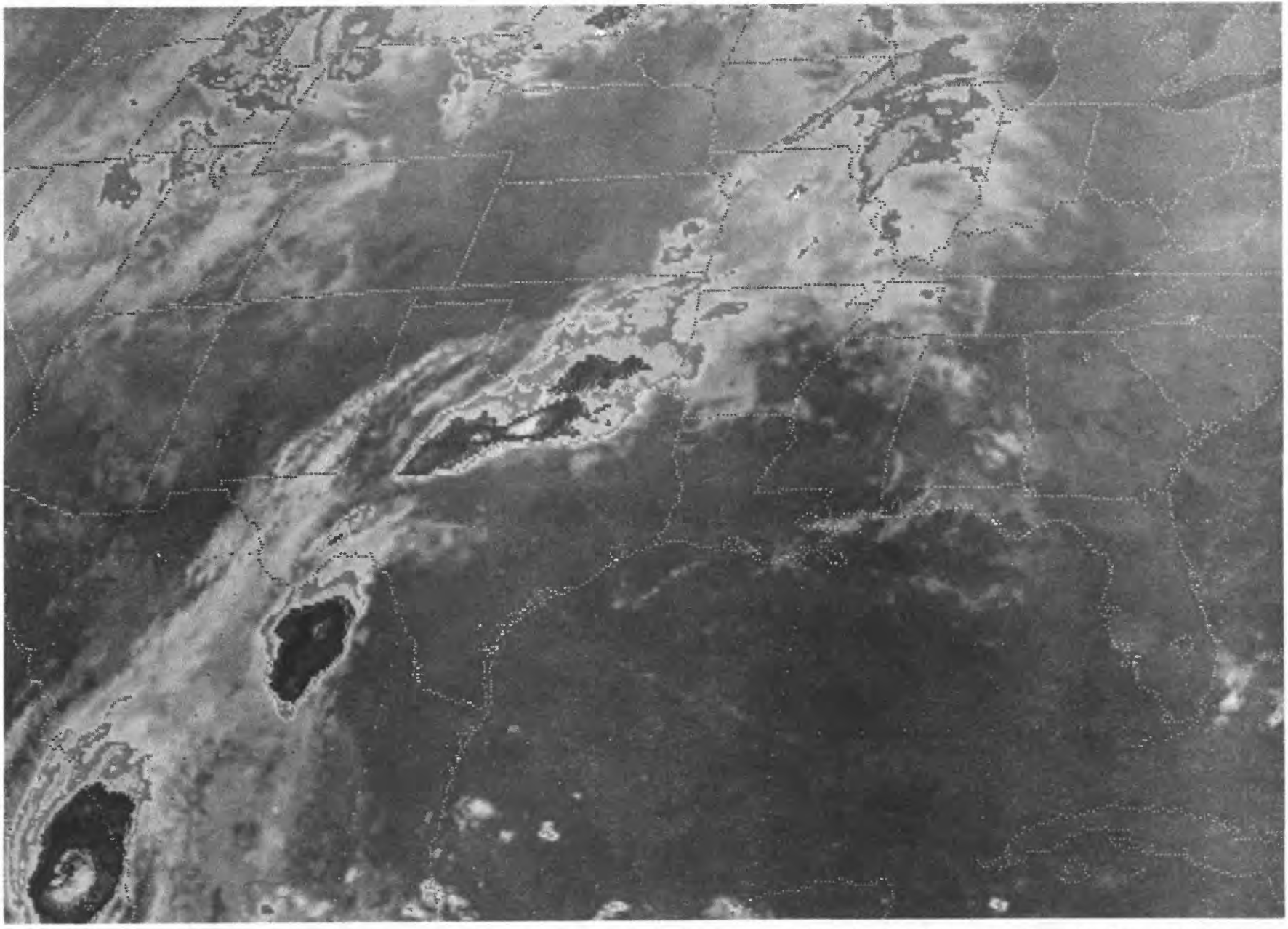

Figure 4a.--GOES enhanced infrared imagery picture showing track of Hurricane Norma across Mexico and Texas, 1:30 a.m. c.d.t., October 12, 1981

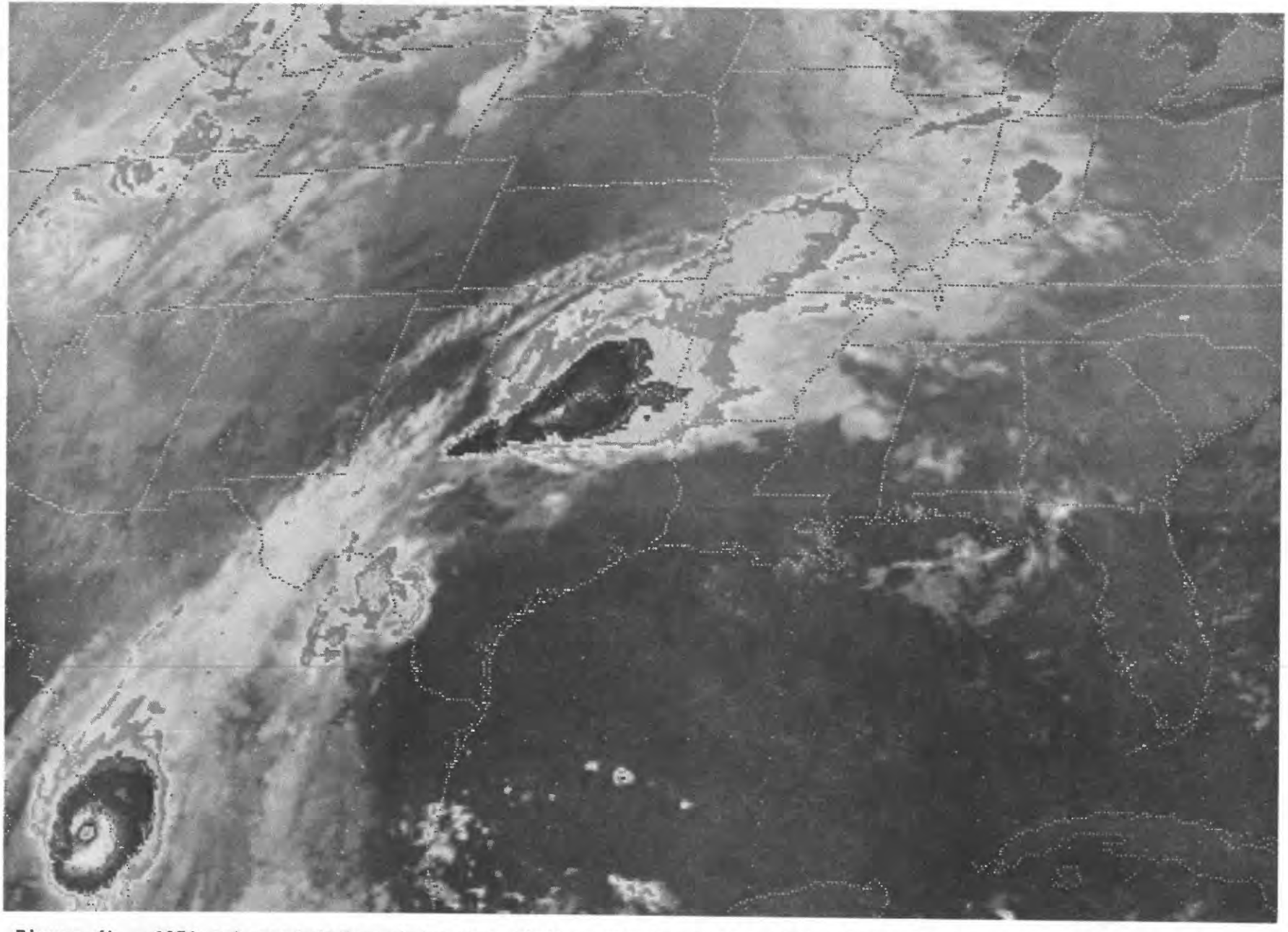

Figure 4b.--GOES enhanced infrared imagery picture showing track of Hurricane Norma across Mexico and Texas, 5:00 a.m. c.d.t., October 12, 1981

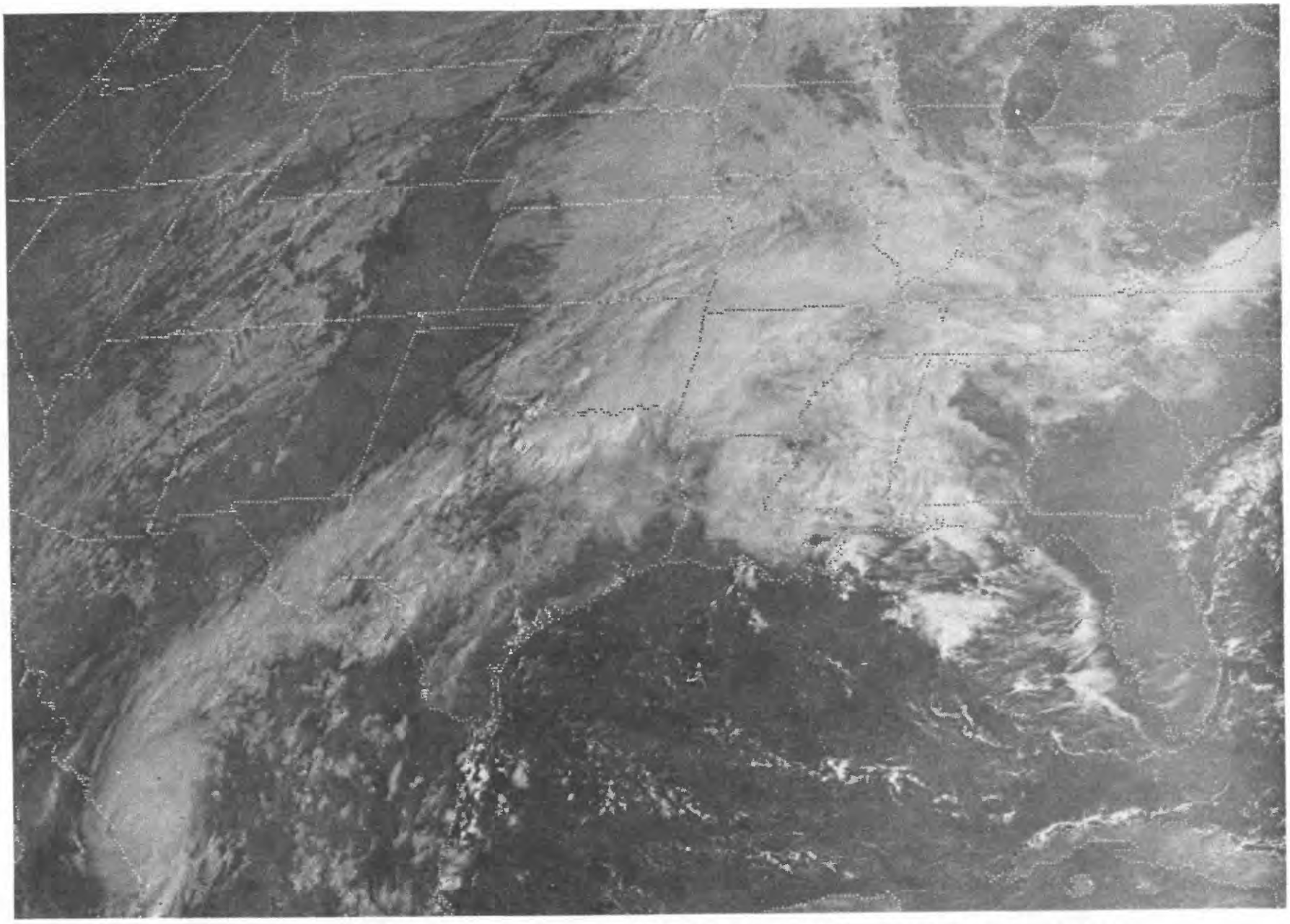

Figure 4c.--GOES visual imagery picture showing track of Hurricane Norma across Mexico and Texas, 9:30 a.m. c.d.t., October 12, 1981

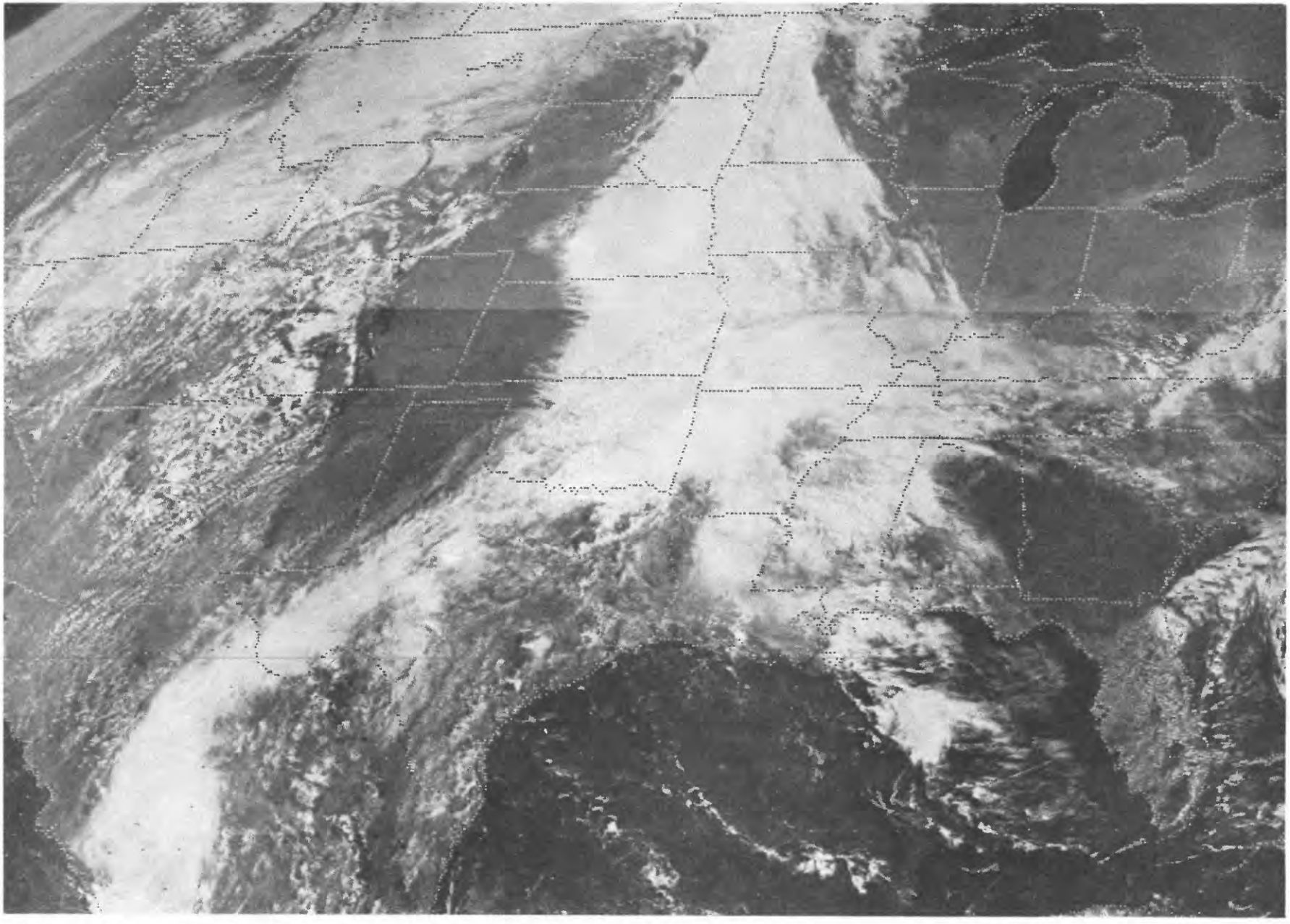

Figure 4d.--GOES visual imagery picture showing track of Hurricane Norma across Mexico and Texas, 1:30 p.m. c.d.t., October 12, 1981

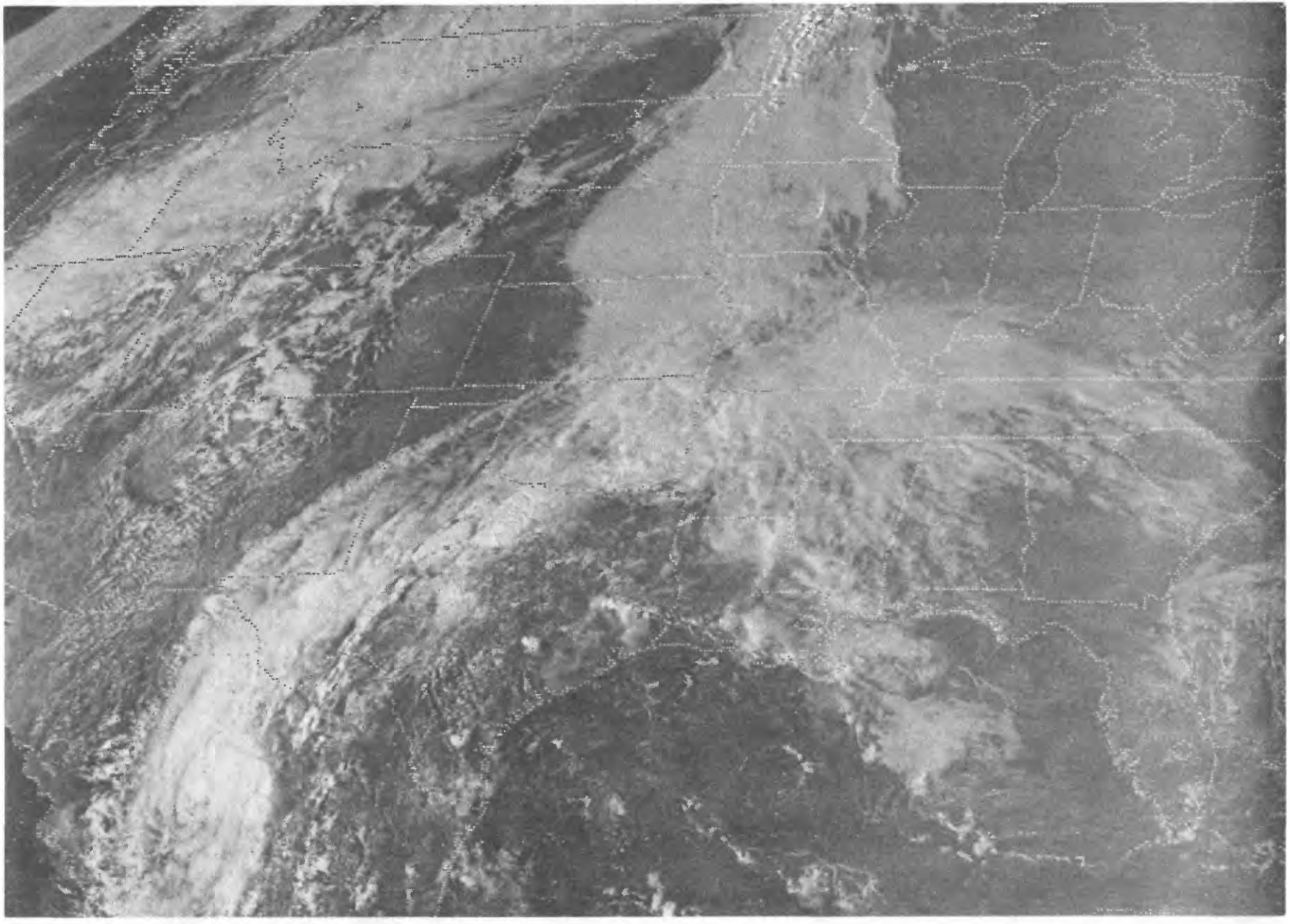

Figure 4e.--GOES visual imagery picture showing track of Hurricane Norma across Mexico and Texas, 4:30 p.m. c.d.t., October 12, 1981

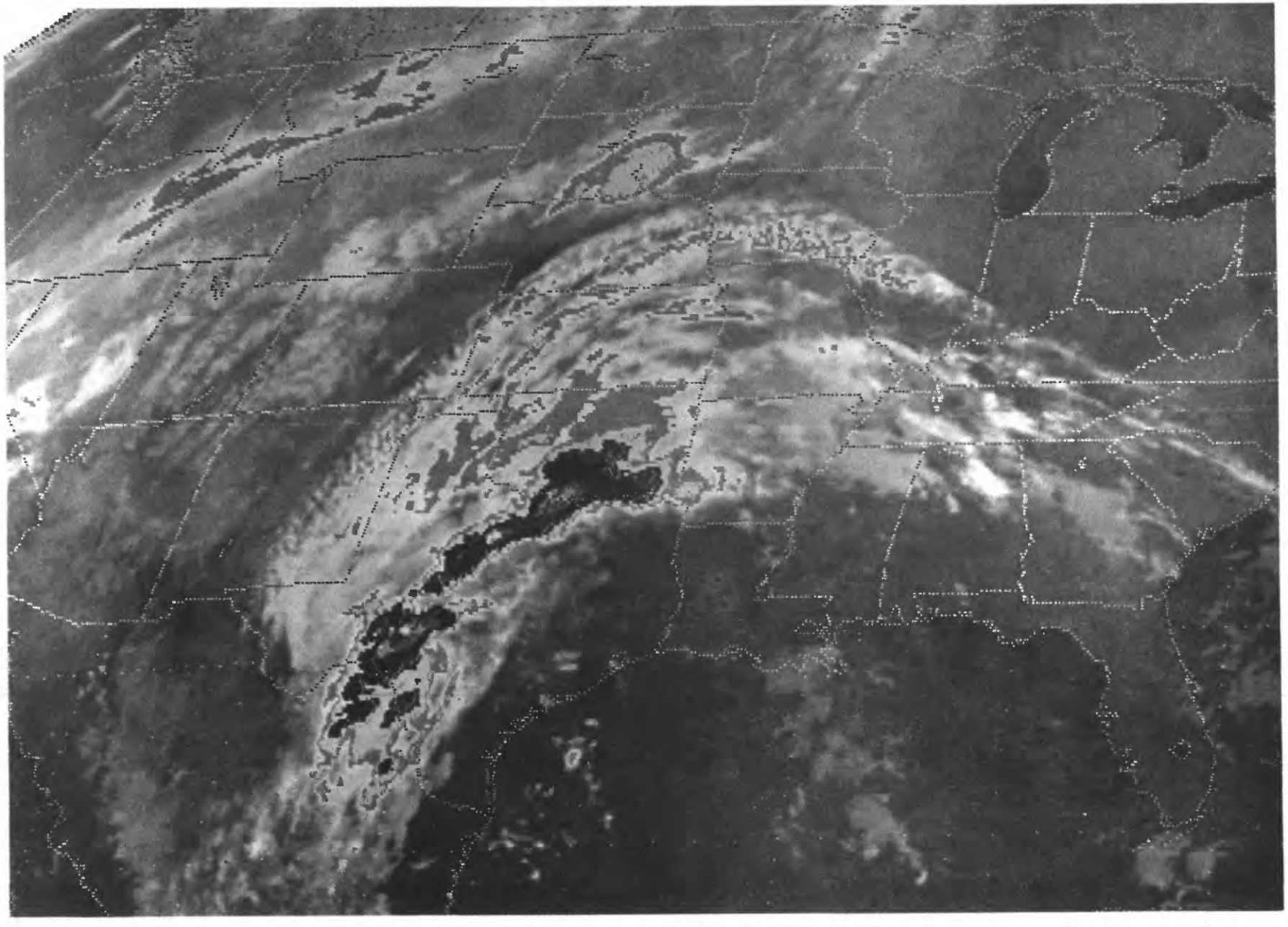

Figure 4f.--GOES enhanced infrared imagery picture showing track of Hurricane Norma across Mexico and Texas, 1:30 a.m. c.d.t., October 13, 1981

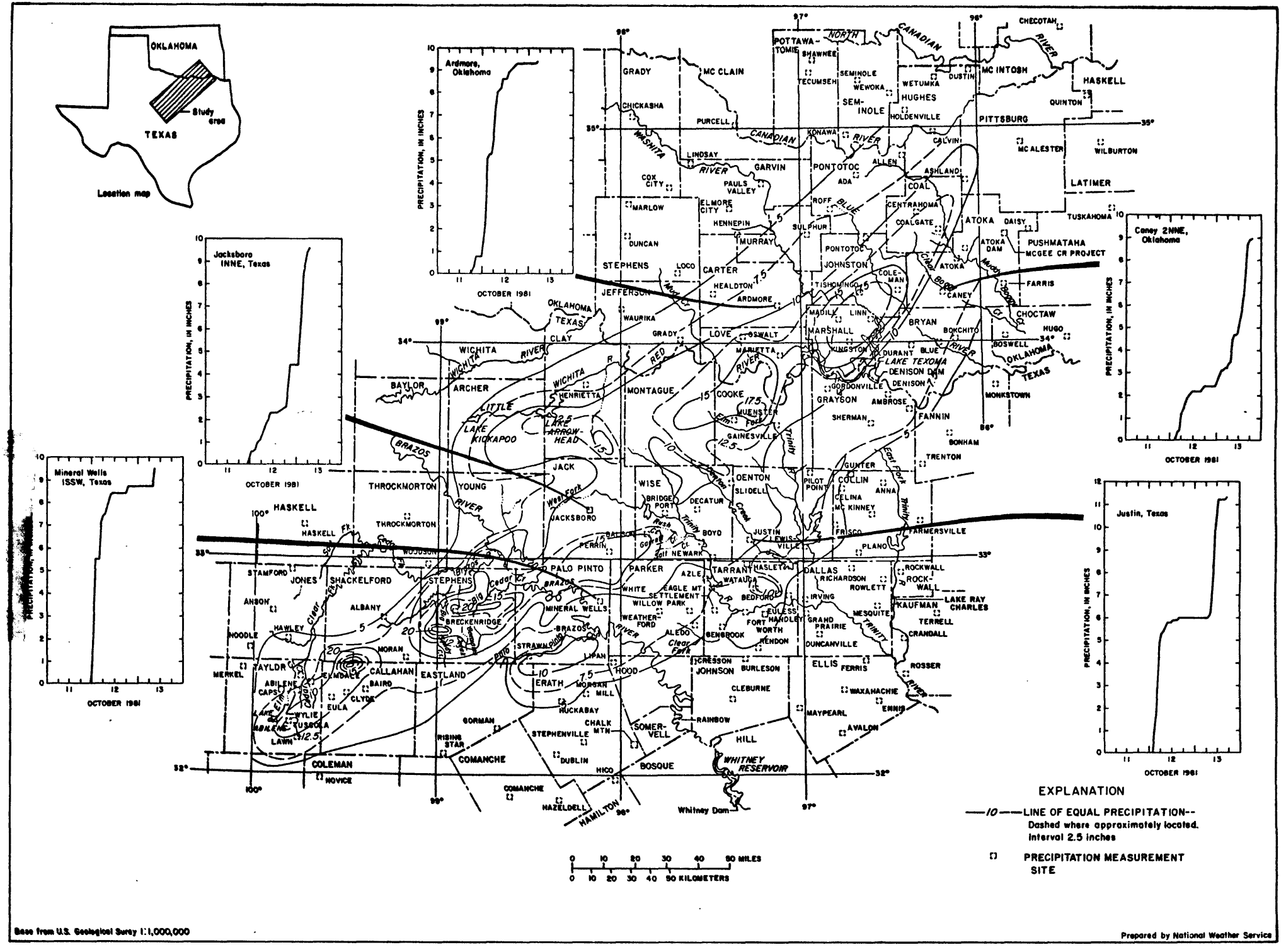

Figure 8.-Isohyetal map, storm of October 11-14, in south-central Oklahoma and north-central Texas

Table 1.--National Weather Service rainfall data for storm of October 11-14, 1981, and total October rainfall in south-central Oklahoma

Observer	County	a.m. Observations - October (inches)				Storm total (inches)	October total (inches)
		11th	12th	13th	14th		
Ada	Pontotoc	-	1.32	3.38	1.10	5.80	11.60
Ardmore	Carter	.01	4.40	7.70	0.10	13.30	16.85
Atoka Dam	Atoka	-	1.45	2.69	4.20	8.34	-
Boswell 4 NNW	Choctaw	-	1.08	.98	2.65	4.71	11.27
Calvin	Hughes	-	1.63	.73	5.55	7.91	11.90
Caney 2 NNE	Atoka	-	1.83	2.44	4.38	8.65	-
Checotah	McIntosh	-	.35	5.53	-	5.88	10.86
Chickasha Exp Sta	Grady	-	3.52	.27	.15	3.94	7.61
Coalgate 1 WNW	Coal	-	1.00	3.00	9.80	13.80	*28.12
Cox City 1 E	Grady	-	1.50	1.78	.20	3.48	9.03
Daisy 4 ENE	Atoka	-	.75	1.28	4.33	6.36	15.99
Duncan 12 W	Stephens	-	2.01	1.37	.57	3.95	6.89
Durant USDA	Bryan	-	2.00	1.52	4.64	8.16	17.79
Healdton	Carter	-	1.93	4.52	.72	7.17	16.44
Hennepin	Garvin	.54	.86	3.13	-	4.53	-
Holdenville	Hughes	-	.86	1.71	1.50	4.07	11.20
Hugo	Choctaw	-	.40	.76	1.75	2.91	8.73
Kingston	Marshall	-	1.90	9.15	7.63	18.68	24.69
Konawa	Seminole	-	1.05	3.43	.82	5.30	9.20
Lindsay	Garvin	1.30	1.70	1.23	-	4.23	9.26
Madill	Marshall	-	1.70	10.17	6.47	18.34	25.80
Marietta 3 NW	Love	-	2.52	9.48	2.24	14.24	24.00
Marlow 1 WSW	Stephens	-	1.98	1.09	.25	3.32	7.94
Pontotoc	Johnston	.60	1.72	5.50	2.00	9.82	18.43
Purcell	McClain	-	1.67	1.61	.15	3.43	6.77
Quinton	Pittsburg	-	.29	.77	5.66	6.72	13.74
Seminole	Seminole	-	1.70	2.27	.60	4.57	8.15
Shawnee	Pottawatomie	-	1.63	2.45	.30	4.38	8.60
Tishomingo	Johnston	-	-	9.57	8.18	17.75	18.43
Tuskahoma	Pushmataha	-	.16	.70	1.32	2.18	9.60
Waurika	Jefferson	-	.75	1.90	.11	2.76	7.56
Wetumka 3 NE	Hughes	-	.90	1.44	2.00	4.34	9.28
Wewoka	Seminole	-	1.15	2.12	1.11	4.38	7.89

* Greatest total monthly rainfall in state for October 1981

Table 2.--National Weather Service supplemental rainfall data for storm of October 11-14, 1981, in south-central Oklahoma

Community	County	a.m. Observations - October (inches)				Storm total (inches)
		11th	12th	13th	14th	
Allen	Pontotoc	0.50	1.49	2.40	1.75	6.14
Ashland	Pittsburg	-	1.20	3.00	6.62	10.82
Bokchito	Bryan	-	1.40	1.25	2.58	5.23
Centrahoma	Coal	-	1.55	2.10	8.80	12.45
Coleman	Johnston	-	1.80	6.00	8.00	15.80
Duncan	Stephens	1.88	1.40	0.47	0	3.75
Dustin	Hughes	-	1.44	1.44	3.85	6.73
Elmore City	Garvin	.90	1.80	-	-	2.70
Grady	Jefferson	-	1.33	6.35	.55	8.23
Linn	Marshall	-	1.33	5.94	11.41	18.68
Loco 6SE	Stephens	-	1.24	2.56	.32	4.12
McGee Creek Project	Atoka	-	-	-	-	5.00
Oswalt	Love	3.50	9.00	-	1.50	14.00
Pauls Valley	Garvin	-	1.61	2.78	-	4.39
Roff 2S	Pontotoc	-	1.52	3.08	1.33	5.93
Sulphur	Murray	-	2.03	5.54	.97	8.54
Tecumseh 4 S	Pottawatomie	-	1.52	2.00	.29	3.81
Waurika 10W	Jefferson	-	.60	1.80	.15	2.55
Wilburton	Latimer	-	.85	.88	2.60	4.33

Table 3.--National Weather Service rainfall data for storm of October 12-14, 1981, and total October rainfall in north-central Texas

Observer	County	a.m. Observations - October (inches)			Storm total (inches)	October total (inches)
		12th	13th	14th		
Abilene WSO	Taylor	3.72	3.83	-	7.55	10.68
Albany	Shackelford	1.05	3.87	0.66	5.58	8.06
Aledo	Parker	1.05	3.08	3.32	7.45	12.39
Anna	Collin	1.30	1.23	1.75	4.28	16.04
Bonham	Fannin	.80	.93	1.70	3.43	17.15
Boyd	Wise	7.65	4.48	0	12.13	27.47
Brazos	Palo Pinto	3.24	1.65	3.05	7.94	14.63
Breckenridge	Stephens	4.90	15.70	.40	21.00	25.18
Bridgeport	Wise	2.60	8.09	2.44	13.13	25.21
Burleson 2 SSW	Johnson	.02	.52	2.68	3.22	8.70
Celina	Collin	3.01	1.34	0	4.35	17.49
Chalk Mountain	Erath	.16	.17	1.90	2.23	6.79
Cleburne	Johnson	.01	2.60	0	2.61	6.84
Comanche	Comanche	.13	.20	2.38	2.71	5.97
Crandall	Kaufman	.05	.57	2.00	2.62	7.74
Cresson	Johnson	0	1.46	3.07	4.53	10.67
Dallas	Dallas	3.11	1.11	0	4.22	16.05
Decatur	Wise	2.95	4.00	2.60	9.55	18.43
Denton	Denton	5.17	5.60	0	10.77	23.46
Dublin	Erath	.05	0	1.49	1.54	5.95
Eagle Mountain Lake	Tarrant	1.11	1.98	4.16	7.25	13.72
Ennis	Ellis	.10	1.05	1.45	2.60	7.60
Farmersville	Collin	1.01	2.30	1.42	4.73	13.91
Ferris	Ellis	.03	.47	1.10	1.60	7.07
Frisco	Collin	1.45	2.47	2.25	6.17	13.82
Gainesville	Cooke	2.01	6.86	2.52	11.39	25.64
Gordonville	Grayson	1.23	4.10	5.71	11.04	-
Gorman	Eastland	.31	0	2.99	3.30	-
Gunter 5 S	Collin	2.68	1.53	3.35	7.56	17.66
Haskell	Haskell	.24	1.90	.05	2.19	5.30
Hazeldell	Comanche	0	1.28	0	1.28	-
Hico	Hamilton	0	0	.77	.77	5.38
Huckabay 2 NW	Erath	1.80	1.90	1.87	5.57	10.95
Jacksboro	Jack	1.70	8.47	.44	10.61	17.42
Jacksboro 1 NNE	Jack	4.4	5.2	-	9.6	16.6
Justin	Denton	5.43	.65	5.59	11.67	-
Lake Abilene	Taylor	4.51	5.11	.46	10.08	-
Lake Ray Hubbard	Kaufman	.12	1.49	1.69	3.30	9.21
Lipan	Hood	2.25	2.18	4.05	8.48	14.12
Maypearl	Ellis	.13	.53	-	.66	-
McKinney 3 S	Collin	*	2.70	1.06	3.76	12.96
Mineral Wells	Palo Pinto	6.65	2.40	.03	9.08	20.00
Morgan Mill	Erath	.86	3.12	.81	4.79	9.07
Muenster	Cooke	1.53	7.65	3.45	12.63	20.86
Pilot Point	Denton	2.70	2.50	3.50	8.70	18.05

Table 3.--National Weather Service rainfall data for storm of October 12-14, 1981, and total October rainfall in north-central Texas--Continued

Observer	County	a.m. Observations - October (inches)			Storm total (inches)	October total (inches)
		12th	13th	14th		
Rising Star	Eastland	0.07	0.35	1.62	2.04	7.10
Rockwall	Rockwall	.03	1.66	2.20	3.89	10.82
Rosser	Kaufman	.04	.54	1.92	2.50	7.34
Sherman Pump Sta	Grayson	1.47	1.76	4.86	8.09	22.83
Slidell	Wise	1.40	5.95	4.35	11.70	21.28
Stamford #1	Jones	.69	2.10	.11	2.90	6.03
Stephenville WSMO	Erath	.28	0	2.33	2.61	7.20
Strawn 8 NNE	Palo Pinto	2.45	1.38	1.26	5.09	10.34
Terrell	Kaufman	0	.67	2.31	3.00	7.56
Trenton	Fannin	.80	2.00	0	2.80	20.47
Waxahachie	Ellis	.23	.24	.86	1.33	7.14
Weatherford	Parker	1.75	.77	3.71	6.23	13.82
Wichita Falls	Wichita	1.81	1.26	0	3.07	7.83
Woodson 5NNE	Throckmorton	.50	2.96	-	3.46	-

* Gage not read. The precipitation included is in the amount following the asterisk. Time distribution unknown.

Table 4.--National Weather Service supplemental rainfall data for storm of October 12-14, 1981, in north-central Texas

Community	County	a.m. Observations - October (inches)			Storm total (inches)
		12th	13th	14th	
Abilene S	Taylor	-	1.97	5.12	7.09
Abilene SW	do.	-	2.15	5.44	7.59
Ambrose	Grayson	2.00	1.22	2.16	5.38
Anson	Jones	-	.75	3.00	3.75
Azle	Tarrant	-	3.10	5.00	8.10
Avalon	Ellis	.17	.13	1.13	1.43
Baird	Callahan	-	4.00	4.90	8.90
Bedford	Tarrant	-	5.50	>5.00	>10.50
Benbrook N	do.	-	4.25	3.25	7.50
Clyde	Callahan	-	4.10	6.10	10.20
Clyde 5 N	do.	-	6.50	16.50	23.00
Duncanville	Dallas	-	1.13	.40	1.53
Eula	Callahan	-	3.42	>6.00	>9.42
Grand Prairie	Dallas	-	2.60	.90	3.50
Handley	Tarrant	-	2.91	3.38	6.29
Haslet	do.	-	3.30	4.40	7.70
Hawley	Jones	-	1.80	3.80	5.60
Irving	Dallas	-	2.60	.48	3.08
Lawn	Taylor	-	1.35	7.35	8.70
Lewisville	Denton	-	3.10	3.26	6.36
Merkell	Taylor	-	1.50	1.00	2.50
Mesquite	Dallas	-	1.00	1.30	2.30
Monkstown	Fannin	.76	.79	2.13	3.68
Moran	Shackelford	-	4.00	5.00	9.00
Newark	Wise	-	8.00	4.00	12.00
Noodle	Jones	-	1.30	3.10	4.40
Novice	Coleman	-	.20	3.30	3.50
Plano	Collin	-	2.50	1.20	3.70
Rainbow	Somervell	-	0	1.00	1.00
Rendon	Tarrant	-	.60	2.00	2.60
Richardson	Dallas	-	2.30	1.20	3.50
Rowlett	Dallas	-	1.60	1.56	3.16
Scranton 2.5	Eastland	2.94	1.74	.68	5.36
Throckmorton	Throckmorton	-	0	3.50	3.50
Tuscola	Taylor	-	6.50	6.50	13.00
Watauga	Tarrant	-	-	-	20.30
White Settlement	do.	-	3.45	3.50	6.95
Willow Park	Parker	-	3.00	5.30	8.30

> More than.

general, all tributaries along these rivers had outstanding floods, but because of the rainfall distribution, some streams had only minor flooding.

Measurements of flow generally are made with a current meter, but during major floods it is often impossible to obtain current-meter measurements because of insufficient warning of floods on streams with rapidly changing stage, destruction of bridges or other structures from which measurements are made, or impassible roads. Following a major flood such as this one, indirect determinations of peak discharges are made at many sites using methods described in Geological Survey Techniques of Water-Resources Investigations by Bodhaine, 1968; Dalrymple and Benson, 1967; Hulsing, 1967; and Matthai, 1967.

Maximum stages and discharges and/or contents at 83 gaging stations, crest stage and low-flow stations, reservoir stations, and a miscellaneous site in the Red, Trinity, and Brazos River basins were computed and are given in table 5. A description of the flooding in each of the three major river basins follows.

Red River Basin

Rainfall totals for October 1981 in the Red River basin exceeded 25 inches in many localized areas. The rainfall can generally be separated into four storm periods: October 6-8, 11-13, 15-17, and 30-31. The heaviest and most intense rains fell within two periods between October 11-17.

In Oklahoma, widespread amounts of moderate to heavy rainfall during October 6-8 substantially raised soil moisture. During October 11-13, the Kingston-Madill-Tishamingo area in south-central Oklahoma received an average of 18 inches of rain in 36 hours. From midnight to 6:00 a.m. c.d.t. on October 12, Ardmore, Oklahoma, received 5.1 inches of rain, 2.7 inches of which occurred in a 1-hour period. Madill, Oklahoma, received 5.0 inches of rain in a 6-hour period, following 9.6 inches of rain during the previous 12 hours. By the end of the October 11-13 storm, Lakes Texoma, Atoka, and Murray, and numerous SCS (Soil Conservation Service) floodwater-detention reservoirs were filled. During this storm, flash flooding and high water occurred on most streams in the area and caused the breaching of many dams, including a small dam at Madill and several floodwater-detention reservoirs. The third storm (October 15-17) produced additional small stream flooding, and secondary rises occurred on the Blue River, Muddy Boggy Creek, and Clear Boggy Creek, thus prolonging flooding along the lower Red River. Record flood stages occurred on the mainstem of the Red River from Gainesville to Tom, Oklahoma, although peak discharges were not as high as in 1941.

In Texas, intense rainfall during short periods of time caused heavy local runoff in many small streams, producing sharp peaks. The peak discharge at East Fork Little Wichita River near Henrietta, Texas (site 7), with a drainage area of 178 square miles, was 32,500 ft^3/s. This peak exceeded by almost 3 feet the previously known maximum stage (since 1963) that occurred in 1972.

Lake Arrowhead near Henrietta, Texas (site 5), is located on the mainstem of the Little Wichita River about 11 miles southwest of Henrietta. The lake reached a stage of 926.59 feet at 1200 hours on October 19, 1981, with a lake content of 265,400 acre-feet, the highest stage ever recorded since the dam was completed in December 1966.

Table 5.--Summary of peak stages and discharges for Red, Trinity, and Brazos River basin floods of October 1981

[mi^2 - square miles; ft - feet; ft^3/s - cubic feet per second; $(ft^3/s)/mi^2$ - cubic feet per second per square mile]

Site	Station name	Station no.	Contributing drainage area (mi^2)	Period of known floods	MAXIMUM FLOOD PREVIOUSLY KNOWN			MAXIMUM DURING FLOOD OF OCTOBER 1981			
					Date	Stage (ft)	Discharge (ft^3/s)	Date	Stage (ft)	Discharge (ft^3/s)	Discharge $[(ft^3/s)/mi^2]$
					RED RIVER BASIN						
1	Red River near Burkburnett, Tex.	07308500	14,634	1959-81	6- 3-57	13.54	----	10-18-81	7.58	6,320	0.43
2	Wichita River near Charlie, Tex.	07312700	3,439	1967-81	11- 4-72	21.21	6,090	10-14-81	12.39	2,450	.71
3	Lake Kickapoo near Archer City, Tex.	07314000	275	1946-81	8- 2-50	a1,049.20	b134,300	10-19-81	1,045.10	b107,000	----
4	Little Wichita River near Archer City, Tex.	07314500	481	1932-56 1966-81	10-31-41	26.18	17,900	10-13-81	25.63	9,870	20.5
5	Lake Arrowhead near Henrietta, Tex.	07314800	822	1967-81	7-28-75	a925.40	b246,300	10-19-81	a926.59	b265,400	----
6	Little Wichita River above Henrietta, Tex.	07314900	1,037	1953-81	9-29-80	c18.28	7,630	10-13-81	23.50	2,250	2.17
7	East Fork Little Wichita River near Henrietta, Tex.	07315200	178	1963-81	5-12-72	28.85	15,500	10-13-81	31.70	32,500	182
8	Red River near Terral, Okla.	07315500	22,787	1938-81	6- 8-41	28.12	197,000	10-14-81	21.31	58,000	2.55
9	Mud Creek near Courtney, Okla.	07315700	572	1960-81	5- 1-74	31.37	33,400	10-16-81	30.20	24,500	42.8
10	Walnut Bayou near Burneyville, Okla.	07315900	314	1961-64 1969-71	6- -57 9-24-70	20.65 15.93	---- 3,860	10- -81	19.39	29,600	94.3
11	Moss Lake near Gainesville, Tex.	07315950	65	1967-81	10-31-74	a722.63	b32,960	10-13-81	a733.49	b50,600	----
12	Red River near Gainesville, Tex.	07316000	24,846	1936-81	5-21-51 6- 9-41	26.53 24.15	---- 168,000	10-14-81	29.45	103,000	4.15
13	Hickory Creek near Marietta, Okla.	07316070	116	d1964-73	----	----	----	10- -81	----	68,100	587
14	Wilson Creek Tributary near McMillan, Okla.	07316130	2.97	1965-75	e5-23-75	8.18	1,380	10- -81	10.25	1,980	667
15	Briar Creek near Powell, Okla.	07316140	12.0	1965-81	e10-30-74	14.97	5,570	10- -81	20.20	14,100	1,175
16	Wildhorse Creek near Hoover, Okla.	07329700	604	1969-81	5-20-77	24.70	18,700	10-16-81	18.51	6,710	11.1
17	Honey Creek near Davis, Okla.	07329870	18.7	1964-81	e5-13-68 e9-22-70	f17.76 13.20	3,000 4,600	10- -81	17.20	14,500	775
18	Washita River near Dickson, Okla.	07331000	7,202	1928-81	10-31-41 5-19-57	44.37 42.30	---- 98,000	10-13-81	26.74	28,800	4.00
19	Lake Texoma near Denison, Tex.	07331500	33,783	1942-81	6- 5-57	a643.18	b5,991,300	10-20-81	a630.71	b4,082,000	----
20	Red River at Denison Dam near Denison, Tex.	07331600	33,784	1923-81	5-21-25	c31.6	201,000	10-28-81	19.25	52,800	1.56
21	Blue River at Milburn, Okla.	07332400	203	1965-81	10- 8-70	27.87	35,100	10-13-81	27.42	34,200	168
22	Blue River near Blue, Okla.	07332500	476	1936-81	2-17-38	31.81	34,400	10-14-81	44.20	65,200	137
23	Coal Creek near Lehigh, Okla.	07332900	8.50	1978-81	>-19-79	11.45	2,450	10- -81	----	3,930	462
24	Muddy Boggy Creek at Atoka, Okla.	07332950	445	1978-81	6- 9-81	25.30	8,860	10-16-81	33.45	29,800	67.0

See footnotes at end of table.

Table 5.--Summary of peak stages and discharges for Red, Trinity, and Brazos River basin floods of October 1981--Continued

Site	Station name	Station no.	Contributing drainage area (mi^2)	Period of known floods	MAXIMUM FLOOD PREVIOUSLY KNOWN Date	Stage (ft)	Discharge (ft^3/s)	MAXIMUM DURING FLOOD OF OCTOBER 1981 Date	Stage (ft)	Discharge (ft^3/s)	Discharge [$(ft^3/s)/mi^2$]
25	Chickasaw Creek Tributary near Stringtown, Okla.	07333330	3.19	1965-72	e4-20-71	16.80	4,930	10- -81	16.72	6,320	1,980
26	Muddy Boggy Creek near Farris, Okla.	07334000	1,087	1937-81	6-17-45	g44.94	61,900	10-16-81	44.55	44,900	41.3
27	Delaware Creek near Wapanucka, Okla.	07334440	45.8	d1958-73	----	----	----	10- -81	24.17	13,700	299
28	Clear Boggy Creek near Caney, Okla.	07335000	720	1942-81	12-11-46	f26.77	52,800	10-14-81	26.60	53,500	74.3
				TRINITY RIVER BASIN							
29	West Fork Trinity River near Jacksboro, Tex.	08042800	683	1956-81	4-27-57	32.10	35,100	10-13-81	30.15	27,000	39.5
30	Bridgeport Reservoir above Bridgeport, Tex.	08043000	1,111	1932-81	4-29,30-82	a836.2	b407,600	10-18-81	a836.13	b388,600	----
31	Big Sandy Creek near Bridgeport, Tex.	08044000	333	1936-81	6-10-41	15.69	53,000	10-13-81	14.78	45,000	----
32	West Fork Trinity River near Boyd, Tex.	08044500	1,725	1947-81	10- 5-59	22.17	27,300	10-14-81	25.87	60,400	35.0
33	Eagle Mountain Reservoir above Fort Worth, Tex.	08045000	1,970	1934-81	4-26-42	a659.9	b333,500	10-14-81	a656.02	b260,800	----
34	Clear Fork Trinity River near Weatherford, Tex.	08045850	121	1980-81	5-20-80	10.89	112	10-14-81	19.06	2,910	----
35	Benbrook Lake near Benbrook, Tex.	08046500	429	1952-81	6- 6-57	a713.35	b185,000	10-26-81	a697.32	b101,400	----
36	Clear Fork Trinity River near Benbrook, Tex.	08047000	431	1947-81	5-17-49	28.72	82,900	10-13-81	5.29	663	----
37	Clear Fork Trinity River at Fort Worth, Tex.	08047500	518	1924-81	5-17-49	28.20	107,000	10-13-81	16.14	18,400	35.5
38	West Fork Trinity River at Fort Worth, Tex.	08048000	2,615	1920-81	4-25-22	23.95	85,000	10-13-81	7.80	24,800	9.48
39	West Fork Trinity River at Beach Street, Fort Worth, Tex.	08048543	2,685	1976-81	3-27-77	34.27	18,800	10-13-81	36.18	26,400	9.83
40	Lake Arlington at Arlington, Tex.	08049200	143	1957-81	5- 4-79	a556.20	b60,580	10-17-81	a549.53	b44,680	----
41	West Fork Trinity River at Grand Prairie, Tex.	08049500	3,065	1925-81	5-17-49	28.00	62,000	10-17-81	27.05	20,300	----
42	Mountain Creek Lake near Grand Prairie, Tex.	08050050	295	1960-81	3-27-77	a458.52	b27,440	10-17-81	a456.92	b22,630	----
43	Mountain Creek at Grand Prairie, Tex.	08050100	298	1960-81	4-19-76	24.21	38,100	10-18-81	12.54	4,630	----
44	Elm Fork Trinity River near Sanger, Tex.	08050500	381	1949-81	10-31-74	29.10	50,000	10-13-81	33.50	150,000	394
45	Isle Du Bois Creek near Pilot Point, Tex.	08051000	266	1949-81	10-31-74	29.43	40,000	10-16-81	28.45	25,100	94.4
46	Clear Creek near Sanger, Tex.	08051500	295	1949-81	9-13-50	24.8	18,200	10-13-81	35.70	104,000	353

See footnotes at end of table.

Table 5.--Summary of peak stages and discharges for Red, Trinity, and Brazos River basin floods of October 1981--Continued

Site	Station name	Station no.	Contributing drainage area (mi^2)	Period of known floods	MAXIMUM FLOOD PREVIOUSLY KNOWN			MAXIMUM DURING FLOOD OF OCTOBER 1981			
					Date	Stage (ft)	Discharge (ft^3/s)	Date	Stage (ft)	Discharge (ft^3/s)	[(ft^3/s)/mi^2]
47	Little Elm Creek near Aubrey, Tex.	08052700	75.5	1979-81	10-31-74	17.04	7,920	10-13-81	17.36	9,100	121
48	Lewisville Lake near Lewisville, Tex.	08052800	1,660	1954-81	6- 3-57	a535.57	b1,146,000	10-18-81	a535.62	b1,131,000	----
49	Elm Fork Trinity River near Lewisville, Tex.	08053000	1,673	1949-81	9-15-50	30.75	21,700	10-13-81	12.93	1,690	----
50	Denton Creek near Justin, Tex.	08053500	400	1949-81	5-24-57	17.64	29,800	10-13-81	17.79	35,400	88.5
51	Grapevine Lake near Grapevine, Tex.	08054500	695	1952-81	6- 6-57	a560.80	b445,800	10-30-81	a558.44	b406,000	----
52	Denton Creek near Grapevine, Tex.	08055000	705	1947-81	4-26-48	30.38	13,900	10-13-81	17.41	1,840	----
53	Elm Fork Trinity River near Carrollton, Tex.	08055500	2,459	1907-81	5-25-08	17.0	145,000	10-13-81	5.14	4,340	1.76
54	Trinity River at Dallas, Tex.	08057000	6,106	1903-81	5-25-08	52.6	184,000	10-19-81	38.33	27,000	4.42
55	East Fork Trinity River at McKinney, Tex.	08058900	164	1975-81	3-27-77	19.84	13,100	10-14-82	19.81	9,430	57.5
56	Sister Grove Creek near Blue Ridge, Tex.	08059400	83.1	1975-81	4-19-77	16.93	4,650	10-14-81	16.91	2,610	31.4
57	Lavon Lake near Lavon, Tex.	08060500	770	1953-81	6- 4-79	a494.98	b523,500	10-26-81	a498.76	b616,600	----
				BRAZOS RIVER BASIN							
58	Brazos River at Seymour, Tex.	08082500	5,972	1923-81	10-16-26	h17.16	95,400	10-14-81	10.44	17,300	2.90
59	Clear Fork Brazos River at Hawley, Tex.	08083240	1,416	1967-81	9-30-80	21.07	8,540	10-14-81	11.84	809	.57
60	Mulberry Creek near Hawley, Tex.	08083245	205	1967-81	5-28-80	16.00	2,750	10-14-81	8.40	437	2.13
61	Elm Creek at Abilene, Tex.	08083430	422	1979-81	5-28-80	7.42	757	10-13-81	15.37	5,020	11.9
62	Cedar Creek at Abilene, Tex.	08083470	119	1970-81	9-18-74	12.54	4,670	10-13-81	15.74	18,500	155
63	Fort Phantom Hill Reservoir near Nugent Tex.	08083500	470	1940-81	5-25-57	58.7	b89,910	10-14-81	37.60	b24,300	----
64	Clear Fork Brazos River at Nugent, Tex.	08084000	2,199	1924-81	9- 8-32	27.05	47,000	10-14-81	14.17	5,100	2.32
65	Clear Fork Brazos River at Fort Griffin, Tex.	08085500	3,988	1923-81	8- 4-78	38.88	149,000	10-16-81	16.38	5,130	1.29
66	North Fork Hubbard Creek near Albany, Tex.	08086150	39.3	1962-81	8- 4-78	23.3	103,000	10-13-81	4.23	364	9.26
67	Hubbard Creek below Albany, Tex.	08086212	613	1966-81	8- 4-78	41.41	330,000	10-13-81	33.05	36,100	58.9
68	Big Sandy Creek above Breckenridge, Tex.	08086290	280	1962-81	5-13-65	23.30	8,170	10-13-81	28.60	80,000	286
69	Hubbard Creek Reservoir near Breckenridge, Tex.	08086400	1,085	1962-81	8- 5-78	a1,188.06	b401,500	10-14-81	a1,190.22	b441,000	----
70	Hubbard Creek near Breckenridge, Tex.	08086500	1,089	1955-81	5-26-57	34.00	34,500	10-14-81	32.06	16,200	14.9

See footnotes at end of table.

Table 5.--Summary of peak stages and discharges for Red, Trinity, and Brazos River basin floods of October 1981--Continued

Site	Station name	Station no.	Contributing drainage area (mi^2)	Period of known floods	MAXIMUM FLOOD PREVIOUSLY KNOWN Date	Stage (ft)	Discharge (ft^3/s)	MAXIMUM DURING FLOOD OF OCTOBER 1981 Date	Stage (ft)	Discharge (ft^3/s)	Discharge [$(ft^3/s)/mi^2$]
71	Gonzales Creek at Breckenridge, Tex.	----	146	----	----	----	----	10-13-81	----	55,600	381
72	Clear Fork Brazos River at Eliasville, Tex.	08087300	5,697	1915-20, 1923-25, 1928-51, 1961-81	8- 5-78	37.04	68,000	10-14-81	31.35	26,900	4.72
73	Brazos River near South Bend. Tex.	08088000	13,107	1938-81	5- 4-41	i27.35	87,400	10-15-81	30.35	40,000	3.05
74	Briar Creek near Graham, Tex.	08088300	24.2	1958-81	9-19-76 5- -57	12.31 15.0	2,730 ----	10-13-81	11.01	1,350	55.8
75	Lake Graham near Graham, Tex.	08088400	221	1958-81	4-30-70	a1,077.77	b61,120	10-13-81	a1,076.91	b58,800	----
76	Big Cedar Creek near Ivan, Tex.	08088450	97.0	1964-81	7- 8-68	22.39	9,590	10-13-81	32.50	34,700	358
77	Possum Kingdom Lake near Graford, Tex.	08088500	14,030	1941-81	10- 5-41	a1,001.0	b743,700	10-13-81	a1,003.61	b653,000	----
78	Brazos River near Palo Pinto, Tex.	08089000	14,245	1924-81	6-16-30	30.0	95,600	10-13-81	26.36	68,600	4.82
79	Lake Palo Pinto near Santo, Tex.	08090300	461	1964-81	10-31-74	a871.15	b56,060	10-14-81	a870.00	b52,600	----
80	Brazos River near Dennis, Tex.	08090800	15,671	1930-81	8-10-78 5- -57	25.86 31.8	59,300 ----	10-14-81	31.85	96,600	6.16
81	Lake Granbury near Granbury, Tex.	08090900	16,113	1968-81	3-27-77	a693.60	b158,800	10-15-81	a691.22	b138,700	----
82	Brazos River near Glen Rose, Tex.	08091000	16,252	1923-81	5-18-35	j23.68	97,600	10-15-81	35.19	86,400	5.32
83	Lake Whitney near Whitney, Tex.	08092500	17,623	1951-81	5-29-57	a570.25	b1,980,000	10-22-81	a547.82	b1,047,000	----

a Elevation, in feet.
b Contents, in acre-feet.
c At former site.
d Low-flow site.
e Crest-stage site.
f Backwater.
g Different datum.
h Maximum gage-height, 23.00 ft on Sept. 28, 1955.
i Maximum gage-height, 41.50 ft on Aug. 6, 1978.
j Maximum gage-height, 33.89 ft on May 27, 1957.

Several streams had multiple peaks; in many cases the second peak was larger than the first. For example, Mud Creek near Courtney, Oklahoma (site 9), had a peak discharge of about 10,000 ft^3/s on October 13 and a second peak discharge of 24,500 ft^3/s on October 16. The second flood crest was approximately 1 foot lower than the maximum stage that occurred in 1974.

The peak stage for the station Red River near Gainesville, Texas (site 12), was 29.45 feet on October 14 with a peak discharge of 103,000 ft^3/s. This exceeded the previous maximum stage (26.53 feet in 1951) since 1936, but the peak discharge was exceeded by the flood of June 9, 1941 (168,000 ft^3/s).

Inflow to Lake Texoma near Denison, Texas (site 19), on the Red River just downstream from the Washita River, was about 2.25 million acre-feet during October. The elevation of Lake Texoma rose from 611.0 feet on October 5 to 630.7 feet on October 20, with a concurrent increase in contents of 1,904,000 acre-feet. Because of large inflows to the Red River from the Blue River in Oklahoma downstream from Lake Texoma, all releases from the lake were stopped from October 14 to 18. The Corps of Engineers, complying with regulations to prevent inundation along the river below Lake Texoma, held floodwaters in the floodpool, which resulted in the inundation of recreational facilities along the lower reaches of the Washita River where it flows into Lake Texoma.

Downstream from Lake Texoma, Blue River and Muddy Boggy Creek (tributaries to Red River) experienced severe flooding on October 13-14 and 16-17 as a result of intense rainfall during these periods. The maximum stage on October 13 on the Blue River at Milburn, Oklahoma (site 21), was only 0.45 foot below the maximum stage of 27.87 feet in 1970. At the Blue River near Blue, Oklahoma (site 22), the previous maximum stage of 31.81 feet, recorded in 1938, was exceeded by more than 12 feet on October 14, 1981, with a stage of 44.20 feet and a peak discharge of 65,200 ft^3/s. The Blue River is not controlled by reservoirs with any significant storage capacities.

The peak stage of 44.55 feet on October 16 at Muddy Boggy Creek near Farris, Oklahoma (site 26), was only slightly lower than the record stage of 44.94 feet that occurred in 1945. At Clear Boggy Creek near Caney, Oklahoma (site 28), the flood crested at a near-record stage of 26.60 feet on October 14, with a discharge of 53,500 ft^3/s. This creek is controlled to a great extent by Soil Conservation Service floodwater-detention structures. Most of these structures were filled to design capacity, with several emergency spillways being fully operational. The discharge hydrograph (fig. 6) for Clear Boggy Creek near Caney, compared to that for an uncontrolled stream such as Blue River near Blue (fig. 6), shows a significant attenuation of flows for the controlled stream.

Discharge hydrographs for selected streams and change in contents in lakes in the Red River basin are shown in figures 6-7.

Trinity River Basin

Rainfall totals for October 1981 in the Trinity River basin were in excess of 20 inches in much of the area; in localized areas, totals exceeded 25 inches. The rainfall can be separated into four storm periods: October 6-9, 11-13, 15-17, and 30-31. Of these, the storm of October 11-13 was the most intense and caused most of the flood damage in the upper Trinity River basin.

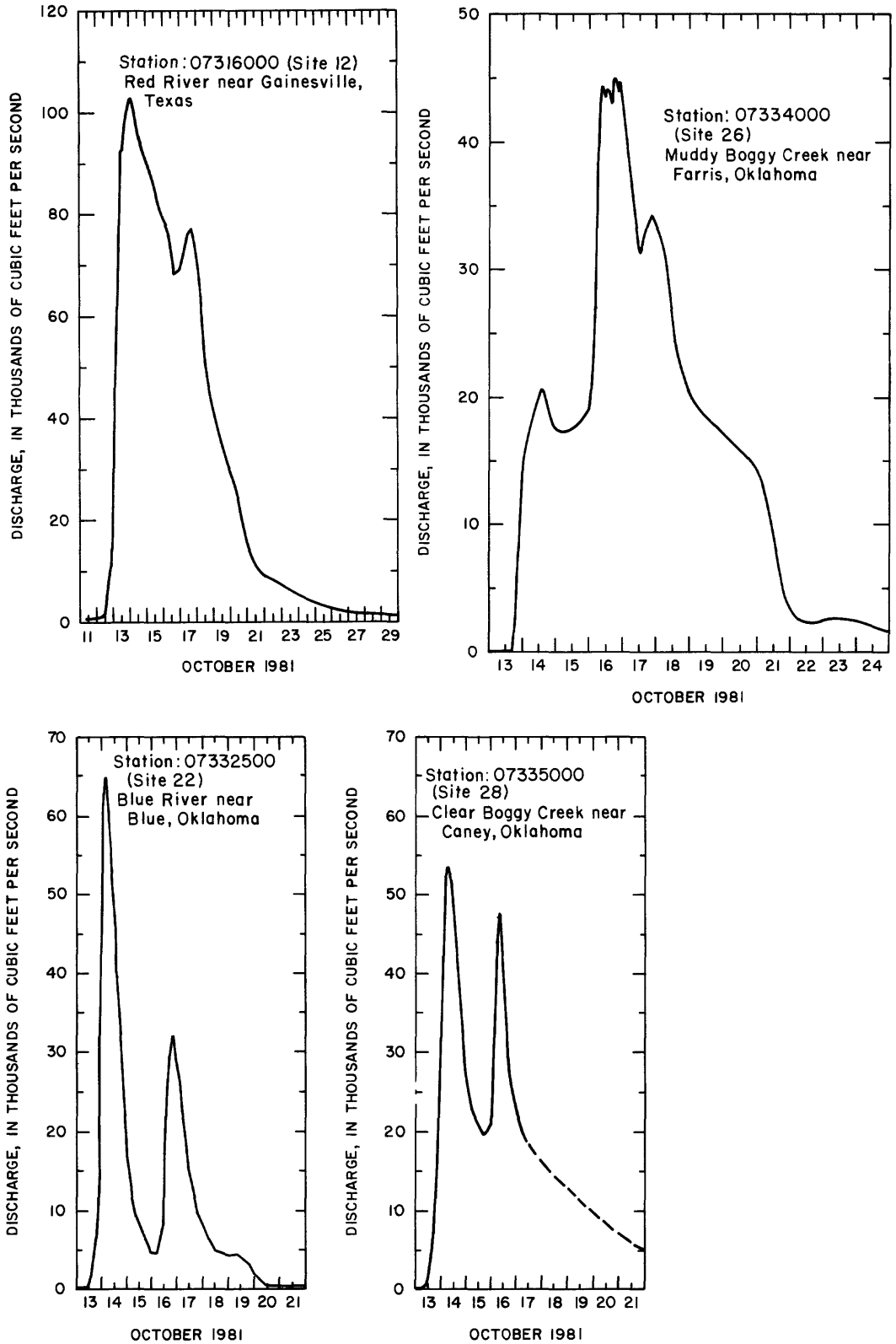

Figure 6.-Discharge hydrographs at selected streamflow stations in the Red River basin

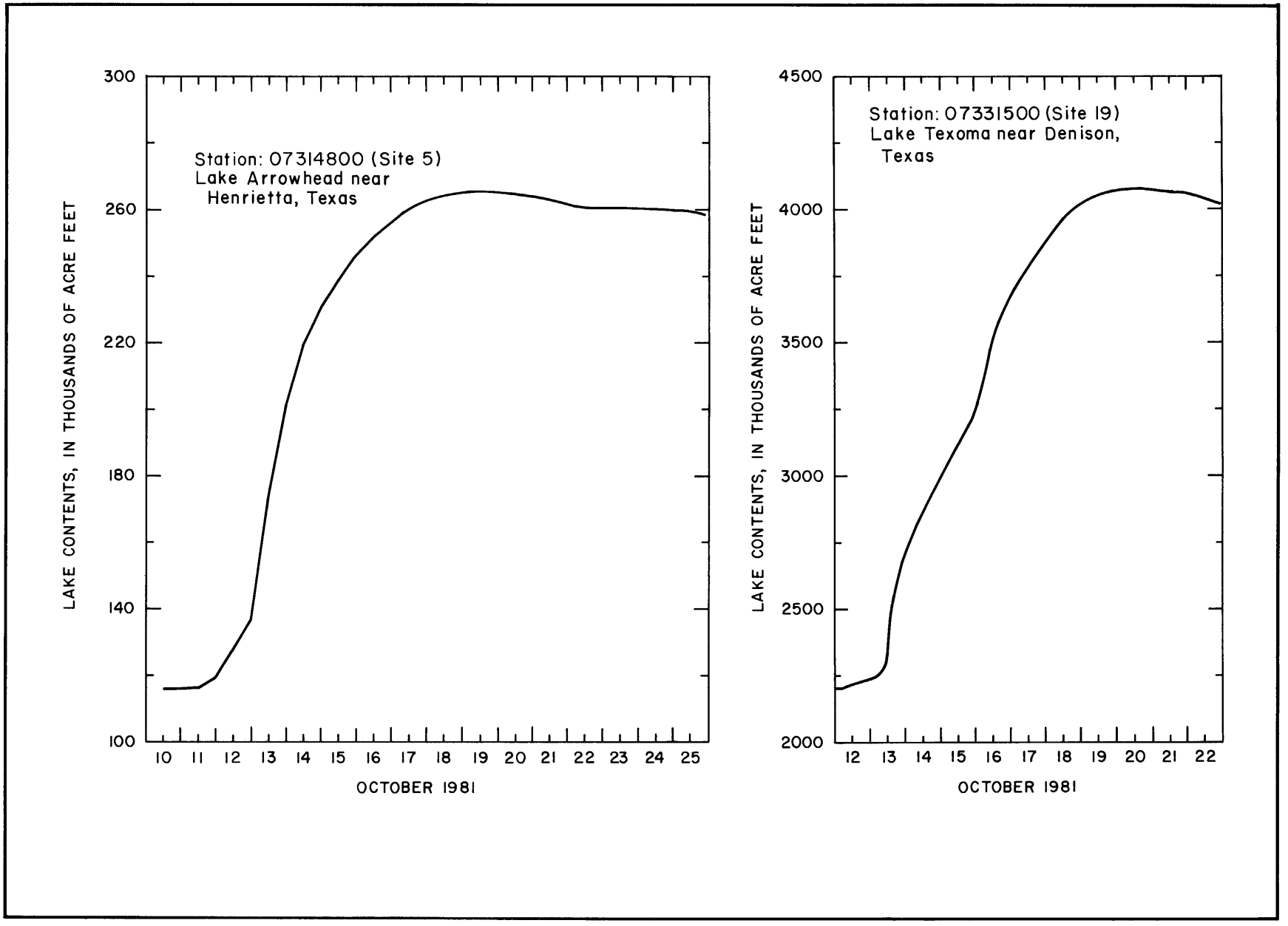

Figure 7.–Contents at selected lakes in the Red River basin

Soil moisture was high as a result of widespread rain during October 6-9. Heavy storms during October 11-13 in the upper Trinity River basin generally occurred north of a line extending from southwest of Fort Worth, west of Dallas, near McKinney, and then northeast toward the Red River. The heaviest rainfall in this area included 16 inches that occurred 6 miles northwest of Gainesville in Cooke County, 14.4 inches in Gainesville, 8.09 inches at Sherman in Grayson County, 18 inches at Perrin in Jack County, and 20.25 inches at Balsora in Wise County.

The storm of October 11-13 produced severe flooding in the Trinity River tributaries upstream from Dallas with record stages being recorded at seven streamflow sites. Record stages for the period of record were set on the West Fork Trinity River near Boyd (site 32), Clear Fork Trinity River near Weatherford (site 34), West Fork Trinity River at Beach Street at Fort Worth (site 39), Elm Fork Trinity River near Sanger (site 44), Clear Creek near Sanger (site 46), Little Elm Creek near Aubrey (site 47), and Denton Creek near Justin (site 50). Record reservoir stage and contents occurred on Lewisville Lake near Lewisville (site 48) and Lavon Lake near Lavon (site 57).

The flood stage at West Fork Trinity River near Boyd, Texas (site 32), exceeded the previously recorded peak of October 1959 by more than 3 feet and exceeded by nearly 1 foot the stage that occurred in May 1908, which was the previous maximum stage known since 1880. Most of this flooding occurred on Big Sandy, Garrett, Salt, and Rush Creeks, as a result of over 20 inches of rainfall in their headwaters. These creeks enter the West Fork Trinity River below Bridgeport Reservoir (site 30). Only local flooding occurred on the Clear Fork Trinity River downstream from Benbrook Lake (site 35).

Severe flooding occurred on the Elm Fork Trinity River and its tributaries. The maximum discharge on October 13 at Elm Fork Trinity River near Sanger, Texas (site 44), was more than three times as large as any previously known peak discharge since records began in 1949. The maximum stage was 2.8 feet higher than the highest stage since 1903 (30.7 feet in May 1908). On Clear Creek near Sanger, Texas (site 46), the peak discharge was over five times as large as the previous peak discharge since records began in 1950. The stage was within 1 foot of the all-time maximum stage (since at least 1880) that occurred in May 1908. All flooding on the Elm Fork Trinity River was contained in Lewisville Lake near Lewisville (site 48).

The storm of October 15-17 produced heavy rainfall in several areas, but the only serious flooding occurred at Sherman, Texas, where 8.84 inches of rain was recorded. Discharge hydrographs for selected streams and change in contents in lakes in the Trinity River basin are shown in figures 8-9.

Brazos River Basin

Rainfall totals for October 1981 in the Brazos River basin were in excess of 20 inches over much of the area and exceeded 25 inches in localized areas. The rainfall generally can be separated into four storm periods: October 6-8, 11-13, 15-17, and 30-31. The heaviest and most intense rainfall fell during October 11-13.

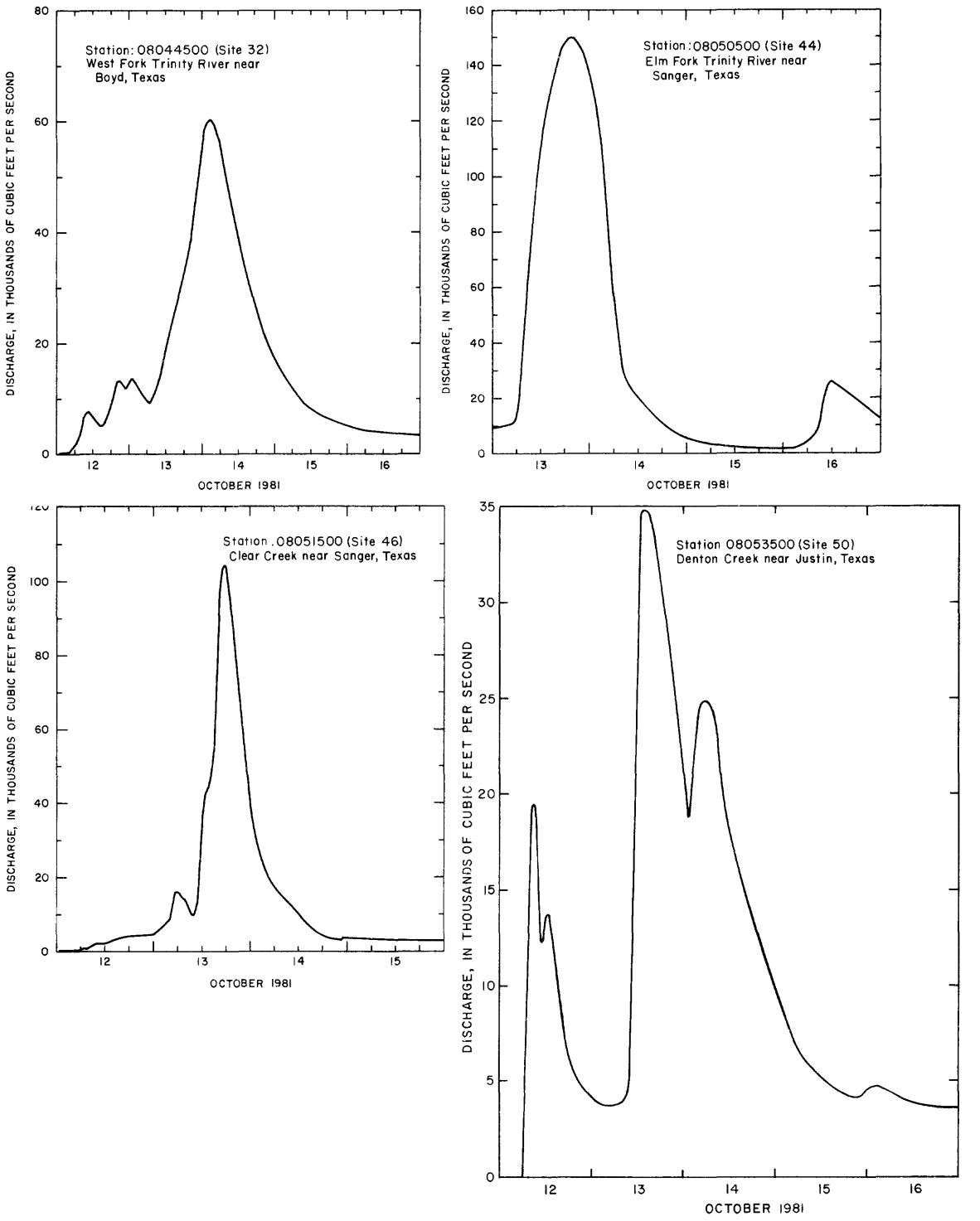

Figure 8.-Discharge hydrographs at selected streamflow stations in the Trinity River basin

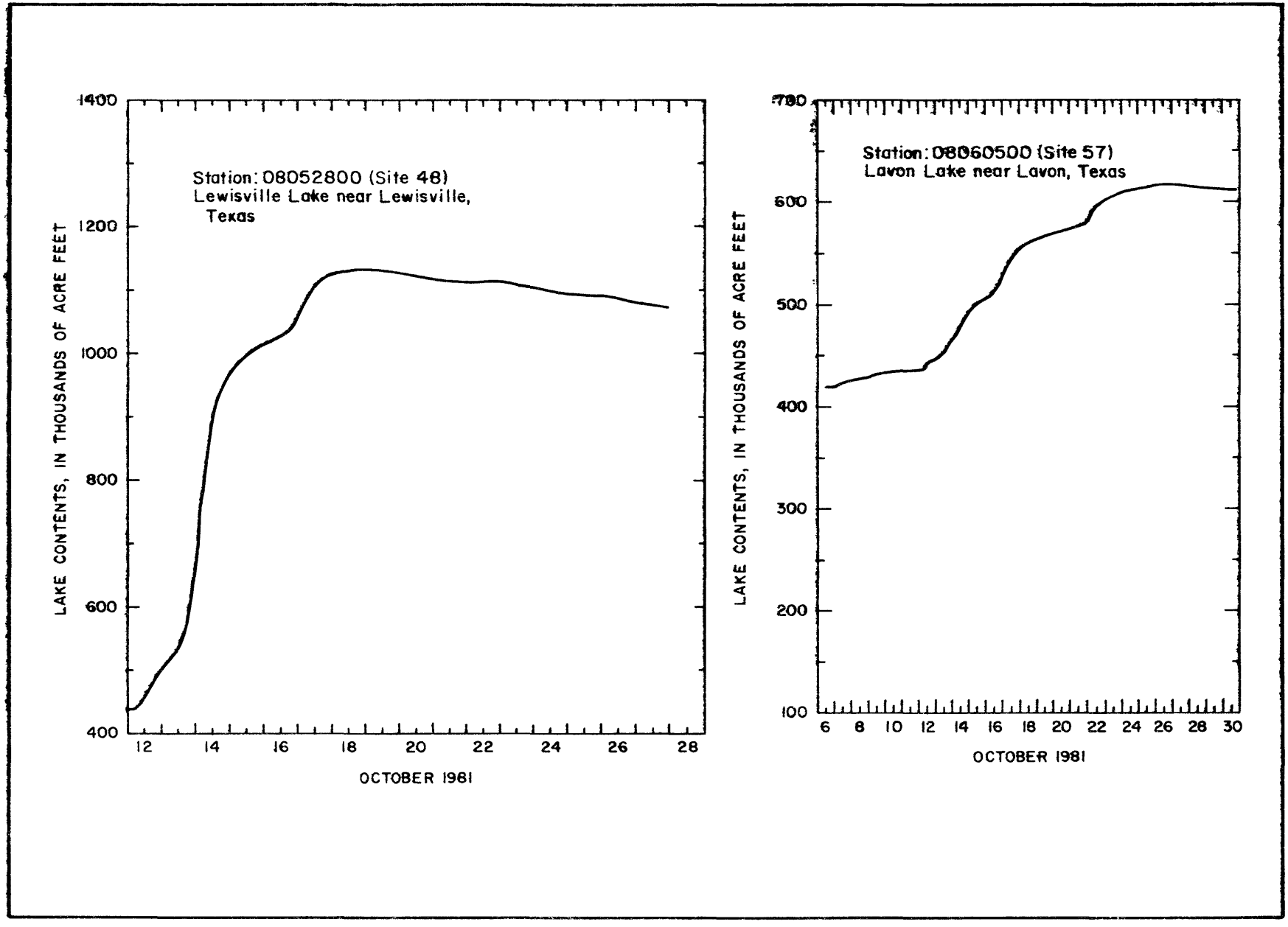

Figure 9.–Contents at selected lakes in the Trinity River basin

During October 11-14, the city of Breckenridge, Texas, located about 90 miles west of Fort Worth, received 21.00 inches of rain from midnight on the 11th through 8:00 a.m. c.d.t. on the 14th, with 15.70 inches falling in a 24-hour period on the 13th. The rainfall total for the month of October at Breckenridge was 25.18 inches. The Abilene area received almost 8 inches of rain during a 34-hour period between 11:00 p.m. c.d.t. on the 11th to 9:00 a.m. c.d.t. on the 13th. The total rainfall for October at Abilene was 10.68 inches. The heaviest rainfall reported in Texas during this storm period occurred 5 miles north of Clyde, Texas, or about 22 miles east-northeast of Abilene, where 23 inches of rain was reported.

Record flood stages occurred in the Breckenridge, Texas, area on Gonzales, Big Sandy, and Big Cedar Creeks, with a record stage and contents occurring on Hubbard Creek Reservoir. Big Sandy Creek above Breckenridge (site 68) had a peak stage of 28.60 feet, that exceeded by more than 5 feet, the previous maximum stage of 23.30 feet on May 13, 1965. The peak discharge of 80,000 ft^3/s on October 13, from a drainage area of 280 square miles, was nearly 10 times greater than previously observed since 1962.

Hubbard Creek Reservoir near Breckenridge (site 69) had the highest stage ever recorded since the dam was completed in December 1962. Some of the heaviest rainfall that occurred during the October 11-13 storm was centered in the immediate vicinity of the reservoir. The reservoir reached a record stage of 1,190.22 feet at noon on October 14 (contents 441,000 acre-feet) with all 12 lift gates at the dam open.

Gonzales Creek flows north from Lake Daniel through the center of Breckenridge to the Brazos River. Severe flooding occurred on this creek both inside and outside the city limits. Long-time residents in Breckenridge could not remember a higher flood. An indirect determination of the peak discharge (55,600 ft^3/s) was made about 2 miles north of Breckenridge (site 71). Records furnished by the city of Breckenridge indicate that Lake Daniel (city's primary water supply) rose more than 20 feet during the storm of October 11-13. A city map of Breckenridge, delineating the inundated area for the October 11-13 storm is shown in figure 10.

Big Cedar Creek near Ivan (site 76), located in Stephens County about 12 miles northeast of Breckenridge, had two peaks during the October 11-13 storm. The first peak occurred on October 12 and reached a stage of 26.35 feet, with a discharge of 10,700 ft^3/s. This peak exceeded the highest peak for the period of record (1962-81) by almost 4 feet. The second and greatest peak, occurred on October 13, reaching a stage of 32.50 feet and a discharge of 34,700 ft^3/s. This peak exceeded by over 10 feet the previous maximum stage that occurred on July 8, 1968.

Record flood stages also occurred in the Abilene area on Elm and Cedar Creeks, with lesser flooding along Lytle, Rainey, Cat Claw, and Little Elm Creeks. The stream-gaging station Cedar Creek at Abilene (site 62) had a peak stage 3 feet higher than the previous maximum that occurred in 1974.

The maximum stage on the Brazos River near Dennis (site 80) was 31.85 feet on October 14, which slightly exceeds the previous maximum observed stage (since at least 1930) of 31.8 feet that occurred in May 1957. The Brazos River near Glen Rose (site 82) reached a record stage of 35.19 feet on October 15 (dis-

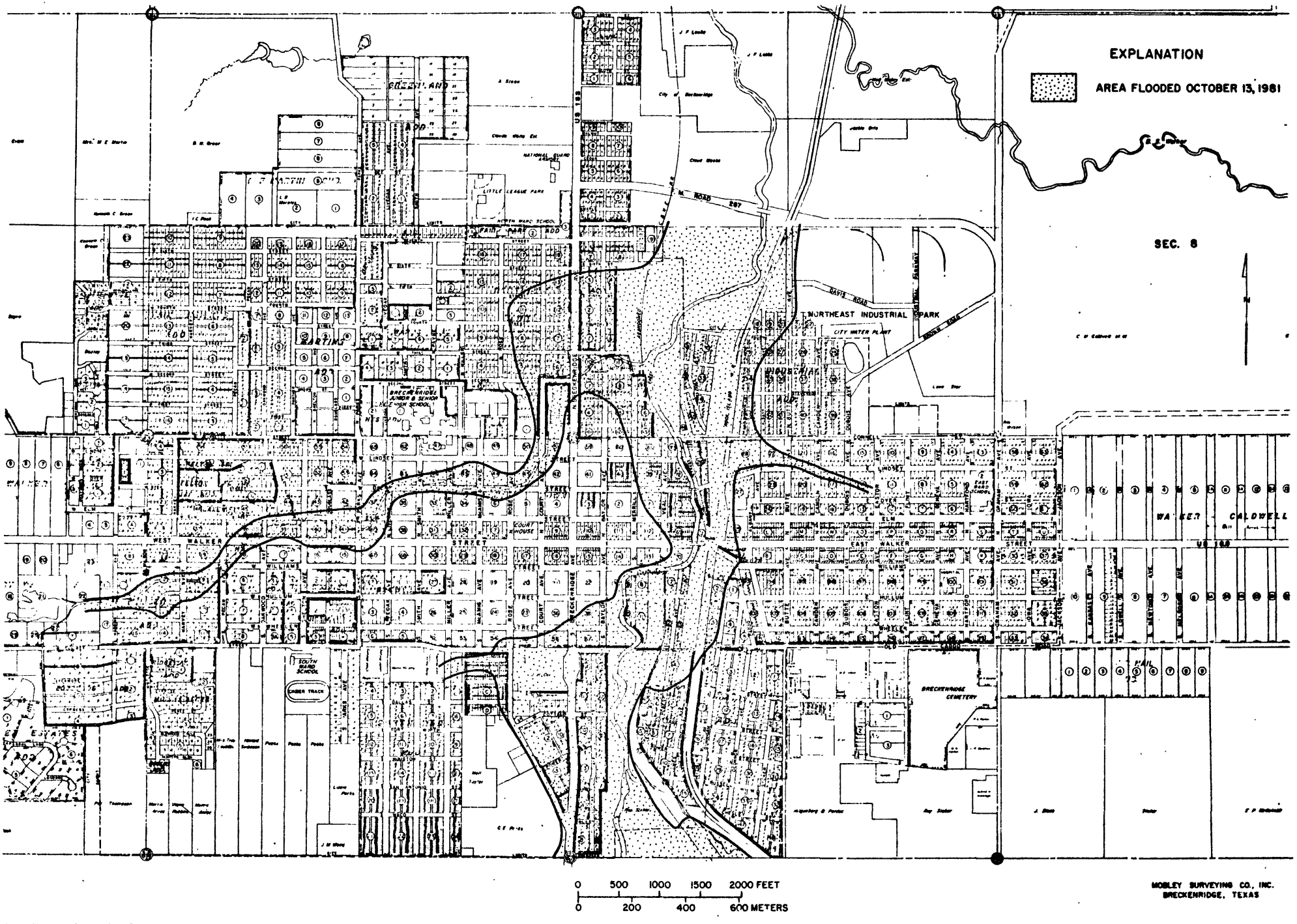

Figure 10.–Flood inundation map for the city of Breckenridge for the storm of October 11–13, 1981

charge, 86,400 ft^3/s). The previous record stage (since at least 1876) was 33.89 feet in May 1957 (discharge, 87,400 ft^3/s). Vegetative growth in the flood plain over the years has caused stages to increase without an increase in the discharge. The maximum discharge recorded at this station was 97,600 ft^3/s on May 18, 1935, at a site 2.4 miles downstream.

Discharge hydrographs for selected streams and change in contents in lakes in the Brazos River basin are shown in figures 11-12.

FLOOD DAMAGES

Oklahoma

South-central and southeastern Oklahoma received widespread damage from the October 1981 flooding. Ten counties, Atoka, Bryan, Carter, Coal, Haskell, Jefferson, Johnston, Love, Marshall, and Pittsburg received damages of such magnitude that they were declared flood-disaster areas.

Damages of more than $23.8 million were estimated for the 10-county area by the Office of the Governor (written commun., 1981). Estimated losses due to extensive flooding in this area were much lower than losses experienced in previous years. This decrease in individual losses is attributed to land-management practices based on previous floodplain inundation studies. Agricultural losses, including livestock, crops, and farm and ranch lands, comprised almost half of the total damage estimates. Damage estimates by property types are as follows:

Damage	Damage in millions of dollars
To private property	1.2
To public property	11.8
To agriculture	10.8
TOTAL	23.8

Texas

Nine counties in north-central and west-central Texas received such widespread damage from the October flooding that they were declared flood-disaster areas. Cooke and Stephens Counties were declared eligible for both individual and public assistance. Grayson, Palo Pinto, Parker, Tarrant, and Taylor Counties were declared eligible for individual assistance only. Montague and Wise Counties were declared eligible for public assistance only.

Damage estimates of more than $90 million for the nine-county area were made by the Corps of Engineers and are summarized in the following table:

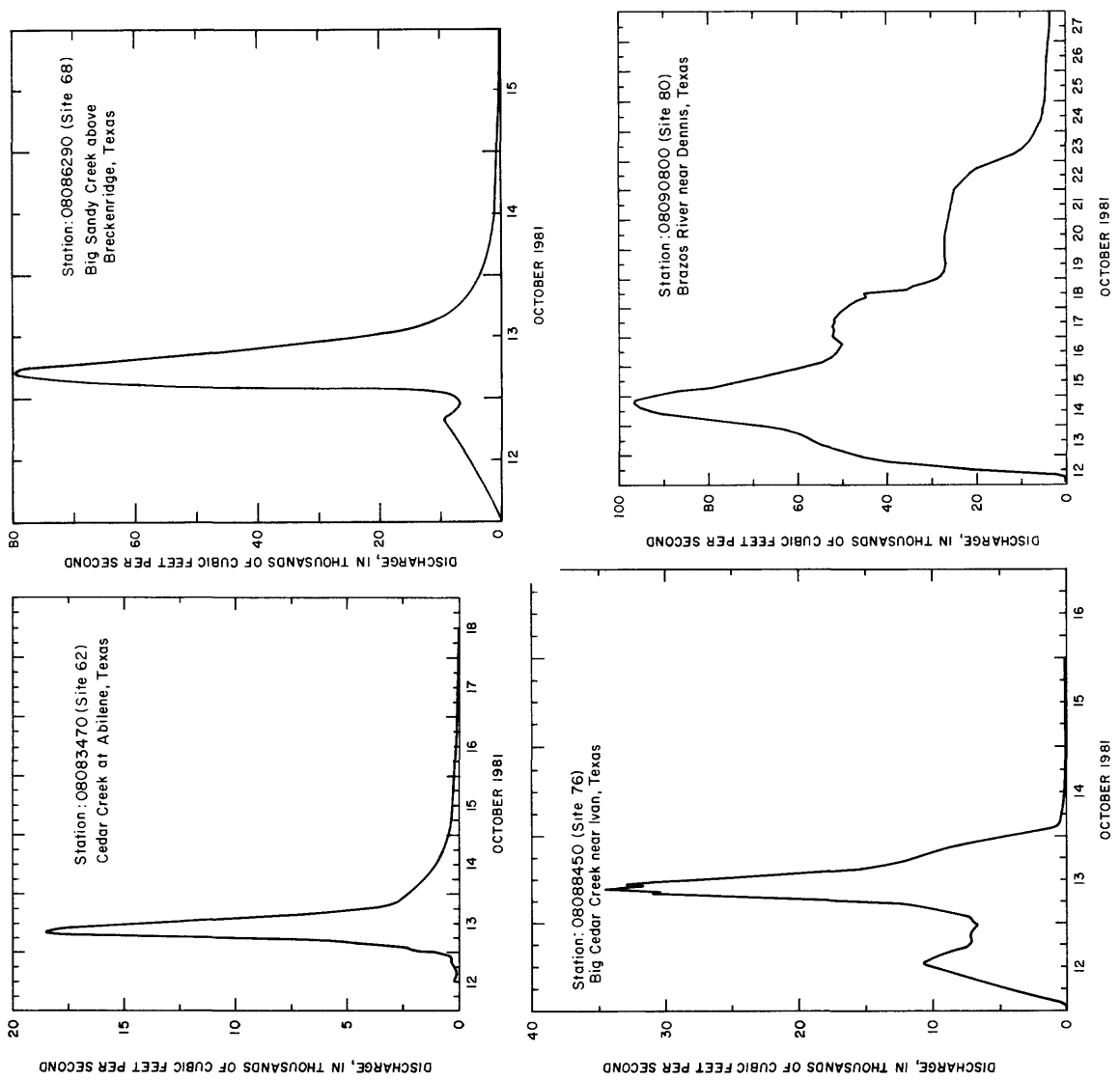

Figure 11.-Discharge hydrographs at selected streamflow stations in the Brazos River basin

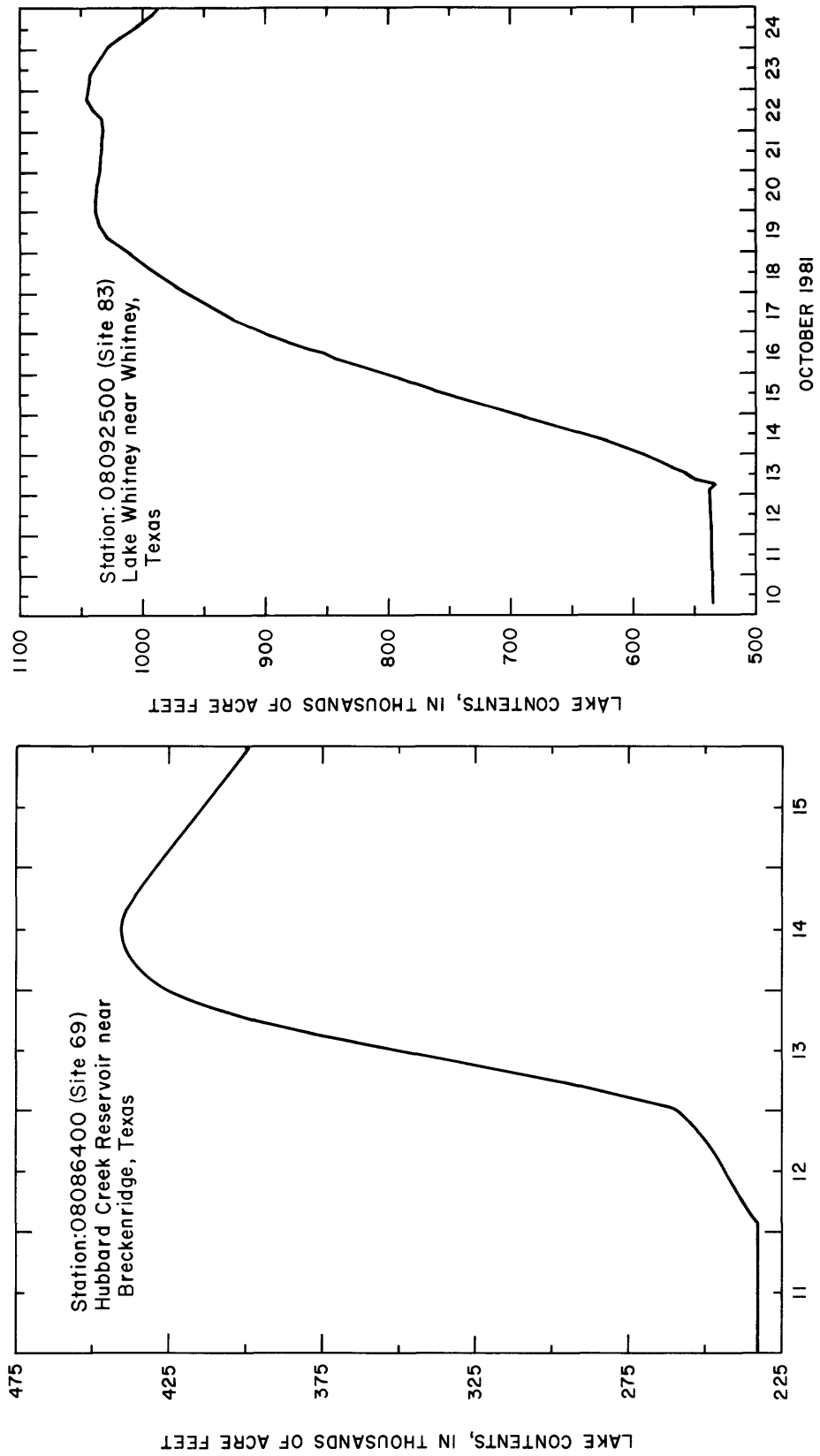

Figure 12.–Contents at selected lakes in the Brazos River basin

County	Damage in millions of dollars
Cooke	1/14.1
Grayson	8.9
Montague	1.1
Palo Pinto	5.6
Parker	9.2
Stephens	2/10.5
Tarrant	36.2
Taylor	4.4
Wise	0.9
TOTAL	90.9

1/ Excludes agriculture damage.
2/ Excludes agriculture damages and damages to residences and businesses outside of Breckenridge.

Flooding along Gonzales Creek in Stephens County, the worst ever reported by long-time residents, cut off the main north-south and east-west highways through the city of Breckenridge and left much of the downstream area inundated. Severe damage to utilities left the city without telephone, electricity, water, and sewer service for over 24 hours before emergency equipment could be installed.

EXPLANATION OF STATION DATA

One of the main purposes of a typical flood report is, at least, a presentation of stage and discharge data on streams and stage and content data on reservoirs. In this report the station data include:

(1) a station description which gives information relative to the location of the gage or site, size of drainage area above the gage, period of record, type of gage, and the extremes relative to the current flood, the period of record, and historical data;

(2) a table of stages and discharges or stages and reservoir contents at indicated times which gives sufficient data so that hydrographs of the flood peaks or reservoir contents may be accurately constructed; and

(3) the mean daily discharges or contents, in acre-feet, at time indicated, along with the monthly summary for the month of October 1981.

These station data are presented in the Supplementary Data section of this report.

Water-quality data for the October 1981 floods are being prepared for publication as a Geological Survey Water-Resources Investigations report (Wells, Schertz, and Flugrath, 1984).

REFERENCES CITED

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Dalrymple, Tate, and Benson, M. A., 1967, Measurement of peak discharge by the slope-area method: U.S. Geological Survey Techniques of Water-Resources Investigations Book 3, Chapter A2, 12 p.

Hulsing, Harry, 1967, Measurement of peak discharge at dams by indirect methods: U.S. Geological Survey Techniques of Water-Resources Investigations Book 3, Chapter A5, 29 p.

Matthai, H. F., 1967, Measurement of peak discharge at width contractions by indirect methods: U.S. Geological Survey Techniques of Water-Resources Investigations Book 3, Chapter A4, 44 p.

Wells, F. C., Schertz, T. L., and Flugrath, M. W., 1984, Effects of October 1981 flood on the water quality of selected streams and reservoirs in the Brazos River basin, Texas: U.S. Geological Survey Water-Resources Investigations Report 84-4055.

SUPPLEMENTARY DATA

(1) 07308500 RED RIVER NEAR BURKBURNETT, TX
(National stream-quality accounting network)

LOCATION.--Lat 34°06'36", long 98°31'53", Cotton County, Okla., Hydrologic Unit 11130102, on left bank at downstream side of bridge on U.S. Highways 277 and 281, 2.5 mi (4.0 km) northeast of Burkburnett, and at mile 933 (1,501 km).

DRAINAGE AREA.--20,570 mi² (53,280 km²), of which 5,936 mi² (15,374 km²) probably is noncontributing.

PERIOD OF RECORD.--July 1924 to August 1925 (monthly discharge only), December 1959 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 952.57 ft (290.343 m) National Geodetic Vertical Datum of 1929. July 11, 1924, to Aug. 31, 1925, nonrecording gage at site 1,000 ft (305 m) downstream at same datum. Dec. 16, 1959, to Jan. 11, 1960, nonrecording gage at present site and datum.

REMARKS.--Records fair. Many small diversions for irrigation upstream from station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 6,320 ft³/s (179 m³/s) Oct. 18, gage height, 7.58 ft (2.310 m).
FOR PERIOD DECEMBER 1959 TO OCTOBER 1981.--Discharge, 62,800 ft³/s (1,780 m³/s) Oct. 19, 1965, gage height, 11.46 ft (3.493 m).
HISTORIC.--Flood of June 3, 1957, reached a stage of 13.54 ft (4.127 m), from levels to floodmarks. According to local residents, higher stages occurred in 1891 and June 1941.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0045	61	3.96	Oct. 17 -	0015	1130	5.65	Oct. 18 -	1500	3970	6.95
	1145	98	4.11		0530	1090	5.62		1845	2660	6.49
	1645	79	4.04		0830	1030	5.58		2400	1680	6.04
	2400	178	4.34		0900	991	5.55				
					0930	1030	5.58	Oct. 19 -	1145	2350	6.40
Oct. 13 -	0600	344	4.70		1000	538	5.13		1200	1990	6.24
	0900	620	5.05		1145	1040	5.59		1230	2300	6.38
	2400	2060	6.02		1900	2080	6.20		1515	2440	6.44
					1930	2390	6.34		1845	2280	6.37
Oct. 14 -	1215	1400	5.70		2100	3000	6.58		2400	2100	6.29
	2400	1590	5.82		2400	3780	6.85				
								Oct. 20	0015	2020	6.29
Oct. 15 -	0845	1910	6.03	Oct. 18 -	0445	4260	7.04		0500	1950	6.26
	2400	1430	5.76		0545	5210	7.31		0930	1630	6.09
					0715	6320	7.58		0945	1950	6.26
Oct. 16 -	0745	1200	5.65		1200	4430	7.09		1815	1630	6.09
	2400	1160	5.62		1245	4810	7.20		2400	1460	5.99

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	36	8.....	61	16.....	1220	24.....	297
2.....	29	9.....	51	17.....	1500	25.....	222
3.....	24	10.....	39	18.....	3990	26.....	166
4.....	19	11.....	33	19.....	2020	27.....	130
5.....	18	12.....	90	20.....	1770	28.....	114
6.....	22	13.....	1220	21.....	1120	29.....	102
7.....	58	14.....	1600	22.....	636	30.....	89
		15.....	1730	23.....	364	31.....	80

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	608
MONTHLY TOTAL, IN ACRE-FEET	37390
RUNOFF, IN INCHES	.05

(2) 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 (4.8 km) southeast of Charlie, and 5.7 mi (9.2 km) northwest of Petrolia.

DRAINAGE AREA.--3,439 mi^2 (8,907 km^2), of which 2,086 mi^2 (5,403 km^2) is above Lake Kemp Dam and 143 mi^2 (370 km^2) is above Lake Wichita Dam.

PERIOD OF RECORD.--October 1967 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 872.71 ft (266.002 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow from 2,086 mi^2 (5,403 km^2) is regulated by Lake Kemp, capacity 603,000 acre-ft (743 hm^3), 71 mi (114 km) upstream. Water is diverted from Lake Diversion, capacity 40,000 acre-ft (49.3 hm^3), 41 mi (82 km) upstream for the irrigation of 42,000 acres (170 km^2) under permit in the vicinity of Wichita Falls. Records furnished by the city of Wichita Falls show that 14,830 acre-ft (18.3 hm^3) was returned to river above station as sewage effluent and filter plant washwater.

MAXIMA: FOR OCTOBER 1981.--Discharge, 2,450 ft^3/s (69.4 m^3/s) Oct. 14, gage height, 12.39 ft (3.776 m). FOR PERIOD OCTOBER 1967 TO OCTOBER 1981.--Discharge, 6,090 ft^3/s (172 m^3/s) Nov. 4, 1972, stage falling, peak occurred Sept. 29, 1980; peak discharge, 2,640 ft^3/s (74.8 m^3/s) June 3, gage height, 12.36 ft (3.767 m).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0200	147	5.45	Oct. 14 -	2400	2250	11.72	Oct. 17	0600	641	6.63
	1600	205	5.63						1800	543	6.42
	2400	417	6.15	Oct. 15 -	0200	2170	11.42		2400	475	6.27
					0600	1970	10.63				
Oct. 13 -	0200	480	6.28		1400	1480	8.72	Oct. 18	0200	413	6.14
	0800	685	6.72		2400	780	6.91		0400	389	6.09
	1400	1120	7.63						0800	376	6.06
	2400	2070	11.03	Oct. 16 -	0200	724	6.80				
					1000	617	6.58	Oct. 19	0200	816	6.98
Oct. 14 -	0200	2170	11.42		1800	641	6.63		0400	765	6.88
	0800	2400	12.22		2400	617	6.58		0800	222	5.68
	1400	2450	12.39								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	119	8.....	1180	16.....	639	24.....	107
2.....	130	9.....	552	17.....	571	25.....	95
3.....	147	10.....	252	18.....	403	26.....	88
4.....	150	11.....	159	19.....	299	27.....	83
5.....	144	12.....	227	20.....	185	28.....	81
6.....	142	13.....	1090	21.....	142	29.....	78
7.....	337	14.....	2350	22.....	124	30.....	78
		15.....	1580	23.....	127	31.....	78

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	379
MONTHLY TOTAL, IN ACRE-FEET	23280
RUNOFF, IN INCHES	.36

(3) 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 (13.2 km) south of Mankins, and 9.2 mi (14.8 km) northwest of Archer City.

DRAINAGE AREA.--275 mi^2 (712 km^2).

PERIOD OF RECORD.--February 1946 to October 1981. Prior to October 1965, monthend contents only.

GAGE.--Nonrecording gage read twice daily prior to Feb. 17, 1974, once daily thereafter. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by city of Wichita Falls). Prior to Oct. 8, 1946, water-stage recorder at same site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam 8,200 ft (2,500 m) long, including a 483-foot-wide (147 m) 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 (1.2 by 1.5 m) 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 Geological Survey topographic maps, dated 1929. The capacity curve, dated November 1946, was entitled "Lake Kickapoo Area & Capacity Curve". Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	1,062.0	-
Design flood (2-foot freeboard)	1,060.0	221,000
Crest of spillway	1,045.0	106,000
Lowest gated outlet (invert)	1,000.92	0

MAXIMA: FOR OCTOBER 1981.--Contents, 107,000 acre-ft (132 hm^3) Oct. 19, gage height, 45.10 ft (13.746 m).
FOR PERIOD FEBRUARY 1946 to OCTOBER 1981.--Contents (at 0800), 71,300 acre-ft (87.9 hm^3) Oct. 1, 1950, elevation, 1,039.0 ft (316.69 m).

Gage height, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Gage height	Date	Hour	Contents	Gage height	Date	Hour	Contents	Gage height
Oct. 8	1200	74900	39.70	Oct. 14	0600	87100	41.90	Oct. 18	2400	107000	45.10
Oct. 9	1200	75500	39.80	Oct. 14	2400	89500	42.30	Oct. 19	2400	107000	45.10
Oct. 10	1200	76000	39.90	Oct. 15	0600	90100	42.40	Oct. 20	2400	107000	45.10
	2400	76500	40.00		1800	93600	43.00				
Oct. 11	1200	76500	40.00		2400	95400	43.30	Oct. 21	2400	107000	45.10
	2400	77100	40.10	Oct. 16	0600	96700	43.50	Oct. 22	2400	107000	45.10
Oct. 12	0600	77100	40.10		2400	100000	44.10				
	2400	79800	40.60	Oct. 17	0600	101000	44.20	Oct. 23	2400	107000	45.10
Oct. 13	0600	81500	40.90		2400	105000	44.80	Oct. 24	1200	106000	45.00
	2400	86000	41.70	Oct. 18	1200	106000	45.00		2400	105000	44.90

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 0800

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1	74420	8	74940	16	97260	24	106000
2	74420	9	75460	17	101600	25	106000
3	73900	10	75980	18	106000	26	106000
4	73900	11	76500	19	106600	27	106000
5	73900	12	76500	20	106600	28	106000
6	73900	13	82570	21	106600	29	106000
7	74420	14	87130	22	106600	30	106000
		15	90650	23	106600	31	106000
CHANGE IN CONTENTS, IN ACRE-FEET							+31580

(4) 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 (2.4 km) downstream from confluence of North and Middle Forks, and 4.8 mi (7.7 km) north of Archer City.

DRAINAGE AREA.--481 mi^2 (1,246 km^2), of which 275 mi^2 (712 km^2) is above Lake Kickapoo.

PERIOD OF RECORD.--May 1932 to January 1956, August 1966 to October 1981.
Water-quality records: Chemical analyses: January 1953 to January 1956. Water temperatures: January 1953 to January 1956. Sediment records: May 1968 to September 1975.

GAGE.--Water-stage recorder. Datum of gage is 934.72 ft (284.903 m) National Geodetic Vertical Datum of 1929. Aug. 17, 1954, to Jan. 6, 1956, nonrecording gage at present site and datum.

REMARKS.--Records fair. Some regulation by Lake Kickapoo (station 07314000) on North Fork Little Wichita River. Records furnished by the city of Wichita Falls show that 994 acre-ft (1.23 hm^3) was diverted from Lake Kickapoo for municipal use during the current water year.

MAXIMA: FOR OCTOBER 1981.--Discharge, 9,870 ft^3/s (280 m^3/s) Oct. 13, gage height, 25.63 ft (7.812 m).
FOR PERIOD MAY 1932 TO JANUARY 1956, AUGUST 1966 TO OCTOBER 1981.--Maximum discharge, 17,900 ft^3/s (507 m^3/s) Oct. 31, 1941, gage height, 26.18 ft (7.980 m).
HISTORIC.--Flood of June 1930 reached a stage of about 28 ft (8.5 m), from information by State Department of Highways and Public Transportation.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 11 -	0100	9.0	4.56	Oct. 13 -	0100	7470	25.40	Oct. 16 -	0400	2260	23.49
	0700	6.4	4.50		0700	7740	25.43		1600	1850	22.49
	1400	4.6	4.45		1500	8310	25.49		2400	1590	21.46
	2100	3.7	4.42		2000	9870	25.63				
	2400	133	6.40		2400	8220	25.48	Oct. 17 -	1600	1020	18.07
									2400	695	14.53
Oct. 12 -	0100	269	8.50	Oct. 14 -	0100	7380	25.39				
	0200	406	10.50		0200	6780	25.32	Oct. 18 -	1200	371	9.99
	0500	677	14.28		0700	5870	25.20		2400	145	6.60
	0700	817	16.00		1900	4740	25.03				
	1200	1420	20.67		2400	3940	24.89	Oct. 19 -	0400	104	5.93
	1500	2760	24.23						1600	50	5.15
	1700	5800	25.19	Oct. 15 -	0400	3410	24.74		2400	29	4.87
	2400	7470	25.40		2400	2350	23.68				

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	0.05	8.....	359	16.....	2000	24.....	3.4
2.....	.03	9.....	50	17.....	1180	25.....	2.2
3.....	0	10.....	14	18.....	388	26.....	2.6
4.....	0	11.....	9.9	19.....	70	27.....	4.4
5.....	0	12.....	2950	20.....	17	28.....	2.0
6.....	0	13.....	8250	21.....	7.3	29.....	1.5
7.....	79	14.....	5630	22.....	5.6	30.....	1.2
		15.....	2870	23.....	11	31.....	.99

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	771
MONTHLY TOTAL, IN ACRE-FEET	47420
RUNOFF, IN INCHES	4.32

(5) 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 (3.7 km) upstream from Lake Creek, 11 mi (18 km) southwest of Henrietta, and 12.3 mi (19.8 km) southeast of Wichita Falls.

DRAINAGE AREA.--822 mi^2 (2,129 km^2).

PERIOD OF RECORD.--June 1967 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 0.40 ft (0.122 m) below National Geodetic Vertical Datum of 1929.

REMARKS.--The lake is formed by a rolled earthfill dam 15,900 ft (4,846 m) long, including an uncontrolled reinforced concrete ogee spillway 1,581 ft (482 m) wide located near the left end of dam. The dam was completed in December 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 (2 m) 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 Geological Survey topographic maps. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam	944.4	-
Design flood	939.95	551,400
Crest of spillway (top of conservation pool)	926.4	262,100
Lowest gated outlet (invert)	874.1	-

MAXIMA: FOR OCTOBER 1981.--Contents, 265,400 acre-ft (327 hm^3) Oct. 19, gage height, 926.59 ft (8.108 m). FOR PERIOD JUNE 1967 TO OCTOBER 1981.--Contents, 246,300 acre-ft (304 hm^3) July 28, 30, 1975, gage height, 925.40 ft (282.062 m).

Gage height, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Gage height	Date	Hour	Contents	Gage height	Date	Hour	Contents	Gage height
Oct. 10	1200	116000	14.84	Oct. 15	1200	238400	24.89	Oct. 20	2400	263600	26.49
					2400	246200	25.39				
Oct. 11	1200	116300	14.88					Oct. 21	1200	263200	26.47
	2400	119400	15.20	Oct. 16	1200	251600	25.74		2400	261600	26.37
					2400	256000	26.02				
Oct. 12	1200	127600	16.05					Oct. 22	2400	260700	26.31
	2400	136700	16.95	Oct. 17	1200	260500	26.30				
					2400	261800	26.38	Oct. 23	2400	260800	26.32
Oct. 13	1200	173100	20.14								
	2400	201000	22.29	Oct. 18	1200	264500	26.54	Oct. 24	2400	260200	26.28
					2400	265100	26.58				
Oct. 14	1200	218800	23.56					Oct. 25	2400	258800	26.19
	2400	230000	24.33	Oct. 19	1200	265400	26.60				

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1	114700	8	115700	16	256000	24	260200
2	114800	9	116000	17	261800	25	258700
3	115000	10	116100	18	265100	26	259500
4	114600	11	119400	19	264900	27	259500
5	114300	12	136700	20	263600	28	259500
6	113600	13	201000	21	261600	29	259200
7	115200	14	230000	22	260700	30	258900
		15	246100	23	260800	31	258600
CHANGE IN CONTENTS, IN ACRE-FEET							+143200

(6) 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 (1.6 km) downstream from Duck Creek, 2.8 mi (4.5 km) west of Henrietta, 6.6 mi (10.6 km) upstream from Turkey Creek, and 7.6 mi (12.2 km) upstream from Dry Fork Little Wichita River.

DRAINAGE AREA.--1,037 mi^2 (2,686 km^2).

PERIOD OF RECORD.--January 1953 to October 1981. Prior to October 1974, published as "near Henrietta".

GAGE.--Water-stage recorder and concrete control. Datum of gage is 831.57 ft (253.463 m) National Geodetic Vertical Datum of 1929. Prior to June 26, 1953, nonrecording gage. Prior to July 11, 1975, at site 2.6 mi (4.2 km) downstream at same datum.

REMARKS.--Records fair. Flow largely regulated by Lake Arrowhead 39 mi (63 km) upstream, capacity 262,100 acre-ft (323 hm^3). The city of Wichita Falls diverted 994 acre-ft (1.23 hm^3) from Lake Kickapoo and 20,910 acre-ft (25.8 hm^3) from Lake Arrowhead for municipal uses, and returned 14,830 acre-ft (18.3 hm^3) as sewage effluent and filter plant washwater to the Wichita River below station 07312500 at Wichita Falls and above station 07312700 near Charlie. The city of Henrietta diverted 601 acre-ft (0.741 hm^3) from pool at gage for municipal use. Diversion records were furnished by the cities of Wichita Falls and Henrietta, respectively.

MAXIMA: FOR OCTOBER 1981.--Discharge, 2,250 ft^3/s (63.7 m^3/s) Oct. 13, gage height, 23.50 ft (7.163 m).
FOR PERIOD JANUARY 1953 TO OCTOBER 1981.--Discharge, 7,630 ft^3/s (216 m^3/s) May 1, 1966, gage height, 18.28 ft (5.572 m).
HISTORIC.--Flood in 1908 reached a stage of 21 ft (6.4 m), at former site, from information by State Department of Highways and Public Transportation.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0200	17	7.93	Oct. 14 -	1200	1660	21.74	Oct. 16 -	0200	802	16.61
	2400	334	12.66		2400	1450	20.60		1600	523	14.46
Oct. 13 -	0600	1370	20.17	Oct. 15 -	1000	913	17.37	Oct. 17 -	0200	508	14.33
	1800	2250	23.50		1600	809	16.66		1600	366	12.98
	2400	2010	23.06								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.00	8.....	7.3	16.....	664	24.....	152
2.....	.00	9.....	6.7	17.....	457	25.....	176
3.....	.00	10.....	2.3	18.....	363	26.....	85
4.....	.00	11.....	.99	19.....	592	27.....	31
5.....	.00	12.....	183	20.....	739	28.....	27
6.....	.00	13.....	2160	21.....	681	29.....	28
7.....	5.0	14.....	2060	22.....	408	30.....	27
		15.....	1130	23.....	187	31.....	32

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	329
MONTHLY TOTAL, IN ACRE-FEET	20240
RUNOFF, IN INCHES	.37

(7) 07315200 EAST FORK LITTLE WICHITA RIVER NEAR HENRIETTA, TX

LOCATION.--Lat 33°48'46", long 98°05'05", Clay County, Hydrologic Unit 11130209, on downstream side of bridge on U.S. Highway 82, 5.8 mi (9.3 km) upstream from Little Wichita River, 6.4 mi (10.3 km) east of Henrietta, and 8.9 mi (14.3 km) west of Ringgold.

DRAINAGE AREA.--178 mi^2 (461 km^2).

PERIOD OF RECORD.--November 1963 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 825.32 ft (251.558 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No known diversions above station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 32,500 ft^3/s (920 m^3/s) Oct. 13, gage height, 31.70 ft (9.662 m).
FOR PERIOD NOVEMBER 1963 TO OCTOBER 1981.--Discharge, 15,500 ft^3/s (439 m^3/s) May 12, 1972, gage height, 28.85 ft (8.793 m), from rating curve extended above 4,000 ft^3/s (113 m^3/s) on basis of contracted-opening measurement of 15,500 ft^3/s (439 m^3/s).
HISTORIC.--Flood in October 1941 reached a stage of 28.8 ft (8.78 m), from information by local resident.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0030	3.2	5.55	Oct. 13 -	1200	21900	30.12	Oct. 15 -	2400	1460	21.13
	0200	173	10.43		1500	32500	31.70				
	0400	631	15.97		1800	18100	29.41	Oct. 16 -	1200	1370	20.77
	0630	1040	19.27		2400	13600	28.48		2400	1220	20.19
	2400	1440	20.99								
				Oct. 14 -	0200	10900	27.88	Oct. 17 -	1200	845	18.03
Oct. 13 -	0200	2740	23.67		1200	4480	25.19		2000	500	14.82
	0300	7260	26.67		2400	2370	23.17		2400	339	12.98
	0400	10900	27.88								
	0700	16500	29.05	Oct. 15 -	1200	1380	20.81	Oct. 18 -	0630	153	10.31
	1000	19500	29.69		1830	1090	19.58		2400	50	8.09

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.02	8.....	186	16.....	1470	24.....	4.7
2.....	.02	9.....	61	17.....	814	25.....	4.2
3.....	.02	10.....	9.9	18.....	125	26.....	3.6
4.....	.02	11.....	3.7	19.....	23	27.....	3.1
5.....	.01	12.....	1140	20.....	14	28.....	2.8
6.....	.10	13.....	16900	21.....	8.4	29.....	2.5
7.....	46	14.....	5640	22.....	6.9	30.....	2.3
		15.....	1490	23.....	5.9	31.....	2.4

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	902
MONTHLY TOTAL, IN ACRE-FEET	55480
RUNOFF, IN INCHES	5.85

(8) 07315500 RED RIVER NEAR TERRAL, OK

LOCATION.--Lat 33°52'43", long 97°56'03", Jefferson County, Hydrologic Unit 11130201, near left bank on downstream side of pier of bridge on U.S. Highway 81, 0.5 mi (0.8 km) downstream from Chicago, Rock Island, and Pacific Railroad Co. bridge, 1.2 mi (1.9 km) south of Terral, 3.6 mi (5.8 km) downstream from Little Wichita River, and at mile 872 (1,403 km).

DRAINAGE AREA.--28,723 mi² (74,393 km²), of which 5,936 mi² (15,374 km²) probably is noncontributing.

PERIOD OF RECORD.--January 1938 to October 1981. Monthly discharge only for some periods, published in WSP 1311.

GAGE.--Water-stage recorder. Datum of gage is 770.31 ft (234.790 m) National Geodetic Vertical Datum of 1929. Prior to Jan. 12, 1939, nonrecording gage at same site and datum.

REMARKS.--Records good. Many small diversions for irrigation, oilfield, and municipal uses upstream from station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 58,000 ft³/s (1,640 m³/s) Oct. 14, gage height, 21.31 ft (6.495 m).
FOR PERIOD JANUARY 1938 TO OCTOBER 1981.--Discharge, 197,000 ft³/s (5,580 m³/s) June 8, 1941, gage height, 28.12 ft (8.571 m). Maximum stage since at least 1891, that of June 8, 1941.
HISTORIC.--Flood of May 19, 1935, reached a stage of 27.2 ft (8.29 m); additional floods in 1891 and May 1, 1908, are reported to have reached about the same stage.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0800	888	9.74	Oct. 14 -	0200	54800	21.01	Oct. 16 -	1600	11300	14.73
	1400	502	9.15		0300	57300	21.24		2400	10300	14.44
	2400	1510	10.40		0400	58000	21.31				
					0500	57200	21.23	Oct. 17 -	1200	9650	14.25
Oct. 13 -	0200	2730	11.32		0600	55500	21.07		2400	11500	14.76
	0700	5190	12.62		0700	54100	20.94				
	1200	8460	13.87		0900	49800	20.46	Oct. 18 -	0200	11600	14.79
	1500	9370	14.17		1200	41500	19.48		1900	9780	14.29
	1700	14600	15.45		1500	32100	18.21		2400	10900	14.62
	1800	20500	16.54		1800	24500	17.16				
	1900	28400	17.71		2400	16300	15.78	Oct. 19 -	0300	11700	14.82
	2100	37400	18.91						1400	7770	13.63
	2200	41000	19.42	Oct. 15 -	0500	13000	15.12		2400	4750	12.40
	2400	50600	20.55		0600	9180	14.10				
					2400	9680	14.26	Oct. 20 -	2400	3590	11.81
Oct. 14 -	0100	53100	20.83								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	129	8.....	520	16.....	10600	24.....	1090
2.....	136	9.....	902	17.....	10200	25.....	918
3.....	148	10.....	805	18.....	10700	26.....	839
4.....	150	11.....	516	19.....	8580	27.....	686
5.....	157	12.....	819	20.....	3990	28.....	565
6.....	162	13.....	14300	21.....	3010	29.....	521
7.....	229	14.....	39300	22.....	2250	30.....	474
		15.....	11100	23.....	1540	31.....	458

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	4058
MONTHLY TOTAL, IN ACRE-FEET	249500
RUNOFF, IN INCHES	.21

(9) 07315700 MUD CREEK NEAR COURTNEY, OK

LOCATION.--Lat 34°00'20", long 97°34'00", in NW1/4SE1/4 sec.25, T.6 S., R.4 W., Jefferson County, Hydrologic Unit 11130201, on downstream side of bridge on State Highway 89, 4.0 mi (6.4 km) downstream from North Mud Creek, 610 mi (9.7 km) northwest of Courtney, and at mile 11.5 (18.5 km).

DRAINAGE AREA.--572 mi^2 (1,481 km^2).

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

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 727.72 ft (221.809 m), National Geodetic Vertical Datum of 1929 Prior to Oct. 1, 1968, auxiliary water-stage recorder 2.0 mi (3.2 km) downstream from base gage.

REMARKS.--Record good.

AVERAGE DISCHARGE.--19 years, 111 ft^3/s (3.172 m^3/s), 81,140 acre-ft/yr (100 hm^3/yr).

MAXIMA: FOR OCTOBER 1981.--Discharge, 24,500 ft^3/s (6.94 m^3/s) Oct. 16, 1981, gage height, 30.20 ft (8.98 m)
FOR PERIOD OCTOBER 1960 TO OCTOBER 1981.--Discharge, 33,400 ft^3/s (946 m^3/s) May 1, 1974, gage height, 31.37 ft (9.562 m).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0100	6.7	9.47	Oct. 15 -	0600	2170	23.62	Oct. 17 -	0800	8930	27.73
	0300	83	10.91		1200	1350	21.90		1200	7180	27.15
	0500	151	11.97		1730	758	18.00		2400	5060	26.14
	1200	74	10.75		2400	320	13.89				
	1500	250	13.22					Oct. 18 -	1200	4160	25.55
	1700	469	15.62	Oct. 16 -	0100	280	13.61		2400	3270	24.86
	1900	674	17.44		0400	721	17.87				
	2400	947	19.48		0700	1540	22.93	Oct. 19 -	1200	2450	24.09
					0900	3440	25.00		1800	1850	23.38
Oct. 13 -	0300	1330	21.61		1200	5800	26.56		2400	1150	20.89
	0600	1870	23.09		1300	8610	27.63				
	0900	2470	23.79		1345	11200	28.36	Oct. 20 -	0300	794	18.54
	1200	3800	24.97		1430	13800	28.89		0600	508	16.15
	1600	5740	26.21		1530	17900	29.43		1200	245	13.31
	1700	7690	27.01		1630	21300	29.81		1800	174	12.43
	1930	9690	27.63		1900	24500	30.20		2400	145	12.03
	2400	8020	27.12		2200	21300	29.81				
					2400	17100	29.34	Oct. 21 -	1200	104	11.52
Oct. 14 -	0400	6420	26.54						2400	83	11.16
	1100	4960	25.76	Oct. 17 -	0200	13600	28.86				
	2400	3130	24.42		0400	11500	28.43	Oct. 22 -	1200	74	11.01

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.04	8.....	.34	16.....	10400	24.....	46
2.....	.02	9.....	.21	17.....	8290	25.....	35
3.....	.01	10.....	.63	18.....	4140	26.....	30
4.....	.02	11.....	1.0	19.....	2350	27.....	22
5.....	.00	12.....	311	20.....	379	28.....	16
6.....	.02	13.....	4630	21.....	106	29.....	14
7.....	1.9	14.....	5010	22.....	73	30.....	13
		15.....	1450	23.....	58	31.....	331

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	1216
MONTHLY TOTAL, IN ACRE-FEET	74790
RUNOFF, IN INCHES	2.45

(11) 07315950 MOSS LAKE NEAR GAINESVILLE, TX

LOCATION.--Lat 33°46'26", long 97°12'50", Cooke County, Hydrologic Unit 11130201, on top of upstream side of dam adjacent to guardrail of roadway about 250 ft (76 m) from right end of Fish Creek dam on Fish Creek, 1.6 mi (2.6 km) upstream from Bearhead Creek, 3.7 mi (6.0 km) upstream from mouth, and 10 mi (16 km) northwest of Gainesville.

DRAINAGE AREA.--65 mi^2 (168 km^2).

PERIOD OF RECORD.--October 1967 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Apr. 20, 1979, recording gage at site about 150 ft (46 m) upstream at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 1,460 ft (445 m) long. The dam was completed and storage began Dec. 2, 1966. An uncontrolled morning-glory-type spillway with a 7- by 7-foot (2 by 2 m) opening is designed to discharge 2,500 ft^3/s (70.8 m^3/s) at a 10-foot (3 m) head. The emergency spillway is a 400-foot-wide (120 m) cut through natural ground located about 100 ft (30 m) to the left of the left end of dam. The dam was built by the city of Gainesville to impound water for municipal use. Area and capacity tables are based on a 1961 survey. There was no diversion from the lake during the current water year. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	740.0	-
Top of design flood pool	736.0	55,230
Crest of spillway	725.0	36,440
Crest of spillway (top of conservation pool)	715.0	23,210
Lowest gated outlet (invert)	666.0	78

MAXIMA: FOR OCTOBER 1981.--Contents, 50,990 acre-ft (62.9 hm^3) Oct. 13, elevation, 733.72 ft (223.638 m).
FOR PERIOD OCTOBER 1967 TO OCTOBER 1981.--Contents, 32,960 acre-ft (40.6 hm^3) Oct. 31, 1974, elevation, 722.63 ft (220.258 m).

Elevation, in feet, and contents, in cubic feet per second, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 11 -	1200	22500	714.34	Oct. 13 -	1600	47100	731.54	Oct. 16 -	1200	38000	725.99
					1800	45600	730.66		2400	36300	724.90
Oct. 12 -	0600	22800	714.66		2000	44100	729.82				
	1200	23900	715.57		2200	42800	729.01	Oct. 17 -	1200	34400	723.61
	1800	25700	717.13		2400	41700	728.32		2400	32200	722.10
	2400	26800	718.05								
				Oct. 14 -	0200	40300	727.49	Oct. 18 -	1200	30100	720.58
Oct. 13 -	0200	33300	722.84		1200	37900	725.93		2400	28000	718.95
	0400	40500	727.59		2400	35800	724.56				
	0600	47100	731.53					Oct. 19 -	1200	26100	717.48
	0800	48900	732.58	Oct. 15 -	1200	33700	723.15		2400	25100	716.61
	1000	49500	732.90		2400	34000	723.38				
	1200	50600	733.49					Oct. 20 -	1200	24500	716.13
	1400	48800	732.52	Oct. 16 -	0400	36700	725.18		2400	24100	715.81

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1.....	21780	8.....	22440	16.....	36290	24.....	23360
2.....	21760	9.....	22460	17.....	32210	25.....	23300
3.....	21740	10.....	22480	18.....	27980	26.....	23260
4.....	21710	11.....	22480	19.....	25090	27.....	23220
5.....	21690	12.....	26830	20.....	24140	28.....	23180
6.....	21810	13.....	41660	21.....	23790	29.....	23170
7.....	22370	14.....	35780	22.....	23590	30.....	23170
		15.....	34040	23.....	23450	31.....	23660
CHANGE IN CONTENTS, IN ACRE-FEET.....							+1850

(12) 07316000 RED RIVER NEAR GAINESVILLE, TX

LOCATION.--Lat 33°43'40", long 97°09'35", in SW1/4 sec.36, T.9 S., R.1 E., Love County, Okla., Hydrologic Unit 11130201, near center of span on downstream side of bridge on U.S. Highway 77, 0.2 mi (0.3 km) downstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, 5.0 mi (8.0 km) downstream from Fish Creek, 7.0 mi (11.0 km) north of Gainesville, and at mile 791.5 (1,273.5 km).

DRAINAGE AREA.--30,782 mi^2 (79,725 km^2), of which 5,936 mi^2 (15,374 km^2) probably is noncontributing.

PERIOD OF RECORD.--May 1936 to October 1981. Monthly discharge only for some periods, published in WSP 1311.

GAGE.--Water-stage recorder. Datum of gage is 627.91 ft (191.387 m) National Geodetic Vertical Datum of 1929. Prior to Jan. 17, 1939, and Feb. 13, 1965, to Nov. 14, 1966, nonrecording gage at same site and datum.

REMARKS.--Records good. Flow slightly regulated by Lake Kemp (station 07331500), since 1943 by Lake Altus in Oklahoma, since 1946 by Lake Kickapoo (station 07314000), and since 1967 by Lake Arrowhead and Moss Lake (stations 07314800 and 07315950).

MAXIMA: FOR OCTOBER 1981.--Discharge, 103,000 ft^3/s (2,920 m^3/s) Oct. 14, gage height, 29.45 ft (8.976 m). FOR PERIOD MAY 1936 TO OCTOBER 1981.--Discharge, 168,000 ft^3/s (4,760 m^3/s) June 9, 1941, gage height, 24.15 ft (7.361 m); maximum gage height, 26.53 ft (8.086 m) May 21, 1951.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0200	853	9.71	Oct. 13 -	1400	92600	26.85	Oct. 17 -	0600	72200	24.10
	1000	1360	10.17		1800	98200	28.26		2400	71000	23.90
	1800	9140	13.40		2400	102000	29.28				
	2000	10700	13.72					Oct. 18 -	0400	65500	22.95
	2200	11400	13.88	Oct. 14 -	0300	103000	29.45		0800	59100	21.81
	2400	16600	15.00		1200	96000	28.50		1200	52200	20.65
Oct. 13 -	0100	24900	16.40		2400	90700	27.50		1600	47600	19.80
	0200	31100	17.27						2400	41800	18.80
	0300	36200	17.90	Oct. 15 -	1200	85600	26.52				
	0500	53000	20.47		2400	79100	25.35	Oct. 19 -	0600	38600	18.28
	0600	57000	21.07						1800	31900	17.40
	0700	61400	21.65	Oct. 16 -	0400	78300	25.20		2400	29400	17.06
	0800	67000	22.50		1200	72200	24.10				
	0900	73300	23.50		2400	69000	23.55	Oct. 20 -	2400	15600	14.80
	1200	87800	25.95								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	169	8.....	414	16.....	72900	24.....	4410
2.....	161	9.....	470	17.....	72800	25.....	3210
3.....	157	10.....	584	18.....	54200	26.....	2320
4.....	154	11.....	648	19.....	35300	27.....	1980
5.....	151	12.....	4700	20.....	23200	28.....	1730
6.....	177	13.....	75900	21.....	11100	29.....	1380
7.....	270	14.....	97000	22.....	8100	30.....	1180
		15.....	85100	23.....	6120	31.....	1610

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	18340
MONTHLY TOTAL, IN ACRE-FEET	1128000
RUNOFF, IN INCHES	.85

(16) 07329700 WILDHORSE CREEK NEAR HOOVER, OK

LOCATION.--Lat 34°32'29", long 97°14'49", on west line of SW1/4 sec.19, T.1 N., R.1 E., Garvin County, Hydrologic Unit 11130303, on downstream left bank at bridge on State Highway 19A, 1.5 mi (2.4 km) north of Hoover, 1.8 mi (2.9 km) downstream from Sandy Creek, and at mile 7.9 (12.7 km).

DRAINAGE AREA.--604 mi^2 (1,564 km^2).

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1944, 1951-69. October 1969 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 803.3 ft (244.85 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated by Duncan, Clear Creek, Humphries and Fuqua Lakes, combined surface-area, 3,340 acres (13.5 km^2), and capacity, 44,800 acre-ft (55.2 hm^3), and numerous flood-retarding structures.

MAXIMA: FOR OCTOBER 1981.--Discharge, 6,710 ft^3/s (190 m^3/s) Oct. 16, gage height, 18.51 ft (5.642 m).
FOR PERIOD OCTOBER 1969 TO OCTOBER 1981.--Discharge, 18,700 ft^3/s (530 m^3/s) May 20, 1977, gage height, 24.70 ft (7.529 m).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0015	5.2	4.84	Oct. 13 -	2000	1010	8.20	Oct. 16 -	0815	4780	15.55
	1200	10.0	4.95		2400	806	7.71		1130	6710	18.51
									1330	5940	17.43
Oct. 13 -	0015	36	5.21	Oct. 14 -	0015	821	7.71		1600	4910	15.78
	0400	143	5.80		1200	387	6.69		1900	3620	13.61
	0415	282	6.30		2400	291	6.30		2400	2640	11.85
	0430	659	7.32								
	0445	1150	8.52	Oct. 15 -	1200	245	6.13	Oct. 17 -	1200	1850	10.25
	0500	1420	9.14		1815	999	8.14		1400	2160	10.88
	0530	1550	9.42		1900	1400	9.04		2400	1360	9.20
	0615	1420	9.12		2400	3600	13.29				
	0645	1390	9.07					Oct. 18 -	0515	1100	8.54
	0715	1460	9.21	Oct. 16 -	0015	3360	13.16		1200	882	8.03
	0745	1510	9.33		0315	2800	12.14				
	0945	1670	9.68		0515	2400	11.38	Oct. 19 -	2400	459	6.97
	1200	1500	9.31		0615	2720	11.99				
	1600	1310	8.88		0700	3440	13.31	Oct. 20 -	2400	372	6.68

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	4.1	8.....	5.1	16.....	4130	24.....	258
2.....	4.1	9.....	4.8	17.....	1940	25.....	237
3.....	4.1	10.....	4.5	18.....	934	26.....	218
4.....	4.1	11.....	4.0	19.....	592	27.....	192
5.....	4.1	12.....	14	20.....	422	28.....	128
6.....	5.2	13.....	1070	21.....	346	29.....	92
7.....	5.3	14.....	452	22.....	310	30.....	80
		15.....	939	23.....	282	31.....	608

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	429
MONTHLY TOTAL, IN ACRE-FEET	26370
RUNOFF, IN INCHES	.82

(18) 07331000 WASHITA RIVER NEAR DICKSON, OK

LOCATION.--Lat 34°13'59, long 96°58'38" in SE1/4SW1/4 sec. 3, T.4 S., R.3 E., Carter County, Hydrologic Unit 11130303, on right bank 500 ft (152.4 m) upstream from bridge on U.S. Highway 177, 1.2 mi (1.9 km) downstream from Caddo Creek, 3.2 mi (5.1 km) north of Dickson, 12.0 mi (19.3 km) northeast of Ardmore, and at mile 63.5 (102.2 km).

DRAINAGE AREA.--7,202 mi^2 (18,653 km^2).

PERIOD OF RECORD.--August 1928 to October 1981. Prior to 1980, published as "near Durwood". Monthly discharge only for some periods, published in WSP 1311.

GAGE.--Water-stage recorder. Datum of gage is 650.57 ft (198.294 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Feb. 16, 1939, nonrecording gage at site 500 ft (152.4 m) downstream at same datum. Dec. 15, 1950, to Feb. 19, 1952, nonrecording gage at same site and datum. Feb. 20, 1952, to Apr. 23, 1975, waterstage recorder at site 500 ft (152.4 m) downstream at same datum.

REMARKS.--Records fair. Some diversions above station for irrigation. Some regulation since March 1959 by Fort Cobb Reservoir (station 07325900). since February 1961 by Foss Reservoir (station 07324300), and by numerous flood-retarding structures.

MAXIMA: FOR OCTOBER 1981.--Discharge, 28,800 ft^3/s (816 m^3/s) Oct. 13, gage height, 26.74 ft (8.150 m). FOR PERIOD AUGUST 1928 TO OCTOBER 1981.--Discharge, 98,000 ft^3/s (2,780 m^3/s) May 19, 1957, gage height, 42.30 ft (12.893 m), from floodmark; maximum gage height, 44.37 ft (13.524 m) Oct. 31, 1941.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0200	120	5.25	Oct. 14 -	0400	23600	24.20	Oct. 17 -	0400	18800	21.70
	0600	284	5.92		0800	19800	22.20		0800	22000	23.50
	0800	632	6.86		1200	16200	20.20		1200	24300	24.57
	1000	1340	8.15		1600	13300	18.40		2400	21500	23.53
	1200	1830	8.84		2000	10800	16.70				
	1600	2620	9.78		2400	8590	15.10	Oct. 18 -	0600	17300	21.64
	2200	1970	9.02						1200	13300	19.60
	2400	2450	9.60	Oct. 15 -	0600	6710	13.60		1800	10900	17.76
					1500	5740	12.78		2400	8790	16.05
Oct. 13 -	0200	5070	12.20		2400	7690	14.40				
	0400	10800	16.70					Oct. 19 -	1200	7310	14.49
	0600	14800	19.30	Oct. 16 -	0600	10600	16.60		2400	7620	14.54
	0800	19900	22.30		0900	14300	19.00				
	1000	23400	24.10		1200	18100	21.30	Oct. 20 -	2400	7280	14.37
	1200	26600	25.70		1500	20900	22.80				
	1600	28800	26.74		2400	16900	20.60				
	2400	26600	25.70								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	82	8.....	126	16.....	15300	24.....	3860
2.....	76	9.....	115	17.....	21700	25.....	3260
3.....	76	10.....	115	18.....	14200	26.....	2600
4.....	80	11.....	122	19.....	7660	27.....	1360
5.....	85	12.....	1420	20.....	7480	28.....	1140
6.....	90	13.....	21300	21.....	7370	29.....	906
7.....	115	14.....	16900	22.....	6020	30.....	719
		15.....	6690	23.....	4690	31.....	2600
MONTHLY, MEAN DISCHARGE, IN CUBIC FEET PER SECOND.....							4782
MONTHLY, TOTAL ACRE-FEET.....							294,100
RUNOFF, IN INCHES.....							0.77

(19) 07331500 LAKE TEXOMA NEAR DENISON, TX

LOCATION.--Lat 33°49'05", long 96°34'20", in NE1/4 sec.33, T.8 S., R.7 E., Bryan County, Okla., Hydrologic Unit 11130210, in control tower of Denison Dam on Red River, 1.2 mi (1.9 km) upstream from Shawnee Creek, 1.8 mi (2.9 km) upstream from Sand Creek, 4.0 mi (6.4 km) northwest of Denison, and at mile 725.9 (1,168.0 km).

DRAINAGE AREA.--39,719 mi^2 (102,872 km^2), of which 5,936 mi^2 (15,374 km^2) probably is noncontributing.

PERIOD OF RECORD.--July 1942 to October 1981. Monthend contents only for some periods, published in WSP 1311.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 30, 1944, nonrecording gage at same site and datum. Prior to Oct. 1, 1948, supplementary nonrecording gage in Cumberland pool at the same datum.

REMARKS.--The lake is formed by a rolled earthfill dam. The controlled outlet consists of eight 20-foot-diameter (508 mm) conduits, and the uncontrolled outlet is a concrete ogee-type weir spillway. Flow was diverted through conduits July 27, 1942; regulated storage began Oct. 31, 1943; power pool was first filled Mar. 15, 1945. Dead storage, 11,000 acre-ft (13.6 hm^3) at elevation 610.0 ft (185.93 m) in Cumberland pool. When contents are below 2,105,000 acre-ft (2.60 km^3), the lake is divided into two pools by protective levees around the Cumberland oilfield on the Washita River arm, with bottom of outlet channel for the upper pool (known as Cumberland pool) at elevation 610.0 ft (185.93 m). At higher elevations the two pools are considered as being at a common level, contents being computed from gage in Denison pool. The lake is used principally for flood control and power development. Revised capacity table, based on survey in 1969, used since Oct. 1, 1977. Figures given herein represent total contents of both pools. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	670.0	-
Crest of spillway	640.0	5,312,000
Top of maximum power pool	617.0	2,643,000
Bottom of minimum power pool (in Denison pool)	590.0	1,031,000

MAXIMA: FOR OCTOBER 1981.--Contents, 4,086,000 acre-ft (5.04 km^3) Oct. 19, elevation, 630.75 ft (192.253 m).
FOR PERIOD JULY 1942 TO OCTOBER 1981.--Contents, 5,991,300 acre-ft (7.39 km^3) June 5, 1957, elevation, 643.18 ft (196.041 m).

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 12 -	0600	2205000	611.40	Oct. 15 -	1200	3126000	622.09	Oct. 18 -	1200	3967000	629.85
	2400	2237000	611.85		2400	3261000	623.41		2400	4031000	630.29
Oct. 13 -	1200	2318000	612.94	Oct. 16 -	1200	3522000	625.85	Oct. 19 -	1200	4062000	630.55
	2400	2712000	617.77		2400	3681000	627.28		2400	4086000	630.75
Oct. 14 -	1200	2868000	619.45	Oct. 17 -	1200	3788000	628.22	Oct. 20 -	2400	4083000	630.72
	2400	3002000	620.84		2400	3892000	629.12				

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1.....	2197000	8.....	2202000	16.....	3681000	24.....	3884000
2.....	2192000	9.....	2204000	17.....	3692000	25.....	3812000
3.....	2188000	10.....	2205000	18.....	4031000	26.....	3724000
4.....	2188000	11.....	2204000	19.....	4086000	27.....	3632000
5.....	2187000	12.....	2237000	20.....	4083000	28.....	3536000
6.....	2192000	13.....	2712000	21.....	4063000	29.....	3441000
7.....	2201000	14.....	3002000	22.....	4020000	30.....	3349000
		15.....	3261000	23.....	3959000	31.....	3347000
CHANGE IN CONTENTS, IN ACRE-FEET.....							+1145000

(20) 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 (549 m) downstream from Denison Dam powerhouse, 0.4 mi (0.6 km) upstream from Shawnee Creek (spillway flow return), 4.5 mi (7.2 km) north of Denison, and at mile 725.5 (1,167.3 km).

DRAINAGE AREA.--39,720 mi^2 (102,875 km^2), of which 5,936 mi^2 (15,374 km^2) probably is noncontributing. At site used prior to October 1961, drainage area 39,777 mi^2 (103,022 km^2), of which 5,936 mi^2 (15,374 km^2) probably was noncontributing.

PERIOD OF RECORD.--October 1923 to October 1981. Monthly discharge only for some periods, published in WSP 1311. Prior to October 1934, published as "near Denison, Tex.", and October 1934 to September 1961, published as "near Colbert, Okla.". Gage-height records collected at various sites in this vicinity during periods 1892-93, 1906-28, and 1931-49 are contained in reports of the National Weather Service.

GAGE.--Water-stage recorder. Datum of gage is 500.00 ft (152.400 m) 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 (4.0 km) downstream. Prior to Oct. 1, 1931, at datum 6.85 ft (2.088 m) higher; Oct. 1, 1931, to Sept. 24, 1934, at datum 7.07 ft (2.155 m) higher; and July 29, 1942, to Sept. 30, 1961, at datum 2.64 ft (0.805 m) lower. Sept. 25, 1934, to July 28, 1942, water-stage recorder at railway bridge 1.9 mi (3.1 km) downstream at datum 7.36 ft (2.243 m) higher.

REMARKS.--Records good. Flow regulated since October 1943 by Lake Texoma (station 07331500).

MAXIMA: FOR OCTOBER 1981.--Discharge, 53,000 ft^3/s (1,500 m^3/s) Oct. 28, gage height, 19.25 ft (5.867 m).
FOR PERIOD OCTOBER 1923 TO OCTOBER 1981.-Discharge, 201,000 ft^3/s (5,690 m^3/s) May 21, 1935, gage height, 31.8 ft (9.69 m), at site and datum then in use; maximum gage height, 32.0 ft (9.75 m) Apr. 25, 1942, at site and datum used in 1943.
HISTORIC.--Flood of May 26, 1908, reached a stage of 45.5 ft (13.87 m) at site and datum used July 29, 1942, to Sept. 30, 1961, from records of the National Weather Service.

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	2010	8.....	61	16.....	1380	24.....	45800
2.....	1400	9.....	51	17.....	308	25.....	47900
3.....	108	10.....	48	18.....	3120	26.....	47600
4.....	63	11.....	46	19.....	12300	27.....	50500
5.....	68	12.....	106	20.....	25700	28.....	52600
6.....	66	13.....	2310	21.....	35200	29.....	52400
7.....	114	14.....	3060	22.....	36800	30.....	50100
		15.....	946	23.....	39000	31.....	45100

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	17930
MONTHLY TOTAL, IN ACRE-FEET	1102000
RUNOFF, IN INCHES	-

(21) 07332400 BLUE RIVER AT MILBURN, OK

LOCATION.--Lat 34°15'04", long 96°33'05", in SW1/4SW1/4 sec. 35, T.3 S., R.7 E., Johnston County, Hydrologic Unit 11140102, on downstream side of left pier of bridge on State Highway 48A, 0.5 mi (0.8 km) north of Milburn, and at mile 84.9 (136.6 km).

DRAINAGE AREA.--203 mi^2 (526 km^2).

PERIOD OF RECORD.--Occasional low flow measurements made in water years 1956-61. October 1965 to October 1981. Prior to October 1975, published as Blue Creek near Milburn.

GAGE.--Water-stage recorder. Datum of gage is 649.65 ft (198.013 m), Oklahoma State Highway Department datum.

REMARKS.-Records good.

MAXIMA: FOR OCTOBER 1981.--Discharge, 34,200 ft^3/s (969 m^3/s) Oct. 13, gage height, 27.44 ft (8.358 m).
FOR PERIOD OCTOBER 1965 TO OCTOBER 1981.--Discharge, 35,100 ft^3/s (994 m^3/s) Oct. 8, 1970, gage height, 27.87 ft (8.495 m).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0300	16	4.77	Oct. 14 -	0300	5210	21.95	Oct. 16 -	1800	4180	20.25
	1200	118	6.19		0500	3770	19.13		2000	3300	18.15
	2400	68	5.65		0730	2500	15.87		2400	2270	15.35
					0900	1990	14.34				
Oct. 13 -	0300	429	8.12		1200	1390	12.34	Oct. 17 -	1030	1210	11.86
	0600	2860	16.86		2400	643	9.25		1200	2950	17.27
	0730	5450	22.22						1330	5150	22.06
	0800	10700	24.24	Oct. 15 -	1530	388	7.96		1430	7400	23.50
	0815	14100	24.95		1700	1160	11.58		1730	10700	24.41
	0830	18000	25.61		2230	1990	14.41		2000	7200	23.42
	0845	20000	25.91		2300	4080	19.93		2130	5040	21.92
	0900	23200	26.31		2330	7250	23.36		2400	3450	18.54
	1000	30700	27.13		2345	9980	24.14				
	1130	34200	27.44		2400	12400	24.70	Oct. 18 -	0300	2210	15.18
	1400	30400	27.09						0900	1730	13.70
	1600	25900	26.63	Oct. 16 -	0115	17900	25.76		1200	1300	12.19
	1800	22100	26.18		0400	15700	25.41		2400	611	9.26
	2100	20300	25.94		0600	12100	24.71				
	2230	16000	25.30		0730	10400	24.33	Oct. 19 -	1200	460	8.47
	2400	11800	24.48		1000	7520	23.54		2400	388	8.05
					1300	5600	22.55				
Oct. 14 -	0030	10600	24.21		1345	6520	23.14	Oct. 20 -	1200	352	7.83
	0130	7780	23.45		1600	5070	21.96		2400	319	7.62

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	35	8.....	39	16.....	8190	24.....	234
2.....	34	9.....	36	17.....	4420	25.....	224
3.....	34	10.....	36	18.....	1430	26.....	217
4.....	34	11.....	36	19.....	471	27.....	204
5.....	35	12.....	126	20.....	352	28.....	196
6.....	36	13.....	17400	21.....	297	29.....	189
7.....	40	14.....	2490	22.....	286	30.....	185
		15.....	1050	23.....	258	31.....	664

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	1267
MONTHLY TOTAL, IN ACRE-FEET	77910
RUNOFF, IN INCHES	7.20

(22) 07332500 BLUE RIVER NEAR BLUE, OK

LOCATION.--Lat 35°59'49", long 96°14'27", on line between sec.27 and 34, T.6 S., R. 10 E., Bryan County, Hydrologic Unit 11140102, near left bank on downstream side of pier of bridge on U.S. Highway 70, 1.0 mi (1.6 km) west of Blue, 7.0 mi (11.3 km) east of Durant, 7.7 mi (12.4 km) upstream from Caddo Creek, and at mile 38.8 (62.1 km).

DRAINAGE AREA.--476 mi^2 (1,233 km^2).

PERIOD OF RECORD.--June 1936 to October 1981. Monthly discharge only for some periods, published in WSP 1311, 1731.

GAGE.--Water-stage recorder. Datum of gage is 503.36 ft (153.424 m) National Geodetic Vertical Datum of 1929. Prior to Mar. 13, 1945, nonrecording gage and Mar. 13, 1945, to Feb 2, 1960, water-stage recorder at site 1.2 mi (1.9 km) downstream at datum 5.00 ft (1.524 m) lower.

REMARKS.--Records good. Some regulation at low flow by State Fish Hatchery, 16.0 mi (25.7 km) above station. Small diversion above station for municipal water supply of city of Durant.

MAXIMA: FOR OCTOBER 1981.--Discharge, 65,200 ft^3/s (1,850 m^3/s) Oct. 14, gage height, 44.20 ft (13.472 m).
FOR PERIOD JUNE 1936 TO OCTOBER 1981.--Discharge, 34,400 ft^3/s (974 m^3/s) Feb. 17, 1938, gage height, 31.81 ft (9.696 m), at site and datum then in use.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	1200	59	1.87	Oct. 14 -	1500	40900	38.80	Oct. 16 -	2400	29400	35.47
	2400	460	5.86		1700	35500	37.30				
					1900	30500	35.80	Oct. 17 -	0300	26200	34.40
Oct. 13 -	0800	217	4.12		2100	26200	34.40		0600	22700	33.10
	1300	733	7.48		2200	23700	33.50		0900	19200	31.67
	1400	1180	9.67		2300	21400	32.60		1200	15700	30.00
	1500	1920	12.77		2400	19400	31.75		1500	13200	28.62
	1600	3160	17.17						1800	11100	27.32
	1800	5160	22.20	Oct. 15 -	0200	15900	30.10		2100	9540	26.22
	2000	6900	24.00		0400	13400	28.80		2400	8350	25.28
	2100	8870	25.70		0600	11800	27.80				
	2200	14700	29.50		1000	9650	26.30	Oct. 18 -	0600	6470	23.58
	2300	30800	35.90		1600	7190	24.27		1200	5020	22.02
	2400	41600	39.00		2200	5260	22.33		2400	4180	20.29
					2400	4760	21.52				
Oct. 14 -	0100	50900	41.25					Oct. 19 -	0800	4270	20.54
	0200	61600	43.50	Oct. 16 -	0600	4600	21.20		2000	3260	17.50
	0400	65200	44.20		1200	8620	25.50		2400	2220	13.93
	0700	60200	43.23		1400	17700	31.00				
	0900	55200	42.20		1600	25400	34.10	Oct. 20 -	1200	916	8.41
	1100	50800	41.22		1800	29500	35.50		2400	694	7.27
	1300	46000	40.10		2000	31200	36.02				

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	31	8.....	85	16.....	14700	24.....	548
2.....	29	9.....	49	17.....	16700	25.....	431
3.....	29	10.....	45	18.....	5490	26.....	394
4.....	30	11.....	39	19.....	3880	27.....	363
5.....	30	12.....	159	20.....	1050	28.....	310
6.....	31	13.....	5330	21.....	615	29.....	275
7.....	50	14.....	45500	22.....	1920	30.....	256
		15.....	9590	23.....	1160	31.....	1880

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	3581
MONTHLY TOTAL, IN ACRE-FEET	220200
RUNOFF, IN INCHES	8.67

(24) 07332950 MUDDY BOGGY CREEK AT ATOKA, OK

LOCATION.--Lat 34°23'23", long 96°07'12", in SE1/4SW1/4 sec.11, T.2 S., R.11 E., Atoka County, Hydrologic Unit 11140103, on right downstream side of MKT railroad bridge in northeast Atoka and at mile 80.1 (128.9 km).

DRAINAGE AREA.--445 mi² (1,153 km²).

PERIOD OF RECORD.--October 1978 to October 1981.

GAGE.--Water-stage recorder. Altitude of gage is 560 ft (171 m) from topographic map.

REMARKS.--Records good except for period of no gage height record, October 5 to November 15, which are poor.

MAXIMA: FOR OCTOBER 1981.--Discharge, 29,800 ft³/s (844 m³/s) Oct. 16, gage height, 33.45 ft (10.196 m).
FOR PERIOD OCTOBER 1978 TO OCTOBER 1981.--Discharge, 8,860 ft³/s (251 m³/s) June 9, 1981, gage height, 25.30 ft (7.711 m).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	1200	0.41	4.18	Oct. 13	2400	17600	29.36	Oct. 17 -	1200	18100	29.62
	2400	.56	4.22						2400	17800	29.48
				Oct. 14 -	0900	19600	30.22				
Oct. 13 -	0600	6.1	4.60		1500	21500	30.94	Oct. 18 -	1200	17500	29.34
	0730	129	6.11		2400	24600	31.99		2400	17300	29.25
	0815	731	7.97								
	0900	1560	9.90	Oct. 15 -	0700	25800	32.33	Oct. 19 -	1200	16100	28.65
	1000	2830	12.88		1900	24500	31.92		2400	13100	27.03
	1100	4280	16.20		2400	25000	32.09				
	1200	5070	17.91					Oct. 20 -	0600	11100	25.77
	1400	6520	20.87	Oct. 16 -	0200	27500	32.83		1100	9230	24.42
	1600	8700	24.00		0500	29800	33.45		1600	7300	22.29
	1730	11200	25.80		1200	27500	32.84		2000	5640	19.09
	1900	13400	27.24		1730	25000	32.08		2230	4090	15.79
	2100	15700	28.46		2400	21600	30.97		2400	3120	13.55

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.8	8.....	.29	16.....	---	24.....	---
2.....	.7	9.....	.33	17.....	---	25.....	---
3.....	.7	10.....	---	18.....	---	26.....	---
4.....	.6	11.....	---	19.....	---	27.....	---
5.....	.5	12.....	---	20.....	---	28.....	---
6.....	.5	13.....	---	21.....	---	29.....	---
7.....	.8	14.....	---	22.....	---	30.....	---
		15.....	---	23.....	---	31.....	---
MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND.....							---
MONTHLY TOTAL, IN ACRE-FEET.....							---
RUNOFF, IN INCHES.....							---

NOTE: Data incomplete.

(26) 07334000 MUDDY BOGGY CREEK NEAR FARRIS, OK

LOCATION.--Lat 34°16'17", long 95°54'43", in NE1/4NW1/4 sec. 26, T.3 S., R.13 E., Atoka County, Hydrologic Unit 11140103, on downstream side of left bank pier of main span of bridge on State Highway 3, 1.3 mi (2.1 km) downstream from McGee Creek, 2.8 mi (4.5 km) northwest of Farris, and at mile 57.7 (92.8 km).

DRAINAGE AREA.--1,087 mi^2 (2,815 km^2).

PERIOD OF RECORD.--October 1937 to October 1981. Monthly discharge only for some periods, published in WSP 1311.

GAGE.--Water-stage recorder. Datum of gage is 444.58 ft (135.508 m) National Geodetic Vertical Datum of 1929. Prior to Mar. 13, 1945, nonrecording gage, and Mar. 13, 1945, to Sept. 30, 1961, water-stage recorder at same site at datum 2.00 ft (0.610 m) higher.

REMARKS.--Records fair. Some regulation since June 1959 by Atoka Reservoir, capacity, 125,000 acre-ft (154 hm^3), on North Boggy Creek, drainage area, 176 mi^2 (456 km^2); pipeline diversions to Oklahoma City since November 1963, normal capacity, 60 mgd (227,100 m^3/d).

MAXIMA: FOR OCTOBER 1981.--Discharge, 45,000 ft^3/s (1,270 m^3/s) Oct. 16, gage height, 44.56 ft (13.582 m). FOR PERIOD OCTOBER 1937 TO OCTOBER 1981.--Discharge, 61,900 ft^3/s (1,750 m^3/s) June 17, 1945, gage height, 44.94 ft (13.698 m).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 13 -	1200	7.7	1.12	Oct. 14 -	1800	19700	38.53	Oct. 17 -	0330	40400	43.85
	1645	136	3.19		2400	17700	37.27		0800	34900	42.89
	1700	300	4.59						1445	31000	42.11
	1730	750	7.10	Oct. 15 -	1700	18200	37.62		2400	34300	42.77
	1815	1620	10.38		2400	19200	38.24				
	1930	3570	15.64					Oct. 18 -	0800	30600	42.02
	2045	6040	20.71	Oct. 16 -	0300	22500	39.80		1200	26600	41.12
	2200	8540	25.35		0415	25100	40.75		1600	23500	40.19
	2300	10600	28.87		0530	30500	42.01		2400	20500	38.93
	2400	12800	32.34		0630	35100	42.92				
					0800	40300	43.82	Oct. 19 -	1200	18400	37.77
Oct. 14 -	0100	14500	34.33		1100	45000	44.56		2400	17200	36.88
	0430	16700	36.44		1700	42900	44.25				
	0900	18700	37.96		1800	45000	44.56	Oct. 20 -	0800	16300	36.14
	1500	20700	39.02		2400	43700	44.37		2400	14200	33.90

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.8	8.....	1.0	16.....	38200	24.....	2000
2.....	.7	9.....	1.0	17.....	35100	25.....	1290
3.....	.7	10.....	1.0	18.....	27000	26.....	1070
4.....	.6	11.....	1.0	19.....	18600	27.....	946
5.....	.5	12.....	1.9	20.....	15800	28.....	842
6.....	.5	13.....	1700	21.....	9030	29.....	759
7.....	.8	14.....	18300	22.....	2490	30.....	658
		15.....	17900	23.....	2590	31.....	4080

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	6399
MONTHLY TOTAL, IN ACRE-FEET	393500
RUNOFF, IN INCHES	6.79

(28) 07335000 CLEAR BOGGY CREEK NEAR CANEY, OK

LOCATION.--Lat 34°15'09", long 96°12'19", in NW1/4SE1/4 sec.36, T.3 S., R.10 E., Atoka County, Hydrologic Unit 11140104, on downstream side of left pier of bridge on old U.S. Highways 69 and 75, 0.5 mi (0.8 km) downstream from Caney Creek, 1.5 mi (2.4 km) north of Caney, and at mile 24.1 (38.8 km).

DRAINAGE AREA.--720 mi^2 (1,865 km^2).

PERIOD OF RECORD.--October 1942 to October 1981. Monthly discharge only for some periods, published in WSP 1311.

GAGE.--Water-stage recorder. Datum of gage is 485.05 ft (147.843 m) National Geodetic Vertical Datum of 1929. Prior to Mar. 13, 1945, nonrecording gage at same site and datum.

REMARKS.--Records fair.

MAXIMA: FOR OCTOBER 1981.--Discharge, 53,500 ft^3/s (1,520 m^3/s) Oct. 14, gage height, 26.60 ft (8.108 m). FOR PERIOD OCTOBER 1942 TO OCTOBER 1981.--Discharge, 52,800 ft^3/s (1,500 m^3/s) Dec. 11, 1946, gage height, 26.77 ft (8.159 m).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 13 -	0200	47	3.03	Oct. 14	0500	51300	26.48	Oct. 16	1200	38100	25.75
	0700	100	3.52		0700	53500	26.60		1500	30900	25.20
	1000	436	5.45		0900	51700	26.50		1800	26900	24.85
	1200	2070	11.60		1200	45700	26.15		2400	22500	24.42
	1400	3730	16.35		1400	42400	25.94				
	1600	5450	20.00		1600	38400	25.67	Oct. 17 -	2400	19200	24.02
	1700	7930	21.60		1900	33300	25.28				
	1800	10600	22.30		2100	30200	25.02	Oct. 18 -	0600	17500	23.96
	1900	12300	22.65		2400	26900	24.70		1200	16600	23.82
	2000	15500	23.24						2400	15200	23.60
	2100	20700	24.00	Oct. 15 -	0600	22800	24.25				
	2200	25900	24.60		1800	19600	23.85	Oct. 19 -	1200	13000	23.40
	2300	31600	25.14		2400	20700	24.00		2400	12000	23.20
	2400	34800	25.40								
				Oct. 16 -	0300	31100	25.10	Oct. 20 -	0600	10700	23.12
Oct. 14 -	0100	39700	25.76		0600	43000	25.98		1800	9680	22.88
	0200	43300	26.00		0900	47800	26.28		2400	8680	22.62
	0300	46500	26.20								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	80	8.....	77	16.....	33000	24.....	3190
2.....	78	9.....	78	17.....	19600	25.....	2830
3.....	76	10.....	81	18.....	16800	26.....	2560
4.....	75	11.....	86	19.....	13100	27.....	2260
5.....	74	12.....	144	20.....	10300	28.....	2010
6.....	74	13.....	6790	21.....	6720	29.....	---
7.....	76	14.....	41800	22.....	4650	30.....	---
		15.....	21800	23.....	3800	31.....	---
MONTHLY, MEAN DISCHARGE, IN CUBIC FEET PER SECOND.....							---
MONTHLY, TOTAL ACRE-FEET.....							---
RUNOFF, IN INCHES.....							---

NOTE: Data incomplete.

(29) 08042800 WEST FORK TRINITY RIVER NEAR JACKSBORO, TX

LOCATION.--Lat 33°17'36", long 98°04'43", Jack County, Hydrologic Unit 12030101, near left bank on downstream side of bridge on State Highway 59, 4 mi (6 km) downstream from Big Cleveland Creek, 7 mi (11 km) upstream from Carroll Creek, 7 mi (11 km) northeast of Jacksboro, and at mile 660 (1,060 km).

DRAINAGE AREA.--683 mi^2 (1,769 km^2).

PERIOD OF RECORD.--March 1956 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 869.28 ft (264.96 m) State Department of Highways and Public Transportation datum. Sept. 20, 1960, to May 30, 1961, nonrecording gage at same site and datum.

REMARKS.--Records good. At end of year, flow from 70.9 mi^2 (183.6 km^2) above this station was partly controlled by 21 floodwater-retarding structures with a combined detention capacity of 19,780 acre-ft (24.4 hm^3). Gage-height telemeter located at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 27,000 ft^3/s (765 m^3/s) Oct. 13, gage height, 30.15 ft (9.190 m).
FOR PERIOD MARCH 1956 TO OCTOBER 1981.--Discharge, 35,100 ft^3/s (994 m^3/s) Apr. 27, 1957, gage height, 32.10 ft (9.784 m), from floodmark. Maximum stage since at least 1900, that of Apr. 27, 1957.
HISTORIC.--Flood in June 1941 reached a stage of 30 ft (9.1 m), from information by local residents.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0200	22	5.29	Oct. 13 -	1600	27000	30.15	Oct. 17 -	1200	4520	21.62
	0800	106	6.02		2000	26700	30.10		2400	3640	20.88
	1000	249	7.40		2400	26500	30.05				
	1800	539	10.35					Oct. 18 -	1200	3040	20.37
	2000	1120	15.45	Oct. 14 -	1500	23100	29.23		2400	2340	19.60
	2200	1840	18.75		1800	20400	28.55				
	2400	2780	20.13		2400	16300	27.35	Oct. 19 -	1200	1590	17.97
									2400	1160	15.70
Oct. 13 -	0200	3730	20.95	Oct. 15 -	0300	14500	26.77				
	0400	6310	22.95		0900	11300	25.55	Oct. 20 -	1200	899	13.75
	0600	9640	24.80		1500	8590	24.28		2400	794	12.85
	0800	13800	26.50		2400	5830	22.62				
	1000	20600	28.60					Oct. 21 -	1200	751	12.43
	1200	26700	30.08	Oct. 16 -	1200	4920	21.94				
					2400	5190	22.15	Oct. 22 -	1200	700	11.93

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.03	8.....	384	16.....	4980	24.....	483
2.....	.01	9.....	107	17.....	4490	25.....	350
3.....	.00	10.....	45	18.....	3010	26.....	276
4.....	.00	11.....	22	19.....	1650	27.....	232
5.....	.00	12.....	540	20.....	926	28.....	167
6.....	23	13.....	20100	21.....	751	29.....	138
7.....	233	14.....	22400	22.....	699	30.....	126
		15.....	10300	23.....	628	31.....	186

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	2363
MONTHLY TOTAL, IN ACRE-FEET	145300
RUNOFF, IN INCHES	3.99

(30) 08043000 BRIDGEPORT RESERVOIR ABOVE BRIDGEPORT, TX

LOCATION.--Lat 33°13' ", long 97°49'54", Wise County, Hydrologic Unit 12030101, at left end of Bridgeport Dam on West Fork Trinity River, 4.6 mi (7.4 km) west of Bridgeport, 13 mi (21 km) upstream from Big Sandy Creek, and at mile 626 (1,007 km).

DRAINAGE AREA.--1,111 mi² (2,877 km²).

PERIOD OF RECORD.--April 1932 to October 1981 (prior to October 1950, monthend figures only).

GAGE.--Nonrecording gage read once daily. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Jan. 26, 1944, nonrecording gages at various sites in vicinity of present gage at present datum.

REMARKS.--The reservoir is formed by a rolled earthfill dam 2,040 ft (622 m) long. The dam was completed in December 1931 and storage began Apr. 1, 1932. The original dam was 1,900 ft (580 m) long, but was lengthened to the present length (2,040 ft or 622 m) in 1971-72. The original service spillway was eliminated during construction (1971-72), and a new spillway with approach and discharge channels was built through natural ground 2,800 ft (850 m) from the left end of dam. The new spillway is 90 ft (27 m) wide and has eight vertical lift gates that are 11.25 by 22 ft (3.43 by 7 m). The controlled outlet works consist of a 48-inch-diameter (1,219 mm) and an 18-inch-diameter (457 mm) pipe encased in a concrete conduit extending through the dam. In addition, a controlled 60-inch-diameter (1,524 mm) steel pipe extends through the service spillway wall to the spillway discharge basin. Flow is affected at times by discharge from the flood-detention pools of 25 floodwater-retarding structures with a combined detention capacity of 21,720 acre-ft (26.8 hm³). These structures control runoff from 80.3 mi² (208.0 km²) above the reservoir. For elevations of outlet works, see table below. Capacity tables are based on surveys made in 1956 and 1968. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	874.0	-
Crest of spillway	866.0	902,000
Top of gates	842.0	469,300
Top of conservation pool	836.0	387,000
Crest of spillway	820.0	212,400
Lowest gated outlet (invert, at spillway)	810.0	133,200
Lowest gated outlet (invert)	751.4	0

MAXIMA: FOR OCTOBER 1981.--Contents, 388,600 acre-ft (479 hm³) Oct. 18, elevation, 836.13 ft (254.852 m).
FOR PERIOD APRIL 1932 TO OCTOBER 1981.--Contents observed, 407,600 acre-ft (503 hm³) Apr. 29, 30, 1942, elevation, 836.2 ft (254.87 m); maximum elevation, 836.55 ft (254.980 m) May 27, 1977.

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 12 -	0200	109000	806.36	Oct. 13 -	1400	209000	819.65	Oct. 15 -	1800	351000	833.16
	0800	113000	806.85		1600	221000	820.96		2400	360000	833.84
	1000	116000	807.40		1800	231000	822.05				
	1200	120000	808.08		2000	239000	822.85	Oct. 16 -	1200	372000	834.82
	1400	124000	808.65		2400	251000	824.08		2400	381000	835.54
	1600	127000	809.07								
	2000	130000	809.59	Oct. 14 -	0400	262000	825.19	Oct. 17 -	0600	384000	835.79
	2200	134000	809.59		0800	274000	826.35		1200	387000	836.02
	2400	138000	810.63		1200	285000	827.35				
					1600	296000	828.40	Oct. 18 -	1200	388600	836.13
Oct. 13 -	0200	142000	811.30		2000	306000	829.26		2400	388000	836.08
	0400	150000	812.35		2400	316000	830.15				
	0600	158000	813.40					Oct. 19 -	1200	387000	836.03
	0800	171000	815.15	Oct. 15 -	0600	329000	831.32				
	1000	183000	816.55		1200	341000	832.32	Oct. 20 -	1200	387000	836.02
	1200	196000	818.10								

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1.....	109200	8.....	107400	16.....	367600	24.....	392300
2.....	108600	9.....	107900	17.....	384800	25.....	392200
3.....	108000	10.....	107900	18.....	388600	26.....	391800
4.....	107500	11.....	107600	19.....	387500	27.....	391200
5.....	106900	12.....	110300	20.....	387300	28.....	390700
6.....	106400	13.....	161600	21.....	387200	29.....	389700
7.....	106700	14.....	270100	22.....	389300	30.....	389700
		15.....	326800	23.....	391500	31.....	391500
CHANGE IN CONTENTS, IN ACRE-FEET.....							+281800

(31) 08044000 BIG SANDY CREEK NEAR BRIDGEPORT, TX

LOCATION.--Lat 33°13'54", long 97°41'40", Wise County, Hydrologic Unit 12030101, on downstream side of bridge on U.S. Highway 380, 1.9 mi (3.1 km) upstream from Greathouse Branch, 4.0 mi (6.4 km) east of Bridgeport, and 4.4 mi (7.1 km) upstream from mouth.

DRAINAGE AREA.--333 mi^2 (862 km^2).

PERIOD OF RECORD.--October 1936 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 727.44 ft (221.724 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Since May 1, 1956, flow from 100 mi^2 (259 km^2) above station is affected at times by storage in Lake Amon G. Carter 30 mi (48 km) upstream, capacity 15,240 acre-ft (18.8 hm^3) at elevation 920.0 ft (280.42 m), spillway crest. Records furnished by city of Bowie show that during the current year 893 acre-ft (1.10 hm^3) was diverted from Lake Amon G. Carter for municipal use and 93 acre-ft (115,000 m^3) of sewage effluent was discharged into tributaries above station. Flow was also affected at times by discharge from 17 flood-detention pools of floodwater-retarding structures with a combined capacity of 11,030 acre-ft (13.6 hm^3). These structures control runoff from 44.1 mi^2 (114.2 km^2) between this station and Lake Amon G. Carter. Gage-height telemeter at this station. Satellite telemeter at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 45,000 ft^3/s (1,270 m^3/s) Oct. 13, gage height, 14.78 ft (4.505 m). FOR PERIOD OCTOBER 1936 TO OCTOBER 1981.--Discharge, 53,000 ft^3/s (1,500 m^3/s) June 10, 1941, gage height, 15.69 ft (4.782 m), from floodmark, from rating curve extended above 22,000 ft^3/s (623 m^3/s); HISTORIC.--Maximum stage since at least 1887 occurred in 1908 and 1915 and reached about the same stage as that of June 10, 1941.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0300	4.7	1.34	Oct. 13 -	2400	24400	12.51	Oct. 18 -	1200	2540	8.94
	0900	146	4.28								
	1200	506	6.27	Oct. 14 -	0300	18100	11.65	Oct. 19 -	1200	2080	8.66
	1800	1180	7.70		0600	13100	11.00		2400	1650	8.30
	2200	2700	8.94		0830	10200	10.62				
	2300	4070	9.42		1200	7040	10.18	Oct. 20 -	0600	1500	8.12
	2400	6070	9.84		1500	5800	9.94		1200	1380	7.97
					2100	4350	9.63		2400	1150	7.66
Oct. 13 -	0100	10600	10.53		2400	3970	9.51				
	0230	12600	10.83					Oct. 21 -	1200	942	7.33
	0400	10100	10.46	Oct. 15 -	0600	3500	9.35		2400	812	7.07
	0600	7740	10.12		1200	3190	9.23				
	0830	1100	10.46		2400	2820	9.07	Oct. 22 -	1200	756	6.94
	1000	14500	11.09						2400	690	6.78
	1200	23500	12.39	Oct. 16 -	1200	2630	8.99				
	1300	31400	13.39					Oct. 23 -	1200	625	6.61
	1400	38800	14.19	Oct. 17 -	0600	2850	9.09		2400	595	6.53
	1630	45000	14.78		1200	3240	9.25				
	1900	40000	14.31		2400	2820	9.07	Oct. 24 -	1200	567	6.45
	2100	32700	13.55								
	2230	28400	13.03	Oct. 18 -	0300	2730	9.03	Oct. 25 -	1200	454	6.09

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.00	8.....	288	16.....	2680	24.....	562
2.....	.00	9.....	62	17.....	2990	25.....	453
3.....	.00	10.....	17	18.....	2570	26.....	331
4.....	.00	11.....	5.9	19.....	2070	27.....	210
5.....	.00	12.....	826	20.....	1380	28.....	132
6.....	.00	13.....	23800	21.....	954	29.....	92
7.....	249	14.....	9560	22.....	750	30.....	70
		15.....	3270	23.....	632	31.....	2750

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	1829
MONTHLY TOTAL, IN ACRE-FEET	112500
RUNOFF, IN INCHES	6.33

(32) 08044500 WEST FORK TRINITY RIVER NEAR BOYD, TX

LOCATION.--Lat 33°05'07", long 97°33'30", Wise County, Hydrologic Unit 12030101, on right bank at downstream side of highway embankment, 10 ft (3 m) right of right abutment of bridge on Farm Road 730, 0.6 mi (1.0 km) northeast of Boyd, 3.5 mi (5.6 km) downstream from Boggy Creek, and at mile 602 (969 km).

DRAINAGE AREA.--1,725 mi^2 (4,468 km^2).

PERIOD OF RECORD.--January 1947 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 660.57 ft (201.342 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 14, 1954, water-stage recorder at site 2.2 mi (3.5 km) downstream at datum 5.48 ft (1.670 m) lower.

REMARKS.--Records fair. During the current year, sustained flows were the result of releases for water supply from Bridgeport Reservoir (station 08043000) 25 mi (40 km) upstream from this station, drainage area 1,111 mi^2 (2,877 km^2). In addition, flow from 100 mi^2 (259 km^2) is affected by storage in Lake Amon G. Carter, capacity 15,240 acre-ft (18.8 hm^3), on Big Sandy Creek. Flow is also affected at times by 34 floodwater-detention structures with a combined detention capacity of 24,050 acre-ft (30.0 hm^3). These structures control runoff from 89.3 mi^2 (231 km^2) in the Big Sandy and Salt Creeks drainage basins. Gage-height satellite telemeters at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 60,400 ft^3/s (1,710 m^3/s) Oct. 14, gage height, 25.87 ft (7.885 m).
FOR PERIOD JANUARY 1947 TO OCTOBER 1981.--Discharge, 27,300 ft^3/s (773 m^3/s) Oct. 5, 1959, gage height, 22.17 ft (6.757 m).
HISTORIC.--Maximum stage since at least 1880, about 25.0 ft (7.6 m) in May 1908, present site and datum, from information by local residents, who also reported a flood of about the same gage height between 1870-80. A flood in April 1942 reached a stage of 20.6 ft (6.28 m), present site and datum, from information by State Department of Highways and Public Transportation.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0200	226	8.01	Oct. 14 -	1500	31500	22.87	Oct. 19 -	2400	4540	18.13
	0600	1370	16.75		1800	25700	22.03				
	0700	2570	17.40		2100	20800	21.29	Oct. 20 -	0100	5150	18.26
	0800	3700	18.00		2400	17100	20.64		1200	4770	18.18
	0900	6710	18.70						2400	4540	18.13
	1100	7670	18.94	Oct. 15 -	0300	14300	20.09				
	1300	6240	18.57		0700	11000	19.53	Oct. 21 -	0700	4080	18.02
	1500	5100	18.33		1200	8140	18.97		1200	3770	17.94
	1700	7100	18.80		1500	7140	18.73		2400	3520	17.84
	1900	11100	19.63		2100	6070	18.44				
	2100	13200	19.95		2400	5350	18.30	Oct. 22 -	1000	3200	17.69
	2400	12600	19.87						1300	3070	17.62
				Oct. 16 -	0400	4590	18.14		2100	2690	17.41
Oct. 13 -	0100	13700	20.05		1200	4080	18.02		2400	2540	17.30
	0500	10400	19.50		2400	3570	17.86				
	0700	9180	19.27					Oct. 23 -	0600	2290	17.09
	1000	13700	20.04	Oct. 17 -	0600	3290	17.81		1200	2000	16.80
	1200	19200	21.10		1200	3480	17.78		1600	1730	16.46
	1400	23400	21.77		1800	3410	17.76		2400	1450	15.93
	1500	26000	22.15		2400	3350	17.76				
	1700	29800	22.71					Oct. 24 -	0200	1350	15.64
	1900	34600	23.34	Oct. 18 -	0600	3430	17.80		1100	1150	14.98
	2100	41700	24.18		1200	3290	17.73		1500	1120	14.88
	2200	47000	24.72		2400	3460	17.81		1900	1200	15.17
	2400	55100	25.45						2400	1180	15.08
				Oct. 19 -	0100	4410	18.10				
Oct. 14 -	0300	60400	25.87		0600	5050	18.24	Oct. 25 -	0600	1170	15.06
	0600	55900	25.50		0900	3590	17.87		1100	1220	15.23
	0900	46600	24.66		1200	3700	17.92		1800	1210	15.19
	1200	39000	23.84		1400	4240	18.06		2400	1180	15.10

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	212	8.....	687	16.....	4100	24.....	1200
2.....	220	9.....	445	17.....	3400	25.....	1180
3.....	223	10.....	297	18.....	3340	26.....	1070
4.....	229	11.....	266	19.....	3940	27.....	937
5.....	233	12.....	6270	20.....	5290	28.....	793
6.....	242	13.....	24100	21.....	4080	29.....	713
7.....	494	14.....	38800	22.....	3100	30.....	675
		15.....	9080	23.....	1960	31.....	8380

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	4063
MONTHLY TOTAL, IN ACRE-FEET	249800
RUNOFF, IN INCHES	2.72

(33) 08045000 EAGLE MOUNTAIN RESERVOIR ABOVE FORT WORTH, TX

LOCATION.--Lat 32°52'39", long 97°28'29", Tarrant County, Hydrologic Unit 12030101, at right end of main section (left) of Eagle Mountain Dam on West Fork Trinity River, 11.8 mi (19.0 km) northwest of Fort Worth, and at mile 583.3 (938.5 km).

DRAINAGE AREA.--1,970 mi^2 (5,102 km^2).

PERIOD OF RECORD.--February 1934 to October 1981 (prior to October 1950, monthend figures only).

GAGE.--Nonrecording gage read once daily. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Feb. 24, 1943, nonrecording gages at several sites within 1.0 mi (1.6 km) of present site at present datum.

REMARKS.--The reservoir is formed by two sections of rolled earthfill and a concrete spillway separated by high natural ground. The total length of the dam, including spillway, is 4,800 ft (1,500 m). The dam was completed Oct. 24, 1932, and storage began Feb. 28, 1934. The emergency spillway is a 1,300-foot-wide (400 m) cut through natural ground located between the two sections of earthfill that make up the dam. The original service spillway, located in the section to the right of the main dam, contains a concrete spillway with four 25-foot (8 m) bays, three are equipped with vertical lift gates and the fourth is left open. In 1971, a side-channel spillway was constructed. The newest spillway is located 300 ft (90 m) to the left of the original service spillway and has six 11.25- by 22-foot-wide (3.43 by 7 m) roller lift gates. The main section of the dam contains the outlet works that consist of two concrete conduits with two 48-inch-diameter (1,219 mm) valves in each conduit. The reservoir is used for flood control and for part of the municipal water supply for the city of Fort Worth. Tarrant County Water Control and Improvement District No. 1 reported that 61,850 acre-ft (76.3 hm^3) was released to Lake Worth and subsequently used for municipal supply by the city of Fort Worth. Total monthly diversions for seven other users are referenced below. Capacities are based on a survey made in 1968. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08044500. For storage above the reservoir, see REMARKS for West Fork Trinity River near Boyd (station 08044500). Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	682.0	-
Crest of spillway	676.0	558,000
Top of gates (new side-channel spillway)	659.0	295,400
Crest of (old service) spillway (top of conservation pool)	649.1	190,400
Crest of spillway (new side-channel spillway)	637.0	99,120
Lowest gated outlet (invert)	599.9	94

MAXIMA: FOR OCTOBER 1981.--Contents, 260,800 acre-ft (322 hm^3) Oct. 14, 15, elevation, 656.02 ft (199.955 m).
FOR PERIOD FEBRUARY 1934 TO OCTOBER 1981.--Contents observed, 333,500 acre-ft (411 hm^3) Apr. 26, 1942, elevation, 659.9 ft (201.14 m).

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 11 -	0600	168000	646.58	Oct. 14 -	0400	227000	652.84	Oct. 17 -	0600	221000	652.22
	2400	171000	646.92		0600	232000	653.35		1200	216000	651.73
					0800	237000	653.86		1800	211000	651.28
Oct. 12 -	0600	174000	647.28		1000	243000	654.36		2400	207000	650.83
	0800	176000	647.51		1200	249000	654.92				
	1000	183000	648.28		1600	255000	655.50	Oct. 18 -	0600	202000	650.34
	1200	189000	648.90		2000	259000	655.88		1200	198000	649.88
	2400	190000	649.03		2400	260800	656.02		1800	194000	649.46
									2400	191000	649.21
Oct. 13 -	0600	190000	649.06	Oct. 15 -	0300	260800	656.02				
	1200	195000	649.58		0600	260000	655.91	Oct. 19 -	1200	190000	649.00
	1400	200000	650.15		1200	256000	655.60				
	1600	206000	650.71		2400	246000	654.70	Oct. 20 -	1200	192000	649.27
	1800	210000	651.12								
	2400	218000	651.92	Oct. 16 -	0600	241000	654.21	Oct. 21 -	1200	191000	649.20
					1200	236000	653.74				
Oct. 14 -	0200	222000	652.38		1800	231000	653.24	Oct. 22 -	1200	193000	649.35
					2400	226000	652.76				

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 0700

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1.....	162700	8.....	166000	16.....	219700	24.....	192300
2.....	162600	9.....	166000	17.....	219700	25.....	192700
3.....	162700	10.....	167800	18.....	201300	26.....	191700
4.....	162600	11.....	168200	19.....	190100	27.....	190500
5.....	162600	12.....	190400	20.....	191800	28.....	190100
6.....	162800	13.....	234400	21.....	191700	29.....	190000
7.....	163900	14.....	259100	22.....	192800	30.....	190200
		15.....	240100	23.....	190600	31.....	192400
CHANGE IN CONTENTS, IN ACRE-FEET.....							+29500

(34) 08045850 CLEAR FORK TRINITY RIVER NEAR WEATHERFORD, TX

LOCATION.--Lat 32°44'25", long 97°39'06", Parker County, Hydrologic Unit 12030102, near left end of bridge on weigh station exit road associated with Interstate Highway 20, 150 ft (46 m) downstream from Squaw Creek, 2.8 mi (4.5 km) downstream from Lake Weatherford Dam on the Clear Fork Trinity River, 3.8 mi (6.1 km) upstream from South Fork Trinity River, and 8.5 mi (13.7 km) east of county courthouse in Weatherford.

DRAINAGE AREA.--121 mi^2 (313 km^2).

PERIOD OF RECORD.--May 1980 to October 1981.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 810.00 ft (246.888 m) National Geodetic Vertical Datum of 1929 (State Department of Highways and Public Transportation bench mark).

REMARKS.--Water-discharge records good. Flow is regulated by Lake Weatherford. Records furnished by the city of Weatherford show that 2,250 acre-ft (2.77 hm^3) was diverted from Lake Weatherford for municipal use and that 1,450 acre-ft (1.79 hm^3) was returned to the South Fork Trinity River, a tributary downstream from this station. Telemeter was installed Jan. 14, 1981.

MAXIMA: FOR OCTOBER 1981.--Discharge, 2,910 ft^3/s (82.4 m^3/s) Oct. 14, gage height, 19.06 ft (5.809 m). FOR PERIOD MAY 1980 TO OCTOBER 1981.--Discharge, 874 ft^3/s (24.8 m^3/s) May 8, 1981, gage height, 14.06 ft (4.285 m).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0300	2.8	9.03	Oct. 13 -	1200	1470	16.80	Oct. 19 -	1200	290	11.59
	0630	8.0	9.23		2400	1960	18.65				
	0715	30	9.85					Oct. 20 -	1200	234	11.33
	0800	60	10.27	Oct. 14 -	0600	2910	19.06				
	0845	125	10.84		1000	1890	18.42	Oct. 21 -	1200	197	11.14
	1015	183	11.19		2400	1100	15.12		2400	225	11.29
	1200	132	10.89								
	1500	21	9.63	Oct. 15 -	0300	1000	14.62	Oct. 22 -	0645	330	11.76
	1700	13	9.40		1200	828	13.78		1015	510	12.46
	2030	8.0	9.23						1900	445	12.23
	2200	76	10.43	Oct. 16 -	1200	604	12.83		2400	431	12.18
	2300	287	11.65								
	2400	527	12.53	Oct. 17 -	1200	489	12.38	Oct. 23 -	1200	364	11.90
Oct. 13 -	0600	884	14.02	Oct. 18 -	1200	382	11.98	Oct. 24 -	1200	245	11.39

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.49	8.....	.93	16.....	605	24.....	250
2.....	.49	9.....	.93	17.....	490	25.....	185
3.....	.49	10.....	.79	18.....	382	26.....	138
4.....	.49	11.....	.86	19.....	288	27.....	119
5.....	.49	12.....	63	20.....	233	28.....	106
6.....	.61	13.....	1340	21.....	204	29.....	97
7.....	13	14.....	1680	22.....	392	30.....	91
		15.....	838	23.....	360	31.....	1220

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	294
MONTHLY TOTAL, IN ACRE-FEET	18050
RUNOFF, IN INCHES	2.80

(35) 08046500 BENBROOK LAKE NEAR BENBROOK, TX

LOCATION.--Lat 32°39'02", long 97°26'54", Tarrant County, Hydrologic Unit 12030102, in intake structure of Benbrook Dam on Clear Fork Trinity River, 2.5 mi (4.0 km) south of Benbrook, 3.5 mi (5.6 km) upstream from Marys Creek, and 14.6 mi (23.5 km) upstream from mouth.

DRAINAGE AREA.--429 mi^2 (1,111 km^2).

PERIOD OF RECORD.--September 1952 to October 1981. Prior to October 1970, published as Benbrook Reservoir.

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

REMARKS.--The lake is formed by a rolled earthfill dam 9,130 ft (2,780 m) long, including a 500-foot (150 m) uncontrolled off-channel concrete-gravity spillway with a 100-foot (30 m) notch in center of ogee weir section. The outlet works consist of a 13.0-foot-diameter (4.0 m) concrete conduit controlled by two 6.5- by 13.0-foot (2.0 by 4.0 m) broome-type gates and two 30-inch (762 mm) steel pipes controlled by slide gates. Deliberate impoundment began Sept. 29, 1952. From August 1950 to Sept. 28, 1952, the lake was operated as a detention basin only. The capacity table is based on a survey made in 1945. The lake was built for flood control, navigation, and low-flow regulation. Gage-height telemeter at station. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	747.0	-
Crest of spillway	724.0	258,600
Crest of notch in spillway	710.0	164,800
Top of conservation storage	694.0	88,250
Crest of intake to wet wells (inverts)	656.0	6,550
Lowest gated outlet (invert)	622.0	12

MAXIMA: FOR OCTOBER 1981.--Contents, 101,400 acre-ft (125 hm^3) Oct. 26, elevation, 697.32 ft (212.543 m). FOR PERIOD SEPTEMBER 1952 TO OCTOBER 1981.--Contents, 185,000 acre-ft (228 hm^3) June 6, 1957, elevation, 713.35 ft (217.429 m).

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 11	1200	71000	689.15	Oct. 15	1200	88800	694.15	Oct. 21	1200	95400	695.85
Oct. 12	1200	71800	689.37	Oct. 16	1200	90700	694.64	Oct. 22	1200	96900	696.22
	2400	72500	689.58								
				Oct. 17	1200	92200	695.03	Oct. 23	1200	99000	696.75
Oct. 13	1200	73600	689.92								
	1600	76900	690.88	Oct. 18	1200	93300	695.31	Oct. 24	1200	100000	697.03
	1800	78300	691.28								
	2400	80800	691.98	Oct. 19	1200	94100	695.53	Oct. 25	1200	101000	697.21
Oct. 14	0800	83700	692.77	Oct. 20	1200	94800	695.70	Oct. 26	1200	101400	697.32
	1800	86500	693.52								
	2200	87100	693.70								

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1.....	70700	8.....	71100	16.....	91490	24.....	100600
2.....	70600	9.....	71070	17.....	92770	25.....	101200
3.....	70530	10.....	71070	18.....	93710	26.....	101400
4.....	70430	11.....	71030	19.....	94540	27.....	101300
5.....	70360	12.....	72820	20.....	95120	28.....	101200
6.....	70430	13.....	80610	21.....	95990	29.....	101000
7.....	71070	14.....	85940	22.....	98220	30.....	101100
		15.....	89850	23.....	99600	31.....	103000
CHANGE IN CONTENTS, IN ACRE-FEET							+32170

(36) 08047000 CLEAR FORK TRINITY RIVER NEAR BENBROOK, TX

LOCATION.--Lat 32°39'54", long 97°26'30", Tarrant County, Hydrologic Unit 12030102, on left bank 1.5 mi (2.4 km) downstream from Benbrook Dam, 1.7 mi (2.7 km) southeast of Benbrook, 2.9 mi (4.7 km) upstream from Marys Creek, and 13.1 mi (21.1 km) upstream from mouth.

DRAINAGE AREA.--431 mi^2 (1,116 km^2).

PERIOD OF RECORD.--July 1947 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 604.22 ft (184.166 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Records good. Flow regulated by Benbrook Lake (station 08046500) since September 1952. Diversion 1.0 mi (1.6 km) upstream for Pecan Valley Golf Course. A gage-height telemeter was installed at this station on Nov. 29, 1977.

MAXIMA: FOR OCTOBER 1981.--Discharge, 663 ft^3/s (18.8 m^3/s) Oct. 13, gage height, 5.29 ft (1.612 m).
FOR PERIOD JULY 1947 TO OCTOBER 1981.--Discharge, 82,900 ft^3/s (2,350 m^3/s) May 17, 1949, gage height, 28.72 ft (8.754 m), from rating curve extended above 11,000 ft^3/s (312 m^3/s) on basis of velocity-area studies and slope-area measurement of 82,900 ft^3/s (2,350 m^3/s). Maximum discharge since construction of Benbrook Dam in 1952, 4,710 ft^3/s (133 m^3/s) May 7, 1979, gage height, 11.27 ft (3.435 m); maximum gage height, 12.20 ft (3.719 m) Apr. 7, 1977. Maximum stage since at least 1922, that of May 17, 1949.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0600	10.0	3.18	Oct. 13 -	1630	97	3.90	Oct. 19 -	1000	11	3.19
	0900	59	3.69		1800	43	3.57		1200	6.8	3.10
	1000	261	4.43		1900	31	3.46		2400	0.16	2.79
	1100	182	4.21		2400	19	3.32				
	1200	80	3.82					Oct. 20 -	1200	0	2.64
	1300	40	3.55	Oct. 14 -	0300	17	3.29				
	2400	11	3.19		2400	9.0	3.15	Oct. 21 -	1200	0	2.62
									2400	3.3	3.00
Oct. 13 -	1230	27	3.42	Oct. 15 -	1200	9.0	3.15				
	1245	40	3.55					Oct. 22 -	1200	29	3.44
	1315	108	3.95	Oct. 16 -	1000	13	3.23		2400	1.9	2.94
	1345	439	4.82		2400	10	3.18				
	1415	663	5.29					Oct. 23 -	1200	1.2	2.90
	1500	365	4.67	Oct. 17 -	1200	10	3.18		2400	.90	2.88
	1545	166	4.16								
				Oct. 18 -	1200	11	3.19	Oct. 24 -	2400	.78	2.87

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	25	8.....	11	16.....	11	24.....	.87
2.....	11	9.....	12	17.....	11	25.....	.83
3.....	10	10.....	10	18.....	11	26.....	245
4.....	9.8	11.....	10	19.....	6.4	27.....	523
5.....	9.6	12.....	49	20.....	.01	28.....	519
6.....	11	13.....	81	21.....	.10	29.....	518
7.....	20	14.....	11	22.....	11	30.....	518
		15.....	9.1	23.....	1.2	31.....	254

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	94.2
MONTHLY TOTAL, IN ACRE-FEET	5790
RUNOFF, IN INCHES	.25

(37) 08047500 CLEAR FORK TRINITY RIVER AT FORT WORTH, TX

LOCATION.--Lat 32°43'56", long 97°21'31", Tarrant County, Hydrologic Unit 12030102, at Fort Worth pumping station on left bank, 240 ft (73 m) upstream from the Texas and Pacific Railway Co. bridge in Fort Worth, 830 ft (253 m) upstream from East-West Expressway bridge, 2.5 mi (4.0 km) upstream from mouth, 5 mi (8 km) downstream from Marys Creek, and 10 mi (16 km) downstream from Benbrook Dam.

DRAINAGE AREA.--518 mi^2 (1,342 km^2).

PERIOD OF RECORD.--March 1924 to October 1981.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 532.91 ft (162.431 m) National Geodetic Vertical Datum of 1929. Prior to Apr. 3, 1970, various nonrecording and recording gages were located within 650 ft (198 m) of present site at different datums.

REMARKS.--Records fair. Flow largely regulated by Benbrook Lake (station 08046500). Records furnished by city of Fort Worth show 3,090 acre-ft (3.81 hm^3) was pumped from pool behind dam during current year. Records furnished by the Benbrook Water and Sewage Authority show that 511 acre-ft (630,000 m^3) of water was diverted from the river upstream from station for municipal use. Gage-height telemeter is located at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 18,400 ft^3/s (521 m^3/s) Oct. 13, gage height, 16.14 ft (4.919 m).
FOR PERIOD MARCH 1924 TO OCTOBER 1981.--Discharge, 107,000 ft^3/s (3,030 m^3/s) May 17, 1949, gage height, 28.20 ft (8.595 m), present datum, from rating curve extended above 16,000 ft^3/s (453 m^3/s) on basis of contracted opening measurement of 107,000 ft^3/s (3,030 m^3/s), Maximum stage since at least 1900, 28.20 ft (8.595 m) May 17, 1949, present datum.
HISTORIC.--Flood of Apr. 25, 1922, reached a stage of 27.5 ft (8.38 m) present datum, discharge, 74,300 ft^3/s (2,100 m^3/s), by slope-area measurement of peak flow; stage and discharge data furnished by the Fort Worth city engineer.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0600	18	8.49	Oct. 13 -	1515	16400	15.60	Oct. 19 -	1200	60	8.78
	0745	504	9.36		1545	14300	14.99				
	0815	1240	9.98		1615	11900	14.25	Oct. 20 -	1200	51	8.75
	0845	2270	10.69		1645	9340	13.44		2400	40	8.71
	0900	3460	11.29		1715	7100	12.67				
	0930	6410	12.44		1800	4620	11.78	Oct. 21 -	1800	89	8.84
	1015	7250	12.72		1930	2420	10.77		2200	262	9.10
	1100	6290	12.40		2200	1280	10.01		2400	504	9.35
	1200	4220	11.62		2400	935	9.70				
	1300	2540	10.84					Oct. 22 -	0300	467	9.32
	1400	1590	10.26	Oct. 14 -	0145	722	9.52		0600	378	9.23
	1730	504	9.35		0700	378	9.23		0700	400	9.25
	2400	230	9.06		2400	180	8.98		0800	1160	9.90
									0830	1600	10.27
Oct. 13 -	0600	136	8.92	Oct. 15 -	1200	129	8.91		1000	1970	10.51
	0730	262	9.10						1400	1640	10.30
	1100	156	8.94	Oct. 16 -	0630	105	8.87		1600	1160	9.90
	1145	825	9.61		0745	237	9.07		1800	825	9.61
	1200	1540	10.23		0930	356	9.21		2000	625	9.45
	1215	2810	10.98		1200	253	9.09		2400	400	9.25
	1230	4080	11.56		2400	162	8.95				
	1245	5780	12.22					Oct. 23 -	1200	222	9.04
	1300	8450	13.14	Oct. 17 -	0600	129	8.91		2400	143	8.93
	1315	11600	14.17		2400	94	8.85				
	1330	14500	15.06					Oct. 24 -	1200	123	8.90
	1345	16400	15.60	Oct. 18 -	1200	72	8.81		2400	111	8.88
	1415	18400	16.14								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.00	8.....	40	16.....	191	24.....	124
2.....	4.5	9.....	73	17.....	118	25.....	103
3.....	10	10.....	26	18.....	77	26.....	163
4.....	9.9	11.....	19	19.....	59	27.....	378
5.....	8.6	12.....	1290	20.....	50	28.....	378
6.....	8.0	13.....	3470	21.....	81	29.....	378
7.....	583	14.....	366	22.....	959	30.....	371
		15.....	135	23.....	242	31.....	728

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	337
MONTHLY TOTAL, IN ACRE-FEET	20710
RUNOFF, IN INCHES	.75

(38) 08048000 WEST FORK TRINITY RIVER AT FORT WORTH, TX

LOCATION.--Lat 32°45'39", long 97°19'56", Tarrant County, Hydrologic Unit 12030102, on left bank 125 ft (38 m) upstream from Texas Electric Service Co.'s concrete dam, 980 ft (299 m) downstream from centerline of Paddock Viaduct (North Main Street) at Fort Worth, 2,600 ft (792 m) downstream from Clear Fork Trinity River, and at mile 556.8 (895.9 km).

DRAINAGE AREA.--2,615 mi^2 (6,773 km^2).

PERIOD OF RECORD.--October 1920 to October 1981. Gage-height records collected in this vicinity since 1910 are contained in reports of the National Weather Service.

GAGE.--Water-stage recorder and concrete dam control with angle-iron-crested notch for flow below 50 ft^3/s (1.42 m^3/s). Datum of gage is 519.24 ft (158.264 m) Texas Reclamation Department datum. Prior to Aug. 22, 1954, at site 1,200 ft (366 m) upstream at same datum. Aug. 22, 1954, to Oct. 15, 1955, at site 2,000 ft (610 m) upstream at same datum.

REMARKS.--Records good. Flow is largely regulated by Lake Worth on the West Fork Trinity River and by Benbrook Lake (station 08046500) on the Clear Fork Trinity River. Many small diversions above station. Gage-height telemeter is located at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 24,800 ft^3/s (702 m^3/s) Oct. 13, gage height, 7.80 ft (2.377 m).
FOR PERIOD OCTOBER 1920 TO OCTOBER 1981.--Discharge, 85,000 ft^3/s (2,410 m^3/s), Apr. 25, 1922, gage height, 23.95 ft (7.300 m), site then in use, by slope-area measurement of peak flow by city engineer of Fort Worth; maximum gage height, 25.91 ft (7.897 m) May 17, 1949, site then in use, discharge, 64,300 ft^3/s (1,820 m^3/s). Maximum stage since at least 1866, that of May 17, 1949. Maximum stages have been affected by levee construction, levee breaks, and channel rectification.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0730	31	0.82	Oct. 13 -	1000	290	1.28	Oct. 14 -	1500	15000	6.03
	0800	1490	2.08		1100	76	1.00		2400	16900	6.40
	0830	3020	2.80		1200	2080	2.39				
	0915	5890	3.82		1230	3560	3.01	Oct. 15 -	1900	19700	6.91
	0945	8760	4.62		1300	8070	4.44				
	1015	10700	5.10		1330	14200	5.87	Oct. 16 -	0800	18000	6.61
	1200	8760	4.62		1400	20000	6.96		1200	16900	6.39
	1300	6190	3.91		1515	24800	7.80		1600	18200	6.65
	1400	4020	3.19		1700	20300	7.01		2400	16900	6.39
	1600	1740	2.22		1800	16400	6.31				
	2000	846	1.67		1900	14100	5.84	Oct. 17 -	0200	14800	5.99
	2400	410	1.39		2400	12500	5.51		0515	17100	6.43
									1100	15800	6.19
Oct. 13 -	0900	218	1.20	Oct. 14 -	0300	13000	5.60		2400	15000	6.03

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	3.6	8.....	61	16.....	18300	24.....	2550
2.....	3.0	9.....	82	17.....	15800	25.....	1620
3.....	5.6	10.....	33	18.....	13700	26.....	1660
4.....	11	11.....	24	19.....	9100	27.....	2060
5.....	12	12.....	2330	20.....	4810	28.....	1700
6.....	12	13.....	7830	21.....	5940	29.....	1440
7.....	1070	14.....	14400	22.....	7880	30.....	1200
		15.....	18600	23.....	6040	31.....	2720

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	4548
MONTHLY TOTAL, IN ACRE-FEET	279700
RUNOFF, IN INCHES	2.01

(39) 08048543 WEST FORK TRINITY RIVER AT BEACH STREET, FORT WORTH, TX

LOCATION.--Lat 32°45'06", long 97°17'21", Tarrant County, Hydrologic Unit 12030102, at downstream side of bridge on Beach Street, 1,700 ft (518 m) downstream from Sycamore Creek, 0.9 mi (1.4 km) downstream from Riverside Drive bridge, 2.6 mi (4.2 km) east of the Tarrant County Courthouse, and at mile 549.6 (884.3 km).

DRAINAGE AREA.--2,685 mi^2 (6,954 km^2).

PERIOD OF RECORD.--October 1976 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 478.70 ft (145.908 m) State Department of Highways and Public Transportation datum.

REMARKS.--Records good. Flow is largely regulated by Lake Worth on the West Fork Trinity River and by Benbrook Lake (station 08046500) on the Clear Fork Trinity River. At times, flow is sustained by releases from the flood-detention pool of Benbrook Lake. There are many diversions upstream from this station for municipal, industrial, and other uses. For diversions by city of Fort Worth, see West Fork Trinity River at Fort Worth (station 08048000).

MAXIMA: FOR OCTOBER 1981.--Discharge, 26,700 ft^3/s (756 m^3/s) Oct. 13, gage height, 36.26 ft (11.052 m).
FOR PERIOD OCTOBER 1976 TO OCTOBER 1981.--Discharge, 18,800 ft^3/s (532 m^3/s) Mar. 27, 1977, gage height, 34.27 ft (10.445 m).
HISTORIC.--Maximum stage since at least 1866 probably occurred in May 1949, stage and discharge unknown. Maximum stages have been affected by levee construction, levee breaks, and channel rectification.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0100	52	3.91	Oct. 13 -	1830	25300	36.26	Oct. 20 -	0600	6140	20.05
	0745	120	4.40		2100		34.03		1200	4710	17.55
	0800	420	5.63								
	0815	1120	7.23	Oct. 14 -	0300	15800	31.85	Oct. 21 -	0600	4530	17.12
	0845	2070	9.14		1200	15700	31.79		1200	4840	17.78
	0930	3020	11.55		2400	17600	32.93		2400	6090	19.96
	1100	4890	15.81								
	1200	6730	19.92	Oct. 15 -	0400	18200	33.29	Oct. 22 -	0600	6830	21.22
	1400	7920	22.31		2400	19700	34.06		1200	9350	25.00
	1800	5880	18.04						1530	9990	26.11
	2115	3780	13.30	Oct. 16 -	1200	19300	33.89		2400	8910	24.38
	2400	2190	9.43		2400	18400	33.42				
								Oct. 23 -	0600	7900	22.86
Oct. 13 -	0100	1260	7.98	Oct. 17 -	0600	18000	33.19		1200	6980	21.47
	0300	636	6.41		1800	17000	32.61		1900	5830	19.51
	0600	453	5.81						2400	4590	17.33
	0930	702	6.60	Oct. 18 -	1200	15600	31.67				
	1200	684	6.55		2400	14600	30.96	Oct. 24 -	0600	3900	14.69
	1300	3900	14.70						1700	2880	11.35
	1415	8700	24.10	Oct. 19 -	0900	12800	29.49				
	1500	14900	31.16		1800	10200	26.35	Oct. 25 -	0600	2270	10.10
	1600	23300	35.38		2400	8180	23.41		2400	2210	9.98
	1745	26700	36.26								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	8.3	8.....	93	16.....	19400	24.....	3160
2.....	6.9	9.....	117	17.....	17000	25.....	2130
3.....	7.6	10.....	48	18.....	14400	26.....	2190
4.....	9.5	11.....	37	19.....	10500	27.....	2410
5.....	13	12.....	2920	20.....	5100	28.....	2160
6.....	16	13.....	9100	21.....	4850	29.....	1870
7.....	1740	14.....	15200	22.....	7480	30.....	1500
		15.....	19100	23.....	6400	31.....	2350

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	4881
MONTHLY TOTAL, IN ACRE-FEET	300100
RUNOFF, IN INCHES	2.10

(40) 08049200 LAKE ARLINGTON AT ARLINGTON, TX

LOCATION.--Lat 32°42'58", long 97°11'32", Tarrant County, Hydrologic Unit 12030102, in new pumphouse at right end of Arlington Dam on Village Creek near western boundary of Arlington, 1.5 mi (2.4 km) upstream from The Texas and Pacific Railway Co. bridge, and 7 mi (11 km) upstream from mouth.

DRAINAGE AREA.--143 mi² (370 km²).

PERIOD OF RECORD.--March 1957 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Sept. 9, 1957, nonrecording gage at same site and datum.

REMARKS.--Lake is formed by a rolled earthfill dam 6,482 ft (1,976 m) long. The service spillway is a 10-foot-diameter (3 m) uncontrolled circular drop inlet. The emergency spillway is an 882-foot-wide (269 m) cut through natural ground near the right end of dam. The dam was completed and storage began Mar. 31, 1957. Capacities are based on a 1955 survey. The dam was built by city of Arlington to impound water for municipal and industrial uses. Records furnished by the Tarrant County Water Control and Improvement District No. 1 show that 46,340 acre-ft (57.1 hm³) was diverted from Cedar Creek Reservoir (station 08063010) into Lake Arlington during the current year. Water is circulated for cooling purposes from lake to generating plant of Texas Electric Service Co. Monthly diversions given in table below do not include consumption of water during cooling since Texas Electric Service Co. did not have this data available. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	572.0	-
Crest of spillway	559.7	70,140
Crest of drop inlet (top of conservation pool)	550.0	45,710
Lowest gated outlet (invert)	505.0	180

MAXIMA: FOR OCTOBER 1981.--Contents, 44,680 acre-ft (55.1 hm³) Oct. 17, elevation, 549.53 ft (167.497 m).
FOR PERIOD MARCH 1957 TO OCTOBER 1981.--Contents, 60,580 acre-ft (74.7 hm³) May 4, 1979, elevation, 556.20 ft (169.530 m).

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 11	1200	33900	544.19	Oct. 13	2400	43500	548.99	Oct. 17	1200	44680	549.53
Oct. 12	1200	34900	544.71	Oct. 14	1200	44600	549.47	Oct. 18	2400	44600	549.51
	2400	35200	544.84		2400	44600	549.50				
								Oct. 19	1200	44600	549.49
Oct. 13	1200	35200	544.86	Oct. 15	1200	44600	549.50				
	1500	37700	546.13					Oct. 20	1200	44500	549.44
	1800	40000	547.28	Oct. 16	1200	44600	549.51				
	2100	41800	548.18		2400	44700	549.53				

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1	32910	8	33760	16	44690	24	45670
2	32800	9	33830	17	44600	25	45510
3	32830	10	33890	18	44640	26	45400
4	32870	11	33980	19	44560	27	45320
5	32890	12	35160	20	44360	28	45210
6	32910	13	43520	21	44450	29	45080
7	33720	14	44620	22	45750	30	44950
		15	44620	23	45800	31	45910
CHANGE IN CONTENTS, IN ACRE-FEET							+13080

(41) 08049500 WEST FORK TRINITY RIVER AT GRAND PRAIRIE, TX

LOCATION.--Lat 32°45'46", long 96°59'42", Dallas County, Hydrologic Unit 12030102, on left bank at upstream side of bridge on Belt Line Road, 1.3 mi (2.1 km) northeast of Grand Prairie, 3.7 mi (6.0 km) upstream from Bear Creek, 6.5 mi (10.5 km) upstream from Mountain Creek, and at mile 514.6 (828.0 km).

DRAINAGE AREA.--3,065 mi^2 (7,938 km^2).

PERIOD OF RECORD.--March 1925 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 410.42 ft (125.096 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 6, 1933, nonrecording gage at bridge on old channel 2,500 ft (762 m) southeast of present site at datum 2.56 ft (0.780 m) higher. Dec. 6, 1933, to May 24, 1956, water-stage recorder at site 440 ft (134 m) downstream from site of nonrecording gage at datum 2.56 ft (0.780 m) higher than present datum. May 25, 1956, to Apr. 18, 1957, nonrecording gage at site 1.5 mi (2.4 km) downstream at different datum. Apr. 19 to Aug. 13, 1957, nonrecording gage on bridge at present site and datum.

REMARKS.--Records good. Flow is affected at times by three upstream reservoirs with a combined capacity of 248,600 acre-ft (307 hm^3), of which 76,550 acre-ft (94.4 hm^3) is for flood control. The river channel at this station was relocated and rectified in 1956. Gage-height telemeter at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 20,200 ft^3/s (572 m^3/s) Oct. 17, gage height, 27.04 ft (8.242 m).
FOR PERIOD MARCH 1925 TO OCTOBER 1981.--Discharge, 62,000 ft^3/s (1,760 m^3/s) May 17, 1949, gage height, 28.00 ft (8.534 m), site and datum then in use, from rating curve extended above 36,000 ft^3/s (1,020 m^3/s).
HISTORIC.--Maximum stage since at least 1900, 30.6 ft (9.33 m) in May 1908, former site and datum, from information by local resident. Flood in April 1922 reached a stage of 29.0 ft (8.84 m), former site and datum, from floodmarks.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12	0800	293	1.15	Oct. 15	0730	14300	24.72	Oct. 20	2400	13600	24.29
	0915	1140	3.77		1030	15500	25.41				
	1000	2420	7.25					Oct. 21	0600	11500	22.73
	1200	3560	9.98	Oct. 16	0915	17100	26.12		1200	9520	20.77
	2000	4370	11.94		1200	18200	26.52		2400	7410	18.01
	2400	5320	14.19		2400	20000	26.99				
								Oct. 22	1200	8440	19.50
Oct. 13	0645	5850	15.27	Oct. 17	1200	19800	26.94		2400	8900	20.11
	1100	5310	14.16		2400	19700	26.93				
	1530	4170	11.44					Oct. 23	1200	9860	21.12
	2000	5480	14.52	Oct. 18	1200	18700	26.65		1700	10100	21.33
	2400	6910	17.19		2400	18000	26.45		2400	9860	21.12
Oct. 14	0600	8420	19.47	Oct. 19	1200	17400	26.24	Oct. 24	1200	8670	19.82
	1200	10100	21.36		2400	16700	25.98		2400	5330	14.20
	1600	11300	22.53								
	2400	13100	23.91	Oct. 20	1200	15700	25.49	Oct. 25	1200	2830	8.28
									2400	2350	7.08

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	169	8.....	1720	16.....	17400	24.....	8320
2.....	172	9.....	619	17.....	19500	25.....	3140
3.....	156	10.....	434	18.....	18600	26.....	2250
4.....	161	11.....	291	19.....	17200	27.....	2330
5.....	168	12.....	2510	20.....	15500	28.....	2380
6.....	194	13.....	5390	21.....	9870	29.....	2030
7.....	2080	14.....	10000	22.....	8130	30.....	1730
		15.....	14600	23.....	9700	31.....	2400

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	5779
MONTHLY TOTAL, IN ACRE-FEET	355300
RUNOFF, IN INCHES	2.17

(42) 08050050 MOUNTAIN CREEK LAKE NEAR GRAND PRAIRIE, TX

LOCATION.--Lat 32°43'55", long 96°56'35", Dallas County, Hydrologic Unit 12030102, at right end of spillway in Mountain Creek Dam on Mountain Creek, 2.5 mi (4.0 km) upstream from Texas and Pacific Railway Co. bridge, and 3.7 mi (6.0 km) southeast of Grand Prairie.

DRAINAGE AREA.--295 mi^2 (764 km^2).

PERIOD OF RECORD.--October 1960 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 21, 1960, nonrecording gage at powerplant at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 5,800 ft (1,770 m) long, including a controlled spillway six 34- by 27-foot (10 by 8 m) tainter gates. The dam was completed in December 1936 and deliberate impoundment began on Mar. 24, 1937. The lake was built and is operated by Dallas Power and Light Co. to supply cooling water for their generating plant. The capacity curve is based on a survey made in 1963. Flow is affected at times by discharge from flood-detention pools of three floodwater-retarding structures with combined detention capacity of 5,560 acre-ft (6.86 hm^3). These structures control runoff from 14.2 mi^2 (36.8 km^2). Figures given herein represent total contents. Gage-height telemeter located at station. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	467.0	-
Top of gates	458.0	25,720
Top of dry weather conservation pool	457.0	22,840
Top of wet weather conservation pool	456.0	20,260
Crest of spillway (sill of tainter gates)	431.0	0

MAXIMA: FOR OCTOBER 1981.--Contents, 22,630 acre-ft (27.9 hm^3) Oct. 17, elevation, 456.92 ft (139.269 m). FOR PERIOD OCTOBER 1960 to OCTOBER 1981.-Contents, 60,580 acre-ft (74.7 hm^3) May 4, 1979, elevation, 556.20 ft (169.530 m).

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 12 -	0600	20700	456.15	Oct. 14 -	1200	22300	456.77	Oct. 17 -	1200	22630	456.92
	1200	21100	456.31		2400	22300	456.79				
	2400	21700	456.56					Oct. 18 -	1200	22500	456.85
				Oct. 15 -	1200	22400	456.81				
Oct. 13 -	1200	21900	456.62					Oct. 19 -	1200	22500	456.85
	2400	22100	456.72	Oct. 16 -	1200	22400	456.83				
								Oct. 20 -	1200	22500	456.85
									2400	22400	456.84

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1.....	19620	8.....	20390	16.....	22480	24.....	23100
2.....	19570	9.....	20620	17.....	22500	25.....	23100
3.....	19530	10.....	20620	18.....	22450	26.....	23100
4.....	19480	11.....	20650	19.....	22430	27.....	23100
5.....	19430	12.....	21700	20.....	22400	28.....	23100
6.....	19340	13.....	22120	21.....	22500	29.....	23070
7.....	20340	14.....	22300	22.....	23560	30.....	23070
		15.....	22350	23.....	22960	31.....	23680
CHANGE IN CONTENTS, IN ACRE-FEET.....							+3940

(43) 08050100 MOUNTAIN CREEK AT GRAND PRAIRIE, TX

LOCATION.--Lat 32°44'52", long 96°55'33", Dallas County, Hydrologic Unit 12030102, on right bank at downstream side of downstream bridge on Jefferson Street, 1,000 ft (305 m) upstream from bridge on U.S. Highway 80, 1.2 mi (1.9 km) upstream from Texas and Pacific Railroad Co. bridge, 1.5 mi (2.4 km) downstream from Mountain Creek Lake Dam, and 4.4 mi (7.1 km) east of Grand Prairie.

DRAINAGE AREA.--298 mi^2 (772 km^2).

PERIOD OF RECORD.--October 1960 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 407.31 ft (124.148 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated by Mountain Creek Lake (station 08050050). Gage-height telemeter is located at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 4,630 ft^3/s (131 m^3/s) Oct. 18, gage height, 12.54 ft (3.822 m).
FOR PERIOD OCTOBER 1960 TO OCTOBER 1981.--Discharge, 38,100 ft^3/s (1,080 m^3/s) Apr. 19, 1976, gage height, 24.21 ft (7.379 m); maximum gage height, 24.62 ft (7.504 m) May 7, 1969.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0600	0.77	1.97	Oct. 15 -	1200	2620	8.80	Oct. 20 -	1200	3740	10.98
	1030	33	3.15		2400	2730	9.04		2400	3400	10.36
	1800	25	3.01								
	2400	12	2.73	Oct. 16 -	1200	3110	9.79	Oct. 21 -	1200	2690	8.96
					2400	3790	11.08		2400	2070	7.63
Oct. 13 -	1200	14	2.77								
	2400	17	2.86	Oct. 17 -	1200	4240	11.88	Oct. 22 -	1200	2270	8.06
					2400	4600	12.50		2400	2540	8.65
Oct. 14 -	0300	115	3.88								
	0600	510	4.75	Oct. 18 -	0600	4630	12.54	Oct. 23 -	1200	3760	11.03
	0800	938	5.35		1200	4600	12.50		2400	2720	9.01
	1200	1640	6.70								
	1430	2000	7.49	Oct. 19 -	1200	4200	11.81	Oct. 24 -	1200	2410	8.36
	2400	2610	8.79		2400	3980	11.42		2400	1620	6.65

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.43	8.....	4.9	16.....	2.0	24.....	5.0
2.....	.51	9.....	3.6	17.....	2.2	25.....	2.7
3.....	.57	10.....	3.1	18.....	1.5	26.....	1.5
4.....	.59	11.....	1.0	19.....	1.0	27.....	1.7
5.....	.53	12.....	17	20.....	.77	28.....	2.5
6.....	.45	13.....	15	21.....	15	29.....	1.0
7.....	8.5	14.....	1.8	22.....	19	30.....	.95
		15.....	.80	23.....	477	31.....	17

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	19.7
MONTHLY TOTAL, IN ACRE-FEET	1210
RUNOFF, IN INCHES	.08

(44) 08050500 ELM FORK TRINITY RIVER NEAR SANGER, TX

LOCATION.--Lat 33°23'11", long 97°05'05", Denton County, Hydrologic Unit 12030103, on right bank on downstream side of pier of bridge on Farm Road 455, 4.1 mi (6.6 km) downstream from Spring Creek, 5.0 mi (8.0 km) upstream from Isle du Bois Creek, and 5.4 mi (8.7 km) northeast of Sanger.

DRAINAGE AREA.--381 mi^2 (987 km^2).

PERIOD OF RECORD.--April 1949 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 553.72 ft (168.774 m) National Geodetic Vertical Datum of 1929. Prior to May 7, 1955, at site 500 ft (150 m) downstream at same datum.

REMARKS.--Records good. Flow is affected at times by discharge from the flood-detention pools of 41 floodwater-retarding structures with a combined capacity of 26,790 acre-ft (33.0 hm^3). These structures control runoff from 94.7 mi^2 (245.3 km^2) in the Elm Fork Trinity River watershed. On Jan. 12, 1981, a telemeter was installed at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 150,000 ft^3/s (4,250 m^3/s) Oct. 13, gage height, 33.50 ft (10.211 m).
FOR PERIOD APRIL 1949 TO OCTOBER 1981.--Discharge, 50,000 ft^3/s (1,420 m^3/s) Oct. 31, 1974, gage height, 29.10 ft (8.870 m).
HISTORIC.--Maximum stage since at least 1903, 30.7 ft (9.36 m) in May 1908, from information by local residents. Flood of May 18, 1935, reached a stage of 29.7 ft (9.05 m), from floodmarks.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0300	99	1.55	Oct. 14 -	0200	123000	32.66	Oct. 16 -	0500	3480	17.49
	0600	474	4.33		0400	93200	31.52		0700	5620	22.58
	0700	1100	7.65		0600	55600	29.50		0900	10500	25.83
	0900	2010	11.79		0800	32000	27.95		1000	19200	26.81
	1200	3520	17.60		1000	24100	27.25		1200	26300	27.46
	1600	7040	24.24		1200	20200	26.89		1800	20000	26.87
	2400	9380	25.40		1500	15800	26.52		2100	16800	26.57
					1800	11000	25.99		2400	12600	26.20
Oct. 13 -	0600	13200	26.26		2100	8090	24.86				
	0800	47200	28.95		2400	5830	22.87	Oct. 17 -	0300	10500	25.81
	0930	72500	30.52						0600	8570	25.07
	1100	98000	31.72	Oct. 15 -	0200	4870	21.15		0900	6610	23.83
	1230	114000	32.34		0400	4110	19.30		1200	4490	20.25
	1400	126000	32.76		1200	2570	14.15		1800	3000	15.78
	1600	139000	33.17		2400	1970	11.58		2300	5360	22.10
	2000	150000	33.50						2400	4590	20.49
	2400	138000	33.14	Oct. 16 -	0200	1920	11.39				

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	3.0	8.....	1720	16.....	13900	24.....	952
2.....	2.3	9.....	356	17.....	6370	25.....	847
3.....	1.3	10.....	178	18.....	2550	26.....	663
4.....	.8	11.....	119	19.....	1450	27.....	533
5.....	.6	12.....	4140	20.....	1300	28.....	454
6.....	64	13.....	88200	21.....	1170	29.....	423
7.....	2710	14.....	39900	22.....	1210	30.....	400
		15.....	2990	23.....	1190	31.....	6420

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	5813
MONTHLY TOTAL, IN ACRE-FEET	357500
RUNOFF, IN INCHES	17.60

(45) 08051000 ISLE DU BOIS CREEK NEAR PILOT POINT, TX

LOCATION.--Lat 33°24'23", long 97°00'45", Denton County, Hydrologic Unit 12030103, on left bank at downstream side of bridge on Farm Road 372, 2.4 mi (3.9 km) downstream from Wolf Creek, 3.0 mi (4.8 km) west of Pilot Point, and 6.3 mi (10.1 km) upstream from mouth.

DRAINAGE AREA.--266 mi^2 (689 km^2).

PERIOD OF RECORD.--April 1949 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 555.48 ft (169.310 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Feb. 8, 1958, water-stage recorder at site 1.0 mi (1.6 km) upstream at datum 4.22 ft (1.286 m) higher.

REMARKS.--Records good. No known diversion above station. Gage-height telemeter was installed Jan. 9, 1981.

MAXIMA: FOR OCTOBER 1981.--Discharge, 39,900 ft^3/s (1,130 m^3/s) Oct. 16, gage height, 29.84 ft (9.095 m).
FOR PERIOD APRIL 1949 TO OCTOBER 1981.--Discharge, 40,000 ft^3/s (1,130 m^3/s) Oct. 31, 1974, gage height, 29.43 ft (8.970 m).
HISTORIC.--Maximum stage since at least 1900, 30.4 ft (9.27 m) in May 1908, present site and datum, from information by local resident.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12	0400	14	1.99	Oct. 15	1430	2440	16.37	Oct. 17	1200	9520	25.14
	0515	203	3.75		1830	1440	11.46		1600	7140	24.12
	0600	826	7.84		2400	597	6.36		2400	5230	22.58
	0730	1830	13.60								
	1200	3400	19.59	Oct. 16	0600	426	5.19	Oct. 18	1000	4720	21.97
	2400	5730	23.11		0800	2440	16.38		1430	4270	21.35
					1000	4760	22.02		1830	3710	20.31
Oct. 13	0400	6960	24.03		1100	8660	24.80		2400	3100	18.77
	1000	9810	25.25		1200	20400	27.85				
	1600	17000	27.21		1400	34700	29.40	Oct. 19	0700	2160	15.23
	2200	29400	28.90		1500	37900	29.68		1200	1200	10.10
					1700	39900	29.84		1400	826	7.84
Oct. 14	0100	32600	29.21		2200	33400	29.28		2400	368	4.80
	0600	26000	28.55		2400	28900	28.85				
	1400	16000	27.00					Oct. 20	1200	232	3.94
	2400	6220	23.50	Oct. 17	0200	25000	28.44		2400	154	3.36
					0400	20400	27.85				
Oct. 15	0400	4830	22.10		0600	17200	27.24	Oct. 21	1200	114	3.00
	1000	3420	19.67		0800	13200	26.30		2400	92	2.81

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.00	8.....	2080	16.....	18900	24.....	201
2.....	.00	9.....	576	17.....	12200	25.....	82
3.....	.00	10.....	67	18.....	4350	26.....	65
4.....	.00	11.....	24	19.....	1430	27.....	49
5.....	.00	12.....	2820	20.....	243	28.....	33
6.....	97	13.....	14300	21.....	117	29.....	24
7.....	1330	14.....	18700	22.....	110	30.....	20
		15.....	3020	23.....	331	31.....	1680

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	2673
MONTHLY TOTAL, IN ACRE-FEET	164300
RUNOFF, IN INCHES	11.59

(46) 08051500 CLEAR CREEK NEAR SANGER, TX

LOCATION.--Lat 33°20'21", long 97°10'51", Denton County, Hydrologic Unit 12030103, at the downstream side of left abutment of main channel bridge on Interstate Highway 35, 600 ft (180 m) downstream from Duck Creek, 1.3 mi (2.1 km) upstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, and 1.7 mi (2.7 km) south of Sanger.

DRAINAGE AREA.--295 mi^2 (764 km^2).

PERIOD OF RECORD.--March 1949 to October 1981.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 582.23 ft (177.464 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Apr. 18, 1975, water-stage recorder at site 950 ft (290 m) downstream at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records good. No appreciable diversion above station. Flow is affected at times by discharge from the flood-detention pools of 51 floodwater-retarding structures with a combined detention capacity of 38,850 acre-ft (47.9 hm^3). These structures control runoff from 149 mi^2 (386 km^2) in the Clear Creek watershed. A crest-stage gage was installed on May 7, 1979.

MAXIMA: FOR OCTOBER 1981.--Discharge, 104,000 ft^3/s (2,950 m^3/s) Oct. 13, gage height, 35.70 ft (10.881 m).
FOR PERIOD MARCH 1949 TO OCTOBER 1981.--Discharge, 18,200 ft^3/s (515 m^3/s) Sept. 13, 1950, gage height, 24.80 ft (7.559 m), site and datum then in use.
HISTORIC.--Maximum stage since at least 1880, 31.5 ft (9.60 m) in May 1908, from information by Gulf, Colorado, and Santa Fe Railway Co. Flood in May 1935 reached a stage of 29.0 ft (8.84 m), from information by State Department of Highways and Public Transportation. Both peaks referenced to site and datum used prior to Apr. 18, 1975.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0300	48	7.11	Oct. 13 -	2400	43500	32.61	Oct. 17 -	1200	2380	16.67
	0600	318	9.03						1730	2280	16.39
	0800	607	10.55	Oct. 14 -	0200	29900	31.38		2145	3520	19.80
	0900	1240	13.13		0500	19900	30.10		2400	3160	18.85
	1200	1920	15.35		1200	10700	28.26				
	1400	2720	17.64		1430	7160	26.77	Oct. 18 -	0300	2740	17.70
	1800	4080	21.21		2400	3440	19.60		1200	2260	16.35
	2400	4630	22.51						2400	2100	15.87
				Oct. 15 -	0600	3020	18.51				
Oct. 13 -	0300	6770	26.38		1200	2750	17.71	Oct. 19 -	1200	2040	15.72
	0500	11000	28.36		1800	2620	17.35		2400	1970	15.49
	0615	16300	29.51		2400	2530	17.10				
	1015	9470	27.83					Oct. 20 -	1200	1900	15.30
	1130	15500	29.36	Oct. 16 -	0600	3110	18.72		2400	1860	15.17
	1200	27200	31.08		0700	3230	19.03				
	1430	46000	32.80		1200	2910	18.16	Oct. 21 -	1200	1780	14.91
	1600	66800	34.09		1800	2660	17.46				
	1630	84200	34.92		2400	2680	17.53	Oct. 22 -	1200	1650	14.51
	1800	104000	35.70								
	2000	88400	35.10	Oct. 17 -	0600	2480	16.94	Oct. 23 -	1200	1260	13.19
	2200	65700	34.03								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.09	8.....	803	16.....	2760	24.....	1310
2.....	.04	9.....	329	17.....	2590	25.....	1140
3.....	.02	10.....	144	18.....	2350	26.....	879
4.....	.01	11.....	66	19.....	2040	27.....	682
5.....	.00	12.....	2190	20.....	1900	28.....	527
6.....	.00	13.....	39700	21.....	1780	29.....	328
7.....	878	14.....	13000	22.....	1640	30.....	205
		15.....	2830	23.....	1510	31.....	3340

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	2739
MONTHLY TOTAL, IN ACRE-FEET	168400
RUNOFF, IN INCHES	10.71

(47) 08052700 LITTLE ELM CREEK NEAR AUBREY, TX

LOCATION.--Lat 33°17'00", long 96°53'33", Denton County, Hydrologic Unit 12030103, on left bank at downstream side of bridge on Farm Road 1385, 1.5 mi (2.4 km) upstream from Mustang Creek, 5.5 mi (8.8 km) east of Aubrey, and 18 mi (29 km) upstream from Lewisville Dam on the Elm Fork Trinity River.

DRAINAGE AREA.--75.5 mi^2 (195.5 km^2).

PERIOD OF RECORD.--June 1956 to September 1976, October 1979 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 534.76 ft (162.995 m) National Geodetic Vertical Datum of 1929 (State Department of Highways and Public Transportation bench mark).

REMARKS.--Records good. Some small diversions for irrigation above station. Flow is affected at times by discharge from the flood-detention pools of 17 floodwater-retarding structures with a combined detention capacity of 10,460 acre-ft (12.9 hm^3). These structures control runoff from 36.4 mi^2 (94.3 km^2) above station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 9,100 ft^3/s (258 m^3/s) Oct. 13, gage height, 17.36 ft (5.291 m).
FOR PERIOD JUNE 1956 TO SEPTEMBER 1976, OCTOBER 1979 TO OCTOBER 1981.--Discharge, 7,920 ft^3/s (224 m^3/s) Oct. 31, 1974, gage height, 17.04 ft (5.194 m); maximum gage height, 17.34 ft (5.285 m) Apr. 26, 1957.
HISTORIC.--Maximum stage since about 1900, 18.2 ft (5.55 m) in May 1941, from information by local residents.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0500	92	8.00	Oct. 13 -	1900	4360	16.36	Oct. 16 -	1600	882	14.08
	0700	239	10.34		2000	6370	16.86		2200	1030	14.41
	0900	878	14.07		2145	9100	17.36				
	1030	1460	15.02		2400	7060	17.00	Oct. 17 -	1200	702	13.60
	1200	2060	15.45						2400	567	13.08
	1330	2850	15.83	Oct. 14 -	0200	5400	16.64				
	1500	3880	16.21		0600	3550	16.10	Oct. 18 -	1200	630	13.33
	1630	4820	16.49		1200	2430	15.64		2400	533	12.93
	1900	5820	16.74		1800	1760	15.26				
	2145	5050	16.55		2400	1320	14.85	Oct. 19 -	1200	492	12.66
	2400	4260	16.33						2400	479	12.57
				Oct. 15 -	0430	1050	14.45				
Oct. 13 -	0300	3390	16.04		1200	795	13.85	Oct. 20 -	1200	466	12.49
	0700	2350	15.60		2400	609	13.25				
	0900	1840	15.32					Oct. 21 -	1200	452	12.39
	1300	1350	14.88	Oct. 16 -	0700	583	13.14				
	1500	2210	15.53								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.00	8.....	1320	16.....	765	24.....	392
2.....	.00	9.....	427	17.....	754	25.....	352
3.....	.00	10.....	203	18.....	593	26.....	260
4.....	.00	11.....	107	19.....	497	27.....	207
5.....	.00	12.....	2520	20.....	468	28.....	148
6.....	.00	13.....	3660	21.....	452	29.....	112
7.....	384	14.....	2880	22.....	463	30.....	88
		15.....	844	23.....	461	31.....	1520

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	641
MONTHLY TOTAL, IN ACRE-FEET	39430
RUNOFF, IN INCHES	9.79

(48) 08052800 LEWISVILLE LAKE NEAR LEWISVILLE, TX

LOCATION.--Lat 33°04'09", long 96°57'51", Denton County, Hydrologic Unit 12030103, in intake structure of Lewisville Dam on Elm Fork Trinity River, 2 mi (3 km) upstream from bridge on State Highway 121, 2.4 mi (3.9 km) northeast of Lewisville, 12 mi (19 km) upstream from Denton Creek, and 30.0 mi (48.3 km) upstream from mouth.

DRAINAGE AREA.--1,660 mi² (4,299 km²).

PERIOD OF RECORD.--November 1954 to October 1981. Prior to October 1970, published as Garza-Little Elm Reservoir near Lewisville.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to May 17, 1955, nonrecording gage at site 4,000 ft (1,220 m) upstream at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 32,888 ft (10,024 m) long, including a 560-foot (171 m) uncontrolled off-channel concrete-gravity spillway with ogee weir section. Deliberate impoundment began Nov. 1, 1954, and the dam was completed in August 1955. The controlled low-flow outlet works consist of a 16.0-foot-diameter (4.9 m) conduit that is controlled by three 6.5- by 13.0-foot (2.0 by 4.0 m) broome-type gates and two 60-inch (1,524 mm) steel pipes with service valves. The lake was built for flood control and water conservation. The city of Dallas obtains most of its water for municipal use from this lake. The capacity table is based on a survey made in 1965. Inflow is affected at times by discharge from the flood-detention pools of 118 floodwater-retarding structures with combined detention capacity of 81,670 acre-ft (101 hm³). These structures control runoff from 298 mi² (772 km²) in the Elm Fork Trinity River, Clear, Little Elm, and Hickory Creeks watersheds. Gage-height telemeter at station. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	560.0	-
Crest of spillway	532.0	981,800
Top of conservation pool	515.0	457,600
Lowest intakes to wet wells (invert)	481.0	42,560
Invert of three broome-type gates	448.0	0

MAXIMA: FOR OCTOBER 1981.--Contents, 1,131,000 acre-ft (1.39 km³) Oct. 18, elevation, 535.62 ft (163.257 m).
FOR PERIOD NOVEMBER 1954 TO OCTOBER 1981.--Contents, 1,146,000 acre-ft (1.41 km³) June 3, 1957, elevation, 535.57 ft (163.242 m).

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 12 -	0400	438000	514.15	Oct. 15 -	1400	1000000	532.50	Oct. 21 -	1200	1110000	535.23
	0800	444000	514.42		2400	1010000	532.80				
	1000	450000	514.65					Oct. 22 -	1200	1110000	535.20
	1800	479000	515.92	Oct. 16 -	1200	1030000	533.12				
					2400	1060000	533.85	Oct. 23 -	1200	1110000	535.07
Oct. 13 -	0600	517000	517.44								
	1800	569000	519.47	Oct. 17 -	0600	108000	534.51	Oct. 24 -	1200	1100000	534.85
	2400	656000	522.50		1200	1110000	535.00				
					2400	1120000	535.44	Oct. 25 -	1200	1090000	534.73
Oct. 14 -	0200	697000	523.85								
	0400	762000	525.90	Oct. 18 -	1800	1131000	535.62	Oct. 26 -	2400	1080000	534.45
	0800	821000	527.65								
	1200	884000	529.42	Oct. 19 -	1200	1130000	535.59	Oct. 27 -	2400	1070000	534.24
	1600	925000	530.52								
	2200	959000	531.42	Oct. 20 -	1200	1120000	535.43	Oct. 28 -	2400	1060000	534.00

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1.....	397300	8.....	422400	16.....	1057000	24.....	1095000
2.....	396000	9.....	434700	17.....	1124000	25.....	1091000
3.....	394100	10.....	437900	18.....	1131000	26.....	1080000
4.....	393100	11.....	438100	19.....	1126000	27.....	1071000
5.....	392400	12.....	505900	20.....	1114000	28.....	1060000
6.....	393900	13.....	677000	21.....	1111000	29.....	1049000
7.....	404200	14.....	970100	22.....	1110000	30.....	1038000
		15.....	1014000	23.....	1103000	31.....	1123000
CHANGE IN CONTENTS, IN ACRE-FEET.....							+724800

(49) 08053000 ELM FORK TRINITY RIVER NEAR LEWISVILLE, TX

LOCATION.--Lat 33°02'43", long 96°57'41", Denton County, Hydrologic Unit 12030103, on left bank at downstream side of pier of bridge on State Highway 121, 1.8 mi (2.9 km) east of Lewisville, 1.9 mi (3.1 km) downstream from Lewisville Lake, 8.3 mi (13.4 km) upstream from Denton Creek, and 28.2 mi (45.4 km) upstream from mouth.

DRAINAGE AREA.--1,673 mi^2 (4,333 km^2).

PERIOD OF RECORD.--March 1949 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 432.39 ft (131.792 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Jan. 6, 1950, nonrecording gage 0.6 mi (1.0 km) upstream at datum 3.26 ft (0.994 m) lower.

REMARKS.--Records good. Flow regulated by Lewisville Lake (see station 08052800) since November 1954. Gage-height telemeter located at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 1,690 ft^3/s (47.9 m^3/s) Oct. 13, gage height, 12.93 ft (3.941 m).
FOR PERIOD MARCH 1949 TO OCTOBER 1981.--Discharge, 21,700 ft^3/s (615 m^3/s) Sept. 15, 1950, gage height, 30.75 ft (9.373 m). Maximum discharge since constuction of Lewisville Dam in 1954, 11,400 ft^3/s (323 m^3/s) May 27, 1957, and does not include about 4,000 ft^3/s (113 m^3/s) that discharged over spillway of Lewisville Dam and by-passed this gaging station.
HISTORIC.--Maximum stage since at least 1907, 33.8 ft (10.30 m) in 1908, present site and datum, from information by local resident.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0200	167	5.09	Oct. 13 -	1530	616	8.24	Oct. 14 -	1200	211	5.54
	0930	545	7.88		2000	1690	12.93		1800	101	4.28
	1230	1110	10.61		2400	1220	11.07				
	1900	517	7.73					Oct. 15 -	1200	52	3.49
	2400	184	5.27	Oct. 14 -	0500	676	8.53		2400	71	3.83
					0800	397	7.05				
Oct. 13 -	1100	72	3.84								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	293	8.....	102	16.....	584	24.....	6300
2.....	279	9.....	182	17.....	3180	25.....	5410
3.....	296	10.....	166	18.....	8480	26.....	5180
4.....	281	11.....	165	19.....	9890	27.....	5700
5.....	281	12.....	487	20.....	9160	28.....	6550
6.....	268	13.....	575	21.....	8190	29.....	7920
7.....	168	14.....	369	22.....	8250	30.....	8200
		15.....	57	23.....	7460	31.....	8040

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	3628
MONTHLY TOTAL, IN ACRE-FEET	223100
RUNOFF, IN INCHES	2.50

(50) 08053500 DENTON CREEK NEAR JUSTIN, TX

LOCATION.--Lat 33°07'08", long 97°17'25", Denton County, Hydrologic Unit 12030104, on right bank at downstream side of bridge on Farm Road 156, 100 ft (30 m) upstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, 2.2 mi (3.5 km) north of Justin, 3.0 mi (4.8 km) upstream from Olivers Creek, 12.9 mi (20.8 km) upstream from Harriet Creek, and 32.9 mi (52.9 km) upstream from Grapevine Dam.

DRAINAGE AREA.--400 mi^2 (1,036 km^2).

PERIOD OF RECORD.--October 1949 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 606.66 ft (184.910 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several small diversions above station. Flow is affected at times by discharge from the flood-detention pools of 84 floodwater-retarding structures with a combined detention capacity of 52,750 acre-ft (65.0 hm^3). These structures control runoff from 197 mi^2 (510 km^2) in the Denton Creek watershed.

MAXIMA: FOR OCTOBER 1981.--Discharge, 34,700 ft^3/s (983 m^3/s) Oct. 13, gage height, 18.68 ft (5.694 m).
FOR PERIOD OCTOBER 1949 TO OCTOBER 1981.--Discharge, 29,800 ft^3/s (844 m^3/s) May 24, 1957, gage height, 17.64 ft (5.377 m).
HISTORIC.--Flood in May 1935 was the highest since 1908 and reached a stage of 20.6 ft (6.28 m) at site about 1,500 ft (457 m) upstream, from information by local resident. Flood in May 1908 reached a stage about 1.0 ft (0.30 m) higher than flood in May 1935, from information by local resident.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 11 -	1200	14	2.08	Oct. 14 -	0400	24300	17.54	Oct. 20 -	1200	2580	12.26
					0800	24200	17.52		2400	2420	12.05
Oct. 12 -	0300	14	2.07		1000	20600	17.23				
	0600	1580	10.25		1200	18200	17.02	Oct. 21 -	1200	2250	11.72
	0700	11800	16.25		1600	15200	16.68				
	0800	19500	17.14		2000	13400	16.46	Oct. 22 -	1200	2110	11.45
	1000	16800	16.87		2400	10900	16.13				
	1300	13700	16.49					Oct. 23 -	0600	1910	11.02
	1500	10800	16.11	Oct. 15 -	0300	8310	15.66		1200	1690	10.52
	1700	7420	15.45		0900	5900	15.04		1800	1560	10.19
	2000	5230	14.70		2100	4150	14.02		2400	1420	9.80
	2400	4160	14.03		2400	4570	14.30				
								Oct. 24 -	1200	1200	9.01
Oct. 13 -	0200	3900	13.78	Oct. 16 -	1200	3820	13.70		2400	1040	8.39
	0600	3660	13.54		2400	3690	13.57				
	0900	4180	14.04					Oct. 25 -	1200	931	7.88
	1000	6280	15.14	Oct. 17 -	1200	3660	13.54		2400	795	7.29
	1100	15900	16.76		2400	3640	13.51				
	1200	26100	17.74								
	1300	34700	18.68	Oct. 18 -	1200	3360	13.21				
	1800	30700	18.25								
	2100	26200	17.75	Oct. 19 -	1200	2960	12.75				
	2400	21300	17.29		2400	2820	12.58				

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.00	8.....	293	16.....	3910	24.....	1210
2.....	.00	9.....	84	17.....	3660	25.....	896
3.....	.00	10.....	41	18.....	3370	26.....	662
4.....	.00	11.....	19	19.....	2970	27.....	466
5.....	.00	12.....	7740	20.....	2610	28.....	309
6.....	.00	13.....	17600	21.....	2260	29.....	236
7.....	182	14.....	18600	22.....	2150	30.....	177
		15.....	6080	23.....	1730	31.....	10400

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	2828
MONTHLY TOTAL, IN ACRE-FEET	173900
RUNOFF, IN INCHES	8.15

(51) 08054500 GRAPEVINE LAKE NEAR GRAPEVINE, TX

LOCATION.--Lat 32°58'21", long 97°03'22", Tarrant County, Hydrologic Unit 12030104, in intake structure of Grapevine Dam on Denton Creek, 2.7 mi (4.3 km) northeast of Grapevine, 4.3 mi (6.9 km) upstream from bridge on State Highway 121, and 11.7 mi (18.8 km) upstream from mouth.

DRAINAGE AREA.--695 mi^2 (1,800 km^2).

PERIOD OF RECORD.--July 1952 to October 1981. Prior to October 1970, published as Grapevine Reservoir.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to May 16, 1953, nonrecording gage at site 1,000 ft (305 m) upstream at present datum.

REMARKS.--The lake is formed by a rolled earthfill dam 12,850 ft (3,917 m) long, including a 500-foot (150 m) uncontrolled off-channel concrete-gravity spillway with an ogee weir section. The dam was completed in June 1952 and deliberate impoundment began July 3, 1952. The controlled outlet works consist of a 13.0-foot-diameter (4.0 m) concrete conduit that is controlled by two 6.5- by 13.0-foot (2.0 by 4.0 m) broome-type gates and two 30-inch (762 mm) steel pipes with service valves. The capacity table used since April 1972 is based on a survey made in October 1966. The lake was built for flood control, navigation, and water conservation. The city of Dallas uses part of this water for their municipal supply. Inflow is affected at times by discharge from the flood-detention pools of 87 floodwater-retarding structures with a combined detention capacity of 57,850 acre-ft (71.3 hm^3). These structures control runoff from 217 mi^2 (562 km^2) in the Denton Creek watershed. Gage-height telemeter at station. Figures give herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	588.0	-
Crest of spillway	560.0	425,500
Top of conservation pool	535.0	181,100
Lowest intake to wet wells (invert)	500.5	22,140
Invert of two broome-type gates	475.0	100

MAXIMA: FOR OCTOBER 1981.--Contents, 406,000 acre-ft (501 km^3) Oct. 30, elevation, 558.44 ft (170.213 m).
FOR PERIOD JULY 1952 TO OCTOBER 1981.--Contents, 445,800 acre-ft (550 km^3) June 6, 1957, elevation, 560.80 ft (170.932 m).

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 11 -	1200	157000	531.62	Oct. 14 -	1800	308000	549.62	Oct. 21 -	1200	382000	556.42
					2400	318000	550.55		2400	385000	556.70
Oct. 12 -	0600	158000	531.63								
	1200	162000	532.23	Oct. 15 -	0600	326000	551.29	Oct. 22 -	1200	390000	557.07
	1600	169000	533.37		1400	334000	552.07				
	1800	178000	534.55		2400	341000	552.72	Oct. 23 -	1200	396000	557.63
	2000	186000	535.66								
	2400	194000	536.77	Oct. 16 -	1200	347000	553.31	Oct. 24 -	1200	399000	557.89
					2400	352000	553.79				
Oct. 13 -	0400	200000	537.49					Oct. 25 -	1200	402000	558.07
	1200	206000	538.34	Oct. 17 -	1200	357000	554.18				
	1600	216000	539.58		2400	361000	554.54	Oct. 26 -	1200	404000	558.25
	1800	223000	540.41								
	2000	236000	541.91	Oct. 18 -	1200	365000	554.92	Oct. 27 -	1200	404000	558.30
	2200	249000	543.47		2400	368000	555.20				
	2400	261000	544.72					Oct. 28 -	1200	405000	558.36
				Oct. 19 -	1200	371000	555.47				
Oct. 14 -	0200	270000	545.72		2400	374000	555.74	Oct. 29 -	1200	405000	558.38
	0400	277000	546.47								
	0600	284000	547.14	Oct. 20 -	1200	377000	555.99	Oct. 30 -	2400	406000	558.44
	1000	292000	548.00		2400	380000	556.20				
	1400	300000	548.84								

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1.....	154100	8.....	156500	16.....	353900	24.....	400700
2.....	153900	9.....	157300	17.....	360300	25.....	402900
3.....	153700	10.....	157500	18.....	368000	26.....	403800
4.....	153500	11.....	157900	19.....	374300	27.....	404700
5.....	153300	12.....	192200	20.....	379600	28.....	405200
6.....	153500	13.....	256300	21.....	385000	29.....	405500
7.....	155300	14.....	317800	22.....	393500	30.....	406100
		15.....	340300	23.....	398000	31.....	464300
CHANGE IN CONTENTS, IN ACRE-FEET.....							+310000

(52) 08055000 DENTON CREEK NEAR GRAPEVINE, TX

LOCATION.--Lat 32°59'13", long 97°00'45", Denton County, Hydrologic Unit 12030104, on left bank at downstream side of left pier of bridge on State Highway 121, 1.3 mi (2.1 km) downstream from Bakers Branch, 4.1 mi (6.6 km) downstream from Grapevine Dam, 5.0 mi (8.0 km) northeast of Grapevine, and 6.1 mi (9.8 km) upstream from mouth.

DRAINAGE AREA.--705 mi^2 (1,826 km^2).

PERIOD OF RECORD.--October 1947 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 439.11 ft (133.841 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow is regulated by Grapevine Lake since July 1952 (see preceding page). Much of flow is used by the city of Dallas for municipal supply (see station 08055500). Records furnished by the Corps of Engineers indicate that 1,970 acre-ft (2.43 hm^3) was diverted during year from Denton Creek just downstream from Grapevine Dam. Gage-height telemeter (DARDC) located at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 1,840 ft^3/s (52.1 m^3/s) Oct. 13, gage height, 17.41 ft (5.306 m).
FOR PERIOD OCTOBER 1947 TO OCTOBER 1981.--Maximum discharge, 13,900 ft^3/s (394 m^3/s) Feb. 26, 1948, gage height, 30.38 ft (9.260 m), from rating curve extended above 6,000 ft^3/s (170 m^3/s) on basis of conveyance-slope study. Maximum discharge since construction of Grapevine Dam in 1952, 6,430 ft^3/s (182 m^3/s) Sept. 21, 1964, gage height, 26.50 ft (8.077 m).
HISTORIC.--Flood in May 1908 was slightly higher than the flood in April 1942, which reached a stage of 35.9 ft (10.94 m), from floodmarks, from information by local resident.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0600	34	5.78	Oct. 13 -	1700	1840	17.41	Oct. 16 -	0900	155	7.01
	0800	113	6.69		2030	1280	14.40		1130	307	8.04
	0900	295	7.95		2400	561	9.93		1600	154	7.00
	1100	534	9.74						2400	69	6.25
	1430	277	7.84	Oct. 14 -	0200	314	8.10				
	1700	132	6.83		0430	149	6.96	Oct. 17 -	1200	57	6.10
	2400	51	6.02		1200	79	6.37				
					2400	63	6.17	Oct. 18 -	1200	52	6.03
Oct. 13 -	0600	48	5.98								
	1300	48	5.98	Oct. 15 -	1200	58	6.11	Oct. 19 -	1200	53	6.05
	1400	155	7.01								
	1430	401	8.77	Oct. 16 -	0600	53	6.05	Oct. 20 -	1200	51	6.02
	1530	1310	14.58								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	32	8.....	33	16.....	126	24.....	58
2.....	33	9.....	36	17.....	57	25.....	58
3.....	33	10.....	32	18.....	52	26.....	57
4.....	32	11.....	33	19.....	53	27.....	57
5.....	31	12.....	162	20.....	53	28.....	56
6.....	32	13.....	543	21.....	55	29.....	56
7.....	51	14.....	123	22.....	306	30.....	56
		15.....	60	23.....	73	31.....	662

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	100
MONTHLY TOTAL, IN ACRE-FEET	6150
RUNOFF, IN INCHES	.16

(53) 08055500 ELM FORK TRINITY RIVER NEAR CARROLLTON, TX

LOCATION.--Lat 32°57'57", long 96°56'39", Dallas County, Hydrologic Unit 12030103, near left bank at downstream side of bridge on Sandy Lake Road, 40 ft (12 m) upstream from Carrollton Dam, 0.3 mi (0.5 km) downstream from Denton Creek, 1.0 mi (1.6 km) upstream from St. Louis Southwestern Railway Lines bridge, 2.3 mi (3.7 km) northwest of Carrollton, and 18.2 mi (29.3 km) upstream from mouth.

DRAINAGE AREA.--2,459 mi^2 (6,369 km^2).

PERIOD OF RECORD.--January 1907 to October 1981. Monthly discharge only for some periods, published in WSP 1312. Prior to November 1923, published as "near Dallas".

GAGE.--Water-stage recorder and concrete control. Datum of gage is 433.40 ft (132.100 m) National Geodetic Vertical Datum of 1929. Prior to November 1923, nonrecording gage at site 15.5 mi (24.9 km) downstream at different datum. Nov. 1, 1923, to Nov. 13, 1934, nonrecording gage, and Nov. 14, 1934, to July 6, 1938, water-stage recorder at present site and datum. July 7, 1938, to Apr. 14, 1939, nonrecording gage at site 9.3 mi (15.0 km) downstream at datum 22.94 ft (6.992 m) lower. Apr. 15, 1939, to Sept. 30, 1955, water-stage recorder at site 8.5 mi (13.7 km) downstream at datum 22.94 ft (6.992 m) lower.

REMARKS.--Records good. Flow is largely regulated by Lewisville Lake (station 08052800) since November 1954 and by Grapevine Lake (station 08054500) since July 1952. Records furnished by the city of Dallas show that during the year 103,900 acre-ft (128 hm^3) was diverted from pool at gage and 69,200 acre-ft (85.3 hm^3) was diverted from river channel 14 mi (23 km) downstream for municipal use. Also, 1,870 acre-ft (2.31 hm^3) was returned from a water treatment plant to the river below this station. Records furnished by the Dallas Power and Light Co. show that during the year 4,080 acre-ft (5.03 hm^3) was diverted from pool at gage into North Lake for cooling water at electric generating plant. Gage-height telemeters located at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 4,340 ft^3/s (123 m^3/s) Oct. 13, gage height, 5.14 ft (1.567 m).
FOR PERIOD JANUARY 1907 TO OCTOBER 1981.--Maximum gage height, about 17 ft (5.2 m) May 25, 1908, present site and datum, from information by local resident, estimated discharge, 145,000 ft^3/s (4,110 m^3/s), at site 8.5 mi (13.7 km) downstream (from information by Corps of Engineers); maximum gage height subsequent to 1908, 14.5 ft (4.42 m) Apr. 26, 1942, present site and datum, from observation by National Weather Service; discharge at site 8.5 mi (13.7 km) downstream, 90,700 ft^3/s (2,570 m^3/s).
HISTORIC.--Flood in 1866 reached about the same stage as flood of May 25, 1908.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0600	51	1.03	Oct. 13 -	0300	525	1.94	Oct. 14 -	0900	1780	3.24
	1000	811	2.36		1200	94	1.15		1200	1120	2.65
	1100	1740	3.27		1600	638	2.08		1800	580	2.01
	1200	2360	3.72		1700	1650	3.14		2400	297	1.61
	1500	2970	4.10		1800	3080	4.13				
	1900	2190	3.60		2200	4340	5.14	Oct. 15 -	0600	152	1.32
	2100	1560	3.13						1600	49	.96
	2400	921	2.49	Oct. 14 -	0600	2660	3.85		2400	109	1.20

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	204	8.....	3.9	16.....	872	24.....	7230
2.....	172	9.....	79	17.....	3140	25.....	6630
3.....	214	10.....	66	18.....	6560	26.....	6070
4.....	176	11.....	63	19.....	7430	27.....	6000
5.....	152	12.....	1290	20.....	7910	28.....	6230
6.....	190	13.....	1550	21.....	7830	29.....	6660
7.....	321	14.....	1740	22.....	8920	30.....	6880
		15.....	119	23.....	8090	31.....	7390

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	3554
MONTHLY TOTAL, IN ACRE-FEET	218500
RUNOFF, IN INCHES	1.67

(54) 08057000 TRINITY RIVER AT DALLAS, TX

LOCATION.--Lat 32°46'29", long 96°49'18", Dallas County, Hydrologic Unit 12030105, on right bank (levee) 90 ft (27 m) downstream from Commerce Street viaduct in Dallas, 5.2 mi (8.4 km) downstream from confluence of West and Elm Forks, and at mile 500.3 (805.0 km).

DRAINAGE AREA.--6,106 mi^2 (15,815 km^2).

PERIOD OF RECORD.--October 1898 to December 1899 (gage heights only published in WSP 28 and 37), July 1903 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 368.02 ft (112.172 m) National Geodetic Vertical Datum of 1929. Oct. 1, 1898, to Dec. 31, 1899, nonrecording gage at site 2 mi (3 km) upstream at different datum. July 1, 1903, to July 20, 1930, nonrecording gage at present site and datum. July 21, 1930, to Sept. 30, 1932, nonrecording gage at site 6 mi (10 km) downstream at datum 3.08 ft (0.939 m) lower. On Jan. 17, 1981, telemeter (data collection platform, solar panel, battery, and antenna) was installed at site.

REMARKS.--Records good. At times flow is affected by storage in seven upstream reservoirs, combined capacity 1,703,700 acre-ft (2.10 km^3), of which 846,200 acre-ft (1.04 km^3) is for flood control. During the year, the city of Dallas reported the diversion for municipal use of 177,100 acre-ft (218 hm^3) from the Elm Fork, 53,170 acre-ft (65.6 hm^3) from Lake Tawakoni (on Sabine River), the purchase of 10,430 acre-ft (12.9 hm^3) from North Texas Municipal Water District (from the East Fork), and returned 187,050 acre-ft (231 hm^3) of sewage effluent to the river downstream from station. The Trinity River Authority reported a discharge of 69,530 acre-ft (85.7 hm^3) of sewage effluent into the river above the station. For other diversions and effluent returns above station, see stations 08048000, 08049200, and 08049500. City of Dallas gage-height telemeter located at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 25,500 ft^3/s (722 m^3/s) Oct. 19, gage height, 38.33 ft (11.683 m).
FOR PERIOD JULY 1903 TO OCTOBER 1981.--Maximum discharge, 184,000 ft^3/s (5,210 m^3/s) May 25, 1908, gage height, 52.6 ft (16.03 m), from rating curve extended above 109,000 ft^3/s (3,090 m^3/s).
HISTORIC.--Maximum stage since at least 1840, that of May 25, 1908. Flood in 1866 reached about the same stage as that of May 25, 1908.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0100	443	12.49	Oct. 16 -	2400	15900	35.96	Oct. 22 -	2400	21100	37.38
	0800	497	12.73								
	0900	1460	16.03	Oct. 17 -	0615	17300	36.38	Oct. 23 -	0630	21600	37.50
	1000	2610	19.30		1300	18600	36.77		1200	22200	37.66
	1200	5100	25.37		2400	21100	37.40				
	1300	5820	26.94					Oct. 24 -	0300	21600	37.50
	1500	7000	28.79	Oct. 18 -	0700	22900	37.80		1200	20400	37.22
	1830	7910	30.21		1400	24200	38.06		2400	17800	36.53
	2400	8560	31.08		2400	25000	38.24				
								Oct. 25 -	0600	15900	35.96
Oct. 13 -	0600	9200	31.91	Oct. 19 -	0600	25200	38.28		1200	14100	35.27
	1200	9430	32.20		1230	25500	38.33		2400	12100	34.08
	1800	9610	32.36		2400	25000	38.14				
	2400	9660	32.39					Oct. 26 -	1200	11100	33.28
				Oct. 20 -	1200	23900	38.01				
Oct. 14 -	0600	10500	32.93		2400	22900	37.81	Oct. 27 -	1200	9390	32.14
	1200	11500	33.65								
	1800	12400	34.37	Oct. 21 -	1200	21200	37.43	Oct. 28 -	1200	8930	31.56
	2400	13200	34.80		2400	19500	37.00				
								Oct. 29 -	1200	8540	31.05
Oct. 15 -	1200	14000	35.22	Oct. 22 -	1200	19800	37.08				
	2400	13800	35.12		1800	20500	37.24	Oct. 30 -	1200	8310	30.75
Oct. 16 -	1200	14300	35.39								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	232	8.....	4710	16.....	14500	24.....	20200
2.....	232	9.....	2190	17.....	18500	25.....	14400
3.....	229	10.....	1280	18.....	23600	26.....	11100
4.....	224	11.....	594	19.....	25100	27.....	9400
5.....	226	12.....	4400	20.....	23800	28.....	8900
6.....	251	13.....	9390	21.....	21200	29.....	8540
7.....	3900	14.....	11500	22.....	19800	30.....	8300
		15.....	13800	23.....	22000	31.....	9150

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	10050
MONTHLY TOTAL, IN ACRE-FEET	618200
RUNOFF, IN INCHES	1.90

(55) 08058900 EAST FORK TRINITY RIVER AT MCKINNEY, TX

LOCATION.--Lat 33°14'38", long 96°36'31", Collin County, Hydrologic Unit 12030106, on downstream side of highway embankment near left end of main channel bridge on State Highways 5 and 121, 750 ft (230 m) downstream from Honey Creek, 1.2 mi (1.9 km) upstream from Southern Pacific Railway Co. bridge, 1.7 mi (2.7 km) upstream from Clemons Creek, 3.3 mi (5.3 km) north of McKinney, 26.1 mi (42.0 km) upstream from Lavon Dam, and 86.5 mi (139.2 km) upstream from mouth.

DRAINAGE AREA.--164 mi^2 (425 km^2).

PERIOD OF RECORD.--October 1975 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 528.74 ft (161.160 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. At end of year, flow from 89.1 mi^2 (230.8 km^2) above this station was affected at times by discharge from the flood-detention pools of 49 floodwater-retarding structures with a combined detention capacity of 26,080 acre-ft (32.2 hm^3). A nonrecording rain gage is located at station. On Jan. 8, 1981, telemeter (data collection platform, solar panel, and antenna) was installed at site.

MAXIMA: FOR OCTOBER 1981.--Discharge, 9,430 ft^3/s (267 m^3/s) Oct. 14, gage height, 19.81 ft (6.038 m).
FOR OCTOBER 1975 TO OCTOBER 1981.--Maximum discharge, 13,100 ft^3/s (371 m^3/s) Mar. 27, 1977, gage height, 19.84 ft (6.047 m), from rating curve extended above 800 ft^3/s (22.7 m^3/s).
HISTORIC.--Maximum stage since 1913, about 28 ft (8.5 m) in April 1942, discharge not determined, from information by State Department of Highways and Public Transportation.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0600	291	8.03	Oct. 14 -	0400	7370	19.49	Oct. 17 -	2400	1720	17.48
	0915	653	12.00		0600	5200	19.05				
	1030	1220	16.13		0800	3980	18.73	Oct. 18 -	1200	1890	17.72
	1200	1840	17.66		1200	2890	18.36		2400	1490	17.07
	1500	2300	18.10		1500	2420	18.16				
	2100	3020	18.41		2400	1890	17.72	Oct. 19 -	1200	1290	16.45
	2400	3620	18.62						2400	1170	15.86
				Oct. 15 -	1200	1590	17.25				
Oct. 13 -	0500	2990	18.40		2400	1410	16.86	Oct. 20 -	1200	1100	15.42
	1200	2240	18.07								
	1430	2120	18.01	Oct. 16 -	0500	1370	16.74	Oct. 21 -	1200	951	14.42
	1900	3100	18.44		0930	2300	18.10				
	2130	4410	18.85		1630	3290	18.51	Oct. 22 -	1200	1280	16.43
	2300	5500	19.12		2400	2790	18.32				
	2400	7260	19.47					Oct. 23 -	0830	1110	15.48
				Oct. 17 -	0600	2260	18.08		2400	761	12.92
Oct. 14 -	0200	9430	19.81								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	2.2	8.....	1410	16.....	2400	24.....	698
2.....	1.7	9.....	649	17.....	2060	25.....	635
3.....	1.2	10.....	419	18.....	1760	26.....	594
4.....	.99	11.....	318	19.....	1300	27.....	526
5.....	1.3	12.....	1630	20.....	1090	28.....	448
6.....	94	13.....	3110	21.....	951	29.....	396
7.....	1070	14.....	4000	22.....	1230	30.....	349
		15.....	1610	23.....	1040	31.....	1880

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	1022
MONTHLY TOTAL, IN ACRE-FEET	62830
RUNOFF, IN INCHES	7.18

(56) 08059400 SISTER GROVE CREEK NEAR BLUE RIDGE, TX

LOCATION.--Lat 33°17'40", long 96°28'58", Collin County, Hydrologic Unit 12030106, on left bank at upstream side of highway embankment of bridge on Farm Road 545, 3.5 mi (5.6 km) upstream from Hatler Ranch, 4.8 mi (7.7 km) west of Blue Ridge, 7.4 mi (11.9 km) upstream from Stiff Creek, 14.7 mi (23.7 km) upstream from mouth, and 24.7 mi (39.7 km) upstream from Lavon Dam.

DRAINAGE AREA.--83.1 mi^2 (215.2 km^2).

PERIOD OF RECORD.--July 1975 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 536.29 ft (163.461 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. At end of year, flow from 47.4 mi^2 (122.8 km^2) above this station was affected at times by discharge from the flood-detention pools of 34 floodwater-retarding structures with a combined detention capacity of 12,710 acre-ft (15.7 hm^3). On Jan. 9, 1981, telemeter (data collection platform, solar panel, battery, and antenna) was installed a station.

MAXMIA: FOR OCTOBER 1981.--Discharge, 2,610 ft^3/s (73.9 m^3/s) Oct. 14, gage height, 16.91 ft (5.154 m).
FOR PERIOD JULY 1975 TO OCTOBER 1981.--Maximum discharge, 4,650 ft^3/s (132 m^3/s) Apr. 19, 1977, gage height, 16.93 ft (5.160 m).
HISTORIC.--Maximum stage since about 1900, 20.7 ft (6.31 m) probably in July 1913, from information furnished by State Department of Highways and Public Transportation. The probable date is from published records for discontinued station 08059500 located 9.7 mi (15.6 km) downstream.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0200	48	4.85	Oct. 14 -	0315	2000	15.95	Oct. 16 -	0700	835	12.15
	0815	102	5.40		0745	2610	16.91		0715	1030	13.28
	1100	380	8.00		1500	1980	15.92		0730	1290	14.29
	1545	795	11.81		2030	1010	13.22		0800	1650	15.26
	1915	1000	13.17		2400	816	11.99		1200	2070	16.07
	2400	1220	14.03						2400	2310	16.46
				Oct. 15 -	0015	808	11.92				
Oct. 13 -	0145	1300	14.33		1200	694	10.94	Oct. 17 -	0015	2290	16.44
	0600	921	12.77		2400	634	10.41		0630	1710	15.41
	1245	624	10.32						0930	1240	14.10
	1815	1040	13.32	Oct. 16 -	0515	613	10.22		1145	994	13.13
	2400	1720	15.42		0630	652	10.57		2400	800	11.85
					0645	714	11.12				
Oct. 14 -	0030	1750	15.49								

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.36	8.....	348	16.....	1680	24.....	348
2.....	.26	9.....	201	17.....	1280	25.....	296
3.....	.18	10.....	122	18.....	786	26.....	248
4.....	.12	11.....	67	19.....	592	27.....	204
5.....	.05	12.....	516	20.....	516	28.....	182
6.....	.37	13.....	1000	21.....	445	29.....	174
7.....	212	14.....	1870	22.....	640	30.....	166
		15.....	698	23.....	469	31.....	915

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	451
MONTHLY TOTAL, IN ACRE-FEET	27720
RUNOFF, IN INCHES	6.26

(57) 08060500 LAVON LAKE NEAR LAVON, TX

LOCATION.--Lat 33°01'54", long 96°28'56", Collin County, Hydrologic Unit 12030106, in right abutment of spillway in dam on East Fork Trinity River, 3,850 ft (1,170 m) upstream from St. Louis Southwestern Railway Lines bridge, 4,000 ft (1,200 m) upstream from bridge on State Highway 78, 2.9 mi (4.7 km) west of Lavon, and 55.9 mi (89.9 km) upstream from mouth.

DRAINAGE AREA.--770 mi² (1,990 km²).

PERIOD OF RECORD.--September 1953 to October 1981. Prior to October 1970, published as Lavon Reservoir.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Jan. 20, 1954, nonrecording gage in the approach channel at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 18,860 ft (5,749 m) long, including a 568-foot (173 m) gated spillway with twelve 40.0- by 28.0-foot (12.2 by 8.5 m) tainter gates. The original dam was 9,499 ft (2,895 m) long, but conservation capacity was increased to the present size in December 1975. Deliberate impoundment began Sept. 14, 1953, and the dam was completed in October 1953. The low-flow outlets consist of five 36-inch-diameter (914 mm) controlled sluice gates. The capacity table is based on Table No. 9 (Design Memo 1970 Conditions). The lake was designed for flood control and water conservation. Water for municipal supply can be released down to elevation 453.0 ft (138.07 m). Flow is affected at times by discharge from the flood-detention pools of 149 floodwater-retarding structures with a combined detention capacity of 69,170 acre-ft (85.3 hm³). These structures control runoff from 242 mi² (627 km²) in the East Fork Trinity River, Pilot Grove Creek, and Sister Grove Creek drainage basins. Gage-height telemeter at station. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	514.0	-
Design flood	509.0	921,200
Top of tainter gates	503.5	748,200
Top of conservation pool	492.0	456,500
Crest of spillway (sill of tainter gates)	475.5	178,300
Lowest gated outlet (invert)	453.0	12,700

MAXIMA: FOR OCTOBER 1981.--Contents, 616,600 acre-ft (760 hm³) Oct. 26, elevation, 498.76 ft (152.022 m).
FOR PERIOD SEPTEMBER 1953 TO OCTOBER 1981.--Contents, 523,500 acre-ft (645 hm³) June 4, 1979, elevation, 494.98 ft (150.870 m).

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 11	1200	435000	490.96	Oct. 16	0900	510000	494.39	Oct. 21	2400	578000	497.26
					1200	512000	494.50				
Oct. 12	0900	438000	491.12		1500	515000	494.62	Oct. 22	0300	583000	497.43
	1200	442000	491.30		1800	518000	494.75		0900	591000	497.77
	1500	444000	491.39		2100	521000	494.90		1200	595000	497.90
	2400	447000	491.55		2400	527000	495.14		2400	600000	498.13
Oct. 13	0900	451000	491.74	Oct. 17	0300	532000	495.34	Oct. 23	1200	605000	498.31
	1500	455000	491.93		0600	536000	495.53				
	1800	460000	492.15		0900	540000	495.68	Oct. 24	1200	611000	498.53
	2400	466000	492.42		1200	543000	495.82				
					1500	546000	495.93	Oct. 25	1200	614000	498.65
Oct. 14	0600	471000	492.66		1800	549000	496.07				
	1200	479000	493.04		2100	552000	496.19	Oct. 26	1200	616600	498.76
	1800	486000	493.36								
	2400	492000	493.61	Oct. 18	0400	556000	496.35	Oct. 27	1200	616000	498.73
					1200	560000	496.50				
Oct. 15	0600	496000	493.81					Oct. 28	1200	615000	498.70
	0900	498000	493.89	Oct. 19	0600	564000	496.68				
	1200	500000	493.96		2400	568000	496.86	Oct. 29	1200	613000	498.64
	1800	502000	494.08								
	2400	505000	494.18	Oct. 20	2400	573000	497.05	Oct. 30	1200	612000	498.59
Oct. 16	0600	507000	494.27								

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1	420000	8	428400	16	525800	24	612400
2	418600	9	432500	17	554200	25	616300
3	417600	10	434100	18	563500	26	616600
4	416800	11	435200	19	568700	27	615800
5	416400	12	447300	20	573400	28	614800
6	418400	13	465900	21	579300	29	613200
7	425300	14	492100	22	600600	30	612400
		15	505000	23	608800	31	640300
CHANGE IN CONTENTS, IN ACRE-FEET							+220300

(58) 08082500 BRAZOS RIVER AT SEYMOUR, TX
(National stream-quality accounting network)

LOCATION.--Lat 33°34'51", long 99°16'02", Baylor County, Hydrologic Unit 12060101, on left bank at downstream side of bridge on U.S. Highways 277 and 283, 0.8 mi (1.3 km) upstream from Wichita Valley Railway bridge, 1.0 mi (1.6 km) southwest of courthouse in Seymour, and at mile 847.4 (1,363.5 km).

DRAINAGE AREA.--15,538 mi^2 (40,243 km^2), approximately, of which 9,566 mi^2 (24,776 km^2) probably is noncontributing.

PERIOD OF RECORD.--November 1923 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 1,238.97 ft (377.638 m) National Geodetic Vertical Datum of 1929. Prior to Apr. 6, 1972, at datum 2.00 ft (0.610 m) higher.

REMARKS.--Records poor. Small diversions above station for irrigation and oilfield operation. Gage-height telemeter located at station.

MAXMIA: FOR OCTOBER 1981.--Discharge, 17,300 ft^3/s (490 m^3/s) Oct. 14, gage height, 10.44 ft (3.182 m).
FOR PERIOD NOVEMBER 1923 TO OCTOBER 1981.--Discharge, 95,400 ft^3/s (2,700 m^3/s) Oct. 16, 1926, gage height, 17.16 ft (5.230 m), from floodmarks, present datum, from rating curve extended above 48,000 ft^3/s (1,360 m^3/s) on basis of slope-area measurement of 95,400 ft^3/s (2,700 m^3/s); maximum gage height, 23.00 ft (7.010 m), present datum, Sept. 28, 1955, discharge 71,200 ft^3/s (2,020 m^3/s).
HISTORIC.--A flood in 1906 reached about the same stage as the flood in 1955.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	1200	234	2.34	Oct. 14 -	0030	17300	10.44	Oct. 15 -	0600	3750	5.91
	2400	260	2.42		0300	16300	10.18		1200	2880	5.42
					0600	13400	9.37		2400	2170	4.95
Oct. 13 -	0300	1930	4.72		0700	11700	8.88				
	0600	4270	6.16		0800	9950	8.32	Oct. 16 -	1200	1930	4.79
	0900	7750	7.58		0900	8180	7.73		2400	1630	4.54
	1200	11200	8.72		1200	5000	6.51				
	1500	13300	9.34		1500	3990	6.03	Oct. 17 -	2400	1300	4.28
	1800	15100	9.85		2400	3890	5.97				
	2100	16500	10.25					Oct. 18 -	2400	848	3.80
	2400	17200	10.43	Oct. 15 -	0015	3910	5.99				
					0200	4040	6.06	Oct. 19 -	2400	679	3.58

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	41	8.....	33	16.....	1850	24.....	319
2.....	27	9.....	15	17.....	1450	25.....	277
3.....	23	10.....	78	18.....	1050	26.....	237
4.....	15	11.....	270	19.....	736	27.....	215
5.....	11	12.....	237	20.....	561	28.....	202
6.....	8.9	13.....	9870	21.....	477	29.....	192
7.....	55	14.....	8090	22.....	381	30.....	179
		15.....	2990	23.....	341	31.....	168

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	983
MONTHLY TOTAL IN ACRE-FEET	60420
RUNOFF, IN INCHES	.19

(59) 08083240 CLEAR FORK BRAZOS RIVER AT HAWLEY, TX

LOCATION.--Lat 32°35'53", long 99°48'53", Jones County, Hydrologic Unit 12060102, on right bank 90 ft (27 m) upstream from upstream bridge on U.S. Highways 83 and 277, 0.8 mi (1.3 km) south of Hawley, 7.4 mi (11.9 km) upstream from Mulberry Creek, and 188.6 mi (303.5 km) upstream from mouth.

DRAINAGE AREA.--1,416 mi^2 (3,667 km^2).

PERIOD OF RECORD.--October 1967 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 1,612.45 ft (491.475 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 21, 1973, at datum 0.80 ft (0.244 m) higher.

REMARKS.--Records poor prior to May and good thereafter. Lake Sweetwater, capacity 11,900 acre-ft (14.7 hm^3), is located on a tributary upstream from gage.

MAXIMA: FOR OCTOBER 1981.--Discharge, 809 ft^3/s (22.9 m^3/s) Oct. 14, gage height, 11.84 ft (3.609 m).
FOR PERIOD OCTOBER 1967 TO OCTOBER 1981.--Discharge, 8,540 ft^3/s (242 m^3/s) Sept. 30, 1980, gage height, 21.07 ft (6.422 m), present datum.
HISTORIC.--Maximum stage since 1915 occurred in 1932; second highest stage in 1957, 25.0 ft (7.62 m), present datum, from information by local residents.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	1200	21	6.87	Oct. 14 -	0300	647	11.43	Oct. 14 -	2400	400	10.70
					0600	704	11.58				
Oct. 13 -	0600	34	7.40		0900	744	11.68	Oct. 15 -	0200	220	9.77
	1200	79	8.27		1200	776	11.76		0400	152	9.19
	1500	201	9.63		1500	797	11.81		0600	125	8.90
	1800	333	10.41		1800	809	11.84		1200	102	8.60
	2400	562	11.20		2100	764	11.73		2400	58	7.90

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	29	8.....	39	16.....	45	24.....	40
2.....	28	9.....	27	17.....	54	25.....	27
3.....	28	10.....	22	18.....	36	26.....	23
4.....	25	11.....	21	19.....	25	27.....	23
5.....	22	12.....	21	20.....	23	28.....	22
6.....	22	13.....	183	21.....	22	29.....	21
7.....	29	14.....	719	22.....	24	30.....	20
		15.....	120	23.....	36	31.....	20

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	57.9
MONTHLY TOTAL, IN ACRE-FEET	3560
RUNOFF, IN INCHES	.05

(60) 08083245 MULBERRY CREEK NEAR HAWLEY, TX

LOCATION.--Lat 32°34'04", long 99°47'32", Jones County, Hydrologic Unit 12060102, on right bank at downstream side of downstream bridge on U.S. Highways 83 and 277, 3.3 mi (5.3 km) south of Hawley, and 5.8 mi (9.3 km) upstream from mouth.

DRAINAGE AREA.--205 mi^2 (531 km^2).

PERIOD OF RECORD.--December 1967 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 1,615.98 ft (492.551 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. No known diversion above station.

MAXMIA: FOR OCTOBER 1981.--Discharge, 440 ft^3/s (12.5 m^3/s) Oct. 14, gage height, 8.44 ft (2.573 m).
FOR PERIOD DECEMBER 1967 TO OCTOBER 1981.--Discharge, 2,750 ft^3/s (77.9 m^3/s) May 28, 1980, gage height, 16.00 ft (4.877 m).
HISTORIC.--A flood in 1957 reached a stage of about 16.0 ft (4.88 m), from floodmarks.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	1200	0.58	0.87	Oct. 13 -	1200	159	4.32	Oct. 14 -	1000	418	8.15
	2400	5.9	1.28		1800	182	4.71		1200	335	7.00
					2100	274	6.12		1300	276	6.14
Oct. 13 -	0200	28	1.94		2400	339	7.06		1400	213	5.20
	0300	46	2.30						1500	167	4.45
	0500	89	3.08	Oct. 14 -	0300	381	7.65		1800	101	3.30
	0600	119	3.62		0600	416	8.12		2100	71	2.77
	0900	139	3.97		0830	437	8.40		2400	51	2.39

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.00	8.....	.07	16.....	3.8	24.....	2.1
2.....	.00	9.....	.07	17.....	1.5	25.....	.76
3.....	.00	10.....	.04	18.....	.42	26.....	.31
4.....	.00	11.....	.03	19.....	.09	27.....	.17
5.....	.00	12.....	4.0	20.....	.06	28.....	.11
6.....	.00	13.....	151	21.....	.03	29.....	.06
7.....	.00	14.....	263	22.....	6.6	30.....	.04
		15.....	18	23.....	2.3	31.....	.02

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND.....	14.7
MONTHLY TOTAL, IN ACRE-FEET.....	902
RUNOFF, IN INCHES.....	.08

(61) 08083430 ELM CREEK AT ABILENE, TX

LOCATION.--Lat 32°30'29", long 99°44'27", Taylor County, Hydrologic Unit 12060102, on left bank at downstream side of bridge on State Highway Loop 243 in the city of Abilene and about 17 mi (27 km) upstream from mouth.

DRAINAGE AREA.--422 mi^2 (1,093 km^2).

PERIOD OF RECORD.--October 1979 to October 1981.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 1,647.16 ft (502.054 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Since 1921, flow largely regulated by Lake Abilene, capacity 7,900 acre-ft (9.74 hm^3), about 30 mi (48 km) upstream.

MAXMIA: FOR OCTOBER 1981.--Discharge, 5,020 ft^3/s (142 m^3/s) Oct. 13, gage height, 15.37 ft (4.685 m).
FOR PERIOD OCTOBER 1979 TO OCTOBER 1981.--Discharge, 1,920 ft^3/s (54.4 m^3/s) July 5, 1981, gage height, 11.00 ft (3.353 m).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 11 -	2200	0.17	1.77	Oct. 13 -	0300	1850	10.86	Oct. 14 -	0600	3610	13.65
	2400	22	2.86		0600	3500	13.49		1200	2900	12.64
					0900	4070	14.25		1800	2390	11.85
Oct. 12 -	0600	610	6.51		1200	4680	14.99		2100	1980	11.12
	1200	872	8.07		1500	4990	15.34		2400	1480	10.06
	1800	661	6.83		1630	5020	15.37				
	2100	797	7.66		2100	4780	15.10	Oct. 15 -	1200	554	6.18
	2400	1190	9.29		2400	4550	14.83		2400	306	5.08

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.01	8.....	4.1	16.....	228	24.....	57
2.....	.01	9.....	.65	17.....	162	25.....	35
3.....	.01	10.....	.31	18.....	106	26.....	28
4.....	.01	11.....	.63	19.....	70	27.....	25
5.....	.01	12.....	658	20.....	59	28.....	24
6.....	9.0	13.....	3980	21.....	53	29.....	24
7.....	216	14.....	2980	22.....	178	30.....	23
		15.....	627	23.....	139	31.....	22

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	313
MONTHLY TOTAL, IN ACRE-FEET	19260
RUNOFF, IN INCHES	.86

(62) 08083470 CEDAR CREEK AT ABILENE, TX

LOCATION.--Lat 32°26'56", long 99°43'13", Taylor County, Hydrologic Unit 12060102, on right bank at upstream side of North Second Street Bridge and State Highway 355 at Abilene, 0.2 mi (0.3 km) downstream from Lytle Creek, 4.1 mi (6.6 km) downstream from Buttonwillow Creek, 5.9 mi (9.5 km) upstream from Rainy Creek, 7.2 mi (11.6 km) downstream from Kirby Lake, and 9.8 mi (15.8 km) upstream from mouth.

DRAINAGE AREA.--119 mi^2 (308 km^2).

PERIOD OF RECORD.--October 1970 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 1,677.67 ft (511.354 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Flow is partly regulated by Lytle Lake, capacity 1,200 acre-ft (1.48 hm^3), and by Lake Kirby, capacity 7,620 acre-ft (9.40 hm^3). Records furnished by the city of Abilene show that 611 acre-ft (753,000 m^3) was diverted from Lake Kirby during the current year.

MAXIMA: FOR OCTOBER 1981.--Discharge, 18,500 ft^3/s (524 m^3/s) Oct. 13, gage height, 15.74 ft (4.798 m).
FOR PERIOD OCTOBER 1970 TO OCTOBER 1981.--Maximum discharge, 4,670 ft^3/s (132 m^3/s) Sept. 18, 1974, gage height, 12.54 ft (3.822 m).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0100	11	1.11	Oct. 13 -	0600	9070	12.78	Oct. 13 -	1600	6680	11.57
	1200	228	4.21		0700	14800	14.74		1800	4220	9.74
	2400	942	7.01		0800	17900	15.59		2000	2590	8.17
					0900	18500	15.74		2400	2260	7.85
Oct. 13 -	0100	2210	7.73		1000	17900	15.59				
	0300	3850	9.42		1200	14400	14.61	Oct. 14 -	0600	1560	6.87
	0400	4700	10.14		1400	10100	13.22		1200	1020	5.95
	0500	5840	11.00		1500	8240	12.41		2400	456	4.65

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.00	8.....	4.2	16.....	156	24.....	31
2.....	.00	9.....	2.0	17.....	94	25.....	31
3.....	.00	10.....	.09	18.....	53	26.....	21
4.....	.00	11.....	.18	19.....	41	27.....	17
5.....	.00	12.....	267	20.....	31	28.....	16
6.....	17	13.....	7820	21.....	29	29.....	15
7.....	60	14.....	1120	22.....	75	30.....	11
		15.....	302	23.....	37	31.....	8.4

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	331
MONTHLY TOTAL, IN ACRE-FEET	20350
RUNOFF, IN INCHES	3.21

(63) 08083500 FORT PHANTOM HILL RESERVOIR NEAR NUGENT, TX

LOCATION.--Lat 32°36'58", long 99°40'05", Jones County, Hydrologic Unit 12060102, at outlet gate tower near right bank, 120 ft (37 m) upstream from dam on Elm Creek, 4.3 mi (6.9 km) upstream from mouth, and 5.4 mi (8.7 km) south of Nugent.

DRAINAGE AREA.--470 mi² (1,217 km²).

PERIOD OF RECORD.--July 1940 to October 1981. Prior to October 1965, monthend contents only.

GAGE.--Nonrecording gage. Datum of gage is 1,580.78 ft (481.822 m) National Geodetic Vertical Datum of 1929.

REMARKS.--The reservoir is formed by a rock-faced earthfill dam 3,740 ft (1,140 m) long. The dam was completed and storage began in October 1938. The uncontrolled service spillway is a cut channel through natural ground with a concrete ogee weir located 0.7 mi (1.1 km) from right end of dam. The service outlet works consist of a concrete tower with a 4.0- by 7.0-foot (1.2 by 2.1 m) conduit. The service tower contains five gated openings at various elevations. The dam and reservoir are owned by the city of Abilene and were built to impound water for municipal use. Since July 1974, the West Texas Utility Co. has operated a steam generating powerplant on the reservoir. During the year, the city of Abilene diverted 27,980 acre-ft (34.5 hm³) from Clear Fork Brazos River into Fort Phantom Hill Reservoir and an undetermined amount of floodflow was diverted by gravity ditch from Deadman Creek into the reservoir. The capacity table was based on a survey of Oct. 2, 1953. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam	69.2	-
Crest of spillway	55.1	74,310
Highest gated outlet (invert)	28.0	10,330
Lowest gated outlet (invert)	1.6	-

COOPERATION.--Records of gage heights and diversions were furnished by the city of Abilene. The capacity table is furnished by the Soil Conservation Service.

MAXIMA: FOR OCTOBER 1981.--Contents, 858300 acre-ft (106 hm³) Oct. 14, gage height, 57.80 ft (17.62 m).
FOR PERIOD JULY 1940 TO OCTOBER 1981.--Maximum contents observed, 89,910 acre-ft (111 hm³) May 25, 1957, gage height, 58.7 ft (17.89 m).

Gage height, in feet and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Gage height	Date	Hour	Contents	Gage height	Date	Hour	Contents	Gage height
Oct. 11	1200	47340	47.40	Oct. 14	0600	84940	57.60	Oct. 16	2400	80160	56.50
	2400	47640	47.50		1200	85830	57.80				
					1800	85830	57.80	Oct. 17	1200	79300	56.30
Oct. 12	1200	48230	47.70		2400	85390	57.70		2400	79300	56.30
	2400	49750	48.20								
				Oct. 15	0600	84500	57.50	Oct. 18	1200	78880	56.20
Oct. 13	0600	51920	48.90		1200	84060	57.40				
	1200	62060	51.90		2400	82730	57.10	Oct. 19	1200	78880	56.20
	1800	78880	56.20								
	2400	83180	57.20	Oct. 16	1200	81870	56.90	Oct. 20	1200	78450	56.10

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1	47640	8	47640	16	81440	24	78020
2	47340	9	47640	17	80160	25	78020
3	47340	10	47340	18	79300	26	77610
4	47050	11	47340	19	78880	27	77610
5	47050	12	48530	20	78450	28	77200
6	46750	13	49440	21	78020	29	77200
7	47840	14	85830	22	78450	30	76790
		15	84060	23	78450	31	76790
CHANGE IN CONTENTS, IN ACRE-FEET							29150

(64) 08084000 CLEAR FORK BRAZOS RIVER AT NUGENT, TX

LOCATION.--Lat 32°41'24", long 99°40'09", Jones County, Hydrologic Unit 12060102, on right bank 33 ft (10 m) downstream from bridge on Farm Road 600 at Nugent, 2 mi (3 km) downstream from Elm Creek, 4 mi (6 km) upstream from Deadman Creek, and 167.8 mi (270.0 km) upstream from mouth.

DRAINAGE AREA.--2,199 mi^2 (5,695 km^2).

PERIOD OF RECORD.--February 1924 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 1,531.91 ft (466.926 m) National Geodetic Vertical Datum of 1929 (levels by Brazos River Authority). Prior to Dec. 12, 1933, nonrecording gage at site 575 ft (175 m) downstream at same datum.

REMARKS.--Records good. Flow affected by four reservoirs with a capacity of 103,600 acre-ft (128 hm^3). Numerous diversions above station for municipal supply and oilfield operation materially affect all flow.

MAXIMA: FOR OCTOBER 1981.--Discharge, 5,100 ft^3/s (144 m^3/s) Oct. 14, gage height, 14.17 ft (4.319 m).
FOR PERIOD FEBRUARY 1924 TO OCTOBER 1981.--Maximum discharge observed, 47,000 ft^3/s (1,330 m^3/s) Sept. 8, 1932, gage height, 27.05 ft (8.245 m), site then in use, from rating curve extended above 25,000 ft^3/s (708 m^3/s).
HISTORIC.--Maximum stage, 30 ft (9.1 m) in 1876; floods in 1900 and May 1923 reached stages of 24 and 24.5 ft (7.3 and 7.47 m), respectively, from information by local residents.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	1200	63	2.31	Oct. 14 -	2230	5100	14.17	Oct. 17 -	1200	847	5.08
	2400	78	2.42		2400	5060	14.11		2400	679	4.63
Oct. 13 -	1200	564	4.31	Oct. 15 -	0600	4640	13.41	Oct. 18 -	1200	533	4.23
	2400	613	4.45		1200	3720	11.74				
					1800	2720	9.70	Oct. 19 -	1200	339	3.59
Oct. 14 -	0600	2600	9.44		2400	2110	8.33				
	1200	4070	12.40					Oct. 20 -	1200	232	3.17
	1800	4920	13.90	Oct. 16 -	1200	1400	6.60				
	2000	5030	14.08		2400	1040	5.62	Oct. 21 -	1200	168	2.89

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	12	8.....	47	16.....	1460	24.....	255
2.....	12	9.....	49	17.....	845	25.....	164
3.....	12	10.....	27	18.....	539	26.....	113
4.....	12	11.....	20	19.....	344	27.....	94
5.....	12	12.....	51	20.....	233	28.....	84
6.....	14	13.....	411	21.....	166	29.....	73
7.....	28	14.....	3640	22.....	211	30.....	65
		15.....	3670	23.....	220	31.....	56

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	417
MONTHLY TOTAL, IN ACRE-FEET	25660
RUNOFF, IN INCHES	.22

(65) 08085500 CLEAR FORK BRAZOS RIVER AT FORT GRIFFIN, TX

LOCATION.--Lat 32°56'04", long 99°13'27", Shackelford County, Hydrologic Unit 12060104, on right bank just downstream from pier of bridge on old Fort Griffin-Throckmorton Road, 0.4 mi (0.6 km) northeast of Fort Griffin, 1.0 mi (1.6 km) upstream from bridge on U.S. Highway 283, 1.7 mi (2.7 km) upstream from Mill Creek, and 74.6 mi (120.0 km) upstream from mouth.

DRAINAGE AREA.--3,988 mi^2 (10,329 km^2).

PERIOD OF RECORD.--December 1923 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 1,174.09 ft (357.863 m) National Geodetic Vertical Datum of 1929. Prior to June 23, 1932, nonrecording gage at same site and datum.

REMARKS.--Records good. Diversions above station for irrigation, municipal supply, and oilfield operations materially affect low flow. Gage-height telemeter at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 5,130 ft^3/s (145 m^3/s) Oct. 16, gage height, 16.38 ft (4.993 m).
FOR PERIOD DECEMBER 1923 TO OCTOBER 1981.--Maximum discharge, 149,000 ft^3/s (4,220 m^3/s) Aug. 4, 1978, gage height, 38.88 ft (11.851 m), from floodmark, from rating curve extended above 33,600 ft^3/s (952 m^3/s) on basis of contracted-opening and flow-over-road measurement of peak flow. Maximum stage since 1876, that of Aug. 4, 1978.
HISTORIC.--Flood in September 1900 reached a stage of 38.0 ft (11.58 m).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	1200	63	2.31	Oct. 14 -	2230	5100	14.17	Oct. 17 -	1200	847	5.08
	2400	78	2.42		2400	5060	14.11		2400	679	4.63
Oct. 13 -	1200	564	4.31	Oct. 15 -	0600	4640	13.41	Oct. 18 -	1200	533	4.23
	2400	613	4.45		1200	3720	11.74				
					1800	2720	9.70	Oct. 19 -	1200	339	3.59
Oct. 14 -	0600	2600	9.44		2400	2110	8.33				
	1200	4070	12.40					Oct. 20 -	1200	232	3.17
	1800	4920	13.90	Oct. 16 -	1200	1400	6.60				
	2000	5030	14.08		2400	1040	5.62	Oct. 21 -	1200	168	2.89

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	12	8.....	47	16.....	1460	24.....	255
2.....	12	9.....	49	17.....	845	25.....	164
3.....	12	10.....	27	18.....	539	26.....	113
4.....	12	11.....	20	19.....	344	27.....	94
5.....	12	12.....	51	20.....	233	28.....	84
6.....	14	13.....	411	21.....	166	29.....	73
7.....	28	14.....	3640	22.....	211	30.....	65
		15.....	3670	23.....	220	31.....	56

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	417
MONTHLY TOTAL, IN ACRE-FEET	25660
RUNOFF, IN INCHES	.22

(66) 08086150 NORTH FORK HUBBARD CREEK NEAR ALBANY, TX

LOCATION.--Lat 32°42'27", long 99°16'29", Shackelford County, Hydrologic Unit 12060105, on downstream side of bridge on U.S. Highway 6, 1.7 mi (2.7 km) southeast of Albany, and 2.0 mi (3.2 km) upstream from Salt Prong Hubbard Creek.

DRAINAGE AREA.--39.3 mi^2 (101.8 km^2).

PERIOD OF RECORD.--November 1962 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 1,340.54 ft (408.597 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No diversion above station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 364 ft^3/s (10.3 m^3/s) Oct. 13, gage height, 4.23 ft (1.289 m).
FOR PERIOD NOVEMBER 1962 TO OCTOBER 1981.--Maximum discharge, 103,000 ft^3/s (2,920 m^3/s) Aug. 4, 1978, gage height, 23.3 ft (7.10 m), from floodmarks, from rating curve extended above 1,500 ft^3/s (42.5 m^3/s) on basis of slope-area measurement of 4,570 ft^3/s (129 m^3/s), contracted-opening measurement of 9,520 ft^3/s (270 m^3/s), and computation of flow-through-culvert, contracted-opening, and flow-over-road determinations of 103,000 ft^3/s (2,920 m^3/s).
HISTORIC.--Flood information begins in 1940. Floods of June 10, 1940, and July 18, 1953, reached stages of about 21 ft (6.4 m), from information by local residents.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0100	0.67	2.44	Oct. 13 -	0300	218	3.76	Oct. 13 -	2100	65	3.18
	0600	2.3	2.58		0400	364	4.23		2400	47	3.08
	0900	7.8	2.74		0600	303	4.05				
	1200	12	2.80		0800	310	4.07	Oct. 14 -	0300	36	3.01
	1800	8.3	2.75		1000	343	4.17		0600	26	2.94
	2400	18	2.87		1200	284	3.99		1200	17	2.86
					1500	173	3.61		1800	11	2.79
Oct. 13 -	0100	32	2.98		1800	102	3.35		2400	7.4	2.73

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.27	8.....	1.2	16.....	4.6	24.....	1.8
2.....	.24	9.....	.78	17.....	2.5	25.....	1.4
3.....	.24	10.....	.67	18.....	1.7	26.....	1.3
4.....	.27	11.....	.67	19.....	1.5	27.....	1.3
5.....	.30	12.....	7.5	20.....	2.1	28.....	1.3
6.....	.34	13.....	187	21.....	2.0	29.....	1.3
7.....	1.3	14.....	20	22.....	5.7	30.....	1.4
		15.....	5.2	23.....	2.6	31.....	1.2

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	8.38
MONTHLY TOTAL, IN ACRE-FEET	515
RUNOFF, IN INCHES	.25

(67) 08086212 HUBBARD CREEK BELOW ALBANY, TX

LOCATION.--Lat 32°43'58", long 99°08'25", Shackelford County, Hydrologic Unit 12060105, on left bank 0.5 mi (0.8 km) downstream from Salt Prong Hubbard Creek, 2.8 mi (4.5 km) upstream from Newcomb Creek, 4.5 mi (7.2 km) upstream from U.S. Highway 180, 9.1 mi (14.6 km) east of Albany, 22.6 mi (36.4 km) upstream from Hubbard Creek Reservoir, and 35.2 mi (56.6 km) upstream from mouth. Water-quality sampling site on left bank 0.5 mi (0.8 km) downstream.

DRAINAGE AREA.--613 mi^2 (1,588 km^2).

PERIOD OF RECORD.--October 1966 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 1,184.99 ft (361.185 m) National Geodetic Vertical Datum of 1929. Prior to June 12, 1968, water-stage recorder at site 2.1 mi (3.4 km) downstream at datum 7.63 ft (2.326 m) lower.

REMARKS.--Records fair through Dec. 4 and good thereafter.

MAXIMA: FOR OCTOBER 1981.--Discharge, 36,100 ft^3/s (1,020 m^3/s) Oct. 13, gage height 33.05 ft (10.074 m). FOR PERIOD OCTOBER 1966 TO OCTOBER 1981.--Maximum discharge, 330,000 ft^3/s (9,350 m^3/s) Aug. 4, 1978, gage height, 41.41 ft (12.622 m), from floodmark, from rating curve extended above 110 ft^3/s (3.12 m^3/s) on basis of step-backwater method and computation of flow-through culverts, contracted-openings, and flow-over-road determination of 330,000 ft^3/s (9,350 m^3/s) at site 4.5 mi (7.2 km) downstream.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0200	0	3.42	Oct. 12 -	2100	4990	14.56	Oct. 14 -	0300	21600	27.67
	0400	16	4.22		2400	6530	16.55		0900	16700	24.81
	0500	926	7.77						1200	12800	22.11
	0600	2060	9.75	Oct. 13 -	0100	7040	17.14		1430	6970	17.07
	0700	3480	12.30		0200	10600	20.36		1530	4250	13.51
	0800	4750	14.22		0300	16100	24.43		1800	2020	9.68
	0900	6020	15.91		0600	24600	29.29		2100	1530	8.87
	1130	7280	17.38		0900	33100	32.29		2400	1310	8.47
	1330	5100	14.71		1200	36100	33.05				
	1500	2910	11.29		1800	32700	32.18	Oct. 15 -	0600	1020	7.95
	1630	2440	10.41		2000	29000	31.13		1200	813	7.54
	1800	3070	11.58		2400	23900	28.91		2400	587	7.02

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.00	8.....	1.2	16.....	620	24.....	127
2.....	.00	9.....	.71	17.....	331	25.....	82
3.....	.00	10.....	4.0	18.....	221	26.....	61
4.....	.00	11.....	4.3	19.....	160	27.....	46
5.....	.00	12.....	3660	20.....	122	28.....	36
6.....	.00	13.....	27500	21.....	101	29.....	33
7.....	1.0	14.....	11600	22.....	123	30.....	29
		15.....	869	23.....	205	31.....	27

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	1483
MONTHLY TOTAL, IN ACRE-FEET	91170
RUNOFF, IN INCHES	2.79

(68) 08086290 BIG SANDY CREEK ABOVE BRECKENRIDGE, TX

LOCATION.--Lat 32°38'54", long 99°00'15", Stephens County, Hydrologic Unit 12060105, on left bank 600 ft (180 m) downstream from Battle Creek, 1.6 mi (2.6 km) upstream from bridge on Farm Road 576, 9.8 mi (15.8 km) southwest of Breckenridge, and about 14.6 mi (23.5 km) upstream from Hubbard Creek Dam.

DRAINAGE AREA.--280 mi^2 (725 km^2).

PERIOD OF RECORD.--February 1962 to October 1981. Prior to October 1975, published as "near Breckenridge."

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,185.83 ft (361.441 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1975, at site 1.6 mi (2.6 km) downstream at datum 7.41 ft (2.259 m) lower.

REMARKS.--Records good. Flow is affected by Lake Cisco, capacity 25,600 acre-ft (31.6 hm^3).

MAXIMA: FOR OCTOBER 1981.--Discharge, 80,000 ft^3/s (2,270 m^3/s) Oct. 13, gage height, 28.60 ft (8.717).
FOR PERIOD FEBRUARY 1962 TO October 1981.--Maximum discharge, 8,170 ft^3/s (231 m^3/s) May 13, 1965, gage height, 23.30 ft (7.102 m).
HISTORIC.--According to information from State Department of Highways and Public Transportation, the floods of May 16, 1949, July 20, 1953, and Apr. 29, 1957, each reached a stage of 24.6 ft (7.50 m).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0100	5.4	1.10	Oct. 13 -	0300	62100	28.30	Oct. 14 -	0300	2760	14.95
	0300	672	5.80		0500	80000	28.60		0600	2100	12.40
	0400	1700	10.70		0700	65900	28.37		0900	1520	9.90
	0600	2580	14.30		0800	55600	28.17		1200	1050	8.10
	1000	3800	18.55		0900	46000	27.95		1500	808	7.09
	1200	4780	21.00		1000	37100	27.70		1800	641	6.36
	1400	6300	23.50		1100	29500	27.44		2200	492	5.68
	1800	9620	25.50		1300	17900	26.82		2400	448	5.47
	2100	7670	24.55		1500	11100	26.05				
	2400	6580	23.85		1700	8250	24.85	Oct. 15	0600	346	4.96
					1900	5770	22.80		1200	278	4.62
Oct. 13 -	0100	8550	25.00		2100	4690	20.80		1800	212	4.25
	0200	18800	26.90		2400	3560	17.85		2400	158	3.85

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.00	8.....	12	16.....	63	24.....	85
2.....	.00	9.....	2.0	17.....	15	25.....	47
3.....	.00	10.....	.09	18.....	33	26.....	29
4.....	.00	11.....	.00	19.....	29	27.....	16
5.....	.00	12.....	4910	20.....	16	28.....	9.5
6.....	.00	13.....	28100	21.....	16	29.....	5.8
7.....	182	14.....	1420	22.....	150	30.....	5.4
		15.....	258	23.....	268	31.....	5.4

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	1151
MONTHLY TOTAL, IN ACRE-FEET	70770
RUNOFF, IN INCHES	4.74

(69) 08086400 HUBBARD CREEK RESERVOIR NEAR BRECKENRIDGE, TX

LOCATION.--Lat 32°49'53", long 98°58'03", Stephens County, Hydrologic Unit 12060105, on left bank just upstream from dam on Hubbard Creek, 1.4 mi (2.3 km) upstream from U.S. Highway 183, 6.5 mi (10.5 km) northwest of Breckenridge, and 12.6 mi (20.3 km) upstream from mouth.

DRAINAGE AREA.--1,085 mi^2 (2,810 km^2).

PERIOD OF RECORD.--October 1962 to October 1981.

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

REMARKS.--The reservoir is formed by a rolled earthfill dam 5,630 ft (1,720 m) long. There are two additional levees, the north and south, making an overall length of 3.5 mi (5.6 km). Storage began September 1962 and the dam was completed in December 1962. The emergency spillway is a 2,000-foot-wide (610 m) cut through natural ground near the left end of dam. The service spillway is a partially controlled morning-glory type, with 12 lift gates designed to discharge 30,000 ft^3/s (850 m^3/s), with a 17.5-foot (5.3 m) head through a 22.0-foot-diameter (6.7 m) concrete conduit. The dam is the property of the West Central Texas Municipal Water District. The District has a permit to divert 56,000 acre-ft (69.0 hm^3) annually for municipal, mining, and industrial uses. Diversions during the current year are as follows: 6,760 acre-ft (8.34 hm^3) for municipal use, 3,750 acre-ft (4.62 hm^3) for oilfield operation, and 1,770 acre-ft (2.18 hm^3) for irrigation and domestic uses. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	1,208.0	-
Crest of spillway	1,194.0	515,800
Top of gates	1,185.1	350,900
Top of conservation pool	1,183.0	317,800
Crest of spillway	1,176.6	230,100
Sill of gate	1,138.0	5,580
Lowest gated outlet (invert)	1,136.0	3,470

COOPERATION.--The diversions and capacity table were furnished by the West Central Texas Municipal Water District.

MAXIMA: FOR OCTOBER 1981.--Contents, 441,000 acre-ft (544 hm^3) Oct. 14, elevation, 1,190.22 ft (362.779).
FOR PERIOD OCTOBER 1962 TO OCTOBER 1981.--Maximum contents, 401,500 acre-ft (495 hm^3) Aug. 5, 1978, elevation, 1,188.06 ft (362.121 m).

Gage height, in feet, and Contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Gage height	Date	Hour	Contents	Gage height	Date	Hour	Contents	Gage height
Oct. 11 -	2400	233000	1176.86	Oct. 13 -	1200	349000	1185.00	Oct. 14 -	1500	440000	1190.15
					1500	374000	1186.49		1800	437000	1189.98
Oct. 12 -	0600	238000	1177.22		1800	397000	1187.78		2100	433000	1189.77
	1200	244000	1177.69		2100	414000	1188.73		2400	429000	1189.57
	1800	250000	1178.21		2400	426000	1189.38				
	2400	259000	1178.88					Oct. 15 -	0300	426000	1189.38
				Oct. 14 -	0300	433000	1189.78		0600	422000	1189.18
Oct. 13 -	0300	275000	1180.02		0600	437000	1190.02		1200	415000	1188.79
	0600	298000	1181.66		0900	440000	1190.17		1800	407000	1188.37
	0900	323000	1183.35		1200	441000	1190.22		2400	399000	1187.92

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1.....	232600	8.....	233000	16.....	371000	24.....	294000
2.....	232400	9.....	233000	17.....	344000	25.....	291000
3.....	232300	10.....	233000	18.....	322000	26.....	289000
4.....	232100	11.....	233000	19.....	311000	27.....	290000
5.....	231800	12.....	259000	20.....	304000	28.....	289800
6.....	232000	13.....	426000	21.....	300000	29.....	290000
7.....	233000	14.....	429000	22.....	298000	30.....	289600
		15.....	399000	23.....	296000	31.....	289400
CHANGE IN CONTENTS, IN ACRE-FEET.....							56400

(70) 08086500 HUBBARD CREEK NEAR BRECKENRIDGE, TX

LOCATION.--Lat 32°50'13", long 98°56'52", Stephens County, Hydrologic Unit 12060105, on downstream side of pier of bridge on U.S. Highway 183, 1.4 mi (2.3 km) downstream from Hubbard Creek Reservoir, 6.8 mi (10.9 km) northwest of Breckenridge, 8.2 mi (13.2 km) upstream from Gonzales Creek, and 11.2 mi (18.0 km) upstream from Clear Fork Brazos River.

DRAINAGE AREA.--1,089 mi^2 (2,821 km^2), of which 1,085 mi^2 (2,810 km^2) is above Hubbard Creek Dam.

PERIOD OF RECORD.--April 1955 to October 1981.
Water-quality records: Chemical analyses: April 1955 to September 1975. Water temperatures: April 1955 to September 1975.

GAGE.--Water-stage recorder. Datum of gage is 1,092.12 ft (332.878 m) National Geodetic Vertical Datum of 1929. Prior to July 16, 1959, at site 300 ft (91 m) upstream at same datum.

REMARKS.--Records good. Flow is regulated by Hubbard Creek Reservoir (station 08086400).

MAXIMA: FOR OCTOBER 1981.--Discharge, 16,200 ft^3/s (459 m^3/s) Oct. 14, gage height, 32.06 ft (9.772 m).
FOR PERIOD APRIL 1955 TO OCTOBER 1981.--Maximum discharge, 34,500 ft^3/s (977 m^3/s) May 26, 1957, gage height, 34.00 ft (10.363 m).
HISTORIC.--Maximum stage since at least 1925, 34.2 ft (10.42 m) July 20, 1953, from information by local resident and State Department of Highways and Public Transportation.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0300	0.47	4.02	Oct. 13 -	0100	254	7.29	Oct. 13 -	2000	16000	32.00
	0600	49	5.41		0300	1010	11.75		2400	16100	32.03
	0700	144	6.49		0600	2660	18.19				
	1600	44	5.34		0900	3150	19.47	Oct. 14 -	0500	16200	32.06
	1800	169	6.69		1200	8190	27.61				
	2000	491	8.83		1300	10600	29.44	Oct. 15 -	0600	16100	32.02
	2400	184	6.80		1400	12600	30.62		1200	16000	31.99
					1600	14900	31.63		2400	15900	31.96

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.0	8.....	.4	16.....	15800	24.....	1350
2.....	.0	9.....	.6	17.....	15100	25.....	1260
3.....	.0	10.....	.5	18.....	12600	26.....	543
4.....	.0	11.....	.4	19.....	7660	27.....	6.9
5.....	.0	12.....	133	20.....	3800	28.....	2.7
6.....	.1	13.....	8630	21.....	2360	29.....	2.2
7.....	.5	14.....	16100	22.....	1490	30.....	1.7
		15.....	16000	23.....	1420	31.....	1.3

MONTHLY, MEAN DISCHARGE, IN CUBIC FEET PER SECOND	104263.3
MONTHLY, TOTAL ACRE-FEET	206800
RUNOFF, IN INCHES	3.56

(72) 08087300 CLEAR FORK BRAZOS RIVER AT ELIASVILLE, TX

LOCATION.--Lat 32°57'36", long 98°45'59", Young County, Hydrologic Unit 12060104, on right bank 5 ft (2 m) upstream from old mill dam 180 ft (55 m) upstream from bridge on Farm Road 1974, 400 ft (122 m) northwest of U.S. Post Office at Eliasville, and 13.2 mi (21.2 km) upstream from mouth.

DRAINAGE AREA.--5,697 mi^2 (14,755 km^2).

PERIOD OF RECORD.--November 1915 to April 1920, December 1923 to August 1925, July 1928 to September 1951, October 1961 to October 1981. Monthly discharge only for some periods published in WSP 1312 as "near Crystal Falls".

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,027.77 ft (313.264 m) National Geodetic Vertical Datum of 1929. See WSP 1922 for history of changes prior to Dec. 18, 1961.

REMARKS.--Records good. Many small diversions above station for municipal supply and oilfield operations.

MAXIMA: FOR OCTOBER 1981.--Discharge, 26,900 ft^3/s (762 m^3/s) Oct. 14, gage height, 31.35 ft (9.555 m).
FOR PERIOD NOVEMBER 1915 TO APRIL 1920, DECEMBER 1923 TO AUGUST 1925, JULY 1928 TO SEPTEMBER 1951, OCTOBER 1961 TO OCTOBER 1981.--Maximum discharge, 68,000 ft^3/s (1,930 m^3/s) Aug. 5, 1978, gage height, 37.04 ft (11.290 m), present site and datum, from rating curve extended above 40,000 ft^3/s (1,130 m^3/s). Maximum stage since 1877, that of Aug. 5, 1978.
HISTORIC.--Flood of May 1, 1957, reached a stage of 35 ft (10.7 m), present site and datum; flood in September 1900 reached about same stage, from information by State Department of Highways and Public Transportation and local residents. Other floods are reported to have occurred in 1876, Apr. 27, 1890, 1932, 1941, and 1955.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0100	41	8.37	Oct. 13 -	0900	22500	29.67	Oct. 17 -	1200	21200	28.96
	0600	166	8.86		1200	24700	30.5				
	0900	1690	10.44		2400	26500	31.19	Oct. 18 -	1200	18300	26.97
	0930	2820	11.12						2400	15400	24.86
	1200	4670	12.48	Oct. 14 -	0430	26900	31.35				
	1800	6360	14.15		1200	26600	31.25	Oct. 19 -	1200	13100	22.93
	2000	7430	15.34		2400	24300	30.40		2400	10400	19.16
	2400	9180	17.61								
				Oct. 15 -	1200	22500	29.71	Oct. 20 -	1200	5830	13.59
Oct. 13 -	0100	10500	19.39		2400	21400	29.09				
	0300	13400	23.25					Oct. 21 -	1200	4740	12.54
	0430	15800	25.16	Oct. 16 -	1200	22200	29.57				
	0600	18100	26.79		2400	21500	29.15	Oct. 22 -	1200	3200	11.38

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	15	8.....	87	16.....	21800	24.....	2640
2.....	15	9.....	54	17.....	21000	25.....	2500
3.....	13	10.....	38	18.....	18200	26.....	1970
4.....	11	11.....	38	19.....	13100	27.....	428
5.....	11	12.....	3780	20.....	6510	28.....	299
6.....	15	13.....	21800	21.....	4480	29.....	245
7.....	56	14.....	26100	22.....	3120	30.....	215
		15.....	22700	23.....	2930	31.....	192

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	5625
MONTHLY TOTAL, IN ACRE-FEET	345800
RUNOFF, IN INCHES	1.14

(73) 08088000 BRAZOS RIVER NEAR SOUTH BEND, TX

LOCATION.--Lat 33°01'27", long 98°38'37", Young County, Hydrologic Unit 12060201, on left bank 225 ft (69 m) downstream from bridge on State Highway 67, 1.8 mi (2.9 km) downstream from Clear Fork Brazos River, 2.0 mi (3.2 km) northeast of South Bend, and at mile 758.2 (1,219.9 km).

DRAINAGE AREA.--22,673 mi^2 (58,723 km^2), of which 9,566 mi^2 (24,776 km^2) probably is noncontributing.

PERIOD OF RECORD.--September 1938 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 1,002.98 ft (305.708 m) National Geodetic Vertical Datum of 1929. Prior to Feb. 23, 1939, nonrecording gage at site 255 ft (69 m) upstream. Feb. 23, 1939, to Mar. 9, 1961, water-stage recorder at site 225 ft (69 m) upstream.

REMARKS.--Records good. Flow is affected at times by discharge from flood-detention pools of 12 floodwater-retarding structures with combined detention capacity of 24,710 acre-ft (30.5 hm^3). These structures control runoff from 108 mi^2 (280 km^2). Gage-height telemeter at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 40,000 ft^3/s (1,130 m^3/s) Oct. 15, gage height, 30.35 ft (9.251 m).
FOR PERIOD SEPTEMBER 1938 TO OCTOBER 1981.--Maximum discharge, 87,400 ft^3/s (2,480 m^3/s) May 4, 1941, gage height, 27.35 ft (8.336 m); maximum gage height, 41.50 ft (12.649 m) Aug. 6, 1978, from flood-mark. Maximum stage since 1938, that of Aug. 6, 1978.
HISTORIC.--Flood in 1876 reached a stage of 36.2 ft (11.03 m), from information by State Department of Highways and Public Transportation and Corps of Engineers. Flood of Sept. 24, 1900, reached a stage of 29.5 ft (8.99 m), and flood of June 16, 1930, reached a stage of 35.5 ft (10.82 m), from information by local residents.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0300	209	5.24	Oct. 14 -	1200	36800	29.03	Oct. 17 -	2400	25100	25.92
	1200	731	6.35		1800	37800	29.40				
	1500	2630	9.18		2400	39100	29.88	Oct. 18 -	1200	23000	25.22
	1800	5150	11.99						2400	20100	23.90
	2100	7660	14.41	Oct. 15 -	0300	38600	29.85				
	2400	9570	16.13		0600	39200	30.09	Oct. 19 -	1200	17100	22.29
					1015	40000	30.34		2400	13800	20.32
Oct. 13 -	0300	15200	19.89		1500	40000	30.35				
	0600	20600	22.63		1900	39000	29.99	Oct. 20 -	0600	11500	18.77
	0900	25300	24.69		2400	37200	29.34		1200	8980	16.60
	1200	27600	25.66						2400	5840	13.44
	1500	29400	26.35	Oct. 16 -	1200	32900	28.19				
	1800	30900	26.91		2400	30000	27.36	Oct. 21 -	1200	4940	12.48
	2100	31900	27.30						2400	3970	11.38
	2400	32800	27.61	Oct. 17 -	0830	27800	26.77				
					1200	27500	26.68	Oct. 22 -	0900	3060	10.25
Oct. 14 -	0300	33500	27.87		2130	25800	26.16		2400	3030	10.21

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	33	8.....	143	16.....	32900	24.....	2340
2.....	44	9.....	568	17.....	27400	25.....	2130
3.....	69	10.....	241	18.....	22800	26.....	1920
4.....	57	11.....	138	19.....	17100	27.....	1110
5.....	47	12.....	2690	20.....	9290	28.....	850
6.....	43	13.....	25300	21.....	5030	29.....	732
7.....	90	14.....	36300	22.....	3150	30.....	660
		15.....	39100	23.....	2730	31.....	606

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	7600
MONTHLY TOTAL, IN ACRE-FEET	467300
RUNOFF, IN INCHES	.67

(74) 08088300 BRIAR CREEK NEAR GRAHAM, TX

LOCATION.--Lat 33°12'43", long 98°37'06", Young County, Hydrologic Unit 12060201, near right bank on downstream side of bridge on Farm Road 1769, 3.7 mi (6.0 km) upstream from mouth, and 7.0 mi (11.3 km) northwest of Graham.

DRAINAGE AREA.--24.2 mi^2 (62.7 km^2).

PERIOD OF RECORD.--April 1958 to October 1981. Prior to October 1965, published as Oak Creek near Graham.

GAGE.--Water-stage recorder. Altitude of gage is 1,090 ft (332 m), from topographic map.

REMARKS.--Records fair. No diversion above station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 1,350 ft^3/s (38.2 m^3/s) Oct. 13, gage height, 11.42 ft (3.481 m).
FOR PERIOD APRIL 1958 TO OCTOBER 1981.--Maximum discharge, 2,730 ft^3/s (77.3 m^3/s) Sept. 19, 1976, gage height, 12.31 ft (3.752 m).
HISTORIC.--Maximum stage since at least 1900, 15.2 ft (4.63 m) in September 1955. Flood in May 1957 reached a stage of 15.0 ft (4.57 m), from information by local residents.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0600	0	0.36	Oct. 13 -	0400	568	8.50	Oct. 14 -	0600	190	4.10
	1200	.18	0.50		1000	705	9.81		1200	82	2.47
	2300	8.5	1.07		1200	1350	11.01		2400	23	1.45
	2400	105	2.38		1600	912	10.34				
					2000	624	9.10	Oct. 15 -	1200	4.1	.80
Oct. 13 -	0100	248	4.85		2400	422	6.90		2400	2.5	.78

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.00	8.....	.00	16.....	1.6	24.....	.14
2.....	.00	9.....	.00	17.....	.48	25.....	.12
3.....	.00	10.....	.00	18.....	.20	26.....	.06
4.....	.00	11.....	.00	19.....	.15	27.....	.00
5.....	.00	12.....	4.0	20.....	.12	28.....	.00
6.....	.00	13.....	699	21.....	.10	29.....	.00
7.....	.19	14.....	128	22.....	.18	30.....	.00
		15.....	7.3	23.....	.22	31.....	.00

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	27.2
MONTHLY TOTAL, IN ACRE-FEET	1670
RUNOFF, IN INCHES	1.29

(75) 08088400 LAKE GRAHAM NEAR GRAHAM, TX

LOCATION.--Lat 33°08'04", long 98°36'48", Young County, Hydrologic Unit 12060201, near left end of earthen dam on Salt Creek, 2.2 mi (3.5 km) northwest of Graham, 5 mi (8 km) downstream from Briar Creek, and 9.5 mi (15.3 km) upstream from mouth.

DRAINAGE AREA.--221 mi^2 (572 km^2).

PERIOD OF RECORD.--March 1958 to September 1963 (unpublished record), October 1963 to October 1981. Prior to October 1965, monthend contents only.

GAGE.--Water-stage recorder. Datum of gage is 1.30 ft (0.396 m) Salt Creek datum. Prior to October 1963, non-recording gage at same site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam 5,000 ft (1,500 m) long. Lake Graham was connected with Lake Eddleman in 1959 by a cut channel at a gage height of 1,050.0 ft (320.04 m). Deliberate impoundment began Apr. 28, 1958, and the dam was completed in July 1958. The uncontrolled emergency spillway is a 1,050-foot-wide (320 m) cut at the right end of dam. The spillway is designed to discharge 136,500 ft^3/s (3,870 m^3/s) at a gage height of 1,087.5 ft (331.47 m). The dam is the property of the city of Graham and was built to impound water for municipal and industrial uses. In addition, water is used by the Texas Electric Service Co. for operation of their steam generating powerplant. The capacity table is based on an original survey of Lake Eddleman in 1928 and a Salt Creek survey of 1953. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam	1,092.0	-
Crest of spillway	1,075.0	53,680
Bottom of interconnecting channel	1,050.0	8,670
Lowest gated outlet (invert)	1,050.0	8,670

COOPERATION.--Capacity table was furnished by Freese, Nichols, and Endress, Consulting Engineers. Record of diversions furnished by the city of Graham and the Texas Electric Service Co.

MAXIMA: FOR OCTOBER 1981.--Contents, 58,800 acre-ft (72.5 hm^3) Oct. 13, gage height, 76.91 ft (23.442 m).
FOR PERIOD MARCH 1958 TO OCTOBER 1981.--Maximum contents, 61,120 acre-ft (75.4 hm^3) Apr. 30, 1970, gage height, 1,077.77 ft (328.504 m).

Gage height, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Gage height	Date	Hour	Contents	Gage height	Date	Hour	Contents	Gage height
Oct. 12	0600	44000	71.09	Oct. 14	0600	58400	76.77	Oct. 16	1200	56100	75.91
	1200	46400	72.07		1200	58100	76.68				
	1800	46800	72.23		1800	57800	76.54	Oct. 17	1200	55700	75.79
	2400	48000	72.73		2400	57300	76.38				
								Oct. 18	1200	55300	75.60
Oct. 13	0600	53800	75.05	Oct. 15	0600	56900	76.22				
	1200	58100	76.66		1200	56600	76.11	Oct. 19	1200	54900	75.48
	1800	58800	76.91		1800	56200	75.98				
	2400	58700	76.88		2400	56100	75.91	Oct. 20	1200	54700	75.40

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1	46080	8	46030	16	55920	24	54200
2	45980	9	46050	17	55430	25	54180
3	45960	10	46000	18	55040	26	54070
4	45880	11	46000	19	54780	27	45020
5	45840	12	48000	20	54620	28	53990
6	45840	13	58670	21	54570	29	53940
7	46080	14	57320	22	57790	30	53970
		15	56060	23	54310	31	53890
CHANGE IN CONTENTS, IN ACRE-FEET							7740

(76) 08088450 BIG CEDAR CREEK NEAR IVAN, TX

LOCATION.--Lat 32°49'39", long 98°43'25", Stephens County, Hydrologic Unit 12060201, on left bank at downstream side of bridge on Farm Road 717, 3.2 mi (5.1 km) south of Ivan, 8.2 mi (13.2 km) northwest of Caddo, and 11.6 mi (18.7 km) northeast of Breckenridge.

DRAINAGE AREA.--97.0 mi^2 (251.2 km^2).

PERIOD OF RECORD.--December 1964 to October 1981.

GAGE.--Water-stage recorder. Altitude of gage is 1,090 ft (33 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 34,700 ft^3/s (983 m^3/s) Oct. 13, gage height, 32.50 ft (9.906 m). FOR PERIOD DECEMBER 1964 TO OCTOBER 1981.--Maximum discharge, 9,590 ft^3/s (272 m^3/s) July 8, 1968, gage height, 22.39 ft 16.824 m), from rating curve extended above 1,000 ft^3/s (28.3 m^3/s) on basis of slope-area measurement of 7,980 ft^3/s (226 m^3/s).

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0100	49	4.67	Oct. 13 -	0300	8950	24.41	Oct. 13 -	2200	7450	22.64
	0230	464	8.02		0500	11600	27.28		2400	4790	19.00
	0245	800	9.57		0600	14300	28.61				
	0300	1170	10.87		0700	20900	30.20	Oct. 14 -	0100	2820	15.24
	0400	2360	14.14		0800	27400	31.33		0130	2090	13.48
	0600	4390	18.36		0900	30200	31.75		0200	1360	11.46
	0800	6200	21.04		0945	34700	32.50		0300	597	8.70
	1000	8030	23.34		1200	29700	31.68		0600	354	7.38
	1200	9970	25.56		1300	24700	30.89		1200	186	6.21
	1315	10700	26.35		1400	19800	29.98		2400	93	5.28
	1600	9020	24.49		1500	16600	29.26				
	1800	7290	22.44		1700	12400	27.94	Oct. 15 -	1200	57	4.80
	2400	6700	21.70		2000	9800	25.37		2400	44	4.59

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	.23	8.....	33	16.....	38	24.....	29
2.....	.25	9.....	14	17.....	32	25.....	19
3.....	.28	10.....	9.4	18.....	29	26.....	14
4.....	.37	11.....	6.4	19.....	21	27.....	10
5.....	.43	12.....	6270	20.....	17	28.....	7.9
6.....	117	13.....	16000	21.....	14	29.....	6.3
7.....	172	14.....	458	22.....	273	30.....	5.4
		15.....	61	23.....	71	31.....	4.4

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	766
MONTHLY TOTAL, IN ACRE-FEET	47080
RUNOFF, IN INCHES	9.10

(77) 08088500 POSSUM KINGDOM LAKE NEAR GRAFORD, TX

LOCATION.--Lat 32°52'20", long 98°25'32", Palo Pinto County, Hydrologic Unit 12060201, at Morris Sheppard Dam on Brazos River, 2.6 mi (4.2 km) upstream from Loving Creek, 11.3 mi (18.2 km) southwest of Graford, and at mile 687.5 (1,106.2 km).

DRAINAGE AREA.--23,596 mi² (61,114 km²), approximately, of which 9,566 mi² (24,776 km²) probably is noncontributing.

PERIOD OF RECORD.--March 1941 to October 1981. Prior to October 1977, published as Possum Kingdom Reservoir.

GAGE.--Water-stage recorder. Datum of gage is 0.10 ft (0.030 m) National Geodetic Vertical Datum of 1929 (levels by Brazos River Authority). Prior to Mar. 19, 1968, mercury U-tube in powerhouse at present site and datum.

REMARKS.--The lake is formed by reinforced concrete dam, Ambursen-type, massive buttress with flat-slab deck, a controlled spillway, two bulkhead sections, and an earthen-dike section. Total length of dam is 2,740 ft (835 m) long. The dam was completed and storage began Mar. 21, 1941. The spillway has nine roof-weir gates (modified bear-trap type) that are 73.66 by 13 ft (22.45 by 4 m) each and are designed to discharge about 100,000 ft³/s (2,830 m³/s) at a gage height of 1,000.0 ft (304.80 m). The outlet works consist of one controlled 54-inch-diameter (1,372 mm) conduit. Water is used for power development, irrigation, municipal, industrial, and recreational purposes. Two generators located in the powerhouse at dam can produce 22,500 kilowatts at a 1,000-foot (305 m) gage height. Eleven major reservoirs, with a combined capacity of 607,800 acre-ft (749 hm³), largely regulate the inflow. The capacity curve is based on recomputation of survey made in 1974. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08080950. Gage-height telemeter was installed at station on Jan. 13, 1981. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam	1,024.0	-
Design flood (top of gates)	1,000.0	570,200
Crest of spillway	987.0	383,300
Invert of penstock	911.5	4,560
Lowest gated outlet (invert of 54-inch conduit)	874.8	0

COOPERATION.--Capacity table 3-C furnished by the Brazos River Authority.

MAXIMA: FOR OCTOBER 1981.--Contents, 652,900 acre-ft (805 hm³/s) Oct. 13, gage height, 1,003.60 ft (305.897 m). FOR PERIOD MARCH 1941 TO OCTOBER 1981.--Maximum contents observed, 743,700 acre-ft (917 hm³) Oct. 5, 1941, gage height, 1,001.0 ft (305.10 m).

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 11	1200	505000	996.07	Oct. 14	1800	609000	1001.80	Oct. 17	1800	551000	998.90
	2400	506000	996.13		2400	597900	1001.37		2400	554200	999.08
Oct. 12	0600	534000	997.88	Oct. 15	0600	591000	1001.07	Oct. 18	0600	557000	999.22
	1200	551000	998.88		1200	587000	1000.86		1200	559000	999.36
	1800	560000	999.40		1800	583000	1000.65		2400	560600	999.45
	2400	566200	999.77		2400	574500	1000.22				
								Oct. 19	1200	562000	999.54
Oct. 13	0600	587000	1000.88	Oct. 16	0600	567000	999.83		2400	559700	999.40
	1200	637000	1002.93		1200	563000	999.56				
	1800	653000	1003.61		1800	559000	999.33	Oct. 20	0600	558000	999.31
	2400	646400	1003.33		2400	554000	999.07		1200	556000	999.20
									1800	554000	999.07
Oct. 14	0600	634000	1002.80	Oct. 17	0600	550000	998.81		2400	550500	998.86
	1200	619000	1002.23		1200	547000	998.65				

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1	499100	8	503700	16	554000	24	555800
2	498700	9	504300	17	554200	25	555900
3	498400	10	505000	18	560600	26	556300
4	497300	11	506000	19	559700	27	555400
5	497100	12	566200	20	550500	28	553000
6	499400	13	646400	21	543000	29	549800
7	502900	14	597900	22	553200	30	547800
		15	594500	23	555400	31	546400
CHANGE IN CONTENTS, IN ACRE-FEET							+47300

(78) 08089000 BRAZOS RIVER NEAR PALO PINTO, TX

LOCATION.--Lat 32°51'45", long 98°18'08", Palo Pinto County, Hydrologic Unit 12060201, on right bank 100 ft (30 m) upstream from bridge on Farm Road 4, 300 ft (91 m) downstream from Dark Valley Creek, 6.5 mi (10.5 km) north of Palo Pinto, and at mile 667.3 (1,073.7 km).

DRAINAGE AREA.--23,811 mi^2 (61,670 km^2), of which 9,566 mi^2 (24,776 km^2) probably is noncontributing.

PERIOD OF RECORD.--January 1924 to October 1981. Monthly discharge only for some periods, published in WSP 1312. Published as "near Mineral Wells" 1924-33.

GAGE.--Water-stage recorder. Datum of gage is 831.23 ft (253.359 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 15, 1933, nonrecording gage at site 19 mi (31 km) downstream at datum 38.19 ft (11.640 m) lower.

REMARKS.--Records good. Since 1941, flow largely regulated by Possum Kingdom Lake (station 08088500) 20 mi (32 km) upstream.

MAXIMA: FOR OCTOBER 1981.--Discharge, 69,300 ft^3/s (1,960 m^3/s) Oct. 13, gage height, 26.53 ft (8.086 m).
FOR PERIOD JANUARY 1924 TO OCTOBER 1981.--Maximum discharge, 95,600 ft^3/s (2,710 m^3/s) June 16, 1930, at site 19 mi (31 km) downstream from Mineral Wells, gage height, 30 ft (9.1 m), present site and datum.
HISTORIC.--Maximum stage occurred in 1876, from data by Corps of Engineers, and was several feet higher than the flood of June 16, 1930, which reached a stage of about 30 ft (9.1 m) and was the highest since at least 1876.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0100	336	1.47	Oct. 13 -	0300	15600	10.40	Oct. 17 -	1200	37100	17.77
	0200	3430	5.12		0600	26200	14.21		1600	29800	15.41
	0300	9680	8.07		0900	47900	20.99		2400	21800	12.62
	0400	14100	9.84		1200	60400	24.33				
	0500	22700	12.96		2000	68600	26.36	Oct. 18 -	1200	22200	12.78
	0600	33500	16.61		2400	66900	25.94				
	0700	40300	18.76					Oct. 19 -	1200	22800	12.99
	0900	37500	17.90	Oct. 14 -	0600	62000	24.74				
	1000	33600	16.66		1200	55800	23.15	Oct. 20 -	1200	22200	12.78
	1100	29000	15.14		1800	49900	21.55				
	1200	25100	13.83		2400	45400	20.28	Oct. 21 -	1200	18200	11.36
	1300	22200	12.77						1400	14900	10.15
	1400	19500	11.85	Oct. 15 -	1200	40500	18.82		1600	13000	9.43
	1600	14300	9.93		2400	45700	20.35		2400	11900	8.99
	1800	9920	8.16								
	2000	8180	7.43	Oct. 16 -	0100	46300	20.52	Oct. 22 -	0300	8200	7.44
	2200	10800	8.52		1200	44300	19.94		1200	5910	6.40
	2400	13600	9.66		2400	41500	19.10		2400	3970	5.44

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	82	8.....	171	16.....	44200	24.....	3200
2.....	45	9.....	89	17.....	33800	25.....	3080
3.....	156	10.....	61	18.....	22200	26.....	2220
4.....	232	11.....	77	19.....	22700	27.....	2720
5.....	55	12.....	18300	20.....	22100	28.....	2390
6.....	548	13.....	50100	21.....	17000	29.....	2690
7.....	792	14.....	56000	22.....	5810	30.....	2150
		15.....	41900	23.....	3490	31.....	2130

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	11630
MONTHLY TOTAL, IN ACRE-FEET	715000
RUNOFF, IN INCHES	.94

(79) 08090300 LAKE PALO PINTO NEAR SANTO, TX

LOCATION.--Lat 32°38'53", long 98°15'56", Palo Pinto County, Hydrologic Unit 12060201, on left bank near left end of dam on Palo Pinto Creek, 4.0 mi (6.4 km) upstream from bridge on Farm Road 4, 4.4 mi (7.1 km) northwest of Santo, 7.5 mi (12.1 km) upstream from Big Sunday Creek, and 18.7 mi (30.1 km) upstream from mouth.

DRAINAGE AREA.--461 mi^2 (1,194 km^2).

PERIOD OF RECORD.--April 1964 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Freese and Nichols, Inc., Consulting Engineers, bench mark).

REMARKS.--The lake is formed by a rock-faced earthfill dam 1,300 ft (400 m) long with a 550-foot (170 m) uncontrolled ogee-crested emergency spillway at right end of dam. The dam was completed and storage began in April 1964. During the summer of 1965, the dam was raised 2 ft (0.6 m) and the spillway crest was raised 4 ft (1.2 m) and lengthened from 500 to 550 ft (150 to 170 m). The lake is the property of Palo Pinto County Municipal Water District No. 1 and was built to impound water for municipal use, principally for the city of Mineral Wells. Water is released to the downstream channel through a 30-inch (762 mm) gated concrete pipe. It then flows 15 mi (24 km) downstream to a diversion lake where it is then pumped to the city of Mineral Wells. In addition, water is circulated through a steam generating powerplant owned by the Brazos Electric Power Co-Operative, Inc. The capacity table is based on a survey completed in 1959. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	898.0	-
Design flood	893.0	163,200
Crest of spillway	867.0	44,090
Lowest gated outlet (invert)	835.0	1,900

COOPERATION.--Capacity table furnished by Freese and Nichols, Inc, Consulting Engineers, for Palo Pinto Municipal Water District No. 1. Records of diversions furnished by the city of Mineral Wells.

MAXIMA: FOR OCTOBER 1981.--Contents, 51,460 acre-ft (63.4 hm^3) Oct. 14, elevation, 869.63 ft (265.063 m). FOR PERIOD APRIL 1964 TO OCTOBER 1981.--Maximum contents, 56,060 acre-ft (69.1 hm^3) Oct. 31, 1974, elevation, 871.15 ft (265.57 m).

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 11 -	1200	26600	859.37								
	1800	26800	859.52	Oct. 13 -	1600	45600	867.55	Oct. 15 -	1200	46900	868.03
	2400	27500	859.84		1800	46300	867.83		2400	47200	868.14
					2200	47800	868.35				
Oct. 12 -	0400	29200	860.70		2400	48900	868.74	Oct. 16 -	1200	47300	868.18
	0600	30400	861.25						2400	47200	868.15
	0800	31600	861.82	Oct. 14 -	0400	50400	869.25				
	1000	32800	862.35		0800	51500	869.63	Oct. 17 -	1200	46900	868.04
	1200	34100	862.95		1000	52600	870.00				
	1400	35400	863.50		1200	51900	869.77	Oct. 18 -	1200	46300	867.80
	1800	38000	864.59		1400	51300	869.59				
	2400	40400	865.55		1600	50500	869.30	Oct. 19 -	1200	45200	867.39
					1800	50200	869.21				
Oct. 13 -	0400	41500	866.00		2000	48000	868.43	Oct. 20 -	1200	45100	867.37
	0800	42700	866.48		2200	49200	868.85				
	1000	43500	866.77		2400	48700	868.67	Oct. 21 -	1200	45100	867.36
	1400	44900	867.30								
				Oct. 15 -	0600	47100	868.12	Oct. 22 -	1200	45000	867.33

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1.....	25390	8.....	26330	16.....	47110	24.....	44740
2.....	25350	9.....	26570	17.....	46670	25.....	44850
3.....	25270	10.....	26470	18.....	45440	26.....	44850
4.....	25200	11.....	27480	19.....	45090	27.....	44630
5.....	25100	12.....	40350	20.....	45070	28.....	44550
6.....	25050	13.....	48490	21.....	45010	29.....	44500
7.....	25810	14.....	48650	22.....	44980	30.....	44700
		15.....	47200	23.....	44770	31.....	45790
CHANGE IN CONTENTS, IN ACRE-FEET.....							+20290

(80) 08090800 BRAZOS RIVER NEAR DENNIS, TX

LOCATION.--Lat 32°36'56", long 97°55'32", Parker County, Hydrologic Unit 12060201, at downstream side of bridge on Farm Road 1543, 0.2 mi (0.3 km) south of Dennis, 1.0 mi (1.6 km) upstream from Patrick Creek, and at mile 589.8 (949.0 km).

DRAINAGE AREA.--25,237 mi^2 (65,364 km^2), of which 9,566 mi^2 (24,776 km^2) probably is noncontributing.

PERIOD OF RECORD.--May 1968 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 697.67 ft (212.650 m) National Geodetic Vertical Datum of 1929 (State Department of Highways and Public Transporation bench marks).

REMARKS.--Water-discharge records good. Flow is largely regulated by releases from storage in Possum Kingdom Lake (station 08088500) and Lake Palo Pinto (station 08090300). Flow is affected at times by discharge from the flood-detention pools of ten floodwater-retarding structures with a combined detention capacity of 11,890 acre-ft (14.7 hm^3). These structures control runoff from 46.5 mi^2 (120.4 km^2) in the East Keechi and Pollard Creeks drainage basins. There are many diversions above station for irrigation, municipal supply, and oil-field operations. Gage-height telemeter at station.

MAXIMA: FOR OCTOBER 1981.--Discharge, 96,600 ft^3/s (2,740 m^3/s) Oct. 14, gage height, 31.85 ft (9.708 m).
FOR PERIOD MAY 1968 TO OCTOBER 1981.--Maximum discharge, 59,300 ft^3/s (1,680 m^3/s) Aug. 10, 1978, gage height, 25.86 ft (7.882 m), from floodmarks.
HISTORIC.--Maximum stage since at least 1930, 31.8 ft (9.69 m) in May 1957, from floodmark, from information by State Department of Highways and Public Transportation.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	0400	91	3.41	Oct. 14 -	1800	96600	31.85	Oct. 20 -	1200	26900	19.57
	0600	100	3.45		2400	92400	31.40				
	0800	1670	5.50					Oct. 21 -	1200	25600	19.19
	0900	4740	9.00	Oct. 15 -	0600	80500	30.05				
	1000	8240	11.70		1200	72400	29.05	Oct. 22 -	0600	23500	18.50
	1100	12800	14.23		1800	65100	27.95		1200	21900	17.95
	1200	17200	16.23		2400	58100	26.80		2400	15800	15.65
	1500	27500	19.75								
	1800	36700	22.40	Oct. 16 -	1200	51200	25.60	Oct. 23 -	0600	11600	13.64
	2400	46200	24.62		2400	52200	25.78		1200	9100	12.25
									1800	7670	11.32
Oct. 13 -	0600	52000	25.73	Oct. 17 -	1200	51800	25.70		2400	6750	10.68
	1200	56600	26.54		2400	49500	25.29				
	2400	67700	28.35					Oct. 24 -	0600	5960	10.06
				Oct. 18 -	1200	45200	23.41		1200	5350	9.54
Oct. 14 -	0600	81800	30.20		2400	29000	20.20		2400	4740	9.00
	1200	92800	31.44								
				Oct. 19 -	1200	26900	19.57	Oct. 25 -	1200	4500	8.78

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	610	8.....	1350	16.....	52300	24.....	5520
2.....	597	9.....	1150	17.....	51500	25.....	4500
3.....	234	10.....	571	18.....	40400	26.....	4140
4.....	110	11.....	323	19.....	27300	27.....	3420
5.....	62	12.....	22000	20.....	26900	28.....	3420
6.....	135	13.....	61300	21.....	25600	29.....	3200
7.....	388	14.....	87700	22.....	21200	30.....	3240
		15.....	73600	23.....	9850	31.....	15700

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	17690
MONTHLY TOTAL, IN ACRE-FEET	1088000
RUNOFF, IN INCHES	1.30

(81) 08090900 LAKE GRANBURY NEAR GRANBURY, TX

LOCATION.--Lat 32°22'27", long 97°41'20", Hood County, Hydrologic Unit 12060201, at right end of spillway of DeCordove Bend Dam on Brazos River, 2.6 mi (4.2 km) upstream from Fall Creek, 7.5 mi (12.1 km) southeast of Granbury, and at mile 542.5 (872.9 km).

DRAINAGE AREA.--25,679 mi² (66,509 km²), of which 9,566 mi² (24,776 km²) probably is noncontributing.

PERIOD OF RECORD.--October 1968 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--The lake is formed by an Ambursen-type concrete and earthfill dam 2,256 ft (688 m) long, including a 932-foot (284 m) concrete spillway. The dam was completed on Aug. 30, 1969, and deliberate impoundment began Sept. 15, 1969. The spillway consists of sixteen 36- by 35-foot (11.0 by 10.7 m) tainter gates and two 7- by 8-foot (2.1 by 2.4 m) sluice gates. The outflow from the sluice gates discharges into a bay where it is then controlled by two 4- by 4.5-foot (1.2 by 1.4 m) sluice gates with inverts at 625.8 ft (190.74 m). Flow is affected at times by discharge from the flood-detention pools of 11 floodwater-retarding structures with a combined detention capacity of 13,360 acre-ft (16.5 hm³). These structures control runoff from 52.7 mi² (136 km²) in the East Keechi, Kickapoo, and Ruckers Creeks drainage basins. The lake was built by the Brazos River Authority for the conservation of water for irrigation, municipal, and industrial uses. Total monthly diversions given in the table below were furnished by the Brazos River Authority. The largest diversion was 9,320 acre-ft (11.5 hm³) for industrial uses. Records furnished by the city of Granbury show that 369 acre-ft (455,000 m³) of sewage effluent was returned above station during the current year. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	706.5	-
Top of tainter gates (design flood)	693.0	153,500
Crest of spillway	658.0	15,440
Lowest gated outlet (invert)	640.0	2,200

COOPERATION.--The capacity curve, based on data prepared by the Ambursen Engineering Corporation, was furnished by the Corps of Engineers.

MAXIMA: FOR OCTOBER 1981.--Contents, 138,700 acre-ft (171 hm³) Oct. 15, elevation, 691.22 ft (210.684 m).
FOR PERIOD OCTOBER 1968 TO OCTOBER 1981.--Maximum contents, 158,800 acre-ft (196 hm³) Mar. 27, 1977, elevation, 693.60 ft (211,409 m).

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elev-tion	Date	Hour	Contents	Elev-tion	Date	Hour	Contents	Elev-tion
Oct. 12	1200	150000	692.57	Oct. 14	0600	137000	691.00	Oct. 17	1200	133000	690.50
	2400	147000	692.20		1200	136000	690.86				
					2400	138000	691.09	Oct. 18	1200	134000	690.58
Oct. 13	1200	147000	692.20								
	2400	141000	691.45	Oct. 15	0600	138700	691.22	Oct. 19	1200	134000	690.60
Oct. 14	0300	139000	691.22	Oct. 16	1200	135000	690.77	Oct. 20	1200	133000	690.50

CONTENTS, IN ACRE-FEET, OCTGOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1	149800	8	149300	16	133300	24	146600
2	149500	9	150100	17	133100	25	144700
3	148800	10	150300	18	135000	26	144300
4	149300	11	149400	19	134100	27	144700
5	149600	12	146700	20	135500	28	145500
6	150100	13	140500	21	136300	29	146100
7	150300	14	137600	22	136600	30	147200
		15	136100	23	141800	31	148700
CHANGE IN CONTENTS, IN ACRE-FEET							+1000

(82) 08091000 BRAZOS RIVER NEAR GLEN ROSE, TX

LOCATION.--Lat 32°16'18", long 97°39'48", Somervell County, Hydrologic Unit 12060201, at downstream side of bridge on U.S. Highway 67, 600 ft (180 m) downstream from Georges Creek, 4.1 mi (6.6 km) upstream from Paluxy River, 6 mi (10 km) northeast of Glen Rose, and at mile 511.2 (822.5 km).

DRAINAGE AREA.--25,818 mi^2 (66,869 km^2), of which 9,566 mi^2 (24,776 km^2) probably is noncontributing.

PERIOD OF RECORD.--October 1923 to October 1981.

GAGE.--Water-stage recorder. Datum of gage is 567.82 ft (173.072 m) National Geodetic Vertical Datum of 1929. Prior to May 7, 1931, nonrecording gage at site 2.5 mi (4.0 km) downstream at same datum. May 7, 1931, to Sept. 30, 1957, water-stage recorder at site 2.4 mi (3.9 km) downstream at same datum, used as supplementary gage Oct. 1, 1957, to Apr. 1, 1959. Apr. 27, 1950, to Sept. 30, 1957, water-stage recorder, present gage, used as supplementary gage.

REMARKS.--Records good. Flow is largely regulated since September 1969 by Lake Granbury (station 08090900) 31 mi (50 km) upstream. Many diversions above station for irrigation, municipal supply, and oilfield operation.

MAXIMA: FOR OCTOBER 1981.--Discharge, 86,400 ft^3/s (2,450 m^3/s) Oct. 15, gage height, 35.19 ft (10.726 m).
FOR PERIOD OCTOBER 1923 TO OCTOBER 1981.--Maximum discharge, 97,600 ft^3/s (2,760 m^3/s) May 18, 1935, gage height, 23.68 ft (7.218 m), site then in use, from floodmarks; maximum gage height, 33.89 ft (10.330 m), present site, May 27, 1957. Maximum stage since at least 1876, that of May 27, 1957.
HISTORIC.--Flood in May 1908 reached a stage of 27 ft (8.2 m), and flood in May 1922 reached a stage of 29.5 ft (8.99 m), which could have equaled or exceeded flood in 1957 at present site, each at site 2.4 mi (3.9 km) downstream, from information by local residents.

Gage height, in feet, and discharge, in cubic feet per second, at indicated time, 1981

Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height	Date	Hour	Discharge	Gage height
Oct. 12 -	1200	594	6.23	Oct. 16 -	2400	63700	30.42	Oct. 23 -	1800	10800	13.32
	1900	833	6.41						2000	8670	12.17
	2000	6640	10.93	Oct. 17 -	0600	57900	29.07		2200	6560	10.88
	2100	11700	13.78		1800	53400	27.97		2400	4950	9.71
	2200	16500	16.04								
	2300	20700	17.80	Oct. 18 -	0300	52100	27.64	Oct. 24 -	0300	3750	8.77
	2400	24700	19.34		1200	50600	27.25		1400	3230	8.35
					2100	48600	26.71		1900	4980	9.73
Oct. 13 -	0200	31200	21.64		2400	46700	26.21		2400	6320	10.72
	0600	39300	24.16								
	1200	46800	26.25	Oct. 19 -	0300	43000	25.21	Oct. 25 -	1200	6490	10.84
	1800	54700	28.30		0600	38800	24.02				
	2400	64500	30.58		0900	35600	23.11	Oct. 26 -	0600	6450	10.81
					1200	33100	22.31		1500	6210	10.64
Oct. 14 -	0300	68600	31.49		1500	30800	21.51		1800	5220	9.91
	1200	72800	32.39		1900	28600	20.72		2100	4200	9.13
	2400	74900	32.85		2400	26600	20.04				
								Oct. 27 -	1200	3740	8.76
Oct. 15 -	0600	77900	33.47	Oct. 20 -	1200	26100	19.83				
	1200	82800	34.47					Oct. 28 -	1200	3720	8.75
	2100	86400	35.19	Oct. 21 -	1200	26100	19.84		2000	3190	8.32
	2400	86400	35.19								
				Oct. 22 -	1200	26200	19.88	Oct. 29 -	0600	2770	7.97
Oct. 16 -	0600	83600	34.63						2400	3270	3.39
	1200	77400	33.36	Oct. 23 -	1200	16500	16.03				
	1800	70500	31.91		1400	14700	15.21	Oct. 30 -	1200	3360	8.45
					1600	12700	14.26		2400	2480	7.73

MEAN DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1981

DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE	DAY	DISCHARGE
1.....	268	8.....	1100	16.....	76500	24.....	4080
2.....	580	9.....	1450	17.....	55700	25.....	6480
3.....	580	10.....	680	18.....	50500	26.....	6450
4.....	361	11.....	598	19.....	34300	27.....	3730
5.....	80	12.....	3320	20.....	26100	28.....	3550
6.....	35	13.....	46600	21.....	26100	29.....	2850
7.....	68	14.....	71700	22.....	25400	30.....	3190
		15.....	81800	23.....	15300	31.....	4250

MONTHLY MEAN DISCHARGE, IN CUBIC FEET PER SECOND	17860
MONTHLY TOTAL, IN ACRE-FEET	1098000
RUNOFF, IN INCHES	1.27

(83) 08092500 LAKE WHITNEY NEAR WHITNEY, TX

LOCATION.--Lat 31°51'55", long 97°22'18", Bosque County, Hydrologic Unit 12060202, on State Highway 22, in intake structure of Whitney Dam on Brazos River, 2.4 mi (3.9 km) upstream from Coon Creek, 3.5 mi (5.6 km) upstream from Iron Creek, 7.4 mi (11.9 km) southwest of Whitney, and at mile 442.4 (712.0 km).

DRAINAGE AREA.--27,189 mi^2 (70,420 km^2), approximately, of which 9,566 mi^2 (24,776 km^2) probably is noncontributing.

PERIOD OF RECORD.--December 1951 to October 1981. Prior to October 1970, published as Whitney Reservoir. Prior to October 1980, published as Whitney Lake.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--The lake is formed by a concrete-gravity and rolled earthfill dam 17,695 ft (5,393 m) long, including spillway. The dam was completed in April 1951 and deliberate impoundment began Dec. 10, 1951. The concrete spillway is 680 ft (210 m) long and includes 17 tainter gates 38.0 by 40.0 ft (11.6 by 12.2 m) each. The outlet works are comprised of 16 gate-operated conduits that are 5.0 by 9.0 ft (1.5 by 2.7 m) each. The space between elevations 522.0 and 571.0 ft (159.11 and 174.04 m) is reserved for flood-control storage. At a maximum design elevation of 573.0 ft (174.65 m), the spillway is designed to discharge 684,000 ft^3/s (19,400 m^3/s). The capacity table is based on a survey made in April and May 1959. Flow is affected at times by discharge from flood-detention pools of four floodwater-retarding structures with combined detention capacity of 2,690 acre-ft (3.32 hm^3). These structures control runoff from 12.2 mi^2 (31.6 km^2) in the Paluxy River drainage basin. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	584.0	-
Design flood	573.0	2,100,000
Top of gates	571.0	1,999,500
Crest of spillway (sill of gates)	533.0	627,100
Top of conservation pool (top of designated power storage)	522.0	411,100
Lowest controlled outlet (invert)	448.83	4,270

COOPERATION.--Records furnished by the Corps of Engineers and reviewed by the Geological Survey.

MAXIMA: FOR OCTOBER 1981.--Contents, 1,047,000 acre-ft (1.29 km^3) Oct. 22, elevation, 547.82 ft (166.976 m).
FOR PERIOD DECEMBER 1951 TO OCTOBER 1981.--Maximum contents, 1,980,000 acre-ft (2.44 km^3) May 29, 1957, elevation, 570.25 ft (173.812 m).

Elevation, in feet, and contents, in acre-feet, at indicated time, 1981

Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation	Date	Hour	Contents	Elevation
Oct. 12 -	1200	537000	528.98	Oct. 15 -	1200	753000	538.00	Oct. 18 -	0300	972000	545.50
					1600	770000	538.64		0600	978000	545.68
Oct. 13 -	0600	543000	529.25		2000	786000	539.21		0900	984000	545.88
	0900	549000	529.53		2400	802000	539.82		1200	990000	546.06
	1200	556000	529.85						1500	997000	546.28
	1500	566000	530.32	Oct. 16 -	0400	819000	540.40		2400	1010000	546.82
	1800	574000	530.68		0800	838000	541.08				
	2100	584000	531.10		1200	851000	541.53	Oct. 19 -	1200	1030000	547.42
	2400	593000	531.52		1600	871000	542.20				
					2000	887000	542.71	Oct. 20 -	1200	1040000	547.58
Oct. 14 -	0400	607000	532.15		2400	901000	543.20				
	0800	624000	532.85					Oct. 21 -	1200	1040000	547.46
	1200	641000	533.56	Oct. 17 -	0400	914000	543.62				
	1600	660000	534.35		0800	927000	544.03	Oct. 22 -	1800	1047000	547.82
	2000	678000	535.08		1200	936000	544.33				
	2400	696000	535.81		1600	946000	544.65	Oct. 23 -	1200	1040000	547.63
					2000	955000	544.96				
Oct. 15 -	0400	715000	536.57		2400	965000	545.28	Oct. 24 -	1200	1010000	546.64
	0800	736000	537.36								

CONTENTS, IN ACRE-FEET, OCTOBER 1981
INSTANTANEOUS OBSERVATION AT 2400

DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS	DAY	CONTENTS
1.....	532400	8.....	532000	16.....	902100	24.....	987600
2.....	532200	9.....	534300	17.....	965300	25.....	952100
3.....	531200	10.....	535500	18.....	1015000	26.....	913700
4.....	530300	11.....	536500	19.....	1040000	27.....	873000
5.....	529300	12.....	537800	20.....	1037000	28.....	833000
6.....	529500	13.....	593700	21.....	1035000	29.....	792700
7.....	531800	14.....	697700	22.....	1047000	30.....	763000
		15.....	803700	23.....	1031000	31.....	755700
CHANGE IN CONTENTS, IN ACRE-FEET							+223500

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