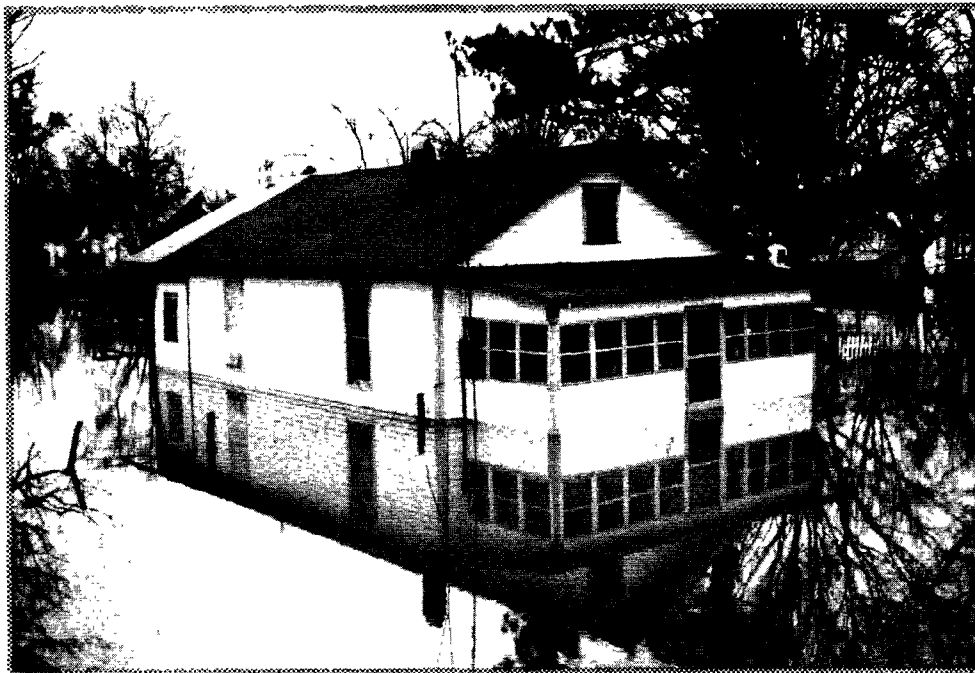


FLOODS OF FEBRUARY 1989 IN TENNESSEE



Prepared by the
U.S. GEOLOGICAL SURVEY

in cooperation with the
TENNESSEE DEPARTMENT OF TRANSPORTATION
and the
U.S. ARMY CORPS OF ENGINEERS,
NASHVILLE DISTRICT



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By Ferdinand Quiñones and Charles R. Gamble

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 89-4207

**Prepared in cooperation with the
TENNESSEE DEPARTMENT OF TRANSPORTATION
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NASHVILLE DISTRICT**



**Nashville, Tennessee
1990**

DEPARTMENT OF THE INTERIOR

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CONVERSION FACTORS

For those readers who may prefer to use metric units rather than the inch-pound units, conversion factors for terms used in this report are listed below:

Multiply inch-pound units	by	To obtain metric units
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
cubic foot per second (ft ³ /s)	0.0283	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]
mile (mi)	1.609	kilometer (km)

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

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ABSTRACT

Rainfall amounts of more than 5 inches during the early morning hours of February 14, 1989, caused flooding in some areas of West and Middle Tennessee. The towns of Lebanon in Middle Tennessee and Obion in West Tennessee were hardest hit. Much of the business district in Lebanon and many residential areas in Obion were flooded. Recurrence intervals for 24-hour rainfall totals were as high as 25 years at some sites but most peak discharges had recurrence intervals of less than 10 years.

Rainfall amounts for the period February 13-20, 1989, peak stages and discharges for this flood, the peak of record, and a list of discharge measurements made during the flood are documented in this report.

INTRODUCTION

Localized flooding occurred in West and Middle Tennessee (fig. 1) as a result of intense rains during the period February 13-20, 1989, with the most severe flooding occurring on February 14. Flooding was caused by nearly continuous rainfall that affected the western and middle parts of the State. Rainfall in East Tennessee was above normal during the period but did not result in any flooding. The most intense rainfall was recorded on February 14 with 24-hour precipitation totals in the area of flooding averaging nearly 3 inches. The maximum

recorded 24-hour rainfall for the storm was 5.68 inches at the town of Antioch near Nashville, Tenn. Flooding was most severe in the cities of Lebanon (Middle Tennessee) and Obion (West Tennessee).

The U.S. Geological Survey (USGS), as part of cooperative programs with the U.S. Army Corps of Engineers (COE), Nashville District, the Tennessee Valley Authority (TVA), the Tennessee Department of Transportation, the Tennessee Department of Health and Environment, and the Metropolitan Government of Nashville and Davidson County, monitored the storm and flood events. Flood-discharge measurements at selected streamflow-gaging stations were made by the USGS. Peak discharges at streamflow-gaging stations operated in cooperation with the above agencies were determined from available records. Daily and cumulative rainfall totals for the 8-day period were supplied by the National Weather Service (NWS), Memphis, Tenn., and additional data were compiled from data recorded at rainfall stations operated by the COE, and by the USGS. This report summarizes the data collected during the storm and flood periods.

Purpose and Scope

This report describes and documents the rainfall and resulting flooding during February 13-20, 1989, in Tennessee. The report covers approximately the western two-thirds of

the State (fig. 1). The eastern third of the State received some rainfall, but experienced only minor flooding.

Acknowledgments

The National Weather Service at Memphis, Tenn., provided rainfall data for this report. Their generous assistance in providing this data is appreciated.

RAINFALL

Intense rainfall began in West Tennessee on February 13, 1989, as a result of a cold front that moved from the west to the east over the State. Rainfall during the next day, as recorded at the NWS stations in West and Middle Tennessee, ranged from 1.33 to 5.12 inches (table 1). The maximum precipitation recorded on February 14 (at gages operated by the USGS) occurred at the town of Antioch, near Nashville, with a 24-hour total of 5.68 inches (fig. 2). At Carthage, a 24-hour total for February 14 of 5.11 inches was recorded (table 1).

In much of West Tennessee, 3.5 to 5.0 inches of rainfall occurred during the night of February 13 and early morning hours of February 14 with Alamo reporting 5.12 inches on the 14th. At Memphis, a total of 4.24 inches fell from 6 p.m. on February 13 through midnight on February 14, however, 3.77 inches of this amount fell during the 6-hour period from midnight to 6 a.m. on February 14 (fig. 3).

Rainfall data recorded on February 14 at the continuous rain gage at Carthage in Smith County showed that most of the rainfall occurred during the early morning hours (fig. 4). About 97 percent of the recorded rainfall occurred

before 12 noon. As a result, flooding in the town of Lebanon, as well as in other communities in Wilson and Cheatham Counties, occurred late in the morning and early in the afternoon.

The intensity of the rainfall declined during the next 4 days, decreasing to small amounts on February 19. Rainfall intensified in association with a near-stationary front on February 20, and rainfall totals for the day average about 2 inches. Flooding from this storm was minimal (table 2).

The recurrence interval of the 5.68 inches of rainfall recorded at Antioch on February 14 (24-hour cumulative) is about 25 years (U.S. Department of Commerce, 1961). The recurrence interval of the most intense rainfall for a 12-hour period (5.11 inches) was about 40 years, while the maximum hourly rate of 1.5 inches had a recurrence interval of 3 years (U.S. Department of Commerce, 1961).

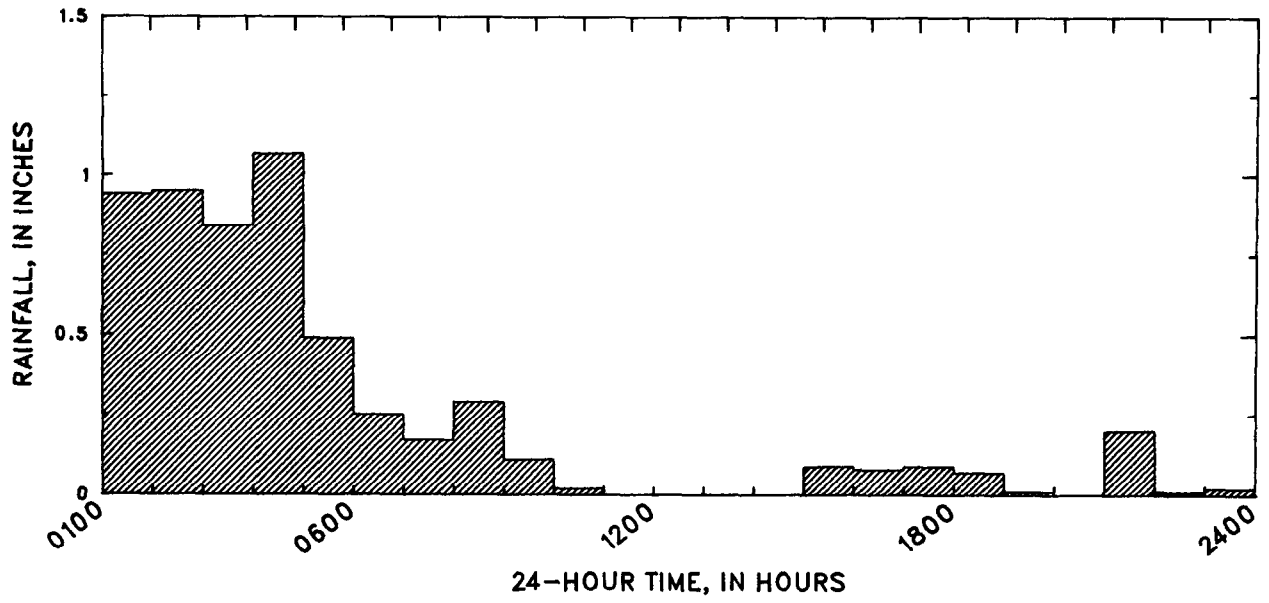
FLOODING

Except for the larger streams, most of the flooding in the Middle Tennessee area occurred on February 14, as a result of the intense rainfall between about 1 a.m. to 6 a.m. on that day. In West Tennessee, where the hydrology is somewhat different from the rest of the State, peaks on most streams occurred later (table 2). The most severe flooding occurred in the city of Lebanon, about 30 miles east of Nashville. Sinking Creek, in the urban area of Lebanon, flooded most of the downtown area. Severe flooding also occurred at Obion where the Obion River flooded significant areas of the town. The peak stage at the Obion River at Obion gaging station (station number 07026000) reached about 37.4 feet, or 3 feet less than the maximum stage of

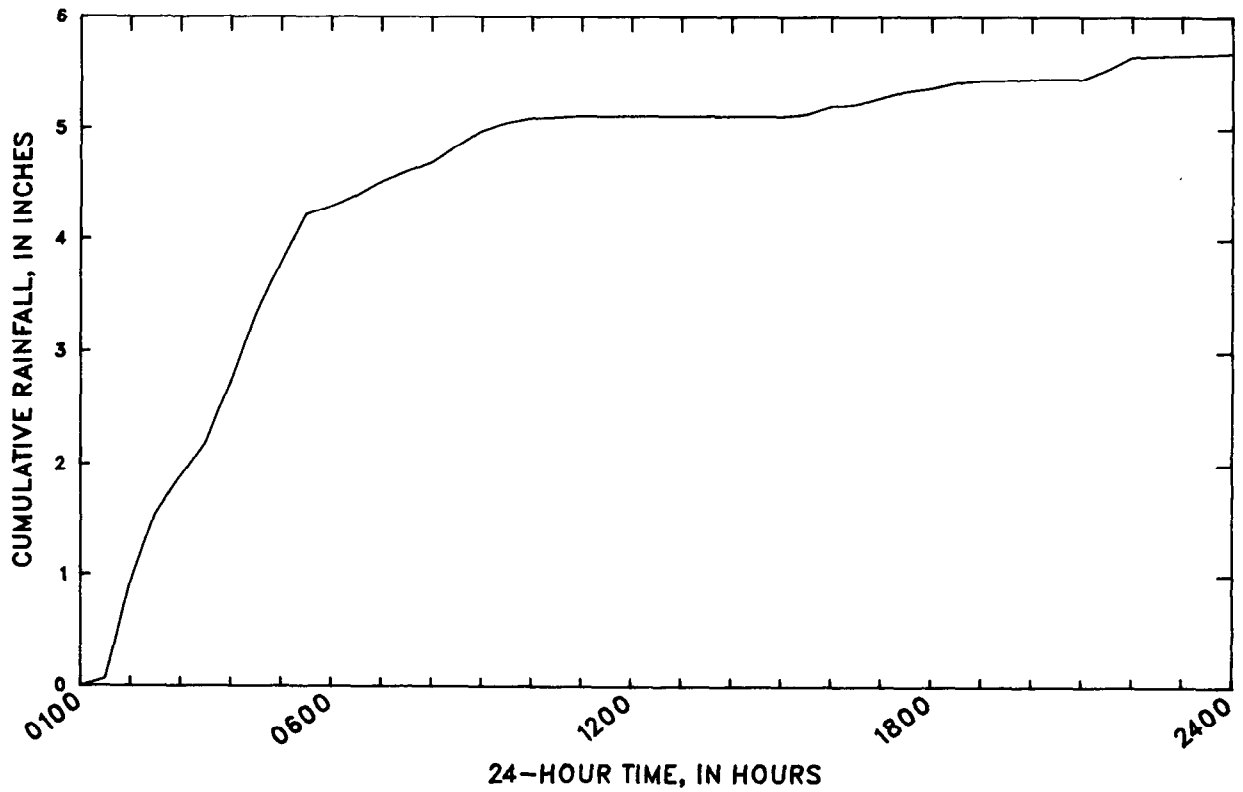
Table 1.--Rainfall data, in inches, for February 13 through 20, 1989
 [T, Trace; --, Not recorded]

Location	February							
	13	14	15	16	17	18	19	20
Corps of Engineers' gages operated by USGS								
Jamestown	0.11	2.91	0.10	0.33	0.60	0.23	0.20	1.40
Byrdstown	.08	2.68 ^a	.13 ^a	.22	.30	.15	.17	1.67
Celina	.10	2.30	.19	.19	.32	.14	.07	1.40
North Springs	.20	3.20	.18	.23	.51	.07	.31	1.51
Livingston	.14	3.35	.15	.26	.51	.15	0	1.79
Gainsboro	.24	4.17	.17	.27	.63	.30	.01	1.94
Cookeville	.10	1.02	.08	.29	.84	.18	.06	1.21
Cordell Hull Dam	.02	2.62	.02	0	0	0	0	.42
Lafayette	.31	3.08	.22	.20	.33	.24	.01	2.33
Carthage	.20	5.11	.38	.30	.94	.20	0	1.76
McMinnville	.05	.34	.05	.28	.98	.15	0	1.51
Statesville	.11	1.60	.15	.29	.85	.14	.01	2.01
Center Hill Dam	.10	1.52	.05	.13	.46	.04	0	2.08
Hunters Point	.21	4.33	.22	.28	.54	.06	0	1.67
Woodbury	.06	.81	.06	.23	.98	.09	0	1.36
Orlinda	1.34	2.35	.53	.20	.09	.16	0	2.43
Old Hickory Dam	.71	2.71	.16	.23	.42	.08	0	1.96
Lascassas	.02	1.54	.06	.34	.98	.11	0	1.61
Murfreesboro	.07	1.53	.07	.36	.66	.16	0	1.36
Smyrna	.07	2.01	.14	.24	.79	.17	.01	1.30
Antioch	.18	5.68	.13	.32	.79	.16	.03	2.09
USGS-Elm Hill Pike	0	5.05	.26	.30	.60	.14	0	2.18
Franklin	.09	2.54	.10	.25	.61	.03	.21	1.60
Kingston Springs	.23	3.54	.19	.33	.62	.11	.11	2.98
Cheatham Dam	1.59	2.29	.16	.10	.16	.18	0	2.30
Bethpage	.80	2.47	.22	.20	.32	.18	0	2.45
Springfield	1.40	2.58	.34	.21	.19	.13	0	2.97
Port Royal	1.41	3.06	.92	.23	.06	.15	.42	1.73
Clarksville	1.30	1.73	.95	.27	.03	.05	0	1.59
Ellis Mills	1.78	3.36	.64	.22	.20	.12	0	1.90
Dover	1.87	2.10	1.28	.24	.01	0	0	1.93
Lebanon	.14	4.55	.16	.26	.71	.17	.03	1.36
Monterey	.11	1.18	.13	.34	.81	.01	.30	1.34
Oneida	.09	1.34	.05	.39	.49	.01	.38	.76
National Weather Service gages								
Memphis	.12	4.14	.61	.22	.62	0	.01	1.90
Millington	1.30	2.49	.84	.10	1.09	.02	.04	.04
Dyersburg	.43	3.19	1.74	.63	.12	.20	.00	1.54
Jackson	.33	3.83	.71	.18	1.08	.04	.03	1.77
Nashville	.20	4.73	.16	.24	.83	.04	0	1.79
Crossville	.19	.46	0	.35	1.04	.19	0	.99
Chattanooga	.05	.08	0	.16	.62	.52	0	.23
Knoxville	.01	.32	0	.20	1.31	.19	0	.09
Tri-Cities	.03	.18	0	.33	.42	.27	0	.04
Fort Campbell	1.65	1.33	1.53	.26	.29	.01	0	2.12
Camden	.79	3.73	--	.66	.47	--	0	--
Alamo	.13	5.12	--	.57	--	--	0	1.80
Milan	0	3.63	--	0	.34	--	--	--
Kenton	.45	4.10	--	.48	--	--	0	1.75
Humboldt	0	3.35	--	.93	--	--	.40	1.60
Gibson	.14	4.15	--	.49	.34	--	T	1.96
Bolivar	0	3.40	--	.71	1.07	--	--	2.15
Brownsville	0	3.73	--	1.23	.60	--	--	1.95
W. Haywood Co.	.04	4.22	--	--	--	--	--	--
Martin	.85	3.33	--	.40	--	--	T	1.42
Gleason	.41	4.27	--	--	.60	--	0	1.53

^aRainfall may have been greater, records incomplete.

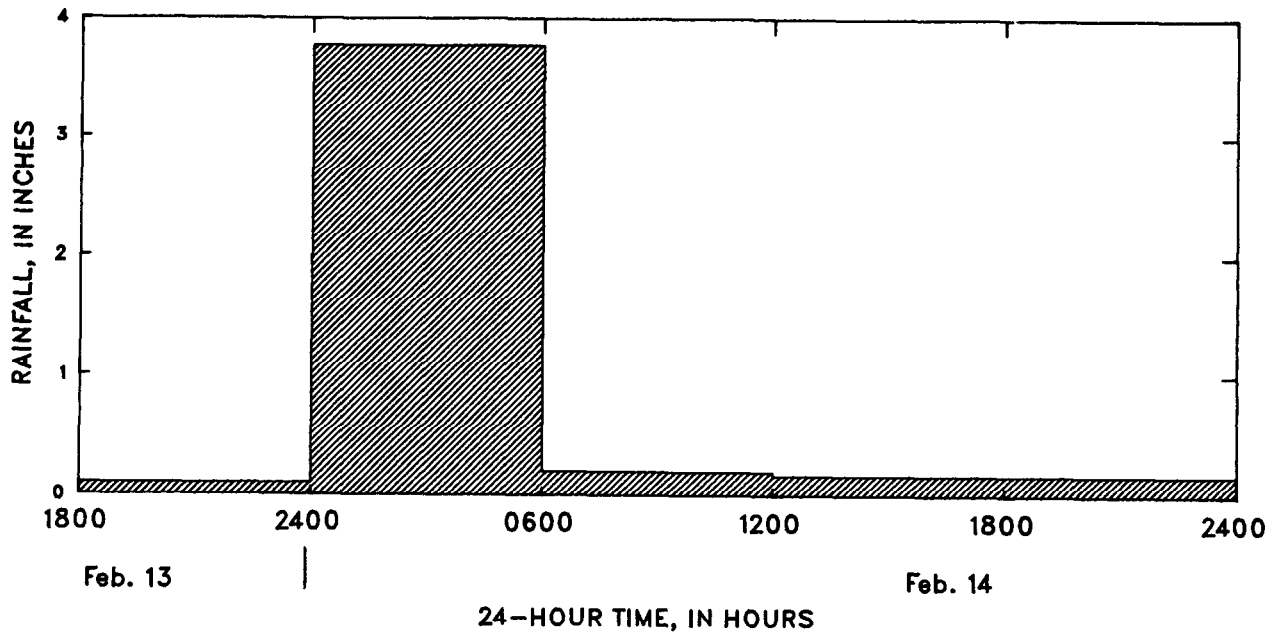


A. One-hour increment totals.

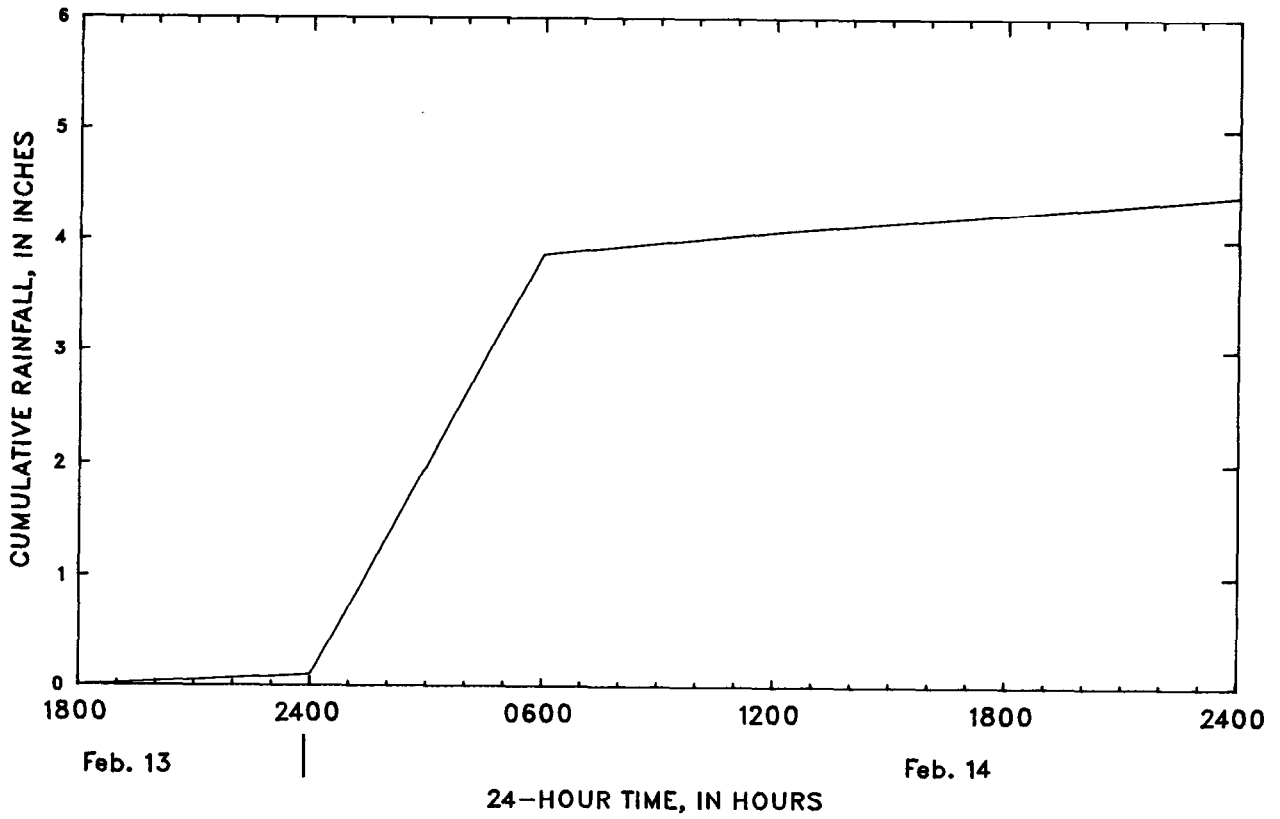


B. Cumulative rainfall totals.

Figure 2.--Rainfall distribution on February 14, 1989, at Antioch, Tenn.

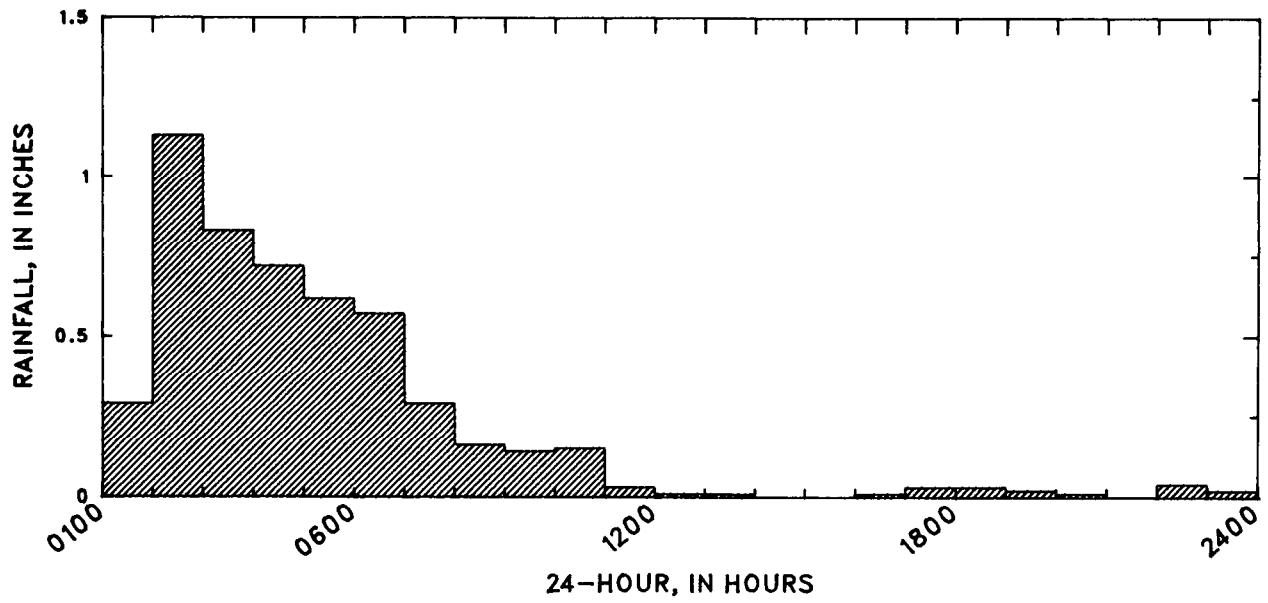


A. Six-hour increment totals.

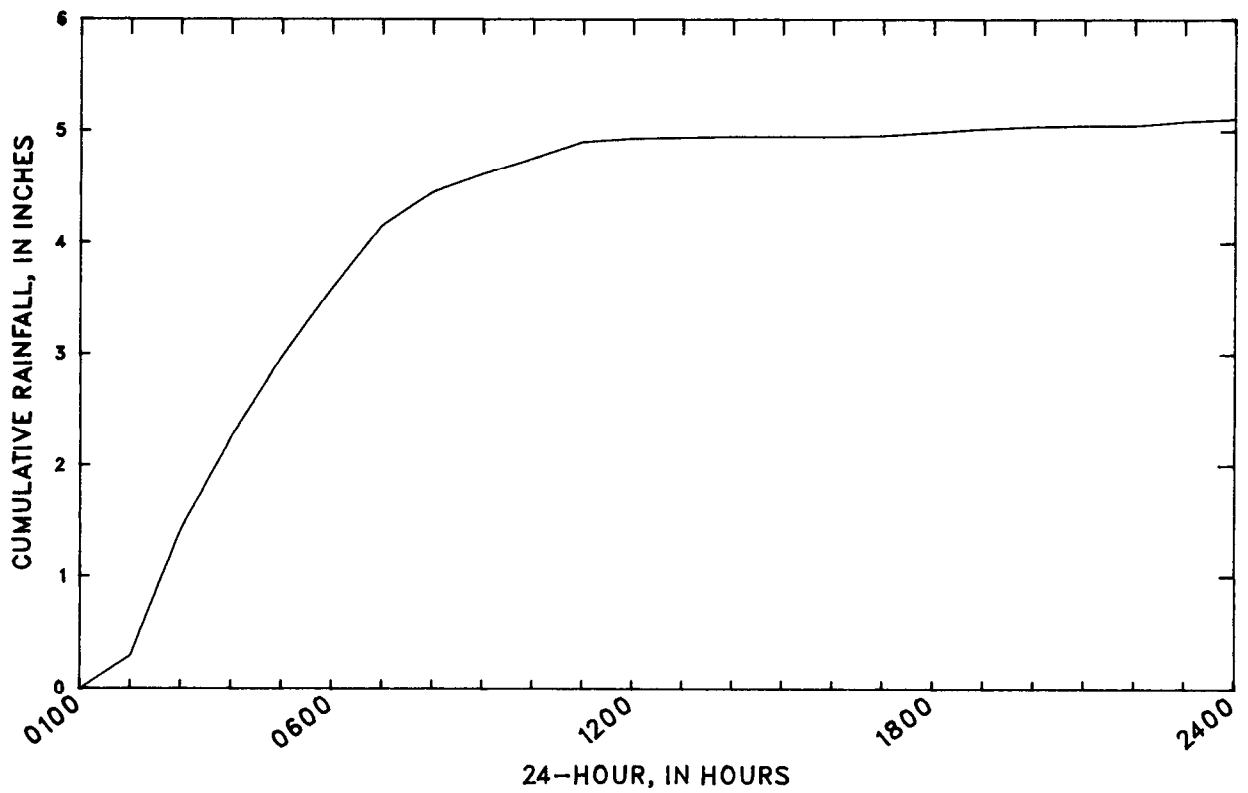


B. Cumulative rainfall totals.

Figure 3.—Rainfall distribution on February 13–14, 1989, at Memphis, Tenn.



A. One-hour increment totals.



B. Cumulative rainfall totals.

Figure 4.—Rainfall distribution on February 14, 1989, at Carthage Tenn.

Table 2.--Peaks at continuous-record stations

[ft, foot; ft³/s, cubic foot per second; (ft³/s)/mi², cubic foot per second per square mile; yrs, years; , less than; --, data not available]

Station No.	Station name	Contributing drainage area (mi ²)	Period of known floods	Maximum flood previously known			Maximum flood during present flood			Recurrence interval (years)	
				Date	Gage height (ft)	Discharge (ft ³ /s)	Date	Gage height (ft)	Discharge (ft ³ /s)		
CUMBERLAND RIVER BASIN											
03414500	East Fork Obey River near Jamestown	196	1929-1942-89	5/27/73	30.46	44,800	2/14	15.37	11,000	56.1	<2
03416000	Wolf River near Byrdstown	106	1929-1942-89	9/02/82	17.14	23,500	2/14	9.19	8,900	84.0	4
03418070	Roaring River above Gainesboro	176	1974-89	3/12/75	21.83	22,400	2/14	19.85	16,600	94.3	6
03418201	Doe Creek at Gainesboro	5.72	1977-89	8/31/82	7.28	--	2/14	5.62	--	--	--
03421200	Charles Creek near McMinnville	31.1	1955-89	3/12/83	13.68	10,800	2/14	7.27	1,850	59.5	<2
03424900	Mulhennin Creek near Gordonsville	26.9	1982-1986-89	9/4/86	22.37	--	2/14	23.85	--	--	--
03425045	Peyton Creek at Monoville	44.7	1986-89	11/28/85	33.81	--	2/14	33.74	--	--	--
03425357	Darwin Branch tributary at Hartsville	.66	1986-89	5/25/86	22.16	--	2/14	20.23	--	--	--
03425365	Second Creek near Walnut Grove	3.47	1986-89	11/09/86	27.06	--	2/14	24.08	--	--	--
03425500	Spring Creek near Lebanon	35.3	1955-89	9/13/79	12.45	13,500	2/14	10.07	7,880	223	8
03425503	Spring Creek at Interstate Hwy. 40 near Lebanon	--	--	--	--	--	2/14	555.88	11,500	--	29
03425575	Bartons Creek at Leeville Pike near Lebanon	--	--	--	--	--	2/14	539.02	11,400	--	>100
03425600	Sinking Creek at Lebanon	--	--	--	--	--	2/14	532.88	4,050	--	14
03425700	Spencer Creek near Lebanon	3.32	1955-89	9/04/86	9.06	2,880	2/14	6.83	1,020	307	3
03430118	McCrorry Creek at Ironwood Drive at Doneison	7.31	1977-89	5/06/84	9.87	2,850	2/14	9.71	2,810	384	10
03430400	Hill Creek at Nolensville	12.0	1965-89	5/07/84	9.82	11,400	2/14	7.82	5,690	474	8
03431000	Hill Creek near Antioch	64.0	1954-89	5/04/79	23.78	30,100	2/14	14.44	6,760	106	2
03431040	Sevenmile Creek at Blackman Road at Nashville	12.2	1965-89	9/13/79	9.58	--	2/14	8.55	--	--	--
03431060	Mill Creek at Thompson Lane near Woodbine	93.4	1965-89	5/04/79	20.63	26,200	2/14	16.88	16,000	171	8
03431062	Mill Creek tributary at Glenrose Avenue at Woodbine	1.17	1977-89	5/06/84	9.12	833	2/14	6.69	559	478	5
03431120	West Fork Browns Creek at General Bates Drive at Nashville	3.30	1965-89	3/29/75	7.00	2,110	2/14	6.50	1,710	518	5
03431240	East Fork Browns Creek at Baird Ward Printing Company at Nashville	1.58	1965-89	6/13/73	5.10	610	2/14	4.04	356	225	4
03431340	Browns Creek at Factory Street at Nashville	13.2	1965-89	9/13/79	10.89	7,800	2/14	8.67	--	--	--
03431490	Pages Branch at Avondale	2.01	1977-89	12/03/78	6.20	--	2/14	4.88	990	493	8
03431517	Cummins Branch at Lickton	2.40	1975-89	9/13/79	5.21	881	2/14	4.06	339	141	<2
03431550	Earthman Fork at Whites Creek	6.29	1965-89	9/15/81	9.34	2,450	2/14	7.86	1,670	266	3
03431573	Ewing Creek at Richmond Hill Drive at Parkwood	2.17	1976-89	6/09/86	497.32	--	2/14	495.17	--	--	--
03431575	Ewing Creek at Brick Church Pike at Parkwood	3.02	1976-89	6/09/86	478.15	--	2/14	476.79	--	--	--

Table 2.--Peaks at continuous-record stations--Continued

Station No.	Station name	Contributing drainage area (mi ²)	Period of known floods	Maximum flood previously known		Maximum during present flood		Recurrence interval (years)
				Date	Gage height (ft)	Date	Gage height (ft)	
CUMBERLAND RIVER BASIN--Continued								
03431578	Ewing Creek at Gwynwood Drive near Jordania	9.98	1976-89	6/09/86	463.10	2/14	462.82	--
03431581	Ewing Creek below Knight Road near Bordeaux	13.3	1976-89	6/09/86	449.80	2/14	448.13	--
03431677	Sugartree Creek at YMCA Access Road at Green Hills	1.51	1976-89	9/13/79	545.23	2/14	544.73	--
03431679	Sugartree Creek at Abbott Martin Road at Green Hills	2.19	1976-89	9/13/79	531.30	2/14	530.80	--
03431700	Richland Creek at Charlotte Avenue at Nashville	24.3	1964-89	9/13/79	15.13	2/14	11.84	5,740
03431795	Bednigo Branch tributary at Chestnut Grove	.47	1986-89	12/25/87	21.06	2/21	20.36	--
03431800	Sycamore Creek near Ashland City	97.2	1962-89	5/19/83	13.24	2/14	12.75	14,400
03432350	Harpeth River at Franklin	176	1975-89	3/13/75	33.65	2/14	18.83	4,820
03432470	Murfrees Fork above Burwood	7.43	1986-89	9/04/86	26.85	2/14	19.68	--
03432925	Little Harpeth River at Granny White Pike at Brentwood	22.0	1978-89	5/04/79	17.55	2/14	11.32	2,450
03433500	Harpeth River at Bellevue	393	1897-1989	2/13/48	24.34	2/14	16.82	13,200
03434500	Harpeth River at Kingston Springs	666	1897-89	1/07/46	32.20	2/14	28.84	40,900
03434590	Jones Creek near Burns	13.3	1984-89	5/06/84	9.87	2/14	8.21	2,330
034350021	Bartons Creek near Cumberland Furnace	22.3	1984-89	5/07/84	12.17	2/14	13.32	--
0343500213	Bartons Creek tributary near Stayton	.51	1984-89	12/09/86	11.05	2/14	11.13	--
03436000	Sulphur Fork Red River near Adams	165	1934-89	3/12/75	30.86	2/21	21.84	13,500
03436100	Red River at Port Royal	498	1937, 1961-89	3/13/75	48.26	2/15	37.24	29,500
03436690	Yellow Creek at Ellis Mills	103	1981-89	5/06/84	18.47	2/21	14.79	7,950
03436700	Yellow Creek near Shiloh	124	1957-80, 1982-89	5/06/84	17.75	2/14	14.32	8,430
TENNESSEE RIVER BASIN								
03600088	Carters Creek at Bulter Rd near Carters Creek	20.1	1987-89	11/26/86	13.67	2/14	11.98	2,190
03602500	Piney River at Vernon	193	1897, 1925-99	12/21/26	16.5 ^a	2/14	17.79	21,200
03603000	Duck River above Hurricane Mills	2,557	1925-89	2/14/48	30.70	2/21	21.36	40,800
03604000	Buffalo River near Flat Woods	447	1897-1989	2/13/48	32.0	2/21	17.22	11,800
03604500	Buffalo River near Lobelville	707	1897-1989	2/14/48	23.76	2/16	11.49	7,660
MISSISSIPPI RIVER BASIN								
07024225	Neil Ditch near Henry	4.07	1984-89	5/8/84	13.11	2/15	12.35	--
07024300	Beaver Creek at Huntingdon	55.5	1954-89	9/19/70	15.20 ^b	2/15	13.00	3,640
07024370	Little Reedy Creek near Huntingdon	.91	1984-89	12/25/87	15.38	2/15	13.97	--
07024500	South Fork Obion at Greenfield	383	1925-89	1/22/37	17.82	2/16	16.93	11,200
07025500	North Fork Obion at Union City	--	1929-70, 1989	6/16/70	18.44	2/16	20.89	15,000

Table 2.--Peaks at continuous-record stations--Continued

Station No.	Station name	Contributing drainage area (mi ²)	Period of known floods	Maximum flood previously known		Maximum during present flood		Recurrence interval (years)			
				Date	Gage height (ft)	Date	Gage height (ft)				
				Discharge (ft ³ /s)	Discharge (ft ³ /s)	Discharge (ft ³ /s)	Discharge (ft ³ /s)				
MISSISSIPPI RIVER BASIN--Continued											
07026000	Obion River at Obion	1,852	1929-58, 1967-89	1/24/37	40.4	99,500	2/18	37.46	42,000	22.7	6
07026370	North Reelfoot Creek at Hwy 22 near Clayton	56.3	1980-83,	12/03/82	19.30	2,170	2/15	20.01	3,520	62.5	2
07026400	South Reelfoot Creek near Clayton	38.6	1984-89	12/09/86	22.94	3,550	2/15	22.10	3,000	77.7	3
07026640	Running Slough near Ledford	10.8	1982-83, 1984-89	5/07/84	8.86	278	2/15	9.13	240	22.2	--
07027000	Reelfoot Lake near Tiptonville	240	1937, 1940-89	1/ /37	17.0	--	2/22	14.79	--	--	--
07027500	South Fork Forked Deer at Jackson	495	1929-73, 1988-89	4/21/73	22.28	31,200	2/14	17.22	4,840	9.8	<2
07029090	Lewis Creek at Dyersburg	25.5	1955-78, 1980-83, 1985-89	3/ 9/64	19.31	5,450	2/15	18.62	3,710	145	5
07029500	Hatchie R. at Bolivar	1,480	1929-89	3/18/73	21.66	61,600	2/22	18.12	24,500	16.6	4
07030100	Cane Creek at Ripley	33.9	1957-70, 1985-89	1/19/88	22.57	5,920	2/15	22.52	5,880	173	(c)
07030240	Loosahatchie River at Arlington	262	1970-89	12/25/87	25.27	27,400	2/21	20.28	10,040	38.3	4
07031660	Wolf River at Walnut Grove Road at Memphis	709	1970-89	3/14/75	27.98	33,400	2/21	18.85	10,950	15.4	2
07032200	Nonconnah Creek near Germantown	68.2	1969-89	12/25/87	22.82	11,300	2/20	20.86	9,260	136	<2

^aSite and datum then in use.

^bOccurred September 13, 1982.

^cApproximately 50 years based on present conditions (after dredging).

record in 1937, and had a peak discharge of about 42,000 cubic feet per second (fig. 5). A typical discharge hydrograph for a stream in Middle Tennessee, Sycamore Creek near Ashland City (station number 03431800), is shown in figure 6. Localized flooding occurred in several communities in Wilson, Cheatham, and Williamson Counties of Middle Tennessee and in several areas in West Tennessee.

Minor flooding occurred along the main stem of the Cumberland River. Peak stages during the flood period are compared with established flood stages in table 3. At Clarksville, flood stage was exceeded by about 3 feet.

Peak discharges and recurrence intervals at selected streamflow-gaging stations are summarized in table 2. Most of the peaks did not exceed a recurrence interval of 10 years (Randolph and Gamble, 1976; Neely, 1984).

U.S. GEOLOGICAL SURVEY ACTIVITIES RELATED TO THE FLOODS

Discharge measurements at selected gaging stations were made by the USGS during the storm and flood periods. These data are summarized in table 4. The USGS, in cooperation with the COE, Nashville District, and Tennessee Department of Transportation, surveyed high-water marks at ungaged sites on Sinking, Spring, and Bartons Creeks in Lebanon. These data were used to determine the peak discharge and recurrence interval for stations on these streams and are listed in table 2. The USGS, in cooperation with the City of Lebanon, the COE, Nashville District, and the Federal Emergency Management Agency, is in the process of preparing a map delineating the areas flooded in Lebanon during the flood of February 14. Flood profiles also are being defined.

Table 3.--Comparison of February 1989 peak stages with established flood stage at selected stations on the Cumberland River

Station No.	Station name	February 1989 flood		Established flood stage (feet)
		Elevation (feet)	Peak stage (feet)	
03417500	Cumberland River at Celina	513.58	24.58	40
03425000	Cumberland River at Carthage	468.63	31.10	40
03431500	Cumberland River at Nashville	405.56	36.46	40
03436500	Cumberland River at Clarksville	380.33	80.33	77

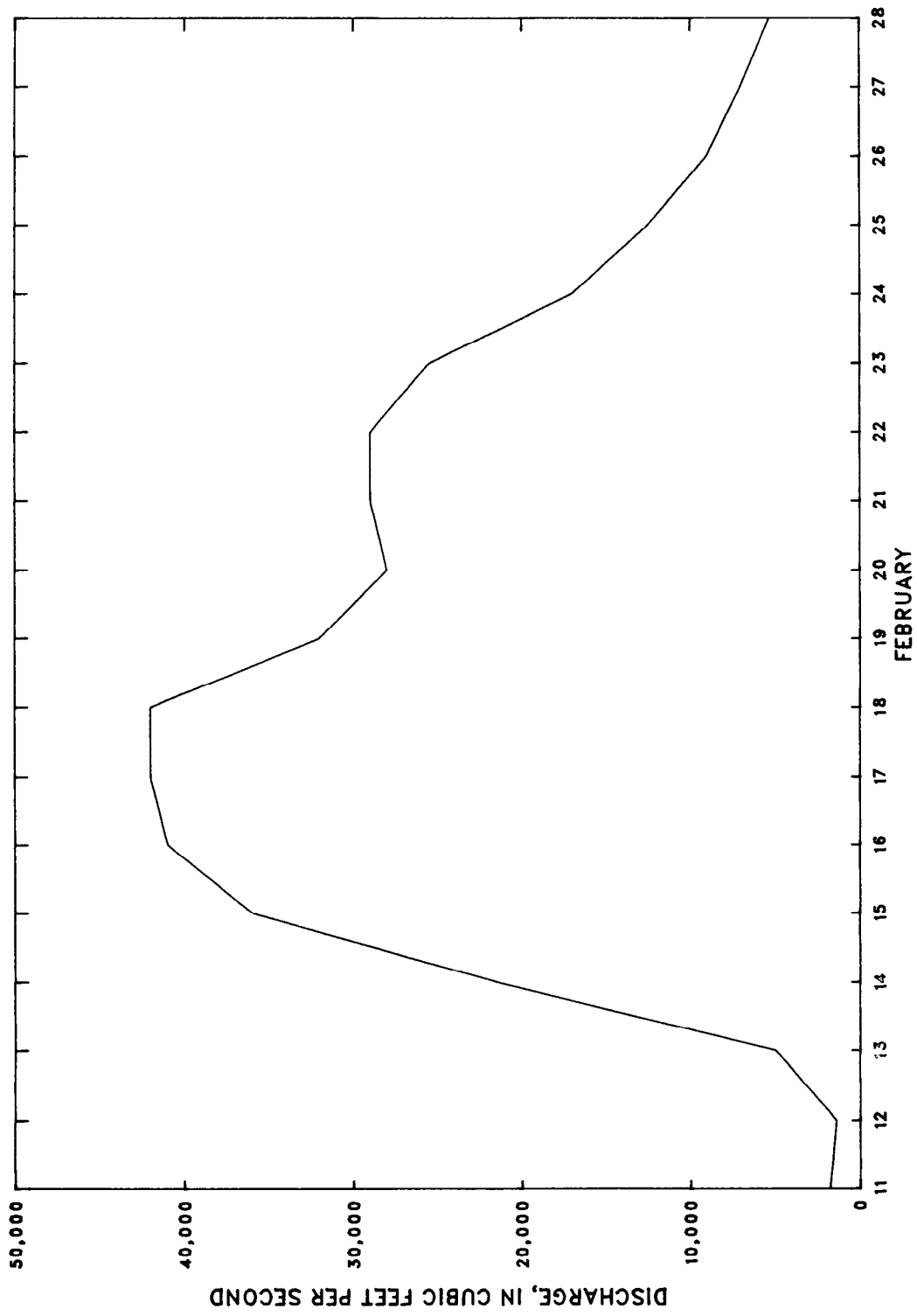


Figure 5.--Discharge hydrograph for the Obion River at Obion, Tenn., for the February 1989 flood.

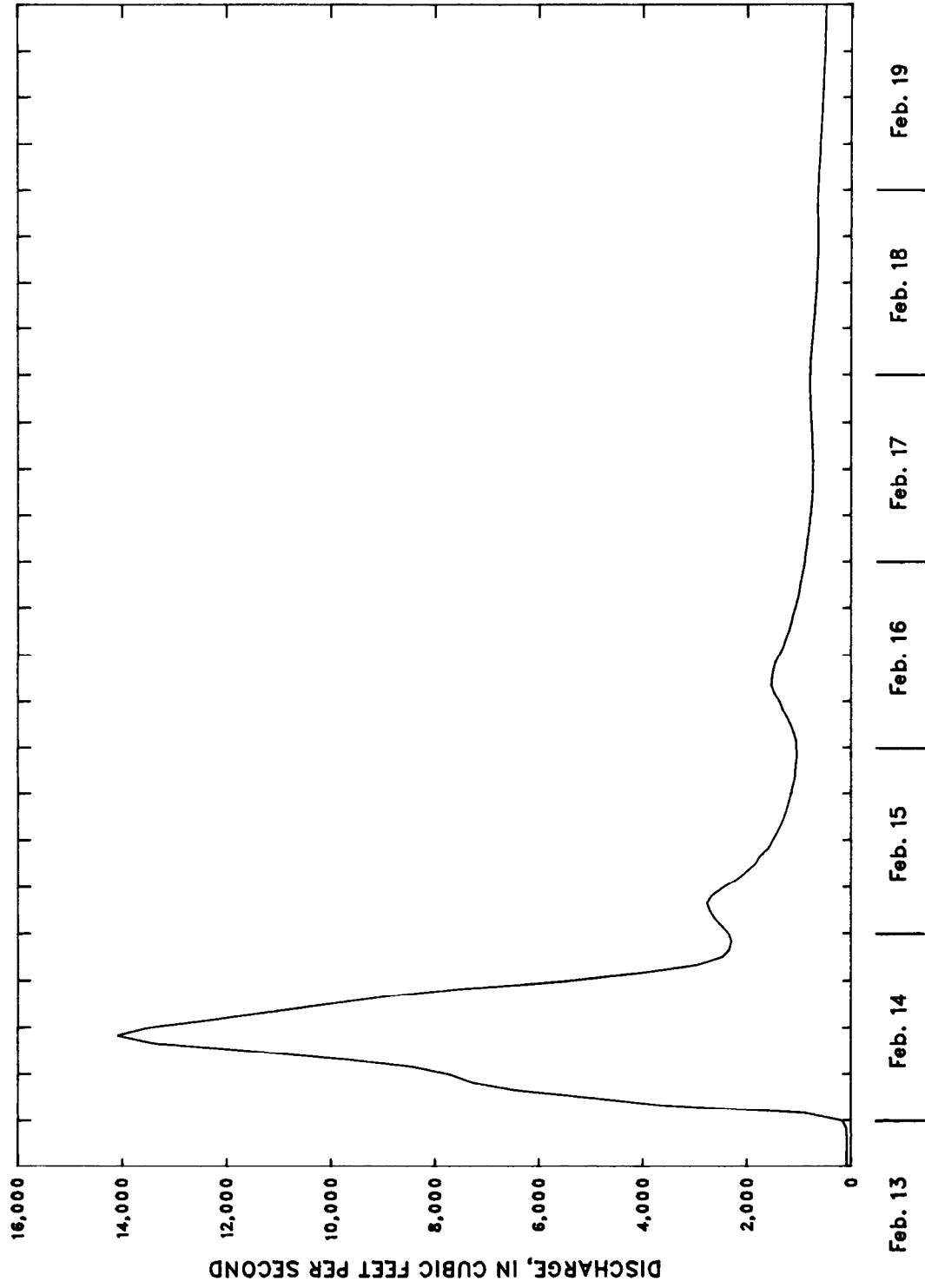


Figure 6.--Discharge hydrograph for Sycamore Creek near Ashland City, Tenn., for the February 1989 flood.

Table 4.--Discharge measurements made during the February 1989 floods in Tennessee

[ft³/s, cubic feet per second]

Station No.	Station name	Date	Gage height (feet)	Discharge (ft ³ /s)
CUMBERLAND RIVER BASIN				
03414500	East Fork Obey River near Jamestown	02/22	7.01	2,520
03416000	Wolf River near Byrdstown	02/21	6.97	4,920
03425000	Cumberland River at Carthage	02/24	21.91	52,700
03431700	Richland Creek at Charlotte Ave.	02/14	7.42	2,560
03431517	Cummings Branch at Lickton	02/14	3.02	95.9
03436000	Sulphur Fork Red River near Adams	02/21	21.62	14,400
03436100	Red River at Port Royal	02/15	37.16	29,300
03436690	Yellow Creek at Ellis Mills	02/14	13.77	7,400
03580995	East Fork Mulberry Creek at Lynchburg	02/21	5.46	974
03602500	Piney River at Vernon	02/21	12.97	9,600
03603000	Duck River at Hurricane Mills	02/22	20.96	41,500
03604000	Buffalo River near Flat Woods	02/21	16.26	12,100
MISSISSIPPI RIVER BASIN				
07024300	Beaver Creek at Huntingdon	02/16	11.27	1,540
07024500	South Fork Obion at Greenfield	02/17	16.61	9,740
		02/22	13.76	4,230
07025500	North Fork Obion near Union City	02/17	19.82	14,000
		02/21	16.27	7,690
		02/22	12.51	4,340
07026000	Obion River at Obion	02/19	36.85	38,000
07026370	North Reelfoot Creek at Hwy 22 near Clayton	02/22	11.75	416
07026400	South Reelfoot Creek near Clayton	02/14	14.86	470
07026640	Running Slough near Ledford	02/15	9.13	240
07028500	North Fork Forked Deer River at Trenton	02/21	6.59	2,340
07029500	Hatchie River at Bolivar	02/14	13.77	5,080
		02/23	17.35	19,700
07030240	Loosahatchie River at Arlington	02/16	15.54	5,580
07031660	Wolf River at Walnut Grove Rd.	02/15	14.60	6,880

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