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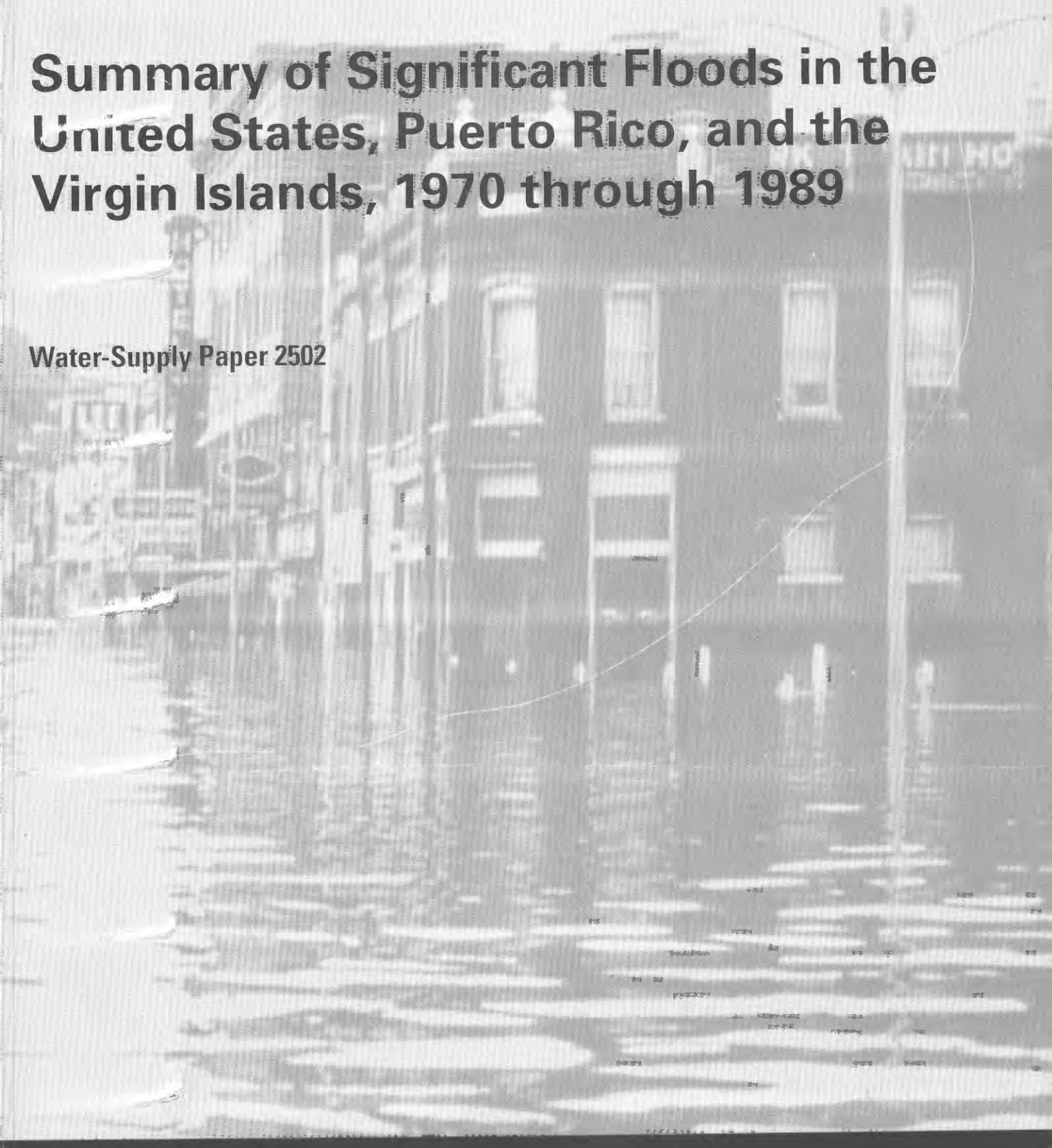
Summary of Significant Floods in the United States, Puerto Rico, and the Virgin Islands, 1970 through 1989



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Summary of Significant Floods in the United States, Puerto Rico, and the Virgin Islands, 1970 Through 1989

By C.A. PERRY, B.N. ALDRIDGE, and H.C. ROSS

Water-Supply Paper 2502

U.S. Department of the Interior

Bruce Babbitt, Secretary

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CONVERSION FACTORS, ABBREVIATIONS, AND VERTICAL DATUM

Multiply	By	To obtain
acre	4,047	square meter
acre-foot (acre-ft)	1,233	cubic meter
cubic foot per second (ft^3/s)	0.02832	cubic meter per second
cubic foot per second per square mile [(ft^3/s)/ mi^2]	0.01093	cubic meter per second per square kilometer
foot (ft)	0.3048	meter
foot per hour (ft/hr)	0.3048	meter per hour
foot per second (ft/s)	0.3048	meter per second
gallon (gal)	3.785	liter
inch (in.)	25.4	millimeter
inch per day (in/d)	25.4	millimeter per day
inch per hour (in/hr)	25.4	millimeter per hour
inch per year (in/yr)	25.4	millimeter per year
mile (mi)	1.609	kilometer
mile per hour (mi/hr)	1.609	kilometer per hour
square foot (ft^2)	0.9290	square meter
square mile (mi^2)	2.590	square kilometer
yard (yd)	0.9144	meter

Temperature can be converted to degrees Celsius (°C) or degrees Fahrenheit (°F) by the equations:

$$°C = 5/9 (°F - 32)$$
$$°F = 9/5 (°C) + 32.$$

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

GLOSSARY

Although much of the terminology used in this report is widely understood, some terms have specialized meanings in hydrology or are unfamiliar outside of hydrologic usage. Most of the definitions given here are from Langbein and Iseri (1960), some with slight modifications, and explain the terms as they are generally used by hydrologists in the U.S. Geological Survey.

Absorption. The entrance of water into the soil or rocks by all natural processes. It includes the infiltration of precipitation or snowmelt.

Area-weighted rainfall. Method of converting point rainfall data into an average value for a certain area or basin.

Bank. The margins of a channel. Banks are called right or left as viewed facing the direction of flow.

Cubic feet per second. A unit expressing rates of **discharge**. One cubic foot per second is equal to the **discharge** of a stream of rectangular cross section, 1 foot wide and 1 foot deep, flowing water an average velocity of 1 foot per second.

Current meter. An instrument for measuring the velocity of flowing water. The U.S. Geological Survey uses a rotating cup meter.

Discharge. In its simplest concept, **discharge** means outflow; therefore, the use of this term is not restricted as to course or location, and it can be applied to describe the flow of water from a pipe or from a **drainage basin**. If the **discharge** occurs in some course or channel, it is correct to speak of the **discharge** of a canal or of a river.

Drainage area. The **drainage area** of a stream at a specified location is that area, measured in a horizontal plane, that is enclosed by a drainage divide.

Drainage basin. A part of the surface of the Earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded **surface water** together with all tributary surface streams and bodies of impounded **surface water**.

Flash flood. A sudden, violent flood, as after an intense rain.

Flood. An overflow or inundation that comes from a river or other body of water (Barrows, 1948, p. 4) and causes or threatens damage. Any relatively high **streamflow** overtopping the natural or artificial banks in any reach of a stream (Leopold and Maddock, 1954, p. 249–251).

Flood plain. The lowland that borders a river, usually dry but subject to flooding (Hoyt and Langbein, 1955, p. 12).

Flood stage. The **stage** at which overflow of the natural banks of a stream begins to cause damage in the reach in which the elevation is measured.

Hydraulic head. Difference in height between a point and the free water surface above or below.

Isohyetal map. A map or chart showing lines that join points that receive the same amount of precipitation.

Overland flow. The flow of rainwater or snowmelt over the land surface toward stream channels.

Regulation. The artificial manipulation of the flow of a stream by the use of dams, gates, or canals to impede, release, or redirect the natural flow of water.

Reservoir. A pond, lake, or basin, either natural or artificial, for the storage, regulation, and control of water.

Stage. The height of a water surface above an established datum plane (also gage height).

Stage-discharge curve. A graph showing the relation between the gage height, usually plotted as ordinate, and the amount of water flowing (**discharge**) in a channel, expressed as volume per unit of time, usually plotted as abscissa.

Stage-discharge relation. The relation expressed by the **stage-discharge curve**.

Streamflow. The **discharge** that occurs in a natural channel. Although the term **discharge** can be applied to the flow of a canal, the word **"streamflow"** uniquely describes the **discharge** in a surface stream course. The term **"streamflow"** is more general than **runoff**, as **streamflow** may be applied to **discharge** whether or not it is affected by diversion or **regulation**.

Streamflow-gaging station. A gaging station where a record of discharge of a stream is obtained.

Surface runoff. That part of the runoff that travels over the soil surface to the nearest stream channel. It also is defined as that part of the runoff of a **drainage basin** that has not passed beneath the surface following precipitation.

Surface water. Water on the surface of the Earth.

Water equivalent of snow. The amount of water that would be obtained if the snow should be completely melted. Water content may be merely the amount of liquid water in the snow at the time of observation (Wilson, 1942, p. 153–154).

Water year. In U.S. Geological Survey reports, **water year** is the 12-month period, October 1 through September 30. The **water year** is designated by the year in which it ends. Thus, the year ending September 30, 1989, is called the "1989 **water year**."

Summary of Significant Floods in the United States, Puerto Rico, and the Virgin Islands, 1970 Through 1989

By C.A. Perry, B.N. Aldridge, *and* H.C. Ross

Abstract

This volume is a compilation of significant floods that occurred throughout the United States, Puerto Rico, and the Virgin Islands during the period from January 1, 1970, through December 31, 1989. A significant flood in this report refers to a maximum discharge (instantaneous or time averaged) that is in the top 5 percent of all the annual maximum discharges recorded or measured at streamflow-gaging stations during their total period of record. Most of these floods are approximately equal or greater than the 20-year recurrence-interval flood (0.05 probability of occurrence in any 1 year) for that station.

A summary of the most devastating floods according to amount of damage and lives lost is provided for each year for the period 1970 through 1989. Significant interstate floods are described also. For each year, a map is provided showing the States with the percentage of total streamflow-gaging stations having significant floods.

A compilation of specific data for the significant floods is arranged State by State for each of the 50 United States and Puerto Rico. Each State compilation includes: (1) a description of the general hydroclimatology and conditions that produce significant floods, (2) descriptions of climatic and basin characteristics that significantly affect maximum flows within the State, (3) tables of data that allow the reader to compare each significant flood during the period 1970 through 1989 with the maximum flood for the entire period of record at selected streamflow-gaging stations, and (4) State maps show the location of the streamflow-gaging stations.

INTRODUCTION

Maximum stream discharges for selected locations are compiled annually by the U.S. Geological Survey's State and Puerto Rico offices. Each office publishes this data along with other data, including daily flow, water-quality, and ground-water information, in the U.S. Geological Survey annual Water-Data Report series. The maximum discharges for each streamflow-gaging station are also placed in the Peak Flow File, which is maintained at each office's World Wide Web (www) computer site. However, publications were needed that compiled significant floods nationwide and provided a relative measure of the severity in a single publication. These publications became the National Flood Summary series of which this volume is a part. This Water-Supply Paper, in addition to providing a list of floods for the period 1970 through 1989, provides a description of major or significant floods and provides some information on their cause and resulting costs, damage estimates, and reported loss of life.

For this report, a significant flood refers to a maximum discharge (instantaneous or time averaged) that is in the top 5 percent of all the annual maximum discharges recorded or measured at a streamflow-gaging station during its total period of record. If the period of record contains an unregulated period and a regulated period, the record is broken into two parts. The top 5-percent maximum discharges for each period were

determined and combined for that station. If the significant flood occurred during the period 1970 through 1989, that flood was included in this summary. Most of these significant floods were approximately equal to or greater than the 20-year recurrence interval (0.05 probability of occurrence in any 1 year) for that station. The listing includes the designation of whether a specific flood was unregulated or regulated.

Innumerable combinations of variable meteorologic and physiographic factors produce floods of all degrees and severity. Some meteorologic factors that affect floods are the form, amount, duration, and intensity of precipitation; the amount of previous precipitation, which would affect the moisture absorption of the soil; the air temperature, which may cause frozen soil or may determine the rate of snowmelt; and the direction of storm movement. The principal physiographic features of a drainage basin that determine floodflows are drainage area, elevation, character of soil, shape, slope, direction of slope, and vegetative or other land cover. With the exception of vegetative cover and soil preconditions, the physiographic features are fixed for any given natural drainage basin. The combination of the magnitude and intensity of meteorologic phenomena, the antecedent moisture conditions, and the effect of inherent physiographic features on runoff determines the magnitude of a flood.

Flood damages frequently are difficult to assess. Dollar amounts given in this report should be used as a general indication of flood losses rather than as definite values. Even if detailed surveys and estimates have been made, there is little consistency among methods used and types of losses included. Some estimates may exclude certain locations (such as mountainous areas) or types of loss (either insured or uninsured) or type of property (either private or public). Some estimates include traffic interruptions and flood-mitigation costs; others include strictly physical damage. Estimates may be based on replacement costs or on depreciated values. For floods not described in detailed published reports, the only damage estimates available usually are the preliminary figures contained in newspapers, National Oceanic and Atmospheric Administration (NOAA) climatological data, or other sources published shortly after the flood. A statement that a disaster declaration was issued indicates that the damage was severe and that financial aid to victims was authorized by the governmental entity making the declaration.

Some of the flood descriptions in this volume give the amount of rainfall and duration of the storm associated with the flooding. Recurrence intervals for these storms may be determined from a rainfall-frequency atlas of the United States (Hershfield, 1961) or from a simplified set of equal-rainfall maps and charts contained in a report by Rostvedt (1965).

Continuing investigation of surface-water resources within the United States is performed by the U.S. Geological Survey in cooperation with State agencies, the U.S. Army Corps of Engineers, the Bureau of Reclamation (U.S. Department of the Interior), and other Federal or local agencies. The National Weather Service, in addition to collecting and compiling data on meteorological phenomena, also collect data on stream stages in some areas.

Previous Flood Summary Reports

During the 1950's and 1960's, the U.S. Geological Survey summarized floods of each year in an annual series of Water-Supply Papers entitled, "Summary of Floods In the United States." A summary was published for each calendar year from 1950 through 1969. Water-Supply Paper 1137–I, the first in the series (U.S. Geological Survey, 1954), states the purpose of the series as being:

> "To assemble in a single volume information relating to all known severe floods in the United States, whether local or of wide areal extent. For floods that are described in... other publications of the Geological Survey, or in reports by other Federal and State agencies, only very brief mention including references to the reports containing detailed descriptions, will be given here. Local floods for which no individual reports have been prepared are briefly described."

In the first volume of that Water-Supply Paper series, each flood was described in a maximum of three or four paragraphs. Later volumes contained longer articles including maps. The series was discontinued after the 1969 volume; however, in 1987 a program was begun to prepare and publish summaries for 1970 and succeeding years. Two flood summary publications (one for the calendar years 1990 and for 1991 and one for January 1992 through September 1993) were published with the longer article format. Water-Supply Papers 2474 and 2499 cover the periods 1990 and 1991 and January 1992 through September 1993, respectively. Much of the following introductory

material is paraphrased from these reports (Jordan and Combs, 1997; Perry and Combs, 1998) and from the published report describing floods for 1968 (Rostvedt, 1972). This volume contains flood summaries and flood statistics for the time period from January 1, 1970, through December 31, 1989, for the 50 United States, Puerto Rico, and the Virgin Islands.

Determination of Maximum Stages and Discharges

The usual method of determining stream discharges at a streamflow-gaging station is the application of a stage-discharge relation to a known stage. This relation usually is defined by current-meter measurements made through as wide a range of stage as possible (fig. 1). If the maximum discharge exceeds the range of the current-meter measurements, short extensions may be made to a graph of the stage-discharge relation by logarithmic extrapolation, by velocity-area studies, or by the use of other measurable hydraulic factors (Kennedy, 1983).

Maximum discharges that are greatly above the range of the defined stage-discharge relation at gaging stations and maximum discharges at miscellaneous sites that have no developed stage-discharge relation generally are determined by various types of indirect measurements. In addition, adverse conditions often make it impossible to obtain current-meter measurements at some gaging stations during significant flooding. Maximum discharges at these stations are determined after the floods have subsided, by indirect methods, which involve determination of water-surface elevations from high-water marks, surveying cross sections, and computing discharge from hydraulic equations rather than from direct measurement of stream velocity by use of a current meter. Indirect methods are described by Dalrymple and Benson (1967), Hulsing (1967), Matthai (1967), Bodhaine (1968), and Benson and Dalrymple (1987).

The accuracy of indirect measurements depends upon onsite conditions and the experience of personnel who select the indirect measurement sites and make the surveys, and generally is poorer than for current-meter measurements. The indirect measurements used in determining maximum discharges for floods are not identified as such in this volume. Information as to the source and quality of discharge data in this volume can be obtained from the U.S. Geological Survey office in the State or territory in which the particular streamflow-gaging station is located.

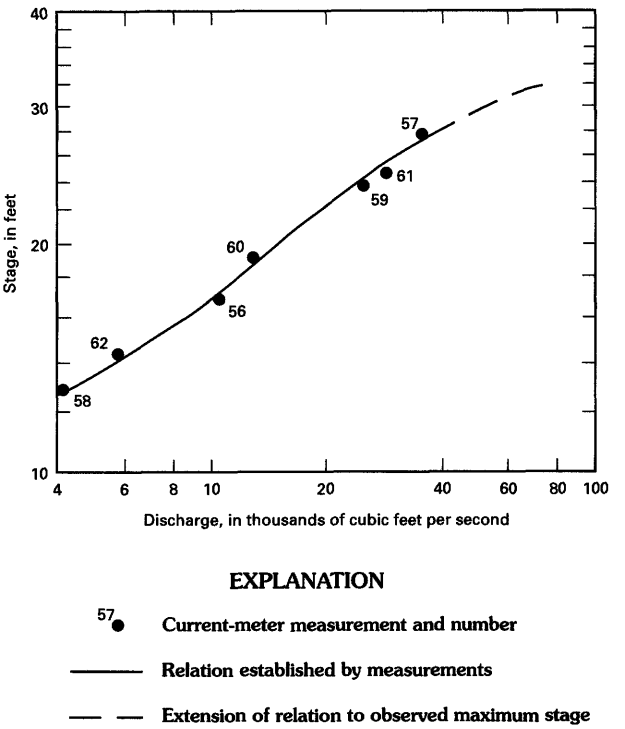

Figure 1. Example of a stage-discharge relation and upward extension.

Explanation of Flood Information

In this volume, first a summary of the most devastating floods according to the number of lives lost and the amount of damage is provided for each year for the period 1970–89. Significant interstate floods are described also. A map is provided for each year showing the percentage of total streamflow-gaging stations having significant floods in each State or territory. In addition, a list of selected references is provided for floods occurring that year.

Next, floods in individual States or territories are examined. A brief narrative of State or territory hydroclimatology is followed by selected significant flood descriptions. A map showing location of all streamflow-gaging stations where there was a significant flood of an approximately 20-year recurrence interval or greater during 1970 through 1989 is provided. Some of these maps have physiographic designations that are described by Fenneman (1946). Finally, specific flood data for each significant flood, including maximum stages and discharges for the period of

Table 1. Example of summary table presented in State or territory compilations

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1992, 1993, 1994, or 1995				Significant floods during 1970–89				
Station number	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05551212	Hypothetical Creek near Town, ST	21.0	1961–90	1961	13.1	--	02/02/72	12.22	4,200	N	25
							11/30/88	12.67	5,500		25–50
05555000	Hypothetical River at City, ST	1,212	1939, 1955–94	1986	21.21	82,800	09/12/86	21.21	82,800	N	>100
06930030	Hypo River near Metropolis, ST	3,333	1919–94	1943	33.33	--	12/23/76	25.55	33,000	Y	10–25
					--	99,900					

[1]Regulated during flood: N, no; Y, yes.

record for those streams, are summarized in tables. The flood data for each State or territory are compiled in downstream order.

In an example of the summary table (table 1), the first two columns identify the streamflow-gaging station, which may be a continuous-record streamflow-gaging station, a partial-record station, or another site at which data have been obtained. The first column gives the U.S. Geological Survey permanent station number (downstream-order number). The second column gives the name of the streamflow-gaging station.

Total drainage area in the summary table is the total area, as measured on a flat projection map, that constitutes the stream drainage basin (enclosed by the divide). The actual drainage area contributing to runoff may be smaller than the total drainage area if the total area includes areas of extremely rapid infiltration rates that do not produce surface runoff or includes closed subbasins within the larger basin that do not have surface outlets (noncontributing areas).

The column headed "Period of record" shows the calendar years for which the stage or discharge shown in the sixth and seventh columns are known to be a maximum. For most streamflow-gaging stations, this period corresponds to the period of systematic collection of streamflow data. For other stations, written or oral history may indicate that a flood stage was the highest since people have observed the stream or was the highest since some known date. For some stations, two or more periods are given. The use of two periods separated by a comma indicates a break in the period of record. Maximum stages or discharges during the intervening period are unknown.

The fifth column shows the water year in which the maximum stage and discharge for the indicated period occurred. The sixth and seventh columns show the stage and discharge of that maximum. Separate listings are made when maximum stage and maximum discharge did not occur concurrently.

The last five columns present data for the maximum stages and discharges from January 1, 1970, through December 31, 1989. The data include the date on which the maximum occurred, maximum stage, and maximum discharge, whether the stream was regulated at the time of the flood, and, where available, the recurrence interval (RI) of the discharge. Regulation can have a substantial effect on discharge measurements, as in the case of a flood-control reservoir a short distance upstream or a flood bypass around the gaging station, or a less substantial effect, as in the case of a reservoir controlling a small part of the total drainage area.

The probability of a given discharge being equaled or exceeded in any given year frequently is used as an indication of a flood's relative magnitude and for comparison with floods at other gaging stations. The relative flood magnitude also can be expressed in terms of the percentage chance of occurrence, which is 100 times the flood probability. A third way of expressing the relative magnitude is in terms of recurrence interval, which is the reciprocal of the flood probability. A discharge that has a probability of 0.10 will be equaled or exceeded on average (over a long period of time) of once in 10 years, has a 10-percent chance of occurring in any given year, has a recurrence interval of 10 years, and is termed a "10-year flood." A 100-year flood has a probability of 0.01, will be equaled or exceeded on average (over a long period of time) of once in 100 years, has a 1-percent chance of occurring in any given year, and has a recurrence interval of 100 years. Because recurrence interval is used most commonly by Federal agencies (for example, in the context of flood insurance), it is used in this volume even though percentage chance avoids the unintended connotations of regularity of occurrence that accompany the term "recurrence interval."

Equivalence of flood probability and percentage-chance values to selected recurrence-interval values is as follows:

Probability	Percentage chance	Recurrence interval (years)
0.50	50	2
.20	20	5
.10	10	10
.04	4	25
.02	2	50
.01	1	100

In addition to probability or percentage chance of a given magnitude of discharge occurring in any 1 year,

the probability or percentage chance of occurrence during a given period of consecutive years also can be calculated. Results of such calculations for selected combinations of recurrence interval and length of period are as follows:

[*, greater than a 99.9- but less than a 100-percent chance]

Recurrence interval (years)	Percentage chance for indicated time period, in years				
	5	10	50	100	500
2	97	99.9	*	*	*
10	41	65	99.5	*	*
50	10	18	64	87	*
100	5	10	39	63	99.3

Recurrence intervals computed for any given flood may differ from gaging station to gaging station because of nonuniform distribution of runoff and uncertainty in the computed recurrence values. Operational patterns for reservoirs generally are not defined adequately to permit recurrence intervals to be computed for maximum discharges on regulated streams.

Another method of indicating a flood's relative magnitude is by comparison of its maximum discharge and the stream's drainage area with values on a regional "envelope curve." A flood-envelope curve is one drawn on a graph in which maximum known discharges are plotted against the drainage area of each streamflow-gaging station (fig. 2). The envelope curve is a smooth curve drawn to equal or exceed all the plotted discharges in relation to the drainage areas. Envelope curves are given for 17 regions of the conterminous United States in Crippen and Bue (1977). This method is better than the formerly used calculation of "unit discharge" (division of the discharge by the drainage area) because unit discharges for greatly different sizes of drainage area are not comparable. Large unit discharges are common for small drainage areas but are usually rare for large drainage areas.

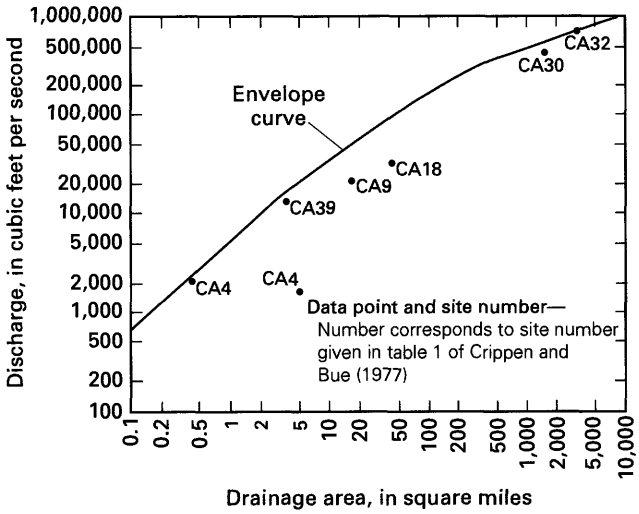

Figure 2. Maximum discharge versus drainage area and envelope curve for a region (modified from Crippen and Bue, 1977, p. 15).

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SUMMARY OF SIGNIFICANT FLOODS, 1970 THROUGH 1989, BY YEAR

This section includes brief descriptions of selected signficant interstate and intrastate floods in yearly accounts. Floods described in this section were those with excessive loss of life, excessive damage, extreme discharge or gage height, or those regional in extent. References are provided for these as well as other selected significant floods that occurred during the year. Figures 3–23 in this section depict widespread regional flooding by giving the percentage of streamflow-gaging stations in each State or territory recording greater than the approximate 20-year recurrence-interval flooding during the calendar year.

1970

Excessive rain falling on snow during January and February was responsible for flows in the Sacramento River in California that were the highest since construction of Shasta Dam (fig. 3). The death toll was 18, and there was $38 million in damages (Paulson and others, 1991). There were also record maximum discharges in the lake basins of northeastern California. Additional flooding extended from northeastern California to northeastern Oregon.

Extensive flooding occurred in early March from northeastern Louisiana across north-central Mississippi and again later in the month from Mississippi across Alabama and into southern Georgia. Highest recurrence-interval floods (50 year) occurred on streams in southwestern Georgia.

The Red River of the North in North Dakota and Minnesota was above flood stage from April 10 to May 10 as a result of melting of a deep winter snowpack and recurring precipitation. Record stages also occurred on the Des Lacs River at Foxholm (station 05116500, table 35), in northwestern North Dakota. Excessive rain and flooding from May 8 to 14 resulted in 21 counties in North Dakota and 11 counties in Minnesota being designated as disaster areas. A greater than 50-year recurrence-interval flood on the Deep River at Deep River, Iowa (station 05455230, table 16), occurred on May 14. Flash floods in extreme northwest Iowa on May 28 caused extensive damage.

During September 4–6, the "Four Corners" area of Arizona, Colorado, New Mexico, and Utah was subjected to monsoon-type thunderstorms that created flash floods over a large area. There were 23 deaths and $10 million in damages (Roeske and others, 1978).

During October 5–10, the eastern two-thirds of Puerto Rico was subjected to excessive rainfall from a stalled tropical storm. As much as 38.4 in. of rain fell in Puerto Rico over a 6-day span (Environmental Sciences Services Administration, 1970). Eighteen persons lost their lives as a result of flooding, and damages were estimated at $68 million (Paulson and others, 1991).

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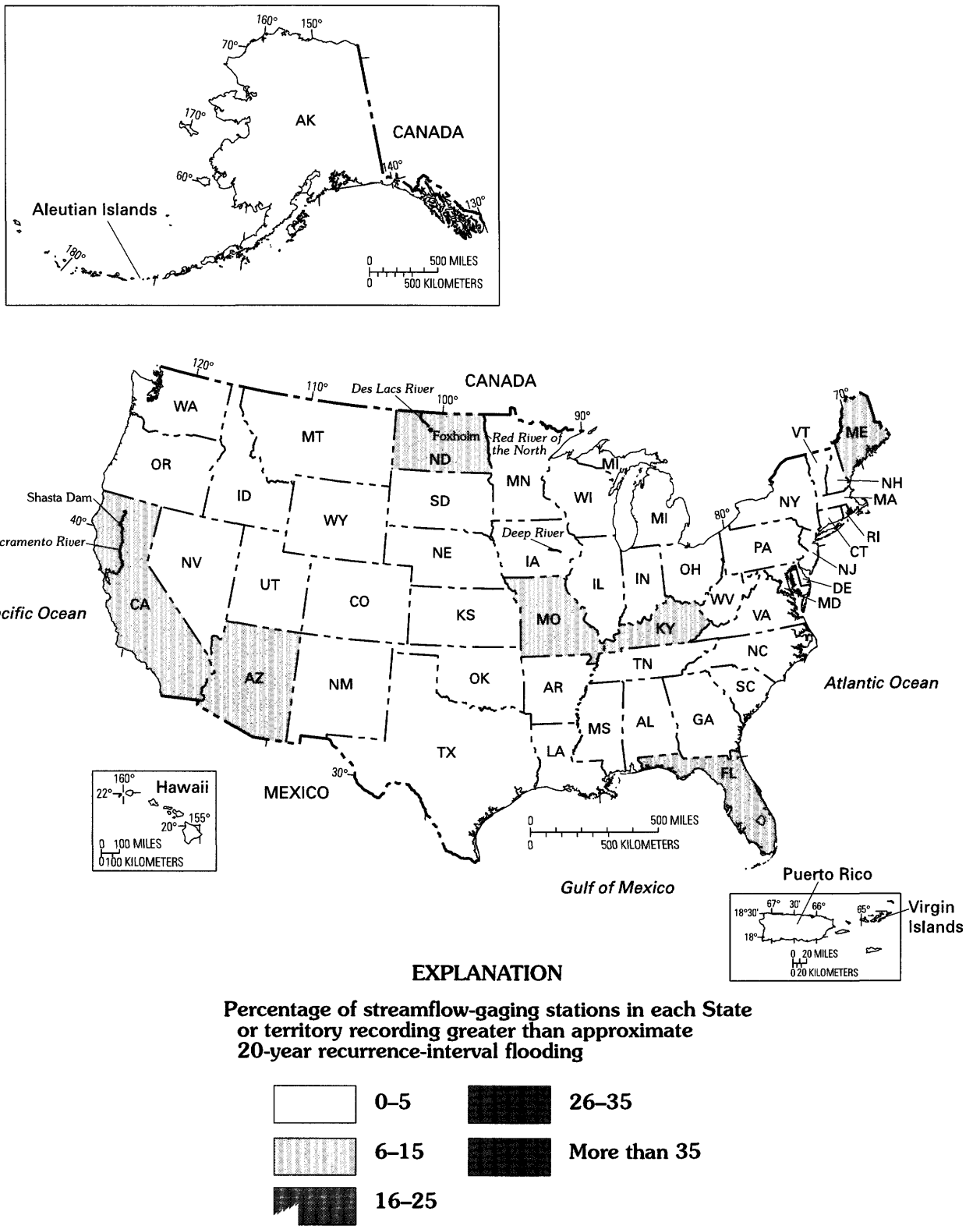

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1971

The first significant flood of 1971 occurred in February across Nebraska, Iowa, Illinois, and Wisconsin (fig. 4). Significant flooding occurred on streams in eastern Nebraska, and some discharges were considered maximum-of-record floods. Ice jams caused flooding on the Rock River in northwestern Illinois on February 24.

Spring rains caused extended flooding in the Southeastern States during March. Record floods occurred in Georgia on the Ocmulgee River. Many streams were above flood stage throughout March.

Snowmelt caused flooding in Utah, Idaho, and Wyoming during May and June. Significant flooding occurred in the Green River Basin in Wyoming. The discharge on the Bear River near Smithfield, Utah (station 10102250, table 46), was considered a 75-year recurrence-interval flood.

Discharges having recurrence intervals of 25 to 100 years were recorded on the North Platte River in Nebraska. The floods occurred in early June as a result of mountain snowmelt upstream in Wyoming. Excessive rainfall in the basin added to the intensity of the floods.

Significant flooding occurred in southern Pennsylvania, eastern Ohio, and northern West Virginia during June and July. One of the most damaging thunderstorms in the last 50 years struck the Baltimore, Maryland, area on August 1. Streamflow-gaging stations in the area recorded discharges with recurrence intervals of 100 years. Fourteen deaths and $6.5 million in damages resulted from the floods (Paulson and others, 1991).

Tropical Storm Doria moved along the eastern seaboard from North Carolina to Maine late in August. The resultant storm system caused rain over North Carolina for the next 2 weeks. The rains eventually spread over the entire East Coast reaching into Maine. Record floods occurred on several small streams in New Jersey and southeastern Pennsylvania.

Extended flooding occurred from September until October in Texas, Louisiana, and Oklahoma. Several storms caused flooding in Oklahoma in early September. Hurricanes Edith and Fern caused floods in Louisiana in September and October. Rivers stayed above flood stage into November.

Significant flooding occurred in western Arkansas and extreme southeastern Oklahoma on December 9–10. Damages totalled as much as $16 million (Paulson and others, 1991). The discharge on the Trinity River near Crandall, Texas, was the second highest since 1949.

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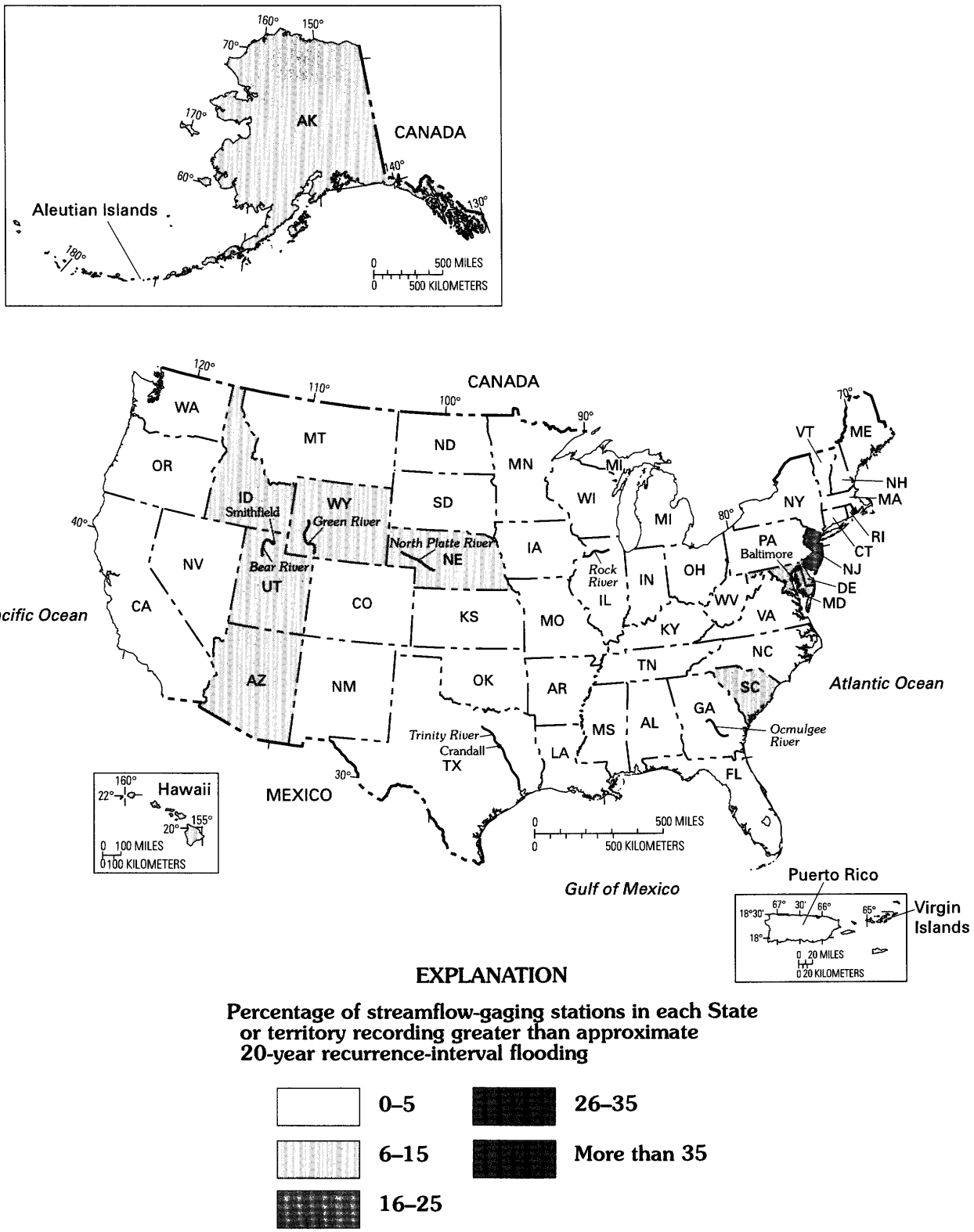

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1972

The first significant floods of 1972 occurred in the Pacific Northwest. Flooding was persistent in the region as many streams were above flood stage from January until March. Flooding extended from central Washington to northern California but was most severe in western Oregon (fig. 5). The Nehalem and Wilson Rivers in Oregon had discharges that were maximums of record. Three counties in west-central Washington were declared Federal disaster areas as a result of the February floods.

The Buffalo Creek flash flood, one of the worst human-induced disasters in history, occurred February 26 in West Virginia. A makeshift dam on Buffalo Creek failed during excessive rains. The rushing waters from the dam failure swept away houses and cars. The flood caused 125 fatalities and $100 million in damages (Paulson and others, 1991).

One of the earliest ice breakups in history in North and South Dakota contributed to flooding along the Little Missouri River from snowmelt and ice jams. The U.S. Geological Survey streamflow-gaging station on the Little Missouri River at Medora, North Dakota (station 06336000, table 35), recorded a discharge with a 25-year recurrence interval.

The most devastating local flood in South Dakota's history occurred in Rapid City, South Dakota, on June 10, 1972. An almost stationary group of thunderstorms formed over the eastern Black Hills and produced rainfall amounts of 15 in. in 6 hours northwest of Rapid City (National Oceanic and Atmospheric Administration, 1972). Rapid Creek at Rapid City (station 06414000, table 43) had a maximum discharge of 50,000 ft^3/s, which was more than seven times greater than the discharge having a 100-year recurrence interval. The flood resulted in 237 deaths and caused $160 million in damages (Paulson and others, 1991).

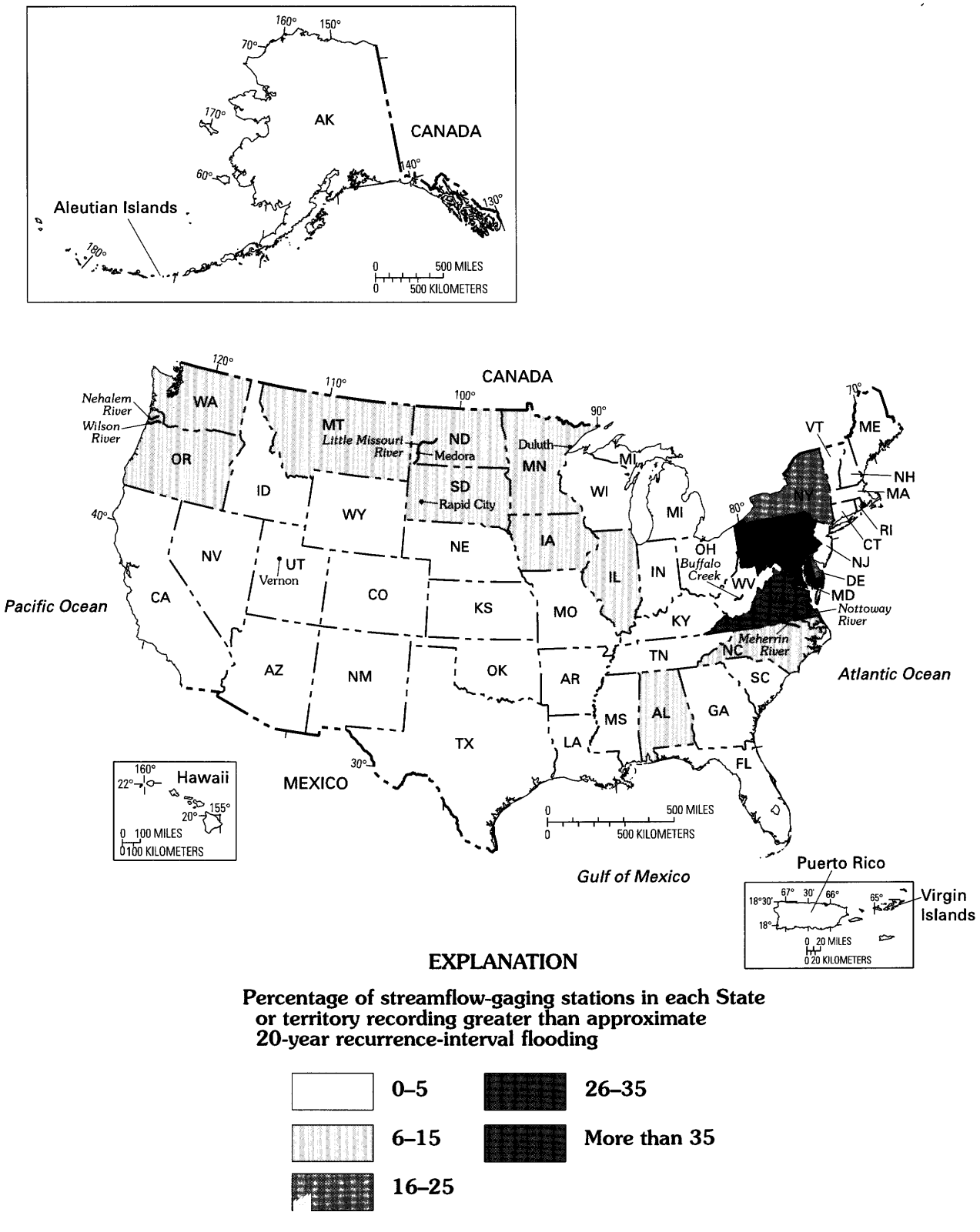
During June 20 through 25, 1972, Hurricane Agnes traveled over the eastern United States with an unusually extended trajectory, and its combination with an extratropical system produced some of the worst flooding in the area's history. The storms produced torrential rains and significant flooding, particularly in Pennsylvania, New York, Maryland, and Virginia. Hurricane Agnes was one of the most destructive hurricanes in history, claiming 117 lives and causing $3.1 billion in damages (Bailey and others, 1975).

On July 21, 1972, the largest 24-hour rainfall recorded in Minnesota resulted in major flash flooding in central Minnesota (Paulson and others, 1991). Thirteen counties were declared disaster areas.

On August 27, locally intense thunderstorms produced excessive rainfall over central Utah. The discharge of Vernon Creek at Vernon, Utah (station 10172700, table 46), was greater than the 100-year recurrence interval for the area (Paulson and others, 1991).

Three flash floods in 1972 occurred in Duluth, Minnesota. The largest flash flood hit the area on September 20 and caused two deaths and $1 million in damages (Paulson and others, 1991).

Widespread flooding occurred from October 5 to 10 in Virginia and North Carolina. The Meherrin and Nottoway Rivers in southeastern Virginia and northeastern North Carolina had discharges that were near record stages.



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1973

Moderate to severe flooding occurred along the central coast of California in January 1973 (fig. 6). Numerous small drainages scattered along about 300 mi of coastline had the largest discharges of record. Large flows were confined to drainages of less than 60 mi^2 and occurred mostly in drainage areas of less than 10 mi^2.

Much of the eastern half of the United States had above-average rainfall in March. Severe floods occurred March 7–9 and 15–16, with streamflow remaining high between the two flood periods in several streams in central Wisconsin. Rainfall on March 17–19 caused severe flooding from western Virginia to southwestern Mississippi. Maximum discharges at more than 100 streamflow-gaging stations in Tennessee and northern parts of Mississippi, Alabama, and Georgia were greater than the previous maximum of record. The discharge at one gaging station on the Tennessee River in Alabama was the largest since at least 1867. The storms that caused this flooding were widespread over much of the area east of the Mississippi River. Strong winds associated with the storms caused severe flooding along the shores of the Great Lakes with damage in Michigan, Ohio, and New York.

In addition to the floods discussed above, the Northeast had floods from April 24 to May 3, June 30 to July 5, and August 2. The April–May floods led to Federal disaster declarations for four counties in extreme northeastern Maine. During the May–June floods, 40 counties spread over New Hampshire, Vermont, New York, and Pennsylvania were declared eligible for Federal disaster aid. Flooding was especially severe in the Delaware River and Lake Ontario Basins. The August 2 flood was described at the time as the most deadly one in the history of central New Jersey, with six deaths recorded.

Spring floods along the Mississippi River resulted in disaster declarations for every county bordering the Mississippi River from the Wisconsin-Illinois State line to the mouth of the river in Louisiana. Floods that began on the Mississippi River and its tributaries in early March lasted through June and caused the evacuation of 50,000 people and damages of more than $400 million. New records for consecutive days above flood stage were set, and maximum stages and discharges exceeded the estimated 100-year recurrence intervals (Chin and others, 1975).

A significant regional flood in the Western States during 1973 resulted from the melting of excessive snowpack in the Rocky Mountains. The highwater period began in April in Arizona and extended through June in Wyoming. Extreme flooding occurred along the South Platte River in Colorado and Nebraska, both from rain on snow and from a general warm-weather snowmelt. The general snowmelt produced significant flooding in the headwaters of the Rio Grande in central Colorado and New Mexico and in the Green River and Colorado River Basins of Wyoming, Colorado, and Utah.

Several floods occurred in April, May, June, September, and November in Southern States from the Carolinas to Mississippi. Primary areas and dates of flooding were March 30–April 8 near the Georgia-Florida State line, May 27–29 in the southern Appalachian area, and June 5–6 near Atlanta, Georgia. Floods occurred near the boundary between North and South Carolina during September 13–14, and in Kentucky and Tennessee during November 25–28.

Multiple floods occurred in an arc through parts of Texas, Oklahoma, Arkansas, Kansas, and Missouri during 1973. Some streams flooded several times during the year. Widespread flooding occurred in the lower parts of the Missouri, White, Arkansas, Yazoo, and Red River Basins. Flooding occurred in basins throughout much of Texas at the time of the March–April floods along the Mississippi River. Discharges in tributaries to the Mississippi River were not historic maximums, but their combined flows caused flooding on the main stem of the Mississippi River. Widespread flooding also

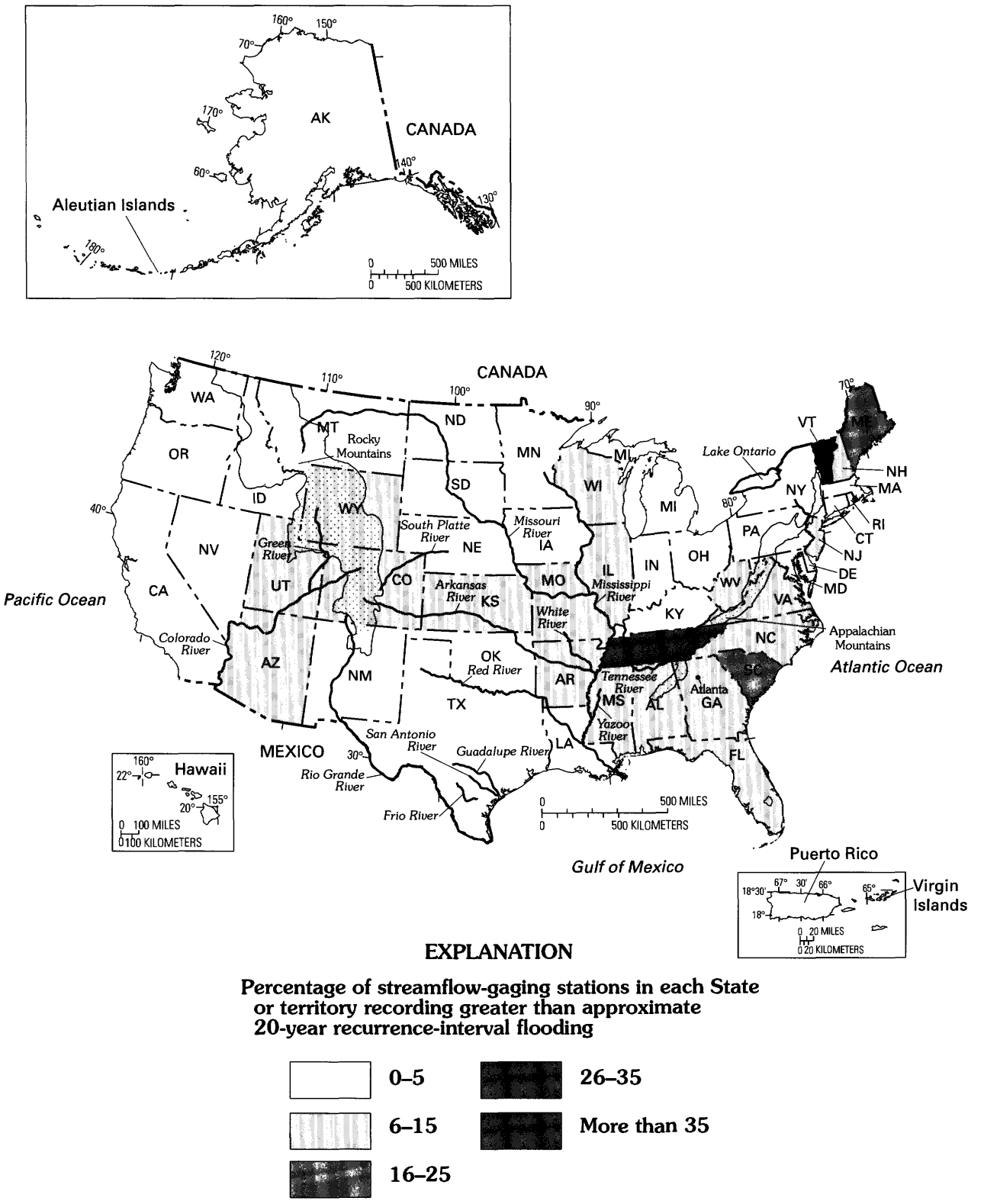

Figure 6. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1973.

occurred in Texas in June and July. The July floods affected the San Antonio, Guadalupe, and Frio River Basins and a small part of the Rio Grande Basin. Some streams reached the highest stages since the mid-1800's. Other periods of significant flooding occurred in the Texas-Missouri arc from late September through mid-October and in late November. Flood crests occurred mainly during September 26–29, October 11–13, and November 24–26, but small areas had flooding on other dates, especially September 5–7 and September 12–14. At numerous streamflow-gaging stations, discharges during late September and mid-October floods ranked highest or second highest in many years of record; at others, the November discharge was larger.

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1974

The most significant floods during 1974 occurred in January in Montana, Idaho, Washington, Oregon, and northern California (fig. 7) and caused as much as $250 million in damage. Significant floods occurred on the west slopes of the Cascade and Sierra Nevada Ranges, and in western Montana, western Idaho, and small parts of eastern Washington. New maximums of record were established at many gaging stations in the Spokane River Basin of Idaho. Flooding was severe on small streams in the Kootenai River Basin in Montana and on streams in the Kootenai and Pend Oreille River Basins in Idaho. Ice jams caused most flooding in the Snake River Basin. The Salmon River, a tributary to the Snake River, had record high floods enhanced by ice jams. Record and near-record flooding also occurred in southwestern Oregon and northwestern California.

The Verdigris and Neosho Rivers, tributaries to the Arkansas River in Kansas and Oklahoma, had record flooding in March, and other streams in eastern Kansas and Oklahoma had near-record flooding in March and April. Flooding from basins in western Mississippi kept the Mississippi River high through much of April. Rains of May 13–20 in the upper Mississippi, Illinois, and lower Missouri River Basins caused another flood on the Mississippi River. The May flood in the Missouri River Basin produced few extreme discharges but still caused considerable damage.

Snowmelt during April, May, and June produced significantly high discharges in the Souris and Pembina River Basins of North Dakota, the Yellowstone, Gallatin, Bitterroot, Swan Rivers, and other basins of northwestern Wyoming and southwestern Montana, and the Salmon River Basin of Idaho. Northern Maine also had record high floods from snowmelt and ice jams.

Nationwide, thunderstorm floods during the summer of 1974 generally did less damage than usual. The absence of severe thunderstorm floods was particularly obvious in the Midwest where floods of this type generally occur frequently. Only two Federal disaster declarations resulted from floods in the conterminous States from July through October. One disaster declaration resulted from flash floods in central New York. The second was for Hurricane Carmen in Louisiana. Hurricane Carmen, which came ashore on September 7, was the only hurricane to make landfall in the United States in 1974. Hurricane Carmen did about $150 million in damage (U.S. Army Corps of Engineers, 1975a) but produced excessive rain in only a few areas and caused little riverine flooding. Much of the damage resulted from flooding in the Mississippi Delta area.

Southeastern Alaska had nearly continuous rainfall in September and October. A few streams near Ketchikan had the second or third highest discharges of record on October 8–9. Elsewhere in Alaska, a glacial lake outburst caused record high discharges on the Kenai River on September 14–15.

The southern Great Plains from Kansas to northeast Texas received excessive rainfall from late August to late November. Flooding occurred in Texas on August 28, September 13–14, September 17–18, September 20–21, October 30–November 10, and November 23. Most of the rains produced widespread, low-magnitude floods, but there were a few isolated areas of high runoff. Other than moderately high discharges at a few gaging stations, most of the floods were not unusual.

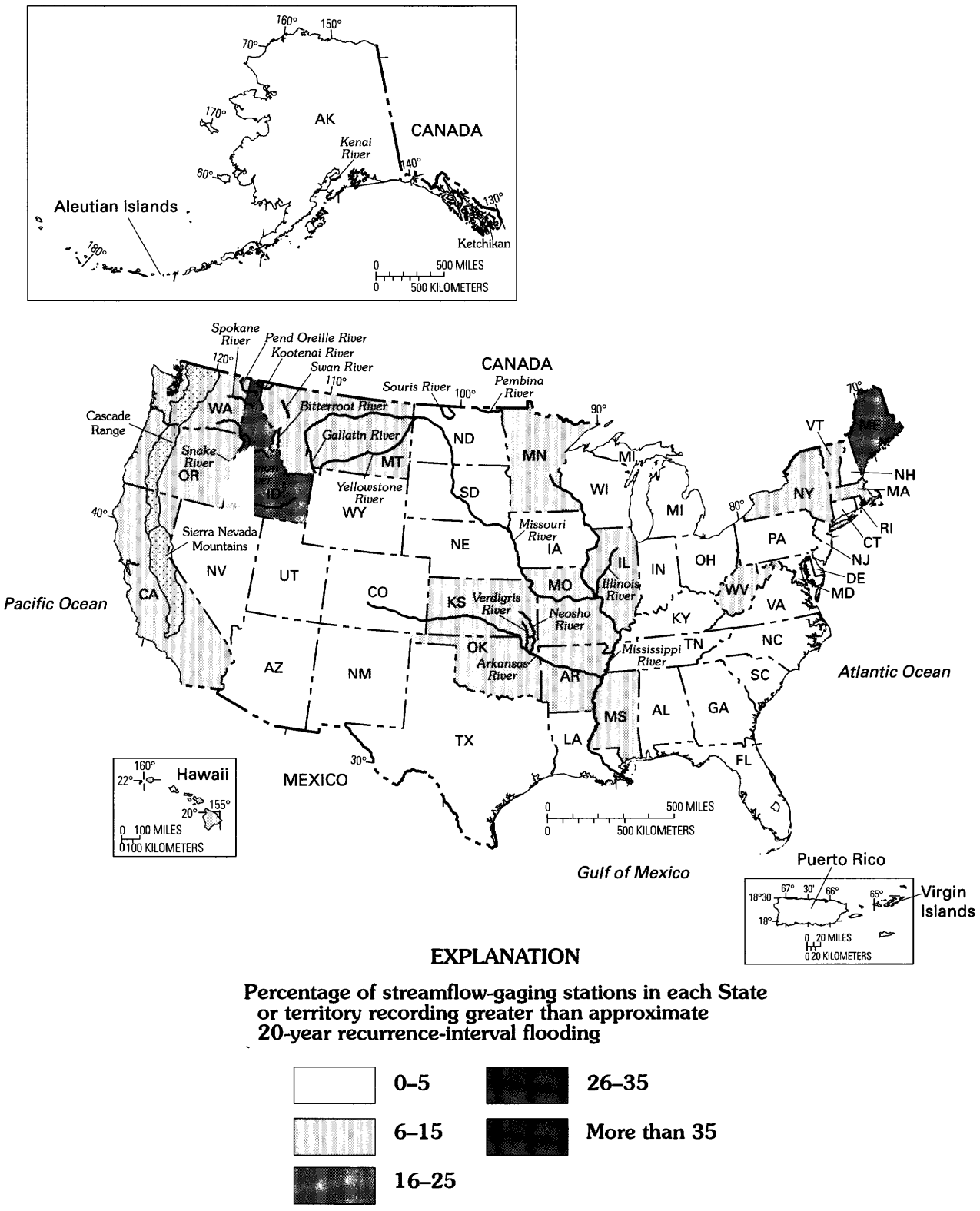

Figure 7. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1974.

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1975

Nearly constant flood conditions plagued the eastern half of the United States from January to April 1975. Cycles of snow, rain, and snowmelt contributed to many floods. The floods continued to compound through time; by April, many streams in the Mississippi and Ohio River Basins exceeded flood stages. The 1975 floods caused damages of $44 million along the lower Mississippi (U.S. Army Corps of Engineers, 1975a). In addition to the Mississippi and Ohio River floods, several other floods occurred in Alabama, Michigan, Minnesota, Wisconsin, and North Dakota during the month of April (fig. 8).

Ten inches of rainfall, most of which fell within a 24-hour period, caused significant flooding in central Tennessee from March 12 to 14 (National Oceanic and Atmospheric Administration, 1975). The Cumberland River Basin, including the Nashville metropolitan area, was most affected by the flooding. The Cumberland River at Nashville crested at 47.6 ft, the highest regulated stage on record.

On March 22, warm temperatures and about 1 in. of rainfall caused 10 to 20 in. of snow in northern Illinois to melt quickly and caused severe flooding in the Rock, Pecatonica, and Illinois Rivers. Record flooding was also reported in southern Wisconsin. High water in the Pecatonica River caused record flooding on the Rock River at Rockton and Rockford, Illinois. The crest at Rockton exceeded the previous record crest recorded in 1937.

Significant flooding occurred in parts of lower Michigan as a result of intense rainfall on April 18 and 19. Flooding was intensified by the already swollen streams and saturated ground that resulted from the snowpack melting 2 weeks earlier. The area around and including the city of Lansing was the worst hit by the floods, with many streams having 100-year or greater recurrence-interval floods. U.S. Geological Survey streamflow-gaging stations recorded maximum stages on the Thornapple River, the highest since the record-setting flood in 1947.

Ice jams created extensive flooding in Alaska in May. An ice jam near Holycross on the Yukon River caused the worst flooding known at the village of Anvik. The ice jam created a lake with an area of about 1,000 mi^2. The Yukon River remained in overbank flow until June 26 while the huge lake drained.

Snowmelt and ample rainfall caused significant flooding in the upper Missouri River Basin from May to July. The Sun River crested 6 ft above flood stage at Great Falls, Montana. A record stage was recorded on the Musselshell River at Harlowton, Montana (station 06120500, table 27).

Record-setting floods plagued the Red River of the North Basin in North Dakota and Minnesota during the month of July. Eleven streamflow-gaging stations recorded maximum-of-record flows. The flood was one of the most damaging to occur in the region and unusual because it was caused entirely by rainfall; snowmelt usually plays a role in flooding in the region. An estimated $245 million in damage was attributed to the flood (Paulson and others, 1991).

Thirteen counties were declared eligible for Federal disaster aid, and one death and $12 million in damages were caused by the July 13–15 flood in New Jersey (Paulson and others, 1991). The second highest stage of record was recorded on the Millstone River at Blackwells Mills, New Jersey (station 01402000, table 31). The flood was caused by a storm that had rainfall totals of more than 10 in. at several locations. On July 20–21, a second storm caused greater than 100-year recurrence-interval flooding along Assunpink Creek in the Trenton, New Jersey, area.

Hurricane Eloise caused flooding in Puerto Rico and the Eastern States during September. The hurricane passed near the north coast of Puerto Rico causing torrential

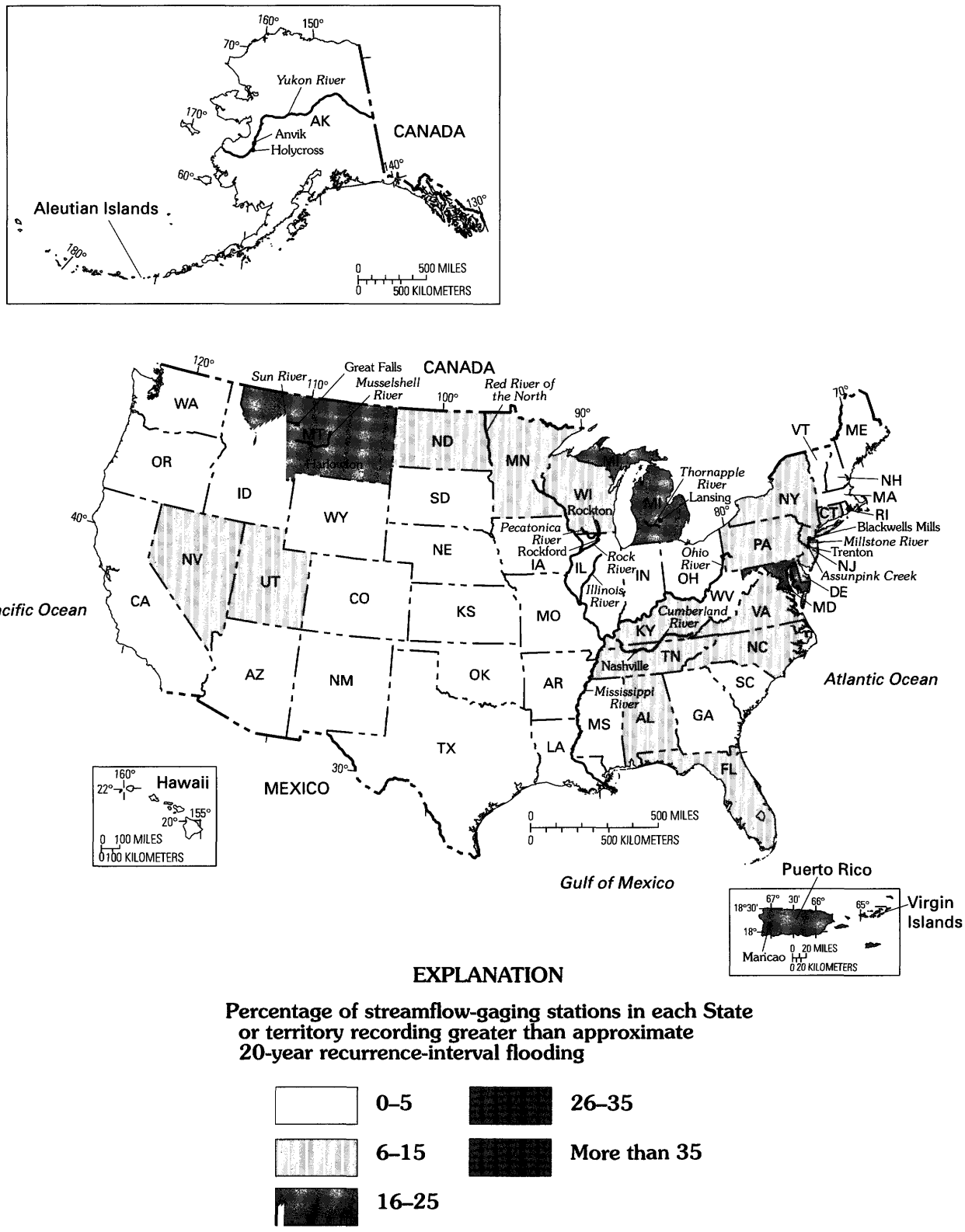

Figure 8. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1975.

rains across the island. As much as 23 in. fell in Maricao during a 24-hour period (National Oceanic and Atmospheric Administration, 1975). Several rivers had maximum discharges that were the highest of record and had recurrence intervals of 50 to 100 years. Hurricane Eloise made landfall in southeastern Louisiana on September 22. The hurricane then followed a northeasterly path across Mississippi and Alabama and along the East Coast. Floods occurred from Louisana to Maryland. Damages were estimated at $415 million. Counties in New York, Pennsylvania, Maryland, Florida, and Alabama were declared disaster areas.

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1976

An unusually intense winter storm hit the island of Oahu, Hawaii, on February 7, 1976 (fig. 9). As much as 4 in. of rain fell in some areas during a period of 1.5 hours. Between 17 and 20 in. total fell throughout the course of the storm (National Oceanic and Atmospheric Administration, 1976). Streams draining the western slopes of Oahu's mountains reached record high discharges.

Snowmelt during March and April caused prolonged flooding in North Dakota and Minnesota. Warm temperatures during the last week of March began melting an 18-in. snowpack. Flooding was the worst in the Souris River Basin of North Dakota. As record stages were being recorded at streamflow-gaging stations, a 6-week advance forecast of the severity of the floods gave time to improve levee systems in North Dakota preventing much additional damage.

On May 30, a weak cold front stalled over Tulsa, Oklahoma, for several hours. Total rainfall of 7 to 10 in. was unofficially reported. Previous maximum gage heights were exceeded by 1 to 3 ft at two streamflow-gaging stations on Mingo Creek. Flooding covered a larger area and caused more damage than any previously known flood along Mingo Creek.

The greatest flood disaster of 1976 occurred on June 5 when the Teton Dam in Idaho failed. The Teton Dam is located on the Teton River in the headwaters of the Snake River Basin. The dam was breached as the reservoir was filling for the first time. About 173,000 acre-ft of water drained through the dam in 2 hours and 23 minutes. The maximum discharge downstream from the dam was estimated at 2.3 million ft^3/s. The flood caused 11 deaths, and damages were estimated at $400 million (Paulson and others, 1991).

Severe floods hit the Houston, Texas, metropolitan area on June 15. The floods were caused by intense rainfall totalling as much as 13 in. (National Oceanic and Atmospheric Administration, 1976), most of which fell within a 3-hour period. The discharge of the Brays Bayou was 29,000 ft^3/s, which is considered the 40-year recurrence interval. Eight deaths and an estimated $25 million in damages resulted from the flood (Paulson and others, 1991).

A storm producing 4 to 6 in. of rain on June 19–20 hit south-central New York and north-central Pennsylvania (National Oceanic and Atmospheric Administration, 1976). The rain produced unusually large maximum discharges in small tributaries to the Chemung River near Corning and in the headwaters of Catharine Creek.

On July 3 and 4, large floods occurred in southeastern Kansas. Otter Creek and Elk River were the most affected by the 4 to 8 in. of rain that fell during 2 days (National Oceanic and Atmospheric Administration, 1976). The maximum stages on Otter Creek and Elk River were the largest known for their periods of record. The Walnut River at El Dorado was reported to have crested almost 1 ft above the previous maximum stage.

The second largest flood disaster of 1976 was the Big Thompson River flood in Colorado. The area most affected by the flood was the Big Thompson Canyon, especially the area downstream from Estes Park, Colorado. The flood was caused by a storm on July 31 through August 1, with rainfall amounts totalling as much as 12 in. in some areas (National Oceanic and Atmospheric Administration, 1976); an estimated 7.5 in. of rain fell in some areas in 1 hour. Maximum discharges on the North Fork Big Thompson and Big Thompson Rivers exceeded previously recorded maximums at several locations. Reports of an estimated 19-ft high wall of water rushed through Big Thompson Canyon destroying everything in its path. In the narrows of the canyon, stream levels rose to 14 ft above pre-flood levels and washed away 1.9 mi of highway. The flood resulted in 139 deaths and 5 missing persons, destroyed 323 homes and

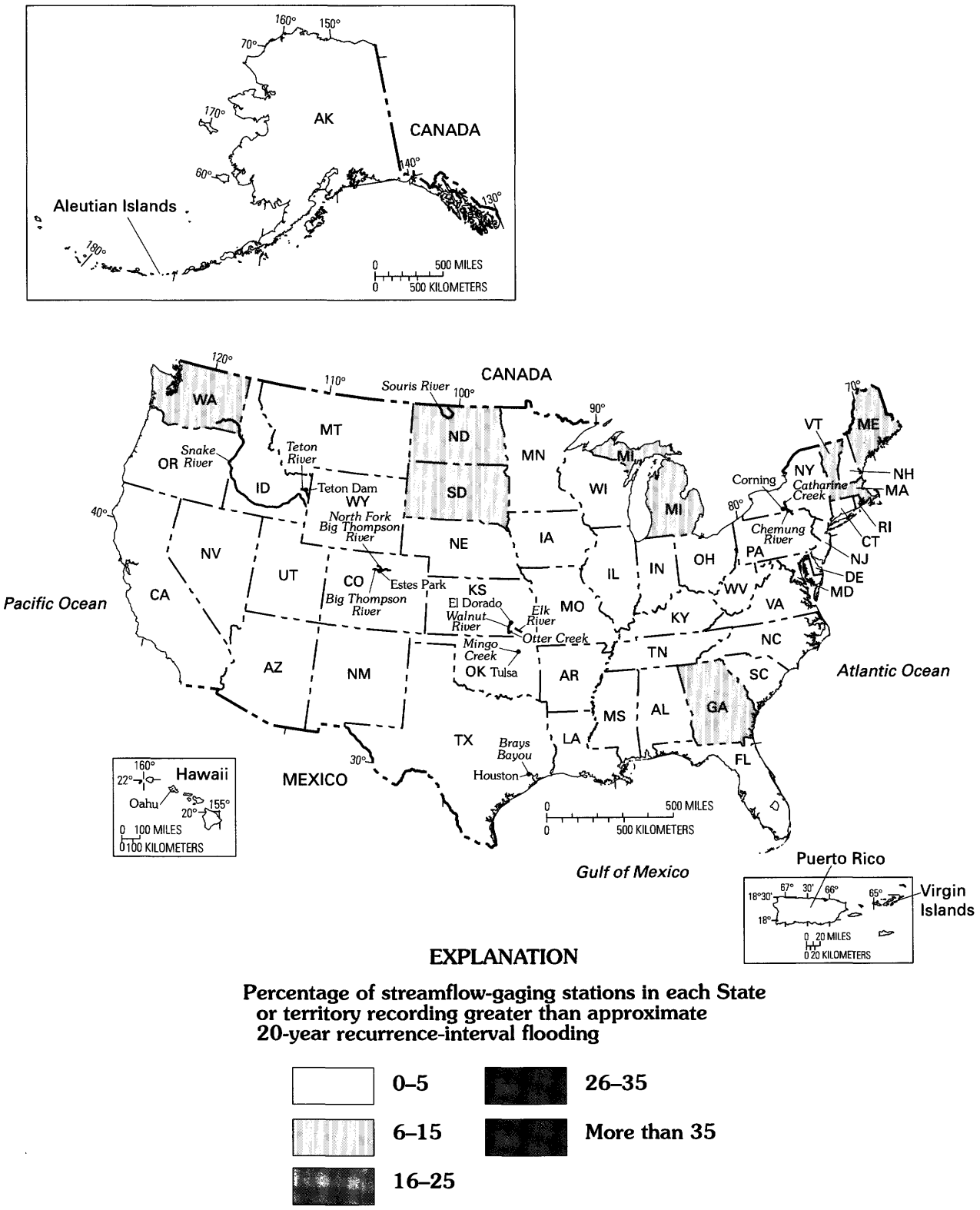

Figure 9. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1976.

96 mobile homes, and damaged many other homes. Two counties were declared Federal disaster areas, and the flood caused $39 million in damages (Paulson and others, 1991).

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1977

Significant flooding did not occur in 1977 until early April when eastern parts of the Ohio River Basin were inundated by a storm producing excessive amounts of rain. The headwaters of the Kanawha, Guyandotte, Big Sandy, Kentucky, Cumberland, and Tennessee Rivers located in southern West Virginia, southeastern Kentucky, extreme western Virginia, and northeastern Tennessee were most affected by the storm (fig. 10). Rainfall amounts of between 4 and 15.5 in. fell over the western slopes of the Appalachian Mountains (National Oceanic and Atmospheric Administration, 1977). The maximum rainfall occurred in southwestern West Virginia, over a period of about 30 hours. The 15.5 in. of rainfall was considerably more than the 5.5 in. expected for the 24-hour, 100-year recurrence-interval storm. Record flooding was recorded on the Guyandotte River at Baileysville, West Virginia (station 03202400, table 50) and all along the Tug Fork River. Flood discharges at some locations were greater than the 100-year recurrence interval. Many small streams in the headwaters of the Tennessee River recorded new maximum discharges of record. No large cities were affected by the flooding, but a number of small towns and populated rural areas were severely damaged; 15 counties in Kentucky, 6 in Tennessee, 17 in Virginia, and 11 in West Virginia were declared Federal disaster areas. There were 22 deaths, and total damages were estimated at $430 million. About 40,000 families were affected in the four-State area (Runner and Chin, 1980).

A storm moved into the Mississippi Delta area of Louisiana during the evening of April 19 and produced rain in the area until the morning of April 22. Rainfall amounts from 6 to 13 in. were reported in the Delta area, and 15 in. of rain was reported west of the Delta (National Oceanic and Atmospheric Administration, 1977). Record maximum discharges were recorded on the Tangipahoa, Tickfaw, Amite, and Comite Rivers.

The Johnstown, Pennsylvania, area experienced flash flooding as a result of almost continuous rains from about 7:00 p.m., July 19 to 4:00 a.m., July 20. Rainfall intensities during much of this time averaged 2 in/hr, with maximum rainfall totals of 12 in. recorded northeast of Johnstown (National Oceanic and Atmospheric Administration, 1977). Flooding was severe along the east side of the Allegheny River Basin. Johnstown, located where the Stonycreek and Little Conemaugh Rivers join to form the Conemaugh River, was adversely affected by the flood. Water 4 to 8 ft deep flowed through the downtown streets. Seven earth-fill, gravity-type dams failed in the area. The worst dam failure, located on Laurel Run, caused 44 deaths. Maximum discharges of record were recorded at 11 streamflow-gaging stations in the area. Of these 11 stations, 6 recorded discharges with recurrence intervals of 100 years or greater. Overall, the catastrophic floods were responsible for 78 deaths (Paulson and others, 1991), destroying 413 dwellings and causing major damage to 1,363 homes. Eight counties were declared Federal disaster areas, and an estimated $300 million in damages occurred (Paulson and others, 1991).

The flood of August 27–28 in West Cache and Blue Beaver Creeks in southwestern Oklahoma was the result of a severe summer thunderstorm. Rainfall data indicated 24-hour totals of 12 in. immediately south of Cache, with an area-weighted average rainfall of 7.7 in. during a 6-hour storm period within a 200-mi^2 area. Damages were $1 million (Paulson and others, 1991).

On September 12 and 13, two intense storms hit the Kansas City, Kansas and Missouri area within 12 hours of each other and caused severe flooding, especially on Brush Creek which runs through the metropolitan area. The storms both had recurrence intervals of 100 years and produced 6 to 7 in. of rain each (National Oceanic and Atmospheric Administration, 1977). Total rainfall was as much as 16 in. in some areas of Kansas City. Twenty-five deaths were caused by the floods, and damages were more than $80 million (Hauth and others, 1981).

The Eastern and Southeastern States were plagued by flood-producing rains during the months of October and November. Most of the flooding occurred on the west side of the Appalachian Mountains. Floods were especially severe in the headwaters of the Kanawha and Tennessee Rivers in eastern Tennessee, western Virginia, and North Carolina. The Holston River Basin in western Virginia and eastern Tennessee received excessive rainfall on October 2–3 and again on November 6–7, and several maximum discharges of record occurred on streams in the basin. The November 6–7 floods were especially severe along the New River in Tennessee. As much as 14 in. of total rainfall occurred in parts of North Carolina (National Oceanic and Atmospheric Administration, 1977), creating floods that were said to be the among the worst in history in North Carolina. Recurrence intervals greater than 100 years were reported for four streamflow-

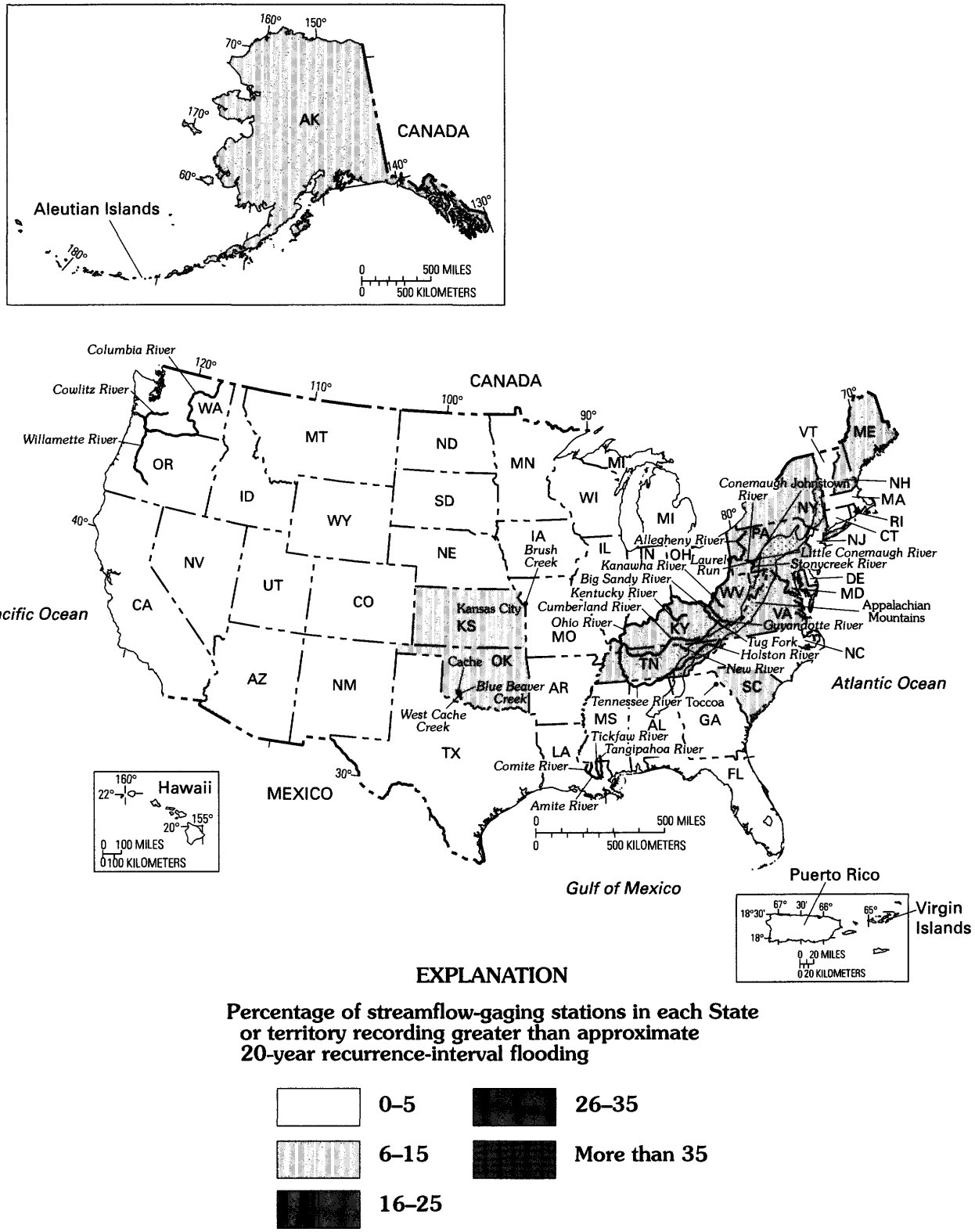

Figure 10. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1977.

gaging stations in North Carolina. The floods were responsible for 13 deaths, 3,600 homeless, and 9,000 unemployed. The floods destroyed 384 homes and 91 bridges, and caused 12 dams to fail. Fifty million dollars in damages were reported for North Carolina alone (Paulson and others, 1981). Sixteen counties in North Carolina, eight in Virginia, and six in Tennessee were declared Federal disaster areas.

Rainfall of 5 to 7 in. caused severe flooding on small streams in northern Georgia on November 2–6 and eventually caused the failure of the Kelly Barnes Dam in Toccoa, Georgia. The dam failed at 1:30 a.m. on November 6, resulting in a 25-ft wave of water rushing down the narrow canyon toward the Toccoa Falls Bible College. The campus was inundated within minutes. One dormitory had 8 ft of water on the ground floor. A trailer park associated with the college was destroyed as 10 ft of water rushed through it. Thirty-nine deaths and $2.8 million in damages occurred during this flash flood (Paulson and others, 1991).

A drought that had plagued the Pacific Northwest throughout the year was broken with November and December storms. The storms caused large amounts of rain and flooding in three separate events during the 2 months. Twelve Washington counties were declared Federal disaster areas (Washington State Department of Community, Trade and Economy, 1995) (U.S. Army Corps of Engineers, 1978c). Northern Washington was affected by the December 2–3 flood, which resulted in five deaths and $14.8 million in damages. Southern Washington and northern Oregon experienced flooding on three different occasions. Flooding occurred in the Cowlitz River Basin in southwest Washingon and along the Columbia River in Oregon on November 25, December 2–3, and December 13–15. Flooding in the Willamette River Basin of Oregon occurred on November 25 and December 13–15. These floods caused $16.2 million in damages in the lower Columbia River Basin and along coastal drainages in Oregon (U.S. Army Corps of Engineers, 1978c).

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1978

The first significant flood of 1978 resulted from the February 6 and 7 "Blizzard of 1978." This storm formed in the Carolinas and moved northward along the Atlantic seaboard. The storm produced record amounts of snow and hurricane-force winds. Record tidal flooding occurred from Boston, Massachusetts, northward to Portland, Maine (fig. 11). Total economic losses from the storm, including damages directly caused by the storm and costs of snow removal, approached $1 billion (Platt and McMullen, 1978).

Spring floods accompanied melting of a large snowpack in the Red River of the North Basin and the Missouri River Basin in the North-Central States. Flooding in different areas continued through the spring months. Above-average precipitation had produced a large, wet snowpack over much of Minnesota, North Dakota, South Dakota, eastern Montana, and parts of northern Nebraska and western Iowa. Much of the ground in the Missouri River Basin froze earlier than normal during the winter season when the ground had a high-moisture content, and the frozen ground would not absorb the snowmelt. Consistently warm temperatures and rains on March 11–12 caused rapid snowmelt throughout the basin and flooding conditions within a few days. A maximum discharge of record was recorded on the Wild Rice River at Hendrum, Minnesota (station 05064000, table 24).

Flooding occurred in Wyoming and southern Montana as the result of intense rains that began the evening of May 16 and continued through the morning of May 19. Before the rain, the streams in the area were already flowing at or near bankfull because of snowmelt and above-average precipitation earlier in the spring. Fourteen streamflow-gaging stations in Montana recorded discharges at or above the 100-year recurrence interval, and about one-fifth of the 164 stations in Montana recorded maximums of record due to this flood.

June and July were very wet months for Minnesota and Wisconsin. Storms caused flash flooding on many different occasions throughout the 2 months in both States. Flooding on July 1–3 was particularly severe in the Kickapoo River Basin of southwestern Wisconsin. The flood caused discharges that are the maximums of record at 11 gaging stations with recurrence intervals of 100 years or greater. On July 5 and 6, Rochester, Minnesota, received intense rains. The National Weather Service rain gage at the airport recorded 4.99 in. of rain over a 3-hour period (National Oceanic and Atmospheric Administration, 1978). The total rainfall far exceeded the amount of a 100-year recurrence interval for that time period. The floods caused by the storm were the largest of record since 1888 on Bear and Silver Creeks and the largest of record on the South Fork Zumbro River since 1855. At the headwaters of the Cedar River, a record-setting flash flood occurred on July 16 and 17, which was the second flash flood in 11 days.

On June 18, the U.S. Geological Survey made a measurement of an extremely high discharge of 3,250 ft^3/s for a 1.71-mi^2 drainage area in the headwaters of a small tributary for Honey Creek in central Ohio. The 100-year recurrence-interval discharge for this site is slightly more than 1,000 ft^3/s. Rainfall of 7 to 8 in. in 2 hours caused this significantly large flood. This amount of rain is well above the 3 in. calculated for the 2-hour, 100-year rainfall in the area (Webber and Mayo, 1980).

Tropical Storm Amelia brought extremely intense rains to central Texas on August 1–4. Rainfall of more than 48 in. in 72 hours occurred northwest of the town of Medina. More than 30 of the 48 in. occurred on August 2 (National Oceanic and Atmospheric Administration, 1978), setting a point rainfall record for the United States. In response to the large rainfall, significant flooding occurred in the Medina River Basin. The upstream reaches of the Guadalupe and Medina Rivers had the highest floods recorded since records began for each station in 1848 and 1880, respectively. Thirty-three deaths occurred, and the damage totals for the area were estimated at $110 million (Paulson and others, 1991).

Significant floods occurred from Michigan to Texas between September 11 and 14. Many areas had flash flooding as a result of storms moving through the area. Some areas received as much as 10 in. of rainfall (National Oceanic and Atmospheric Administration, 1978). The hardest hit areas were central Arkansas and northern Louisiana, and Federal disaster declarations were made for two counties in each area. Little Rock, Arkansas, received 10 to 13 in. of rain the morning of September 13 (National Oceanic and Atmospheric Administration, 1978). At several stations the 6-hour rainfall total was well above the 100-year recurrence interval.

Two storms, the first from December 3 to 5 and the second from December 7 to 10, caused record flooding in Kentucky and West Virginia. Flooding was most severe in the Licking, Kentucky, Salt, and Green

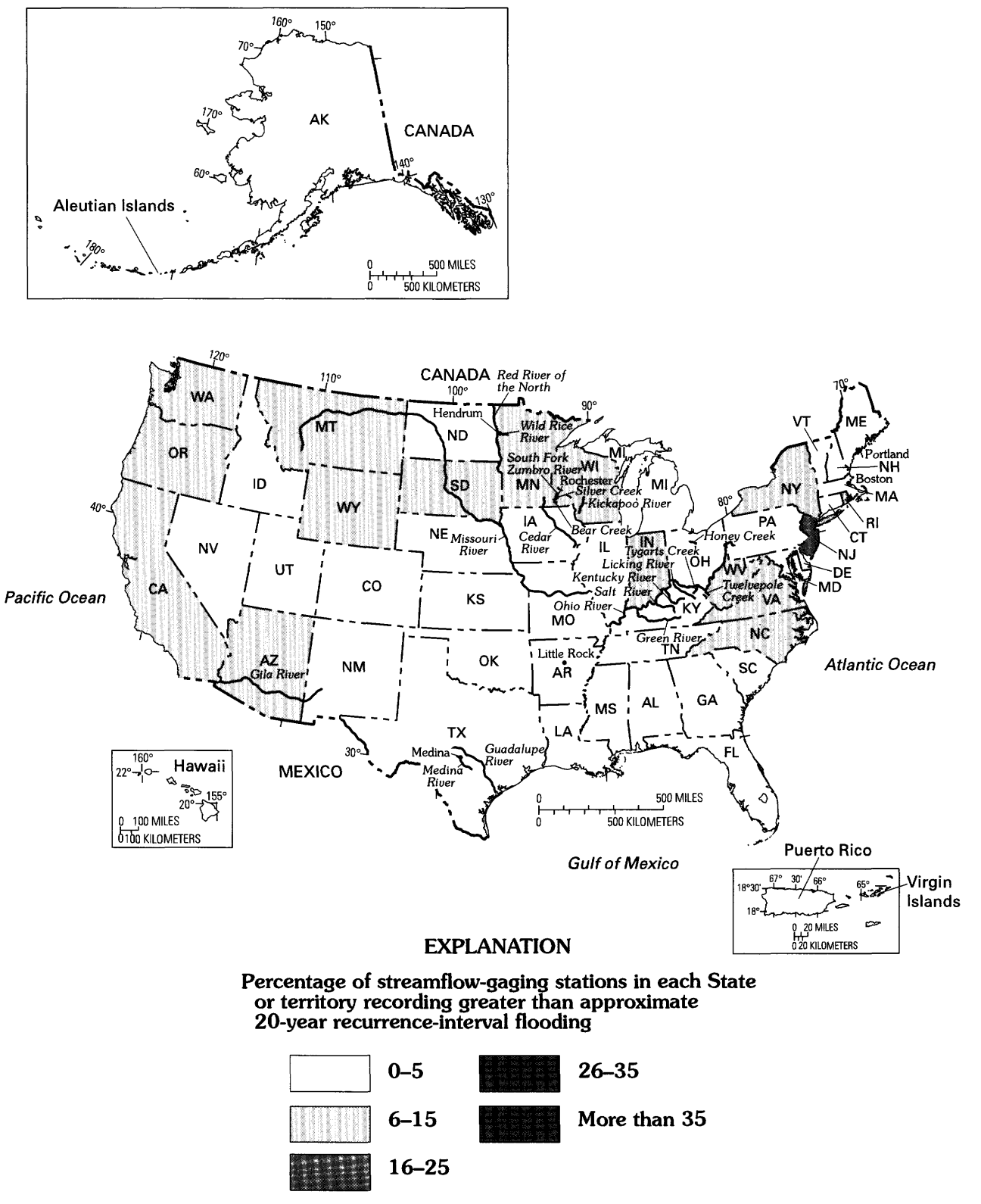

Figure 11. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1978.

River Basins, and along the Ohio River. Maximum discharges of record were recorded at many stations in the Tygarts Creek, Kentucky River, and Salt River Basins. In West Virginia, discharges with recurrence intervals greater than 100 years were recorded in the Twelvepole Creek Basin. Total damages for the flood were estimated to be greater than $100 million in Kentucky and $12 million in West Virginia (Sullivan and others, 1979).

The Southwest experienced recurrent flooding from November through the end of the year as a result of a persistent series of upper-level low-pressure systems that developed off the southwest coast of California. These low-pressure systems caused frequent periods of widespread and above-average precipitation in Arizona and New Mexico. Floods with recurrence intervals greater than 50 years occurred in the Gila River Basin.

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1979

On February 20, 1979, a record-breaking storm hit the Island of Hawaii and inundated the island with torrential rains for the following 72 hours (fig. 12). Twenty-three inches of rains fell at the Hilo Airport in 24 hours (National Oceanic and Atmospheric Administration, 1979). This surpasses the previous record rainfall in 24 hours by more than 5 in. Record 48- and 72-hour rainfalls also were recorded. The resulting floods ranged in magnitude from discharges having recurrence intervals of 10 to 100 years. Runoff from the rains caused roads to be closed for several hours, caused flooded basements, and eventually ponded in low-lying areas. Streams in and around Hilo had near-record flows.

Spring flooding was severe in parts of Illinois and Missouri. Nearly every stream in Illinois was above flood stage during March. Flooding was especially severe along the Rock and Kankakee Rivers. The high tributary inflow caused the Mississippi River to be 7 to 12 ft above flood stage, but the river was easily contained within the levees except in areas where major rivers, such as the Illinois and Missouri, flow into the Mississippi.

The worst flooding since 1969 struck Minnesota late in March. Rapid snowmelt caused flooding in the Red River of the North Basin.

Several floods occurred in the southeastern United States from March to May. The worst of these floods was caused by the rainfall on March 3–4 and April 11–14. On March 3–4, 10 to 14 in. of rain fell near Pensacola, Florida, as much as 12 in. fell in eastern Mississippi, and 8 in. fell in western Alabama (National Oceanic and Atmospheric Administration, 1979). Maximum discharges of record and discharges with recurrence intervals of 100 years occurred in parts of the Tallapoosa River Basin of Georgia and Alabama. Rains on April 11–13 caused severe flooding in Mississippi, Alabama, and the northwest corner of Georgia. Floods reaching 50- to 100-year recurrence intervals were recorded in the downstream reaches of the Coosa and Tallapoosa Rivers in Alabama. Several tributaries in the middle of the Tombigbee River Basin and the lower half of the Black Warrior River Basin, both in Alabama, had the highest discharges in 80 to 100 years. On most streams in the northern and eastern part of the Pearl River Basin in Mississippi discharges were greater than the 100-year recurrence interval. Damages from these floods in Mississippi, Alabama, and Georgia totalled $386 million. Floods also hit the Austin-San Antonio and Houston-Galveston areas of Texas in April. These were the worst floods, in terms of water levels, number of people affected, and dollar damages, to occur in the Houston area.

Tropical Storm Claudette caused severe flooding from Texas to Indiana after it made landfall in Louisiana on July 24. The storm caused torrential rains in 12 counties in the extreme southern corner of eastern Texas that includes the Houston and Galveston areas. Rainfall was 20 to 40 in. over the area (National Oceanic and Atmospheric Administration, 1979). Floods occurred on many small creeks and bayous between and within the San Bernard and Trinity River Basins. Southern Indiana was also hit by remnants of Tropical Storm Claudette, which produced as much as 10 in. of rain in some areas (National Oceanic and Atmospheric Administration, 1979). Severe floods resulted, especially in south-central Indiana.

Three hurricanes affected the United States during late August and early September. Hurricanes David, Elena, and Frederic hit the Southeastern States, and David and Frederic also hit Puerto Rico. None of the hurricanes caused significant flooding in the continental United States. However, intense thunderstorms associated with the hurricanes caused flash flooding and coastal storm surges. Puerto Rico had significant floods on some of its rivers due to Hurricane David. Floods on some of the eastern and southeastern streams in Puerto Rico were classified as 25-year floods.

Floods hit Texas and Louisiana again on September 17–25. The streams and rivers in the area were already swollen from the July floods and the rain from the hurricanes when 48 to 60 hours of continuous rain fell on coastal counties of eastern Texas and southwestern Louisiana.

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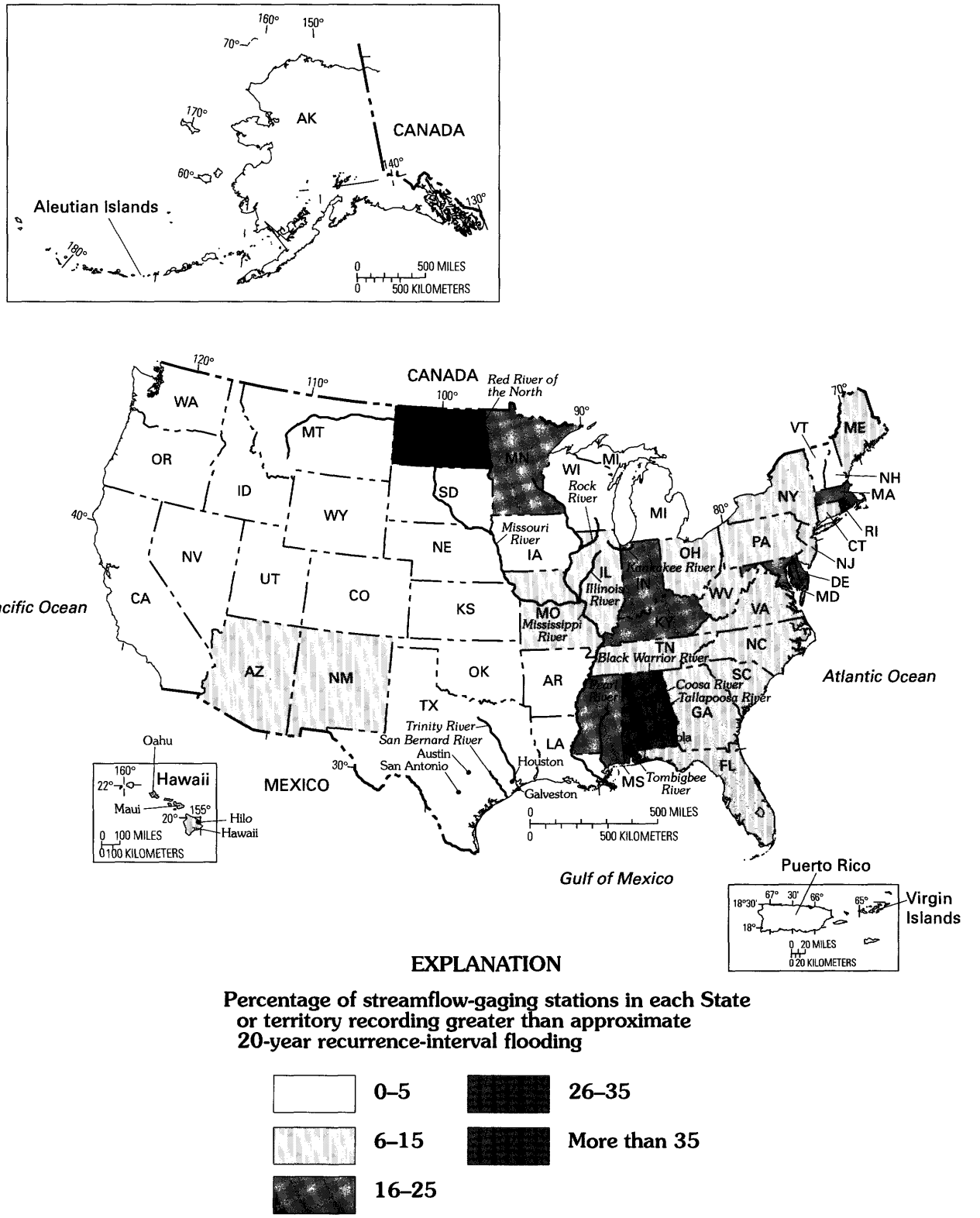

Figure 12. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1979.

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1980

The first significant floods of 1980 occurred February 13 to 21 in southern California and Arizona (fig. 13). The floods were a result of six Pacific storms hitting the Southwest and creating an extended period of rainfall. This extended period of rainfall, not an excessive amount in one storm, caused the severe flooding. The resulting volumes of runoff in many streams south of Los Angeles, California, during February were the highest ever recorded. The 7-day volumes on the Salt and Verde Rivers in Arizona were the second and third highest, respectively, recorded since 1906 (Chin and others, 1991). These excessive volumes caused all the reservoirs in southern California, except Lake Henshaw in San Diego County, to have spillway releases. Seven reservoirs in Arizona on the Salt, Verde, and Agua Fria Rivers had spillway releases. The floods caused 18 deaths and $350 million in damages (Paulson and others, 1991).

Intense rains hit Louisiana, Mississippi, and Alabama in two consecutive storms in March and April. The first storm occurred from March 26 to April 2 and struck southeastern Louisiana and scattered areas in Mississippi. The second storm lasted from April 11 to April 13 and affected most of Mississippi and was especially intense in the area from Baton Rouge and New Orleans, Louisiana, to Mobile, Alabama. The 2-hour rainfall in Mobile on April 13 had a recurrence interval of 100 years. As a result of this rainfall, Mobile experienced the worst flash floods in the city's history.

The most devastating hydrologic event during the year occurred on May 18 with the eruption of Mount St. Helens in Washington. The eruption caused very rapid melting of the mountain's snow and ice, creating severe mudflows along the North Fork Toutle, South Fork Toutle, and lower Cowlitz Rivers and throughout the Lewis River Basin in Washington. The mudflows had substantial effects on the streams and flood plains as large quantities of sediment were deposited. The mudflows deposited about 11,000 acre-ft of water, mud, and debris in Swift Reservoir on the Lewis River. The sediment that was deposited from these mudflows caused changes in the characteristics of flow in many of the streams in the area and required flood profiles to be reworked in the affected areas.

The month of August brought almost continuous rain to West Virginia, southwestern Pennsylvania, and eastern Ohio. Many precipitation stations reported rain during almost every day from August 2 to 22, and daily totals of 2 in. or more were very common. On August 9, thunderstorms produced 3.0 to 3.5 in. of rain in 1 hour over Clarksburg, West Virginia (National Oceanic and Atmospheric Administration, 1980). Flooding was particularly severe in the town of Lost Creek, West Virginia.

Hurricanes and tropical storms ravaged the coastal areas of Texas in August and September. Hurricane Allen, the first of the season, was the most intense ever recorded in both the eastern and western parts of the Caribbean Sea. The storm made landfall on August 9 in Texas, and tidal surges 10 to 20 ft above sea level were recorded along the southern coast. The tidal flooding was the worst since 1919. Tropical Storm Danielle, which made landfall in eastern Texas on September 5, did not produce the high winds and tidal flooding that Hurricane Allen did, but the storm did produce torrential rains. Urban flooding caused by the excessive rainfall was the most destructive element of this storm. Tropical Storm Jeanne in mid-November also caused coastal flooding along the entire coast of Texas with the worst flooding near Galveston.

Figure 13. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1980.

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1981

The first significant flood of 1981 was a result of rain falling on deep snow in the area from New Hampshire to eastern Pennsylvania (fig. 14). Rainfall of 1 to 4 in. occurred over the area and, along with temperatures in the 50- to 60-°F range, caused 6 to 12 in. of snow to melt. Ice jams were the major factor causing the flooding. The highest recorded stage (26.6 ft) on the Delaware River at Matamoras, Pennsylvania, was a result of a massive ice jam.

Considerable spring flooding occurred in Montana during May when four extensive storms created conditions that resulted in flooding in the Helena and Continental Divide areas. Flooding occurred when excessive precipitation combined with snowmelt. At 13 streamflow-gaging stations, recurrence intervals of greater than 100 years were recorded. Near Boulder, Montana, the maximum discharge of the Boulder River was twice the previous maximum of record. These floods were some of the costliest in Montana's history, with total damages exceeding $30 million (Paulson and others, 1991).

A deadly flash flood struck Austin, Texas, during the night of May 24. A short, intense rainfall produced as much as 10 in. of rain in 4 hours (National Oceanic and Atmospheric Administration, 1981). Streams rose rapidly, beginning about 10:00 p.m. and peaking about midnight. The floods receded just as quickly, so most streams were at preflood levels by 3:00 a.m. The flood resulted in 13 deaths and $40 million in damages (Paulson and others, 1991). The speed at which the streams rose to flood levels contributed to the number of deaths as the floods probably caught many people unaware of the danger.

The summer months were plagued with floods in the North-Central States. Illinois and Indiana were the hardest hit, as rains began in May and continued through July. Flooding was widespread from Wisconsin to Kentucky, with the most severe floods in scattered areas. Thirteen counties dispersed over Illinois, Ohio, and western Pennsylvania were declared Federal disaster areas because of flooding in mid-June. Agriculture in Illinois and Indiana suffered substantially from the storms and resulting floods.

On August 29, a tropical depression moved inland at Brownsville, Texas, and continued to move up the Rio Grande Valley. By August 30, the depression reached San Antonio and, during the evening, created a line of thunderstorms that produced 8 to 12 in. of rain in the area (National Oceanic and Atmospheric Administration, 1981). Water levels on many rivers in the region were near record highs.

October brought excessive rains and flooding to Texas and Oklahoma. On October 5, rainfall amounts totalling 8 in. caused severe urban flooding in Houston (National Oceanic and Atmospheric Administration, 1981). A storm produced 11 in. of rain in southern Texas on October 6 through 7. Record floods were produced in Oklahoma and Texas from a storm that lasted from October 11 to 16. In a 3-day period from October 11 to 14, 17 to 20 in. of rain fell in south-central Oklahoma and north-central Texas (National Oceanic and Atmospheric Adminstration, 1981). As a result, floods that exceeded the 100-year recurrence interval occurred in central Texas. The damage totals exceeded $115 million in Texas and Oklahoma combined (Buckner and Kurklin, 1984).

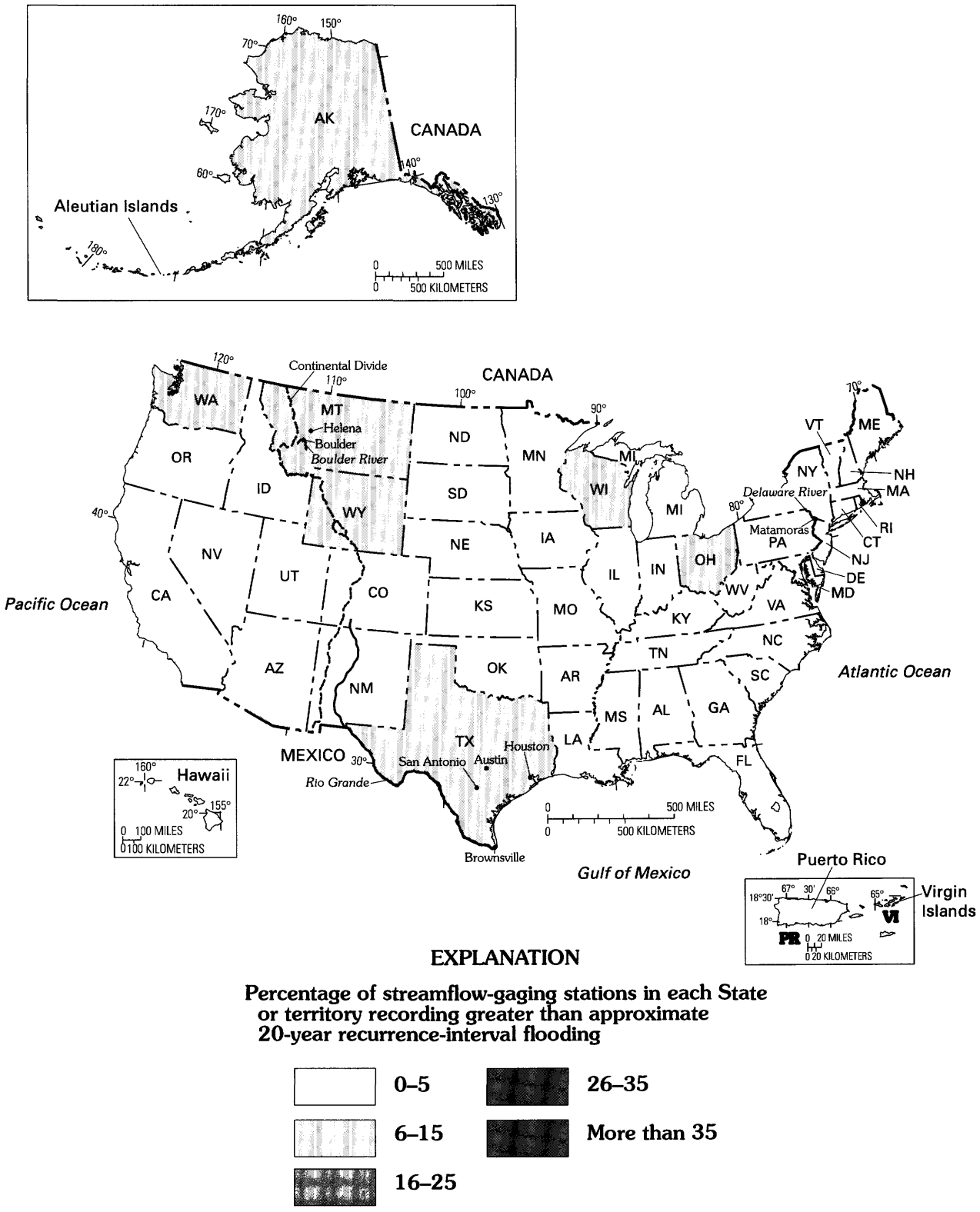

Figure 14. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1981.

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1982

The San Francisco Bay area of California experienced the first significant flooding of 1982 when an intense storm system came onshore during January 3 through 5 (fig. 15). The storm caused continuous, moderate rainfall for about 34 hours over the San Francisco Bay area. Landslides began around 9:00 a.m. on January 4 and quickly transformed to debris flows. In addition to the landslides and debris flows, flooding was considerable throughout the area. Many small streams had maximums of record, but the record lengths for streams in the area are relatively short. There were 31 deaths, and total damage from the storm was $75 million (Paulson and others, 1991).

A rapid increase in temperatures caused spring snowmelt floods in Indiana, Michigan, and Ohio in March. In addition to the melting of a deep snowpack, moderate rains fell across the area, which intensified the melting. Continued periods of rain throughout the month resulted in streams sustaining high flow and causing additional maximum discharges. Recurrence intervals for maximum discharges recorded at several streamflow-gaging stations in the St. Joseph, Yellow, Maumee, and Kankakee River Basins were 50 to 100 years.

On March 31, a cold front collided with warm Pacific air over central California causing 2 in. of rain to fall in San Jose during a very short period of time (National Oceanic and Atmospheric Administration, 1982). Six streams in and near San Jose overflowed and forced the evacuation of 50 homes. Some of the floodwaters were stored in the Coyote and Anderson Reservoirs upstream from San Jose, which helped reduce the severity of the flooding.

Excessive rainfall fell mostly during the last 3 weeks of May and first week of June over much of western South Dakota. Spearfish received 11.22 in. of rain from May 14 to 21 and had a total of 14.31 in. for the month of May. Other rainfall amounts for May were 11.30 in. at Elm Springs, 10.70 in. at Lead and at Belle Fourche, 9.90 in. at Eagle Butte, 9.87 in. at Milesville, 9.85 in. at Wasta, and 9.53 in. at Timber Lake. Near-record stages were recorded on the Little Missouri, Moreau, Belle Fourche, Cheyenne, and White Rivers.

A storm that local newspapers dubbed "the worst spring storm during the 20th century" ravaged through Connecticut, eastern New York, and central and eastern Massachusetts on June 5 through 7. The storm produced rainfall totals as high as 16 in. in Connecticut (National Oceanic and Atmospheric Administration, 1982). At several places, the rainfall recorded with the storm was the highest recorded for a non-hurricane storm. This storm resembled a "northeaster" without the cold temperatures. Almost every stream in Connecticut flooded, with central Connecticut being the hardest hit. Eleven deaths and damages of $250 million were caused by the floods (Paulson and others, 1991).

Persistent moderate to intense rains throughout May resulted in record flooding in Iowa in June and July. The floods occurred mostly in southwestern and east-central Iowa. Many streams had record discharges. The maximum discharges for Old Mans Creek at Highway 149 near Williamsburg were twice the 100-year recurrence-interval flood. One of the largest floods ever recorded in Iowa occurred July 3 on Cedar Creek near Bussey. The recorded discharge was more than twice that of a 100-year recurrence-interval flood.

Early in the morning of July 15, an earthen dam in the Front Range of the Colorado Rocky Mountains failed, releasing 674 acre-ft of water and an estimated maximum discharge of 18,000 ft^3/s down Roaring River Valley. The onslaught of water caused another dam downstream to fail also. Geomorphic and sedimentologic evidence suggest that this was probably the largest flood in the Roaring and Fall River Basins since the retreat of the glaciers about 10,000 years ago. Along the course of the flood, channels were widened tens of feet and either scoured or filled. An alluvial fan of 42.3 acres, containing about 226 acre-ft of material, was deposited at the month of the Roaring River. The alluvial fan dammed the Fall River, forming a lake of 17 acres upstream from the fan. Three people were killed, and total damages from the flood were estimated at $31 million (Paulson and others, 1991).

Intense thunderstorms produced by a nearly stationary weather front over Kansas City, Missouri, caused significant flooding August 12 through 13. Flash flooding was prevalent during the night and early morning hours on August 12. These floods affected much of the same area as the 1977 floods in Kansas City. Maximum discharges at several stations exceeded the discharges recorded for the 1977 flood. Four deaths occurred from the flooding, and damages were estimated at about $30 million (Paulson and others, 1991).

Flood-producing thunderstorms moved through Tennessee on four separate occasions from July to

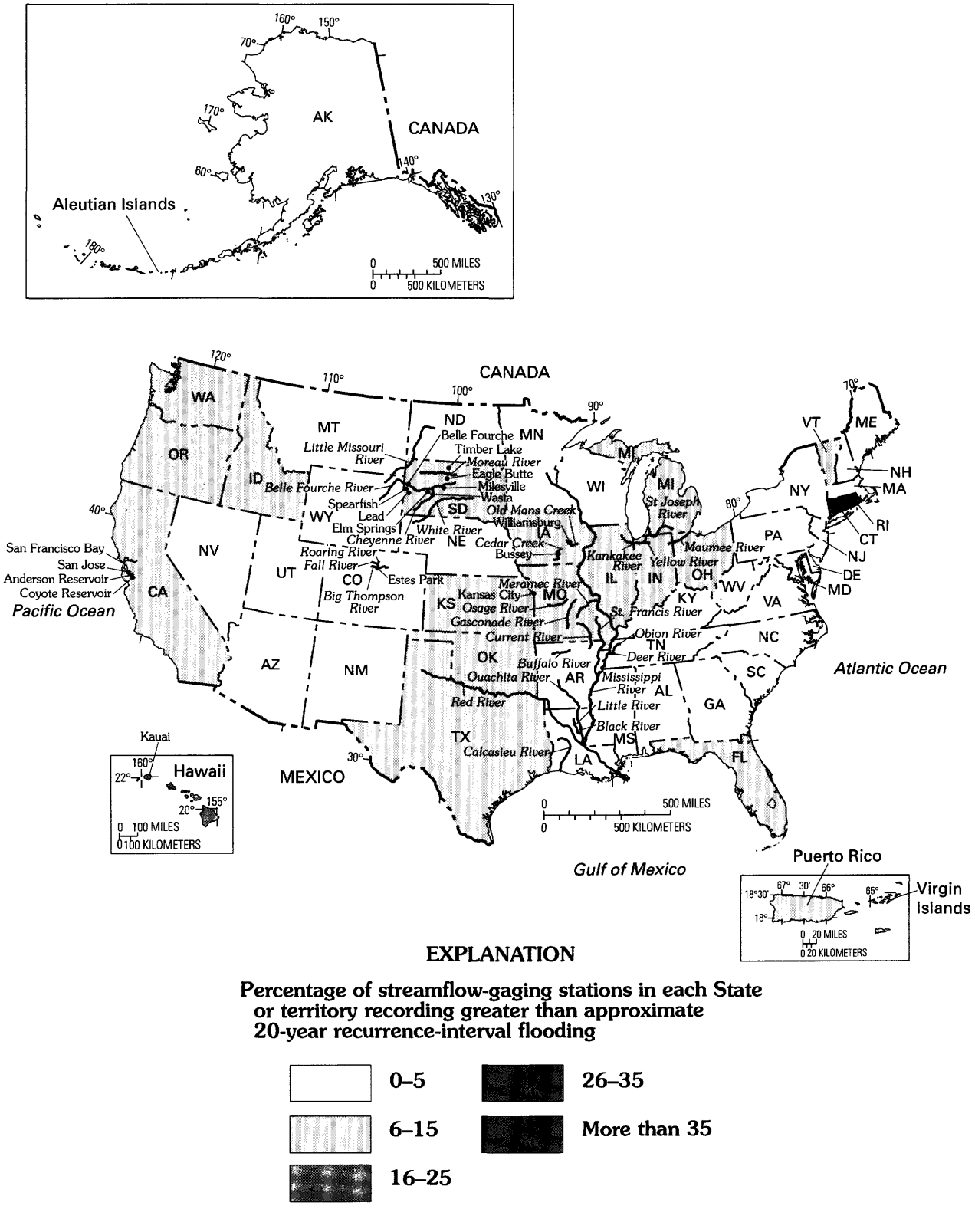

Figure 15. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1982.

September. On July 31, 2.5 to 6 in. of rain caused flash floods in eastern Tennessee (National Oceanic and Atmospheric Administration, 1982). Record-breaking floods in central and eastern Tennessee on August 17 resulted from rainfall that exceeded the100-year expected rainfall. Flooding continued on August 30 through September 4 in north-central Tennessee. Water covered major highways, washed out bridges, and prompted evacuations of approximately 300 people.

Remnants of Tropical Storm Chris caused torrential rains and flooding throughout Louisiana, Mississippi, Tennessee, and Kentucky on September 12. Significant flooding occurred along the Rutherford and South Forks of the Obion River and the North and Middle Forks of the Deer River in western Tennessee.

On November 23, Hurricane Iwa passed 30 mi west of Kauai and became the most costly storm to hit the State of Hawaii. The Federal Emergency Management Agency (FEMA) estimated losses at $308 million. Most of the damage was a result of high tidal surges as the winds were very high, but little rain fell. Surge levels exceeded the 100-year flood, and the debris line left by the tidal surge on Kauai was as much as 900 feet inland from the boundary of the 100-year flood level shown on FEMA flood-insurance maps.

Widespread flooding occurred in December 1982 and January 1983 in the Mississippi River Basin. Streams in Illinois, Missouri, Arkansas, Louisiana, Mississippi, and Tennessee were hardest hit by the floods. Flooding resulted from two main periods of intense rains; the first storm occurred from December 2 through 7 and the second from December 24 through 29. Missouri, Illinois, and Arkansas were affected by the earlier storm, and Louisiana and Mississippi were affected by the later storm. Significant floods, many of which exceeded the 100-year recurrence intervals, occurred in Missouri in the Gasconade, Osage, Meramec, St. Francis, and Current River Basins. In Arkansas, the Buffalo River experienced record flooding. Louisiana experienced extensive flooding as well, with most of the damage occurring along the Calcasieu, Little, Black, Red, and Ouachita Rivers.

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1983

The first significant floods of 1983 occurred in California (fig. 16). Severe storms originating in the Pacific Ocean frequently hit California from January through March. Landslides were the most damaging aspect of the storms, but floods played an important part as well. On January 22 through January 29, a series of intense storms moved rapidly through the northeastern Pacific Ocean and struck the California coast with intense rains, gale-force winds, high surf, and high tides. Riverine flooding from these storms in the San Francisco Bay area produced record flooding.

Severe thunderstorms originating along the central coast of the Gulf of Mexico produced flood conditions for Louisiana and Mississippi on April 5. Rainfall was especially excessive over the Pearl River Basin in Louisiana. The Pearl River crested above flood stage through most of its length on April 7 and stayed above flood stage through the end of April. In southern Mississippi, 8 to 14 in. of rain fell on April 5 (National Oceanic and Atmospheric Adminstration, 1983), and many creeks and rivers in this region experienced maximums of record. Additional rains on April 6 caused severe flooding on Gordon Creek and the Bouie River.

Intense rainfall on April 28 through April 30 produced widespread flooding throughout Kentucky, but the most severe flooding was concentrated in the western part of the State. The rains and flooding lasted through May 4. Rainfall averaged 6 to 10 in. across most of the State (National Oceanic and Atmospheric Administration, 1983). Small streams began flooding April 30, and by May 4, larger streams also had reached flood stage.

The winter of 1982–83 was among the most severe in Wyoming, Colorado, Utah, Nevada, and parts of other Western States since records began. Wet, cold weather with large accumulations of snow continued through April. A record snowpack resulted from the extended winter weather and lingered until May or early June. Temperatures stayed cold longer than normal and when they began to rise, it was a sharp and rapid increase. Several events resulted from these conditions—(1) High-magnitude streamflow, both in terms of volume and maximum discharges, occurred in most of these Western States; (2) the first required use of spillways at Hoover and Glen Canyon Dams on the Colorado River; (3) long-duration flooding along the lower Colorado River; (4) devastating landslides and debris flows in Utah and Nevada; and (5) the highest water level since 1924 in the Great Salt Lake.

Significant floods occurred in southeastern Arizona from September 27 to October 3. The floods were caused by the remnant moisture from dissipating Tropical Storm Octave. The most intense rainfall was concentrated in a narrow band from south of Tucson to Clifton. Large, flat areas northwest of Tucson were inundated with floodwaters when the Santa Cruz and Gila Rivers overtopped their banks and spread across the flood plain.

Significant floods on October 17–23 occurred in southwestern and central Oklahoma. The floods were caused by remnant moisture from Hurricane Tico. The most intense rainfall was concentrated in a narrow band from Rush Springs to Shawnee. Record maximum discharges were recorded on Deep Red Run, the lower Washita River, and Elk and Walnut Creeks. Damages were estimated at $12 million (Paulson and others, 1991).

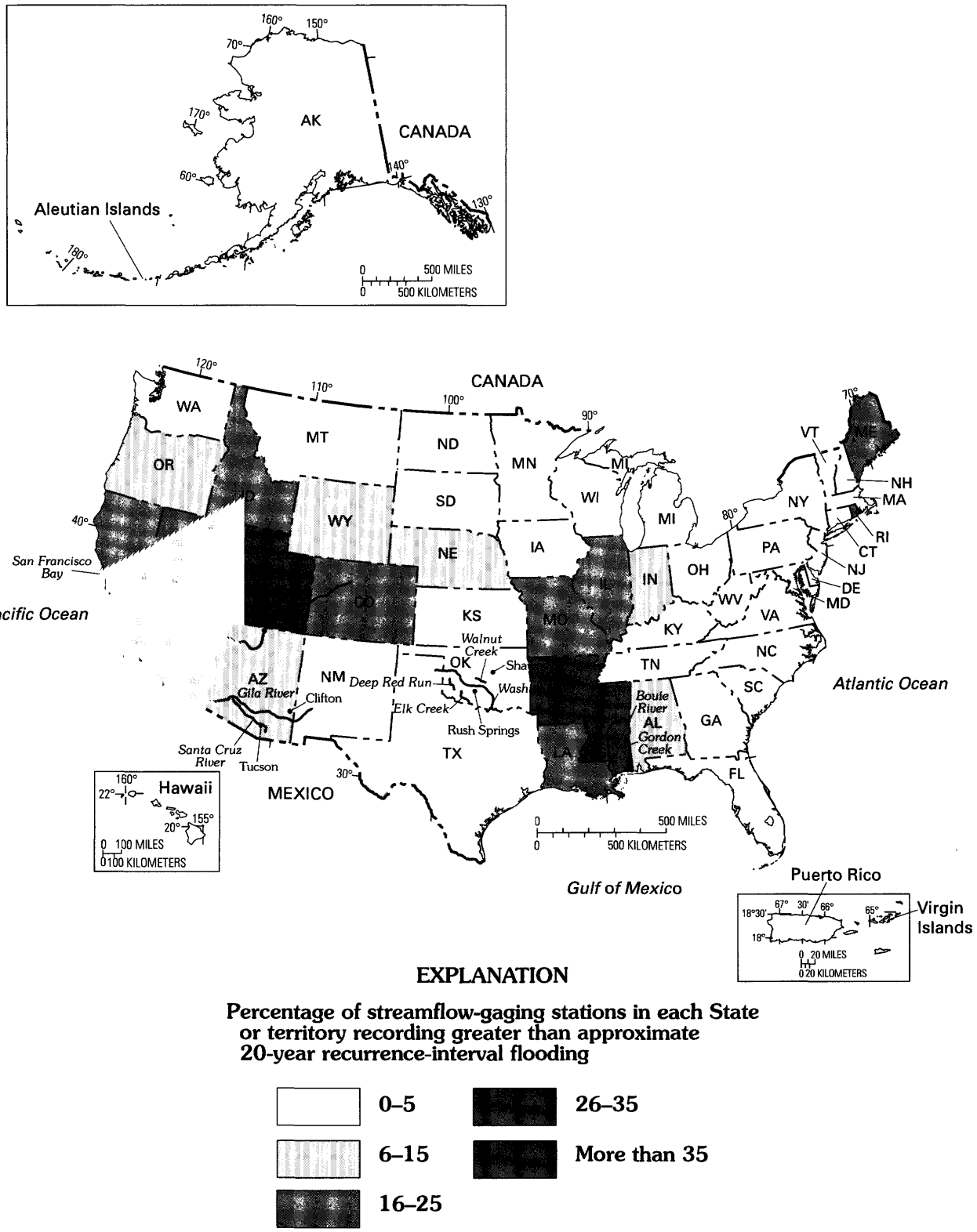

Figure 16. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1983.

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1984

Two major storms created flood conditions throughout March 1984 in Georgia (fig. 17). On March 5 through March 6, a storm produced flooding in southern Georgia as well as northern Florida. Floods with recurrence intervals of 50 years or more occurred on creeks in southern Georgia. A severe storm producing high winds, tornadoes, and intense rains hit Georgia on March 27 and 28. This storm produced 50-year floods in southern Georgia, as well as severe coastal flooding along the Atlantic seaboard. Tides in Chesapeake Bay were 1.6 ft above the normal high tide.

One of the worst floods in northern New Jersey occurred April 5 through April 7 as a result of 2 to 8 in. of rain (National Oceanic and Atmospheric Administration, 1984) combined with snowmelt and saturated soil conditions. The storm that hit the Atlantic seaboard at the end of March created ideal conditions for flooding in New Jersey. The March storm had left as much as 8 in. of snow across much of the State, and its immediate melting caused high discharges on rivers, high lake levels, and saturated soil before the April rains. Thirteen streamflow-gaging stations in the Passaic River Basin recorded new maximum discharges. Streamflow-gaging stations throughout northern New Jersey recorded discharges with recurrence intervals from 20 to 100 years.

During the first week of May, a series of thunderstorms produced widespread and flash flooding throughout the Tennessee Valley and surrounding area. Eastern Kentucky was the hardest hit by the floods, but parts of Tennessee, West Virginia, and Virginia also flooded.

The worst flooding in Tulsa, Oklahoma, history occurred May 26 and May 27. A series of large thunderstorm cells developed over Tulsa and did not move for more than 7 hours. Official rainfall reports from the storms were as much as 12 in. of rain in an 8-hour period (National Oceanic and Atmospheric Administration, 1984). There were several unofficial reports of as much as 15 in. of rain (Bergman and Tortorelli, 1988).

The wet winter of 1984 in the Western and West-Central States caused a large accumulation of snow in the Colorado River Basin and the Great Basin of Utah and Nevada. The spring thaw conditions were very similar to 1983, and many of the same areas flooded as a result of snowmelt. Extensive flooding occurred in the upper Missouri River Basin of southwestern Montana, the Snake River Basin of Idaho, the upper North Platte River Basin in Colorado and Wyoming, and the Colorado River Basin and the Great Basin during April, May, and June.

A series of severe storms plagued the central and upper Midwest for 3 weeks starting in late May and ending in early June. Repeated and intense thunderstorms produced excessive amounts of rainfall over parts of the seven-State area of Kansas, Missouri, Iowa, Minnesota, South Dakota, Nebraska, and Wisconsin. Record and near-record streamflows occurred at several streamflow-gaging stations. Turkey Creek in Nebraska had a maximum discharge 1.3 times the estimated discharge of the 100-year recurrence interval. In southeastern South Dakota, the maximum discharge of the James River near Scotland also exceeded the 100-year recurrence interval.

Hurricane Diana made landfall September 14 on the North Carolina coast. Coastal flooding, winds, and, in some areas, riverine flooding were severe. Riverine flooding was not uniformly severe due to the dry conditions prior to the hurricane and the sandy nature of the coastal plain soils, which minimized the surface runoff. Discharges recorded in south-central North Carolina did, however, reach the estimated 100-year recurrence interval.

A series of thunderstorms produced record rains and severe flooding from October 18 through October 27 in parts of Texas, Louisiana, Arkansas, and Oklahoma. The most severe floods were in southern Texas and Louisiana. A strong active front became stationary in southern Texas and produced record rainfall in the Corpus Christi area. Unofficial reports state that as much as 25 in. of rain fell in 3.5 hours in areas north of Corpus Christi. Long-time residents described the flooding as the worst in the area's history.

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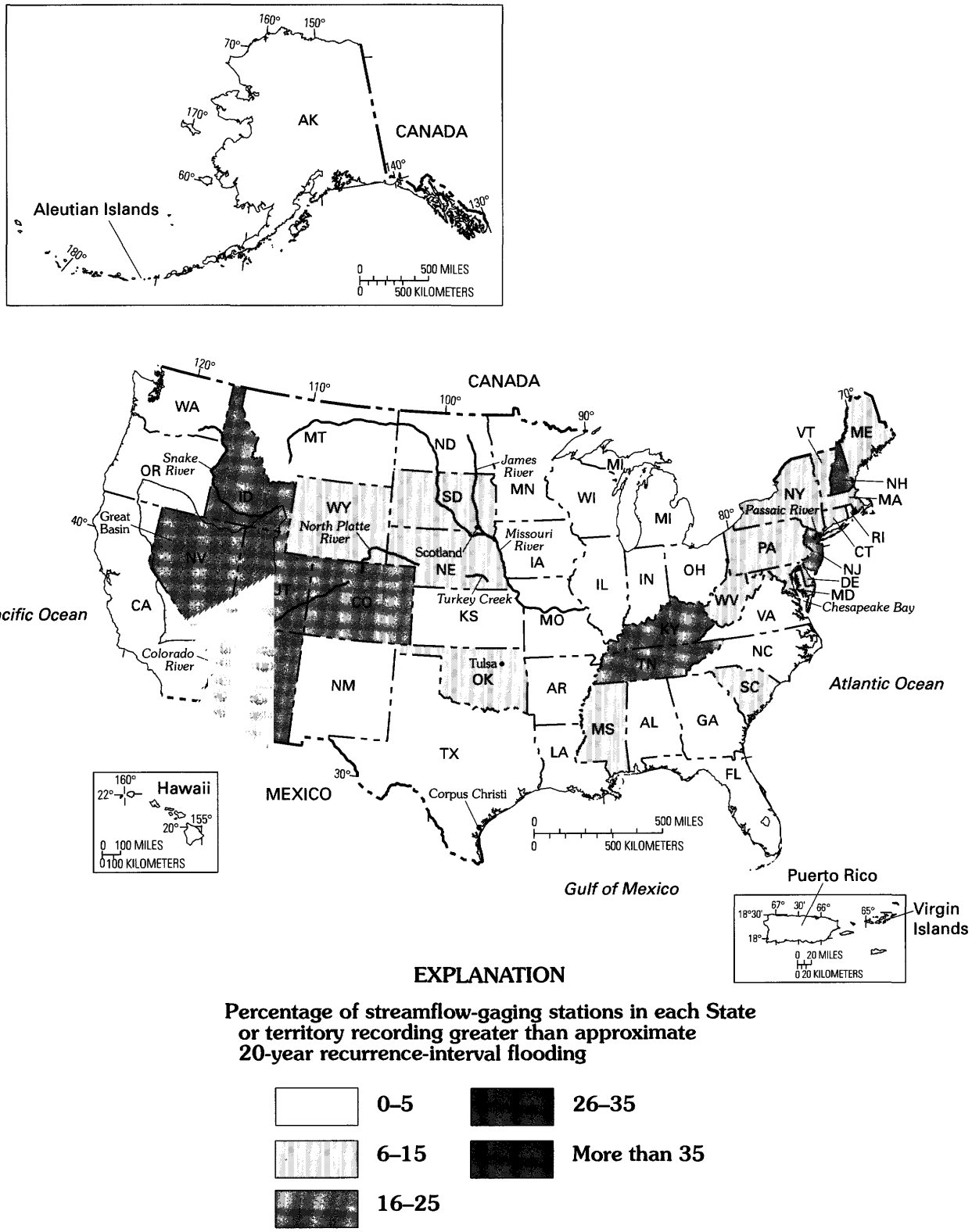

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1985

Floods occurred in the Northeastern and Central States due to a series of winter storms starting in December 1984 and continuing through April 1985 (fig. 18). Alternate periods of freezing and thawing from December to April kept rivers high from Illinois to New York. Discharges on the Elkhart River at Goshen, Indiana (station 04100500, table 15), and on the La Moine River at Colmar, Illinois (station 05584500, table 14), were near the 100-year recurrence interval.

As much as 6.9 in. of rainfall, combined with unseasonably warm temperatures and rapidly melting snow, caused extensive flooding throughout northern New York from December 29 through January 2. Maximum discharges at six streamflow-gaging stations in the Black and Salmon River Basins had recurrence intervals greater than or equal to 100 years.

Cheyenne, Wyoming, had its worst flood in more than 120 years on August 1. During the afternoon, a moderate thunderstorm developed southeast of Cheyenne, but the storm increased in intensity as it moved into the city during the early evening. Torrential rain, golf-ball-sized hail, and 70-mi/hr winds were produced by the storm. Seven inches of rain fell in less than 24 hours (National Oceanic and Atmospheric Administration, 1985). The discharge for Dry Creek in Cheyenne greatly exceeded the estimated 100-year recurrence interval. The flood caused 12 deaths and $61.1 million in damages (Paulson and others, 1991). The city was declared a Federal disaster area.

On October 6, a tropical depression stalled and caused intense precipitation over southern Puerto Rico. As much as 24.6 in. of rain fell in a 24-hour period (National Oceanic and Atmospheric Administration, 1985). The most severe flooding occurred along the southern coast. The highest maximums of record occurred at streamflow-gaging stations on the Río Coamo, Río Inabon, Río Descalabrado, Río Camuy, Río Cerrillos, and Río Portugues. Most of these maximum discharges had recurrence intervals of 50 years or greater. There were many devastating landslides that resulted from the intense rains as well. The worst landslide ravaged a populated area northwest of the city of Ponce. Deaths totalled 170, and damages of $125 million occurred (Paulson and others, 1991).

The 1985 hurricane season was longer than normal with six hurricanes hitting the United States. They were Hurricanes Bob, Danny, Elena, Gloria, Juan, and Kate. The first hurricane to make landfall was Hurricane Bob in Florida on July 23, and the last was Hurricane Kate, striking Florida, Georgia, and South Carolina on November 16.

Hurricane Elena made landfall in Mississippi on September 2. Elena followed an erratic path, first entering the Gulf of Mexico heading for the Louisiana coast when it turned and threatened the Florida coast for 2 days before turning again and hitting land in Mississippi. The storm quickly moved through Mississippi and Louisiana and finally dissipated over Missouri. Coastal flooding was severe in Florida. Residents of low areas were ordered to evacuate along most of the west coast of Florida.

Hurricane Gloria developed off the west coast of Africa and eventually became the first hurricane to strike New England since 1960. Hundreds of thousands of people were evacuated from coastal areas between North Carolina and Massachusetts because of expected high winds and tidal flooding. Although tidal flooding from Gloria was severe, the riverine flooding was minor because the hurricane did not produce large amounts of rain.

Similar to Hurricane Elena, Hurricane Juan followed an erratic path in the Gulf of Mexico. The storm formed in the central Gulf of Mexico on October 25, then moved northeast toward Louisiana. The storm veered toward Texas before turning back toward Louisiana where it finally made landfall on October 29. On October 30, the storm again moved offshore and made landfall in Florida on October 31. As a result of Juan's slow meandering path, the storm produced excessive rainfall. Despite the large amount of rain, there was minimal riverine flooding in the Coastal States. Storm surges, however, caused severe coastal flooding in Louisiana and Mississippi.

In November, remnants of Hurricane Juan combined with a low-pressure system moving in from the west and then combined with a stalled system over the Appalachian Mountains. The resultant moisture-laden weather system caused severe flooding in large areas of West Virginia and Virginia, and significant flooding in smaller parts of Maryland and Pennsylvania. New maximum discharges were recorded at 63 streamflow-gaging stations, all exceeding 100-year recurrence intervals. The flooding in West Virginia was called the worst in that State's history, with 38 lives lost and $578 million in damages. The Cheat River and South Branch Potomac River Basins were the hardest hit. Overall, the storm was the fourth most costly hurricane-type storm in United States history (to 1985), with 62 lives lost and $1,400 million in damages (Carpenter, 1990).

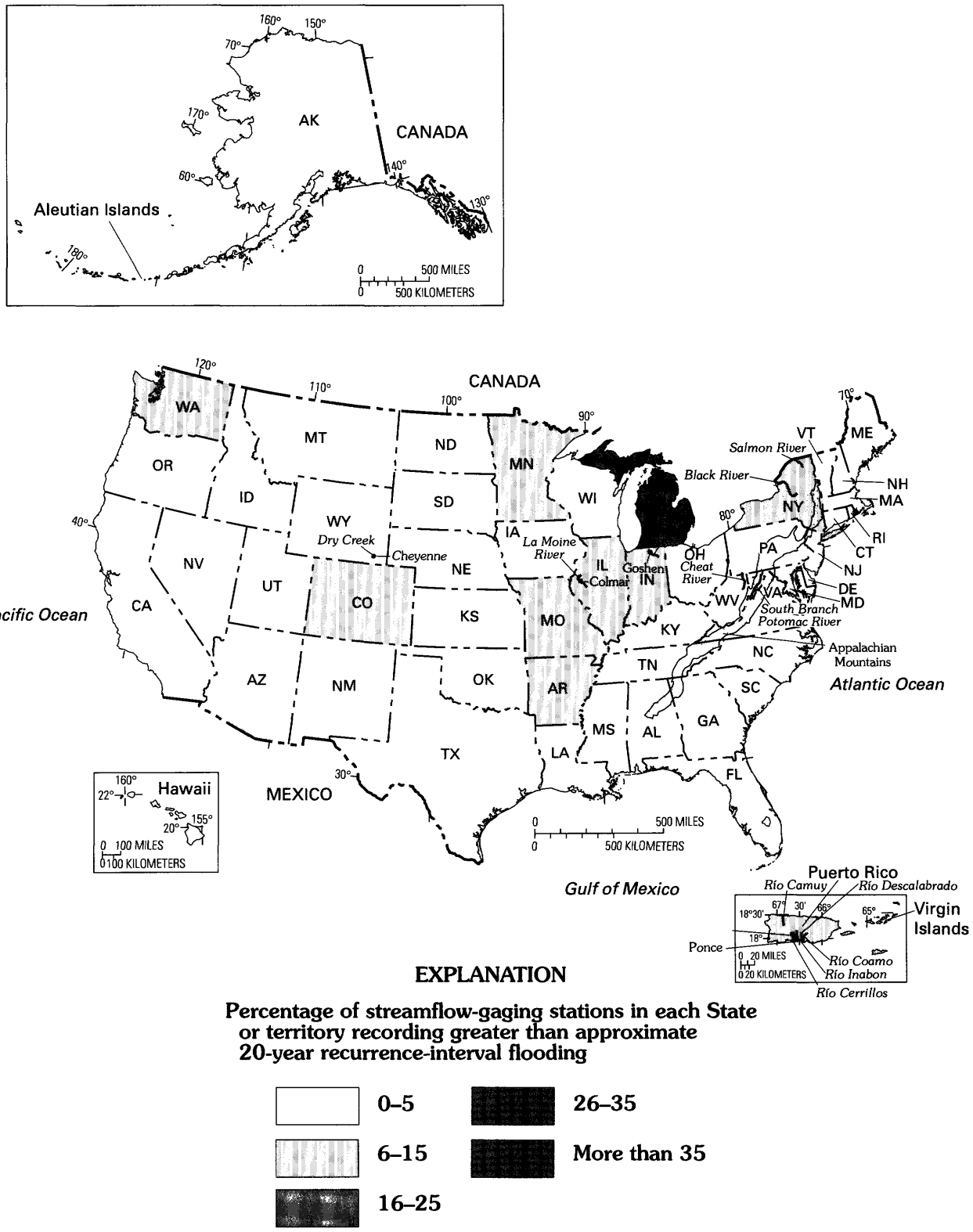

Figure 18. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1985.

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1986

The first significant flooding of 1986 occurred in northern and central California and western Nevada as a result of rainstorms beginning February 11 and continuing through February 24 (fig. 19). The storms produced widespread flooding and landslides. Record flooding occurred in three streams that drain to the southern part of the San Francisco Bay area. Large maximum discharges also occurred in the Feather and American River Basins in central California. Lake Tahoe rose 6 in/d as a result of high inflow. In California and Nevada the floods caused 14 deaths and $379 million in damages (Paulson and others, 1991).

Flooding in South Dakota that began early in March was due to near-normal winter snowfall coupled with carryover moisture from the previous year, as fall precipitation was 150 to 200 percent of normal over most of the State. The third week in March, a wet spring storm produced precipitation that augmented the flooding. This was followed by the wettest April on record for South Dakota (the 5.13-in. precipitation total for April 1986 far surpassed the next largest 3.87-in. total received in 1941). Thunderstorm activity continued through May, June, and July, keeping rivers and streams at high stages. An unusually wet September (four times the usual rain for the area) again produced flooding in southeastern South Dakota and caused the highest stages of the year on the lower Vermillion and Big Sioux Rivers.

Intense rains, producing 8 in. in 2 hours, fell over the Pittsburgh, Pennsylvania, area on May 30 (National Oceanic and Atmospheric Administration, 1986). The rains caused severe flash floods in some Pittsburgh suburbs. The severity of the floods was increased by the area's high relief and many paved surfaces. The maximum discharge of Little Pine Creek near Etna (station 03049800, table 39) had a recurrence interval greater than 100 years.

Several intense thunderstorm systems moved through Texas, Louisiana, and Arkansas during the last week of May and the first week of June. On May 24, severe storms caused localized flood damage in the extreme northeastern corner of Arkansas. The San Antonio, Texas, area experienced recurring flash floods from thunderstorms from May 25 through June 4. Hurricane Bonnie made landfall at the Louisiana-Texas border on June 26, causing high storm surges and riverine flooding due to excessive rainfall.

Record snowmelt caused flooding along the eastern slopes of the Rocky Mountains from southwestern Montana to southern Wyoming during June. The maximum discharge of the Madison River near West Yellowstone, Montana (station 06037500, table 27), was the highest since records began in 1913 and had a recurrence interval greater than 100 years. Northern Utah also had flooding due to the snowmelt. Early in June, the Great Salt Lake reached its highest level in nearly 140 years of record.

Several severe thunderstorms occurred in Iowa, Nebraska, and Kansas from June 29 to July 8. The rains caused flash flooding in west-central Iowa. The Blue River and its tributaries, located in southern Nebraska and northern Kansas, had considerable flooding and exceeded flood stages by as much as 12 ft. Severe thunderstorms occurred in northeastern Kansas on July 6 and 7, produced about 10 in. of rain in 24 hours (National Oceanic and Atmospheric Administration, 1986), and resulted in significant flash flooding.

A severe thunderstorm hit the Milwaukee, Wisconsin, area on August 6 causing major flash floods along the Menomonee and Kinnickinnic Rivers. Rainfall amounts for the 24-hour period totalled almost 7 in. (National Oceanic and Atmospheric Administration, 1986). During the most intense period of rainfall, 1.10 in. fell in 5 minutes. On the Menomonee River, the recurrence interval for the discharge was 40 to 50 years. Property damage totalled $30 million (Wisconsin Department of National Resources, 1986; U.S. Army Corps of Engineers, 1987).

Recurring thunderstorms caused record-breaking rainfalls and floods during September in Minnesota, Wisconsin, Michigan, and Illinois. Severe floods occurred September 10–15 in eastern Wisconsin and across the central part of the Lower Peninsula of Michigan. Southeastern Minnesota and western Wisconsin were affected by floods from September 20 through September 22. Flash floods occurred September 25–28 in the Des Plaines River Basin in southeastern Wisconsin and northeastern Illinois. The Mississippi River was above flood stage from Wisconsin to southern Missouri as a result of excessive rainfall in the upper basin.

The South-Central States were affected by excessive rains and flooding between September 26 and October 5. The rains were the result of a nearly stationary front that extended from the Texas Panhandle, through Oklahoma and southeastern Kansas, and into central Missouri. The precipitation from the front was augmented as the remnants of Hurricane Paine from

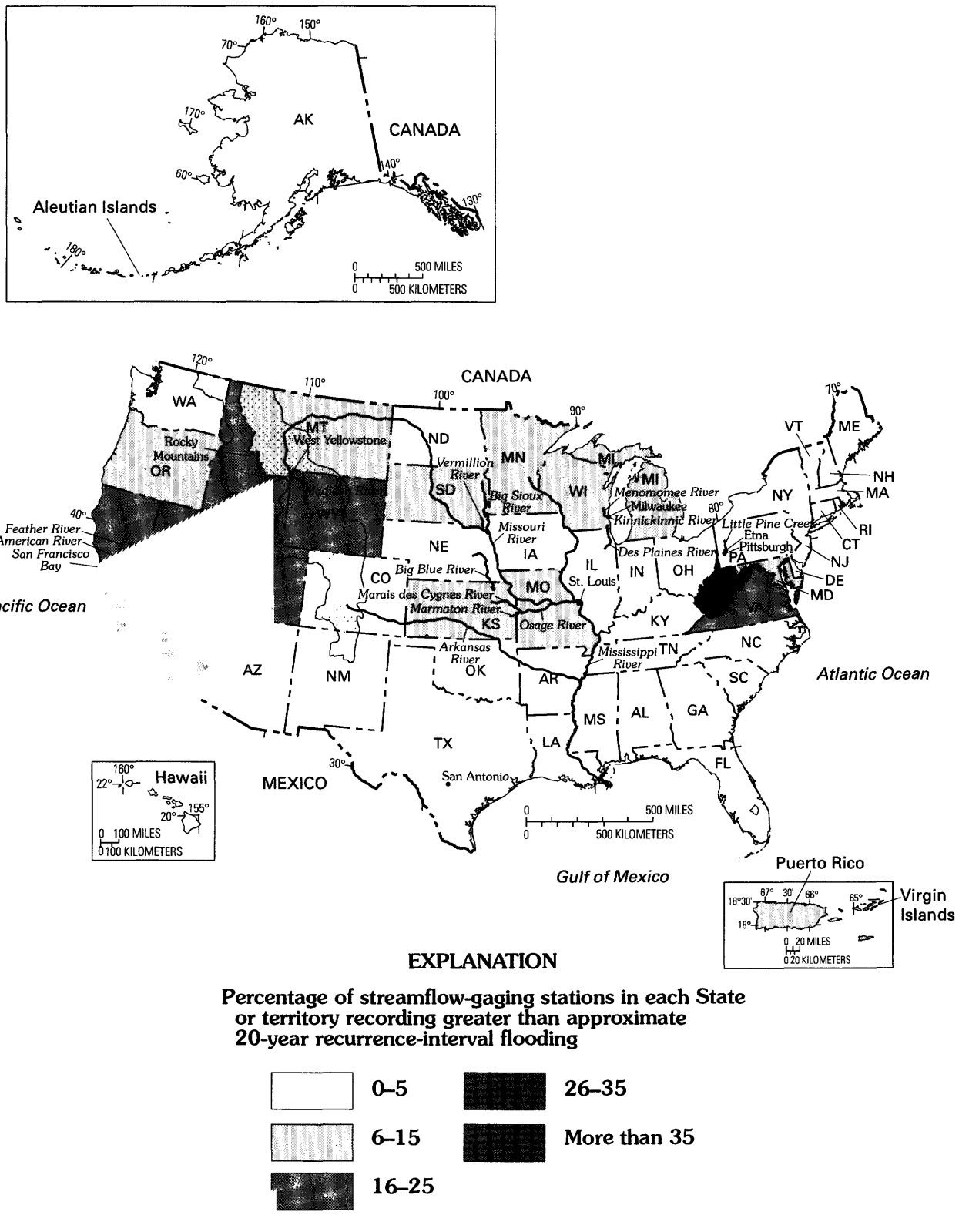

Figure 19. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1986.

the Pacific Ocean moved northeastward along the frontal boundary on October 2 and 3. Hardest hit by the flooding were areas of north-central Oklahoma and southeastern Kansas, which received more than 20 in. of rain during the 8-day period (National Oceanic and Atmospheric Administration, 1986). Severe floods also occurred in the Osage and Arkansas River Basins of Oklahoma, Missouri, and Kansas. Many streams in Oklahoma had maximum discharges with recurrence intervals of 50 to greater than 100 years, and many reservoirs were filled almost to capacity. The Marais des Cygnes and the Marmaton Rivers in Kansas had extremely high stages. Extensive flooding also occurred across much of Missouri as several streams in the Osage River Basin reached maximum flows that were greater than the 100-year recurrence interval. The high flow of the Missouri River, combined with the already high flow in the Mississippi River, produced the fifth highest stage of record for the Mississippi River at St. Louis.

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1987

The first significant flood of 1987 occurred in the Northeastern States and began late in March. Warm temperatures and rainfall accelerated snowmelt runoff. Three separate storms moved through the region during the first week of April. These storms caused severe flooding through Maine, New Hampshire, and Massachusetts (fig. 20). Sixteen streamflow-gaging stations in the three States recorded maximum discharges greater than the 100-year recurrence interval. The hardest hit areas in Maine were the Androscoggin, Kennebec, and Piscataquis River Basins. Record lake levels were reached in at least six flood-control reservoirs in New Hampshire and Vermont. New York was affected by severe flooding along Schoharie Creek, eventually causing failure of a New York State Thruway bridge. The bridge collapse caused 10 deaths and, during preliminary investigations, was attributed to scour around the piers (Zembrzuski, 1990). Total damages were estimated at $100 million in Maine and $65 million in New York (Paulson and others, 1991).

Storms brought excessive amounts of rain to Iowa, Nebraska, Kansas, and Missouri late in May. Extensive flash flooding and record river flooding occurred in southwestern Iowa and southeastern Nebraska on the Nishnabotna and West Nishnabotna Rivers. The same type of weather system moved into Oklahoma and Texas in late May and early June and caused severe flooding. Discharges in the Arkansas and Red River Basins in Oklahoma exceeded the 50- to 100-year recurrence intervals.

Flooding continued in parts of Texas throughout June and into July with significant flooding occurring in southern Texas in mid-June. All major reservoirs in the area reached record levels. On July 16, thunderstorms moved over the San Antonio area producing excessive rainfall. Flooding was concentrated along the Guadalupe River and its tributaries.

Intense rains fell over the divide between the Ohio River and Lake Erie Basins on July 1–2. Rainfall totals were as much as 5 in. in 24 hours in some areas (National Oceanic and Atmospheric Administration, 1987). Other areas had 4 in. of rain in less than 6 hours. Flooding was most severe on the upstream reaches of the Sandusky and Scioto Rivers in Ohio. A few discharges in the area exceeded the estimated 100-year recurrence interval. Four counties in Ohio were declared Federal disaster areas, and the storm caused an estimated $20 million in damages (Mayo and Mangus, 1989).

Central Minnesota was inundated by excessive rains from a succession of thunderstorms during July 20 to 24. At several locations the 100-year, 24-hour record rainfall was exceeded. Many of the suburbs of Minneapolis suffered flash floods.

The worst flood in the history of Chicago, Illinois, struck on August 13 as a result of a succession of thunderstorms that produced excessive rainfall. An official measurement of 9.35 in. in 8 hours (National Oceanic and Atmospheric Administration, 1987) was the greatest for 116 years of record collection. The northern and western metropolitan areas of Chicago bore the brunt of the storm. Significant flash flooding occurred along with general riverine flooding that persisted for many days. Maximum discharges of record occurred at several streamflow-gaging stations on the Des Plaines River and its tributaries. Ponding developed in areas that were normally drained by storm sewers. Areas of northwestern metropolitan Chicago were transformed into large shallow lakes as standing water accumulated to depths of 1 to 3 ft. Damages totalled $62.4 million (Curtis, 1990).

During the first week of September, a tropical depression formed in the Atlantic Ocean and moved over South and North Carolina. Some coastal areas received more than 10 in. of rain in 3 days. Flooding occurred in many areas but was most prevalent in the vicinity of Charleston, South Carolina. The system moved into Virginia on September 5, and produced excessive rainfall that resulted in flooding. Maximum discharges at nine streamflow-gaging stations in Virginia exceeded record highs. Intense rains moved into Maryland and Pennsylvania on September 8 and 9. Flooding in Pennsylvania ranged from flash floods to large-scale river flooding.

A slow-moving storm system produced excessive rain in Puerto Rico in late November and early December. Severe flash floods occurred over the southeastern and eastern parts of the island. The Río Valenciano had a discharge with a greater than 30- to 50-year recurrence interval.

Damaging floods occurred in Hawaii on December 12–13, and again on December 31 and January 1, 1988. The later period of flooding was caused by a low-pressure system that developed west of the islands and produced very intense rains as it moved eastward across the islands. Significant flooding occurred on the island of Hawaii. The U.S. Geological Survey streamflow-gaging station on the Wailuha River at Hilo was washed away. More than 20 in. of rain in 24 hours fell

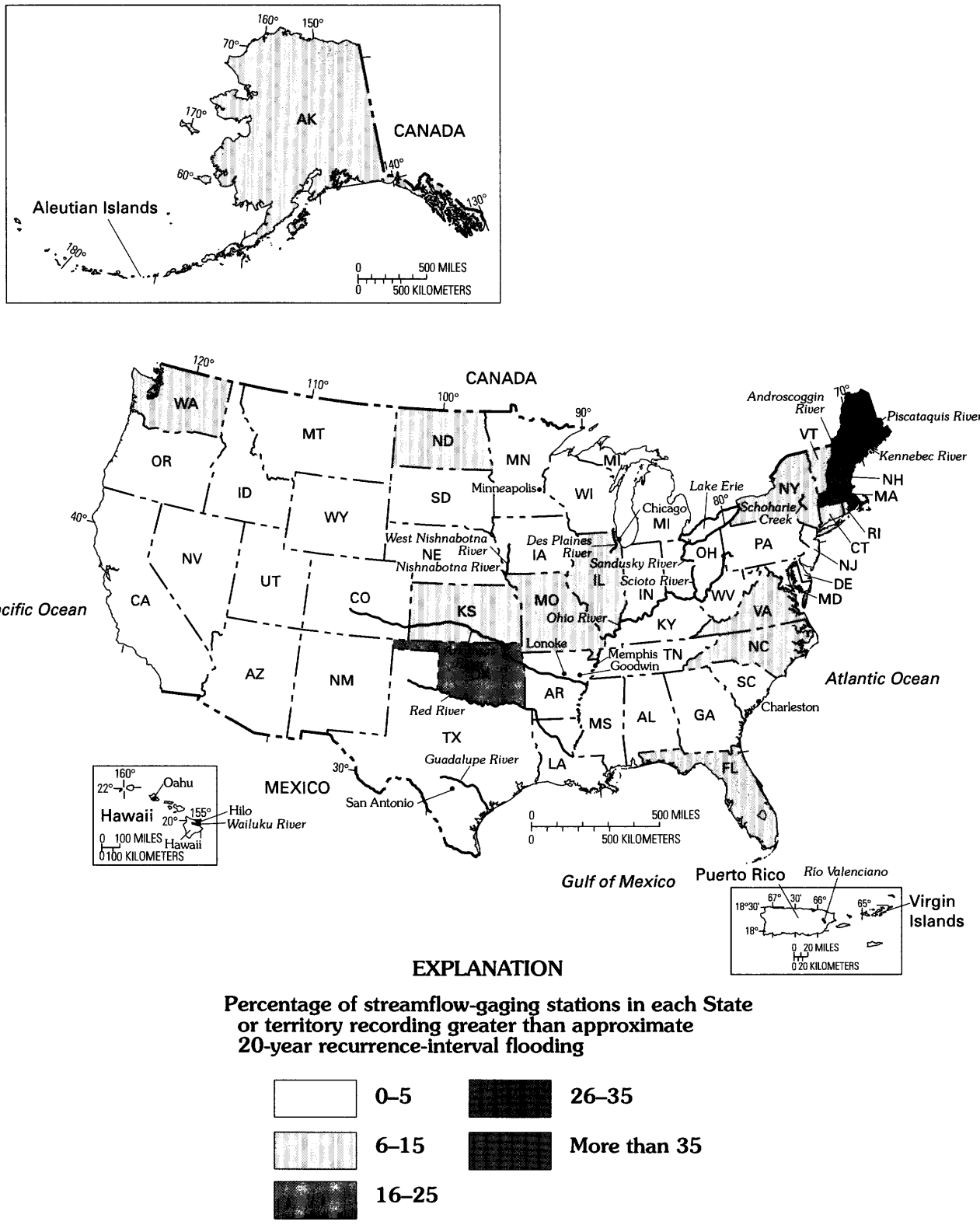

Figure 20. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1987.

over Oahu on New Year's Eve (National Oceanic and Atmospheric Administration, 1987) and produced extensive flash flooding in the valleys of that island. Total damages were estimated at $35 million.

Excessive rains began on Christmas Eve in the south-central United States and continued for 4 days. The most intense rains were centered over Memphis, Tennessee. Rainfall totalled as much as 14 in. in western Tennessee and 12 in. in northeastern Arkansas (National Oceanic and Atmospheric Administration, 1987). The discharges on the Bayou Meto near Lonoke and Big Creek at Goodwin, Arkansas, were between 50- and 100-year recurrence intervals.

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1988

Many areas throughout the United States were affected by drought conditions in 1988. There were few significant widespread floods (fig. 21). A few flash floods occurred during the summer months due to localized, intense rains from thunderstorms. Several flash floods occurred during the summer.

On April 1 and 2, southern Kansas received 3 to 7 in. of localized rain (National Oceanic and Atmospheric Administration, 1988), which caused flash floods. New Orleans, Louisiana, received 7 to 9 in. of rain on April 1 and 2 (National Oceanic and Atmospheric Administration, 1988). Severe flooding occurred, and $18 million in damages resulted. Albuquerque, New Mexico, had $3 million in damages as a result of flash flooding on July 5–9.

Tropical Storm Beryl hit Louisiana and Mississippi in early August. The storm brought as much as 15 in. of rain to coastal counties of Mississippi (National Oceanic and Atmospheric Administration, 1988). Significant flooding occurred on the Biloxi River in Mississippi.

Hurricane Gilbert, the first category five hurricane to make landfall since 1969, struck Louisiana and Texas on September 15 through 19. The storm caused coastal floods in Louisiana and produced excessive rains across Texas and Oklahoma.

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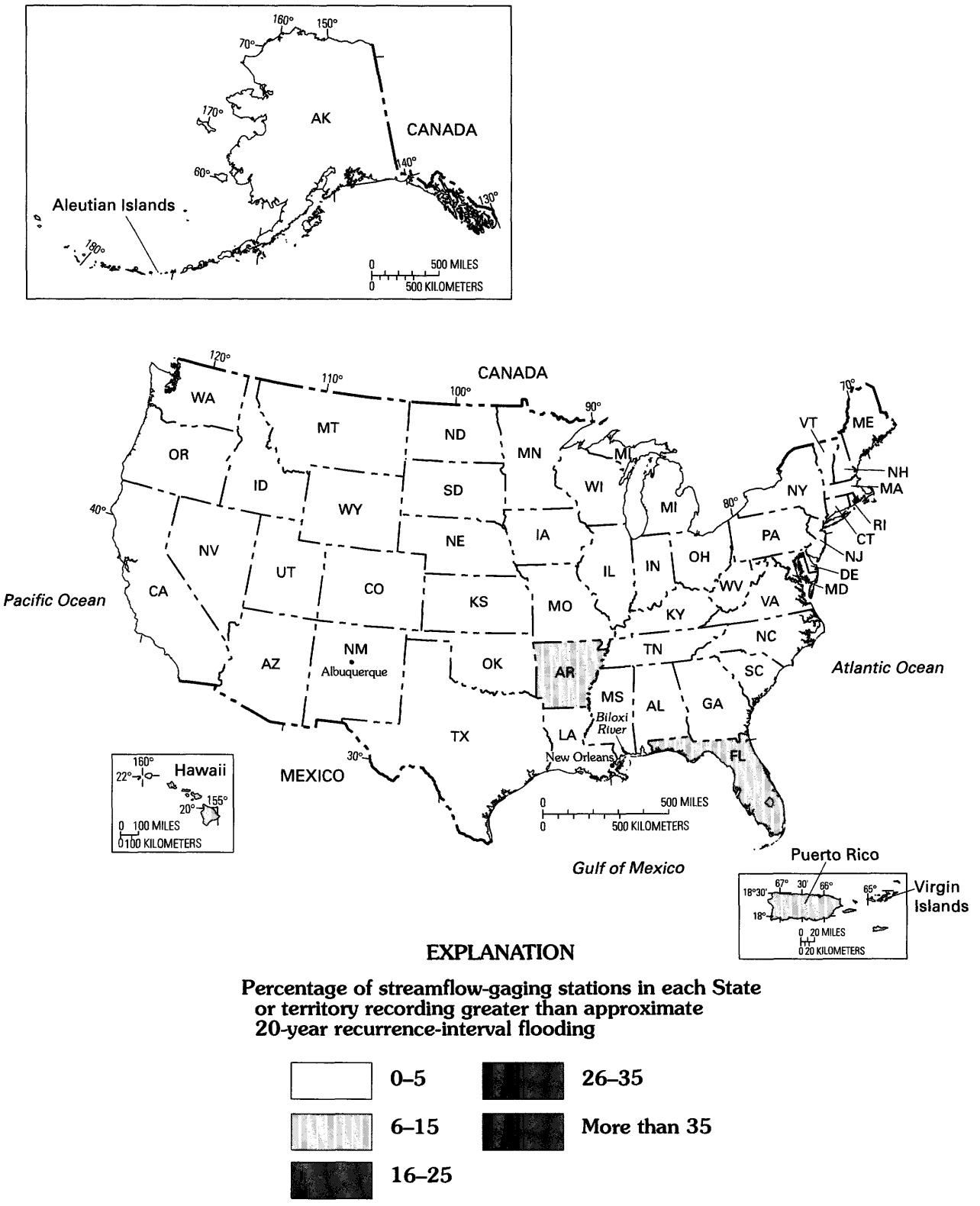

Figure 21. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1988.

1989

The first significant floods of 1989 struck the Ohio and middle Mississippi River Basins in February (fig. 22). Severe flooding occurred in Kentucky, Tennessee, and Ohio on February 12–16. Additional floods occurred in the same area on March 4–6. The Hatchie River in Tennessee was above flood stage for 3 months during late winter and early spring.

Severe floods struck central Indiana and southwestern Ohio late in May. A maximum of record occurred on Seven Mile Creek at Camden, Ohio.

Numerous minor flash floods occurred at many locations in the United States throughout the months of June and July. Nearly all of them were due to intense rains that fell during short periods of time from thunderstorms, resulting in rapid rises on rivers and streams. Flash flooding was intensified in urban areas because large areas of impervious surfaces increase runoff.

Tropical Storm Allison brought extensive rains to southeastern Texas, Louisiana, and Oklahoma in late June and early July. Significant flooding was reported throughout Texas and Louisiana. The storm made landfall northeast of Galveston and moved northeastward through eastern Texas and western Louisiana. Remnants of the storm produced flood-causing rains in New Jersey, Pennsylvania, Delaware, and Maryland.

Hurricane Hugo caused severe coastal and riverine flooding during September. Before striking the southeastern United States, Hugo devastated the Virgin Islands and eastern Puerto Rico with coastal flooding due to storm surges of as much as 11 ft and riverine flooding from more than 10 in. of rain in a 2-day period. When the hurricane hit South Carolina, storm surges of as much as 20 ft flooded the coastal areas. The hurricane killed 26 persons and caused $9 billion in damages (National Oceanic and Atmospheric Administration, 1990).

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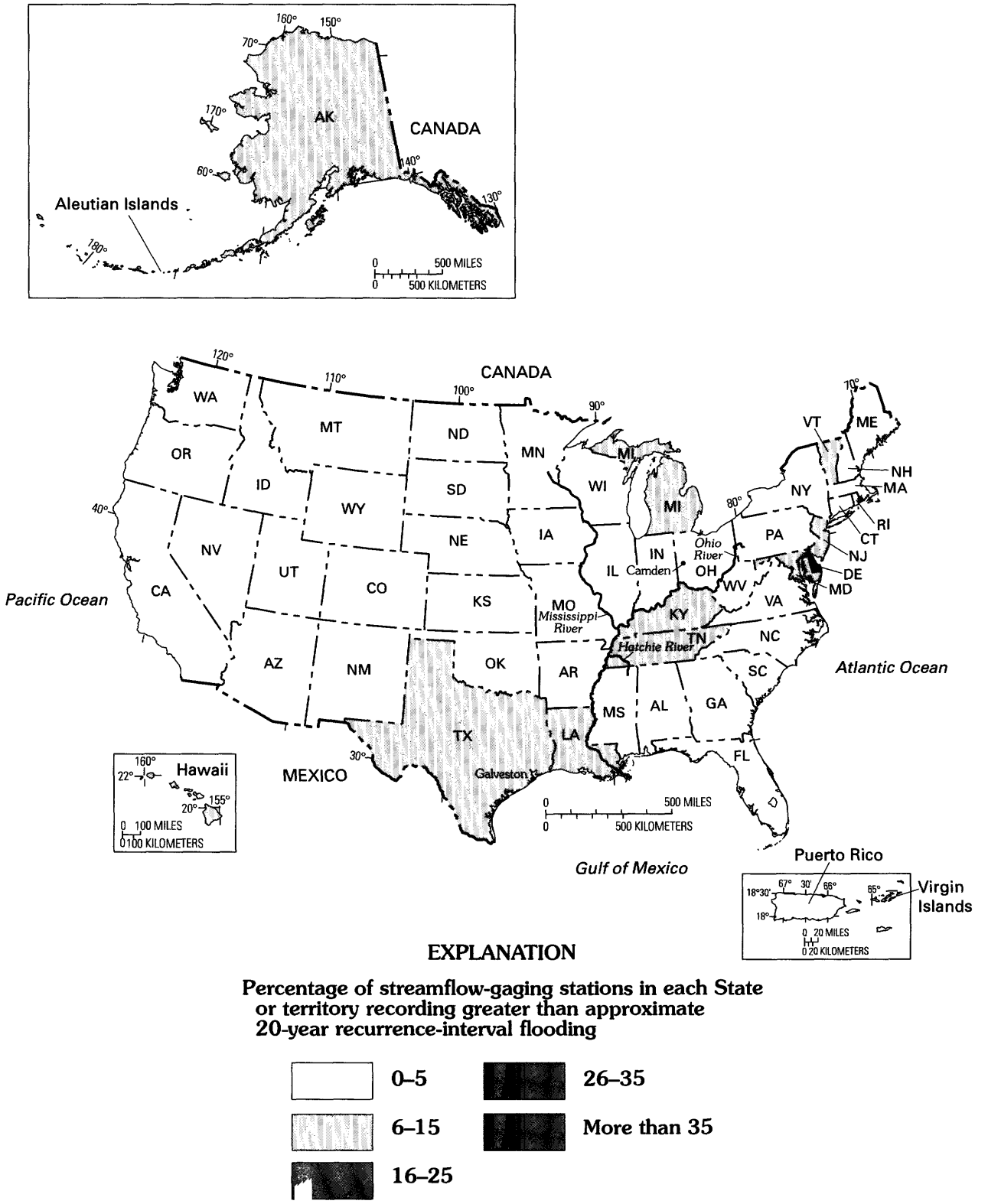

Figure 22. Percentage of streamflow-gaging stations in each State or territory recording greater than approximate 20-year recurrence-interval flooding during 1989.

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Significant Floods, 1970 Through 1989, By State or Territory

In addition to the specific flood data, this section provides a description of the hydroclimatology and a summary of significant floods for each State or territory in the United States. The summary of significant floods includes those with loss of life or excessive damage during the period 1970 through 1989. The floods that were in the top 5 percent of each streamflow-gaging station's record during this period are tabulated, and an estimated recurrence interval is provided along with other pertinent data. A map of each State or territory is supplied to locate the streamflow-gaging stations.

Alabama

Hydroclimatology

Alabama is located in the southeastern United States and is bordered on the south by the Gulf of Mexico. The principal sources for the State's moisture are the Gulf of Mexico and the subtropical Atlantic Ocean (Paulson and others, 1991). Winter precipitation results from frontal systems and cyclone development in the Gulf. Summer precipitation results from thunderstorms and, occasionally, tropical storms and hurricanes. Mean annual precipitation ranges from about 50 in. in the northern part of the State to about 65 in. in the southern part. The statewide mean annual rainfall is about 55 in. (Paulson and others, 1991).

Significant floods in Alabama typically result from precipitation and high coastal waters associated with hurricanes, tropical storms, and tropical depressions; thunderstorms; and slow-moving or stationary frontal systems. The chance for flooding increases in the spring when the ground is already saturated with previous rain causing the runoff to be greater.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for rural Alabama streams is dependent on drainage area and storage, which is the percentage of the basin occupied by swamps, ponds, or reservoirs. For urban areas, maximum discharge depends on drainage area and percentage of the basin underlain by impervious surface (Jennings and others, 1994).

Significant Floods

The flood of March and April 1979 was the most extensive in Alabama during 1970–89. Twenty-eight percent of the streamflow-gaging stations in the State recorded significant discharges at this time. Central Alabama was the most severely affected. The flooding was caused by a series of early spring storms in the region that produced extremely moist soil conditions. The average rainfall during the flood was more than 8 in. in the Tombigbee River Basin, and the maximum was 17.3 in. at Pickensville (Paulson and others, 1991). The combined flow of the Tombigbee and the Black Warrior Rivers produced the largest known flood since 1874. Maximum discharges were the largest of record on the Sucarnoochee River at Livingston (station 2467500, fig. 23).

Torrential rains during a 48-hour period produced the flood of 1973. Eleven percent of the streamflow-gaging stations recorded significant discharges. This flood caused severe flooding in the upper Tombigbee and Tennessee River Basins. Rainfall was greatest in northwestern Alabama, as Hamilton received 10.5 in. (Paulson and others, 1991). This flood was the largest of record for the Flint River near Chase (station 3575000, fig. 23). Maximum discharges had greater than the 100-year recurrence interval on the Buttahatchee River, a major tributary to the upper Tombigbee River.

The location of streamflow-gaging stations in Alabama that had significant floods for 1970–89 is shown in figure 23 by station number. The specific data for each significant flood are listed in table 2. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

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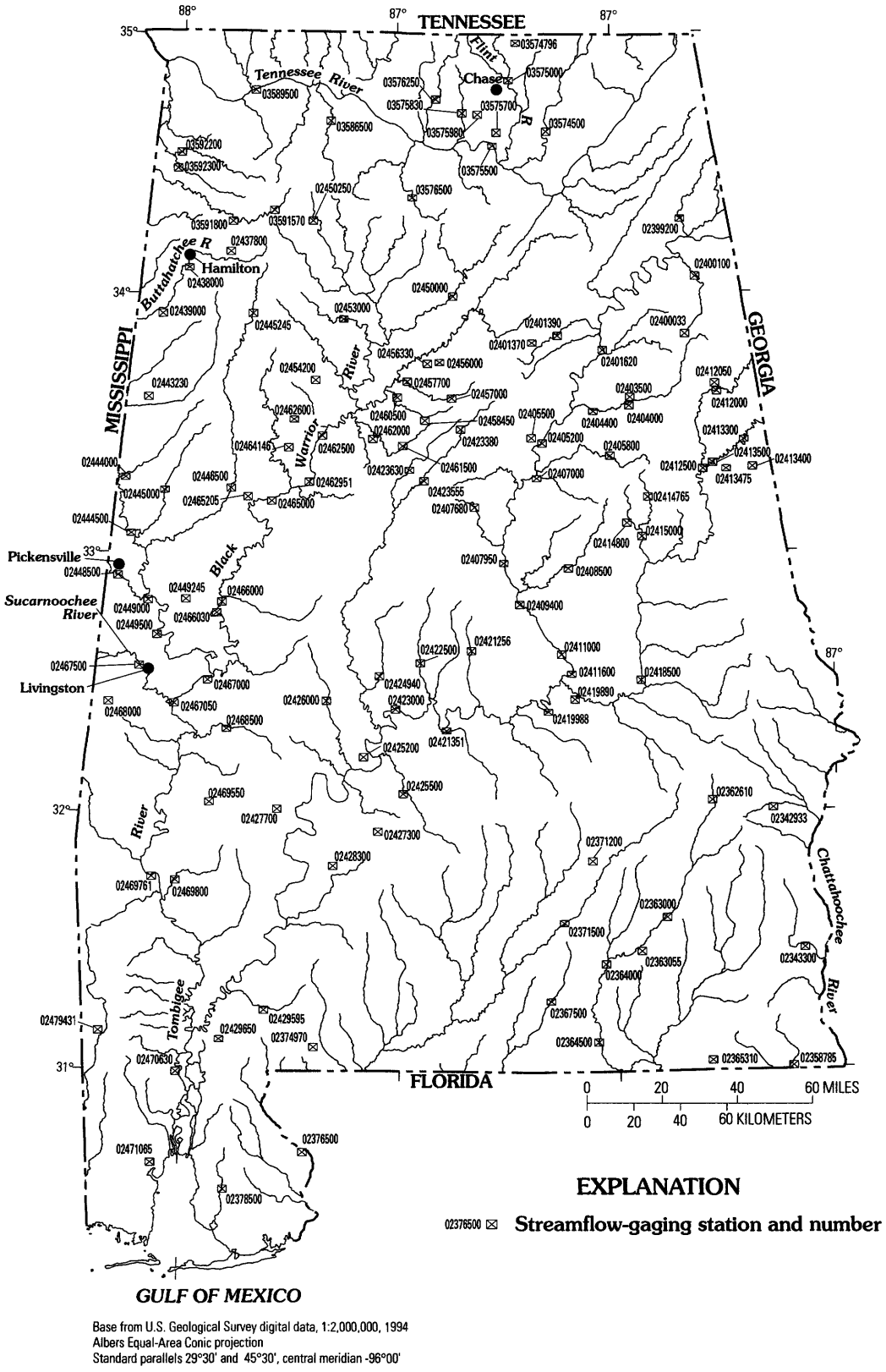

Figure 23. Location of streamflow-gaging stations with significant floods during 1970–89 for Alabama.

Table 2. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alabama

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
Station number (fig. 23)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02342933	South Fork Cowikee Creek near Batesville, AL	112	1964–95	1990	43.40	28,200	2/17/75	37.08	18,100	N	50
02343300	Abbie Creek near Haleburg, AL	146	1958–94	1994	37.00	35,000	3/31/70	23.84	7,590	N	25
02358785	Cowarts Creek at State Route 53 near Cottonwood, AL	103	1971–80, 1994	1975	12.59	14,400	4/10/75	12.59	14,400	N	10–25
02362610	Pea River near Midway, AL	18.7	1973–82, 1990, 1994	1975	14.75	5,350	2/17/75	14.75	5,350	N	50–100
02363000	Pea River near Ariton, AL	498	1929, 1939–95	1929	25.00	53,000	2/18/75	24.38	47,600	N	>100
02363055	Moores Branch near Victoria, AL	2.17	1973–82	1974	4.40	510	12/31/73	4.40	510	N	2–5
02364000	Pea River at Elba, AL	959	1929, 1936–55, 1972–95	1929	43.50	90,000	2/19/75	37.26	39,000	Y	25
02364500	Pea River near Samson, AL	1,182	1905–13, 1923–25, 1929, 1936–70, 1975	1929	45.30	85,000	4/--/73	--	32,000	Y	15
02365310	Grants Branch tributary near Fadette, AL	1.44	1972–81	1973	9.80	1,360	9/10/73	9.80	1,360	N	25–50
02367500	Lightwood Knot Creek at Babbie, AL	114	1944–72, 1975, 1990	1990	15.73	26,000	4/13/75	14.70	21,600	N	50–100
02371200	Indian Creek near Troy, AL	8.87	1959–86, 1990, 1994	1975	7.75	3,950	2/17/75	7.75	3,950	N	50–100
02371500	Conecuh River at Brantley, AL	500	1929, 1938–95	1990 1929	24.44 26.00	25,700 25,000	2/19/75	24.51	19,800	N	25
02374970	Sizemore Creek near Robinsonville, AL	79.4	1971–81	1980	29.81	10,400	4/13/80	29.81	10,400	N	10–25
02376500	Perdido River at Barrineau Park, FL	394	1929, 1942–95	1955 1929	23.94 25.70	39,000 --	4/09/83	20.86	24,100	N	25–50
02378500	Fish River near Silverhill, AL	55.3	1954–69, 1971, 1987–95	1989	19.28	14,300	6/09/89	19.28	14,300	N	25–50
02399200	Little River near Blue Pond, AL	199	1948, 1958–95	1985	16.98	53,800	7/24/85	16.98	53,800	N	>100
02400033	Nances Creek near White Plains, AL	4.62	1971–81	1974	7.53	1,430	4/04/74	7.53	1,430	N	10–25
02400100	Terrapin Creek at Ellisville, AL	252	1963–95	1979	19.82	20,100	3/04/74 3/04/79	19.07 19.82	16,700 20,100	N N	10–25 25–50
02401370	Big Canoe Creek near Springville, AL	45.0	1979–94	1983	12.79	4,870	12/01/82	12.79	4,870	N	10–25
02401390	Big Canoe Creek at Ashville, AL	141	1966–95	1979	18.75	13,600	4/13/79	18.75	13,600	N	100
02401620	Coosa River at H. Neely Henry Dam near Ohatchee, AL	6,596	1966–79	1979	--	93,700	4/13/79	--	93,700	Y	--
02403500	Coldwater Spring near Anniston, AL	--	1945, 1946, 1958–95	1976	--	66	4/01/76	--	66	N	--

Table 2. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alabama—Continued

Station number (fig. 23)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02404000	Choccolocco Creek near Jenifer, AL	277	1904–07, 1930–70, 1979	1979	17.85	23,000	4/13/79	17.85	23,000	N	20
02404400	Choccolocco Creek at Jackson Shoal near Lincoln, AL	481	1961–71, 1975–95	1963	39.98	36,900	3/30/77	39.54	35,800	N	25
02405200	Coosa River at Logan Martin Dam near Vincent, AL	7,743	1965–79	1979	--	115,000	4/15/79	--	115,000	Y	--
02405500	Kelly Creek near Vincent, AL	193	1952–70, 1979, 1987–95	1979	27.39	33,400	4/13/79	27.39	33,400	N	50–100
02405800	Talladega Creek above Talladega, AL	69.6	1958–70	1970	12.70	6,550	3/19/70	12.70	6,550	N	5–10
02407000	Coosa River at Childersburg, AL	8,392	1914–95	1979 1970	28.99 --	150,000 94,600	4/14/79	28.99	150,000	Y	50
02407680	Waxahatchee Creek near Columbiana, AL	32.9	1972–82	1977	16.32	8,320	3/29/77	16.32	8,320	N	10–25
02407950	Coosa River at Lay Dam near Clanton, AL	9,053	1963–79	1979	--	196,700	4/13/79	--	196,700	Y	--
02408500	Hatchet Creek near Rockford, AL	233	1945–79	1979	31.83	66,000	4/13/79	31.83	66,000	N	>100
02409400	Coosa River at Mitchell Dam near Verbena, AL	9,778	1938–63, 1965, 1967–77, 1979	1979	--	281,000	4/13/79	--	281,000	Y	--
02411000	Coosa River at Jordan Dam near Wetumpka, AL	10,102	1913–14, 1927–95	1979	47.67	316,000	4/13/79	47.67	316,000	Y	75–100
02411600	Coosa River at Wetumpka, AL	10,148	1893–95	1938	57.9	--	1/11/72	44.60	--	Y	--
02412000	Tallapoosa River near Heflin, AL	448	1953–95	1977	31.34	32,500	3/31/77	31.34	32,500	N	100
02412050	Cane Creek at U.S. Highway 78 near Heflin, AL	52.8	1972–82	1977	12.55	9,650	3/29/77	12.55	9,650	N	25–50
02412500	Tallapoosa River near Ofelia, AL	792	1920, 1939–70, 1979	1920	21.00	41,000	3/--/77	--	39,600	N	50
02413300	Little Tallapoosa River near Newell, AL	406	1976–95	1976	18.18	14,100	3/16/76	18.18	14,100	Y	10–25
02413400	Wedowee Creek above Wedowee, AL	6.87	1960–72, 1979	1979	8.22	1,900	4/13/79	8.22	1,900	N	50
02413475	Wedowee Creek near Wedowee, AL	46.6	1951–75, 1979	1979	14.10	4,870	4/13/79	14.10	4,870	N	10–25
02413500	Little Tallapoosa River near Wedowee, AL	591	1919, 1938–70, 1979	1919	23.00	30,000	3/--/76 3/--/77	-- --	30,000 27,800	N N	50 25
02414765	Enitachopco Creek below Ashland, AL	26.2	1972–81	1979	15.38	8,820	3/04/79	15.38	8,820	N	25–50
02414800	Harbuck Creek near Hackneyville, AL	7.97	1951–70, 1979	1979	11.87	6,260	4/14/79	11.87	6,260	N	>100
02415000	Hillabee Creek near Hackneyville, AL	190	1953–73, 1979, 1986–95	1979	28.10	26,400	4/14/79	28.10	26,400	N	>100
02418500	Tallapoosa River below Tallassee, AL	3,328	1920, 1929–95	1920 1929	-- 51.35	177,000 115,000	4/14/79	8.63	128,000	Y	25

Table 2. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alabama—Continued

Station number (fig. 23)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02419890	Tallapoosa River near Montgomery-Montgomery Water Works, AL	4,646	1973–95	1973	31.40	--	4/02/73	31.40	--	Y	--
02419988	Alabama River at Montgomery, AL	15,023	1890–95	1979	51.80	--	4/16/79	51.80	--	Y	--
02421256	Swift Creek near Vida, AL	89.4	1971–81	1979	63.93	20,200	3/04/79	63.93	20,200	N	10–25
02421351	Alabama River below Robert F Henry Lock and Dam near Benton, AL	16,233	1972–95	1979	133.00	-- --	4/18/79	133.00	--	Y	--
02422500	Mulberry Creek at Jones, AL	203	1938–84, 1986–95	1938	33.60	48,000	4/14/79	25.26	21,800	N	25
02423000	Alabama River at Selma, AL	17,095	1886, 1891–95	1961	57.97	284,000	4/18/79	55.02	211,000	Y	35
02423380	Cahaba River near Mountain Brook, AL	140	1979, 1981, 1985–95	1979	20.60	19,000	4/13/79	20.60	19,000	N	--
02423555	Cahaba River near Helena, AL	335	1965, 1967–73, 1975–81	1976	34.85	22,800	3/16/76	34.85	22,800	N	10–25
02423630	Shades Creek near Greenwood, AL	72.3	1965–81	1979	13.19	10,900	4/13/79	13.19	10,900	N	--
02424940	Oakmulgee Creek near Augustin, AL	220	1976–87	1979	19.53	12,900	3/05/79	19.53	12,900	N	10–25
02425200	Big Swamp Creek near Orrville, AL	35.8	1973–85	1979	14.05	3,330	4/04/79	14.05	3,330	N	10–25
02425500	Cedar Creek at Minter, AL	211	1953–82	1975	26.53	99,800	2/17/75	26.53	99,800	N	>100
02426000	Boguechitto Creek near Browns, AL	95.4	1943–58, 1960–73, 1979	1943	20.70	19,000	3/--/76	--	17,000	N	50
02427300	Prairie Creek near Oak Hill, AL	10.3	1960–74	1972	15.00	1,860	3/02/72	15.00	1,860	N	10–25
02427700	Turkey Creek at Kimbrough, AL	97.5	1958–95	1962	25.02	39,600	3/04/79	23.37	20,000	N	25–50
02428300	Tallatchee Creek near Vredenburgh, AL	13.2	1959–74	1972	13.27	9,650	3/01/72	13.27	9,650	N	>50
02429595	Little River near Uriah, AL	99.2	1969–79	1974	16.14	12,500	9/08/74	16.14	12,500	N	>50
02429650	Majors Creek at State Highway 59 near Tensaw, AL.	44.4	1971–81	1980	16.29	5,660	4/13/80	16.29	5,660	N	10–25
02437800	Barn Creek near Hackleburg, AL	13.1	1959–73	1973	14.76	5,160	3/16/73	14.76	5,160	N	25–50
02438000	Buttahatchee River below Hamilton, AL	277	1951–73, 1975–95	1973	35.49	49,500	3/16/73	35.49	49,500	N	>100
02439000	Buttahatchee River near Sulligent, AL	472	1939–60, 1972–85	1973	17.31	60,100	3/17/73	17.31	60,100	N	>100
02443230	Mud Creek near Fernbank, AL	35.8	1972–83	1979	34.91	4,650	4/13/79	34.91	4,650	N	10–25
02444000	Coal Fire Creek near Pickensville, AL	126	1955–80	1979	11.74	16,400	4/13/79	11.74	16,400	N	50–100
02444500	Tombigbee River near Cochrane, AL	5,940	1892, 1939–79, 1982–95	1892	50.20	255,000	3/21/73	47.37	166,000	Y	--
02445000	Lubbub Creek near Carrollton, AL	112	1955–67, 1969, 1979	1979	16.00	19,200	4/13/79	16.00	19,200	N	>50

Table 2. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alabama—Continued

Station number (fig. 23)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02445245	New River near Winfield, AL	59.3	1951–73	1973	24.30	7,970	3/16/73	24.30	7,970	N	10–25
02446500	Sipsey River near Elrod, AL	528	1930–32, 1940–71, 1979–95	1961	18.83	27,800	4/13/79	17.85	23,100	N	10–25
02448500	Noxubee River near Geiger, AL	1,097	1929–95	1979	48.58	156,000	4/14/79	48.58	156,000	N	>100
							5/22/83	41.38	34,400	N	--
02449000	Tombigbee River at Gainesville, AL	8,632	1892, 1939–81, 1983–91	1979	56.28	261,000	3/23/73	54.21	172,000	Y	--
				1892	58.40	250,000	4/15/79	56.28	261,000	Y	--
02449245	Brush Creek near Eutaw, AL	43.2	1971–73, 1975–95	1979	22.68	8,560	4/13/79	22.68	8,560	N	25–50
				1990	23.54	7,950					
02449500	Tombigbee River at Epes, AL	8,930	1901, 1905–13, 1939–45, 1979, 1990–95	1979	55.77	247,000	4/16/79	55.77	247,000	Y	--
02450000	Mulberry Fork near Garden City, AL	365	1929–95	1990	25.04	66,500	1/03/82	22.45	52,100	N	40
02450250	Sipsey Fork near Grayson, AL	92.1	1967–95	1973	44.27	20,300	3/16/73	44.27	20,300	N	50–100
02453000	Blackwater Creek near Manchester, AL	181	1939–71, 1979–82, 1989–95	1961	13.10	10,600	4/14/79	11.69	8,550	N	25
02454200	Wolf Creek near Oakman, AL	85.0	1958–70, 1979	1970	26.50	15,000	3/20/70	26.50	15,000	N	25–50
02456000	Turkey Creek at Morris, AL	80.9	1943–79	1970	23.12	15,600	3/19/70	23.12	15,600	N	40
02456330	Crooked Creek near Morris, AL	16.2	1976–88	1983	23.49	10,600	5/19/83	23.49	10,600	N	25–50
02457000	Fivemile Creek at Ketona, AL	23.9	1954–79	1970	14.94	4,970	3/19/70	14.94	4,970	N	--
02457700	Fivemile Creek at Linn Crossing, AL	96.2	1965–75	1970	21.73	14,500	3/20/70	21.73	14,500	N	>50
02458450	Village Creek at Avenue W at Ensley, AL	33.5	1976–79, 1989–95	1977	13.26	5,730	9/07/77	13.26	5,730	N	--
02460500	Village Creek near Adamsville, AL	83.5	1954–58, 1965, 1973–81	1970	23.15	19,700	3/19/70	23.15	19,700	Y	--
02461500	Valley Creek near Bessemer, AL	52.5	1976–79, 1989–95	1979	17.06	11,300	4/13/79	17.06	11,300	N	--
02462000	Valley Creek near Oak Grove, AL	148	1916, 1936, 1954–95	1984	33.98	32,000	12/04/83	33.98	32,000	N	50–100
02462500	Black Warrior River at Bankhead Lock and Dam near Bessemer, AL	3,979	1929–36, 1977–95	1979	82.10	143,000	4/13/79	82.10	143,000	Y	25–50
02462600	Blue Creek near Oakman, AL	5.32	1960–73, 1977–84	1970	7.70	4,250	3/19/70	7.70	4,250	N	10–25
02462951	Black Warrior River at Holt Lock and Dam near Holt, AL	4,219	1977–95	1979	--	178,000	4/13/79	--	178,000	Y	10–25
				1984	190.19	158,000					
02464146	Turkey Creek near Tuscaloosa, AL	6.16	1981–84, 1987–95	1984	11.98	3,500	12/03/83	11.98	3,500	N	--
02465000	Black Warrior River at Northport, AL	4,820	1900, 1929–95	1979	66.85	272,000	4/13/79	66.85	272,000	Y	>100
				1900	67.70	215,000	12/03/84	--	271,000	Y	

Table 2. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alabama—Continued

Station number (fig. 23)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02465205	Jay Creek near Coker, AL	3.65	1964–71, 1973–74	1971	7.20	1,470	2/21/71	7.20	1,470	N	10–25
02466000	Black Warrior River near Eutaw, AL	5,792	1933–57, 1961, 1977–81	1979 1961	-- 60.30	222,000 213,000	4/16/79	--	222,000	Y	50–100
02466030	Black Warrior River at Selden Lock and Dam near Eutaw, AL	5,810	1977–95	1979	58.87	222,000	4/16/79	58.87	222,000	Y	--
02467000	Tombigbee River at Demopolis Lock and Dam near Coatopa, AL	15,385	1929–95	1979	37.03	343,000	4/18/79	37.03	343,000	Y	65–70
02467050	Tombigbee River at U.S. Highway 80 near Coatopa, AL	15,500	1893–16, 1918–29, 1979–80	1979	--	343,000	4/18/79	--	343,000	Y	--
02467500	Sucarnoochee River at Livingston, AL	607	1939–76, 1978–95	1979	33.47	62,200	4/14/79	33.47	62,200	N	>100
02468000	Alamuchee Creek near Cuba, AL	62.3	1955–70, 1979	1979	18.87	14,700	4/14/79	18.87	14,700	N	>50
02468500	Chickasaw Bogue near Linden, AL	257	1944–46, 1966–91	1979 1945	30.18 30.33	38,700 33,000	3/04/79	30.18	38,700	N	50–100
02469550	Horse Creek near Sweetwater, AL	60.4	1958–79	1979	18.66	28,100	3/08/79	18.66	28,100	N	25–50
02469761	Tombigbee River at Coffeeville Lock and Dam near Coffeeville, AL	18,417	1874, 1961–95	1979	65.46	290,000	4/22/79	65.46	290,000	Y	50–100
02469800	Satilpa Creek near Coffeeville, AL	164	1956–95	1956	18.37	25,600	3/04/79	17.33	23,400	N	40–50
02470630	Mobile River at Barry Power Plant Bucks, AL	43,000	1951, 1953–95	1961	18.19	539,000	4/25/79	17.72	498,000	Y	30–40
02471065	Montlimar Creek at U.S. Highway 90 at Mobile, AL	8.57	1963–67, 1975–83	1981	13.17	5,530	5/06/81	13.17	5,530	N	--
02479431	Pond Creek near Deer Park, AL	20.4	1977–95	1983	21.00	3,780	4/07/83	21.00	3,780	N	10–25
03574500	Paint Rock River near Woodville, AL	320	1936–95	1973	24.40	74,200	3/16/73	24.40	74,200	N	>100
03574796	Walker Branch near Plevna, AL	0.44	1902–75	1973	8.67	276	3/16/73	8.67	276	N	50–55
03575000	Flint River near Chase, AL	342	1929–81, 1983–94	1973 1991	29.52 31.04	104,000 87,300	3/16/73	29.52	104,000	N	>100
03575500	Tennessee River at Whitesburg, AL	25,610	1867, 1925–36, 1938–95	1973 1867	26.06 31.40	323,000 --	3/19/73	26.06	323,000	Y	--
03575700	Aldridge Creek near Farley, AL	14.10	1961–64, 1985–95	1988	10.95	3,660	1/19/88	10.95	3,660	N	--
03575830	Indian Creek near Madison, AL	49.0	1960–95	1973	12.70	16,500	3/16/73	12.70	16,500	N	>100
03575980	Mcdonald Creek at Patton Road near Huntsville, AL	9.02	1985–94	1988	9.63	5,100	1/19/88	9.63	5,100	N	--
03576250	Limestone Creek near Athens, AL	119	1940–82, 1984–85, 1992–95	1973	17.28	45,800	3/16/73	17.28	45,800	N	>100
03576500	Flint Creek near Falkville, AL	86.3	1953–73, 1991, 1993–95	1973 1991	15.85 19.28	12,500 --	3/16/73	15.85	12,500	N	40–50

Table 2. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alabama—Continued

Station number (fig. 23)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03586500	Big Nance Creek at Courtland, AL	166	1936–40, 1946–81, 1988–95	1973	24.97	27,200	3/16/73	24.97	27,200	N	>100
03589500	Tennessee River at Florence, AL	30,810	1867, 1895–95	1973 1897	30.03 32.50	530,000 444,000	3/17/73	30.03	530,000	Y	--
03591570	Bear Creek at Posey Mill, AL	26.8	1964–75	1973	26.38	4,200	3/16/73	26.38	4,200	N	50–100
03591800	Bear Creek near Hackleburg, AL	143	1957–79, 1981	1973	39.00	24,000	3/16/73	39.00	24,000	N	>100
03592200	Cedar Creek near Pleasant Site, AL	189	1948, 1951, 1955, 1958–77	1973	28.02	27,100	3/16/73	28.02	27,100	N	>100
03592300	Little Bear Creek near Halltown, AL	78.2	1951–77	1973	18.18	20,400	3/16/73	18.18	20,400	Y	>100

[1]Regulated during flood: N, no; Y, yes.

Alaska

Hydroclimatology

Alaska is located northwest of the conterminous United States and Canada. Alaska is bordered on three sides by different bodies of water—the Bering Sea, the North Pacific Ocean, the Chukchi Sea, and the Arctic Ocean. The moisture in Alaska is mainly controlled by storms originating over the North Pacific Ocean or the southern perimeter of the Bering Sea (Paulson and others, 1991). These storms travel northeastward from their point of origin toward southeastern Alaska and the Gulf of Alaska during most of the year. During summer, these storms typically change path and move more northward over the Bering Sea and Bering Strait. These storms partly regulate the geographic distribution of seasonal and annual precipitation, and the change in direction of the storms results in storms occurring in the interior of Alaska more during the summer than during the winter. Mean annual precipitation ranges from 320 in. in southeastern Alaska to less than 5 in. in northern Alaska near the Arctic Ocean (Paulson and others, 1991).

Alaska can be divided into four climatic zones. This division was necessary because of the great climatic differences resulting from the size of the State, the topography, and the mechanisms by which temperature and precipitation are affected by the oceans on three sides. The zones are defined progressively northward and are characterized as follows. The areas along the southern coast have small temperature variations, large annual precipitation, relatively cool summers, and relatively warm winters that have short periods of below-freezing temperatures. The southwestern and western coasts have greater daily and seasonal temperature variations and less precipitation than the southern coastal areas. The interior of the State has a continental climate with large daily and annual temperature ranges and a small quantity of annual precipitation. The northern coast has less temperature variation, less precipitation (especially near the Arctic Ocean), and lower mean annual temperature than the interior part of the State. Precipitation is greatest during August along the northern coast and in continental areas, and during October in the southern coastal area.

When the temperatures are mild, local flooding is caused by convective storms. Warm temperatures also bring the probability of the melting of the snowpack and associated flooding. Serious flooding in Alaska is difficult to determine due to the extensive area of the State that is undeveloped.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Alaska depends largely on the drainage area of the basin, mean annual precipitation, and minimum January temperature. The percentage of the drainage area that is forested and the lake storage areas also affect runoff (Jennings and others, 1994).

Significant Floods

The flood of October 1986 was the most extensive in Alaska during 1970–89. In south-central Alaska, almost 18 in. of rainfall during August 9–11 caused flooding around Seward, and a separate but concurrent storm in the Susitna River Basin caused floods having recurrence intervals greater than 100 years. Landslides and landslide-dam failures and resultant floods, debris flows, alluvial-fan aggradation, and flooding in and around Seward caused about $20 million in damages, but short-term streamflow records and unstable channels precluded accurate discharge or recurrence-interval determinations in the most extensively damaged area (Jones and Zenone, 1988; Lamke and Bigelow, 1988).

In August 1971, flooding occurred in the Matanuska and Susitna River Valleys and along the western Cook Inlet in south-central Alaska. Rainfall ranging from 3 to 9 in. was recorded in early August, compounding flood conditions created in July. Discharges having recurrence intervals greater than 100 years occurred in several streams in the sparsely populated area, and flood damages amounted to more than $10 million, mostly to highways in the Matanuska Valley (Lamke, 1972).

The location of streamflow-gaging stations in Alaska that had significant floods for 1970–89 is shown in figure 24 by station number. The specific data for each significant flood are listed in table 3. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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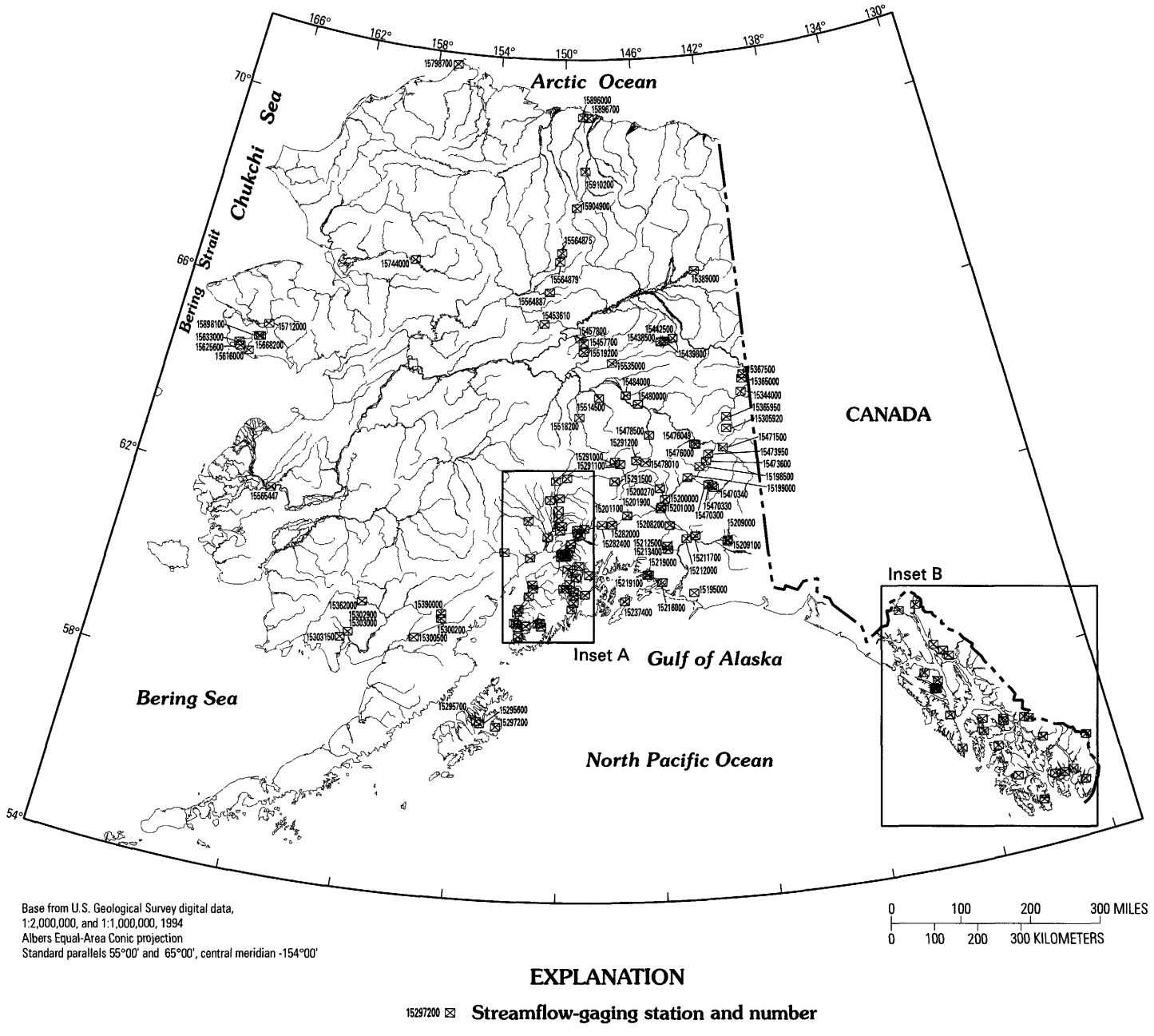
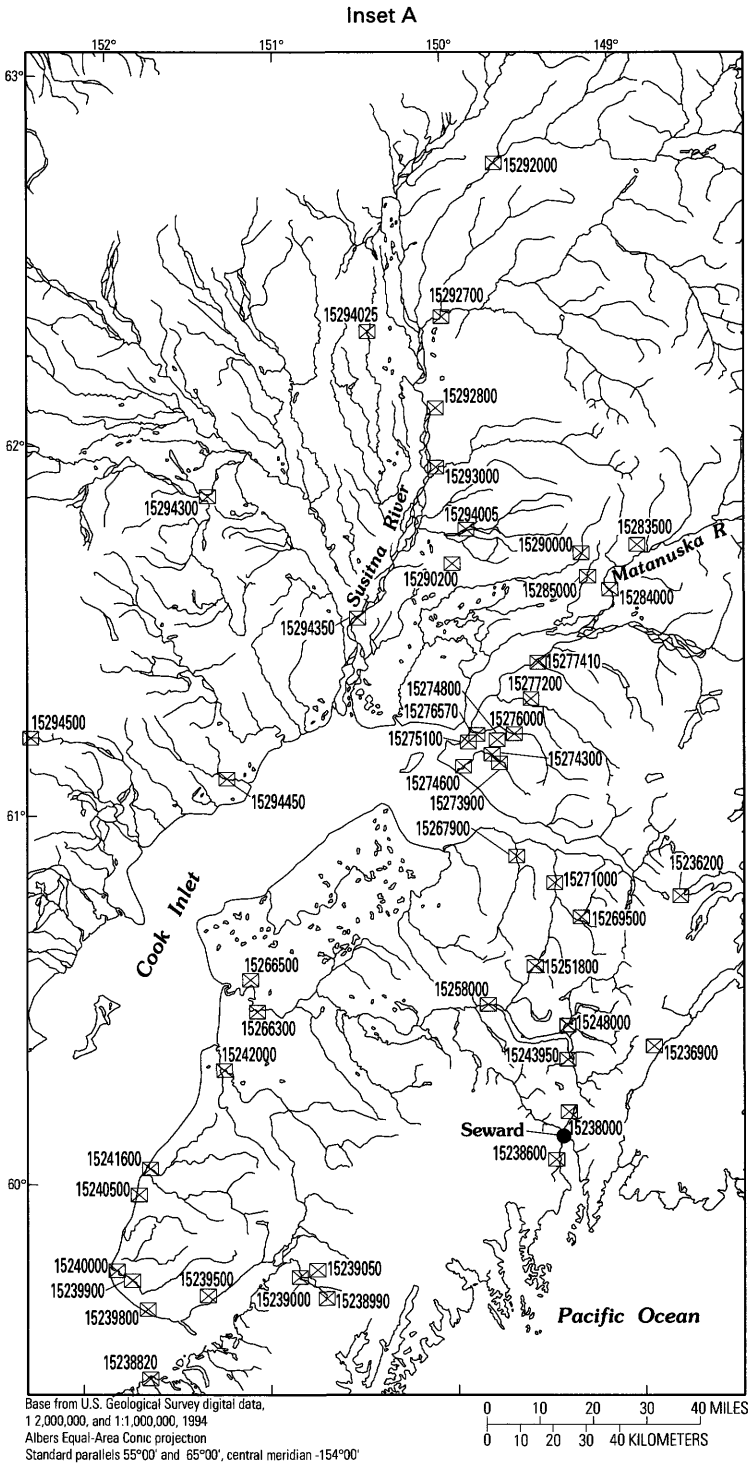


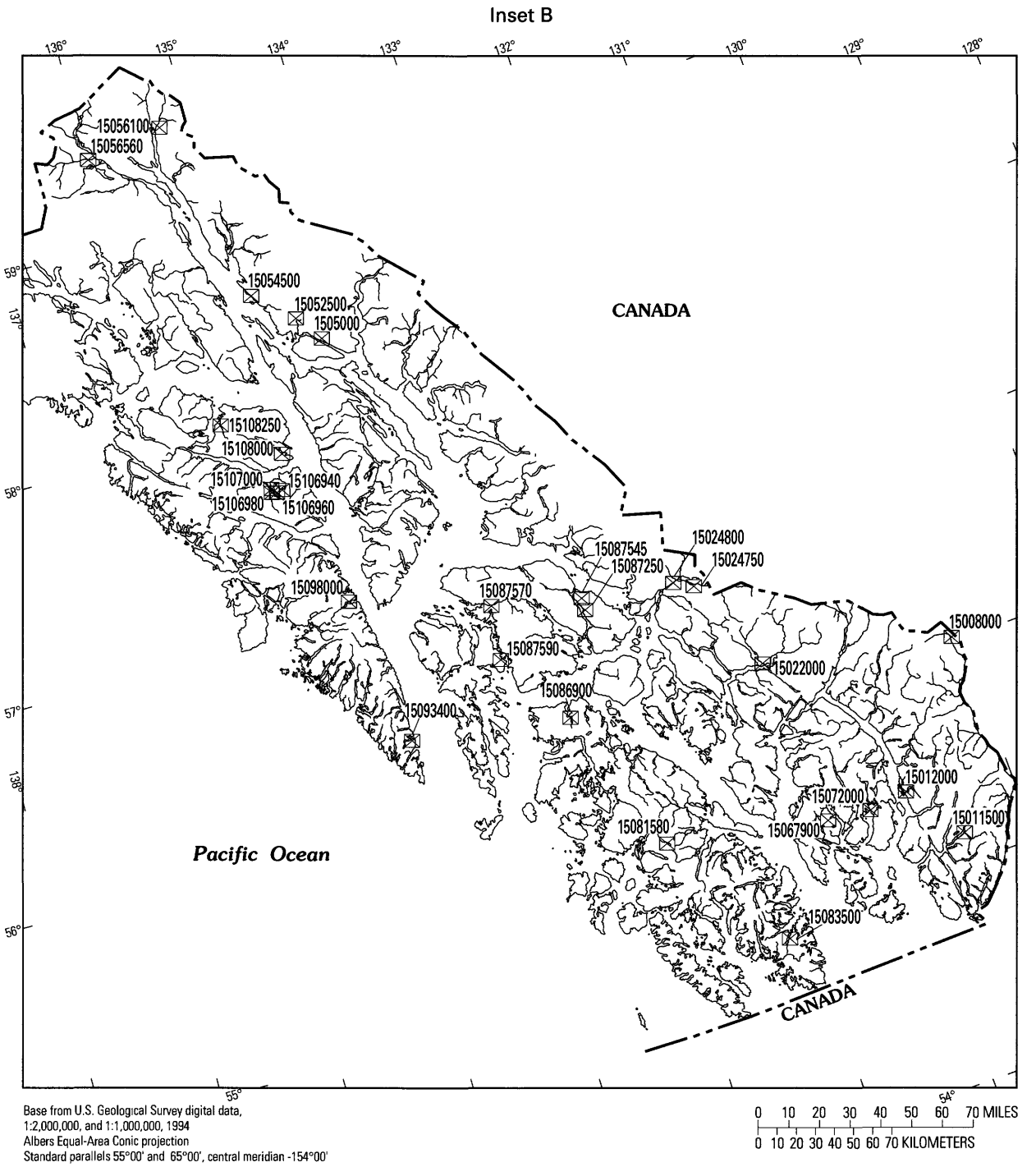
Figure 24. Location of streamflow-gaging stations with significant floods during 1970–89 for Alaska.



EXPLANATION

15238820 ⊠ **Streamflow-gaging station and number**

Figure 24. Location of streamflow-gaging stations with significant floods during 1970–89 for Alaska—Continued.



EXPLANATION

15083500 ⊠ **Streamflow-gaging station and number**

Figure 24. Location of streamflow-gaging stations with significant floods during 1970-89 for Alaska—Continued.

Table 3. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alaska

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1992				Significant floods during 1970–89				
Station number (fig. 24)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
15008000	Salmon River near Hyder, AK	94.0	1964–73	1971 1967	28.90 28.97	140,000 104,000	8/30/71	28.90	140,000	N	--
15011500	Red River near Metlakatla, AK	45.3	1964–78	1977	10.79	12,400	11/03/76	10.79	12,400	N	10–25
15012000	Winstanley Creek near Ketchikan, AK	15.5	1937–38, 1948–75	1962	6.65	4,120	10/09/74	5.83	2,910	N	15
15022000	Harding River near Wrangell, AK	67.4	1952–92	1962	16.22	15,000	10/08/74	14.50	11,700	N	15
15024750	Goat Creek near Wrangell, AK	17.3	1977–86	1981	7.04	7,020	9/11/81	7.04	7,020	N	10–25
15024800	Stikine River near Wrangell, AK	19,920	1977–92	1981	28.22	299,600	9/11/81	28.22	299,600	N	10
15050000	Gold Creek at Juneau, AK	9.76	1917–20, 1947–48, 1950–82	1981 1918	6.53 6.80	2,700 2,600	9/06/81	6.53	2,700	N	40
15052500	Mendenhall River near Auke Bay, AK	85.1	1966–92	1981	10.91	15,500	9/08/81	10.91	15,500	N	15
15054500	Bessie Creek near Auke Bay, AK	1.35	1967–80	1979	14.58	310	11/01/78	14.58	310	N	10–25
15056100	Skagway River at Skagway, AK	145	1964–86	1981	19.25	16,400	9/07/81	19.25	16,400	N	20–25
15056560	Klehini River near Klukwan, AK	284	1982–92	1982 1988	-- 84.16	9,000 8,330	10/15/81	--	9,000	N	10–25
15067900	Upper Mahoney Lake outlet near Ketchikan, AK	2.03	1978–89	1984 1983	8.10 8.11	965 945	10/29/83	8.10	965	N	10–25
15072000	Fish Creek near Ketchikan, AK	32.1	1916–24, 1926–35, 1939–92	1962	5.85	5,400	10/08/74 12/27/79	5.19 4.91	4,540 4,520	N N	25–30 25–30
15081580	Black Bear Lake outlet near Klawock, AK	1.82	1981–91	1982	7.13	413	11/05/81	7.13	413	N	10–25
15083500	Perkins Creek near Metlakatla	3.38	1977–92	1985	5.66	2,900	10/06/84	5.66	2,900	N	10–25
15086900	Red Creek near Point Baker, AK	11.2	1972–81	1976	19.39	1,530	1/31/76	19.39	1,530	N	10–25
15087250	Twin Creek near Petersburg, AK	3.01	1967–77, 1979–80	1972	11.43	800	11/18/71	11.43	800	N	10–25
15087545	Municipal Watershed Creek near Petersburg, AK	2.20	1979–88	1987	7.83	1,090	10/14/86	7.83	1,090	N	10–25
15087570	Hamilton Creek near Kake, AK	65.0	1972–73, 1975–86, 1989–92	1976 1989	14.97 17.31	15,600 15,500	1/30/76	14.97	15,600	N	15–25
15087590	Rocky Pass Creek near Point Baker, AK	2.72	1977–88	1980	6.15	1,190	10/09/79	6.15	1,190	N	10–25
15093400	Sashin Creek near Big Port Walter, AK	3.72	1966–73, 1975–80	1977	5.30	2,650	11/02/76	5.30	2,650	N	10–25
15098000	Baranof River at Baranof, AK	32.0	1915–22, 1926–27, 1959, 1961–74	1973	13.50	9,000	10/06/72	13.50	9,000	N	20–30
15106940	Hook Creek above tributary near Tenakee, AK	4.48	1968–80	1976 1968	3.79 3.83	1,290 662	9/15/76	3.79	1,290	N	10–25

Table 3. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alaska—Continued

Station number (fig. 24)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1992				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
15106960	Hook Creek near Tenakee, AK	8.00	1968–80	1980	5.04	1,520	10/05/79	5.04	1,520	N	10–25
15106980	Tonalite Creek near Tenakee, AK	14.5	1969–88	1980	9.72	3,610	10/09/79	9.72	3,610	N	20–30
15107000	Kadashan River near Tenakee, AK	37.7	1965–80	1980	11.42	8,100	10/09/79	11.42	8,100	N	10–25
15108000	Pavlof River near Tenakee, AK	24.3	1958–81	1979	9.28	4,620	10/30/78	9.28	4,620	N	20–30
15108250	Game Creek near Hoonah, AK	42.8	1970–77, 1979–80	1979	15.25	16,950	11/01/78	15.25	16,950	N	10–25
15195000	Dick Creek near Cordova, AK	7.95	1971–81	1981	9.25	2,600	8/07/81	9.25	2,600	N	10–25
15198500	Station Creek near Mentasta, AK	15.3	1970–77, 1979–80, 1982, 1984–92	1985 1973	14.32 46.41	770 260	7/30/85	14.32	770	N	20–30
15199000	Copper River tributary near Slana, AK	4.32	1963–90, 1992	1980	14.24	205	6/--/80	14.24	205	N	20–30
15200000	Gakona River at Gakona, AK	620	1950–74, 1992	1971	8.10	10,500	8/10/71	8.10	10,500	N	20–30
15200270	Sourdough Creek at Sourdough, AK	68.0	1970–81	1979	78.46	1,270	5/--/79	78.46	1,270	N	10–25
15201000	Dry Creek near Glennallen, AK	11.4	1963–92	1972	25.88	546	5/--/72 5/05/79	25.88 19.00	546 350	N N	>50 20–30
15201100	Little Nelchina River tributary near Eureka Lodge, AK	7.81	1965–89, 1992	1977 1992	13.30 14.33	127 --	5/29/77	13.30	127	N	10–15
15201900	Moose Creek tributary at Glennallen, AK	7.11	1963–74	1972	22.03	250	5/--/72	22.03	250	N	10–25
15208200	Rock Creek near Tonsina, AK	14.3	1966–92	1989 1986	6.26 12.69	225 150	5/29/89	6.26	225	N	50–100
15209000	Chititu Creek near May Creek, AK	30.9	1973–83	1981	6.22	970	8/07/81	6.22	970	N	10–25
15209100	May Creek near May Creek, AK	10.4	1973–83	1981	6.87	168	8/07/81	6.87	168	N	10–25
15211700	Strelna Creek near Chitina, AK	23.8	1971–92	1985	26.57	670	8/12/85	26.57	670	N	50–100
15212000	Copper River near Chitina, AK	20,600	1951–52, 1956–90	1981	37.30	380,000	7/15/71 8/08/81	29.94 37.30	265,000 380,000	N N	20–25 >100
15212500	Boulder Creek near Tiekel, AK	9.80	1964–92	1981 1964	11.72 12.28	1,330 450	8/07/81	11.72	1,330	N	>100
15213400	Stuart Creek near Tiekel, AK	37.4	1972–81	1981	28.37	2,690	8/07/81	28.37	2,690	N	10–25
15216000	Power Creek near Cordova, AK	20.5	1948–92	1991 1949	7.13 7.65	5,950 5,540	9/04/87	7.04	5,760	N	15–20
15219000	West Fork Olsen Bay Creek near Cordova, AK	4.78	1965–80	1972	5.30	1,030	9/12/72	5.30	1,030	N	10–25
15219100	Control Creek near Cordova, AK	4.22	1964–74	1972	12.43	1,280	9/12/72	12.43	1,280	N	10–25
15236200	Shakespeare Creek at Whittier, AK	1.61	1970–80, 1984–92	1979	12.81	620	9/13/79	12.81	620	N	15–20
15236900	Wolverine Creek near Lawing, AK	9.51	1967–78, 1981	1981	6.28	1,810	8/21/81	6.28	1,810	N	10–25

Table 3. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alaska—Continued

Station number (fig. 24)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1992				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
15237400	Chalmers River near Cordova, AK	6.32	1967–73, 1975–80	1979	12.65	3,380	8/15/79	12.65	3,380	N	10–25
15238000	Lost Creek near Seward, AK	8.42	1949, 1963–72, 1976, 1987	1987 1976	12.30	14,000 920	10/11/86	--	14,000	N	--
15238600	Spruce Creek near Seward, AK	9.26	1966–92	1987	13.96	13,600	10/11/86	13.96	13,600	N	>50
15238820	Barabara Creek near Seldovia, AK	20.7	1973–92	1984	6.08	2,050	11/29/83	6.08	2,050	N	15–25
15238990	Upper Bradley River near Nuka Glacier near Homer, AK	--	1980–92	1987 1991	9.86 13.54	2,530 774	10/10/86	9.86	2,530	Y	5–10
15239000	Bradley River near Homer, AK	56.1	1958–90	1987 1982	10.90 16.16	8,800 5,830	8/10/79 10/10/86	9.46 10.90	6,020 8,800	Y Y	15 50–100
15239050	Middle Fork Bradley River near Homer, AK	9.25	1980–92	1987	8.53	1,120	10/10/86	8.53	1,120	N	10–25
15239500	Fritz Creek near Homer, AK	10.4	1963–92	1981	18.53	852	10/22/80 11/29/83	18.53 17.48	852 380	N N	>50 15–20
15239800	Diamond Creek near Homer, AK	5.35	1963–81	1981	13.96	255	10/22/80	13.96	255	N	10–25
15239900	Anchor River near Anchor Point, AK	137	1966–74, 1979–87, 1992	1984 1981	7.42 8.45	6,050 4,680	11/29/83	7.42	6,050	N	10–25
15240000	Anchor River at Anchor Point, AK	224	1954–66, 1984–92	1984	8.51	11,000	11/30/83	8.51	11,000	N	10–25
15240500	Cook Inlet tributary near Ninilchik, AK	5.19	1966–81	1976	13.86	140	5/13/76	13.86	140	N	10–25
15241600	Ninilchik River at Ninilchik, AK	131	1963–85	1974 1976	6.04 8.64	1,240 1,000	4/24/74	6.04	1,240	N	15–25
15242000	Kasilof River near Kasilof, AK	738	1950–74, 1977	1977	8.06	13,000	8/24/77	8.06	13,000	N	20–30
15243950	Porcupine Creek near Primrose, AK	16.8	1963–89	1987 1989	13.03 20.23	4,000 1,070	10/11/86	13.03	4,000	N	50–100
15248000	Trail River near Lawing, AK	181	1948–50, 1952–77, 1987	1967	11.93	7,480	9/22/76	10.73	6,660	N	10–25
15251800	Quartz Creek at Gilpatricks, AK	9.41	1963–70, 1976, 1987	1987	17.29	897	10/11/86	17.29	897	N	25–50
15258000	Kenai River at Cooper Landing, AK	634	1948–92	1974	17.18	23,100	9/21/74	17.18	23,100	Y	40–50
15266300	Kenai River at Soldotna, AK	2,010	1965–92	1977	13.45	33,700	9/09/77	13.45	33,700	N	20–25
15266500	Beaver Creek near Kenai, AK	51.0	1968–78, 1980–83, 1985–92	1987 1972	9.43 10.55	700 598	10/11/86	9.43	700	N	20–25
15267900	Resurrection Creek near Hope, AK	149	1968–85	1980 1977	8.71 8.96	3,380 1,980	7/12/80	8.71	3,380	N	25–50
15269500	Granite Creek near Portage, AK	28.2	1967–80	1970	12.46	2,040	9/13/78	11.65	1,570	N	--
15271000	Sixmile Creek near Hope, AK	234	1970, 1980–90	1980 1970	13.22 20.80	8,070 7,300	7/12/80	13.22	8,070	N	25–50
15273900	South Fork Campbell Creek at canyon mouth near Anchorage, AK	25.2	1967–79, 1981, 1989	1989	4.35	550	8/28/89	4.35	550	N	10–25

Table 3. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alaska—Continued

Station number (fig. 24)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1992				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
15274300	North Fork Campbell Creek near Anchorage, AK	13.4	1967–84	1971	12.18	107	8/09/71	12.18	107	N	10–25
15274600	Campbell Creek near Spenard, AK	69.7	1966–92	1989	23.04	1,510	8/26/89	23.04	1,510	N	>50
15274800	South Branch South Fork Chester Creek near Anchorage, AK	10.8	1967–73, 1975–78	1971	11.29	44	8/09/71	11.29	44	N	10–25
15275100	Chester Creek at Arctic Boulevard at Anchorage, AK	27.2	1967–85, 1988–92	1989	5.56	421	8/26/89	5.56	421	N	>50
15276000	Ship Creek near Anchorage, AK	90.5	1947–92	1989 1980	6.38 8.04	2,100 1,080	8/27/89	6.38	2,100	Y	50–75
15276570	Ship Creek below power plant at Elmendorf Air Force Base, AK	115	1971–80	1971 1976	-- 4.32	1,600 789	8/09/71	--	1,600	Y	10–25
15277200	Meadow Creek at Eagle River, AK	7.43	1965–74	1971	12.66	184	8/09/71	12.66	184	N	10–25
15277410	Peters Creek near Birchwood, AK	87.8	1974–83	1980 1979	5.73 6.29	1,200 595	9/16/80	5.73	1,200	N	5–10
15282000	Caribou Creek near Sutton, AK	289	1955–78	1973	7.18	8,720	6/15/73	7.18	8,720	N	25–50
15282400	Purinton Creek near Sutton, AK	8.51	1963–66, 1968–81, 1988–91	1989 1972	6.80 11.82	11,785 --	5/16/89	6.80	117	N	10–15
15283500	Eska Creek near Sutton, AK	13.4	1966, 1971–92	1971	26.82	1,680	8/10/71	26.82	1,680	N	>50
15284000	Matanuska River at Palmer, AK	2,070	1949–74, 1985–86, 1992	1971	13.60	82,100	8/10/71	13.60	82,100	N	--
15285000	Wasilla Creek near Palmer, AK	16.8	1971, 1976–92	1971	17.74	700	8/10/71	17.74	700	N	>50
15290000	Little Susitna River near Palmer, AK	61.9	1949–92	1971 1980	7.84 8.92	7,840 3,440	8/10/71	7.84	7,840	N	>100
15290200	Nancy Lake tributary near Willow, AK	8.00	1980, 1983–87, 1989–92	1987	13.21	465	10/11/86	13.21	465	N	>25
15291000	Susitna River near Denali, AK	950	1957–65, 1967, 1969–85	1971	13.32	38,200	8/10/71	13.32	38,200	N	>100
15291100	Raft Creek near Denali, AK	4.33	1963–92	1964	11.72	133	8/--/71	11.69	132	N	10
15291200	MacLaren River near Paxson, AK	280	1958–85	1971	8.24	9,260	8/11/71	8.24	9,260	N	40
15291500	Susitna River near Cantwell, AK	4,140	1961–72, 1980–85	1971 1984	-- 8.98	55,000 33,400	8/10/71	--	55,000	N	10–25
15292000	Susitna River at Gold Creek, AK	6,160	1950–92	1964 1962	16.58 18.30	90,700 80,600	8/10/71	16.36	87,400	N	35
15292700	Talkeetna River near Talkeetna, AK	2,006	1964–92	1987	17.38	75,700	10/11/86	17.38	75,700	N	50–100
15292800	Montana Creek near Montana, AK	164	1963–72, 1987	1987	20.00	15,300	10/11/86	20.00	15,300	N	>50
15293000	Caswell Creek near Caswel, AK	19.6	1963–87	1987	19.00	960	10/11/86	19.00	960	N	>100
15294005	Willow Creek near Willow, AK	166	1979–92	1987	9.01	12,000	10/11/86	9.01	12,000	N	50–100

Table 3. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alaska—Continued

Station number (fig. 24)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1992				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
15294025	Moose Creek near Talkeetna, AK	52.3	1972–92	1987	31.80	5,790	10/11/86	31.80	5,790	N	>100
15294300	Skwentna River near Skwentna, AK	2,250	1960–82, 1987	1987	17.30	69,000	10/11/86	17.30	69,000	N	75–100
15294350	Susitna River at Susitna Station, AK	19,400	1975–92	1987	22.58	312,000	10/12/86	22.58	312,000	N	>50
15294450	Chuitna River near Tyonek, AK	131	1976–87	1987	16.46	10,000	10/10/86	16.46	10,000	N	>50
15294500	Chakachatna River near Tyonek, AK	1,120	1959–72	1971 1967	-- 29.30	470,000 23,400	8/11/71	--	470,000	N	--
15295600	Terror River near Kodiak, AK	15.0	1963–68, 1979–86	1981	7.87	3,400	10/21/80	7.87	3,400	Y	10–25
15295700	Terror River at mouth near Kodiak, AK	30.7	1964–68, 1982–92	1966	6.48	3,820	11/29/83	4.80	3,060	Y	--
15297200	Myrtle Creek near Kodiak, AK	4.74	1963–92	1977	6.93	1,350	1/03/77	6.93	1,350	N	35–40
15300000	Newhalen River near Iliamna, AK	3,478	1951–67, 1969–77, 1982–86	1971	10.68	44,200	8/16/71	10.68	44,200	N	75–100
15300200	Roadhouse Creek near Iliamna, AK	20.8	1973–76, 1978–83	1980 1979	12.38 13.02	280 50	8/--/80	12.38	280	N	10–25
15300500	Kvichak River at Igiugig, AK	6,500	1967–87	1980	23.64	48,700	9/12/80	23.64	48,700	N	15–20
15302000	Nuyakuk River near Dillingham, AK	1,490	1954–92	1977 1988	10.49 11.35	32,200 24,900	7/02/77	10.49	32,200	N	75–100
15302900	Moody Creek at Aleknagik, AK	1.28	1969–73, 1975–85, 1988–92	1971	19.60	55	6/07/71	19.60	55	N	75–100
15303000	Wood River near Aleknagik, AK	1,110	1958–70, 1972	1972	13.83	25,000	6/--/72	13.83	25,000	N	20–25
15303150	Snake River near Dillingham, AK	113	1974–83	1977	6.81	2,470	6/17/77	6.81	2,470	N	10–25
15305920	West Fork tributary near Tetlin Junction, AK	1.02	1967–84, 1990–92	1973 1992	14.02 19.17	102 62	7/13/73	14.02	102	N	35–40
15305950	Taylor Creek near Chicken, AK	38.40	1967–91	1988	15.88	750	6/--/88	15.88	750	N	25–30
15344000	King Creek near Dome Creek, AK	5.87	1975–92	1982 1992	13.44 16.26	163 118	6/--/82	13.44	163	N	15–20
15365000	Discovery Fork American Creek near Eagle, AK	5.53	1963–73	1972 1964	11.29 19.70	52 --	8/07/72	11.29	52	N	10–25
15367500	Bluff Creek near Eagle, AK	3.38	1963–72	1970	11.68	41	6/--/70	11.68	41	N	10–25
15389000	Porcupine River near Fort Yukon, AK	29,500	1965–79	1973	33.68	299,000	5/24/73	33.68	299,000	N	10–25
15438500	Bedrock Creek near Central, AK	9.94	1964–74, 1989	1989 1967	-- 15.73	800 405	6/25/89	--	800	N	>25
15439800	Boulder Creek near Central, AK	31.3	1964–92	1989 1984	10.01 10.18	1,460 1,310	6/25/89	10.01	1,460	N	50–75
15442500	Quartz Creek near Central, AK	17.2	1967, 1969–79, 1989–92	1976	22.06	500	8/--/76	22.06	500	N	15–20
15453610	Ray River tributary near Stevens Village, AK	8.00	1977–92	1979	20.36	220	5/--/79	20.36	220	N	15–20

Table 3. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alaska—Continued

Station number (fig. 24)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1992				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
15457700	Erickson Creek near Livengood, AK	26.3	1973–92	1977 1985	21.10 21.62	860 370	5/31/77	21.10	860	N	50–100
15457800	Hess Creek near Livengood, AK	662	1971–78, 1983–86	1975	66.78	10,000	5/13/75	66.78	10,000	N	>25
15470300	Little Jack Creek near Nabesna, AK	6.73	1975–92	1985 1992	18.53 18.55	239 --	7/31/85	18.53	239	N	40–50
15470330	Chalk Creek near Nabesna, AK	14.8	1975–92	1978	18.00	360	8/10/78	18.00	360	N	20–30
15470340	Jack Creek near Nabesna, AK	115	1975–83, 1992	1975	21.60	2,440	9/11/75	21.60	2,440	N	10–25
15471500	Tanana River tributary near Tetlin Junction, AK	2.43	1965–90	1988	13.52	58	5/--/88	13.52	58	N	30–40
15473600	Log Cabin Creek at Log Cabin Inn, AK	10.7	1966–91	1975 1981	11.70 12.10	350 350	8/--/81	12.10	350	N	10
15473950	Clearwater Creek near Tok, AK	36.4	1964–80, 1985	1985 1970	-- 49.58	1,680 750	7/30/85	--	1,680	N	25–30
15476000	Tanana River near Tanacross, AK	8,550	1953–90	1988	12.91	49,100	7/25/88	12.91	49,100	N	>100
15476049	Tanana River tributary near Cathedral Rapids, AK	3.09	1970, 1973–92	1970	15.38	332	7/07/70	15.38	332	N	40
15478010	Rock Creek near Paxson, AK	50.3	1963–87	1977	12.68	1,800	6/--/77	12.68	1,800	N	25–35
15478500	Ruby Creek near Donnelly, AK	5.32	1963–79, 1987	1987 1977	-- 13.26	1,660 400	6/18/77	--	400	N	5–10
15480000	Banner Creek at Richardson, AK	20.2	1964–92	1989	16.38	950	6/26/89	16.38	950	N	20–25
15484000	Salcha River near Salchaket, AK	2,170	1949–51, 1953–59, 1961–92	1967	21.78	97,000	8/23/86	18.67	37,100	N	10–15
15514500	Wood River near Fairbanks, AK	855	1969–78	1976	8.98	5,510	8/13/76	8.98	5,510	N	10–25
15518200	Rock Creek near Ferry, AK	8.17	1965, 1967, 1970–75, 1977–80	1980	13.90	938	6/18/80	13.90	938	N	5–10
15519200	Brooks Creek tributary near Livengood, AK	7.81	1964–88, 1990	1975 1990	13.27 16.72	168 36	5/--/75	13.27	168	N	30
15535000	Caribou Creek near Chatanika, AK	9.19	1970–86	1984 1975	3.64 5.47	184 117	6/16/84	3.64	184	N	10–15
15564875	Middle Fork Koyukuk River near Wiseman, AK	1,200	1968, 1971–80, 1984–87	1977 1973	10.66 13.50	19,100 17,100	5/31/77	10.66	19,100	N	5–10
15564879	Slate Creek at Coldfoot, AK	73.4	1981–92	1989	20.17	3,900	6/01/89	20.17	3,900	N	10–15
15564887	Bonanza Creek tributary near Prospect Camp, AK	11.7	1975–92	1987	19.55	253	6/26/87	19.55	253	N	5–10
15565447	Yukon River at Pilot Station, AK	321,000	1976–92	1985 1991	-- 27.47	1,100,000 1,070,000	6/05/85	--	1,100,000	N	25–50
15619000	Dexter Creek near Nome, AK	2.99	1978, 1981–89	1989 1978	14.12 16.18	135 64	6/14/89	14.12	135	N	10–25
15625000	Arctic Creek near Nome, AK	1.76	1969–78	1975 1978	-- 13.04	199 80	7/10/75	--	199	N	10–25
15633000	Washington Creek near Nome, AK	6.34	1964–92	1975 1989	19.35 21.78	620 150	7/10/75	19.35	620	N	>100

Table 3. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Alaska—Continued

Station number (fig. 24)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1992				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
15668100	Star Creek near Nome, AK	3.78	1964–89	1986 1977	12.25 15.18	179 33	9/04/86	12.25	179	N	30
15668200	Crater Creek near Nome, AK	21.9	1964–89	1975	19.71	2,540	7/10/75	19.71	2,540	N	30
15712000	Kuzitrin River near Nome, AK	1,720	1910, 1963, 1966–73	1971 1966	-- 11.94	40,000 31,800	6/03/71	--	40,000	N	10–25
15744000	Kobuk River at Ambler, AK	6,570	1966–78	1971 1973	-- 38.96	95,000 93,600	5/29/71	--	95,000	N	5–10
15798700	Nunavak Creek near Barrow, AK	2.79	1972–92	1980 1984	4.86 33.75	131 66	6/10/80	4.86	131	N	15
15896000	Kuparuk River near Deadhorse, AK	3,130	1971–92	1978	37.60	118,000	6/07/78	37.60	118,000	N	30–40
15896700	Putuligayuk River near Deadhorse, AK	176	1970–80, 1982–92	1980 1971	22.60 24.50	5,800 4,980	6/12/80	22.60	5,800	N	15
15904900	Atigun River tributary near Pump Station 4, AK	32.6	1976–92	1976	14.50	1,000	7/29/76	14.50	1,000	N	20
15910200	Happy Creek at Happy Valley Camp near Sagwon, AK	34.5	1972–92	1976	18.51	1,390	6/06/76	18.51	1,390	N	10

[1] Regulated during flood: N, no; Y, yes.

Arizona

Hydroclimatology

Located in the southwestern part of the United States, Arizona's climate ranges from periods of excessive regional flooding to very dry periods. The moisture in Arizona is provided mainly by the Pacific Ocean and the Gulf of Mexico (Paulson and others, 1991). Due to Arizona's position in a transitional region of general atmospheric circulation, the sources of moisture shift during the year. The principal sources of moisture are the Gulf of Mexico in the summer and the Pacific Ocean in the winter. The moisture supply generally is small because Arizona is close to a semi-permanent, subtropical high-pressure zone.

Typically, half of Arizona receives less than 10 in. of mean annual precipitation in about equal quantities during the summer and winter. Annual precipitation in Arizona increases with elevation. Most of the Central Highlands and some mountain tops in the Basin and Range Lowlands receive more than 25 in. of mean annual precipitation (Paulson and others, 1991).

Regional flooding is most severe in Arizona when strong Pacific storms are diverted south in the fall and winter and the subtropical jetstream supplies moisture from the Pacific Ocean. Localized but intense flash flooding can occur during the summer monsoon period from strong thunderstorms. Occasionally, remnants of strong hurricanes moving from the Pacific Ocean produce flooding in Arizona. On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Arizona is dependent on drainage area of the basin, mean basin elevation, and mean annual precipitation (Jennings and others, 1994).

Significant Floods

The most extensive flood during 1970–89 was the flood of October 1983. Twenty-five percent of the streamflow-gaging stations in the State recorded significant discharges during this time. The areas affected were in southeastern Arizona, particularly the Santa Cruz and San Francisco River Basins. The flood was caused by the remnant moisture from dissipated Tropical Storm Octave. The most intense rainfall was concentrated in a narrow band from south of Tucson to Clifton. Maximum discharges on the Santa Cruz River at Tucson (station 09482500, fig. 25) and on Aravaipa Creek (station 09473000, fig. 25) were more than twice those recorded in the previous 65 years. Large, flat areas northwest of Tucson were inundated with floodwaters when the Santa Cruz and Gila Rivers overflowed their banks and spread across the flat land.

During 1979, 13 percent of the streamflow-gaging stations recorded significant discharges. This flood affected the upper Salt and Verde Rivers, and it filled reservoirs upstream from Phoenix.

The third-most extensive flood in Arizona occurred during the fall of 1970. Twelve percent of the gaged streams recorded signifcant discharges. The flooding occurred on Tonto Creek and the Hassayampa River in central Arizona.

The location of streamflow-gaging stations in Arizona that had significant floods for 1970–89 is shown in figure 25 by station number. The specific data for each significant flood are listed in table 4. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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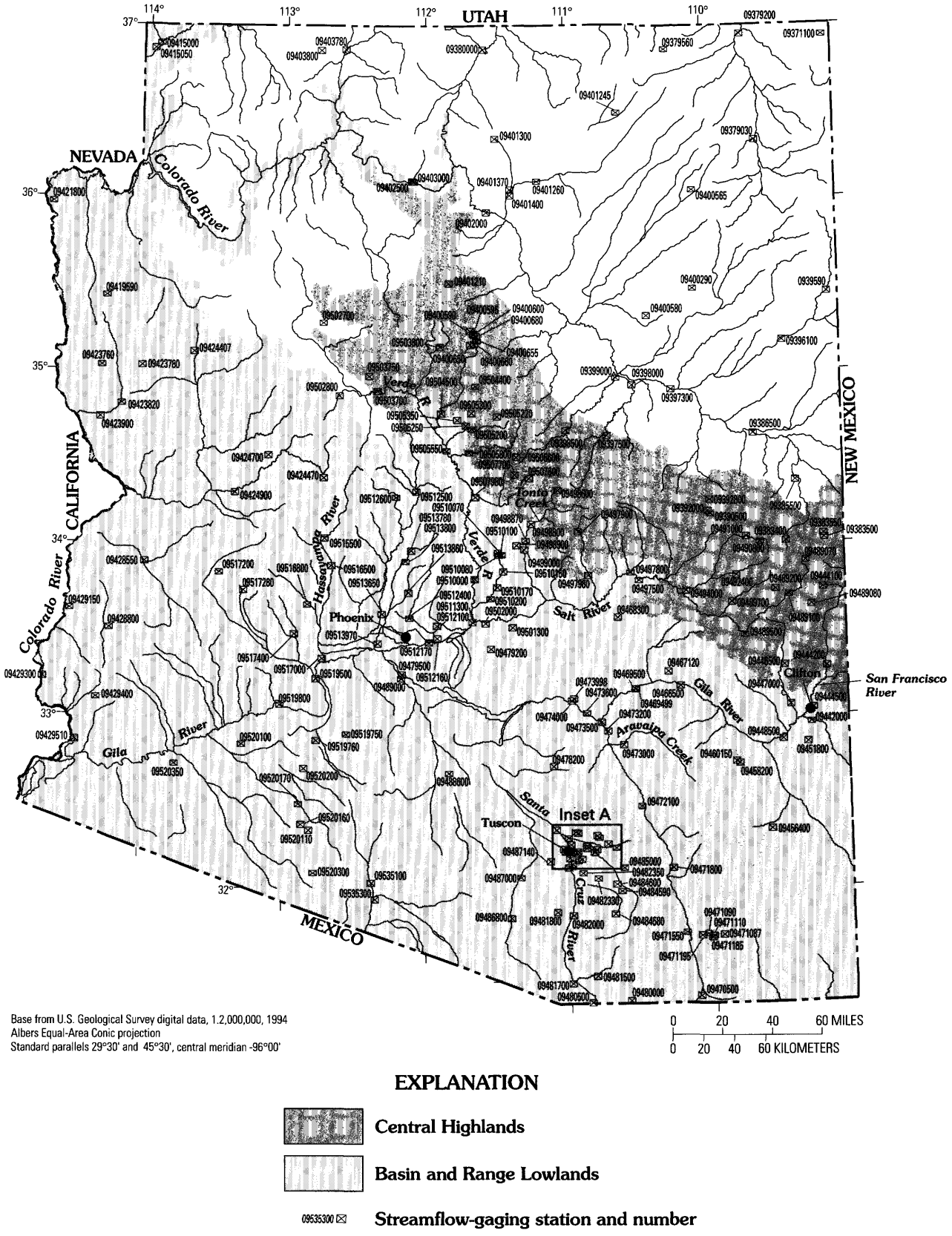

Figure 25. Location of streamflow-gaging stations with significant floods during 1970–89 for Arizona.

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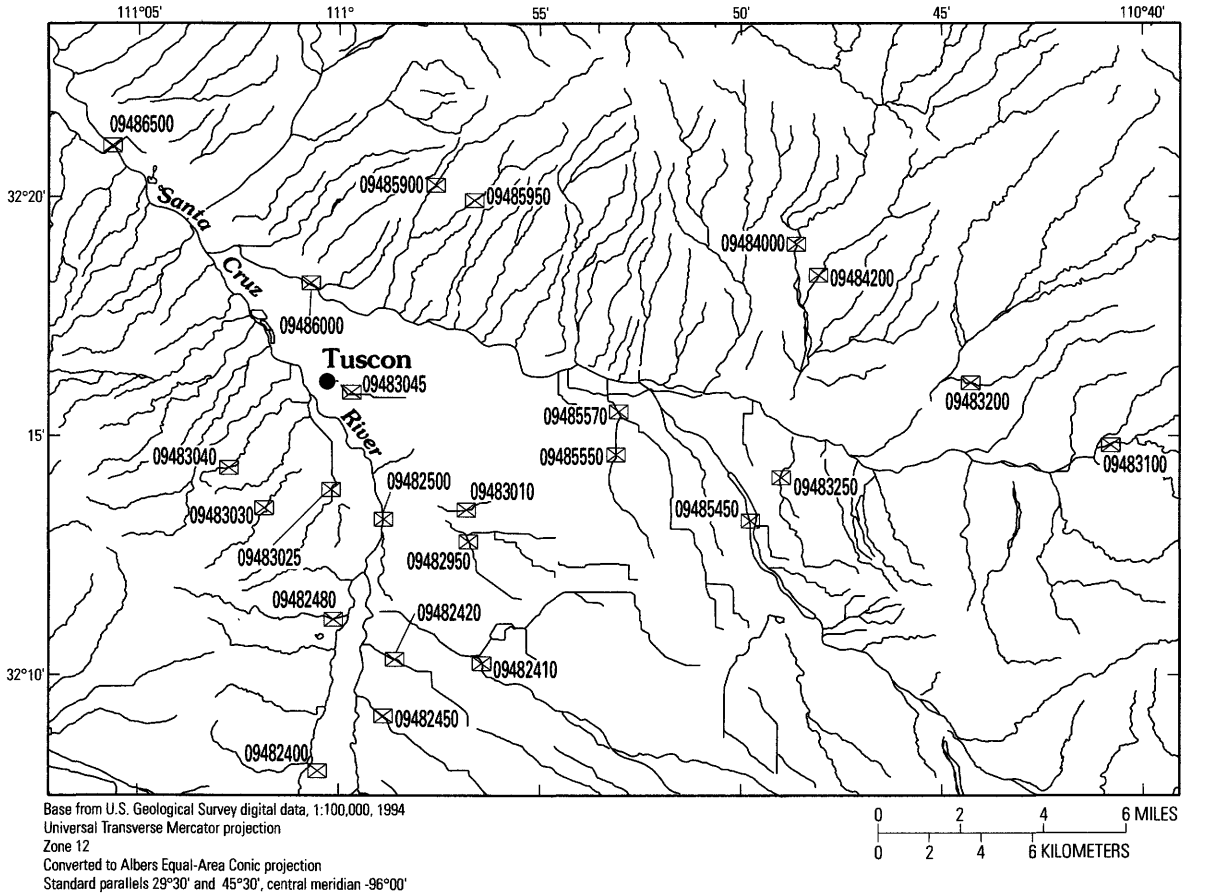

EXPLANATION

09482950⊠ **Streamflow-gaging station and number**

Figure 25. Location of streamflow-gaging stations with significant floods during 1970–89 for Arizona—Continued.

Table 4. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arizona

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 25)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09371100	Teec Nos Pos Wash near Teec Nos Pos, AZ	16.0	1967–76	1970	9.44	1,350	9/12/70	9.44	1,350	N	10–25
09379030	Black Mountain Wash near Chinle, AZ	80.7	1963–77	1977	11.27	3,100	8/17/77	11.27	3,100	N	10–25
09379200	Chinle Creek near Mexican Water, AZ	3,650	1963–94	1982	13.87	12,000	9/07/70 8/24/82	7.55 13.87	9,880 12,000	N N	20 30–50
09379560	El Capitan Wash near Kayenta, AZ	5.88	1963–76	1971	11.40	2,340	8/26/71	11.40	2,340	N	25–50
09380000	Colorado River at Lees Ferry, AZ	111,800	1884, 1921–94	1884	31.50	300,000	6/29/83	18.14	97,300	Y	75–100
09383400	Little Colorado River at Greer, AZ	29.1	1961–82, 1984	1973	5.65	615	10/20/72	5.65	615	N	30–40
09383500	Nutrioso Creek above Nelson Reservoir near Springerville, AZ	83.3	1967–82, 1984	1984	12.28	700	10/02/83	12.28	700	N	20–30
09383550	Nutrioso Creek below Nelson Reservoir near Springerville, AZ	86.8	1967–82	1973	7.03	465	4/29/73	7.03	465	Y	20–50
09385500	Little Colorado River below Lyman Reservoir near St. Johns, AZ	790	1941–53, 1956–80	1941	--	603	4/27/79	--	540	Y	10–30
09386500	Little Colorado River above Zuni River near Hunt, AZ	3,741	1940–72	1971	4.22	1,310	9/03/71	4.22	1,310	Y	20–30
09390500	Show Low Creek near Lakeside, AZ	68.6	1954–94	1979 1972	9.16 9.53	5,550 5,450	12/26/71 12/18/78	9.53 9.16	5,450 5,550	Y Y	20–30 20–30
09392000	Show Low Creek below Jaques Dam near Show Low, AZ	73.0	1943, 1954–94	1985 1943	-- 4.00	3,080 304	12/26/71 12/28/84	-- --	2,500 3,080	Y Y	10–30 10–30
09392800	Long Lake tributary near Show Low, AZ	5.22	1965–76	1972	5.59	530	12/26/71	5.59	530	N	10–25
09395900	Black Creek near Lupton, AZ	494	1964–82	1982	9.58	7,680	8/25/82	9.58	7,680	N	20–30
09396100	Puerco River near Chambers, AZ	2,156	1971–88, 1990–94	1971 1990	9.65 11.80	17,800 14,700	9/30/71	9.65	17,800	N	5–15
09397300	Little Colorado River near Joseph City, AZ	12,384	1972, 1974–94	1979 1993	7.64 8.32	25,400 12,400	12/19/78	7.64	25,400	N	5–15
09397500	Chevelon Fork below Wildcat Canyon near Winslow, AZ	271	1948–70, 1979, 1982–94	1993	20.78	24,700	12/18/78	18.25	19,900	N	20–30
09398000	Chevelon Creek near Winslow, AZ	785	1916–20, 1929–34, 1936–72, 1979	1979	24.46	33,600	12/18/78	24.46	33,600	N	75–100
09398500	Clear Creek below Willow Creek near Winslow, AZ	317	1948–91, 1993	1993	26.73	29,100	12/18/78	22.32	19,700	Y	30–40
09399000	Clear Creek near Winslow, AZ	621	1929–34, 1936–80, 1982	1929	18.10	50,000	12/19/78	16.67	36,300	Y	30–50
09400290	Teshbito Wash tributary near Holbrook, AZ	20.0	1960, 1963–76	1970 1960	15.10 16.50	890 --	9/05/70	15.10	890	N	<10

Table 4. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arizona—Continued

Station number (fig. 25)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09400565	Polacca Wash tributary near Chinle, AZ	6.45	1964–76	1975	11.60	1,130	9/07/75	11.60	1,130	N	10–25
09400580	Castle Butte Wash near Winslow, AZ	5.57	1964–76	1975	10.01	860	7/15/75	10.01	860	N	10–25
09400590	Rio de Flag at Hidden Hollow Road at Flagstaff, AZ	31.5	1970–82	1973 1978	-- 2.79	153 144	4/28/73	--	153	N	<10
09400595	Schultz Canyon at Flagstaff, AZ	6.09	1970–80	1973 1979	3.25 3.29	48 41	4/28/73	3.25	48	N	<10
09400600	Rio de Flag at Flagstaff, AZ	51.0	1956–60, 1970–82	1982	8.27	240	3/12/82	8.27	240	N	10–25
09400650	Sinclair Wash at Flagstaff, AZ	8.11	1970–80	1970	9.21	401	9/05/70	9.21	401	N	25–50
09400655	Rio de Flag at Interstate Highway 40 at Flagstaff, AZ	82.4	1970–82	1979	9.30	421	12/19/78	9.30	421	N	<10
09400660	Bow and Arrow Wash at Flagstaff, AZ	2.06	1969–80	1971	6.19	73	8/15/71	6.19	73	N	25–50
09400680	Switzer Canyon at Flagstaff, AZ	1.87	1969–80	1979	7.60	135	12/18/78	7.60	135	N	10–25
09401210	Slate Mountain Wash near Flagstaff, AZ	5.43	1962–75	1973	6.53	88	4/--/73	6.53	88	N	<10
09401245	Klethla Valley tributary near Kayenta, AZ	0.79	1962–76	1971	9.57	290	8/--/71	9.57	290	N	10–25
09401260	Moenkopi Wash at Moenkopi, AZ	1,629	1974–94	1983	15.10	10,100	9/30/83	15.10	10,100	N	10–25
09401300	Hamblin Wash tributary near Cedar Ridge, AZ	0.10	1963–76	1976	11.84	110	--/--/76	11.84	110	N	<10
09401370	Hamblin Wash tributary number 2 near Tuba City, AZ	2.16	1963–75	1973	3.47	350	10/19/72	3.47	350	N	5–20
09401400	Moenkopi Wash near Tuba City, AZ	2,492	1941–53, 1965–78	1973	16.98	12,100	10/19/72	16.98	12,100	N	40–70
09402000	Little Colorado River near Cameron, AZ	26,459	1923, 1929, 1947–94	1923 1952	-- 20.70	120,000 24,900	10/19/72	19.67	22,400	Y	30–35
09402500	Colorado River near Grand Canyon, AZ	141,600	1884, 1921–94	1884 1921	-- 37.50	300,000 220,000	6/29/83	26.26	96,200	Y	75–100
09403000	Bright Angel Creek near Grand Canyon, AZ	101	1924–73	1936	15.00	4,400	7/19/71	8.84	2,300	N	20
09403780	Kanab Creek near Fredonia, AZ	1,085	1965–80	1970	9.11	4,630	8/18/70	9.11	4,630	N	25–50
09403800	Bitter Seeps Wash tributary near Fredonia, AZ	2.85	1963–76	1971 1964	10.82 12.30	1,950 736	8/23/71	10.82	1,950	N	10–25
09415000	Virgin River at Littlefield, AZ	5,090	1930–94	1989	22.37	61,000	3/02/78 1/01/89	13.60 22.37	22,000 61,000	N N	20 >100
09415050	Big Bend Wash tributary near Littlefield, AZ	7.27	1963–75	1970 1963	3.88 3.89	250 248	--/--/70	3.88	250	N	10–25
09419590	Detrital Wash tributary near Chloride, AZ	1.23	1963–76, 1980	1971	4.75	470	8/12/71	4.75	470	N	20–40
09421800	Ringbolt Wash near Hoover Dam, AZ	1.21	1964–76, 1980	1976	6.47	310	9/08/76	6.47	310	N	5–20

Table 4. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arizona—Continued

Station number (fig. 25)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09423760	Little Meadow Creek near Oatman, AZ	8.47	1965–76	1970	6.89	869	8/--/70	6.89	869	N	10–25
09423780	Walnut Creek near Kingman, AZ	31.3	1965–76	1971	5.89	715	8/12/71	5.89	715	N	25–50
09423820	Sacramento Wash near Yucca, AZ	787	1965–76	1971	7.63	13,000	8/12/71	7.63	13,000	N	25–50
09423900	Sacramento Wash tributary near Topock, AZ	14.7	1963–76	1976	10.48	1,030	9/10/76	10.48	1,030	N	10–25
09424407	Mc Garry's Wash near Kingman, AZ	13.50	1968–79	1972	5.75	1,000	9/19/72	5.75	1,000	N	15–40
09424470	Kirkland Creek near Kirkland, AZ	109	1974–83	1979 1980	11.85 29.40	10,300 8,440	11/11/78	11.85	10,300	N	20–50
09424700	Iron Spring Wash tributary near Bagdad, AZ	0.64	1964–76, 1978–79	1978	7.12	180	3/01/78	7.12	180	N	10–25
09424900	Santa Maria River near Bagdad, AZ	1,128	1967–85, 1989–94	1978 1991	7.82 8.56	23,100 18,900	3/01/78	7.82	23,100	N	15–25
09428550	Bouse Wash tributary near Bouse, AZ	14.6	1963–76	1971	4.44	2,920	8/10/71	4.44	2,920	N	15–40
09428800	Tyson Wash tributary near Quartzsite, AZ	13.7	1963–76	1976 1974	-- 4.11	1,950 980	9/25/76	--	1,950	N	10–25
09429150	Creosote Wash near Ehrenberg, AZ	1.98	1965–76	1971	6.83	580	8/10/71	6.83	580	N	10–25
09429300	Colorado River below Cibola Valley, AZ	187,800	1957–88	1983	16.57	40,700	8/18/83 10/07/83	16.57 15.72	40,700 36,400	Y Y	25–75 25–75
09429400	Indian Wash tributary near Yuma, AZ	2.56	1963–76, 1980	1980	5.36	98	--/--/80	5.36	98	N	15–40
09429510	Mittry Lake tributary near Yuma, AZ	0.30	1965–76	1973	4.51	165	8/16/73	4.51	165	N	10–25
09442000	Gila River near Clifton, AZ	4,010	1911–17, 1928–46, 1948–94	1979	23.80	57,000	10/21/72 12/19/78 12/29/84	18.70 3.80 20.80	33,000 57,000 48,800	N N N	40–50 >100 75–100
09444100	Campbell Blue Creek near Alpine, AZ	--	1959–89	1984 1985	-- 4.52	619 204	10/20/72 10/02/83	-- --	342 619	N N	20–30 50–100
09444200	Blue River near Clifton, AZ	506	1966, 1968–94	1973	22.56	30,000	10/20/72	22.56	30,000	N	20–40
09444500	San Francisco River at Clifton, AZ	2,766	1891, 1905–07, 1911–86, 1988–94	1984 1993	19.72 25.27	90,900 42,900	10/02/83	19.72	90,900	N	75–100
09446500	Eagle Creek near Double Circle Ranch near Morenci, AZ	377	1944–67, 1973	1973	12.02	30,000	10/20/72	12.02	30,000	N	>100
09447000	Eagle Creek above pumping plant near Morenci, AZ	622	1916, 1932, 1944–94	1993 1984	-- 13.04	36,800 36,400	10/02/83	13.04	36,400	N	>100
09448500	Gila River at head of Safford Valley near Solomon, AZ	7,896	1914–94	1984	20.80	132,000	12/19/78 10/02/83	14.40 20.80	100,000 132,000	N N	40–50 75–100
09451800	Tollgate Wash tributary near Clifton, AZ	0.12	1963–76	1973 1963	7.54 7.55	63 62	10/19/72	7.54	63	N	5–20
09456400	Gold Gulch near Bowie, AZ	15.0	1963–76	1971	10.16	2,550	8/18/71	10.16	2,550	N	10–25

Table 4. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arizona—Continued

Station number (fig. 25)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09458200	Deadman Creek near Safford, AZ	4.78	1967–76, 1979, 1987, 1989–93	1979 1991	-- 4.30	2,760 393	12/18/78	--	2,760	N	>100
09460150	Frye Creek near Thatcher, AZ	4.02	1967–76, 1979, 1991–94	1979 1993	-- 2.80	2,300 509	12/19/78	--	2,300	N	>100
09466500	Gila River at Calva, AZ	11,470	1916, 1930–94	1984	23.00	150,000	10/03/83	23.00	150,000	N	50–80
09467120	Salt Creek near Peridot, AZ	35.2	1964–75, 1979	1973	19.56	3,200	10/19/72	19.56	3,200	N	10–25
09468300	Sevenmile Wash tributary near Globe, AZ	0.83	1933, 1962–76, 1979	1979	9.47	640	12/18/78	9.47	640	N	20–40
09469499	San Carlos Reservoir inflow at Coolidge Dam, AZ	12,900	1906, 1914–28, 1930–86	1906 1916	-- 25.50	150,000 130,000	12/19/78 10/03/83	-- --	100,000 150,000	N N	20–50 50–80
09469500	Gila River below Coolidge Dam, AZ	12,886	1906, 1914–86, 1989–94	1906 1916	-- 25.50	150,000 130,000	10/07/83	10.76	4,960	Y	5–25
09470500	San Pedro River at Palominas, AZ	737	1926, 1930–33, 1935–41, 1950–94	1940 1926	16.45 23.90	22,000 --	10/09/77	16.04	14,500	N	20
09471087	Walnut Gulch 63.111 near Tombstone, AZ	0.22	1962–81	1976	--	541	7/27/76	--	541	N	>100
09471090	Walnut Gulch 63.009 near Tombstone, AZ	9.11	1967–81	1972	--	2,640	7/24/72	--	2,640	N	25–50
09471110	Walnut Gulch 63.015 near Tombstone, AZ	9.24	1955–81	1955	--	5,290	8/10/71	--	1,250	Y	10–25
09471185	Walnut Gulch 63.103 near Tombstone, AZ	0.28	1963–81	1975	--	31	7/17/75	--	31	N	<10
09471195	Walnut Gulch 63.007 near Tombstone, AZ	5.22	1966–81	1972	--	2,590	8/12/72	--	2,590	N	50–100
09471550	San Pedro River near Tombstone, AZ	1,730	1967–86	1978	11.40	24,200	10/09/77	11.40	24,200	N	50–100
09471800	San Pedro River near Benson, AZ	2,490	1966–76	1972 1974	10.60 10.85	9,800 9,520	8/26/72	10.60	9,800	N	<10
09472100	Peck Canyon tributary near Redington, AZ	8.02	1968–81	1972	9.25	4,340	8/12/72	9.25	4,340	N	>50
09473000	Aravaipa Creek near Mammoth, AZ	537	1919–21, 1931–41, 1965–94	1984	16.76	70,800	10/02/83	16.76	70,800	N	>100
09473200	Green Lantern Wash near Winkelman, AZ	3.63	1964–76, 1981	1981 1967	9.00 9.18	3,700 2,650	5/01/81	9.00	3,700	N	20–40
09473500	San Pedro River at Winkelman, AZ	4,453	1919, 1926, 1930, 1935, 1940, 1963–84	1984 1979	-- 14.41	135,000 18,000	--/--/84	--	135,000	N	>100
09473600	Tam O'Shanter Wash near Hayden, AZ	4.37	1963–76, 1981	1974	14.28	1,570	8/02/74	14.28	1,570	N	>50
09473998	Gila River inflow Coolidge Dam to Kelvin, AZ	5,125	1913–86	1916 1968	-- 18.70	100,000 27,600	10/02/83	--	100,000	N	20–50

Table 4. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arizona—Continued

Station number (fig. 25)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09474000	Gila River at Kelvin, AZ	18,011	1891, 1906, 1912–94	1906 1984	-- 33.00	190,000 100,000	10/02/83	33.00	100,000	Y	20–50
09478200	Durham Wash near Florence, AZ	15.6	1954–57, 1963–76, 1980	1971	6.10	3,500	8/20/71	6.10	3,500	N	20–40
09479200	Queen Creek tributary at Apache Junction, AZ	0.51	1961–79	1971	5.30	262	9/30/71	5.30	262	N	20–40
09479500	Gila River near Laveen, AZ	20,615	1916, 1926, 1940–46, 1948–94	1916 1993	-- 12.41	65,000 41,600	10/04/83	--	35,000	Y	25–50
09480000	Santa Cruz River near Lochiel, AZ	82.2	1949–94	1978	10.21	12,000	10/09/77 8/15/84	10.21 10.20	12,000 12,000	N N	>100 >100
09480500	Santa Cruz River near Nogales, AZ	533	1930–94	1978	15.50	31,000	8/01/74 10/09/77 10/02/83	12.94 15.50 12.40	17,100 31,000 16,200	N N N	40–50 >100 30–40
09481500	Sonoita Creek near Patagonia, AZ	209	1930–72, 1978, 1984	1984 1934	13.70 15.20	16,000 11,000	10/02/83	13.70	16,000	N	>100
09481700	Calabasas Canyon near Nogales, AZ	10.3	1963–65, 1967–76, 1978	1978	6.10	1,200	10/09/77	6.10	1,200	N	10–25
09481800	Demetrie Wash tributary near Continental, AZ	0.15	1963–76	1975	7.13	110	9/07/75	7.13	110	N	10–25
09482000	Santa Cruz River at Continental, AZ	1,682	1940–47, 1952–94	1984 1978	16.34 16.70	45,000 26,500	10/09/77 10/02/83	16.70 16.34	26,500 45,000	N N	40–60 >100
09482330	Pumping Wash near Vail, AZ	0.81	1966–81	1971	5.68	337	7/--/71	5.68	337	N	10–25
09482350	South Fork Airport Wash near Tucson, AZ	9.78	1966–80	1974 1971	6.51 6.69	1,890 480	7/08/74	6.51	1,890	N	20–50
09482400	Airport Wash at Tucson, AZ	23.0	1966–81, 1984, 1988	1984 1968	4.20 4.39	2,900 385	10/01/83	4.20	2,900	N	>100
09482410	Rodeo Wash at Tucson, AZ	7.24	1970–81	1970 1972	-- 4.16	898 380	7/20/70	--	898	N	25–50
09482420	Julian Wash at Tucson, AZ	26.5	1970–81	1970	4.46	1,270	7/19/70	4.46	1,270	N	10–25
09482450	West Branch Santa Cruz River at Tucson, AZ	23.6	1966–81	1976 1981	6.91 8.02	910 760	9/25/76	6.91	910	N	10–25
09482480	Big Wash at Tucson, AZ	2.94	1965–81	1971	11.41	3,000	8/17/71	11.41	3,000	N	40–70
09482500	Santa Cruz River at Tucson, AZ	2,222	1915–81, 1984–94	1984	22.20	52,700	10/10/77 10/02/83	21.80 22.20	23,700 52,700	N N	40–60 >100
09482950	Railroad Wash at Tucson, AZ	2.30	1970–74, 1976–83	1971 1972	-- 7.00	1,590 1,280	7/19/71	--	1,590	N	25–50
09483010	High School Wash at Tucson, AZ	0.95	1968–83	1972 1971	5.92 5.97	800 664	8/12/72	5.92	800	N	15–40
09483025	Silvercroft Wash at Tucson, AZ	2.74	1965, 1969–81	1970 1971	-- 6.70	1,500 1,450	7/20/70	--	1,500	N	15–40
09483030	Anklam Wash at Tucson, AZ	2.11	1965–81	1971 1970	8.77 8.90	2,420 2,000	8/17/71	8.77	2,420	N	15–40
09483040	West Speedway Wash near Tucson, AZ	0.46	1965–81	1976 1969	7.86 9.40	240 236	9/25/76	7.86	240	N	<10
09483045	Flowing Wells Wash at Tucson, AZ	3.53	1971–90	1982 1971	8.30 8.50	1,470 1,250	8/23/82	8.30	1,470	N	15–25

Table 4. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arizona—Continued

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			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09483100	Tanque Verde Creek near Tucson, AZ	43.0	1960–85	1984	7.39	8,600	10/02/83	7.39	8,600	N	25–50
09483200	Agua Caliente Wash tributary near Tucson, AZ	2.04	1965–80	1971	8.39	430	8/19/71	8.39	430	N	10–25
09483250	Rob Wash at Tucson, AZ	2.08	1971–90	1982	4.83	1,900	8/23/82	4.83	1,900	N	25–50
09484000	Sabino Creek near Tucson, AZ	35.5	1932–94	1993 1979	7.60 11.76	12,900 7,400	9/06/70 12/18/78	10.21 11.76	7,730 7,400	N N	40–50 40–50
09484200	Bear Creek near Tucson, AZ	16.3	1960–74, 1979	1979	5.40	1,400	12/18/78	5.40	1,400	N	25–50
09484580	Barrel Canyon near Sonoita, AZ	14.1	1962–76	1971	6.87	1,900	8/--/71	6.87	1,900	N	10–25
09484590	Davidson Canyon Wash near Vail, AZ	50.5	1968–81	1970	7.95	6,860	7/20/70	7.95	6,860	N	25–50
09484600	Pantano Wash near Vail, AZ	457	1958–94	1958	24.00	38,000	9/22/81	13.25	13,000	N	10–20
09485000	Rincon Creek near Tucson, AZ	44.8	1953–94	1971	10.50	9,660	8/19/71	10.50	9,660	N	40–50
09485450	Pantano Wash (at Broadway Boulevard) at Tucson, AZ	599	1979–81, 1984, 1988–94	1984	8.60	11,000	10/01/83	8.60	11,000	N	10–25
09485550	Arcadia Wash at Tucson, AZ	2.72	1966, 1968–83	1971	6.46	1,210	8/17/71	6.46	1,210	N	10–25
09485570	Alamo Wash at Tucson, AZ	9.58	1976–77, 1979–84, 1986–92	1988 1979	7.34 12.92	4,000 1,890	8/20/88	7.34	4,000	N	10–25
09485900	Pima Wash near Tucson, AZ	4.93	1964–81, 1984	1984	17.20	460	10/01/83	17.20	460	N	25–50
09485950	Geronimo Wash near Tucson, AZ	2.15	1964–81	1971	16.56	705	8/12/71	16.56	705	N	25–50
09486000	Rillito Creek at La Cholla Blvd near Tucson, AZ	918	1915–81, 1984	1984 1929	-- 24.00	29,700 24,000	10/02/83	--	29,700	N	>100
09486500	Santa Cruz River at Cortaro, AZ	3,503	1940–47, 1950–85, 1990–92, 1994	1984	16.57	65,000	10/02/83	16.57	65,000	N	>100
09486800	Altar Wash near Three Points, AZ	465	1966–80, 1993–94	1970	13.85	22,000	9/04/70	13.85	22,000	N	50–100
09487000	Brawley Wash near Three Points, AZ	776	1940, 1962, 1966–81, 1984, 1992–94	1984 1970	12.07 15.80	19,100 13,700	10/01/83	12.07	19,100	N	50–100
09487140	San Joaquin Wash near Tucson, AZ	0.45	1969–81	1981 1976	6.60 7.31	520 480	7/28/81	6.60	520	N	10–25
09488600	Silver Reef Wash near Casa Grande, AZ	12.80	1950, 1963–75	1971 1950	8.75 11.50	1,400 --	8/03/71	8.75	1,400	N	10–25
09489000	Santa Cruz River near Laveen, AZ	8,581	1940–46, 1948–94	1984	19.74	33,000	10/04/83	19.74	33,000	Y	5–15
09489070	North Fork of East Fork Black River near Alpine, AZ	38.1	1966–78	1973	4.64	1,070	4/17/73	4.64	1,070	N	15–40
09489080	Hannagan Creek near Hannagan Meadow, AZ	1.61	1964–76	1973 1975	6.51 10.57	70 48	10/19/72	6.51	70	N	40–70

Table 4. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arizona—*Continued*

Station number (fig. 25)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09489100	Black River near Maverick, AZ	315	1963–80, 1982, 1984	1984	9.78	14,000	10/02/83	9.78	14,000	N	25–50
09489200	Pacheta Creek at Maverick, AZ	14.8	1958–80	1973	4.36	323	5/13/73	4.36	323	N	25–50
09489500	Black River below pumping plant near Point of Pine, AZ	560	1954–94	1973	18.00	17,900	10/19/72 10/02/83	18.00 17.30	17,900 17,300	N N	40–50 40–50
09489700	Big Bonito Creek near Fort Apache, AZ	119	1958–81	1979	9.04	4,510	12/18/78	9.04	4,510	N	25–50
09490800	North Fork White River near Greer, AZ	40.2	1966–78	1973	4.15	510	4/28/73	4.15	510	N	>50
09491000	North Fork White River near McNary, AZ	78.2	1946, 1948–85	1984	6.78	2,310	10/02/83	6.78	2,310	N	75–100
09492400	East Fork White River near Fort Apache, AZ	38.8	1958–94	1984 1961	5.40 5.70	2,700 663	10/01/83	5.40	2,700	N	>100
09494000	White River near Fort Apache, AZ, mile 4.5	632	1958–94	1979	15.71	14,600	12/18/78	15.71	14,600	N	40–60
09497500	Salt River near Chrysotile, AZ, mile 34.8	2,849	1916, 1925–94	1993	18.33	76,600	12/18/78 2/15/80	17.35 16.06	70,400 58,300	N N	30–35 20
09497800	Cibecue Creek near Chrysotile, AZ	295	1959–94	1977	17.30	22,200	9/02/77 2/15/80	17.30 11.67	22,200 10,600	N N	50–100 10
09497900	Cherry Creek near Young, AZ	62.1	1963–78	1973	8.93	7,290	10/19/72	8.93	7,290	N	<10
09497980	Cherry Creek near Globe, AZ	200	1966–94	1979	16.90	15,700	1/17/79	16.90	15,700	N	25–50
09498600	Cristopher Creek tributary near Kohl's Ranch, AZ	0.66	1966–76	1970	9.84	265	9/05/70	9.84	265	N	30–60
09498800	Tonto Creek near Gisela, AZ	430	1965–75	1970	29.20	38,000	9/05/70	29.20	38,000	N	10–25
09498870	Rye Creek near Gisela, AZ	122	1963, 1966–85	1970	14.10	44,400	9/05/70	14.10	44,400	N	>100
09498900	Gold Creek near Payson, AZ	6.44	1963–76, 1979	1970	11.94	2,800	9/05/70	11.94	2,800	N	25–50
09499000	Tonto Creek above Gun Creek near Roosevelt, AZ	675	1941–94	1993 1970	17.95 18.20	72,500 53,000	3/02/78 2/15/80	16.50 7.00	57,200 61,400	N N	20–25 25
09501300	Tortilla Creek at Tortilla Flat, AZ	24.30	1966–83, 1992–94	1971	13.23	7,500	9/01/71	13.23	7,500	N	10–25
09502000	Salt River below Stewart Mountain Draw, AZ	6,232	1935–94	1980 1984	-- 17.50	64,000 33,300	1/19/79 2/16/80	-- --	54,000 64,000	Y Y	25–50 25–50
09502700	Crookton Wash near Seligman, AZ	6.00	1963–76, 1978–80	1978	3.72	480	3/01/78	3.72	480	N	10–25
09502800	Williamson Valley Wash near Paulden, AZ	255	1965–85	1983	9.96	14,800	9/23/83	9.96	14,800	N	25–50
09503700	Verde River near Paulden, AZ	2,507	1963–94	1993	14.25	23,200	2/20/80	12.72	15,700	N	25–50
09503750	Limestone Canyon near Paulden, AZ	14.5	1969–76, 1978–80	1971	16.51	4,100	8/12/71	16.51	4,100	N	15–40
09503800	Volunteer Wash near Bellemont, AR	131	1966–76, 1978–80	1978	6.55	2,300	3/01/78	6.55	2,300	N	10–25
09504400	Munds Canyon tributary near Sedona, AZ	1.15	1964–77, 1979–80	1970	11.10	705	9/05/70	11.10	705	N	10–25

Table 4. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arizona—Continued

Station number (fig. 25)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09504500	Oak Creek near Cornville, AZ	355	1938, 1941–46, 1948–94	1980 1938	16.30 23.00	26,400 --	12/19/78 2/19/80	16.00 16.30	25,100 26,400	N N	20–25 25
09505200	Wet Beaver Creek near Rimrock, AZ	111	1962–94	1993	17.21	16,000	2/19/80	13.96	10,900	N	15–30
09505220	Rocky Gulch near Rimrock, AZ	1.40	1960–82, 1986–92	1970 1980	-- 2.78	1,550 179	9/05/70	--	1,550	N	>100
09505250	Red Tank Draw near Rimrock, AZ	48.0	1958–78	1970	12.69	10,500	9/05/70	12.69	10,500	N	50–100
09505300	Rattlesnake Canyon near Rimrock, AZ	24.6	1958–80	1980	11.90	4,000	2/14/80	11.90	4,000	N	15–40
09505350	Dry Beaver Creek near Rimrock, AZ	142	1961–94	1970	14.35	26,600	9/05/70 12/18/78	14.35 12.20	26,600 24,200	N N	25–50 25–50
09505550	Verde River below Camp Verde, AZ	4,653	1970, 1972–80	1979	21.27	55,000	12/19/78	21.27	55,000	N	10–25
09505600	Dirty Neck Canyon near Clints Well, AZ	3.42	1965–75, 1979	1970	7.88	210	10/19/72	7.87	210	N	<10
09505800	West Clear Creek near Camp Verde, AZ	241	1965–94	1993	13.22	24,800	12/18/78	11.60	22,400	N	25–50
09507600	East Verde River near Pine, AZ	6.34	1962–74	1970	6.40	2,820	9/05/70	6.40	2,820	N	10–25
09507700	Webber Creek above West Fork Webber Creek near Pine, AZ	4.79	1959–74	1970	4.36	1,220	9/05/70	4.36	1,220	N	25–50
09507980	East Verde River near Childs, AZ	331	1961–66, 1968–94	1970 1993	19.20 19.80	23,500 20,100	9/05/70	19.20	23,500	N	15–25
09510000	Verde River below Bartlett Draw, AZ	6,188	1938–48, 1950–94	1978	25.90	101,000	3/02/78 2/15/80	25.90 25.40	101,000 97,300	Y Y	30–40 25
09510070	West Fork Sycamore Creek above McFarland near Sunflower, AZ	4.58	1966–74, 1978, 1983–86	1970	5.50	1,700	9/05/70	5.50	1,700	N	10–25
09510080	West Fork Sycamore Creek near Sunflower, AZ	9.80	1962–74, 1978–79	1970	9.50	3,480	9/05/70	9.50	3,480	N	25–50
09510100	East Fork Sycamore Creek near Sunflower, AZ	4.49	1961–86	1970	9.50	1,940	9/05/70	9.50	1,940	N	50–100
09510150	Sycamore Creek near Sunflower, AZ	52.3	1962–76	1970	22.00	16,100	9/05/70	22.00	16,100	N	10–25
09510170	Camp Creek near Sunflower, AZ	2.60	1963–79, 1991–94	1978	5.05	402	3/02/78	5.05	402	N	5–20
09510200	Sycamore Creek near Fort McDowell, AZ	164	1960–94	1970	19.70	24,200	9/05/70 3/02/78	19.70 16.00	24,200 17,900	N N	25–50 15–25
09511300	Verde River near Scottsdale, AZ	6,615	1961–94	1980 1978	18.30 18.30	98,000 96,000	3/02/78 2/16/80	18.30 --	96,000 98,000	Y Y	50–100 50–100
09512100	Indian Bend Wash at Scottsdale, AZ	139	1943, 1961–84	1972	4.90	21,000	6/22/72	4.90	21,000	N	>100
09512160	Indian Bend Wash at McDowell Road, Scottsdale, AZ	--	1961–79	1972 1978	8.01 9.99	14,300 3,400	6/22/72	8.01	14,300	N	20–50

Table 4. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arizona—Continued

Station number (fig. 25)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09512170	Salt River at Jointhead Dam, Phoenix, AZ	13,225	1890–91, 1895, 1905–07, 1909, 1916, 1920, 1927, 1932, 1937–38, 1941, 1960, 1965–66, 1970, 1973, 1978–80	1891 1979	-- 10.30	300,000 126,000	2/16/80	9.30	170,000	Y	75–100
09512400	Cave Creek at Phoenix, AZ	252	1943, 1958–90	1943 1966	-- 11.65	9,000 766	8/05/74	9.30	3,460	Y	>100
09512500	Agua Fria River near Mayer, AZ	585	1940–94	1980	15.76	33,100	2/19/80 8/29/88	15.76 13.98	33,100 25,500	N N	>100 40–50
09512600	Turkey Creek near Cleator, AZ	89.4	1980–92	1980	11.51	5,230	2/19/80	11.51	5,230	N	10–25
09513650	Agua Fria River at El Mirage, AZ	1,628	1963–94	1979	11.70	58,400	12/19/78	11.70	58,400	Y	>100
09513780	New River near Rock Springs, AZ	67.3	1962–94	1970	13.50	18,600	9/05/70 3/02/78	13.50 9.40	18,600 13,600	N N	20–35 10–25
09513800	New River at New River, AZ	83.3	1961–82	1970 1978	9.98 12.34	19,500 18,000	9/05/70	9.98	19,500	N	15–30
09513860	Skunk Creek near Phoenix, AZ	64.6	1960–93	1964 1970	10.48 12.24	11,500 9,650	9/05/70	12.24	9,650	N	15–25
09513970	Agua Fria River at Avondale, AZ	2,066	1960–82	1979 1968	6.48 12.70	29,300 20,000	12/19/78	6.48	29,300	N	25–50
09515500	Hassayampa River at Box Damsite near Wickenburg, AZ	417	1925, 1927, 1937–38, 1946–82	1970	34.60	58,000	9/05/70	34.60	58,000	N	>100
09516500	Hassayampa River near Morristown, AZ	796	1939–47, 1954, 1956, 1964–81, 1983–94	1970	19.00	47,500	9/05/70 9/10/84	19.00 16.18	47,500 26,700	N N	>100 40–50
09516800	Jack Rabbit Wash near Tonopah, AZ	137	1964–79, 1983, 1991–94	1983	11.20	13,000	9/--/83	11.20	13,000	N	20–40
09517000	Hassayampa River near Arlington, AZ	1,470	1961–80, 1983–94	1970 1993	8.40 12.50	39,000 11,400	9/05/70 3/02/78	8.40 5.60	39,000 20,000	N N	50–100 15–30
09517200	Centennial Wash tributary near Wenden, AZ	2.79	1963–79, 1983, 1991–94	1970	4.66	720	9/05/70	4.66	720	N	15–30
09517280	Tiger Wash near Aguila, AZ	85.2	1963–79, 1983, 1991–94	1970	10.20	4,550	8/20/70	10.20	4,550	N	20–40
09517400	Winters Wash near Tonopah, AZ	47.8	1962–79	1976	10.10	3,640	9/25/76	10.10	3,640	N	25–50
09519500	Gila River below Gillespie Dam, AZ	49,650	1891, 1921–94	1891 1980	-- 18.81	250,000 178,000	12/20/78 2/16/80 10/05/83	17.06 18.81 15.37	125,000 178,000 95,200	Y Y Y	25–50 75–100 20–50
09519750	Bender Wash near Gila Bend, AZ	68.8	1963–79, 1983, 1992, 1994	1983	8.49	3,610	2/--/83	8.49	3,610	N	10–20
09519760	Sauceda Wash near Gila Bend, AZ	126	1963–79, 1990–94	1976	5.92	3,150	9/26/76	5.92	3,150	N	5–20

Table 4. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arizona—Continued

Station number (fig. 25)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09519800	Gila River below Painted Rock Dam, AZ	50,910	1960–94	1993	16.79	32,000	5/03/83	9.36	9,190	Y	10–30
09520100	Military Wash near Sentinel, AZ	8.70	1963–79, 1983, 1991–94	1974 1983	5.35 6.80	1,530 1,420	8/02/74	5.35	1,530	N	10–25
09520110	Hot Shot Arroyo near Ajo, AZ	0.44	1966–81	1976	6.68	240	9/05/76	6.68	240	N	10–25
09520160	Gibson Arroyo at Ajo, AZ	2.18	1967–81	1970	7.60	1,800	8/02/70	7.60	1,800	N	>50
09520170	Rio Cornez near Ajo, AZ	243	1967–80	1976	10.41	8,030	9/04/76	10.41	8,030	N	10–25
09520200	Black Gap Wash near Ajo, AZ	12.1	1962–79	1979	9.35	940	7/20/79	9.35	940	N	10–25
09520300	Alamo Wash tributary near Ajo, AZ	0.90	1963–76, 1978–80, 1982–93	1972	4.45	510	8/31/72	4.45	510	N	25–50
09520350	Mohawk Pass Wash at Mohawk, AZ	0.09	1963–76, 1980	1970	4.70	117	8/01/70	4.70	117	N	10–25
09535100	San Simon Wash near Pisinimo, AZ	569	1972–94	1976	10.82	12,500	9/24/76	10.82	12,500	N	50–100
09535300	Vamori Wash at Kom Vo, AZ	1,250	1972–94	1984	10.54	10,400	10/03/83	10.54	10,400	N	>100

[1] Regulated during flood: N, no; Y, yes.

Arkansas

Hydroclimatology

Arkansas is located in the south-central United States. The weather in Arkansas is affected by the prevailing westerlies, which are part of the atmosphere's general circulation pattern. The weather systems typically move from west to east. The primary source of moisture is the Gulf of Mexico, and the Pacific Ocean is a secondary source. Mean annual precipitation in Arkansas ranges from about 40 in. in the Arkansas Valley north of the Ouachita Mountains to 56 in. in the Ouachita Mountains (Paulson and others, 1991).

Flooding characteristics in Arkansas depend on the season. In the winter, flooding is generally widespread and lasts for several days. Flooding in the summer is typically local and short-lived.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Arkansas is dependent on drainage area of the basin, channel slope, and channel length. In the upland area of the State, mean basin elevation and mean annual precipitation replace channel length as factors affecting maximum discharge (Jennings and others, 1994).

Significant Floods

The most extensive flood in Arkansas during 1970–89 was the flood of December 1982. Thirty-two percent of the State's streamflow-gaging stations recorded significant discharges. The flood mostly affected northern and western Arkansas. On December 3, 1982, rainfall amounts exceeded 12 in. in 24 hours (Paulson and others, 1991). Maximum discharges matching or exceeding the 100-year recurrence interval were recorded at 21 gaging stations, and maximum discharges with at least a 25-year recurrence interval occurred at 27 additional gaging stations. Several tornados caused damage along the eastern edge of the flooded areas.

During 1973 and 1974, Arkansas had unusually large amounts of precipitation. A flood during June 1974 resulted in discharges with 100-year recurrence intervals at six streamflow-gaging stations. Thirteen percent of the gaged streams recorded significant discharges during these years.

The location of streamflow-gaging stations in Arkansas that had significant floods for 1970–89 is shown in figure 26 by station number. The specific data for each significant flood are listed in table 5. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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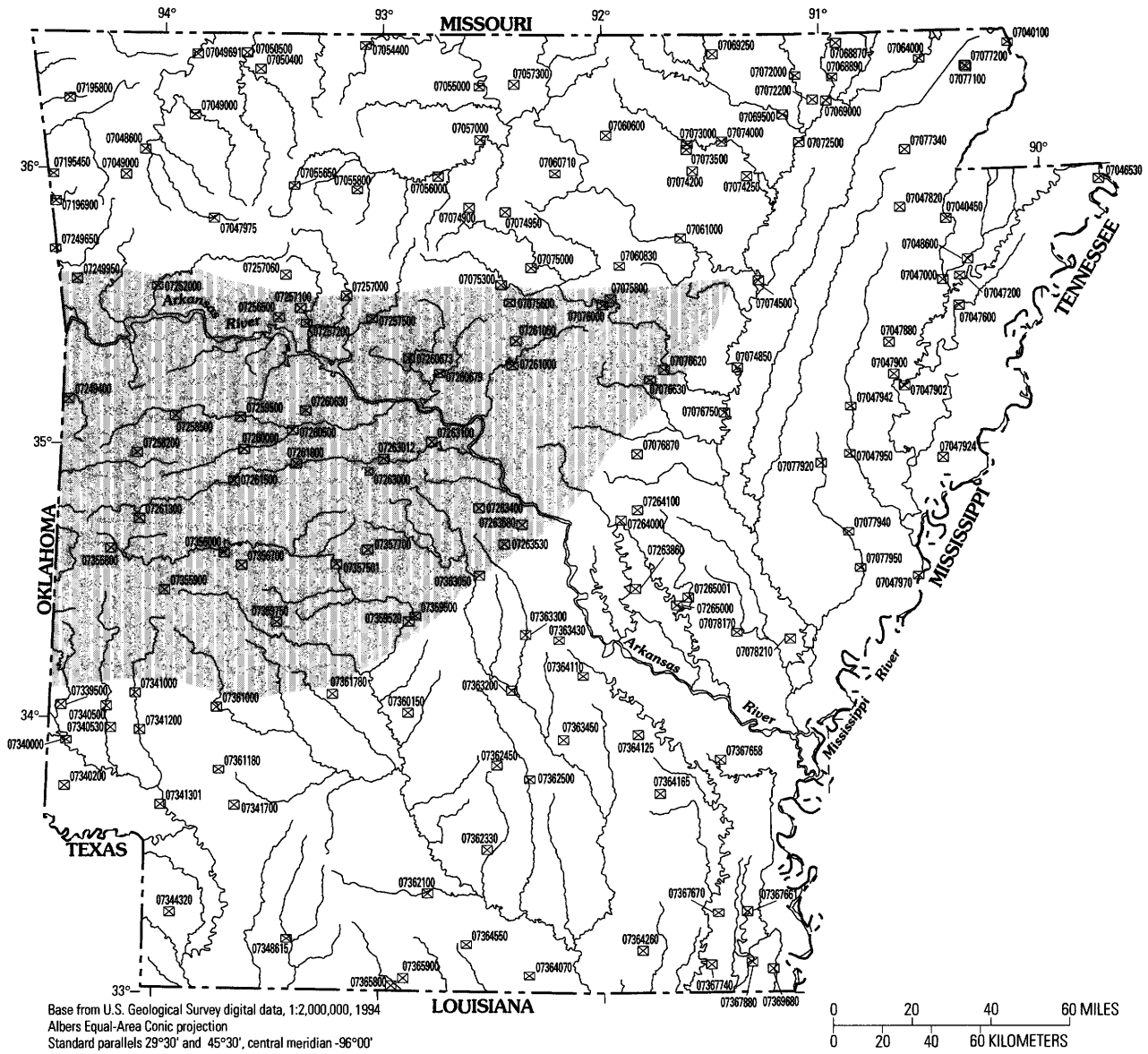
Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.



EXPLANATION

Ouachita Mountains

07365900 ⊠ Streamflow-gaging station and number

Figure 26. Location of streamflow-gaging stations with significant floods during 1970–89 for Arkansas.

Table 5. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arkansas

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig. 26)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07040100	St. Francis River at St. Francis, AR	1,772	1916–93	1935	28.20	39,200	4/02/79	24.83	27,400	Y	50–100
							12/26/82	25.24	24,802	Y	25–50
							2/15/89	--	27,269	Y	50–100
07040450	St. Francis River at Lake City, AR	2,374	1917–93	1979	--	42,700	4/21/73	12.79	30,400	Y	10–25
				1937	13.30	36,700	4/02/79	--	42,700	Y	>100
							12/29/82	12.58	28,815	Y	10–25
07046530	Ditch number 42 at Hickman, AR	1.08	1963–82	1973	12.83	163	4/19/73	12.83	163	N	--
07046600	Right hand chute of Little River at Rivervale, AR	2,106	1939–94	1979	13.28	35,600	4/02/75	12.75	33,800	N	10–25
				1989	13.87	33,697	4/06/79	13.28	35,600	N	10–25
							2/20/89	13.87	33,697	N	10–25
07047000	St. Francis River Floodway near Marked Tree, AR (Dam)	4,644	1935–70, 1980–93	1989	--	57,292	2/22/89	--	57,292	Y	25–50
				1966	27.82	20,000					
07047200	Ditch number 45 near Lepanto, AR	2.16	1962–85	1973	8.83	220	4/22/74	8.84	220	N	10–25
				1974	8.84	220					
07047600	Tyronza River near Tyronza, AR	290	1939–74, 1980–93	1988	30.86	11,090	3/01/87	26.00	7,889	N	10–25
				1950	31.61	15,660	11/27/87	30.86	11,091	N	>100
							2/16/89	28.59	17,258	N	>100
07047820	Murray Creek near Jonesboro, AR	1.38	1960–83, 1987–88, 1991–92, 1994	1973	14.20	1,330	5/27/73	14.20	1,330	N	25–50
07047880	Pope Creek tributary at Bird Eye, AR	0.08	1963–93	1978	7.73	511	9/13/78	7.73	511	N	>100
							5/15/83	6.12	144	N	25
07047900	St. Francis Bay at Riverfront, AR	--	1935–93	1979	38.90	54,700	4/28/73	--	49,900	Y	10–25
							4/08/79	38.90	54,700		25–50
07047902	St. Francis River at latitude of Wittsburg, AR	6,475	1936–75, 1977, 1979, 1981–93	1937	--	74,100	4/28/73	--	62,600	Y	--
							2/23/89	--	58,640	Y	--
07047924	Crooked Bayou tributary at State Highway 149 at Hughes, AR	0.48	1963–82	1980	12.63	625	7/22/80	12.63	625	N	>100
07047942	L'Anguille River near Colt, AR	535	1971–94	1985	14.49	35,200	11/30/84	14.49	35,200	N	>100
				1988	17.34	16,300					
07047950	L'Anguille River at Palestine, AR	786	1933, 1935–37, 1939, 1943–85, 1990–93	1983	29.19	22,803	5/19/83	29.19	22,803	N	50–100
				1937	39.70	--					
07047970	Mississippi River at Helena, AR	941,700	1828, 1844, 1849–51, 1858–59, 1862, 1865, 1867, 1872–1993	1912	--	2,041,000	4/07/75	--	1,790,000	Y	25–50
				1937	60.21	1,968,000					
07047975	Dog Branch at St. Paul, AR	1.23	1961–81	1973	10.60	956	4/22/73	10.60	956	N	25–50
07048000	West Fork White River at Greenland, AR	83.10	1946–83	1960	14.50	34,700	11/24/73	14.30	33,300	N	25–50
07048600	White River near Fayetteville, AR	400	1964–94	1986	30.45	81,600	11/25/73	30.29	80,200	N	25–50
							11/19/85	30.45	81,600	N	25–50
07049000	War Eagle Creek near Hindsville, AR	263	1943, 1953–77, 1985–94	1943	28.10	50,000	11/19/85	28.49	49,000	N	50–100
				1986	28.49	49,000					

Table 5. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arkansas—Continued

Station number (fig. 26)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07049691	White River at Beaver Dam near Eureka Springs, AR	1,192	1966–84	1973	--	25,900	4/23/73	--	25,900	Y	>100
07050400	Freeman Branch at Berryville, AR	0.73	1961–80	1977	8.66	525	4/30/77	8.66	525	N	10–25
07050500	Kings River near Berryville, AR	527	1927, 1939–94	1985 1986	13.79 38.91	77,510 66,000	10/25/84 11/19/85	13.79 38.91	77,510 66,000	N N	50–100 25–50
07054400	Charley Creek near Omaha, AR	3.41	1962–81, 1983	1983	16.54	4,850	12/03/82	16.54	4,850	N	>100
07055000	White River near Flippin, AR	6,081	1927, 1929–94	1927	45.40	240,000	9/27/71 3/29/85	13.61 14.08	31,300 31,800	Y Y	10–25 10–25
07055650	Smith Creek near Boxley, AR	8.35	1963–83	1983 1974	13.74 15.80	7,200 6,830	12/03/82	13.74	7,200	N	>100
07055800	Dry Branch near Vendor, AR	6.15	1962–81, 1983	1983	15.30	5,000	12/03/82	15.30	5,000	N	25–50
07056000	Buffalo River near St. Joe, AR	829	1915, 1940–94	1983	53.75	158,000	11/25/73 12/03/82	45.41 53.75	111,000 158,000	N N	10–25 >100
07057000	Buffalo River near Rush, AR	1,096	1915, 1927, 1929–74, 1983	1983	55.80	215,000	12/03/82	55.80	215,000	N	>100
07057300	Dodd Creek tributary near Mountain Home, AR	0.76	1961–86	1985	13.58	800	9/05/85	13.58	800	N	25–50
07060600	Band Mill Creek near Brockwell, AR	1.25	1961–85	1975	12.65	1,830	9/20/75	12.65	1,830	N	>100
07060710	North Sylamore Creek near Fifty Six, AR	58.1	1966–85, 1987–94	1983	20.60	25,200	12/03/82	20.60	25,200	N	25–50
07060830	Wolf Bayou near Drasco, AR	0.27	1963–83	1983	9.49	283	12/03/82	9.49	283	N	10–25
07061000	White River at Batesville, AR	11,070	1904–58, 1979–94	1916	31.90	382,000	12/03/82	29.27	312,000	Y	50–100
07064000	Black River near Corning, AR	1,749	1915–16, 1919–94	1945	16.92	48,600	3/30/75	--	28,200	Y	10–25
07068870	Fourche River tributary at Middlebrook, AR	0.19	1961–81	1973	8.69	330	4/22/73	8.69	330	N	25
07068890	Fourche River above Pocahontas, AR	229	1965–79	1977	25.40	42,600	3/28/77	25.40	42,600	N	10–25
07069000	Black River at Pocahontas, AR	4,845	1927, 1937–94	1927	25.90	80,000	4/25/73 12/07/82	25.00 25.22	66,000 66,300	Y Y	10–25 10–25
07069250	Brush Creek near Mammoth Spring, AR	0.48	1961–92, 1994	1973	15.05	960	4/22/73 5/22/74	15.05 14.25	960 849	N N	25–50 25
07069500	Spring River at Imboden, AR	1,183	1915, 1937–94	1983	38.12	244,000	3/28/77 12/03/82	28.78 38.12	82,700 244,000	N N	10–25 >100
07072000	Elevenpoint River near Ravenden Springs, AR	1,134	1930–33, 1936–94	1983	29.06	162,000	12/03/82	29.06	162,000	N	>100
07072200	Hubble Creek near Pocahontas, AR	1.33	1961–85	1977	12.40	1,160	3/28/77	12.40	1,160	N	25–50
07072500	Black River at Black Rock, AR	7,369	1905–94	1983 1915	31.51 31.90	190,000 160,000	3/29/77 12/04/82	28.10 31.51	109,000 190,000	Y Y	10–25 50–100
07073000	Strawberry River near Evening Shade, AR	217	1939–79	1949	26.59	31,000	3/28/77	25.38	24,000	N	10–25
07073500	Piney Fork at Evening Shade, AR	99.2	1939–94	1983	30.32	50,400	12/03/82	30.32	50,400	N	>100

Table 5. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arkansas—Continued

Station number (fig. 26)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07074000	Strawberry River near Poughkeepsie, AR	473	1937–94	1983	35.90	158,000	12/03/82	35.90	158,000	N	>100
07074200	Dry Branch tributary near Sidney, AR	1.22	1961–81, 1983	1983	12.40	1,230	12/03/82	12.40	1,230	N	10–25
07074250	Reeds Creek near Strawberry, AR	34.9	1963–83	1975	16.30	18,500	3/28/75	16.30	18,500	N	>100
07074500	White River at Newport, AR	19,860	1886–1994	1927	35.60	387,000	12/05/82	34.00	330,000	Y	50–100
07074850	White River near Augusta, AR	20,464	1933, 1935, 1937–80, 1984–94	1989 1945	35.54 40.83	140,000 --	5/11/84 2/18/89	32.24 35.54	67,300 140,000	N Y	-- --
07074900	Trace Creek tributary near Marshall, AR	0.26	1961–86	1983	11.89	288	12/03/82	11.89	288	N	25
07074950	Tick Creek near Leslie, AR	1.58	1961–83	1973	9.94	1,380	4/22/73	9.94	1,380	N	25–50
07075000	Middle Fork of Little Red River at Shirley, AR	302	1935, 1939–94	1983	37.53	241,000	12/03/82	37.53	241,000	N	>100
07075300	South Fork of Little Red River at Clinton, AR	148	1962–94	1983	34.27	67,900	3/28/77 12/03/82	26.43 34.27	32,700 67,900	N N	2–5 >100
07075600	Choctaw Creek tributary near Choctaw, AR	1.36	1964–93	1983	19.07	1,760	12/03/82 9/04/85	19.07 14.68	1,760 710	N N	>100 10–25
07075800	Dill Branch tributary near Ida, AR	0.26	1964–94	1979	9.96	230	3/10/73 4/02/79	9.64	216 230	N N	10–25 25
07076000	Little Red River near Heber Springs, AR	1,153	1927–35, 1937–87	1949	46.53	117,000	2/05/83	18.33	11,000	Y	>100
07076620	Little Red River near Searcy, AR	1,648	1984–94	1985 1988	35.92 37.12	35,300 26,000	11/27/84	35.92	35,300	Y	--
07076630	Key Branch near Searcy, AR	0.66	1961–82, 1986–88, 1990–92, 1994	1974	7.79	573	11/24/73	7.79	573	N	25
07076750	White River at Georgetown, AR	23,387	1913–80, 1984–94	1985 1949	23.94 32.80	94,900 --	5/13/84 4/05/85	21.68 23.94	66,000 94,900	N Y	-- --
07076870	Pigeon Roost Creek at Butlerville, AR	23.0	1961–94	1974	12.62	8,800	4/21/74 2/26/87	12.62 12.38	8,800 7,700	N N	25–50 25–50
07077100	Big Creek near Boydsville, AR	12.8	1962–81, 1994	1973	19.14	5,700	4/19/73	19.14	5,700	N	25–50
07077200	Big Creek tributary near Boydsville, AR	1.58	1962–85, 1989–94	1979 1984	9.44 9.65	785 730	12/03/78	9.44	785	N	10–25
07077340	Sugar Creek tributary near Walcott, AR	0.68	1963–86	1973	13.62	1,000	4/19/73	13.62	1,000	N	>100
07077920	Big Creek at Goodwin, AR	31.1	1961–94	1988	10.35	1,250	12/25/87	10.35	1,250	N	50–100
07077940	Spring Creek near Aubrey, AR	38.0	1962–81, 1993–94	1980	16.03	2,100	7/22/80	16.03	2,100	N	10
07077950	Big Creek at Poplar Grove, AR	448	1971–94	1973	31.74	5,910	4/23/73	31.74	5,910	N	10–25
07078170	Little Lagrue Bayou tributary near Dewitt, AR	1.51	1961–80	1973	10.14	270	4/19/73	10.14	270	N	50–100
07078210	Tarleton Creek tributary at Ethel, AR	0.20	1963–86	1973	8.05	645	4/19/73	8.05	645	N	>100
07195450	Ballard Creek at Summers, AR	14.6	1963–86	1986 1979	10.07 12.24	5,100 4,830	11/19/85	10.07	5,100	N	5–10

Table 5. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arkansas—Continued

Station number (fig. 26)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07195800	Flint Creek at Springtown, AR	14.2	1961–94	1974	17.51	14,600	6/08/74	17.51	14,600	N	>100
07196900	Baron Fork at Dutch Mills, AR	40.6	1958–94	1986	14.81	20,900	7/13/72 11/18/85	13.74 14.81	17,100 20,900	N N	5–10 10–25
07249400	James Fork near Hackett, AR	147	1958–94	1968 1992	23.00 23.06	30,000 8,410	12/10/71	22.24	17,500	N	10–25
07249650	Mountain Fork near Evansville, AR	8.15	1962–81	1971	11.41	5,120	10/26/70	11.41	5,120	N	25–50
07249950	Webber Creek tributary near Cedarville, AR	0.34	1962–82, 1985–94	1971	7.71	274	10/26/70 11/24/73	7.71 7.38	274 220	N N	10–25 10–25
07252000	Mulberry River near Mulberry, AR	373	1928, 1939–94	1983	23.66	70,200	12/03/82 2/23/85	23.66 21.90	70,200 59,700	N N	25–50 10–25
07256500	Spadra Creek at Clarksville, AR	61.1	1927, 1949, 1953–94	1974	19.93	27,400	12/10/71 6/05/74	16.54 19.93	18,000 27,400	N N	10–25 >100
07257000	Piney Creek near Dover, AR	274	1949, 1951–93	1983	33.87	111,000	12/10/71 12/03/82	28.70 33.87	74,600 111,000	N N	25–50 >100
07257060	Mikes Creek tributary near Ozone, AR	0.20	1964–83	1974	10.98	166	6/05/74	10.98	166	N	10–25
07257100	Minnow Creek tributary near Hagerville, AR	0.19	1962–94	1970	6.62	176	4/24/70	6.62	176	N	25
07257200	Little Piney Creek near Lamar, AR	154	1979–94	1983	15.35	13,300	12/03/82	15.35	13,300	N	2–5
07257500	Illinois Bayou near Scottsville, AR	241	1943, 1948–94	1983	27.49	130,000	12/03/82	27.49	130,000	N	>100
07258200	Pack Saddle Creek tributary near Waldron, AR	0.92	1961–93	1968	9.42	689	10/21/84	9.42	689	N	25–50
07258500	Petit Jean River near Booneville, AR	241	1939–94	1939	23.42	43,200	12/10/71	22.48	30,800	N	10–25
07259500	Petit Jean River near Waveland, AR	516	1939–92	1939 1945	29.95 32.23	62,600 37,100	12/03/82	28.51	9,100	Y	25–50
07260000	Dutch Creek at Waltreak, AR	81.4	1927, 1946–94	1969	22.38	24,500	12/03/82 10/29/84	20.75 19.66	18,400 15,000	N N	25–50 10–25
07260500	Petit Jean River at Danville, AR	764	1917–94	1939	31.82	70,800	12/03/82	29.36	47,500	Y	>100
07260630	Jake Creek near Chickalah, AR	1.85	1961–80, 1983	1983	14.58	2,200	12/03/82	14.58	2,200	N	>100
07260673	West Fork Point Remove Creek near Hattieville, AR	222	1979–94	1983	26.62	64,100	12/03/82	26.62	64,100	N	>100
07260679	East Fork Point Remove Creek tributary near St. Vincent, AR	0.09	1967–94	1983	8.24	102	12/03/82	8.24	102	N	25–50
07261000	Cadron Creek near Guy, AR	169	1955–94	1983	29.29	24,200	12/04/82	29.29	24,200	N	25–50
07261050	Pine Mountain Creek tributary near Damascus, AR	0.29	1961–81, 1983	1983	13.50	573	12/03/82	13.50	573	N	>100
07261300	Tan-a-hill Creek near Boles, AR	2.33	1960–81	1974	13.50	3,100	6/08/74	13.50	3,100	N	25–50
07261500	Fourche Lafave River near Gravelly, AR	410	1939–87, 1989–94	1983	32.45	162,000	12/03/82	32.45	162,000	N	>100
07261800	Brogan Creek near Rover, AR	1.04	1963–94	1983	10.65	1,260	12/03/82	10.65	1,260	N	50–100

Table 5. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arkansas—Continued

Station number (fig. 26)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07263000	South Fourche La Fave River near Hollis, AR	210	1942–94	1983	24.55	94,000	12/03/82	24.55	94,000	N	>100
07263012	Fourche La Fave near Aplin, AR	957	1980–94	1985 1983	33.79 36.10	24,700 --	10/20/84	33.79	24,700	Y	--
07263100	Fourche La Fave River tributary near Perryville, AR	1.47	1962–94	1983	11.45	1,150	12/03/82 3/21/85	11.45 9.61	1,150 720	N N	25–50 5–10
07263400	Little Maumelle River at Ferndale, AR	15.0	1963–86, 1993–94	1973	15.01	10,800	3/10/73	15.01	10,800	N	50–100
07263530	Fourche Creek at Red Gate, AR	32.4	1979, 1981–93	1985	14.00	6,100	10/19/84	14.00	6,100	N	10–25
07263580	Rock Creek at 36th Street at Little Rock, AR	20.5	1979, 1981–94	1988 1989	13.94 14.73	10,500 --	12/25/87	13.94	10,500	N	--
07263860	Mile Branch near Tomberlin, AR	2.75	1963–79	1979	11.16	570	12/08/78	11.16	570	N	10
07264000	Bayou Meto near Lonoke, AR	207	1937, 1948–94	1988	27.11	5,750	12/29/87	27.11	5,750	N	50–100
07264100	White Oak Branch near Lonoke, AR	8.41	1961–86	1979	9.49	1,700	12/08/78	9.49	1,700	N	10–25
07265000	Crooked Creek near Humphrey, AR	79.2	1939–54, 1957–80	1973 1950	22.07 23.51	2,370 2,010	5/03/73	22.07	2,370	Y	10–25
07265001	Bayou Meto and Crooked Creek near Stuttgart, AR	653	1936–80	1937 1973	-- 23.80	9,350 6,370	5/03/73	23.80	6,370	N	10–25
07339500	Rolling Fork near De Queen, AR	182	1947, 1949–94	1947	25.60	110,000	3/27/77	16.12	7,650	Y	10–25
07340000	Little River near Horatio, AR	2,662	1915, 1930–94	1915	38.00	124,000	12/10/71	32.84	65,100	Y	25–50
07340200	West Flat Creek near Foreman, AR	10.7	1962–81, 1983	1983	12.97	3,800	12/02/82	12.97	3,800	N	10–25
07340500	Cossatot River near De Queen, AR	360	1938–94	1968	22.60	122,000	12/10/71 10/13/73	21.88 18.05	103,000 26,500	N Y	50–100 25–50
07340530	Mill Slough tributary near Locksburg, AR	0.64	1963–86	1983	9.76	719	12/26/82	9.76	719	N	25–50
07341000	Saline River near Dierks, AR	121	1920, 1939–94	1968	22.95	59,200	7/02/83	17.33	12,900	Y	25–50
07341200	Saline River near Lockesburg, AR	256	1964–94	1968	20.86	64,700	12/03/82	20.52	59,600	Y	50–100
07341301	Little River at Millwood Dam near Ashdown, AR	4,119	1967–84	1973	--	67,300	5/13/73	--	67,300	Y	10–25
07341700	Caney Creek near Hope, AR	12.9	1963–82	1974	15.70	9,410	8/31/74	15.70	9,410	N	>100
07344320	Mill Creek tributary near Fouke, AR	1.44	1961–83	1983	11.64	780	12/03/82	11.64	780	N	10–25
07348615	Bayou Dorcheat near Bussey, AR	229	1969–80	1974	219.83	22,000	6/08/74	219.83	22,000	N	25–50
07355800	Lewis Creek tributary near Mena, AR	0.65	1961–94	1991	6.23	560	10/31/72	6.19	559	N	25
07355900	Big Fork tributary at Big Fork, AR	0.19	1964–83	1983	14.25	225	12/03/82	14.25	225	N	25
07356000	Ouachita River near Mount Ida, AR	414	1942–94	1983	39.78	102,000	12/10/71 12/03/82	38.62 39.78	95,500 102,000	N N	>100 >100

Table 5. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arkansas—Continued

Station number (fig. 26)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07356700	Barnes Branch near Mount Ida, AR	1.85	1961–81, 1983	1983	16.79	3,070	12/03/82	16.79	3,070	N	>100
07357501	Ouachita River at Blakely Mountain Dam near Hot Springs, AR	1,105	1923, 1937–83	1945	38.55	123,000	12/19/82	--	12,400	Y	50–100
07357700	Glazypeau Creek at Mountain Valley, AR	3.84	1961–86	1985	12.69	2,800	10/19/84	12.69	2,800	N	25
07359500	Ouachita River near Malvern, AR	1,585	1903–04, 1923–92	1990 1923	29.00 30.30	166,000 140,000	12/03/82	27.06	125,000	Y	25–50
07359520	Jackson Creek near Malvern, AR	2.95	1962–81	1974	11.37	1,800	6/08/74	11.37	1,800	N	25–50
07359750	Little Sugarloaf Creek near Bonnerdale, AR	2.32	1962–83	1974	14.55	3,450	6/07/74	14.55	3,450	N	25–50
07360150	Pearson Creek tributary near Dalark, AR	0.42	1961–81	1973	9.61	1,220	4/19/73	9.61	1,220	N	>100
07361000	Little Missouri River near Murfreesboro, AR	380	1927–31, 1938–77	1945 1927	19.84 21.00	120,000 --	6/08/74	16.32	31,900	Y	25–50
07361180	South Fork Ozan Creek near Ozan, AR	17.7	1963–91, 1994	1973	25.06	8,360	4/19/73 11/23/73	25.06 24.60	8,360 7,200	N N	>100 25–50
07361780	Bradshaw Creek near Hollywood, AR	3.36	1962–81	1974	16.86	1,140	6/08/74	16.86	1,140	N	10–25
07362100	Smackover Creek near Smackover, AR	385	1939–94	1974	24.97	52,700	6/08/74 6/28/86	24.97 23.28	52,700 34,200	N N	>100 25–50
07362330	Dunn Creek near Hampton, AR	13.6	1962–94	1966	10.11	4,240	4/24/73	9.88	3,650	N	25–50
07362450	Cooks Creek near Fordyce, AR	5.02	1962–81	1974	11.93	2,120	12/03/73	11.93	2,120	N	10–25
07362500	Moro Creek near Fordyce, AR	240	1938, 1952–94	1958	16.47	26,800	12/27/87	15.86	22,000	N	25–50
07363050	Holly Creek tributary near Benton, AR	1.44	1962–86	1978	11.80	2,760	9/13/78	11.80	2,760	N	>100
07363200	Saline River near Sheridan, AR	1,123	1938–94	1988	22.93	76,800	12/28/87	22.93	76,800	N	25–50
07363300	Hurricane Creek near Sheridan, AR	204	1960–93, 1995	1960	18.55	52,300	12/27/87	16.83	20,000	N	10–25
07363430	East Fork Derrieusseaux Creek near Pine Bluff, AR	0.66	1961–81	1973	12.17	1,020	4/22/73	12.17	1,020	N	>100
07363450	Varnell Creek near Rison, AR	0.28	1964–86	1983	8.71	214	12/28/82	8.71	214	N	10–25
07364070	Bear Creek near Strong, AR	5.62	1963–83	1983	15.35	950	12/27/82	15.35	950	N	25
07364110	Nevins Creek tributary near Pine Bluff, AR	0.75	1961–89, 1991–92, 1994	1984	10.58	600	5/15/83 9/24/84	10.40 10.58	590 600	N N	25–50 25–50
07364125	Cane Creek at Star City, AR	4.93	1962–83	1973	11.34	2,890	4/19/73	11.34	2,890	N	50–100
07364165	Upper Cutoff Creek near Monticello, AR	18.8	1963–83	1970	11.30	4,720	3/03/70	11.30	4,720	N	50–100
07364260	Hanks Creek near Hamburg, AR	20.90	1962–83	1974	11.59	2,300	4/21/74	11.59	2,300	N	10–25
07364550	Cany Creek tributary near Eldorado, AR	0.13	1961–83, 1985–94	1974	12.40	978	6/08/74	12.40	978	N	>100

Table 5. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Arkansas—Continued

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			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07365800	Cornie Bayou near Three Creeks, AR	180	1956–87, 1990–94	1974	17.50	65,000	6/08/74	17.50	65,000	N	>100
07365900	Three Creeks near Three Creeks, AR	50.4	1956–78	1974	12.13	24,100	6/08/74	12.13	24,100	N	>100
07367658	Cypress Creek Canal number 19 tributary near Dumas, AR	0.94	1961–86	1973	9.81	288	4/24/73	9.81	288	N	25
07367661	Boeuf River near Lake Village, AR	315	1946–91	1979 1991	22.10 22.90	10,800 --	3/16/73 12/06/78	20.90 22.10	9,940 10,800	N N	10–25 25–50
07367670	Wards Bayou tributary at Montrose, AR	3.24	1961–83	1974	7.87	570	4/21/74	7.87	570	N	--
07367680	Boeuf River near Eudora, AR	623	1939–92	1966 1991	19.70 21.61	18,600 --	1/21/79	19.02	17,500	N	10–25
07367740	Camp Bayou near Parkdale, AR	1.86	1963–85	1974	9.41	380	4/21/74	9.41	380	N	25
07369680	Bayou Macon at Eudora, AR	500	1932, 1938–92, 1994	1973 1958	25.85 27.43	5,630 5,100	3/20/73 2/05/75	25.85 22.80	5,630 4,400	N N	50–100 10–25

[1] Regulated during flood: N, no; Y, yes.

California

Hydroclimatology

California is located on the West Coast of the United States. It borders about 800 mi of the Pacific Ocean and makes up nearly two-thirds of the coastline between Canada and Mexico. Precipitation in California is caused primarily by moisture-laden marine air moving in from the Pacific Ocean. A semipermanent high-pressure system located off the coast tends to regulate the movement of Pacific storms and is a key feature of the atmospheric-circulation patterns that determine California's climate (Paulson and others, 1991). Most of California's precipitation is received between November and March. California's mountain ranges induce precipitation and create "rain shadows" in the leeward valleys and plains. The combined effects of topography and atmospheric-circulation patterns result in mean annual precipitation that ranges from about 3 in. in the desert areas of southern California to 120 in. in the coastal mountains near the Oregon border (Paulson and others, 1991).

Flooding is limited generally to the winter storm season, except in the southern deserts, where summer thunderstorms occasionally produce localized flash floods. On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in California is dependent on drainage area of the basin, mean annual precipitation, and an elevation index, which is the mean of elevations (in thousands of feet) at points along the main channel at 10 and 85 percent of the distances from the site to the divide (Jennings and others, 1994).

Significant Floods

The flood of February 1986 was the most extensive in California during 1970–89. Twenty-three percent of the streamflow-gaging stations in the State recorded significant discharges. The flood was caused by a storm that produced substantial rainfall and excessive runoff in the northern one-half of the State (California Department of Water Resources, 1988). A series of storms embedded in a flow of moist air from the southwest moved across the State. Rain continued for 12 consecutive days in many areas of northern California. The largest total rainfall was 49.6 in., recorded at Bucks Lake in the Feather River Basin (Paulson and others, 1991). Storm totals of 20 to 30 in. were common for many locations. Maximum discharges of record were measured on the Russian River at Guerneville (station 11467000, fig. 27) and the Napa River near Napa (station 11458000, fig. 27).

California also had significant floods in 1980 and 1983. During the 1980 flood, 13 percent of the streamflow-gaging stations in the State recorded significant discharges, and 17 percent had significant discharges during the 1983 flood. The 1980 flood was most severe in central and southern coastal California.

The location of streamflow-gaging stations in California that had significant floods for 1970–89 is shown in figure 27 by station number. The specific data for each significant flood are listed in table 6. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

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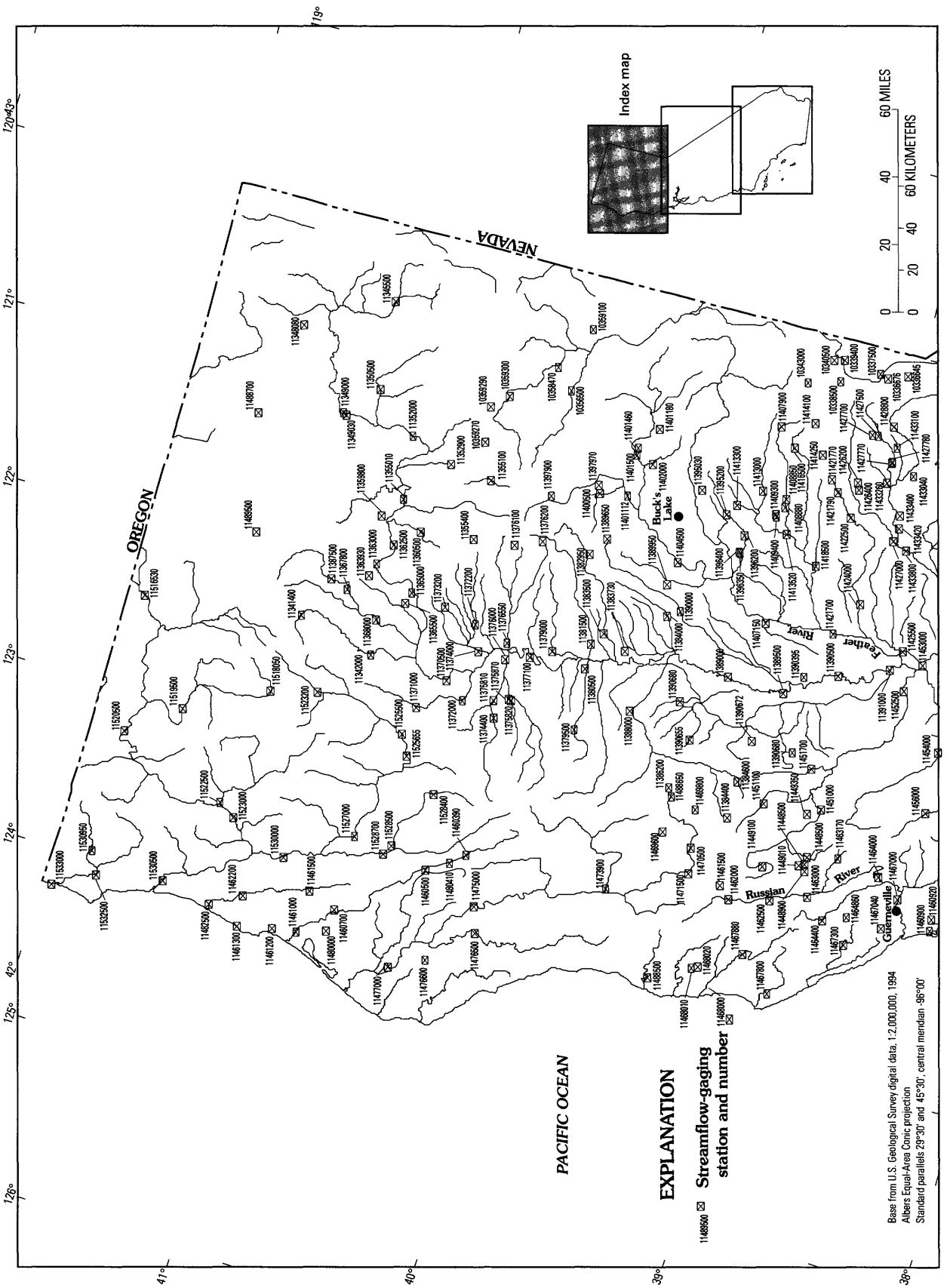

Figure 27. Location of streamflow-gaging stations with significant floods during 1970–89 for California.

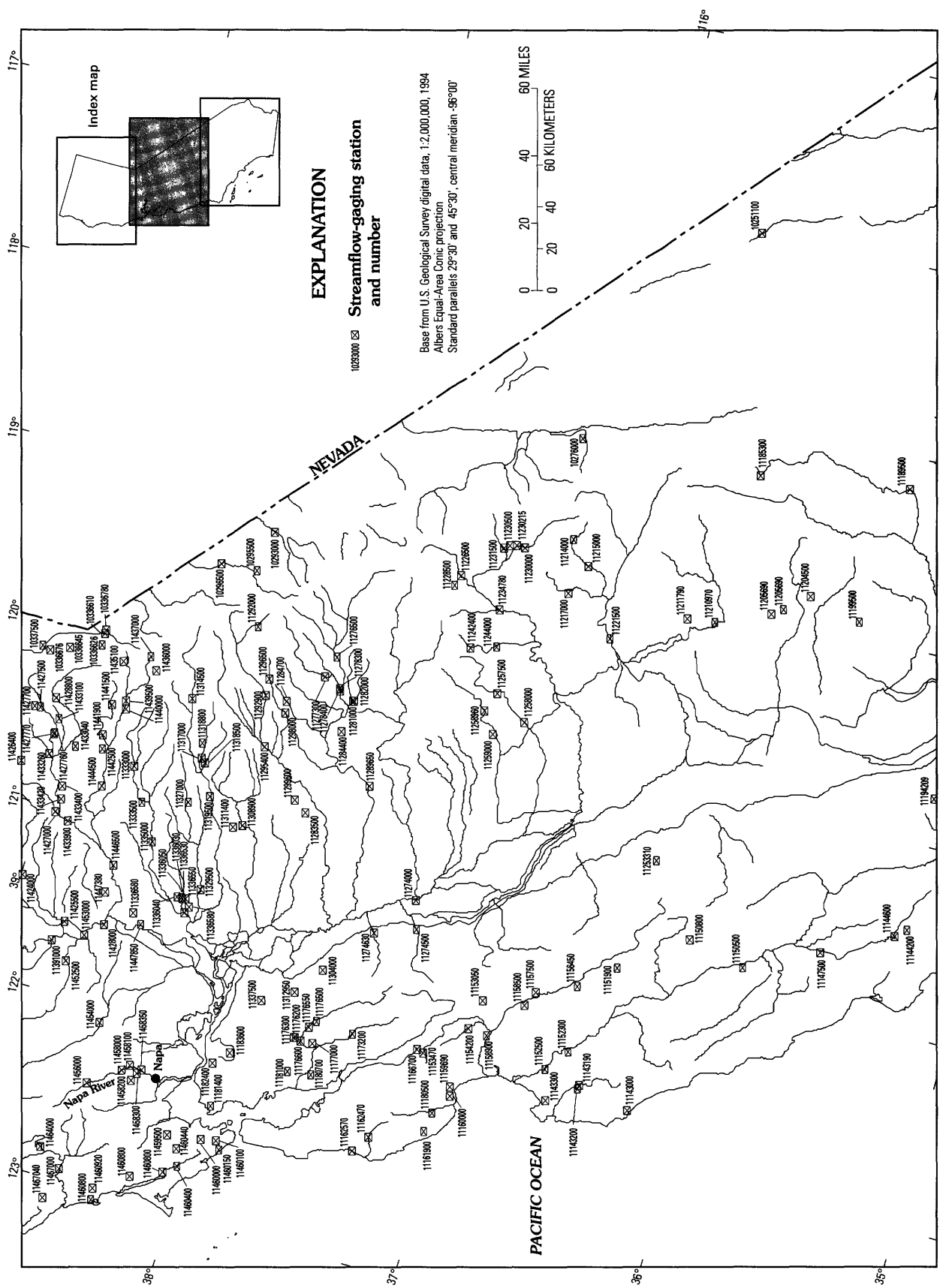

Figure 27. Location of streamflow-gaging stations with significant floods during 1970–89 for California—Continued.

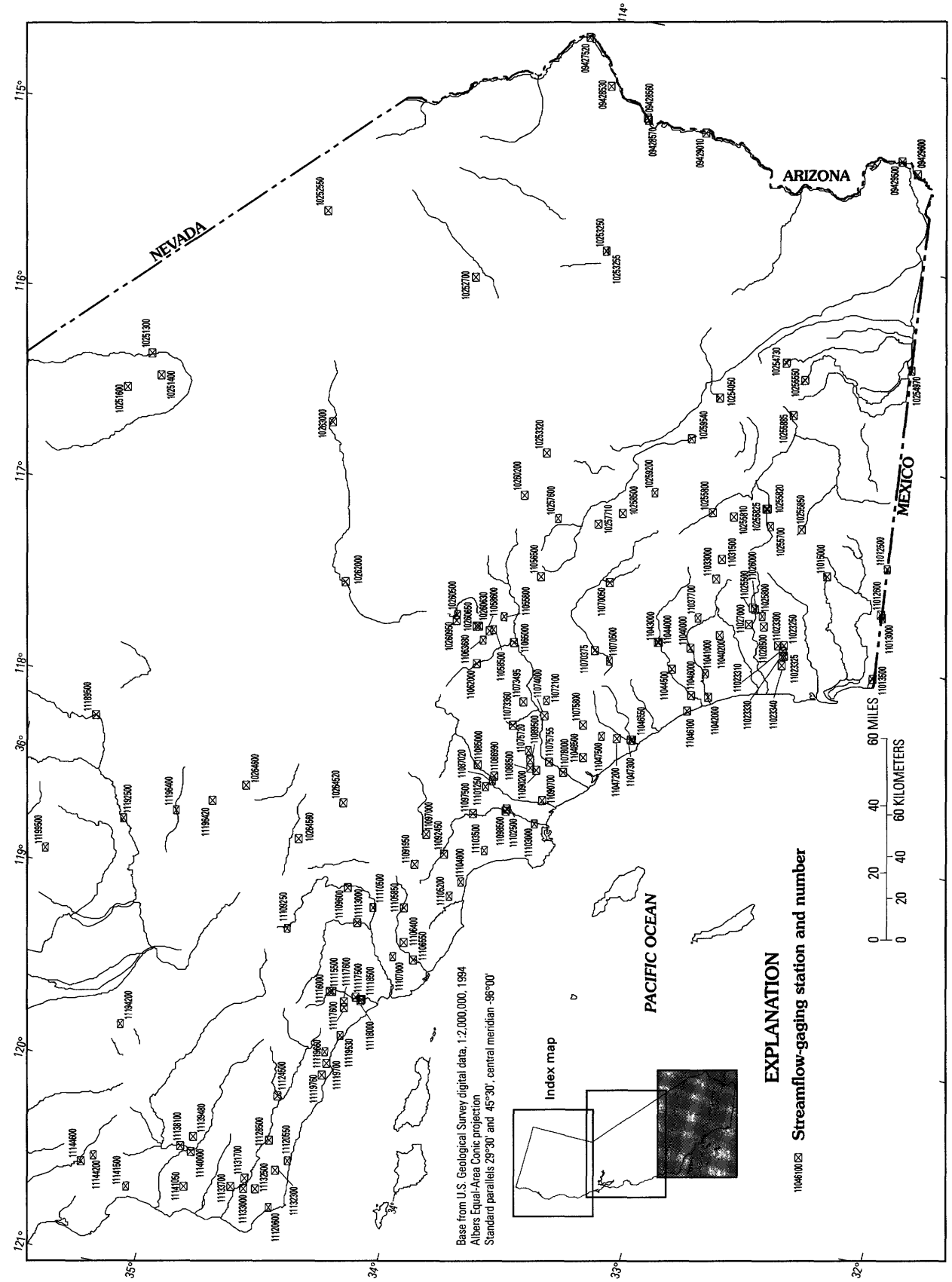

Figure 27. Location of streamflow-gaging stations with significant floods during 1970–89 for California—Continued.

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 27)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09427520	Colorado River below Parker Dam, CA-AZ	182,700	1935–45, 1947–94	1937 1983	-- 77.29	42,400 40,900	6/29/83 10/05/83	77.29 76.26	40,900 38,800	Y Y	-- --
09428530	Arch Creek near Earp, CA	1.52	1959–73	1971	21.74	7,160	8/19/71	21.74	7,160	N	--
09428560	Colorado River tributary number 2 near Vidal, CA	0.39	1960–73	1971	9.94	400	8/11/71	9.94	400	N	--
09428570	Colorado River tributary near Vidal, CA	1.12	1960–73	1971	12.55	460	8/11/71	12.55	460	N	--
09429010	Colorado River at Palo Verde Dam, CA-AZ	186,200	1969–88	1983	--	42,300	6/30/83	--	42,300	Y	--
09429500	Colorado River below Imperial Dam, CA-AZ	188,500	1972–81 1983–94	1983	--	30,200	8/18/83	--	30,200	Y	--
09429600	Colorado River below Laguna Dam, AZ	188,600	1972–91 1993–94	1983 1977	-- 12.88	30,900 5,030	8/19/83	--	30,900	Y	--
10251100	Salt Creek near Stovepipe Wells, CA	--	1974–88	1976 1984	4.81 4.87	363 105	2/09/76	4.81	363	N	--
10251300	Amargosa River at Tecopa, CA	3,090	1962–83	1983 1969	16.00 18.34	10,600 5,000	8/19/83	16.00	10,600	N	--
10251400	Ibex Creek near Tecopa, CA	0.20	1959–73	1973	14.33	126	10/03/72	14.33	126	N	--
10251600	Salsberry Creek near Shoshone, CA	0.01	1959–73	1973	12.99	12	10/03/72	12.99	12	N	--
10252550	Caruthers Creek near Ivanpah, CA	1.13	1964–94	1984 1979	5.38 5.75	671 333	8/25/82 7/21/84	5.22 5.38	614 671	N N	25–50 25–50
10252700	Creosote Creek near Cadiz, CA	0.02	1959–73	1972	11.34	20	8/13/72	11.34	20	N	--
10253250	Granite Wash near Rice, CA	0.01	1960–73	1970	4.58	22	8/14/70	4.58	22	N	--
10253255	Granite Wash number 2 near Rice, CA	0.02	1960–73	1970	4.71	27	8/14/70	4.71	27	N	--
10253320	Quail Wash near Joshua Tree, CA	100	1964–79	1978	3.33	930	1/10/78	3.33	930	N	--
10254050	Salt Creek near Mecca, CA	269	1961–91	1976 1983	14.30 16.90	9,900 8,120	9/24/76 3/02/83	14.30 16.90	9,900 8,120	N N	75–100 50–75
10254730	Alamo River near Niland, CA	--	1961–94	1977	-- --	4,500	8/17/77 3/03/83	-- --	4,500 4,000	N N	-- --
10254970	New River at international boundary at Calexico, CA	--	1982–94	1988	14.45	809	8/24/88	14.45	809	N	--
10255550	New River at outlet near Westmorland, CA	--	1962–94	1977	--	3,000	9/13/76 8/17/77	-- --	2,500 3,000	N N	-- --
10255700	San Felipe Creek near Julian, CA	89.2	1959–83	1980	7.85	6,150	2/21/80	7.85	6,150	N	>100
10255800	Coyote Creek near Borrego Springs, CA	144	1951–86	1980 1976	7.50 14.50	3,890 2,300	8/17/77 2/21/80	-- 7.50	3,840 3,890	N N	15 15
10255810	Borrego Palm Creek near Borrego Springs, CA	21.8	1951–93	1979 1955	9.80 9.90	2,640 2,000	8/15/77 8/16/79	7.50 9.80	2,160 2,640	N N	50–75 50–75
10255820	Yaqui Pass Wash near Borrego, CA	0.04	1960–73	1970	6.77	38	8/16/70	6.77	38	N	15–20
10255825	Yaqui Pass Wash number 2 near Borrego, CA	0.04	1960–73	1970	7.00	25	8/16/70	7.00	25	N	25–50

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10255850	Vallecito Creek near Julian, CA	39.7	1964–83	1976 1983	6.30 6.47	1,160 100	9/10/76	6.30	1,160	N	--
10255885	San Felipe Creek near Westmorland, CA	1,693	1961–88	1976	19.00	100,000	9/10/76	19.00	100,000	N	--
10257600	Mission Creek near Desert Hot Springs, CA	35.6	1968–92, 1994	1983 1969	3.33 6.40	1,750 1,660	8/17/83	3.33	1,750	N	--
10257710	Chino Canyon Creek near Palm Springs, CA	3.88	1975–84	1977	5.93	247	8/15/77	5.93	247	N	--
10258500	Palm Cyn Creek near Palm Springs, CA	93.1	1930–42, 1948–94	1980	7.29	7,000	7/20/79 2/21/80	6.38 7.29	4,400 7,000	N N	20–30 35–50
10259200	Deep Creek near Palm Desert, CA	30.6	1962–94	1976 1984	7.84 10.27	7,100 5,700	9/10/76 8/14/84	7.84 10.27	7,100 5,700	N N	-- --
10259540	Whitewater River near Mecca, CA	1,495	1961–94	1969 1990	-- 5.87	2,500 162	7/20/79	--	2,450	N	--
10260200	Pipes Creek near Yucca Valley, CA	15.1	1959–79	1978 1969	3.57 3.84	640 252	3/04/78	3.57	640	N	--
10260500	Deep Creek near Hesperia, CA	134	1906–07, 1909–11, 1914–16, 1918, 1920–21, 1930–93	1938 1978	-- 13.45	46,600 24,800	3/04/78	13.45	24,800	Y	15
10260630	Abondigas Creek above Lake Gregory at Crestline, CA	1.15	1980–83, 1985–93	1983 1993	6.32 11.21	580 203	2/27/83	6.32	580	N	--
10260650	Houston Creek below Lake Gregory at Crestline, CA	2.68	1980–93	1980 1993	7.31 7.69	570 339	1/29/80	7.31	570	Y	--
10260950	West Fork Mojave River above Mojave River Forks Reservoir near Hesperia, CA	70.3	1975–94	1978 1980	5.41 17.45	11,300 8,380	2/10/78	--	11,300	Y	--
10262000	Mojave River near Hodge, CA	1,091	1931–32, 1971–80, 1982–93	1978	8.80	12,700	2/10/78	8.80	12,700	Y	--
10263000	Mojave River at Afton, CA	2,121	1930–32, 1953–78, 1980–94	1969	10.40	18,000	3/05/78	5.30	14,000	N	--
10264520	Amargosa Creek tributary near Leona Valley, CA	0.05	1959–73, 1989	1971	12.10	19	11/29/70	12.10	19	N	25–50
10264560	Spencer Canyon Creek near Fairmont, CA	3.68	1959–73, 1978–81, 1983, 1986, 1989	1978	13.54	430	2/10/78	13.54	430	N	>100
10264600	Oak Creek near Mojave, CA	15.8	1958–86, 1989	1973	10.53	1,740	5/14/73 3/04/78	10.53 7.48	1,740 750	N N	>100 30–50
10276000	Big Pine Creek near Big Pine, CA	39.0	1908–10, 1920–78	1932	6.55	458	9/05/78	--	353	N	--
10293000	East Walker River near Bridgeport, CA	359	1923–81, 1983–94	1963	4.64	1,390	7/02/80 6/03/86	4.55 4.56	1,380 1,370	Y Y	20–30 20–30
10295500	Little Walker River near Bridgeport, CA	63.1	1945–86	1963	3.22	1,510	3/08/86	2.87	1,030	N	10–20
10296500	West Walker River near Coleville, CA	250	1903–10, 1916–38, 1957–94	1938 1907	-- 5.90	6,500 4,170	5/30/83	4.83	3,540	N	10–15

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10336610	Upper Truckee River at South Lake Tahoe, CA	54.9	1972–74, 1978, 1980–94	1986	9.08	2,740	3/08/86	9.08	2,740	N	15–25
10336626	Taylor Creek near Camp Richardson, CA	16.7	1969–92	1980	6.33	1,530	1/14/80	6.33	1,530	Y	--
10336645	General Creek near Meeks Bay, CA	7.44	1981–94	1982	5.43	765	12/20/81	5.43	765	N	15–25
10336676	Ward Creek at Highway 89 near Tahoe Pines, CA	9.70	1973–94	1982	8.05	1,800	12/19/81	8.05	1,800	N	20–30
10336780	Trout Creek near Tahoe Valley, CA	36.7	1961–94	1963	11.14	535	3/08/86	11.00	480	N	15–20
10337500	Truckee River at Tahoe City, CA	507	1901–94	1969	9.32	2,630	6/28/82 1/29/83 12/26/83 3/13/86	7.93 7.73 8.53 8.84	1,930 1,980 2,360 2,450	Y Y Y Y	5–15 5–15 15–25 20–30
10338500	Donner Creek at Donner Lake near Truckee, CA	14.3	1910, 1931–52, 1956–57, 1959–94	1986	4.83	707	2/19/86	4.83	707	Y	30–40
10339400	Martis Creek near Truckee, CA	39.9	1959–90, 1993–94	1963	6.16	1,880	2/28/86	5.66	663	Y	>10
10340500	Prosser Creek below Prosser Creek Dam near Truckee, CA	52.9	1943–94	1956 1951	10.13 11.00	4,560 4,320	2/20/86	6.66	1,790	Y	10–20
10343000	Independence Creek near Truckee, CA	8.10	1903–07, 1910, 1968–94	1982 1993	6.12 8.16	291 200	12/20/81	6.12	291	Y	10–20
10356500	Susan River at Susanville, CA	184	1901, 1903–05, 1917–21, 1951–94	1970	8.89	5,850	1/24/70 2/17/86	8.89 8.33	5,850 5,120	Y Y	40–60 15–30
10358470	Willow Creek tributary near Susanville, CA	3.08	1963–73	1970	7.51	183	1/23/70	7.51	183	N	25–35
10359100	Shaffer Creek near Litchfield, CA	5.63	1964–73	1970	12.16	389	1/23/70	12.16	389	N	10–20
10359270	Aspen Creek near Westwood, CA	4.70	1970–80	1975	3.00	21	5/15/75	3.00	21	N	--
10359290	Pine Creek tributary near Susanville, CA	4.70	1971–80	1975 1972	-- 5.27	397 93	5/15/75	--	397	N	--
10359300	Pine Creek near Susanville, CA	226	1961–82	1975 1970	5.45 5.60	1,140 936	5/15/75	5.45	1,140	N	--
11012000	Cottonwood Creek above Tecatec near Dulzura, CA	310	1937–94	1980	11.15	11,700	2/21/80 3/03/83	11.15 9.76	11,700 6,690	Y Y	>100 --
11012500	Campo Creek near Campo, CA	85.0	1937–94	1993	6.86	1,580	3/24/83 2/20/80	5.39 4.36	895 652	N N	25–30 10–15
11013000	Tijuana River near Dulzura, CA	481	1937–88	1983 1980	7.03 10.66	13,600 12,200	2/21/80 3/03/83	10.66 7.03	12,200 13,600	Y Y	100 --
11013500	Tijuana River near Nestor, CA	1,695	1937–82	1980	8.70	33,500	2/21/80	8.70	33,500	Y	--
11015000	Sweetwater River near Descanso, CA	45.4	1906–27, 1957–94	1927 1980	-- 12.31	11,200 6,750	2/20/80	12.31	6,750	N	25
11023250	Poway Creek near Poway, CA	7.92	1978–87	1980	7.26	755	2/21/80	7.26	755	N	--

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11023300	Rattlesnake Creek near Poway, CA	3.74	1962–73	1973 1967	2.04 4.99	68 64	11/11/72	2.04	68	N	--
11023310	Rattlesnake Creek at Poway, CA	8.13	1970–75, 1977–88	1980	2.88	1,430	2/21/80	2.88	1,430	N	--
11023325	Beeler Creek at Pomerado Road near Poway, CA	5.46	1977–88	1980	9.20	1,410	1/29/80	9.20	1,410	N	--
11023330	Los Penasquitos Creek below Poway Creek near Poway, CA	31.2	1971–93	1980	11.11	4,990	2/21/80	11.11	4,990	N	--
11023340	Los Penasquitos Creek near Poway, CA	42.1	1965–94	1980	10.26	4,750	3/01/78 2/21/80	10.26	4,700 4,750	N N	30 30
11025500	Santa Ysabel Creek near Ramona, CA	112	1912–22, 1944–71, 1973–94	1916 1980	-- 14.25	28,400 10,700	2/21/80	14.25	10,700	Y	25–35
11025800	Clevenger Creek tributary near Ramona, CA	0.45	1962–73	1973	7.67	54	11/16/72	7.67	54	N	25–50
11026000	Santa Ysabel Creek, CA	128	1906–10, 1912, 1957–71, 1973–80	1980 1969	-- 12.19	12,500 7,120	2/21/80	--	12,500	Y	--
11027000	Guejito Creek near San Pasqual, CA	22.5	1947–53, 1955–82	1980 1966	7.22 7.45	3,940 2,250	2/20/80	7.22	3,940	Y	50–75
11028500	Santa Maria Creek near Ramona, CA	57.6	1914–20, 1947–94	1980 1916	14.39 15.90	15,200 7,140	2/21/80	14.39	15,200	N	65–75
11031500	Agua Caliente Creek near Warner Springs, CA	19.0	1961–87	1980 1969	4.80 6.36	1,440 564	2/21/80	4.80	1,440	N	40–50
11033000	West Fork San Luis Rey River near Warner Springs, CA	25.5	1914, 1958–86	1980	15.60	6,200	2/21/80	15.60	6,200	N	30–40
11037700	Pauma Creek near Pauma Valley, CA	11.0	1965–82	1980 1967	8.51 8.60	3,170 2,100	2/20/80	8.51	3,170	N	65–75
11040000	San Luis Rey River at Monserate Narrows, CA	373	1936, 1939–41, 1947–86	1980	9.68	15,500	2/21/80	9.68	15,500	Y	--
11040200	Keys Creek tributary at Valley Center, CA	7.65	1969, 1971–83	1980	8.80	1,680	2/21/80	8.80	1,680	N	--
11041000	San Luis Rey River near Bonsall, CA	513	1891, 1915, 1930–79	1891 1978	-- 14.97	128,000 8,230	1/17/78	14.97	8,230	Y	--
11042000	San Luis Rey River at Oceanside, CA	557	1913–16, 1930–42, 1947–94	1916 1993	-- 21.70	95,600 25,700	2/21/80	14.00	25,000	Y	--
11043000	Murrieta Creek at Temecula, CA	222	1931–94	1993	17.24	25,000	2/21/80	13.70	21,800	Y	25–50
11044000	Santa Margarita River near Temecula, CA	588	1923–94	1993	22.50	31,000	2/21/80	16.50	22,000	N	15
11044500	Santa Margarita River near Fallbrook, CA	644	1925–29, 1931–80	1927 1978	-- 14.55	33,100 22,000	3/01/78 2/20/80	14.55 14.40	22,000 21,000	Y Y	15–20 10–15
11046000	Santa Margarita River at Ysidora, CA	740	1923–94	1980	18.80	24,000	2/18/80	18.80	24,000	--	10
11046100	Las Flores Creek near Oceanside, CA	26.6	1952–67, 1969–79, 1994	1978	13.50	7,300	3/01/78	13.50	7,300	N	--
11046550	San Juan Creek at San Juan Capistrano, CA	117	1970–85	1978 1983	7.00 15.88	14,700 5,770	3/04/78 2/20/80	7.00 --	14,700 11,400	N N	-- --

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11047200	Oso Creek at Crown Valley Parkway near Mission Viejo, CA	14.0	1971–81	1980 1976	7.60 9.90	5,150 440	2/16/80	7.60	5,150	N	20–30
11047300	Arroyo Trabuco at San Juan Capistrano, CA	54.1	1973–77, 1984–88	1986	15.35	2,020	2/15/86	15.35	2,020	N	--
11047500	Aliso Creek at El Toro, Ca	7.91	1931–80	1969 1937	11.00 11.20	2,500 1,950	1/05/79 2/16/80	6.60 --	2,450 1,870	N N	20–30 10–20
11048500	San Diego Creek at Culver Drive near Irvine, CA	41.8	1950–85	1983 1980	14.48 21.17	10,400 7,720	2/16/80 3/01/83	21.17 14.48	7,720 10,400	N N	70–100 >100
11055800	City Creek near Highland, CA	19.6	1920–94	1969 1937	9.39 10.20	7,000 1,500	1/29/80 --/--/78	9.1 --	3,630 2,510	N N	-- --
11056500	Little San Gorgonio Creek near Beaumont, CA	1.74	1950–85	1984 1969	6.62 8.50	520 --	9/10/76 --/--/84	5.30 6.62	427 520	Y Y	30–50 --
11058500	East Twin Creek near Arrowhead Springs, CA	9.04	1920–92, 1994	1980	8.35	3,710	1/29/80 4/18/81	8.35 --	3,710 1,960	N N	75–100 30–50
11058600	Waterman Canyon Creek near Arrowhead Springs, CA	4.65	1921–28, 1930–31, 1933–52, 1954–85	1938 1969	4.10 5.53	2,350 1,160	1/29/80	5.03	925	N	25–50
11062000	Lytle Creek near Fontana, CA	46.6	1920–21, 1926–27, 1931–38, 1943, 1947–88, 1991–94	1938	--	25,200	2/16/80	9.22	10,330	N	30–50
11063680	Devil Canyon Creek near San Bernardino, CA	5.49	1920–23, 1925–54, 1956–94	1969 1978	5.40 8.40	3,720 1,820	3/04/78 2/19/80	8.40 6.70	1,820 672	Y Y	-- 12
11065000	Lytle Creek at Colton, CA	186	1958–83, 1985–94	1978	14.80	17,500	3/04/78	14.80	17,500	N	--
11070050	Bautista Creek at Valle Vista, CA	48.5	1970–87	1980	6.40	8,320	3/28/79 2/24/80	3.30 6.40	1,390 8,320	N N	-- >100
11070375	San Jacinto River at Railroad Canyon weir near Elsinore, CA	562	1952, 1954–58, 1960–85	1980	7.27	5,700	2/22/80	7.27	5,700	Y	30–50
11070500	San Jacinto River near Elsinore, CA	723	1916–94	1927	11.80	16,000	2/22/80 3/02/83	9.53 9.98	9,010 9,170	Y Y	30–40 30–40
11072100	Temescal Creek above Main Street at Corona, CA	224	1981–83, 1985–94	1983	11.67	4,720	3/01/83	11.67	4,720	Y	--
11073360	Chino Creek at Schaeffer Avenue near Chino, CA	48.9	1969–94	1983	10.32	13,100	2/27/83	10.32	13,100	Y	--
11073495	Cucamonga Creek near Mira Loma, CA	75.8	1969–77, 1979–94	1983	7.85	16,100	2/27/83	7.85	16,100	N	--
11074000	Santa Ana River below Prado Dam, CA	1,490	1938, 1941–94	1938 1993	-- 7.29	100,000 7,190	2/21/80	6.88	7,440	Y	--
11075720	Carbon Creek below Carbon Canyon Dam, CA	19.5	1962–94	1983	5.11	796	3/01/83	5.11	796	Y	--
11075755	Santa Ana River at Ball Road at Anaheim, CA	1,587	1977–87	1983	6.17	18,500	3/01/83	6.17	18,500	Y	--
11075800	Santiago Creek at Modjeska, CA	13.0	1962–94	1969	10.50	6,520	3/02/83	3.90	3,400	N	--

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11078000	Santa Ana River at Santa Ana, CA	1,700	1923–30, 1932–89, 1991–94	1938 1981	-- 16.00	46,300 6,200	3/01/83	10.66	20,100	Y	--
11085000	San Gabriel River below Santa Fe Dam near Baldwin Park, CA	236	1943–48, 1951–84, 1986–94	1969	22.20	30,900	3/03/83	20.90	23,100	Y	--
11086990	San Jose Creek near El Monte, CA	87.8	1965–78	1978	9.28	11,100	3/04/78	9.28	11,100	N	--
11087020	San Gabriel River above Whittier Narrows Dam, CA	353	1956–57, 1964–94	1969	10.90	46,600	2/17/80	10.70	43,800	Y	--
11088500	Brea Creek below Brea Dam near Fullerton, CA	21.6	1943–80, 1982–94	1980 1978	-- 6.34	1,700 1,060	2/18/80 2/27/83	-- 5.53	1,700 1,220	Y Y	-- --
11089500	Fullerton Creek below Fullerton Dam near Brea, CA	4.94	1943–47, 1949–94	1983	8.25	392	3/01/83 2/15/86	8.25 8.17	392 381	Y Y	-- --
11090200	Fullerton Creek at Richman Avenue at Fullerton, CA	12.1	1960–77, 1979–81	1980	6.70	2,050	1/28/80	6.70	2,050	N	25–30
11090700	Coyote Creek at Los Alamitos, CA	150	1965–78	1975	7.25	14,300	12/04/74	7.25	14,300	N	--
11091950	Limekiln Canyon Wash near Chatsworth, CA	3.41	1960–73	1971	10.41	540	11/29/70	10.41	540	N	10–25
11092450	Los Angeles River at Sepulveda Dam, CA	158	1930–79	1978	12.04	14,700	3/04/78	12.04	14,700	Y	-
11097000	Big Tujunga Creek below Hansen Dam, CA	153	1933–36, 1938, 1941–94	1938 1983	-- 7.64	54,000 15,200	2/10/78 3/02/83	7.63 7.64	15,200 15,200	Y Y	-- --
11097500	Los Angeles River at Los Angeles, CA	514	1930–79	1938 1978	-- 14.62	67,000 52,700	2/10/78	14.62	52,700	Y	--
11098500	Los Angeles River near Downey, CA	599	1929–78	1938 1978	-- 10.35	79,700 73,600	2/10/78	10.35	73,600	Y	--
11101250	Rio Hondo above Whittier Narrows Dam, CA	91.2	1957–94	1980	7.35	18,200	2/16/80	7.35	18,200	Y	--
11102500	Rio Hondo near Downey, CA	143	1929–79	1969	15.15	46,900	3/01/78 3/27/79	12.24 10.83	32,000 25,600	Y Y	-- --
11103000	Los Angeles River at Long Beach, CA	827	1929–80, 1982–83, 1989–90, 1992	1980	17.99	129,000	2/16/80	17.99	129,000	Y	--
11103500	Ballona Creek near Culver City, CA	89.5	1914, 1928–78	1968 1934	14.89 18.50	32,500 11,300	12/04/74 2/10/78	12.35 14.84	20,560 28,088	Y Y	-- --
11104000	Topanga Creek near Topanga Beach, CA	18.0	1930–38, 1940–79	1969	13.36	12,200	3/04/78	10.99	10,130	N	30
11105200	Cold Creek tributary near Malibu Beach, CA	0.30	1961–73	1971	17.48	102	11/29/70	17.48	102	N	10
11105850	Arroyo Simi near Simi, CA	70.6	1934–35, 1937–41, 1943–47, 1952, 1954–60, 1962–83	1983 1980	8.50 8.80	10,700 9,310	2/16/80 3/01/83	8.80 8.50	9,310 10,700	N N	30–35 40–50
11106400	Conejo Creek above Highway 101, CA	64.2	1973–83	1983	23.23	13,300	3/01/83 2/16/80	23.23 21.67	13,300 11,800	N N	15–20 10
11106550	Calleguas Creek at Camarillo State Hospital, CA	248	1969–82	1980	10.54	25,300	2/16/80	10.54	25,300	N	30–35

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11107000	Honda Barranca near Somis, CA	2.57	1955–73	1972	14.77	770	12/27/71	14.77	770	N	10–20
				1969	15.34	184					
11109250	Lockwood Creek at Gorge near Stauffer, CA	58.7	1972–81	1980	5.45	2,490	2/16/80	5.45	2,490	N	--
				1978	7.32	1,070					
11109600	Piru Creek above Lake Piru, CA	372	1938, 1956–94	1938	--	35,000	3/01/83	11.36	20,850	Y	10
				1969	18.60	31,200					
11110500	Hopper Creek near Piru, CA	23.6	1934–36, 1938–41, 1943–83	1969	12.72	8,400	2/16/80	11.60	8,120	N	30–35
11113000	Sespe Creek near Fillmore, CA	251	1933–85, 1991–92, 1994	1978	22.40	73,000	2/10/78	22.40	73,000	N	40–50
							3/01/83	20.41	56,000	N	25
							2/16/80	19.53	40,700	N	10–15
11115500	Matilija Creek at Matilija Hot Springs, CA	54.6	1933–88	1969	16.50	20,000	3/04/78	13.91	16,500	N	25
							2/14/86	10.59	9,730	Y	5–10
11116000	North Fork Matilija Creek at Matilija Hot Springs, CA	15.6	1934–41, 1943–83	1969	11.00	9,440	3/04/78	8.94	5,780	N	20
11117500	San Antonio Creek at Casitas Springs, CA	51.2	1950–83	1969	14.30	16,200	2/10/78	13.82	13,900	N	25–30
11117600	Coyote Creek near Oak View, CA	13.2	1959–88	1969	12.00	8,000	1/18/73	11.56	6,580	N	10–25
				1980	13.72	5,100					
11117800	Santa Ana Creek near Oak View, CA	9.11	1938, 1959–88	1978	10.01	5,330	3/04/78	10.01	5,330	N	10–25
				1969	10.70	4,730					
11118000	Coyote Creek near Ventura, CA	41.2	1935–52, 1954–58, 1970–82	1938	--	11,500	2/21/80	7.97	643	Y	--
				1978	11.63	420					
11118500	Ventura River near Ventura, CA	188	1933–94	1978	19.14	63,600	2/10/78	19.14	63,600	Y	50
				1969	24.30	58,000					
11119530	Franklin Creek at Carpinteria, CA	3.56	1971–78, 1981–84, 1986–92	1972	6.10	1,600	10/01/83	4.50	1,600	N	5–10
11119660	San Ysidro Creek at Montecito, CA	3.07	1972–83	1980	2.85	332	2/16/80	2.85	332	N	--
				1978	29.10	300					
11119700	Sycamore Creek at Santa Barbara, CA	3.41	1971–80	1978	4.65	1,120	2/09/78	4.65	1,120	N	--
				1980	4.83	582					
11119780	Arroyo Burro at Santa Barbara, CA	6.65	1971–92	1978	5.67	1,850	3/04/78	5.67	1,850	N	--
				1984	5.71	1,510					
11120550	Gaviota Creek near Gaviota, CA	18.8	1967–86	1983	9.44	5,270	1/28/83	9.44	5,270	N	--
11120600	Jalama Creek near Lompoc, CA	20.5	1966–82	1978	11.34	4,020	3/04/78	11.34	4,020	N	--
11124500	Santa Cruz Creek near Santa Ynez, CA	74.0	1942, 1944–94	1969	14.45	7,050	2/09/78	12.37	5,060	N	20–25
11128500	Santa Ynez River at Solvang, CA	579	1932, 1935–36, 1947–94	1969	17.10	82,000	3/04/78	11.90	60,600	Y	--
							3/01/83	10.62	38,600	Y	--
11131700	Santa Rita Creek near Lompoc, CA	14.1	1976–79, 1981–92	1978	9.06	450	3/04/78	9.06	450	N	--
11132300	El Jaro Creek near Las Cruces, CA	3.54	1960–73	1973	7.08	500	1/18/73	7.08	500	N	10–20
				1967	14.20	499					
11132500	Salsipuedes Creek near Lompoc, CA	47.1	1941–94	1952	20.80	11,400	1/18/73	16.00	8,280	N	10–20
11133000	Santa Ynez River at narrows near Lompoc, CA	789	1907, 1914, 1929–63, 1965–94	1907	22.00	120,000	3/04/78	16.80	63,200	Y	--
				1969	24.20	80,000					

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11133700	Purisima Creek near Lompoc, CA	4.75	1971–91	1974 1983	-- 2.96	200 152	1/07/74	--	200	N	--
11138100	Cuyama River below Twitchell Dam, CA	1,132	1959–83	1973 1969	8.22 10.58	9,100 6,920	6/13/73	8.22	9,100	Y	--
11139480	Tepusquet Creek tributary near Sisquoc, CA	2.44	1960–73	1973	6.03	186	10/18/72	6.03	186	N	40–50
11140000	Sisquoc River near Garey, CA	471	1941–53, 1955–84, 1986–94	1983 1967	11.16 13.50	33,600 22,600	3/01/83	11.16	33,600	N	--
11141050	Orcutt Creek near Orcutt, CA	18.5	1983–92	1983 1991	7.53 9.26	1,830 286	3/01/83	7.53	1,830	N	--
11141500	Arroyo Grande at Arroyo Grand, CA	102	1940–86	1967	12.88	5,400	3/01/83	10.68	4,620	Y	15–25
11143000	Big Sur River near Big Sur, CA	46.5	1951–94	1978	14.30	10,700	1/05/78	14.30	10,700	N	>100
11143190	Klondike Canyon near Carmel Valley, CA	2.14	1961–69, 1971–73	1971	54.46	82	12/21/70	54.46	82	N	10–20
11143200	Carmel River at Robles del Rio, CA	193	1956, 1958–94	1983	11.49	8,380	2/14/86 2/28/83	10.56 11.49	6,680 8,380	N N	5–15 10–20
11143300	Arroyo del Rey at Del Rey Oaks, CA	13.8	1967–78	1974	4.24	64	1/03/74	4.24	64	N	--
11144200	Salsipuedes Creek near Pozo, CA	5.91	1970–83	1980	6.12	1,450	2/21/80	6.12	1,450	N	--
11144600	Salinas River below Salinas Dam near Pozo, CA	112	1974–86	1978	10.24	7,160	2/10/78	10.24	7,160	Y	--
11147500	Salinas River at Paso Robles, CA	390	1938, 1940–65, 1969–94	1969	23.80	28,000	2/16/80 12/22/82	15.99 15.90	18,500 16,400	N N	15–25 10–20
11150500	Salinas River near Bradley, CA	2,535	1949–60, 1962–94	1969	20.34	117,000	2/10/78	18.68	70,600	Y	25–35
11150800	Cow Creek near San Ardo, CA	4.80	1961–73	1973	59.74	435	1/18/73	59.74	435	N	5–15
11151600	Little Rabbit Valley Creek near San Benito, CA	4.25	1961–69, 1971–73	1973	53.05	79	1/18/73	53.05	79	N	15–25
11152300	Salinas River near Chualar, CA	4,042	1977–89, 1991–94	1983	14.49	48,000	3/03/83	14.49	48,000	Y	15–30
11152500	Salinas River near Spreckels, CA	4,156	1862, 1911, 1914, 1930–56, 1958–60, 1962–94	1969 1862	26.51 31.00	83,100 --	3/03/83	23.44	63,000	Y	15–30
11153050	Pacheco Creek tributary near Dunneville, CA	0.17	1961–73	1973	51.82	14	1/18/73	51.82	14	N	15–30
11153470	Llagas Creek above Chesbro Reservoir near Morgan Hill, CA	9.63	1972–82	1982 1978	6.86 7.50	980 969	1/04/82	6.86	980	N	--
11154200	Uvas Creek near Gilroy, CA	71.2	1959–87, 1989–92	1986	21.82	14,200	2/17/86	21.82	14,200	Y	40–60
11156450	Willow Creek tributary near San Benito, CA	1.24	1961–73	1973 1969	51.56 51.81	55 40	1/18/73	51.56	55	N	15–30
11157500	Tres Pinos Creek near Tres Pinos, CA	206	1938, 1940–83	1983	11.14	8,790	1/27/83	11.14	8,790	N	25–50
11158500	San Benito River near Hollister, CA	586	1950–83	1958 1983	16.30 16.34	11,600 11,600	3/02/83	16.34	11,600	Y	15–25

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11158900	Pescadero Creek near Chittenden, CA	10.2	1971–81	1980	7.11	667	2/20/80	7.11	667	N	--
11159690	Aptos Creek near Aptos, CA	10.2	1972–83	1982	12.1	3,980	1/04/82	12.1	3,980	N	--
11160000	Soquel Creek at Soquel, CA	40.2	1937, 1951–94	1956	22.33	15,800	1/04/82	21.85	9,700	N	20–30
11160500	San Lorenzo River at Big Trees, CA	106	1937–94	1956	22.55	30,400	1/05/82	28.85	29,700	N	30–50
11161800	San Vicente Creek near Davenport, CA	6.07	1970–83	1982	8.90	2,280	1/04/82	8.90	2,280	N	--
11162470	Pescadero Creek tributary near La Honda, CA	0.22	1961–73	1973	51.75	51	1/16/73	51.75	51	N	>50
11162570	San Gregorio Creek at San Gregorio, CA	50.9	1970–94	1982	21.28	7,910	1/04/82	21.28	7,910	N	40–60
11166700	Arroyo Calero tributary near New Almaden, CA	0.18	1961–73	1973 1963	51.50 59.83	78 28	1/18/73	51.50	78	N	20–30
11173200	Arroyo Hondo near San Jose, CA	77.10	1969–81	1980	12.36	6,600	2/19/80	12.36	6,600	N	5–20
11176200	Arroyo Mocho near Pleasanton, CA	142	1963–85	1982 1968	13.97 31.00	4,330 505	1/05/82	13.97	4,330	N	--
11176300	Tassajara Creek near Pleasanton, CA	26.8	1915–19, 1922–30, 1979–83	1982	11.70	2,280	1/05/82	11.70	2,280	N	--
11176500	Arroyo Valle near Livermore, CA	147	1913–24, 1926–28, 1930, 1956, 1958–94	1956	13.93	18,200	3/03/83	8.89	2,850	Y	15–30
11176550	Arroyo Valle tributary near Livermore, CA	3.58	1959–73	1973	15.09	152	1/18/73	15.09	152	N	10–20
11176600	Arroyo Valle at Pleasanton, CA	171	1958–85	1958	25.36	11,300	3/03/83	13.86	2,590	Y	--
11177000	Arroyo de la Laguna near Pleasanton, CA	405	1913–19, 1921–30, 1970–83, 1988–94	1982	19.61	11,400	1/05/82	19.61	11,400	Y	20–40
11180700	Patterson Creek at Union City, CA	--	1959–94	1986 1963	18.44 20.40	22,100 10,500	1/24/83 2/19/86	16.70 18.44	16,800 22,100	Y Y	15–25 30–40
11181000	San Lorenzo Creek at Hayward, CA	37.5	1940, 1942, 1947–83	1982 1956	20.15 20.82	7,740 4,790	1/05/82	20.15	7,740	N	20–40
11181400	Wildcat Creek at Richmond, CA	8.69	1965–75	1970 1973	9.90 10.30	776 725	1/21/70	9.90	776	N	5
11182400	Arroyo del Hambre at Martinez, CA	15.1	1965–82	1982	12.65	2,200	1/04/82	12.65	2,200	N	5–15
11183600	Walnut Creek at Concord CA	85.2	1969–92	1982	19.10	13,300	1/05/82	19.10	13,300	N	20–30
11185300	Golden Trout Creek near Cartago, CA	23.6	1957–67, 1970, 1972–78	1978	4.18	326	6/09/78	4.18	326	N	20–40
11189500	South Fork Kern River near Onyx, CA	530	1914, 1930–42, 1947–94	1967	16.90	28,700	2/18/80	9.20	4,360	N	10–25
11192500	Kern River near Democrat Springs (river only), CA	2,258	1951–55, 1957–88	1951	30.70	40,000	6/19/83	17.02	6,790	Y	--
11194200	Wagonwheel Creek near Reward, CA	1.38	1959–73	1972	14.20	338	6/06/72	14.20	338	N	--

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

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			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11196400	Caliente Creek above Tehachapi Creek near Caliente, CA	165	1962–83	1983	10.72	15,500	3/01/83	10.72	15,500	N	--
11196420	Tehachapi Creek near Tehachapi, CA	53.2	1962–85	1983 1963	4.51 5.30	5,560 1,700	3/01/83	4.51	5,560	N	--
11199500	White River near Ducor, CA	92.9	1943, 1945–53, 1972–94	1943 1973	-- 6.12	2,300 1,330	2/10/78	5.30	1,330	N	10–20
11204500	South Fork Tule River near Success, CA	109	1931–54, 1956–90	1967	12.50	14,300	1/13/80	9.42	6,570	N	10–30
11205680	Frazier Creek near Strathmore, CA	3.05	1974–88, 1992–94	1983	9.72	216	1/22/83	9.72	216	N	--
11205690	Lewis Creek near Lindsay CA	21.50	1974–88, 1992–94	1983	25.17	811	1/22/83	25.17	811	N	--
11210970	Antelope Creek at Woodlake, CA	--	1974–86, 1988	1978 1983	8.04 13.72	341 275	2/10/78	8.04	341	N	--
11211790	Cottonwood Creek near Elderwood, CA	60.40	1969, 1972–84	1983 1969	7.22 10.40	2,310 --	1/22/83	7.22	2,310	N	--
11214000	North Fork Kings River below Meadowbrook, CA	37.7	1922–35, 1956–81	1978	6.50	3,000	9/05/78	6.50	3,000	N	--
11215000	North Fork Kings River near Cliff Camp, CA	181	1922–88	1938	18.00	14,000	9/05/78	11.96	5,110	Y	20–40
11217000	Dinkey Creek at Dinkey Meadow near Shaver Lake, CA	50.7	1922–35, 1977–87	1982	12.07	11,200	4/11/82	12.07	11,200	N	>100
11221500	Kings River below Pine Flat Dam, CA	1,545	1954–88	1969	10.73	17,100	6/21/83	10.60	16,700	Y	--
11226500	San Joaquin River at Miller Crossing, CA	249	1922–28, 1952–88	1956	21.28	16,600	9/25/82	19.69	11,500	N	30–40
11228500	Granite Creek near Cattle Mountain, CA	47.8	1922–28, 1952–86	1982 1956	11.55 11.92	8,610 1,790	1/13/80 4/11/82	9.73 11.55	3,530 8,610	N N	-- --
11230000	South Fork San Joaquin River near Florence Lake, CA	171	1922–80	1978	17.55	6,800	9/05/78	17.55	6,800	Y	--
11230215	South Fork San Joaquin River below Hooper Creek near Florence Lake, CA	184	1979–88 1992–94	1982	11.42	5,950	9/26/82	11.42	5,950	Y	--
11230500	Bear Creek near Lake Thomas at Edison, CA	52.5	1922–88, 1992–94	1982	8.35	3,660	9/05/72 9/05/78 9/26/82 6/01/86	6.98 7.90 8.35 6.76	1,800 3,520 3,660 1,680	N N N N	50–75 >100 >100 30–50
11231500	Mono Creek below Lake Thomas at Edison, CA	92.5	1922–87, 1992–94	1982	8.87	2,160	9/26/82 7/18/84	8.87 8.85	2,160 2,130	Y Y	50–100 50–100
11234760	San Joaquin River above Shakeflat Creek near Big Creek, CA	1,003	1960–88, 1992–94	1969	18.38	18,400	6/18/83	18.18	17,900	Y	10–30
11242400	North Fork Willow Creek near Sugar Pine, CA	16.9	1966–84, 1986–94	1980	7.41	2,750	1/13/80	7.41	2,750	N	25–50
11244000	North Fork Willow Creek near Bass Lake, CA	50.8	1940–88	1986 1982	-- 7.78	2,100 1,950	2/19/86	--	2,100	Y	--
11253310	Cantua Creek near Cantua Creek, CA	46.4	1958–94	1983 1969	5.72 6.60	3,420 1,920	3/01/83	5.72	3,420	N	30–50
11257500	Fresno River near Knowles, CA	133	1912, 1916–63, 1965–90	1956	11.52	13,300	12/22/82 2/18/86	9.36 10.55	8,000 10,700	N N	15–25 30–40

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11258000	Fresno River below Hidden Dam near Daulton, CA	258	1938, 1942–88	1956 1974	11.64 14.61	17,500 8,620	3/01/83	8.83	4,190	Y	<5
11258960	Chowchilla River above Willow Creek near Raymond, CA	173	1981–90	1986	15.25	16,900	2/18/86	15.25	16,900	N	--
11259000	Chowchilla River below Buchanan Dam near Raymond, CA	236	1931–72, 1976–88	1956	16.50	30,000	3/01/83	11.67	5,020	Y	<5
11274000	San Joaquin River near Newman, CA	9,520	1868, 1914–94	1938 1969	-- 65.90	33,000 28,000	2/25/80 3/04/83	65.26 65.78	23,500 30,700	Y Y	10–15 30–60
11274500	Orestimba Creek near Newman, CA	134	1932–94	1958 1963	6.57 9.72	10,200 8,300	2/19/86	9.12	6,990	N	10–20
11274630	Del Puerto Creek near Patterson, CA	72.6	1959–94	1959	14.68	1,800	3/01/83	7.93	1,610	N	10–15
11276500	Tuolumne River near Hetch Hetchy, CA	457	1915–94	1943	13.90	12,900	7/07/83	13.09	10,700	Y	10–15
11277300	Cherry Creek below Valley Dam near Hetch Hetchy, CA	118	1957–94	1974	10.53	4,210	7/10/74	10.53	4,210	Y	15–20
11278300	Cherry Creek near Early Intake, CA	226	1957–94	1963	14.50	16,500	4/11/82	14.34	15,900	Y	15–25
11278400	Cherry Creek below Dion River Holm Powerhouse near Mather, CA	234	1963–94	1982	15.36	16,300	4/11/82 2/19/86	15.36 13.26	16,300 8,910	Y Y	20 5–10
11281000	South Fork Tuolumne River near Oakland Recreation Camp, CA	87	1923–94	1956 1982	10.90 11.29	11,900 8,070	4/11/82	11.29	8,070	N	20
11282000	Middle Tuolumne River at Oakland Recreation Camp, CA	73.5	1917–94	1956	11.75	4,920	2/19/86	9.46	2,930	N	15–20
11283500	Clavey River near Buck Meadows, CA	144	1960–83, 1987–94	1980	21.47	19,400	1/13/80	21.47	19,400	N	20–25
11284400	Big Creek above Whites Gulch near Groveland, CA	16.4	1965, 1970–94	1986	7.03	2,620	2/17/86	7.03	2,620	N	15
11284700	North Fork Tuolumne River near Long Barn, CA	23.1	1956, 1962–86	1986	9.93	2,760	2/19/86	9.93	2,760	N	20
11289650	Tuolumne River below LaGrange Dam near LaGrange, CA	1,538	1971–94	1983	15.09	10,400	4/24/83	15.09	10,400	Y	15–20
11292000	Middle Fork Stanislaus River at Kendy Meadows near Dardanelle, CA	47.5	1939–45, 1947–88, 1992–94	1951 1983	6.66 6.67	1,700 1,640	5/18/73 5/29/83	6.55 6.67	1,550 1,640	Y Y	10–15 15–20
11292900	Middle Fork Stanislaus River below Beardsley Dam, CA	316	1957–88, 1992–94	1983	12.30	9,080	5/30/83 3/08/86	12.30 11.39	9,080 7,210	Y Y	10–20 5–15
11295400	Stanislaus River near Hathaway Pines, CA	629	1968–94	1986	23.50	46,200	2/19/86	23.50	46,200	Y	--
11296500	South Fork Stanislaus River at Strawberry, CA	44.8	1912–16, 1939–88, 1992–94	1951	9.25	3,900	2/16/82	7.57	2,530	Y	10–20
11298000	South Fork Stanislaus River near Long Barn, CA	66.9	1938–88, 1992–94	1951	9.30	4,900	2/16/82 2/19/86	8.66 7.96	4,050 3,210	Y Y	15–25 10–15

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11299600	Black Creek near Copperopolis, CA	14.4	1984–94	1986	9.10	5,200	2/19/86	9.10	5,200	N	10–25
11304000	Corral Hollow Creek near Tracy, CA	61.6	1959–67, 1972–78	1973	3.65	339	2/11/73	3.65	339	N	--
11308900	Calaveras River below New Hogan Dam near Valley Springs, CA	363	1961–90	1980	10.52	10,000	1/22/80	10.52	10,000	Y	--
11311400	Bear Creek tributary near Valley Springs, CA	0.15	1960–73	1973	23.11	60	3/11/73	23.11	60	N	25–50
11312950	Mountain House Creek tributary near Altamont, CA	0.27	1959–69, 1972–73	1973	6.67	14	1/18/73	6.67	14	N	--
11314500	North Fork Mokelumne River below Salt Springs Dam, CA	170	1927–33, 1935–94	1951	17.20	16,000	6/26/71 6/15/83	12.16 12.43	6,780 7,010	Y Y	10–25 10–25
11316800	Forest Creek near Wilseyville, CA	20.8	1961–94	1986	8.12	2,020	2/19/86	8.12	2,020	N	40–60
11317000	Middle Fork Mokelumne River at West Point, CA	68.4	1912–94	1986 1914	9.19 10.00	4,920 2,550	2/19/86 2/16/82	9.19 8.67	4,920 4,510	N Y	30 25
11318500	South Fork Mokelumne River near West Point, CA	75.1	1934–94	1986 1956	12.48 14.80	7,300 6,920	2/16/82 2/19/86	11.05 12.48	6,050 7,300	N N	20 30
11319500	Mokelumne River near Mokelumne Hill, CA	544	1901, 1903–04, 1928–94	1951 1986	18.50 21.98	33,700 28,500	2/18/86	21.98	28,500	Y	15
11327000	Sutter Creek near Sutter Creek, CA	48.1	1936–41, 1961–80	1980	6.53	6,930	1/13/80	6.53	6,930	N	20–30
11329500	Dry Creek near Galt, CA	324	1927–33, 1945–87	1986	26.02	30,300	4/01/82 2/17/86	25.74 26.02	23,000 30,300	N N	20 35
11333000	Camp Creek near Somerset, CA	62.6	1955–94	1982	14.50	8,680	2/16/82 2/19/86	14.50 13.86	8,680 7,790	Y Y	20 15
11333500	North Fork Cosumnes River near El Dorado, CA	205	1912–41, 1949–87	1956 1928	14.80 15.20	15,800 8,700	2/16/82	14.26	15,500	Y	15
11335000	Cosumnes River at Michigan Bar, CA	536	1907–94	1986 1907	14.76 16.30	45,100 --	2/17/86	14.76	45,100	N	20
11336030	Badger Creek at Riley Road near Galt, CA	13.0	1972–83, 1986	1982	41.13	1,310	--/--/82	41.13	1,310	N	--
11336040	North Fork Badger Creek at Riley Road near Galt, CA	12.6	1972–83, 1986	1986	41.40	1,040	2/17/86	41.40	1,040	N	--
11336050	Willow Creek at McKenzie Road near Galt, CA	2.95	1972–83, 1986	1986 1982	39.40 40.26	215 164	2/17/86	39.40	215	N	--
11336530	Laguna Creek at McKenzie Road near Galt, CA	117	1972–83, 1986	1982	40.43	10,330	--/--/82	40.43	10,330	N	--
11336550	Skunk Creek at McKenzie Road near Galt, CA	11.70	1972–83	1980 1982	24.64 40.02	240 --	2/19/80	24.64	240	N	--
11336560	Deadman Gulch at Christenson Road near Galt, CA	8.82	1972–79, 1981, 1986	1986	26.50	400	2/17/86	26.50	400	N	--
11336580	Morrison Creek near Sacramento, CA	48.6	1960–87	1986	10.40	2,730	2/17/86	10.40	2,730	N	--

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11337500	Marsh Creek near Byron, CA	42.6	1954–83	1982	15.35	5,920	1/05/82	15.35	5,920	N	30
11341400	Sacramento River near Mt. Shasta, CA	135	1960–61, 1963–87	1965	10.60	12,200	1/16/74	10.25	11,500	Y	20–30
11342000	Sacramento River at Delta, CA	425	1945–94	1974	27.20	69,800	1/16/74	27.20	69,800	N	>100
11345500	South Fork Pit River near Likely, CA	247	1930, 1932–94	1971	6.05	1,620	6/02/71 5/31/83	6.05 5.14	1,620 1,000	N N	>100 20
11348080	Big Sage Reservoir tributary near Alturas, CA	2.54	1963–73	1971 1963	6.87 7.09	175 145	3/26/71	6.87	175	N	10–25
11349000	Pit River near Lookout, CA	1,585	1959–71, 1979–80	1970	20.96	10,900	1/24/70	20.96	10,900	Y	--
11349030	Pit River tributary near Lookout, CA	0.47	1963–67, 1969–73	1970	5.48	62	1/23/70	5.48	62	N	20–40
11350500	Ash Creek at Adin, CA	258	1904–05, 1932, 1958–66, 1968–82	1970	14.69	2,950	1/24/70	14.69	2,950	N	--
11352000	Pit River near Bieber, CA	2,475	1904–08, 1914, 1922–26, 1952–78	1907 1970	-- 13.92	33,800 23,000	1/24/70	13.92	23,000	Y	--
11352900	Beaver River near Hat Creek, CA	23.2	1970–80	1970	5.89	349	1/23/70	5.89	349	N	--
11355010	Pit River below Pit Number 1 Powerhouse near Fall River Mills, CA	3,761	1974–94	1986	17.03	30,000	2/20/86	17.03	30,000	N	40–80
11355100	Butte Creek tributary near Old Station, CA	5.15	1963–72	1970	3.88	20	1/23/70	3.88	20	N	20–30
11355400	Bunchgrass Creek near Manzanita Lake, CA	0.62	1970–80	1980	6.34	92	1/13/80	6.34	92	N	--
11359800	Cayton Creek tributary near Dana, CA	0.16	1963–73	1970	5.54	35	1/23/70	5.54	35	N	25–50
11360500	Burney Creek at Park Avenue near Burney, CA	94.6	1912–13, 1921–22, 1959–75, 1977–80	1970	15.89	4,910	1/23/70	15.89	4,910	N	--
11362500	Pit River below Pit Number 4 Dam, CA	4,648	1923–94	1986	18.70	33,700	1/25/70 2/20/86	18.04 18.70	31,000 33,700	N N	30 40
11363000	Pit River at Big Bend, CA	4,710	1911–94	1970 1986	18.17 18.70	49,000 43,800	1/25/70 2/20/86	18.17 18.70	49,000 43,800	N N	50 35
11363930	Iron Canyon Creek below Iron Canyon Dam near Big Bend, CA	11.24	1967–84, 1986–91	1986 1978	-- 3.24	650 582	2/05/86	--	650	Y	--
11365000	Pit River near Montgomery Creek, CA	4,952	1945–64, 1966–94	1970 1986	32.36 74.65	73,000 55,500	1/24/70	32.36	73,000	Y	55
11365500	Squaw Creek above Shasta Lake, CA	64.0	1945–66, 1969–80	1956	21.90	17,800	1/16/74	21.90	17,800	N	20
11367500	McCloud River near McCloud, CA	358	1932–94	1956	9.42	11,800	1/23/70 1/16/74	9.36 9.12	11,700 11,200	N N	35 30
11367800	McCloud River at Ah-di-na near McCloud, CA	427	1956, 1965–94	1974	13.68	26,400	1/16/74	13.68	26,400	Y	--
11368000	McCloud River above Shasta Lake, CA	604	1946–94	1974	28.26	45,500	1/16/74	28.26	45,500	N	35

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11370500	Sacramento River at Keswick, CA	6,468	1939–94	1940	--	186,000	1/24/70	32.22	78,900	Y	20
				1970	32.22	78,900	4/01/74	31.92	81,400	Y	40
11371000	Clear Creek at French Gulch, CA	115	1951–93	1974	14.99	14,600	1/16/74	14.99	14,600	N	>100
							1/26/83	14.09	10,500	N	25–35
11372000	Clear Creek near Igo, CA	228	1941–94	1956	13.75	24,500	3/03/83	12.73	19,200	Y	40–60
11372200	South Cow Creek near Millville, CA	77.3	1956–72	1970	9.46	6,970	1/23/70	9.46	6,970	N	15–25
				1956	12.50	--					
11373200	Oak Run Creek near Oak Run, CA	11	1958–66, 1969–76	1974	7.87	3,860	1/16/74	7.87	3,860	N	>50
11374000	Cow Creek near Millville, CA	425	1937, 1950–94	1982	21.22	48,700	11/16/81	21.22	48,700	N	45
				1937	23.80	--					
11374400	Middle Fork Cottonwood Creek near Ono, CA	244	1957–75	1974	12.70	22,700	1/16/74	12.70	22,700	N	>100
				1965	19.08	13,500					
11375810	Cottonwood Creek near Olinda, CA	395	1972–86	1974	21.44	36,900	1/16/74	21.44	36900	N	--
11375820	South Fork Cottonwood Creek near Cottonwood, CA	217	1963–78	1974	14.05	18,700	1/16/74	14.05	18,700	N	--
11375870	South Fork Cottonwood Creek near Olinda, CA	371	1977–86	1983	15.38	35,800	2/28/83	15.38	35,800	N	--
11376000	Cottonwood Creek near Cottonwood, CA	927	1941–94	1983	21.59	86,000	1/16/74	20.15	70,000	N	25
							12/19/81	19.70	64,400	N	15
							3/01/83	21.59	86,000	N	50
11376100	South Fork Bailey Creek near Manzanita Lake, CA	3.67	1970–80	1970	9.14	266	1/23/70	9.14	266	N	--
				1971	10.60	244					
11376200	Summit Creek near Mineral, CA	1.80	1961–73	1970	11.15	220	1/23/70	11.15	220	N	20–30
11376550	Battle Creek below Coleman Fish Hatchery near Cottonwood, CA	357	1962–94	1970	14.75	24,300	1/24/70	14.75	24,300	N	30–40
							11/16/81	12.64	18,000	N	10–15
11377100	Sacramento River above Bend Bridge near Red Bluff, CA	8,900	1879–88, 1892–1994	1940	--	291,000	1/24/70	36.60	157,000	Y	25
				1970	36.60	157,000					
11379000	Antelope Creek near Red Bluff, CA	123	1938, 1941–44, 1946–82	1970	17.95	17,200	1/23/70	17.95	17,200	N	25–35
				1938	22.00	--					
11379500	Elder Creek near Paskenta, CA	92.4	1949–91, 1993–94	1983	12.10	17,700	2/28/83	12.10	17,700	N	50
				1958	13.90	11,700	2/14/86	11.62	15,300	N	25
11380500	Elder Creek at Gerber, CA	136	1950–70, 1972–80	1965	14.90	14,100	1/23/70	14.40	12,900	N	15
11381500	Mill Creek near Los Molinos, CA	131	1929–94	1938	23.40	36,400	1/23/70	15.63	17,100	N	25
11382950	North Fork Calf Creek near Butte Meadows, CA	1.26	1970–80	1970	14.59	34	1/23/70	14.59	34	N	--
11383500	Deer Creek near Vina, CA	208	1912–15, 1921–94	1938	19.20	23,800	1/23/70	15.14	20,100	N	30
11383730	Sacramento River at Vina Bridge near Vina, CA	--	1947–70, 1972–78, 1980	1970	191.48	171,000	1/24/70	191.48	171,000	N	--
11384000	Big Chico Creek near Chico, CA	72.40	1931–86	1986	14.00	10,600	1/24/70	15.10	9,270	N	20
				1938	16.60	8,260	2/17/86	14.00	10,600	N	40
11384400	South Fork Stony Creek near Stonyford, CA	2.52	1970–80	1974	28.56	586	1/16/74	28.56	586	N	--

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11384600	Little Stony Creek above East Park Reservoir near Lodoga, CA	45.60	1967–82	1970	11.39	4,000	1/23/70	11.39	4,000	N	--
11386200	South Fork Elk Creek near Elk Creek, CA	2.56	1970–80	1970	23.51	311	1/23/70	23.51	311	N	--
11388000	Stony Creek below Black Butte Dam near Orland, CA	738	1956–90	1958 1963	-- 13.37	36,300 10,700	2/18/86	11.40	23,300	Y	35–45
11389000	Sacramento River at Butte City, CA	12,075	1941–94	1942	96.87	170,000	3/02/83	95.89	157,000	Y	30
11389500	Sacramento River at Colusa, CA	12,090	1941–94	1983 1942	68.50 69.20	51,800 49,000	3/04/83 12/26/83 2/19/86	68.50 67.65 67.97	51,800 49,100 50,100	Y Y Y	35 15 20
11389650	Scotts John Creek near Stirling City, CA	3.76	1970–79	1970	6.01	206	1/23/70	6.01	206	N	--
11389950	Little Butte Creek near Magalia, CA	11.4	1969–85	1970	6.37	1,180	1/24/70	6.37	1,180	Y	--
11390000	Butte Creek near Chico, CA	147	1931–94	1986	14.52	22,000	2/17/86	14.52	22,000	N	45
11390395	Butte Slough near Meridian, CA	--	1967–78	1970	61.64	150,000	1/26/70	61.64	150,000	N	--
11390500	Sacramento River below Wilkins Slough near Grimes, CA	12,920	1939–94	1986 1940	52.50 52.75	32,700 27,000	3/04/83 12/27/83 2/20/86	52.16 50.62 52.50	32,300 30,400 32,700	Y Y Y	40 10 50
11390655	South Fork Willow Creek near Fruto, CA	38.9	1963–78	1973	12.58	3,620	2/07/73	12.58	3,620	N	--
11390660	Walker Creek at Artois, CA	60.4	1966–81	1973	11.69	5,660	2/07/73	11.69	5,660	N	--
11390672	Stone Corral Creek near Sites, CA	38.2	1958–85	1983	16.64	5,700	1/26/83	16.64	5,700	N	--
11390680	Salt Creek near Williams, CA	13.0	1960–73	1973	29.18	940	2/07/73	29.18	940	N	5–15
11391000	Sacramento River at Knights Landing, CA	14,535	1951–80	1970	40.86	30,800	1/26/70	40.86	30,800	Y	--
11395030	South Fork Feather River below Little Grass Valley Dam, CA	25.9	1928–33, 1961–94	1986	14.78	5,780	2/18/86	14.78	5,780	Y	25–35
11395200	South Fork Feather River below diversion dam near Strawberry Valley, CA	37.7	1961–94	1986	14.92	8,870	2/17/86	14.92	8,870	Y	25–35
11396200	South Fork Feather River below Forbestown Dam, CA	87.5	1963–94	1986	16.07	15,400	2/17/86	16.07	15,400	Y	30–60
11396350	South Fork Feather River at Ponderosa Dam, CA	108	1963–80, 1982–87	1986	67.23	21,000	2/17/86	67.23	21,000	Y	25–50
11396400	Sucker Run near Forbestown, CA	18.7	1965–87	1982	9.90	2,600	4/11/82	9.90	2,600	N	20–30
11397900	Benner Creek near Chester, CA	7.67	1970–80	1970	6.29	182	1/23/70	6.29	182	N	--
11397970	Lake Almanor tributary near Almanor, CA	1.66	1963–73	1970 1963	8.43 8.85	131 111	1/23/70	8.43	131	N	5–15
11400500	Butt Creek below Almanor-Butt Creek Tunnel near Prattville, CA	69.3	1937–59, 1965–94	1986	5.90	3,870	2/17/86	5.90	3,870	N	30–40

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11401112	North Fork Feather River below Belden Dam, CA	612	1970–94	1987	8.96	3,230	11/18/74	8.89	3,040	Y	5–15
							9/30/87	8.96	3,230	Y	5–15
11401180	Little Grizzly Creek near Genesee, CA	29.6	1965–79	1970	6.15	1,800	1/24/70	6.15	1,800	N	--
11401460	Hough Creek near Crescent Mills, CA	3.79	1963–73	1970	4.60	227	1/23/70	4.60	227	N	5–15
11401500	Indian Creek near Crescent Mills, CA	739	1906–08, 1912–17, 1931–88, 1990–93	1986	20.80	36,200	2/18/86	20.80	36,200	N	50
11402000	Spanish Creek above Blackhawk Creek at Keddie, CA	184	1934–88, 1990–93	1986	14.88	19,600	2/17/86	14.88	19,600	N	45–60
11404500	North Fork Feather River at Pulga, CA	1,953	1912–94	1986	39.86	87,900	2/19/86	39.86	87,900	Y	40–50
11407150	Feather River near Gridley, CA	3,676	1956, 1965–94	1965	100.43	151,000	2/19/86	100.06	150,000	Y	20–30
11407900	Middle Yuba River below Jackson Meadows Dam near Sierra City, CA	38.3	1963, 1965–87	1963	10.57	10,000	12/20/81	9.61	3,660	Y	10–20
				1986	17.57	3,630					
11408850	Middle Yuba River near Camptonville, CA	136	1967–89	1986	17.90	21,600	2/17/86	17.90	21,600	Y	10–20
11408880	Middle Yuba River below Our House Dam, CA	145	1969–94	1986	27.40	20,600	2/17/86	27.40	20,600	Y	15–25
11409300	Oregon Creek at Camptonville, CA	23.0	1968–94	1986	11.56	4,550	2/17/86	11.56	4,550	N	15–25
11409400	Oregon Creek below Log Cabin Dam near Camptonville, CA	29.1	1969–94	1986	11.24	6,400	2/17/86	11.24	6,400	N	30–35
				1993	12.11	2,300	12/25/83	7.66	2,590	N	3–5
11413000	North Yuba River below Goodyears Bar, CA	250	1931–94	1963	23.80	40,000	2/17/86	20.12	29,000	N	20
11413300	Slate Creek below diversion dam near Strawberry, CA	49.4	1961–81, 1983–94	1986	16.89	13,600	2/17/86	16.89	13,600	N	15–25
11413520	North Yuba River below New Bullards Bar Dam near North San Juan, CA	490	1965, 1967–94	1965	49.80	91,600	1/22/70	35.29	56,200	Y	15–25
11414100	Fordyce Creek below Fordyce Dam near Cisco, CA	31.7	1967–94	1974	7.90	4,660	7/09/74	7.90	4,660	Y	25–50
11414250	South Yuba River at Langs Crossing near Emigrant Gap, CA	120	1966–94	1986	19.95	20,400	2/18/86	19.95	20,400	Y	5–15
11416500	Canyon Creek below Bowman Lake, CA	28.3	1927–94	1986	9.08	3,970	1/22/70	9.42	3,740	Y	20–30
				1970	9.42	3,740	3/08/86	9.08	3,970	Y	25–35
11418500	Deer Creek near Smartville, CA	84.6	1928, 1936–94	1928	14.50	14,000	2/17/86	14.05	12,100	Y	50–75
11421700	Feather River below Shanghai Bend near Olivehurst, CA	5,334	1970–80	1970	62.55	133,000	1/22/70	62.55	133,000	Y	--
11421770	Bear River below Drum Afterbay near Blue Canyon, CA	12.3	1967–94	1982	4.64	7,530	4/11/82	4.64	7,530	Y	--
11421790	Bear River below Dutch Flat Afterbay near Dutch Flat, CA	21.5	1966–94	1986	--	4,240	2/17/86	--	4,240	Y	--
				1992	2.30	76					

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11422500	Bear River below Rollins Dam near Colfax, CA	105	1912–13, 1916–17, 1950–53, 1964–94	1986	20.62	22,500	2/16/82 2/17/86	12.95 20.62	15,400 22,500	Y Y	10–20 50–100
11424000	Bear River near Wheatland, CA	292	1929–94	1986	21.60	48,000	2/17/86	21.60	48,000	Y	>100
11425500	Sacramento River at Verona, CA	21,251	1930–94	1986	42.11	92,900	2/22/80 3/04/83 2/20/86	38.12 38.82 42.11	80,900 79,400 92,900	Y Y Y	10–20 10–20 >50
11426000	Sacramento weir spill to Yolo Bypass near Sacramento, CA	--	1928, 1961–84, 1986, 1989–91, 1993	1986 1928	30.84 33.01	128,000 118,000	2/20/86	30.84	128,000	Y	40–80
11426200	North Fork Forbes Creek near Dutch Flat, CA	1.68	1956–85	1970 1956	4.76 6.40	377 --	1/22/70	4.76	377	Y	--
11426400	North Shirttail Creek near Dutch Flat, CA	9.10	1956–85	1980 1984	12.32 30.38	3,370 803	1/13/80	12.32	3,370	Y	75–100
11427000	North Fork American River at North Fork Dam, CA	342	1942–94	1965	11.87	65,400	2/17/86	11.40	60,600	N	25
11427500	Middle Fork American River at French Meadows, CA	47.9	1952–94	1963	14.20	21,500	3/08/86	10.40	2,870	Y	10–15
11427700	Duncan Creek near French Meadows, CA	9.94	1961–94	1965	10.60	3,650	2/17/86	10.35	3,220	N	20–30
11427760	Middle Fork American River above Middle Fork Powerhouse near Foresthill, CA	87.8	1966–94	1980 1986	8.47 11.60	9,860 6,100	1/13/80	8.47	9,860	Y	--
11427770	Middle Fork American River below Interbay Dam near Foresthill, CA	89.10	1966–85	1980	7.95	9,900	1/13/80	7.95	9,900	Y	--
11428800	Rubicon River below Hell Hole Dam, CA	114	1967–94	1986 1981	-- 7.60	10,700 718	3/08/86	--	10,700	Y	10–15
11433040	Pilot Creek below Mutton Canyon near Georgetown, CA	21.1	1962–94	1986	10.86	6,330	2/18/86	10.86	6,330	Y	40–60
11433100	Long Canyon Creek near French Meadows, CA	18.0	1961–92	1965	11.20	4,690	1/13/80	10.05	3,310	Y	5–15
11433260	North Fork of Middle Fork American River near Foresthill, CA	88.9	1966–85	1980	17.00	30,100	1/13/80	17.00	30,100	N	--
11433400	Canyon Creek near Georgetown, CA	12.50	1966–79	1970	11.01	1,300	1/21/70	11.01	1,300	N	5–15
11433420	Maine Bar Canyon Creek near Greenwood, CA	0.76	1973–83, 1985–86	1986	2.58	367	2/18/86	2.58	367	N	--
11433800	North Fork American River below Auburn Damsite near Auburn, CA	973	1972–85	1980	87.50	66,700	1/14/80	87.50	66,700	N	--
11435100	Pyramid Creek at Twin Bridges, CA	8.76	1971–94	1971	4.62	858	6/26/71	4.62	858	Y	15
11436000	Silver Lake outlet near Kirkwood, CA	15.2	1923–94	1986	6.22	1,160	5/14/75 2/19/86	5.12 6.22	796 1,160	Y Y	-- --

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11437000	Caples Lake outlet near Kirkwood, CA	13.5	1923–32, 1934–44, 1946–47, 1949–83, 1985, 1987–92	1969 1985	-- 2.62	669 134	7/02/80	--	482	Y	--
11439500	South Fork American River near Kyburz, CA (river only)	193	1923–94	1965	10.92	17,500	2/16/82	9.65	11,000	Y	10
11440000	Alder Creek near Whitehall, CA (total flow)	22.1	1923–81	1956	8.40	5,500	1/13/80	7.91	4,550	Y	50
11441500	South Fork Silver Creek near Ice House, CA	27.5	1925–94	1956	6.71	3,940	1/22/70 5/26/82	5.66 5.74	1,800 1,930	Y Y	15–25 20–30
11441900	Silver Creek below Camino Diversion Dam, CA	171	1961–94	1986	11.70	22,800	2/17/86	11.70	22,800	Y	--
11442500	South Fork American River below Silver Creek near Pollock Pines, CA	449	1970–93	1980	17.83	29,500	1/13/80 2/17/86	17.83 16.66	29,500 25,100	N Y	-- --
11444500	South Fork American River near Placerville, CA	598	1912–20, 1965–94	1965 1914	17.40 19.00	47,300 15,000	1/13/80	16.30	39,000	Y	15–20
11446500	American River at Fair Oaks, CA	1,888	1862, 1905–17, 1919–94	1951 1862	31.85 38.00	180,000 --	2/19/86	27.96	134,000	Y	25–50
11447360	Arcade Creek near Del Paso Heights, CA	31.5	1964–78	1978	15.01	2,390	1/14/78	15.01	2,390	N	15–20
11447650	Sacramento River at Freeport, CA	--	1982–94	1986	25.00	117,000	2/16/82	21.27	103,000	Y	10–20
11448500	Adobe Creek near Kelseyville, CA	6.36	1955–78	1974 1963	8.92 9.22	1,570 1,450	1/16/74	8.92	1,570	N	10–25
11448900	Highland Creek above Highland Creek Dam, CA	11.9	1955–78	1974 1965	10.91 12.15	3,140 3,080	1/16/74	10.91	3,140	N	10–20
11449010	Highland Creek below Highland Creek Dam, CA	14.2	1967–77	1971 1974	4.78 5.09	765 625	12/03/70	4.78	765	Y	--
11449100	Scotts Creek near Lakeport, CA	55.2	1961–76, 1978–80	1974 1980	13.38 22.62	11,100 5,060	1/16/74	13.38	11,100	N	--
11449350	Burns Valley Creek near Clearlake Highlands, CA	4.37	1963–78	1978	7.14	852	1/16/78	7.14	852	N	10–20
11449500	Kelsey Creek near Kelseyville, CA	36.6	1947–94	1954	14.80	8,150	1/26/83	13.31	7,730	N	10–15
11451000	Cache Creek near Lower Lake, CA	528	1945–94	1958	9.40	8,000	1/23/70	8.60	6,320	Y	5–10
11451100	North Fork Cache Creek at Hough Spring near Clearlake Oaks, CA	60.2	1972–94	1986	12.84	10,800	2/17/86	12.84	10,800	N	15–25
11451700	Bear Creek tributary near Wilbur Springs, CA	4.49	1960–69, 1971–73	1973 1965	28.90 29.00	695 531	1/18/73	28.90	695	N	5–10
11452500	Cache Creek at Yolo, CA	1,139	1903–94	1958	85.35	41,400	1/24/70	80.36	34,600	Y	10–30
11453000	Yolo Bypass near Woodland, CA	--	1942, 1951–94	1986	34.87	374,000	2/20/86	34.87	374,000	Y	25–35
11454000	Putah Creek near Winters, CA	574	1931–94	1940	29.50	81,000	1/24/70 3/02/83	18.85 19.55	16,300 18,700	Y Y	20–30 30–50

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11456000	Napa River near St. Helena, CA	81.4	1930–32, 1940–94	1986	18.52	16,900	2/17/86	18.52	16,900	N	50–75
11458000	Napa River near Napa, CA	218	1930–32, 1960–94	1986	30.20	37,100	2/18/86	30.20	37,100	Y	75–150
11458100	Milliken Creek near Napa, CA	17.3	1971–83	1983	10.14	3,440	1/26/83	10.14	3,440	Y	--
11458200	Redwood Creek near Napa, CA	9.79	1959–73	1971 1965	8.52 10.44	1,460 1,450	11/27/70	8.52	1,460	N	25–50
11458300	Napa Creek at Napa, CA	14.9	1971–83	1982	12.76	3,190	1/01/82	12.76	3,190	N	--
11458350	Tulucay Creek at Napa, CA	12.6	1972–83	1982	7.38	2,360	2/25/83	7.38	2,360	N	--
11459500	Novato Creek at Novato, CA	17.6	1947–94	1982	14.46	5,000	1/04/82 2/17/86	14.46 12.44	5,000 2,530	Y Y	>50 10–25
11460000	Corte Madera Creek at Ross, CA	18.1	1952–93	1982	19.81	6,000	4/01/82 2/17/86	19.81 18.07	6,000 4,150	N N	>75 10–30
11460100	Arroyo Corte Madera Presidio at Mill Valley, CA	4.69	1966–73, 1976–85	1970 1982	7.52 8.11	1,180 1,170	1/21/70	7.52	1,180	N	--
11460150	Redwood Creek near Tamalpais Valley, CA	6.38	1962–73	1973	10.74	2,150	1/16/73	10.74	2,150	N	15–25
11460400	Lagunitas Creek at Samual P. Taylor State Park, CA	34.3	1983–94	1986	8.44	3,470	2/18/86	8.44	3,470	Y	10–15
11460440	Nicasio Creek near Nicasio, CA	1.74	1962–71, 1973, 1982–83	1982 1967	-- 15.38	610 560	1/04/82	--	610	N	15–25
11460600	Lagunitas Creek near Point Reyes Station, CA	81.7	1975–94	1982	26.96	22,100	1/04/82	26.96	22,100	Y	>75
11460800	Walker Creek near Tomales, CA	40.1	1960–84	1982	31.37	18,800	1/16/73	22.91	8,070	N	--
11460900	Roscoe Creek at Bodega Bay, CA	0.25	1962–73, 1982–83	1982 1970	-- 9.71	210 76	1/04/82	--	210	N	>100
11460920	Salmon Creek at Bodega, CA	15.7	1963–75, 1982–83	1982 1973	-- 19.61	7,400 2,260	1/04/82	--	7,400	N	>100
11461500	East Fork Russian River near Calpella, CA	92.2	1942–94	1965 1993	20.21 22.89	18,700 10,200	1/23/70	20.13	12,400	N	10–25
11462000	East Fork Russian River near Ukiah, CA	105	1912–13, 1952–56, 1958–94	1956 1970	-- 10.84	13,300 7,350	1/24/70	10.84	7,350	Y	30–40
11462500	Russian River near Hopland, CA	362	1938, 1940–94	1956 1938	27.00 30.00	45,000 --	1/16/74	25.50	39,700	Y	20–35
11463000	Russian River near Cloverdale, CA	503	1952–94	1965	31.60	55,200	1/16/74	26.50	51,900	Y	30–50
11463170	Big Sulphur Creek at Geysers Resort near Cloverdale, CA	13.1	1981–94	1986	8.98	5,700	2/17/86	8.98	5,700	N	10–20
11464000	Russian River near Healdsburg, CA	793	1938, 1940–94	1965 1938	27.00 30.80	71,300 --	2/17/86	25.81	71,100	Y	20–25
11464400	Dry Creek near Yorkville, CA	56.0	1974–83	1974	13.50	15,400	1/16/74	13.50	15,400	N	--
11464860	Warm Springs Creek near Asti, CA	12.2	1974–83	1983	12.15	2,660	1/26/83	12.15	2,660	N	--
11467000	Russian River near Guerneville, CA	1,338	1940–94	1986 1956	48.56 49.70	102,000 90,100	2/18/86	48.56	102,000	Y	>50

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11467040	Ward Creek tributary near Cazadero, CA	0.11	1962–73	1973 1966	11.52 11.84	48 46	1/16/73	11.52	48	N	5–10
11467300	Unnamed tributary to Wheatfield Fork Gualala River near Annap., CA	0.19	1962–73	1973	55.78	255	1/16/73	55.78	255	N	10–25
11467600	Garcia River near Point Arena, CA	98.5	1952–56, 1963–83	1974	17.41	30,300	1/16/74	17.41	30,300	N	--
11467880	Navarro River tributary near Philo, CA	0.65	1962, 1965–69, 1971–74	1974	9.99	127	1/16/74	9.99	127	N	10–25
11468000	Navarro River near Navarro, CA	303	1938, 1951–94	1956	40.60	64,500	1/16/74	39.13	61,000	N	30–50
11468010	Albion River near Comptche, CA	14.4	1962–78	1974	12.35	4,430	1/16/74	12.35	4,430	N	40–60
11468020	Albion River tributary near Comptche, CA	0.40	1962–74	1974	11.60	110	1/16/74	11.60	110	N	20–30
11468500	Noyo River near Fort Bragg, CA	106	1952–94	1974	27.14	26,600	3/29/74	27.14	26,600	N	40–60
11469600	Hull Creek near Potter Valley, CA	1.49	1970–80	1974	58.26	820	1/16/74	58.26	820	N	--
11469650	Corbin Creek near Elk City, CA	6.18	1971–80	1980	58.00	1,620	1/13/80	58.00	1,620	N	--
11469800	Cold Creek tributary near Elk City, CA	0.81	1970–75, 1977–80	1970	10.78	256	1/23/70	10.78	256	N	--
11470500	Eel River below Scott Dam near Potter Valley, CA	290	1923–94	1965	24.24	56,300	2/17/86	20.70	39,500	Y	15–25
11471500	Eel River at Van Arsdale Dam near Potter Valley, CA	349	1910–23, 1925–94	1965	33.90	64,100	2/17/86	30.46	51,300	Y	25–40
11473900	Middle Fork Eel River near Dos Rios, CA	745	1966–94	1986 1966	27.41 32.86	93,100 70,200	2/17/86	27.41	93,100	N	10–20
11475000	Eel River at Fort Seward, CA	2,107	1956–94	1965	87.20	561,000	2/17/86	59.27	306,000	N	10–20
11476500	South Fork Eel River near Miranda, CA	537	1941–94	1965	46.00	199,000	12/19/81	34.79	123,000	N	15–25
11476600	Bull Creek near Weott, CA	28.1	1961–94	1965	20.60	6,520	12/16/82	12.00	5,880	N	10
11477000	Eel River at Scotia, CA	3,113	1911–15, 1917–94	1965	72.00	752,000	1/16/74 2/17/86	52.31 51.08	387,000 364,000	N N	15 15
11480000	Jacoby Creek near Freshwater, CA	5.80	1955–72, 1974	1972	9.30	2,510	3/02/72	9.30	2,510	N	50–75
11480390	Mad River above Ruth Reservoir near Forest Glen, CA	93.8	1981–94	1986 1993	11.39 13.10	15,000 11,700	2/17/86	11.39	15,000	N	20–30
11480410	Mad River below Ruth Reservoir near Forest Glen, CA	121	1981–94	1986	17.61	17,800	2/17/86	17.61	17,800	Y	20–30
11480500	Mad River near Forest Glen, CA	143	1954–94	1956 1965	-- 16.80	39,200 20,100	2/17/86	16.15	19,500	Y	15–25
11480700	Maple Creek near Blue Lake, CA	12.1	1962–67, 1969–73	1972	47.89	4,100	3/02/72	47.89	4,100	N	10–20
11481000	Mad River near Arcata, CA	485	1911–13, 1951–94	1965	30.70	81,000	3/02/72	23.44	54,400	N	10
11481200	Little River near Trinidad, CA	40.5	1953, 1956–94	1975 1953	14.19 15.70	9,830 --	1/22/72 3/18/75	14.08 14.19	9,720 9,830	N N	10–20 10–20

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11481300	Big Lagoon tributary near Trinidad, CA	0.13	1962–73	1972	52.41	27	1/21/72	52.41	27	N	>50
11481500	Redwood Creek near Blue Lake, CA	67.7	1954–58, 1973–93	1975	13.70	12,200	3/18/75	13.70	12,200	N	--
11482200	Redwood Creek at south park boundary near Orick, CA	185	1971–81	1975 1972	-- 29.36	33,000 32,600	3/18/75	--	33,000	N	--
11482500	Redwood Creek at Orick, CA	277	1912–13, 1953–94	1965	24.00	50,500	3/18/75	23.82	50,200	N	20–25
11488700	Dry Lake tributary at Perez, CA	1.74	1963–73	1970	6.62	164	1/23/70	6.62	164	N	5–10
11489500	Antelope Creek near Tennant, CA	18.6	1953–79	1974	5.19	1,350	11/11/73	5.19	1,350	N	40–60
11516530	Klamath River below Iron Gate Dam, CA	4,630	1961–94	1965	13.63	29,400	2/21/82	11.60	18,700	Y	10–20
11518050	East Fork Scott River near Alahan, CA	110	1960–74	1974	11.25	12,500	1/16/74	11.25	12,500	N	--
11519500	Scott River near Fort Jones, CA	653	1942–94	1965	25.34	54,600	1/16/74	23.67	36,700	N	25–50
11520500	Klamath River near Seiad Valley, CA	6,940	1913–25, 1927, 1952–94	1965	33.75	165,000	1/16/74	29.65	126,000	N	30–70
11522500	Salmon River at Somes Bar, CA	751	1912, 1914–15, 1927–29, 1931–94	1965	43.40	133,000	3/02/72 1/16/74	24.84 26.73	56,900 63,500	N N	15–25 20–35
11523000	Klamath River at Orleans, CA	8,475	1927–29, 1931–92	1965	76.50	307,000	1/16/74 2/18/86	37.24 37.16	279,000 278,000	N N	25–50 25–50
11523200	Trinity River above Coffee Creek near Trinity Center, CA	149	1956, 1958–94	1974 1982	12.96 13.78	26,500 14,500	1/16/74	12.96	26,500	N	>75
11525500	Trinity River at Lewiston, CA	719	1861, 1881, 1912–94	1956	27.30	71,600	1/18/74	10.41	14,400	Y	20–35
11525655	Trinity River below Limekiln Gulch near Douglas City, CA	812	1981–91	1983	10.45	8,070	6/12/83	10.45	8,070	Y	--
11527000	Trinity River near Burnt Ranch, CA	1,439	1932–40, 1956–94	1956	43.20	172,000	1/16/74	27.72	68,100	Y	15–30
11528400	Hayfork Creek near Hayfork, CA	86.70	1956–69, 1971–72, 1974–76	1974	14.59	7,550	1/16/74	14.59	7,550	N	--
11528500	Hayfork Creek near Hyampom, CA	378	1954–74	1974	19.34	29,400	1/16/74	19.34	29,400	N	10–25
11528700	South Fork Trinity River below Hyampom, CA	764	1965–94	1965	30.45	88,000	2/17/86	25.47	75,000	N	15–30
11530000	Trinity River at Hoopa, CA	2,853	1912–14, 1917–18, 1932–94	1965 1974	40.30 45.98	231,000 145,000	1/16/74	45.98	145,000	Y	20–30
11530500	Klamath River near Klamath, CA	12,100	1862, 1881, 1890, 1911–27, 1932–94	1965 1890	55.30 63.00	557,000 425,000	1/16/74 2/18/86	41.96 36.76	529,000 459,000	Y Y	60–70 30–40
11530950	Darlingtonia Creek at Darlingtonia, CA	0.77	1962–69, 1971–73	1972	56.75	270	3/02/72	56.75	270	N	5–10
11532500	Smith River near Crescent City, CA	614	1927, 1932–94	1965	48.50	228,000	1/22/72	43.37	182,000	N	50

Table 6. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in California—Continued

Station number (fig. 27)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11533000	Lopez Creek near Smith River, CA	0.92	1962–73	1972	54.29	570	3/02/72	54.29	570	N	20–40

[1]Regulated during flood: N, no; Y, yes.

Colorado

Hydroclimatology

Colorado is located in the west-central United States. Approximately 50 percent of the State is covered by the Rocky Mountains and Colorado Plateau, and the other 50 percent is Great Plains. Colorado's location and the high-elevation mountains combine to create a complex and diverse climate statewide. Mean annual precipitation ranges from 7 in. in south-central Colorado to 60 in. in the mountains (Doesken and others, 1984). The major moisture sources for Colorado are the Pacific Ocean and the Gulf of Mexico (Paulson and others, 1991). Seasonal, large-scale atmospheric circulation interacts with the mountainous topography to produce three major precipitation patterns.

The most important precpitation pattern, the mid-winter pattern, is created by frontal systems from the Pacific Ocean that are directed by the polar jetstream into Colorado from the northwest, west, and southwest. These airmasses must rise over the mountains causing a major orographic component to be added to the winter precipitation pattern. Therefore, during the winter season, most of the precipitation occurs in the higher mountains and in parts of the western valleys.

The second precipitation pattern affects the eastern half of the State during the spring and summer. In the Great Plains and the foothills of the Rocky Mountains, a substantial increase in precipitation begins in early March and continues through June. As temperatures rise, the supply of moisture from the Gulf of Mexico steadily increases over the plains east and southeast of Colorado. This moisture and increased convective activity result in periodic, widespread rainfall and occasionally severe thunderstorms east of the mountains. May and June tend to be the wettest months in the northeastern quarter of Colorado.

The third precipitation pattern is the summer monsoon, which occurs over the southern half of the State in July and August. Rainfall from thunderstorms over the mountains can become deadly flash floods as runoff is concentrated into the steep and narrow mountain valleys.

Colorado is divided into three basic flood regions: (1) the mountainous region, running north-south through the central part of the State; (2) the plateau region to the west of the mountainous region; and (3) the plains region to the east of the mountainous region. Each region has different factors affecting runoff.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in the mountainous region of Colorado is dependent upon drainage area, mean basin slope, and mean annual precipitation. In the plateau region, maximum discharges for streams are dependent on drainage area, mean annual precipitation, and, to a small extent, mean basin elevation. The important variables for the plains region are effective drainage area (total area minus controlled or dammed area), the 100-year, 24-hour rainfall, and channel slope (Jennings and others, 1994).

Significant Floods

The flash floods that occurred in the Big Thompson and Cache la Poudre River Basins during the night of July 31 and morning of August 1, 1976, resulted in 144 deaths and $39 million in damages (Paulson and others, 1991). The floods were a result of slow-moving monsoonal thunderstorms that produced as much as 12 in. of rain in 3 hours over the downstream part of the Big Thompson River Basin.

The floods during June and July of 1983, mostly confined to the mountains and their western slopes, were the result of snowmelt runoff combined with minor rainfall runoff. Eighteen percent of the streamflow-gaging stations recorded significant discharges. The White River near Meeker (station 09304500, fig. 28) recorded a discharge greater than the 100-year recurrence interval.

The floods of May and June 1984 were the most extensive during 1970–89. Twenty-five percent of the streamflow-gaging stations in the State, located mostly in the mountains and the Colorado Plateau, recorded significant discharges. The flooding was caused by snowmelt combined with minor rainfall runoff. Discharges exceeding the 50-year recurrence interval were recorded on the Colorado River near Cameo (station 09095500, fig. 28). Maximum discharge exceeded the 100-year recurrence interval on the White River near Meeker (station 09304500, fig. 28) and was a new peak of record.

The location of streamflow-gaging stations in Colorado that had significant floods for 1970–89 is shown in figure 28 by station number. The specific data for each significant flood are listed in table 7. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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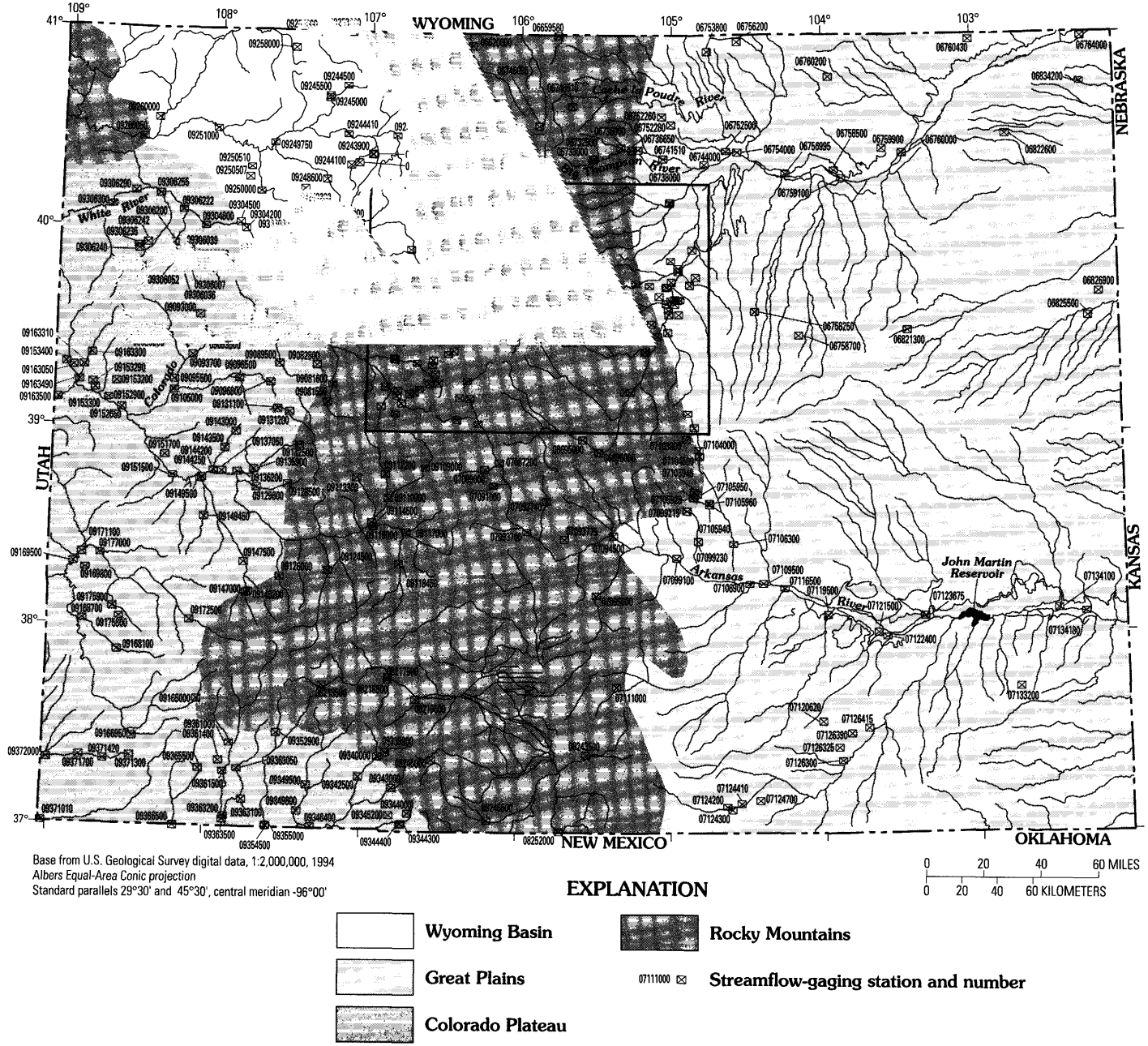

Figure 28. Location of streamflow-gaging stations with significant floods during 1970–89 for Colorado.

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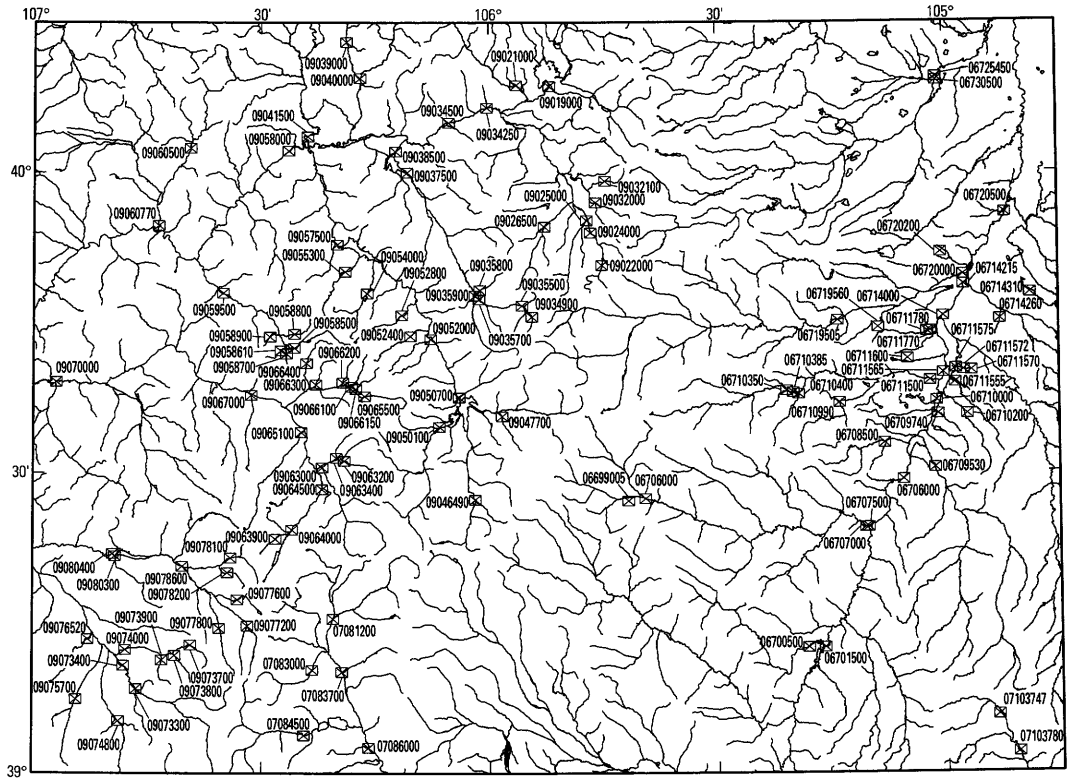

Base from U.S. Geological Survey digital data, 1:100,000, 1994
Universal Transverse Mercator projection
Zone 13
Converted to Albers Equal-Area Conic projection
Standard parallels 29°30' and 45°30', central meridian -96°00'

0 10 20 30 MILES
0 10 20 30 KILOMETERS

EXPLANATION

07086000 ⊠ **Streamflow-gaging station and number**

Figure 28. Location of streamflow-gaging stations with significant floods during 1970–89 for Colorado—Continued.

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06620000	North Platte River near Northgate, CO	1,431	1904, 1915–93	1923 1984	-- 7.84	6,720 6,460	5/17/84	7.84	6,460	Y	30–40
06659580	Sand Creek at CO-WY State line	29.2	1969–93	1977	6.65	6,710	7/19/77	6.65	6,710	Y	150–200
06695000	South Platte River above 11-mile Canyon Reservoir near Hartsel, CO	880	1939–94	1970 1957	-- 5.22	3,970 1,240	4/27/70	--	3,970	Y	>500
06696000	South Platte River near Lake George, CO	963	1930–89, 1992–94	1970	8.34	3,000	4/28/70	8.34	3,000	Y	>500
06699005	Tarryall Creek below Rock Creek near Jefferson, CO	230	1983–89, 1991–92, 1994	1987	7.00	654	4/19/87	7.00	654	N	--
06700500	Goose Creek above Cheesman Lake, CO	86.6	1925–82	1957 1942	4.11 4.57	487 464	5/22/73	3.96	452	N	20
06701500	South Platte River below Cheesman Lake, CO	1,752	1926–94	1970	13.40	4,640	4/29/70	13.40	4,640	Y	200–500
06706000	North Fork South Platte River below Geneva Creek at Grant, CO	127	1909–13, 1943–89, 1991–94	1912 1950	3.30 4.52	990 464	6/18/83 6/29/78	2.15 2.16	805 825	N Y	20 20
06707000	North Fork South Platte River at South Platte, CO	479	1909–10, 1913–82	1949	6.30	2,050	6/12/80	4.71	1,600	Y	10
06707500	South Platte River at South Platte, CO	2,579	1904–82	1921	8.95	6,320	4/30/70	8.24	5,040	Y	60–70
06708000	South Platte River at Waterton, CO	2,621	1926–80	1942	5.68	5,700	4/30/70	4.90	4,870	Y	40–50
06708500	Deer Creek near Littleton, CO	26.2	1942–46, 1979–88, 1990–91	1980	6.22	320	--/--/80	6.22	320	N	--
06709530	Plum Creek at Titan Road near Louviers, CO	315	1984–87, 1989–94	1984 1992	7.00 8.32	2,300 367	5/15/84	7.00	2,300	N	--
06709740	Lee Gulch at Littleton, CO	--	1981–91, 1993–94	1983	16.00	444	--/--/83	16.00	444	N	--
06710000	South Platte River at Littleton, CO	3,069	1942–85	1965	15.45	110,000	5/06/73	11.12	11,000	Y	15–20
06710200	Big Dry Creek tributary at Littleton, CO	0.95	1969–78	1971	3.65	479	8/30/71	3.65	479	N	--
06710350	Bear Creek near Evergreen, CO	--	1979–90	1980	7.37	465	--/--/80	7.37	465	N	--
06710385	Bear Creek above Evergreen, CO	104	1984–94	1984	3.80	388	8/26/84	3.80	388	N	--
06710400	Cub Creek at Evergreen, CO	--	1979–91, 1993–94	1980	7.41	244	--/--/80	7.41	244	N	--
06710990	Parmalee Gulch at mouth at Indian Hills, CO	--	1979–91	1980 1984	9.30 9.62	100 100	--/--/84	9.62	100	N	--
06711500	Bear Creek at mouth at Sheridan, CO	260	1927–89, 1991–94	1969	9.50	8,150	5/06/73	8.34	3,750	Y	25–30
06711555	Little Dry Creek above Englewood, CO	--	1982–94	1983	15.64	1,060	--/--/83	15.64	1,060	N	--
06711565	South Platte River at Englewood, CO	--	1983–88, 1990–94	1984	5.25	4,090	8/20/84	5.25	4,090	Y	--

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06711570	Harvard Gulch at Colorado Boulevard at Denver, CO	--	1981–89, 1991, 1993–94	1988	14.02	597	8/04/88	14.02	597	N	--
06711572	Harvard Gulch below University Boulevard at Denver, CO	--	1981–88, 1993–94	1983 1994	13.75 14.14	780 766	--/--/83	13.75	780	N	--
06711575	Harvard Gulch at Harvard Park at Denver, CO	--	1981–91, 1993–94	1981	15.61	785	--/--/81	15.61	785	N	--
06711600	Sanderson Gulch tributary at Lakewood, CO	0.38	1969–83, 1985–91, 1993–94	1977	14.91	422	6/06/77	14.91	422	N	--
06711770	Dry Gulch at Denver, CO	--	1981–91, 1993–94	1981	16.00	445	--/--/81	16.00	445	N	--
06711780	Lakewood Gulch at Denver, CO	--	1981–91	1984	17.24	930	--/--/84	17.24	930	N	--
06714000	South Platte River at Denver, CO	3,861	1895–1901, 1903–06, 1909–94	1965	15.00	40,300	5/07/73	10.85	17,600	Y	--
06714215	South Platte River at 64th Avenue, Commerce City, CO	3,884	1982–94	1987	8.09	14,300	6/08/87	8.09	14,300	Y	--
06714260	Westerly Creek at Aurora, CO	--	1982–91, 1993–94	1983	14.45	1,530	--/--/83	14.45	1,530	N	--
06714310	Sand Creek tributary at Denver, CO	0.29	1971–88, 1991	1985 1991	-- 13.78	800 428	--/--/85	--	800	N	--
06719505	Clear Creek at Golden, CO	400	1975–94	1983	6.44	2,370	7/10/83	6.44	2,370	N	--
06719560	Lena Gulch at Lakewood, CO	9.00	1974–80, 1987–91, 1993–94	1975	14.41	641	7/20/75	14.41	641	N	--
06720000	Clear Creek at mouth near Derby, CO	575	1914, 1927–82	1965 1973	-- 8.90	5,070 4,700	5/06/73	8.90	4,700	Y	--
06720200	South Platte River tributary number 2 at Northglenn, CO	0.50	1969–78	1976	7.90	151	5/24/76	7.90	151	N	--
06720500	South Platte River at Henderson, CO	4,713	1926–94	1973 1965	11.67 12.93	33,000 29,600	5/06/73	11.67	33,000	Y	--
06725450	St. Vrain Creek below Longmont, CO	424	1977–82, 1985–89, 1991–94	1980	6.37	2,380	5/01/80	6.37	2,380	Y	5–10
06730500	Boulder Creek at mouth near Longmont, CO	439	1927–49, 1951–55, 1979–90, 1992–93, 1995	1938	6.94	4,410	5/19/83	4.82	2,090	Y	--
06732500	Fall River at Estes Park, CO	39.8	1945–53, 1978–91, 1993–94	1982	11.10	6,550	7/15/82	11.10	6,550	N	>500
06733000	Big Thompson River at Estes Park, CO	137	1947–94	1982 1965	3.16 6.89	5,500 1,640	7/15/82	--	5,500	N	>500
06736000	North Fork Big Thompson River at Drake, CO	85.1	1947–76	1976	9.21	8,710	7/31/76	9.21	8,710	N	>500
06736650	Cedar Creek at Cedar Cove, CO	18.9	1979–84, 1986, 1990–91, 1993–94	1980	13.80	1,590	--/--/80	13.80	1,590	N	--

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06738000	Big Thompson River at mouth of canyon near Drake, CO	305	1888, 1895–99, 1902–03, 1906, 1927–33, 1938–49, 1951–85, 1987–94	1976	19.86	31,200	7/31/76	19.86	31,200	N	300–400
							4/30/80	7.62	6,150	Y	15–20
06741510	Big Thompson River at Loveland, CO	535	1979–94	1980	10.10	6,970	4/30/80	10.10	6,970	Y	--
06744000	Big Thompson River at mouth near La Salle, CO	830	1927–28, 1931–81	1980	9.91	6,220	5/01/80	9.91	6,220	Y	--
06746095	Joe Wright Creek above Joe Wright Reservoir, CO	3.01	1979–94	1983	2.20	238	7/07/83	2.20	238	N	>500
				1994	5.61	126					
06748510	Little Beaver Creek near Idywilde, CO	0.88	1961–73	1970	2.15	28	6/28/70	2.15	28	N	25
06752260	Cache La Poudre River at Fort Collins, CO	1,129	1975–86, 1988–94	1983	8.31	6,660	6/21/83	8.31	6,660	Y	--
				1991	9.15	3,370					
06752280	Cache La Poudre River above Boxelder Creek near Timnath, CO	1,246	1980–85, 1987–94	1983	8.02	5,810	6/21/83	8.02	5,810	Y	--
06752500	Cache La Poudre River near Greeley, CO	1,877	1903, 1916–17, 1919, 1924–94	1983	8.92	6,360	5/17/80	8.14	4,030	Y	--
							6/14/83	8.92	6,360	Y	--
06753800	Owl Creek tributary near Rockport, CO	4.28	1969–79	1973	15.40	3,400	6/28/73	15.40	3,400	N	--
06754000	South Platte River near Kersey, CO	9,654	1902–03, 1905–12, 1914–94	1973	11.73	31,500	5/08/73	11.73	31,500	Y	--
06756200	Geary Creek tributary near Rockport, CO	1.15	1969–79	1971	11.01	192	8/19/71	11.01	192	N	--
06756995	South Platte River at Masters, CO	12,175	1977–80, 1982–88	1980	10.06	15,100	5/02/80	10.06	15,100	Y	--
06758250	Kiowa Creek tributary near Bennett, CO	6.40	1970–79	1978	19.60	2,400	8/02/78	19.60	2,400	N	--
06758500	South Platte River near Weldona, CO	13,245	1953–94	1973	11.68	26,800	5/08/73	11.68	26,800	Y	--
06758700	Middle Bijou Creek tributary near Deer Trail, CO	1.74	1970–79	1977	--	1,290	7/20/77	--	1,290	N	--
				1979	13.36	880					
06759100	Bijou Creek near Ft. Morgan, CO	1,500	1977–87	1977	6.01	2,200	7/26/77	6.01	2,200	Y	--
06759900	Antelope Draw near Union, CO	3.19	1969–79	1978	11.60	280	6/23/78	11.60	280	N	--
06760000	South Platte River at Balzac, CO	16,852	1918–34, 1936–80	1965	13.32	123,000	5/09/73	10.70	20,300	Y	--
06760200	Igo Creek tributary near Keota, CO	1.53	1969–79	1979	11.48	125	7/03/79	11.48	125	N	--
06760430	Spring Canyon Creek near Peetz, CO	22.9	1969–79	1975	13.36	448	7/10/75	13.36	448	N	--

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06764000	South Platte River at Julesburg, CO	23,193	1902–06, 1909–12, 1914–15, 1917–18, 1920–24, 1926–83, 1985, 1990–92	1965	10.44	37,600	5/11/73	8.10	22,000	Y	--
06821300	North Fork Arikaree River tributary near Shaw, CO	6.55	1969–79	1979	15.21	1,270	8/10/79	15.21	1,270	N	--
06822600	Patent Creek near St. Petersburg, CO	2.37	1969–79	1979	14.55	850	7/22/79	14.55	850	N	--
06825500	Landsman Creek near Hale, CO	268	1951–76	1975 1969	14.91 15.78	13,000 10,600	6/20/75	14.91	13,000	N	50
06826900	Sand Creek near Hale, CO	14.6	1969–79	1975	19.20	4,350	5/28/75	19.20	4,350	N	--
06834200	Spring Creek tributary near Amherst, CO	23.0	1969–79	1973	13.97	480	9/10/73	13.97	480	N	--
07081200	Arkansas River near Leadville, CO	97.2	1968–83, 1990–94	1983 1978	4.30 4.47	1,090 894	6/21/83	4.30	1,090	Y	25
07083000	Halfmoon Creek near Malta, CO	23.6	1947–94	1984 1979	3.77 7.76	615 274	6/30/84 6/08/85	3.77 3.75	615 575	N N	150 100
07083700	Arkansas River near Malta, CO	228	1965–67, 1975–84	1980	5.37	2,200	6/12/80	5.37	2,200	Y	20–25
07084500	Lake Creek above Twin Lakes Reservoir, CO	75.0	1946–52, 1954–58, 1960–62, 1964–94	1978 1990	5.08 5.77	3,270 1,940	5/27/70 6/15/78	5.20 5.08	2,660 3,270	Y Y	5–10 25–50
07086000	Arkansas River at Granite, CO	427	1897, 1910–88, 1990–94	1957	7.20	5,360	6/13/80 6/25/83 6/09/85	5.65 5.74 5.72	3,560 3,600 3,320	Y Y Y	40–50 40–50 25
07087200	Arkansas River at Buena Vista, CO	611	1965–80, 1987–93	1980	6.55	3,950	6/11/80	6.55	3,950	Y	20–25
07089000	Cottonwood Creek below Hot Springs near Buena Vista, CO	65.0	1912–23, 1950–68, 1970–86	1957	4.52	1,180	6/13/80	3.33	672	N	30
07091000	Chalk Creek near Nathrop, CO	97.0	1949–56, 1979, 1981–82, 1984–93	1986	3.55	1,400	--/--/86	3.55	1,400	N	40–50
07093700	Arkansas River near Wellsville, CO	1,485	1961–82, 1984–94	1980 1985	8.02 8.12	6,240 6,020	6/12/80 6/10/85	8.02 8.12	6,240 6,020	Y Y	90–100 50–60
07093740	Badger Creek at upper station near Howard, CO	106	1981–85, 1987–91	1983	8.22	1,360	8/14/83	8.22	1,360	N	--
07093775	Badger Creek at lower station near Howard, CO	211	1981–94	1984	8.05	2,470	7/28/84	8.05	2,470	N	--
07094500	Arkansas River at Parkdale, CO	2,548	1946–55, 1965–94	1983 1985	8.06 9.13	6,310 5,960	6/26/83 6/09/85	8.06 9.13	6,310 5,960	Y Y	20 15
07095000	Grape Creek near Westcliffe, CO	320	1925–28, 1930, 1932–61, 1963–84, 1987–94	1966	8.45	7,460	4/17/87	4.25	1,410	N	15
07099100	Beaver Creek near Portland, CO	214	1971–81	1973 1981	7.56 8.67	4,800 2,800	9/09/73	7.56	4,800	N	10–25
07099215	Turkey Creek near Fountain, CO	13.0	1978–89	1982	4.70	1,020	7/28/82	4.70	1,020	N	--

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07099230	Turkey Creek above Teller Reservoir near Stone City, CO	62.3	1978–87, 1989–94	1982 1987	11.51 11.88	3,640 2,760	8/20/82	11.51	3,640	N	--
07103747	Monument Creek at Palmer Lake, CO	25.9	1977–89	1981 1985	2.07 2.34	216 204	8/02/81	2.07	216	Y	15
07103780	Monument Creek above North Gate Boulevard at U.S. Air Force Academy, CO	--	1985–94	1985	6.05	372	4/30/85	6.05	372	Y	--
07103800	West Monument Creek at Air Force Academy, CO	14.9	1970–94	1980	2.73	80	5/08/80	2.73	80	Y	20
07104000	Monument Creek at Pikeview, CO	204	1935, 1939–49, 1976–94	1981 1935	7.48 14.00	3,750 --	8/05/81	7.48	3,750	Y	50
07104500	Templeton Gap Floodway at Colorado Springs, CO	8.73	1952–78, 1980–81	1980	3.58	1,130	7/02/80	3.58	1,130	N	--
07105928	Little Fountain Creek near Fort Carson, CO	11.8	1979–89	1985	5.04	224	10/04/84	5.04	224	Y	--
07105940	Little Fountain Creek near Fountain, CO	26.9	1978–88	1986	8.47	1,290	8/23/86	8.47	1,290	Y	--
07105945	Rock Creek above Fort Carson Reservation, CO	6.79	1979–94	1982	4.73	276	7/28/82	4.73	276	N	--
07105950	Rock Creek near Fort Carson, CO	7.79	1979–88, 1990–94	1982	6.09	353	7/28/82	6.09	353	Y	--
07105960	Rock Creek near Fountain, CO	16.9	1979–88	1986	4.81	176	8/02/86	4.81	176	Y	--
07106300	Fountain Creek near Pinon, CO	849	1973–94	1980 1985	7.05 7.53	10,200 6,960	5/08/80	7.05	10,200	Y	--
07108900	St. Charles River at Vineland, CO	474	1979–94	1982	12.70	7,560	8/11/82	12.70	7,560	Y	--
07109500	Arkansas River near Avondale, CO	6,327	1939–51, 1966–94	1978	8.93	15,400	8/04/72 7/30/78	8.05 8.93	15,000 15,400	Y Y	-- --
07111000	Huerfano River at Manzanares Crossing near Redwing, CO	73.0	1924–76, 1978–82	1951	8.14	10,200	8/03/72	6.36	6,520	N	100–150
07116500	Huerfano River near Boone, CO	1,875	1980–94	1981 1994	10.90 11.36	8,030 2,950	8/12/81	10.90	8,030	N	--
07119500	Apishapa River near Fowler, CO	1,125	1922–25, 1939–94	1923 1951	-- 17.70	83,000 11,100	7/10/78	17.60	18,300	N	--
07120620	Big Arroyo near Thatcher, CO	--	1983–92	1985	4.86	1,500	7/28/85	4.86	1,500	N	--
07121500	Timpas Creek at mouth near Swink, CO	496	1922, 1924–25, 1965, 1968–94	1965 1978	-- 21.11	21,400 12,300	7/10/78	21.11	12,300	N	35–40
07122400	Crooked Arroyo near Swink, CO	108	1968–93	1971 1984	7.91 8.40	1,200 1,050	8/07/71	7.91	1,200	N	--
07123675	Horse Creek near Las Animas, CO	--	1980–87, 1989–93	1989	6.61	1,030	7/15/89	6.61	1,030	N	--
07124200	Purgatoire River at Madrid, CO	550	1972–94	1976	12.80	14,300	7/20/76	12.80	14,300	N	10–15
07124300	Long Canyon Creek near Madrid, CO	100	1972–89	1979	7.37	3,140	7/17/79	7.37	3,140	N	5–10
07124410	Purgatoire River below Trinidad Lake, CO	672	1977–94	1981	7.89	963	9/10/81	7.89	963	Y	--

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07124700	Gray Creek near Engleville, CO	4.95	1970–78, 1981	1970	16.78	2,520	7/22/70	16.78	2,520	N	--
07126300	Purgatoire River near Thatcher, CO	1,935	1965–94	1965	23.50	47,700	7/03/81	22.00	42,400	N	--
07126325	Taylor Arroyo below Rock Crossing near Thatcher, CO	--	1983–89, 1991–92, 1994	1989	10.96	2,820	7/31/89	10.96	2,820	N	--
07126390	Lockwood Canyon Creek near Thatcher, CO	--	1983–90, 1992–93	1987	10.39	1,070	5/22/87	10.39	1,070	N	--
07126415	Red Rock Canyon Creek at mouth near Thatcher, CO	--	1983–94	1987	10.09	1,530	5/22/87	10.09	1,530	N	--
07133200	Clay Creek tributary near Deora, CO	1.60	1969–79	1979	16.50	1,900	8/--/79	16.50	1,900	N	--
07134100	Big Sandy Creek near Lamar, CO	3,307	1968–82	1976	8.48	2,520	9/16/76	8.48	2,520	N	--
07134180	Arkansas River near Granada, CO	23,707	1982–94	1987	11.78	3,460	5/26/87	11.78	3,460	Y	--
08213500	Rio Grande at Thirtymile Bridge near Creede, CO	163	1911–23, 1925–94	1927 1986	-- 5.88	7,500 4,050	6/07/86	5.88	4,050	Y	50–60
08217500	Rio Grande at Wagon Wheel Gap, CO	780	1951–94	1985	6.10	5,190	6/09/85	6.10	5,190	Y	50
08218500	Goose Creek at Wagon Wheel Gap, CO	90.0	1955–83, 1985–91	1970	4.52	879	9/14/70 6/16/87	4.52 4.35	879 761	N N	30 20
08219500	South Fork Rio Grande at South Fork, CO	216	1911–22, 1936–94	1912	9.70	8,000	5/24/84	6.91	3,690	N	20
08243500	Trinchera Creek below Smith Reservoir near Blanca, CO	396	1929–82	1942 1973	-- 7.88	1,340 1,070	5/13/73	7.88	1,070	Y	50
08245000	Conejos River below Platoro Reservoir, CO	40.0	1952–94	1958 1965	-- 4.05	1,160 920	6/30/85	3.62	1,020	Y	25
08246500	Conejos River near Mogote, CO	282	1903–05, 1912–94	1912	8.50	9,000	6/25/85	5.43	2,920	Y	5
08252000	Rio Grande at CO-NM State line	--	1954–82	1979	7.77	5,000	6/10/79	7.77	5,000	Y	20–25
09010500	Colorado River below Baker Gulch near Grand Lake, CO	53.4	1953–94	1957 1971	7.19 7.30	976 840	6/25/71 6/19/83	7.30 7.27	840 857	Y Y	5 5–10
09019000	Colorado River below Lake Granby, CO	312	1951–82	1971 1973	3.95 4.09	1,520 1,440	6/27/71 6/20/74	3.95 3.89	1,520 1,470	Y Y	50–60 50–60
09021000	Willow Creek below Willow Creek Reservoir, CO	134	1953–82	1957	4.84	867	5/29/79	4.81	859	Y	10–15
09022000	Fraser River at upper station near Winter Park, CO	10.5	1969–73, 1985–86, 1988–90, 1992–94	1972	2.15	181	6/05/72	2.15	181	N	10
09024000	Fraser River at Winter Park, CO	27.6	1911, 1914, 1916–45, 1947–94	1918 1983	2.90 2.94	820 624	6/13/73 6/27/83	2.58 2.94	510 624	Y Y	10 25
09025000	Vasquez Creek at Winter Park, CO	27.8	1935–70, 1972–94	1983	4.14	526	6/27/83	4.14	526	Y	20–25
09026500	St. Louis Creek near Fraser, CO	32.9	1935–94	1952	2.89	470	6/21/71	2.50	383	Y	5–10
09032000	Ranch Creek near Fraser, CO	19.9	1935–89, 1991–94	1983	3.96	451	6/27/83	3.96	451	Y	>200

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09032100	Cabin Creek near Fraser, CO	--	1984–94	1984	2.37	126	6/13/84	2.37	126	Y	--
09034250	Colorado River at Windy Gap near Granby, CO	789	1982–94	1984	7.34	5,260	5/25/84	7.34	5,260	Y	--
09034500	Colorado River at Hot Sulphur Springs, CO	825	1905–09, 1912–24, 1926–28, 1930–94	1921 1933	-- 5.24	10,300 5,640	5/25/84	5.10	5,720	Y	<5
09034900	Bobtail Creek near Jones Pass, CO	5.49	1966–94	1988	5.19	290	6/28/88	5.19	290	N	200
09035500	Williams Fork below Steelman Creek, CO	16.3	1934–41, 1966–94	1938 1983	2.48 5.80	441 403	6/30/84	5.74	409	Y	25
09035700	Williams Fork above Darling Creek near Leal, CO	34.7	1966–94	1971	7.12	677	6/24/71	7.12	677	N	50
09035800	Darling Creek near Leal, CO	8.18	1966–94	1984	4.30	241	6/30/84	4.30	241	N	30
09035900	South Fork of Williams Fork near Leal, CO	27.2	1966–94	1978 1990	3.37 3.87	464 400	6/15/78	3.37	464	N	25
09037500	Williams Fork near Parshall, CO	184	1905–24, 1934–94	1918	6.05	2,620	6/22/83 5/25/84 6/16/78	5.82 5.08 4.78	2,220 1,850 1,270	N N Y	100 40–50 5
09038500	Williams Fork below Williams Fork Reservoir, CO	230	1949–54, 1959–94	1953 1983	-- 5.91	2,640 1,960	6/28/83	5.91	1,960	Y	50–60
09039000	Troublesome Creek near Pearmont, CO	44.6	1954–93	1983 1957	2.81 3.48	630 503	6/25/83 5/22/84	2.81 2.90	630 558	N N	75–100 50
09040000	East Fork Troublesome Creek near Troublesome, CO	76.0	1937–43, 1954–83	1978 1979	5.66 6.00	795 635	5/25/78 5/27/83	5.66 5.69	795 743	N N	20 15
09041500	Muddy Creek at Kremmling, CO	290	1982–94	1984	12.67	1,670	5/16/84	12.67	1,670	Y	--
09046490	Blue River at Blue River, CO	--	1984–94	1984	2.84	506	7/01/84	2.84	506	Y	--
09047700	Keystone Gulch near Dillon, CO	9.10	1958–94	1983	3.01	118	6/27/83	3.01	118	N	50
09050100	Tenmile Creek below North Tenmile Creek at Frisco, CO	93.3	1958–94	1965	6.15	1,910	6/26/83	4.16	1,530	N	10
09050700	Blue River below Dillon, CO	335	1960–94	1984 1983	3.88 3.95	2,010 1,990	6/22/83 5/25/84	3.95 3.88	1,990 2,010	Y Y	20–25 20–25
09052000	Rock Creek near Dillon, CO	15.8	1943–56, 1967–90, 1992–94	1973 1971	4.35 4.36	289 271	6/24/71 6/10/73	4.36 4.35	271 289	N N	10 25
09052400	Boulder Creek at upper station near Dillon, CO	8.56	1967–90, 1992–94	1984 1986	3.42 3.83	316 166	7/01/84	3.42	316	N	75
09052800	Slate Creek at upper station near Dillon, CO	14.2	1967–85, 1987–94	1983	6.14	485	8/05/83	6.14	485	N	200
09054000	Black Creek below Black Lake near Dillon, CO	15.0	1943–49, 1967–83, 1985–91, 1993–94	1983 1985	4.74 5.28	555 305	6/25/83	4.74	555	N	500
09055300	Cataract Creek near Kremmling, CO	12.0	1967–94	1983 1967	5.20 5.43	353 321	6/25/83	5.20	353	N	500
09057500	Blue River below Green Mountain Reservoir, CO	599	1938–94	1938 1984	5.93 10.22	4,000 3,460	7/01/84	10.22	3,460	Y	--

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09058000	Colorado River near Kremmling, CO	2,382	1905–18, 1962–70, 1972–93	1912	21.80	21,500	7/12/83	14.91	10,100	Y	5
							5/26/84	16.60	13,600	Y	5–10
09058500	Piney River below Piney Lake near Minturn, CO	13.0	1948–54, 1964–94	1985	5.12	560	7/01/84	4.76	449	N	25
				1952	5.47	396	6/08/85	5.12	560	N	<200
09058610	Dickson Creek near Vail, CO	3.41	1972–94	1979	2.75	48	5/06/79	2.75	48	Y	50
				1984	3.22	46					
09058700	Freeman Creek near Minturn, CO	2.94	1965–94	1984	2.21	82	5/25/84	2.21	82	N	>500
				1976	2.60	35					
09058800	East Meadow Creek near Minturn, CO	3.61	1965–82, 1984–93	1984	1.71	81	6/30/84	1.71	81	N	50
				1975	2.13	74					
09058900	Moniger Creek near Minturn, CO	0.76	1966–74, 1977–85, 1987–90	1989	2.05	29	5/21/89	2.05	29	N	--
				1980	2.37	--					
09059500	Piney River near State Bridge, CO	86.2	1945–83, 1986–94	1983	5.82	1,220	6/27/83	5.82	1,220	N	100
09060500	Rock Creek near Toponas, CO	47.6	1953–80	1976	4.77	494	5/21/76	4.77	494	N	15
				1962	4.80	482					
09060770	Rock Creek at McCoy, CO	--	1984–94	1984	4.74	1,760	5/07/85	3.50	968	Y	--
09061450	Sweetwater Creek at mouth near Dotsero, CO	105	1976, 1979–91, 1993	1976	18.60	7,390	7/12/76	18.60	7,390	N	--
09063000	Eagle River at Red Cliff, CO	70.0	1911–25, 1944–94	1912	4.00	1,010	5/24/84	6.43	846	Y	20–25
				1984	6.43	846					
09063200	Wearyman Creek near Red Cliff, CO	8.78	1965–77, 1979–81, 1983–94	1983	3.61	155	6/20/83	3.61	155	N	25
09063400	Turkey Creek near Red Cliff, CO	23.8	1964–94	1985	2.87	556	6/08/85	2.87	556	N	30
				1965	3.03	515					
09063900	Missouri Creek near Gold Park, CO	6.39	1973–94	1975	3.19	300	6/30/84	3.63	268	N	--
				1983	3.83	164					
09064000	Homestake Creek at Gold Park, CO	36.0	1948–54, 1975–94	1953	6.84	1,080	6/30/84	6.21	930	Y	--
09064500	Homestake Creek near Red Cliff, CO	58.2	1911–14, 1916–18, 1944–94	1918	6.20	1,300	5/24/84	3.96	943	Y	<10
09065100	Cross Creek near Minturn, CO	34.2	1957–63, 1968–94	1957	5.45	754	7/05/75	5.42	738	N	20–25
				1983	6.14	715					
09065500	Gore Creek at upper station near Minturn, CO	14.4	1948–56, 1964–92, 1994	1983	2.60	662	6/24/83	2.60	662	N	30
				1951	6.65	514					
09066100	Bighorn Creek near Minturn, CO	4.54	1964–83, 1986–89, 1991–94	1973	3.82	225	6/10/73	3.82	225	N	20–25
				1993	3.93	115					
09066150	Pitkin Creek near Minturn, CO	5.32	1965–94	1985	3.38	265	6/15/78	2.55	221	Y	--
							6/08/85	3.38	265	Y	--
09066200	Booth Creek near Minturn, CO	6.02	1965–83, 1985, 1987–94	1978	4.07	355	6/15/78	4.07	355	N	55
				1975	4.10	210					
09066300	Middle Creek near Minturn, CO	5.94	1965–94	1974	2.65	116	6/20/74	2.65	116	N	20
				1983	3.28	113	6/25/83	3.28	113	N	20
09066400	Red Sandstone Creek near Minturn, CO	7.32	1964–94	1983	4.66	215	6/10/73	4.41	207	N	20
							6/19/83	4.66	215	N	25
09067000	Beaver Creek at Avon, CO	14.8	1974–94	1983	3.46	249	6/27/83	3.46	249	N	100
09070000	Eagle River below Gypsum, CO	945	1947–94	1984	9.46	7,020	6/25/83	9.13	6,660	N	25
							5/25/84	9.46	7,020	N	50–60

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09070500	Colorado River near Dotsero, CO	4,394	1941–94	1984	14.20	22,200	5/25/84	14.20	22,200	Y	150
09071300	Grizzly Creek near Glenwood Springs, CO	6.15	1977–94	1986 1985	4.99 5.20	364 320	6/05/86	4.99	364	N	>500
09073300	Roaring Fork River above Difficult Creek near Aspen, CO	75.8	1980–94	1985	5.10	2,350	6/08/85	5.10	2,350	Y	--
09073400	Roaring Fork River near Aspen, CO	108	1965–94	1985	5.29	2,230	6/09/85	5.29	2,230	Y	>500
09073700	Hunter Creek above Midway Creek near Aspen, CO	6.18	1965–80	1973 1979	3.18 6.77	580 239	6/26/73	3.18	580	N	30
09073800	Midway Creek near Aspen, CO	8.62	1971–80	1971	3.17	290	6/17/71	3.17	290	N	30
09073900	No Name Creek near Aspen, CO	6.54	1971–80	1971	5.48	163	6/17/71	5.48	163	N	25
09074000	Hunter Creek near Aspen, CO	41.1	1950–56, 1970–87, 1989–94	1985 1953	2.33 7.02	1,170 1,010	6/08/85	2.33	1,170	N	100
09074800	Castle Creek above Aspen, CO	32.2	1970–94	1984 1970	3.64 3.88	559 398	6/30/84	3.64	559	N	>500
09075700	Maroon Creek above Aspen, CO	35.4	1970–94	1980 1970	3.39 3.52	836 382	6/22/80	3.39	836	N	50
09076520	Owl Creek near Aspen, CO	6.60	1975–85, 1987–89	1984	2.39	90	5/21/84	2.39	90	Y	>500
09077200	Fryingpan River near Ivanhoe Lake, CO	18.7	1964–82	1965 1971	3.02 4.62	391 356	8/25/82	2.08	102	Y	--
09077600	Ivanhoe Creek near Norrie, CO	9.12	1964–76	1973	5.90	197	6/28/73	5.90	197	Y	15
09077800	South Fork Fryingpan River at upper station near Norrie, CO	11.5	1964–82	1971 1970	3.35 3.36	326 278	5/07/82	3.00	83	Y	--
09078100	North Fork Fryingpan River above Cunningham Creek near Norrie, CO	12.0	1964–80	1975	4.07	381	7/04/75	4.07	381	N	20
09078200	Cunningham Creek near Norrie, CO	7.12	1964–80	1975	2.89	335	7/04/75	2.89	335	N	50
09078600	Fryingpan River near Thomasville, CO	134	1976–94	1987	4.50	1,550	6/08/87	4.50	1,550	Y	--
09080300	Rocky Fork Creek near Meredith, CO	12.3	1969–82	1978	1.74	101	6/14/78	1.74	101	N	25
09080400	Fryingpan River near Ruedi, CO	238	1965–90, 1992–94	1965	5.16	2,690	9/16/76	3.50	1,400	Y	--
09081550	Crystal River at Placita, CO	107	1960–73, 1975–77	1971 1973	6.00 6.23	1,940 1,930	6/24/71	6.00	1,940	N	<10
09081600	Crystal River above Avalanche Creek near Redstone, CO	167	1956–94	1983	6.12	4,180	6/25/83	6.12	4,180	N	90
09082800	North Thompson Creek near Carbondale, CO	26.8	1964–79	1970 1964	4.00 4.05	365 322	5/22/70	4.00	365	N	10
09085000	Roaring Fork River at Glenwood Springs, CO	1,451	1906–09, 1912, 1914–81, 1983–94	1957 1921	8.64 8.70	19,000 17,600	6/25/83	8.06	12,100	Y	5
09085100	Colorado River below Glenwood Springs, CO	6,013	1967–94	1984	12.49	31,500	5/25/84	12.49	31,500	Y	>500

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09085200	Canyon Creek above New Castle, CO	23.8	1969–86	1983 1986	5.78 8.15	966 840	6/19/83	5.78	966	N	15–20
09085300	East Canyon Creek near New Castle, CO	15.1	1969–83	1978	3.42	956	6/11/78	3.42	956	N	40–50
09085400	Possum Creek near New Castle, CO	6.41	1969–82	1977 1978	2.49 2.52	85 80	8/25/77	2.49	85	N	10
09089500	West Divide Creek near Raven, CO	64.6	1956–94	1984 1983	5.83 6.00	1,410 847	5/28/83 5/14/84	6.00 5.83	847 1,410	N N	20 175
09091100	Mamm Creek near Silt, CO	--	1980–91, 1993	1984	11.92	430	6/06/84	11.92	430	N	--
09092500	Beaver Creek near Rifle, CO	7.90	1953–82	1964	4.00	85	5/28/79	3.90	80	N	10
09093000	Parachute Creek near Parachute, CO	141	1949–54, 1965–70, 1975–86	1977	6.11	2,310	8/19/77	6.11	2,310	N	75
09093500	Parachute Creek at Parachute, CO	198	1921–27, 1949–54, 1975–82	1976	9.47	2,600	7/31/76	9.47	2,600	N	75
09093700	Colorado River near De Beque, CO	7,370	1967–94	1984	14.83	38,200	5/26/84	14.83	38,200	Y	>500
09095000	Roan Creek near De Beque, CO	321	1921–26, 1963–72, 1975–81	1980	9.21	2,020	5/11/80	9.21	2,020	N	25
09095500	Colorado River near Cameo, CO	8,050	1935–94	1984	14.36	39,300	6/26/83 5/26/84	13.17 14.36	36,000 39,300	Y Y	50 100
09096500	Plateau Creek near Collbran, CO	80.4	1922–27, 1929–80	1922	6.90	3,080	6/14/73	5.26	1,240	Y	2–5
09096800	Buzzard Creek below Owens Creek near Heiberger, CO	49.7	1956–70	1970 1957	5.75 5.82	652 636	5/17/70	5.75	652	N	15
09105000	Plateau Creek near Cameo, CO	592	1936–83, 1986–94	1983	8.51	5,010	6/15/73 6/22/83	7.99 8.51	4,550 5,010	Y Y	50 100
09109000	Taylor River below Taylor Park Reservoir, CO	254	1939–94	1957	7.56	2,270	7/01/84	6.63	1,510	Y	20–25
09110000	Taylor River at Almont, CO	477	1913, 1916, 1919–87, 1989–94	1920 1957	5.00 5.32	3,760 3,590	6/26/84	4.73	2,640	Y	2–5
09112200	East River below Cement Creek near Crested Butte, CO	238	1964–72, 1980–81, 1994	1980	8.30	3,360	6/12/80	8.30	3,360	N	25–30
09113300	Ohio Creek at Bladwin, CO	47.2	1959–70	1970	3.62	683	5/18/70	3.62	683	N	20
09114500	Gunnison River near Gunnison, CO	1,012	1912–14, 1916–28, 1945–94	1918 1957	-- 6.74	11,400 9,320	5/25/84	5.42	7,570	Y	15–20
09117000	Tomichi Creek at Parlin, CO	427	1945–51, 1964–70	1970	7.04	760	5/20/70	7.04	760	N	20
09118450	Cochetopa Creek below Rock Creek near Parlin, CO	--	1982–93	1984	4.49	1,120	5/23/84	4.49	1,120	Y	--
09119000	Tomichi Creek at Gunnison, CO	1,061	1938–85, 1987–94	1984	5.49	4,620	5/23/70 5/23/84	4.18 5.49	1,690 4,620	N N	20 >500
09124500	Lake Fork at Gateview, CO	334	1938–94	1983 1993	4.18 4.37	2,720 1,920	7/10/83	4.18	2,720	N	20
09126000	Cimarron River near Cimarron, CO	66.6	1955–94	1957	8.32	1,790	6/10/73	6.05	1,560	Y	15–20

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09128500	Smith Fork near Crawford, CO	42.8	1936–81, 1983–94	1984 1983	8.28 9.26	1,410 800	5/28/79 5/15/84	6.90 8.28	1,180 1,410	N N	50 150
09129600	Smith Fork near Lazear, CO	166	1976–84, 1986	1984	9.28	1,610	5/18/84	9.28	1,610	Y	15–20
09131100	Cow Creek near Paonia, CO	12.0	1969–82	1975	3.01	281	6/14/75	3.01	281	Y	25
09131200	West Muddy Creek near Somerset, CO	49.9	1962–73	1973	3.97	1,190	5/14/73	3.97	1,190	Y	10
09132500	North Fork Gunnison River near Somerset, CO	526	1934–81, 1983–94	1984	8.20	9,220	5/24/84	8.20	9,220	Y	90
09135900	Leroux Creek at Hotchkiss, CO	66.7	1976–94	1984	11.82	1,880	6/07/84	11.82	1,880	N	50
09136200	Gunnison River near Lazear, CO	5,241	1962–85	1984	8.57	19,800	6/07/84	8.57	19,800	Y	50–60
09137050	Currant Creek near Read, CO	56.9	1976–87	1984	5.73	644	6/07/84	5.73	644	Y	15–20
09143000	Surface Creek near Cedaredge, CO	27.4	1940–94	1984 1957	3.67 3.96	824 517	5/18/73 6/08/80 6/07/84	3.21 3.32 3.67	624 630 824	Y Y Y	40–50 40–50 200
09143500	Surface Creek at Cedaredge, CO	39.0	1917–76, 1978–94	1941 1984	2.50 3.44	1,190 862	5/18/73 5/30/83 6/07/84	-- 3.37 3.44	730 724 862	Y Y Y	20–25 20–25 30–40
09144200	Tongue Creek at Cory, CO	197	1958–68, 1976–87	1984	6.77	2,130	6/07/84	6.77	2,130	Y	500
09144250	Gunnison River at Delta, CO	5,628	1976–82, 1984–94	1984	13.15	25,500	6/07/84	13.15	25,500	Y	100–150
09146200	Uncompahgre River near Ridgway, CO	149	1959–82, 1984–92, 1994	1984	5.48	1,970	9/06/70 5/24/84	5.38 5.48	1,890 1,970	N N	20 25
09147000	Dallas Creek near Ridgway, CO	97.2	1922–27, 1956–71, 1980–94	1923 1984	4.40 6.40	1,120 680	7/21/83	6.13	998	Y	40–50
09147500	Uncompahgre River at Colona, CO	448	1903–05, 1921–94	1921 1970	-- 5.71	4,080 2,660	6/24/83 5/25/84	4.74 5.54	3,460 3,900	Y Y	25–30 50–60
09149450	Dry Creek near Olathe, CO	102.00	1980–85, 1987–91, 1993	1982	5.50	1,040	7/27/82	5.50	1,040	N	--
09149500	Uncompahgre River at Delta, CO	1,115	1903–06, 1908–11, 1914, 1916, 1921–31, 1939–86, 1988–89, 1992–94	1984	8.85	5,800	5/15/84	8.85	5,800	Y	>500
09151500	Escalante Creek near Delta, CO	209	1976–83, 1985–89	1977	8.54	2,050	7/24/77	8.54	2,050	N	10
09151700	Deer Creek tributary near Dominguez, CO	4.79	1971–80	1977	12.86	178	7/24/77	12.86	178	N	--
09152650	Leach Creek at Durham, CO	24.8	1973–83	1974	6.76	632	7/18/74	6.76	632	N	25–30
09152900	Adobe Creek near Fruita, CO	15.4	1973–83	1983	6.75	243	8/10/83	6.75	243	N	50
09153200	Little Salt Wash tributary near Fruita, CO	3.13	1971–81	1981	12.20	193	7/--/81	12.20	193	N	--
09153290	Reed Wash near Mack, CO	15.7	1976–92, 1994	1983 1991	-- 6.21	390 235	7/23/83	--	390	Y	200

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09153300	Reed Wash near Loma, CO	29.3	1973–83	1983	7.24	435	7/23/83	7.24	435	Y	--
09153400	West Salt Creek near Mack, CO	168	1974–83	1982	7.43	1,430	8/15/82	7.43	1,430	N	10
09163050	Badger Wash near Mack, CO	6.51	1973–82	1977	4.75	618	7/04/77	4.75	618	Y	75–100
09163300	East Salt Creek tributary near Mack, CO	1.48	1971–80	1975	12.70	95	6/08/75	12.70	95	N	--
09163310	East Salt Creek near Mack, CO	197	1972–82	1974	9.95	2,630	7/18/74	9.95	2,630	N	15–20
09163490	Salt Creek near Mack, CO	436	1972–82	1972	5.69	1,680	9/19/72	5.69	1,680	N	15–20
09163500	Colorado River near CO-UT State line	17,843	1951–94	1984 1957	16.12 16.40	69,800 56,800	6/27/83 5/27/84	15.02 16.12	62,100 69,800	Y Y	100 200
09165000	Dolores River below Rico, CO	105	1952–94	1984 1952	5.95 6.15	2,170 2,120	5/24/84	5.95	2,170	N	25
09166950	Lost Canyon Creek near Dolores, CO	71.3	1984–94	1986	7.23	744	4/02/86	7.23	744	Y	--
09168100	Disappointment Creek near Dove Creek, CO	147	1958–86	1983	13.54	8,140	8/08/83	13.54	8,140	N	50–60
09168700	Disappointment Creek tributary near Slick Rock, CO	1.73	1970–81	1971	15.66	260	8/27/71	15.66	260	N	--
09169500	Dolores River at Bedrock, CO	2,024	1918–22, 1971–88, 1990–94	1973 1979	12.09 12.39	9,280 8,520	4/30/73 5/05/86	12.09 9.12	9,280 5,230	N Y	10–15 2–5
09169800	East Paradox Creek tributary near Bedrock, CO	4.14	1970–80	1970	19.17	368	9/--/70	19.17	368	N	--
09171100	Dolores River near Bedrock, CO	2,145	1970–94	1973	12.88	9,500	4/30/73	12.88	9,500	Y	5–10
09172500	San Miguel River near Placerville, CO	308	1909, 1912, 1930–34, 1942–83, 1985–94	1909 1985	-- 8.06	10,000 1,950	6/24/83	6.20	3,830	N	150–200
09175800	Dead Horse Creek near Naturita, CO	5.30	1970–80	1977	25.25	1,250	8/15/77	25.25	1,250	N	--
09175900	Dry Creek near Naturita, CO	78.6	1967–78	1970	8.31	5,660	9/05/70	8.31	5,660	N	50–75
09177000	San Miguel River at Uravan, CO	1,499	1954–62, 1970, 1974–94	1970	12.60	8,910	9/06/70 5/10/83	12.60 10.14	8,910 8,050	Y Y	30–40 20–25
09236000	Bear River near Toponas, CO	23.0	1953–65, 1967–81, 1983–86	1957 1978	-- 4.01	436 430	6/26/78	4.01	430	Y	50–60
09239500	Yampa River at Steamboat Springs, CO	604	1904–06, 1910–94	1921 1905	6.64 8.90	6,820 4,550	4/26/74	6.96	5,790	N	30
09241000	Elk River at Clark, CO	216	1912, 1921–22, 1930–73, 1975–91	1984 1921	6.12 7.10	4,910 3,920	5/23/84 6/06/86	6.12 6.03	4,910 4,720	N N	175–200 100
09243700	Middle Creek near Oak Creek, CO	23.5	1976–94	1984	4.08	329	5/14/84	4.08	329	N	30–40
09243800	Foidel Creek near Oak Creek, CO	8.61	1976–80, 1983, 1985–94	1980	3.38	55	4/21/80	3.38	55	Y	5

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09243900	Foidel Creek at mouth near Oak Creek, CO	17.5	1976–80, 1983–94	1980	5.18	90	4/22/80	5.18	90	N	20–25
09244100	Fish Creek near Milner, CO	34.5	1956–73	1970	6.74	342	5/18/70	6.74	342	N	20
09244410	Yampa River below diversion near Hayden, CO	1,430	1966–86	1984 1974	11.45 11.90	13,100 12,300	5/16/84	11.45	13,100	Y	20–25
09244500	Elkhead Creek near Clark, CO	45.4	1944, 1959–73	1970	6.17	1,060	5/18/70	6.17	1,060	N	10
09245000	Elkhead Creek near Elkhead, CO	64.2	1953–94	1984	7.58	2,850	5/27/83 5/20/84	7.17 7.58	1,950 2,850	N N	20 200
09245500	North Fork Elkhead Creek near Elkhead, CO	21.0	1959–73	1970 1964	4.50 4.53	1,100 575	5/21/70	4.50	1,100	N	30
09248600	East Fork of Williams Fork above Willow Creek, CO	108	1957–72	1970	7.05	1,570	5/19/70	7.05	1,570	N	15–20
09249200	South Fork of Williams Fork near Pagoda, CO	46.7	1966–77, 1979	1974 1970	3.97 4.06	910 878	5/09/74	3.97	910	N	20
09249750	Williams Fork at mouth near Hamilton, CO	419	1984–94	1984	9.96	4,750	5/16/84	9.96	4,750	N	--
09250000	Milk Creek near Thornburgh, CO	65.0	1953–86	1984	7.36	1,580	5/10/74 5/14/84	5.03 7.36	1,050 1,580	N N	20 75
09250507	Wilson Creek above Taylor Creek near Axial, CO	20.0	1981–92	1984	8.71	352	5/14/84	8.71	352	N	--
09250510	Taylor Creek at mouth near Axial, CO	7.22	1976–77, 1979–92	1984 1986	2.25 3.27	41 38	5/15/84	2.25	41	N	40–50
09251000	Yampa River near Maybell, CO	3,410	1904–05, 1916–94	1984	12.42	25,100	5/17/84	12.42	25,100	Y	>500
09253000	Little Snake River near Slater, CO	285	1943–47, 1951–81, 1983–94	1984 1974	8.78 8.95	4,780 4,180	5/28/83 5/23/84	8.09 8.78	4,200 4,780	N N	30–35 90–100
09255000	Slater Fork near Slater, CO	161	1911–12, 1933–81, 1983–94	1984	11.78	2,250	5/08/74 5/16/84	10.75 11.78	1,860 2,250	N N	40 150
09258000	Willow Creek near Dixon, WY	24.0	1954–81, 1983–93	1984	6.02	476	5/10/84 3/31/86	6.02 5.47	476 351	N N	90–100 20
09260000	Little Snake River near Lily, CO	3,730	1923–30, 1932–94	1984 1926	9.85 10.50	16,700 14,200	5/18/84	9.85	16,700	N	>500
09260050	Yampa River at Deerlodge Park, CO	7,660	1982–94	1984	19.13	33,200	5/18/84	19.13	33,200	Y	--
09302450	Lost Creek near Buford, CO	21.5	1965–89	1974	7.53	944	5/09/74	7.53	944	N	15
09302500	Marvine Creek near Buford, CO	59.7	1973–84	1976 1984	4.01 4.13	442 410	6/09/76	4.01	442	N	10
09303000	North Fork White River at Buford, CO	259	1912, 1915, 1920, 1952–94	1984	6.76	3,550	5/24/84	6.76	3,550	N	200
09303300	South Fork White River at Budges Resort, CO	52.3	1976–94	1983	6.57	2,750	6/25/83	6.57	2,750	N	100
09303320	Wagonwheel Creek at Budges Resort, CO	7.36	1976–89	1985	4.64	336	6/08/85	4.64	336	N	15–20
09303400	South Fork White River near Budges Resort, CO	128	1976–94	1983	6.18	3,770	6/22/83	6.18	3,770	N	25

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09303500	South Fork White River near Buford, CO	152	1906, 1914–15, 1943–47, 1967–92	1983 1906	7.73 8.20	3,620 3,230	6/24/83	7.73	3,620	N	>500
09304000	South Fork White River at Buford, CO	177	1920, 1952–94	1983 1957	6.27 7.07	3,150 3,000	6/16/78 6/26/83	7.00 6.27	3,000 3,150	N N	30 50
09304200	White River above Coal Creek near Meeker, CO	648	1962–94	1983	7.07	5,740	6/26/83 5/25/84	7.07 7.05	5,740 5,700	N N	200 200
09304500	White River near Meeker, CO	755	1901, 1910–94	1984 1901	6.12 6.50	6,950 5,000	6/26/83 5/25/84	5.89 6.12	6,700 6,950	N N	100 150–200
09304800	White River below Meeker, CO	1,024	1962–79, 1981–94	1983 1984	4.97 5.06	6,590 6,320	6/26/83 5/25/84	4.97 5.06	6,590 6,320	N N	>500 >500
09306007	Piceance Creek below Rio Blanco, CO	177	1974–94	1977 1984	7.01 7.47	520 419	7/19/77	7.01	520	N	15–20
09306036	Sorghum Gulch at mouth near Rio Blanco, CO	3.62	1974–85	1985	11.49	250	7/12/85	11.49	250	N	75
09306039	Cottonwood Gulch near Rio Blanco, CO	1.20	1974–77, 1979–85	1984	3.96	514	8/16/84	3.96	514	N	--
09306042	Piceance Creek tributary near Rio Blanco, CO	1.06	1974–77, 1979–92	1984	6.38	506	8/01/84	6.38	506	N	30
09306052	Scandard Gulch at mouth near Rio Blanco, CO	7.97	1974–76, 1978–85	1984	1.77	32	8/01/84	1.77	32	N	>500
09306058	Willow Creek near Rio Blanco, CO	48.4	1974–85	1983	5.16	89	7/22/83	5.16	89	N	20
09306061	Piceance Creek above Hunter Creek near Rio Blanco, CO	309	1974–87	1985 1984	5.65 5.85	612 458	5/16/85	5.65	612	N	15–20
09306200	Piceance Creek below Ryan Gulch near Rio Blanco, CO	506	1965–94	1985 1983	7.70 7.81	550 480	5/16/84 5/05/85	7.74 7.70	525 550	N N	35 40–45
09306222	Piceance Creek at White River, CO	652	1965–66, 1971–86, 1988–93, 1995	1978	7.04	625	9/07/78	7.04	625	N	40–50
09306235	Corral Gulch below Water Gulch near Rangely, CO	8.61	1975–82, 1984–89	1977 1981	3.20 3.44	272 264	7/23/77	3.20	272	N	20
09306240	Box Elder Gulch near Rangely, CO	9.21	1975–85	1981	4.37	332	9/07/81	4.37	332	N	30–35
09306242	Corral Gulch near Rangely, CO	31.6	1974–94	1984	6.12	1,780	8/18/84	6.12	1,780	N	60
09306255	Yellow Creek near White River, CO	262	1965, 1973–82, 1988–89, 1991–94	1978	12.97	6,800	9/07/78	12.97	6,800	N	100–150
09306290	White River below Boise Creek near Rangely, CO	2,530	1983–94	1984	8.45	6,440	6/07/84	8.45	6,440	Y	--
09306300	White River above Rangely, CO	2,773	1972–82	1975	7.02	4,260	6/09/75	7.02	4,260	N	10
09339900	East Fork San Juan River above Sand Creek near Pagosa Springs, CO	64.1	1957–94	1970	6.75	2,260	9/14/70	6.75	2,260	N	100
09340000	East Fork San Juan River near Pagosa Springs, CO	86.9	1935–80	1970	4.85	2,460	9/14/70	4.85	2,460	N	75
09342500	San Juan River at Pagosa Springs, CO	298	1911–14, 1927, 1935–94	1912	17.80	25,000	9/06/70	9.02	6,580	N	75–100

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09343000	Rio Blanco near Pagosa Springs, CO	58.0	1935–71	1970 1949	3.70 4.12	2,500 958	9/06/70	3.70	2,500	N	150–200
09344000	Navajo River at Banded Peak Ranch near Chromo, CO	69.8	1937–94	1980 1952	4.55 4.89	1,480 964	9/14/70 6/09/80	4.50 4.55	1,350 1,480	N Y	40–50 50–55
09344300	Navajo River above Chromo, CO	96.4	1957–70	1970	8.20	1,400	9/14/70	8.20	1,400	N	25
09344400	Navajo River below Oso Diversion Dam near Chromo, CO	101	1971–94	1984 1993	4.92 4.93	1,330 1,210	5/24/84	4.92	1,330	Y	--
09345200	Little Navajo River below Lake Oso Diversion Dam near Chromo, CO	14.2	1971–83, 1985–93	1979 1981	-- 2.09	235 233	5/30/79	--	235	Y	--
09346400	San Juan River near Carracas, CO	1,230	1962–94	1970	8.34	9,730	9/06/70	8.34	9,730	N	30–40
09349500	Piedra River near Piedra, CO	371	1940–73	1970 1957	7.92 8.60	7,980 6,870	9/06/70	7.92	7,980	N	50
09349800	Piedra River near Arboles, CO	629	1963–94	1970	6.38	8,370	9/06/70 4/22/80	6.38 5.80	8,370 6,140	N N	60–70 15–20
09352900	Vallecito Creek near Bayfield, CO	72.1	1963–92, 1994	1970	6.51	7,050	9/06/70 6/10/80	6.51 3.43	7,050 1,600	N N	>500 <5
09354500	Los Pinos River at La Boca, CO	510	1951–85, 1987–94	1957	8.95	6,400	9/06/70	7.68	4,160	Y	25
09355000	Spring Creek at La Boca, CO	58.0	1951–94	1970	4.62	1,980	9/06/70 10/19/72 7/29/89	4.62 4.19 3.34	1,980 1,640 866	N N Y	75 40 10
09361000	Hermosa Creek near Hermosa, CO	172	1920–28, 1940–80	1941 1920	6.02 9.00	2,980 2,790	5/19/73	5.15	2,680	N	15–20
09361400	Junction Creek near Durango, CO	26.3	1960–65, 1980–91, 1993	1980 1965	3.64 4.66	600 300	--/--/80	3.64	600	N	>500
09361500	Animas River at Durango, CO	692	1909, 1912, 1922, 1924–94	1912	11.00	25,000	9/06/70	8.83	11,600	N	30
09363050	Florida River below Florida Farmers Ditch near Durango, CO	107	1968–82	1973 1975	5.70 5.75	1,100 975	5/19/73	5.70	1,100	Y	10–15
09363100	Salt Creek near Oxford, CO	17.7	1957–63, 1968–83	1973	5.24	811	10/19/72	5.24	811	N	30–35
09363200	Florida River at Bondad, CO	221	1958–63, 1968–83	1973	6.30	1,640	10/19/72	6.30	1,640	Y	25
09363500	Animas River near Cedar Hill, NM	1,090	1935–93	1949	11.45	13,100	9/06/70 10/20/72	11.30 10.56	12,100 10,600	Y Y	25 15–20
09365500	La Plata River at Hesperus, CO	37.0	1905–06, 1917–90, 1992–94	1941 1970	3.30 5.13	1,880 1,230	9/06/70	5.13	1,230	N	20–25
09366500	La Plata River at CO-NM State line	331	1920–85, 1987–94	1927 1934	-- 10.80	4,750 4,390	7/25/77	9.45	3,400	N	>500
09371010	San Juan River at Four Corners, CO	14,600	1978–93	1979	6.25	16,900	5/29/79	6.25	16,900	Y	--
09371300	McElmo Creek tributary near Cortez, CO	4.43	1971–81	1977	22.20	1,750	8/18/77	22.20	1,750	N	--
09371420	McElmo Creek above Alkali Canyon near Cortez, CO	147	1973–86	1981	6.08	864	7/15/81	6.08	864	N	10

Table 7. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Colorado—Continued

Station number (fig. 28)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09371700	McElmo Creek below Cortez, CO	283	1973–83	1977	8.96	2,130	7/19/77	8.96	2,130	N	25
09372000	McElmo Creek near CO-UT State line	346	1951–94	1967 1970	7.58 8.13	3,040 2,880	9/06/70	8.13	2,880	N	30–40

[1] Regulated during flood: N, no; Y, yes.

Connecticut

Hydroclimatology

Connecticut is located on the East Coast and is bordered on the south by Long Island Sound, an inlet of the Atlantic Ocean. Connecticut's climate is temperate humid. The primary sources of moisture are the Atlantic Ocean and the Gulf of Mexico. The proximity of the Atlantic Ocean to Connecticut has a distinct effect on the State's climate. The four primary weather systems that generally affect Connecticut are: (1) coastal storms of extratropical origin called "northeasters"; (2) low-pressure systems that move northeastward along the Appalachian Mountains; (3) tropical cyclones, including hurricanes; and (4) local thunderstorms. The precipitation in the State is generally plentiful and distributed evenly over the entire State, averaging about 46 in.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Connecticut is dependent on drainage area of the basin, 24-hour precipitation, channel length, channel slope, and percentage of drainage area underlain by coarse-grained stratified drift (Jennings and others, 1994).

Significant Floods

The flood of June 1982 was the most extensive in Connecticut during 1970–89. Thirty percent of the streamflow-gaging stations recorded significant discharges. The flood was caused by a low-pressure system that formed over the Gulf States and moved northward. The storm affected primarily south-central and southeastern Connecticut. Approximately 25 percent of the State was affected by floods equal to or exceeding the 100-year recurrence interval. Flash flooding occurred on numerous small streams throughout most of Connecticut. The effects of the June 4–7 storm were compounded in many locations by 4 in. of rain that saturated the soils and filled reservoirs to near capacity the previous week. Throughout the State, precipitation totals were high. The central and south-central parts of the State received from 8 to 16 in. of rain in approximately 48 hours. In Connecticut, the 24-hour precipitation for a recurrence interval of 100 years is between 7 and 8 in. The 48-hour precipitation for a recurrence interval of 100 years is between 9 and 10 in. (Hershfield, 1961).

The location of streamflow-gaging stations in Connecticut that had significant floods for 1970–89 is shown in figure 29 by station number. The specific data for each significant flood are listed in table 8. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

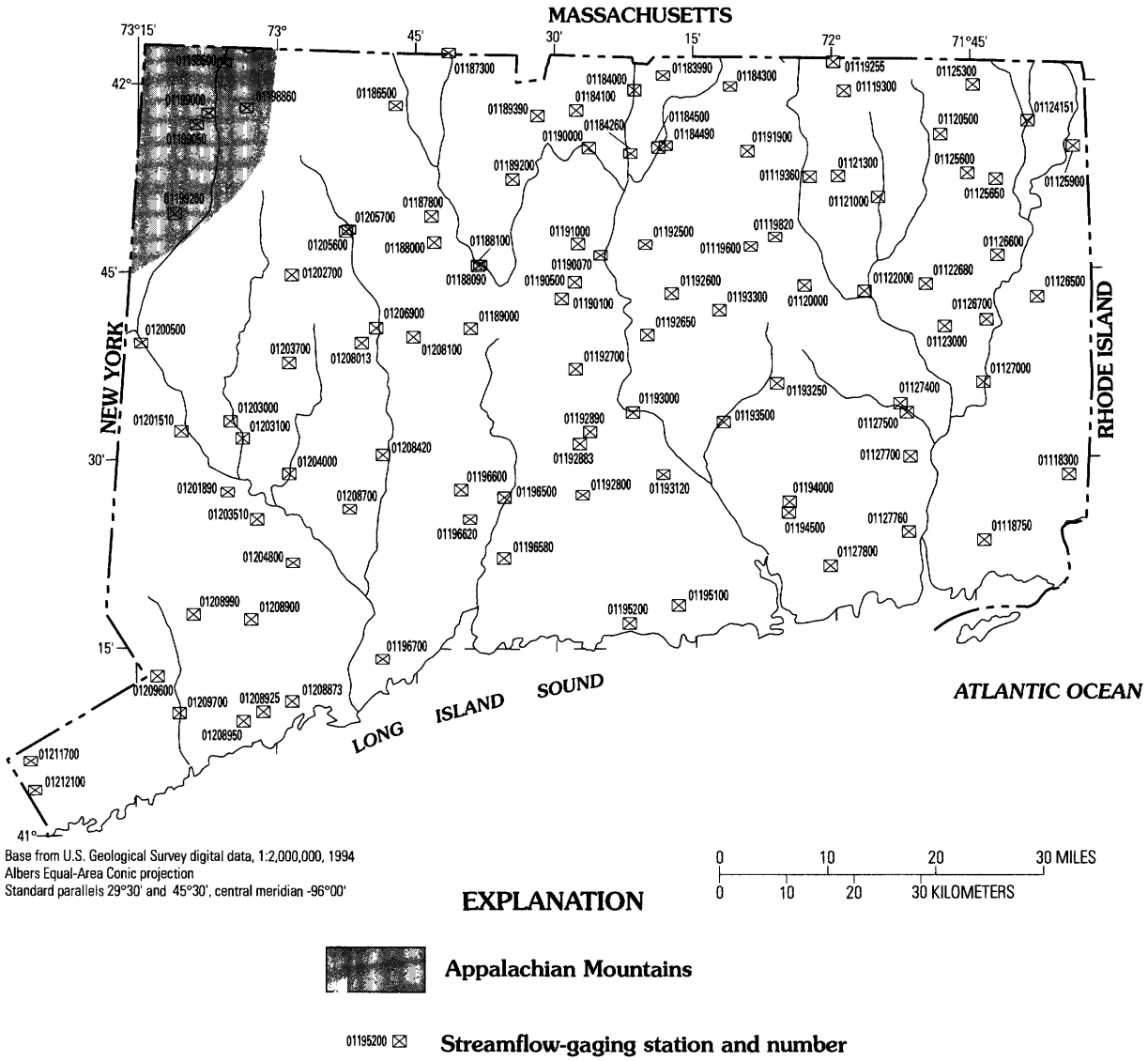

Figure 29. Location of streamflow-gaging stations with significant floods during 1970–89 for Connecticut.

Table 8. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Connecticut

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig.29)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01118300	Pendleton Hill Brook near Clarks Falls, CT	4.02	1959–95	1982	6.73	300	6/05/82	6.73	300	N	20
							12/03/86	6.49	280	N	15
01118750	Haleys Brook near Old Mystic, CT	4.37	1962–84	1982	5.23	720	6/05/82	5.23	720	N	50–100
01119255	Delphi Brook near Staffordville, CT	2.59	1964–76	1974	2.07	310	12/21/73	2.07	310	N	10–25
01119300	Roaring Brook near Staffordville, CT	5.61	1960–84	1982	4.56	920	6/05/82	4.56	920	N	50–100
01119360	Conat Brook at West Willington, CT	2.40	1964–83	1979	4.92	150	1/25/79	4.92	150	N	15
01119600	Ash Brook near North Coventry, CT	2.79	1960–70	1970	3.10	260	4/02/70	3.10	260	N	5–10
				1966	4.90	170					
01119820	Skungamaug River at North Coventry, CT	24.7	1963–75	1973	4.01	1,600	2/03/73	4.01	1,600	N	10–25
				1974	4.21	1,800	12/21/73	4.21	1,800	N	10–25
01120000	Hop River near Columbia, CT	74.8	1933–84	1982	16.72	6,940	6/06/82	16.72	6,940	N	75–100
				1938	16.25	6,450					
01120500	Safford Brook near Woodstock Valley, CT	4.15	1951–81	1955	6.68	1,000	1/21/79	6.95	830	N	20–30
				1979	6.95	830					
01121000	Mount Hope River near Warrenville, CT	28.6	1938, 1941–95	1955	10.41	5,590	1/25/79	9.09	3,080	N	25
				1938	14.50	--					
01121300	Fenton River at East Willington, CT	11.4	1964–76	1974	5.33	750	12/21/73	5.33	750	N	10–25
01122000	Natchaug River at Willimantic, CT	174	1931–95	1938	16.39	32,000	1/29/79	8.89	3,500	Y	--
01122680	Merrick Brook near Scotland, CT	5.21	1964–84	1982	4.88	1,020	6/05/82	4.88	1,020	N	30–50
01123000	Little River near Hanover, CT	30.0	1936, 1938, 1952–95	1982	8.31	2,450	6/06/82	8.31	2,450	N	40
01124151	Quinebaug River at West Thompson, CT	172	1967–89	1987	6.45	2,820	4/10/87	6.45	2,820	Y	--
				1955	20.10	48,200					
01125300	English Neighborhood Brook at North Woodstock, CT	4.66	1962–84	1982	7.55	1,200	6/05/82	7.55	1,200	N	30–50
01125600	Mashamoquet Brook at Abington, CT	11.1	1963–76	1973	4.94	820	2/02/73	4.94	820	N	5–10
01125650	Wappoquia Brook near Pomfret, CT	4.21	1964–84	1970	5.16	850	4/02/70	5.16	850	N	30–50
01125900	Cady Brook at East Punam, CT	8.29	1964–84	1978	4.51	950	1/26/78	4.51	950	N	20
01126500	Moosup River at Moosup, CT	83.6	1933–67, 1970–84	1938	8.20	4,100	1/25/78	7.20	3,200	Y	--
				1936	8.35	4,260					
01126600	Blackwell Brook near Brooklyn, CT	17.0	1962–76	1970	7.76	1,100	4/02/70	7.76	1,100	N	10–25
01126700	Kitt Brook near Canterbury, CT	11.1	1964–76	1973	3.39	400	2/02/73	3.39	400	N	10–25
01127000	Quinebaug River at Jewett City, CT	713	1919–95	1955	29.00	40,700	1/26/78	19.82	18,600	Y	--
01127400	Susquetonscut Brook at Yantic, CT	15.7	1962–76	1970	6.51	1,400	4/02/70	6.51	1,400	N	--
01127500	Yantic River at Yantic, CT	89.3	1931–95	1938	14.66	--	1/21/79	12.64	7,860	N	25
				1982	14.88	9,850	1/25/79	12.42	7,580	N	25
							6/06/82	14.88	9,850	N	50

Table 8. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Connecticut—Continued

Station number (fig.29)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01127700	Trading Cove Brook near Thamesville, CT	8.6	1961–74	1973	5.69	940	2/02/73	5.69	940	N	10–25
01127760	Hunts Brook at Old Norwich Road at Quaker Hill, CT	11.5	1964–76	1972	5.71	650	6/19/72	5.71	650	N	10–25
01127800	Fourmile River near East Lyme, CT	4.30	1961–84	1982	9.24	1,280	6/05/82	9.24	1,280	N	>100
01183990	Jawbuck Brook near Hazardville, CT	2.16	1967–76	1976	4.24	90	1/28/76	4.24	90	N	--
01184000	Connecticut River at Thompsonville, CT	9,660	1929–95	1936	16.60	282,000	5/31/84	10.80	186,000	Y	75–100
01184100	Stony Brook near West Suffield, CT	10.4	1960–95	1982	5.83	1,280	6/06/82	5.83	1,280	N	50–75
01184260	Namerick Brook near Warehouse Point, CT	2.6	1964–84	1974	5.92	620	12/21/73 5/30/84	5.92 14.68	620 555	N N	20 25
01184300	Gillette Brook at Somers, CT	3.64	1960–84	1975	6.38	375	9/27/75 6/05/82	6.38 5.58	375 290	N N	20–30 15
01184490	Broad Brook at Broad Brook, CT	15.5	1938, 1962–76, 1982–95	1975	6.56	1,140	9/27/75 1/27/76	6.56 6.38	1,140 1,090	N N	20–30 20–30
01184500	Scantic River at Broad Brook, CT	98.2	1929–84	1955 1938	19.90 16.08	13,300 7,360	5/30/84	11.39	2,900	N	30
01186500	Still River at Robertsville, CT	85.0	1936, 1938, 1949–95	1955	16.48	44,000	12/21/73 3/22/80	8.99 8.88	6,690 6,450	Y Y	-- --
01187300	Hubbard River near West Hartland, CT	19.9	1938–55, 1957–95	1955	16.50	10,500	3/21/80 4/04/87	11.21 9.71	4,710 3,320	N N	35 15
01187800	Nepaug River near Nepaug, CT	23.5	1922–55, 1958–80, 1982–84	1955 1974	-- 7.20	10,000 2,280	12/21/73 3/22/80	7.20 6.94	2,280 2,120	N N	20–30 20–30
01188000	Burlington Brook near Burlington, CT	4.10	1932–95	1955	9.22	1,690	3/19/83	7.85	810	N	20
01188090	Farmington River at Unionville, CT	378	1978–95	1980	16.57	20,300	3/23/80	16.57	20,300	Y	--
01188100	Roaring Brook at Unionville, CT	7.60	1962–84	1982	3.14	900	6/05/82	3.14	900	N	30–50
01189000	Pequabuck River at Forestville, CT	45.8	1938, 1942–95	1955	13.22	11,700	6/05/82	9.88	4,990	N	20
01189200	Stratton Brook near Simsbury, CT	5.13	1964–84	1982	4.01	390	6/05/82	4.01	390	N	20
01189390	East Branch Salmon Brook at Granby, CT	39.5	1964–76	1975	9.84	1,940	9/26/75	9.84	1,940	N	5–10
01190000	Farmington River at Rainbow, CT	590	1928, 1936–86	1955	23.50	69,200	6/07/82	11.70	19,600	Y	--
01190070	Connecticut River at Hartford, CT	10,487	1683, 1692, 1801, 1828, 1838–39, 1841, 1843–1992	1936	37.05	313,000	6/01/84	--	192,000	Y	--
01190100	Piper Brook at Newington Junction, CT	14.6	1955, 1958–84	1980	11.62	2,400	10/03/79	11.62	2,400	N	25–50
01190500	South Branch Park River at Hartford, CT	39.9	1936–72, 1974–81	1980 1955	13.19 19.65	5,630 5,000	10/03/79	13.19	5,630	Y	--
01191000	North Branch Park River at Hartford, CT	26.8	1936–86	1955 1938	18.80 11.80	10,000 3,000	6/06/82	11.86	3,270	Y	--
01191900	Charter Brook near Crystal Lake, CT	8.51	1965–84	1974	4.52	600	12/21/73	4.52	600	N	15

Table 8. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Connecticut—Continued

Station number (fig. 29)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01192500	Hockanum River near East Hartford, CT	73.4	1920–21, 1929–95	1938	13.78	5,160	1/25/79	11.93	3,260	Y	--
01192600	South Branch Salmon Brook at Buckingham, CT	0.94	1961–76	1972	5.00	115	9/19/72	5.00	115	N	25–50
01192650	Roaring Brook at Hopewell, CT	24.3	1962–76	1970	5.34	1,240	4/02/70 2/03/70	5.34 5.23	1,240 1,180	N N	25–50 25–50
01192700	Mattabesset River at East Berlin, CT	46.5	1962–76, 1979	1970	7.73	2,980	2/03/70 1/25/79	7.73 7.60	2,980 2,900	N N	10–25 5–10
01192800	Parmalee Brook near Durham, CT	2.79	1960–84	1979 1982	5.76 5.76	517 517	1/25/79 6/05/82	5.76 5.76	517 517	N N	20 20
01192883	Coginchaug River at Middlefield, CT	29.8	1981–95	1982	12.23	2,110	6/06/82	12.23	2,110	N	--
01192890	Coginchaug River at Rockfall, CT	34.7	1962–80	1979	6.27	1,960	1/25/79	6.27	1,960	N	20–25
01193000	Connecticut River at Middletown, CT	10,887	1814, 1854, 1860, 1862, 1928, 1936, 1938, 1947–95	1936 1938	28.20 25.75	267,000 239,000	6/02/84	21.27	186,000	Y	--
01193120	Ponset Brook near Higganum, CT	5.72	1962–77, 1982	1982 1973	-- 5.14	1,700 900	6/05/82 2/02/73	-- 5.14	1,700 900	N N	>50 30–50
01193250	Judd Brook near Colchester, CT	3.93	1962–79	1979	4.86	625	1/25/79	4.86	625	N	30–50
01193300	Blackledge River near Gilead, CT	6.75	1960–84	1982	5.66	480	6/05/82	5.66	480	N	20–30
01193500	Salmon River near East Hampton, CT	100	1929–95	1938 1982	10.96 14.40	12,400 18,500	1/25/79 6/06/82	12.67 14.40	12,900 18,500	N N	50–75 >100
01194000	Eightmile River at North Plain, CT	20.1	1938–84	1982	11.12	5,800	1/21/79 6/06/82	8.24 11.12	2,730 5,800	N N	45 >100
01194500	East Branch Eightmile River near North Lyme, CT	22.3	1938–82	1982	10.22	5,170	6/06/82	10.22	5,170	N	>100
01195100	Indian River near Clinton, CT	5.68	1982–95	1982	8.29	2,600	6/05/82	8.29	2,600	N	--
01195200	Neck River near Madison, CT	6.55	1962–82	1982	7.75	1,040	6/05/82	7.75	1,040	N	>100
01196500	Quinnipiac River at Wallingford, CT	115	1931–95	1982	14.02	8,200	1/25/79 6/06/82	12.93 14.02	5,580 8,200	N N	45 >100
01196580	Muddy River near North Haven, CT	18.0	1963–74	1970	3.01	1,300	2/03/70	3.01	1,300	N	25–50
01196600	Willow Brook near Cheshire, CT	9.34	1960–76, 1979–83	1982	6.15	3,000	6/06/82	6.15	3,000	N	>100
01196620	Mill River near Hamden, CT	24.5	1969–70, 1979–95	1982	9.53	5,580	6/06/82	9.53	5,580	N	--
01196700	Wepawaug River at Milford, CT	18.4	1962–84	1982	9.89	5,020	6/06/82	9.89	5,020	N	>100
01198500	Blackberry River at Canaan, CT	45.9	1949–81	1955	13.01	14,200	1/25/79	9.16	2,740	Y	--
01198860	Deming Brook near Huntsville, CT	1.08	1971–84	1980	2.50	520	3/21/80	2.50	520	N	--
01199000	Housatonic River at Falls Village, CT	634	1913–95	1949	19.40	23,900	5/31/84	16.56	19,400	Y	--
01199050	Salmon Creek at Lime Rock, CT	29.4	1949, 1955, 1962–95	1955	13.50	6,300	5/29/84 3/06/79	7.01 5.90	2,520 1,820	N N	25 15

Table 8. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Connecticut—Continued

Station number (fig. 29)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01199200	Guinea Brook at West Woods Road at Ellsworth, CT	3.50	1960–81	1974	5.84	320	12/21/73	5.84	320	N	50–100
01200500	Housatonic River at Gaylordsville, CT	996	1901–14, 1924, 1928–95	1955	18.58	51,800	3/07/79 5/31/84	12.23 15.22	20,800 34,000	Y Y	-- --
01201510	Still River at Lanesville, CT	69.6	1932–84	1956 1975	14.11 8.70	7,980 4,140	9/27/75	8.70	4,140	N	25
01201890	Pond Brook near Hawleyville, CT	11.9	1963–76	1975	7.81	1,400	2/02/73 12/21/73 9/26/75	6.14 6.85 7.81	930 1,150 1,400	N N N	5–10 5–10 10–25
01202700	Butternut Brook near Litchfield, CT	2.42	1960–84	1982 1973	6.26 7.91	860 500	6/05/82	6.26	860	N	30–50
01203000	Shepaug River near Roxbury, CT	132	1931–84	1955	17.20	50,300	9/27/75	11.18	10,000	N	15
01203100	Jacks Brook near Roxbury Falls, CT	7.90	1961–84	1975	7.82	1,600	9/26/75	7.82	1,600	N	20–30
01203510	Pootatuck River at Sandy Hook, CT	24.8	1966–84	1979 1982	8.47 8.09	2,720 2,340	1/25/79	8.47	2,720	N	--
01203700	Wood Creek near Bethlehem, CT	3.39	1962–84	1973 1975	-- 4.61	700 600	2/02/73 9/26/75	-- 4.61	700 600	N N	20–30 20
01204000	Pomperaug River at Southbury, CT	75.1	1933–95	1955	21.80	29,400	9/27/75 4/04/87	15.68 15.92	9,500 9,780	N N	20 20
01204800	Copper Mill Brook near Monroe, CT	2.45	1959–76	1973	7.10	255	2/02/73	7.10	255	N	10
01205600	West Branch Naugatuck River at Torrington, CT	33.8	1955, 1957–95	1955	16.70	16,500	4/04/87	8.65	3,180	Y	--
01205700	East Branch Naugatuck River at Torrington, CT	13.6	1955, 1957–77, 1979–95	1955	13.60	8,550	12/01/85	6.39	1,730	Y	--
01206900	Naugatuck River at Thomaston, CT	99.8	1955, 1960–83, 1985–95	1955 1960	27.00 6.25	53,400 5,140	9/29/75 4/08/87	5.61 6.29	3,810 3,820	Y Y	-- --
01208013	Branch Brook near Thomaston, CT	20.8	1971–89	1982	4.07	805	6/08/82 4/07/87	4.07 3.93	805 766	Y	--
01208100	Hancock Brook near Terryville, CT	1.18	1960–81	1975	5.19	300	9/26/75	5.19	300	N	15
01208420	Hop Brook near Naugatuck, CT	16.3	1955, 1970–89	1955	--	2,650	6/04/84	3.79	582	Y	--
01208700	Little River at Oxford, CT	4.54	1960–84	1982	6.47	1,350	6/05/82	6.47	1,350	N	>100
01208873	Rooster River at Fairfield, CT	10.6	1978–95	1980	11.65	2,170	4/09/80	11.65	2,170	N	5–10
01208900	Patterson Brook near Easton, CT	1.21	1960–84	1982	8.33	148	6/05/82	8.33	148	N	30–50
01208925	Mill River near Fairfield, CT	28.6	1973–95	1980	7.15	1,800	4/10/80	7.15	1,800	Y	--
01208950	Sasco Brook near Southport, CT	7.38	1960–95	1972	7.00	1,640	6/19/72 1/21/79	7.00 6.87	1,640 1,580	N N	30–50 30–50
01208990	Saugatuck River near Redding, CT	21.0	1962–95	1969	5.88	2,160	3/22/80	5.43	1,580	N	10
01209600	Comstock Brook at North Wilton, CT	3.53	1960–75	1975	5.69	440	9/26/75	5.69	440	N	--
01209700	Norwalk River at South Wilton, CT	30.0	1955, 1963–95	1956	13.50	12,000	4/10/80	6.27	2,890	Y	--

Table 8. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Connecticut—Continued

Station number (fig.29)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01211700	East Branch Byram River at Round Hill, CT	1.69	1960–75	1972	4.19	245	6/19/72	4.19	245	N	10–15
01212100	East Branch Byram River at Riversville, CT	11.1	1963–84	1972	7.62	1,700	6/19/72	7.62	1,700	N	20

[1] Regulated during flood: N, no; Y, yes.

Delaware

Hydroclimatology

Located along the East Coast of the United States, Delaware has a climate described as modified continental. The major sources of moisture for precipitation in the region are the Atlantic Ocean and the Gulf of Mexico (Paulson and others, 1991). During the summer, a nearly stationary subtropical Atlantic high-pressure cell, called the Bermuda High, usually develops over the eastern United States. The Bermuda High causes southerly winds to blow into Delaware bringing with them warm, humid, tropical maritime air. Occasionally, during a weakening of the Bermuda High, cooler, dryer air from Canada brings summertime relief from the humidity and heat. The airmasses are much more mobile in the winter, which brings many changes in the source of the weather systems. About one-third of the days from December to February are affected by cold, dry, polar air originating in Canada. Another one-third of the winter days are affected by milder airmasses originating from the ocean, and the remaining one-third of the winter is characterized by a transition period between the first two weather systems.

The mean annual precipitation in Delaware ranges from about 41 in. in the central part of the State to about 46 in. along the southern Atlantic coastal margin and in topographically higher areas in the northern part of the State (Paulson and others, 1991). Annual precipitation is distributed evenly throughout the year with slightly higher monthly averages in July and August.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Delaware is dependent on drainage area; storage, which is the percentage of basin covered by lakes, ponds, and swamps; channel slope; percentage of basin covered by forest; and soil permeability (Jennings and others, 1994).

Significant Floods

Intense rain resulting from Tropical Storm Allison in July 1989 caused the most severe flooding during 1970–89. Thirty-three percent of the streamflow-gaging stations in the State recorded significant discharges. Maximum discharges of record were recorded at three gaging stations in Delaware. These maximum discharges were greater than the 100-year recurrence interval.

The flood of February 1979 was caused by intense rain falling on compacted snow cover in southern Delaware. Twenty-five percent of the streamflow-gaging stations recorded significant discharges.

A smaller, but still significant flood occurred in June 1972. Twenty-two percent of the streamflow-gaging stations in the State recorded significant discharges. The flood was caused by torrential rains associated with Hurricane Agnes.

The location of streamflow-gaging stations in Delaware that had significant floods for 1970–89 is shown in figure 30 by station number. The specific data for each significant flood are listed in table 9. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

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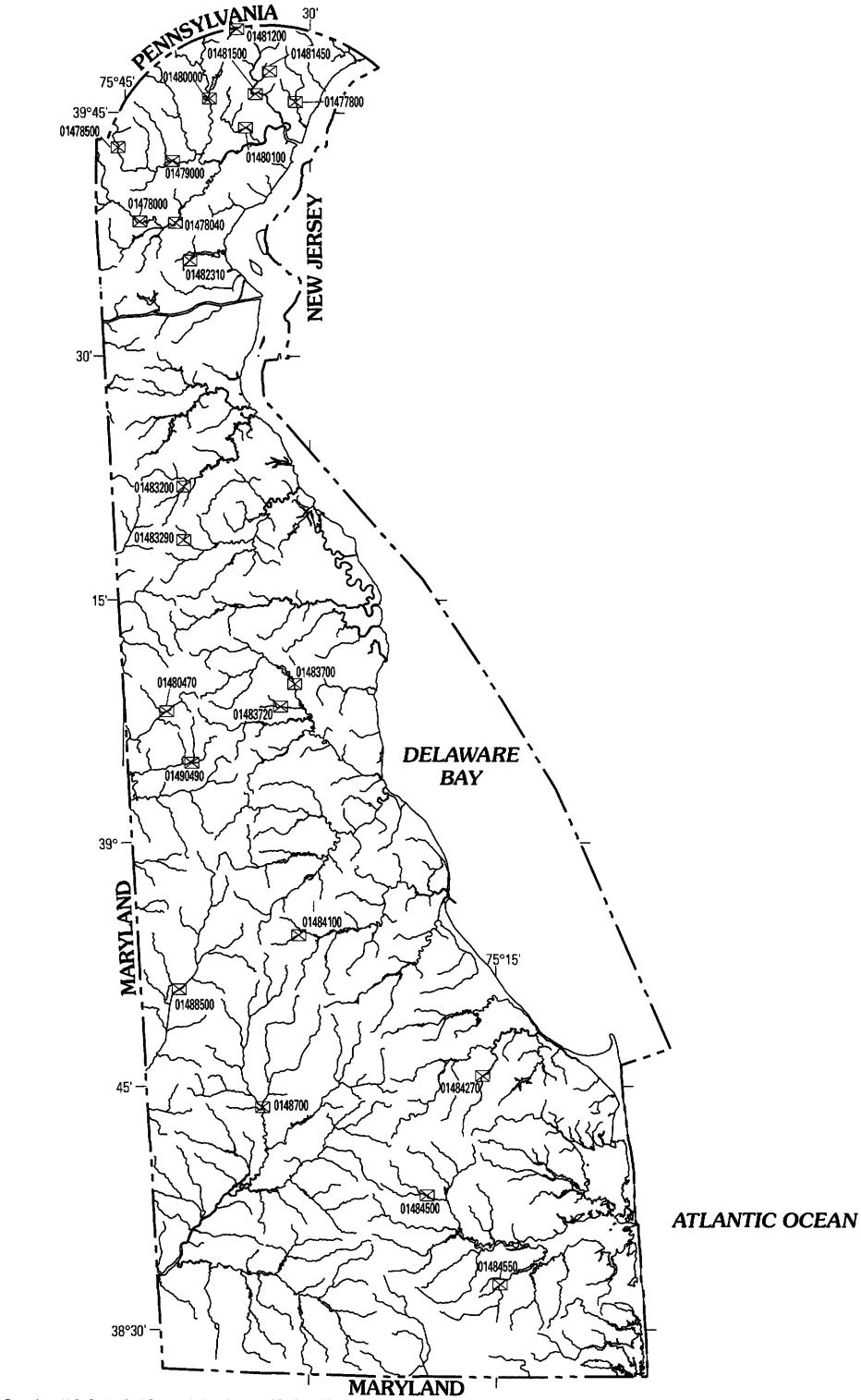

EXPLANATION

01484550 **Streamflow-gaging station and number**

Figure 30. Location of streamflow-gaging stations with significant floods during 1970–89 for Delaware.

Table 9. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Delaware

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 30)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01477800	Shellpot Creek at Wilmington, DE	7.46	1945–94	1989	13.76	8,040	9/13/71	11.91	6,850	N	55
							7/05/89	13.76	8,040	N	95
01478000	Christina River at Coochs Bridge, DE	20.5	1943–94	1989	13.12	5,530	6/22/72	11.35	3,320	N	15
							7/05/89	13.12	5,530	N	100
01478040	Christina River near Bear, DE	40.6	1979–83, 1985–91	1989	14.34	7,500	7/05/89	14.34	7,500	N	>100
01478500	White Clay Creek above Newark, DE	66.7	1953–59, 1963–80	1972	13.77	10,200	6/22/72	13.77	10,200	N	70
01479000	White Clay Creek near Newark, DE	89.1	1932–36, 1943–57, 1960–94	1989	16.55	11,600	6/22/72	17.74	9,080	N	40
				1972	17.74	9,080	7/16/75	16.15	6,900	N	15
							7/05/89	16.55	11,600	N	100
01480000	Red Clay Creek at Wooddale, DE	47.0	1943–94	1975	10.32	5,010	7/21/75	10.32	5,010	N	30
01480100	Little Mill Creek at Elsmere, DE	6.70	1964–80, 1989	1989	8.80	4,400	7/05/89	8.80	4,400	N	55-60
01481200	Brandywine Creek tributary near Centerville, DE	0.97	1966–75	1971	9.35	405	9/13/71	9.35	405	N	10
01481450	Willow Run at Rockland, DE	0.37	1966–75	1971	12.70	620	9/13/71	12.70	620	N	15–20
01481500	Brandywine Creek at Wilmington, DE	314	1947–94	1972	15.49	29,000	6/23/72	15.49	29,000	N	95
							1/25/79	13.22	22,400	N	35
01482310	Doll Run at Red Lion, DE	1.07	1966–75	1973	8.51	360	7/15/73	8.51	360	N	10
01483200	Blackbird Creek at Blackbird, DE	3.85	1952–53, 1955–94	1972	5.04	712	6/22/72	5.04	712	N	35–40
01483290	Paw Paw Branch tributary near Clayton, DE	1.30	1966–75	1972	8.43	760	6/22/72	8.43	760	N	>100
01483700	St. Jones River at Dover, DE	31.9	1958–94	1960	9.45	1,900	2/26/79	8.40	1,340	Y	20
01483720	Puncheon Branch at Dover, DE	2.30	1966–75	1975	6.39	520	7/13/75	6.39	520	N	35
01484100	Beaverdam Branch at Houston, DE	2.83	1958–94	1960	5.55	176	5/30/84	4.60	149	N	15
01484270	Beaverdam Creek near Milton, DE	6.10	1966–80	1979	4.84	63	2/26/79	4.84	63	N	15
				1969	4.88	25					
01484500	Stockley Branch at Stockley, DE	5.24	1943–94	1994	5.52	303	2/26/79	5.01	217	N	20
01484550	Pepper Creek at Dagsboro, DE	8.78	1960–75	1972	6.39	545	10/24/71	6.39	545	N	10
01487000	Nanticoke River near Bridgeville, DE	75.4	1935, 1943–69, 1971–94	1979	10.31	3,020	2/26/79	10.31	3,020	N	75
				1935	11.00	--					
01488500	Marshyhope Creek near Adamsville, DE	43.9	1935, 1943–68, 1972–94	1975	13.19	3,700	7/13/75	13.19	3,700	N	30
				1935	14.50	--	5/30/84	12.65	2,800	N	15
01490470	Tappahanna Ditch near Hartly, DE	5.93	1952–73	1972	7.42	127	12/08/71	7.42	127	N	10
				1961	8.57	--					
01490490	Beachy Neidig Ditch near Willow Grove, DE	2.30	1966–75	1970	4.81	76	4/15/70	4.81	76	N	15
				1967	8.46	67					

[1] Regulated during flood: N, no; Y, yes.

Florida

Hydroclimatology

Located in the southeastern United States, Florida is a peninsula bordered on three sides by ocean. Florida receives tropical moisture throughout the majority of its area during most of the year. Polar continental air occasionally enters northern Florida during the winter. The summer months typically receive the most rainfall as a result of convective showers. Hurricanes are a typical threat in the summer and fall months in Florida. Florida also has the highest number of thunderstorms per year in the Nation. Florida receives a statewide mean annual precipitation of 53 in. The majority of the annual precipitation falls during the May through September period. Stalled frontal systems in the winter months can cause excessive rainfall and flooding (Paulson and others, 1991).

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges in Florida is dependent on total drainage area of the basin, channel slope, and the percentage of the drainage area covered by lakes and ponds. For the urbanized areas, additional information such as percentage of drainage area that is impervious and area controlled by detention structures improves estimates of maximum discharges (Jennings and others, 1994).

Significant Floods

Significant flooding occurred in Florida in September 1988. Ten percent of the streamflow-gaging stations in the State recorded significant discharges during this time.

In the summer of 1975, nearly 20 in. of rain fell during a 4-day period in the eastern part of the Florida Panhandle causing severe flooding. The Choctawhatchee and Escambia River Basins were most affected by this flood. In April 1973, intense rainfall during a period of 6 days caused flooding in the Suwannee and St. Marys River Basins.

The location of streamflow-gaging stations in Florida that had significant floods for 1970–89 is shown in figure 31 by station number. The specific data for each significant flood are listed in table 10. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

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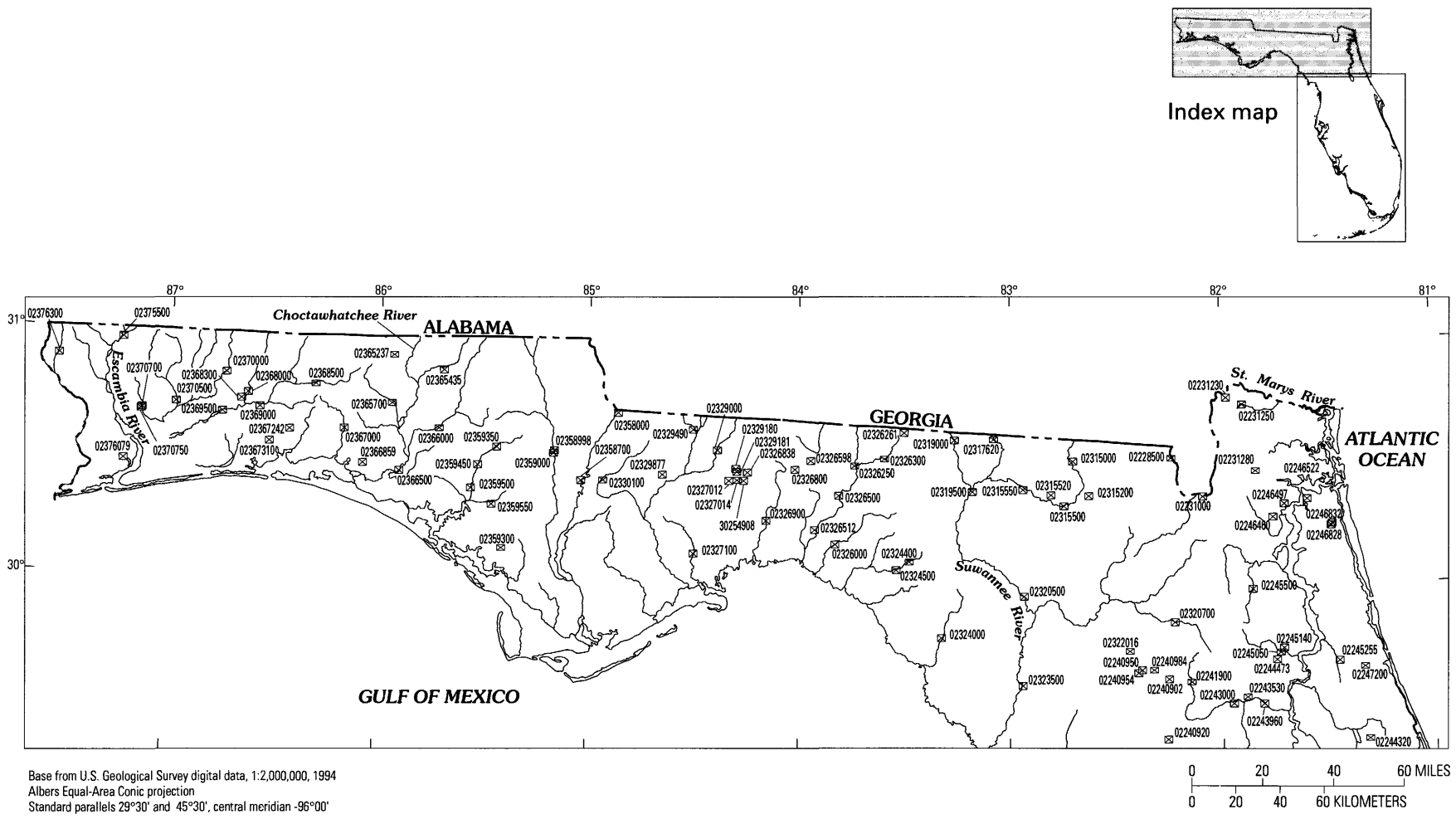
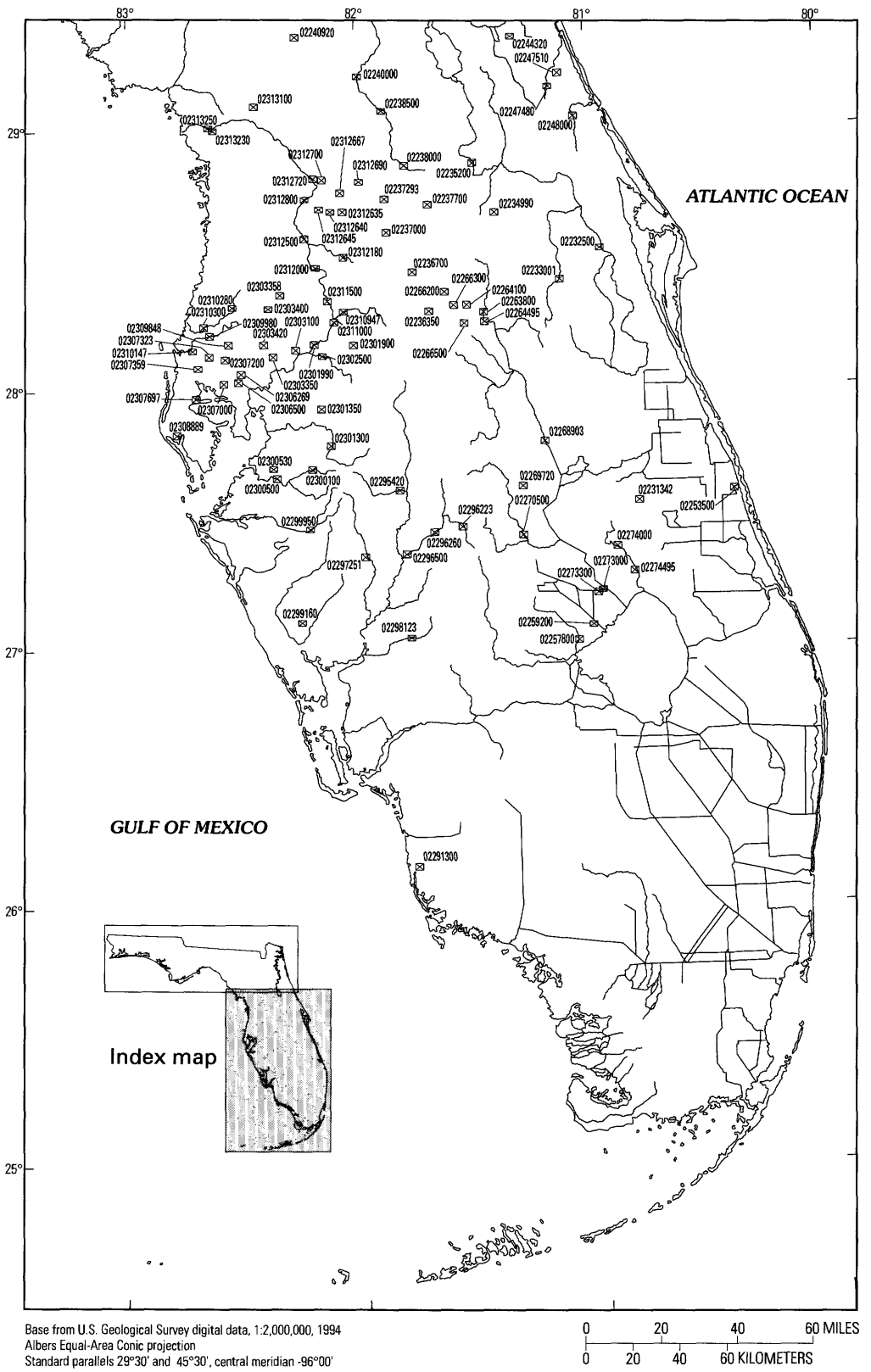


Figure 31. Location of streamflow-gaging stations with significant floods during 1970–89 for Florida.



EXPLANATION

02324000 ⊠ **Streamflow-gaging station and number**

Figure 31. Location of streamflow-gaging stations with significant floods during 1970–89 for Florida—Continued.

Table 10. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Florida

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 31)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02228500	North Prong St. Marys River at Moniac, GA	160	1921–23, 1927–30, 1932–34, 1951–89, 1992–94	1973	22.98	11,600	4/05/73	22.98	11,600	N	>100
02231000	St. Marys River near Macclenny, FL	700	1927–89, 1991–93	1947 1964	22.29 23.25	28,100 26,000	4/05/73	22.86	28,000	N	30–35
02231230	Pigeon Creek at Boulogne, FL	9.36	1964–66, 1970–76	1970 1973	23.98 25.91	682 --	3/29/70	23.98	682	N	2–5
02231250	Little St. Marys River near Hilliard, FL	19.8	1961–89	1973	16.49	3,000	4/04/73	16.49	3,000	N	50–60
02231280	Thomas Creek near Crawford, FL	29.9	1965–89, 1991	1973	21.04	4,020	4/04/73	21.04	4,020	N	25–50
02231342	Fort Drum Creek at Sunshine Street Parkway near Ft. Drum, FL	52.6	1978–94	1979	38.35	1,410	9/04/79	38.35	1,410	N	10–20
02232500	St. Johns River near Christmas, FL	1,539	1935–94	1954 1960	10.59 10.81	11,700 11,000	10/01/79	9.36	7,070	N	5–10
02233001	Econlockhatchee River at Magnolia Ranch near Bithlo, FL	32.9	1973–79, 1981–94	1982 1987	62.58 63.42	474 370	6/21/82	62.58	474	N	2–5
02234990	Little Wekiva River near Altamonte Springs, FL	90.7	1972–79, 1983–94	1984 1994	27.34 28.93	592 354	7/22/84	27.34	592	N	15–25
02235200	Blackwater Creek near Cassia, FL	126	1962–94	1968	9.93	749	9/29/79	9.45	605	N	10–20
02236350	Green Swamp Run near Eva, FL	43.0	1980–94	1989 1988	4.21 5.06	912 63	2/12/88	4.21	912	N	50–100
02236700	Little Creek near Clermont, FL	14.7	1979–94	1979	9.82	293	9/28/79	9.82	293	N	10–25
02237000	Palatlakaha River near Mascotte, FL	182	1946–55, 1964–75	1946 1954	96.60 96.66	458 372	3/03/70	--	374	Y	5–10
02237293	Palatlakaha River at structure M–1 near Okahumpka, FL	221	1971–75, 1977–93	1987 1977	-- 71.84	451 9	10/04/79 4/02/87	-- --	416 451	N Y	5–10 5–10
02237700	Apopka-Beauclair Canal near Astatula, FL	184	1959–83, 1985–93	1960 1969	-- 68.01	754 494	4/01/87	--	589	N	5–10
02238000	Haines Creek at Lisbon, FL	648	1926, 1942–80, 1986–94	1987 1926	-- 65.30	1,490 --	3/18/86 3/30/87 3/10/88	-- -- --	1,220 1,490 1,470	N Y Y	25–50 50–60 50–60
02238500	Ocklawaha River at Moss Bluff, FL	879	1944–55, 1960, 1966, 1968–88, 1994	1983 1960	-- 50.83	2,340 1,630	2/20/83 3/20/86	-- --	2,340 2,120	Y Y	50–100 40–50
02240000	Ocklawaha River near Conner, FL	1,200	1931–46, 1964–88, 1994	1982 1933	8.46 9.14	4,430 3,700	4/09/82	8.46	4,430	N	45–55
02240902	Prairie Creek near Gainesville, FL	114	1979–90	1988	7.69	549	9/11/88	7.69	549	N	10–20
02240920	Fairfield Sink Drain at Fairfield, FL	1.70	1966–89	1988	23.30	292	9/08/88	23.30	292	N	50–100
02240950	Hogtown Creek near Gainesville, FL	18.5	1959–78	1970 1964	11.29 12.23	1,600 1,210	2/03/70	11.29	1,600	N	10–25

Table 10. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Florida—Continued

Station number (fig. 31)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02240954	Hogtown Creek near Arredondo, FL	41.2	1972–88	1988	60.53	1,040	9/07/88	60.53	1,040	N	15–25
02240984	Sweetwater Branch tributary at Gainesville, FL	0.79	1972–86	1985	10.22	596	4/14/85	10.22	596	N	25–50
02241900	Lochloosa Creek at Grove Park, FL	37.4	1958–82	1978	9.47	1,530	8/18/78	9.47	1,530	N	10–25
02243000	Orange Creek at Orange Springs, FL	1,119	1942–52, 1956–71, 1976–89, 1991, 1994	1942	10.60	2,400	2/03/70	8.69	1,410	N	10–20
02243530	Bruntbridge Brook at Kenwood, FL	4.63	1971–86	1982	8.33	270	6/19/82	8.33	270	N	10–25
02243960	Ocklawaha River at Rodman Dam near Orange Springs, FL	2,747	1969–89, 1994	1970 1982	9.46 9.64	9,560 8,610	2/05/70	9.46	9,560	Y	10–20
02244320	Middle Haw Creek near Korona, FL	78.3	1976–94	1979	12.72	1,900	9/30/79	12.72	1,900	N	10–20
02244473	Rice Creek near Springside, FL	43.2	1974–89, 1991	1978	9.80	2,990	8/01/78	9.80	2,990	N	15–25
02245050	Etonia Creek at Bardin, FL	219	1974–89	1979	7.74	1,210	5/12/79	7.74	1,210	N	15–25
02245140	Simms Creek near Bardin, FL	47.3	1974–89, 1991	1980 1974	13.78 15.47	1,490 1,410	12/07/79	13.78	1,490	N	5–10
02245255	Deep Creek near Hastings, FL	20.7	1975–89, 1991	1984 1982	7.78 8.31	308 297	9/28/84	7.78	308	N	5–15
02245500	South Fork Black Creek near Penney Farms, FL	134	1940–89, 1991	1945	26.33	13,900	2/03/70	22.71	9,450	N	15–20
02246460	Williamson Creek at Cedar Hills, FL	0.92	1971–89	1989	13.16	256	9/29/89	13.16	256	N	30–40
02246497	McCoy Creek at Jacksonville, FL	3.51	1976–86, 1988	1979 1984	23.17 23.61	1,010 862	6/15/79	23.17	1,010	N	40–50
02246522	Red Bay Branch tributary at Jacksonville, FL	0.57	1975–86	1982	12.88	595	9/05/82	12.88	595	N	10–20
02246828	Pablo Creek at Jacksonville, FL	25.8	1974–89, 1991	1989	8.26	1,250	9/25/89	8.26	1,250	N	30–40
02246832	Cedar Swamp Creek near Jacksonville, FL	3.40	1974–89, 1991	1989	6.73	437	9/24/89	6.73	437	N	30–40
02247200	Fish Swamp outlet near Summer Haven, FL	4.64	1962–89	1985	5.75	687	9/01/85	5.75	687	N	15–25
02247480	Tiger Bay Canal near Daytona Beach, FL	29.0	1978–94	1979	32.94	263	3/07/79	32.94	263	N	5–10
02247510	Tomoka River near Holly Hill, FL	76.8	1965–94	1969	12.92	2,100	6/05/76	12.50	1,750	N	10–20
02248000	Spruce Creek near Samsula, FL	33.4	1952–94	1964 1954	14.05 15.49	1,610 798	9/04/79	12.43	1,070	N	15–25
02253500	South Canal near Vero Beach, FL	--	1951–94	1963 1964	10.97 10.98	1,930 1,280	9/04/79	10.75	1,860	Y	25–50
02257800	Harney Pond Canal at S-71 near Lakeport, FL	--	1963–78, 1984–89	1970	--	4,670	3/27/70	--	4,670	Y	25–50
02259200	Indian Prairie Canal at S-72 near Okeechobee, FL	--	1963–78, 1984–89	1970	--	2,130	10/03/69	--	2,130	Y	>100
02263800	Shingle Creek at airport near Kissimmee, FL	89.2	1959–94	1960	11.00	3,320	3/31/87	9.75	1,680	N	15–20

Table 10. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Florida—Continued

Station number (fig. 31)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02264100	Bonnet Creek near Vineland, FL	56.1	1967–94	1989 1967	-- 77.75	1,230 432	11/23/88	--	1,230	N	20–30
02264495	Shingle Creek at Campbell, FL	180	1969–94	1987	60.78	2,070	4/01/87	60.78	2,070	N	50–60
02266200	Whittenhorse Creek near Vineland, FL	12.4	1967–94	1987	94.82	62	3/31/87	94.82	62	N	10–25
02266300	Reedy Creek near Vineland, FL	75.0	1960, 1962–94	1960	14.90	1,910	12/07/87	13.52	1,430	N	10–20
02266500	Reedy Creek near Loughman, FL	110	1940–59, 1969–78, 1980–83, 1986–94	1969	4.25	790	4/02/87	3.95	779	Y	50–100
02268903	Kissimmee River at S-65 near Lake Wales, FL	1,607	1970–78, 1982–94	1988 1970	-- --	11,100 8,970	2/23/88	--	11,100	Y	>100
02269720	Morgan Hole Creek near Avon Park, FL	13.9	1971–75, 1978–93	1974	7.37	1,400	6/27/74	7.37	1,400	N	15–25
02270500	Arbuckle Creek near De Soto City, FL	379	1940–94	1948 1960	8.71 9.45	7,380 4,900	8/01/78	6.92	2,920	N	2–5
02273000	Kissimmee River at S-65E near Okeechobee, FL	--	1928–62, 1965–94	1970 1977	-- 21.40	25,800 4,130	7/04/74	--	16,000	Y	10–20
02273300	Canal 41A at S-84 near Okeechobee, FL	--	1965–78, 1984–89	1974 1966	-- 15.99	5,910 4,470	8/29/74	--	5,910	Y	5–15
02274000	Taylor Creek near Basinger, FL	15.7	1956–89	1957	11.98	2,540	8/01/78	10.86	1,160	Y	5–10
02274495	Williamson Ditch at S-7 near Okeechobee, FL	35.4	1965–89	1970	23.48	900	9/20/85 3/27/70	-- 23.48	564 900	N Y	2–5 10–25
02291300	Golden Gate Canal at Naples, FL	--	1965–75	1971	7.14	3,460	9/14/71	7.14	3,460	N	25–50
02295420	Payne Creek near Bowling Green, FL	121	1964–68, 1980–94	1982 1965	17.78 17.88	3,170 2,190	6/18/82	17.78	3,170	N	10–20
02296223	Little Charley Bowlegs Creek near Sebring, FL	41.9	1953–83	1960	17.61	874	6/21/82	17.12	842	N	10–20
02296260	Charlie Creek near Crewsville, FL	142	1981–93	1982	20.72	4,000	6/21/82	20.72	4,000	N	10–20
02296500	Charlie Creek near Gardner, FL	330	1950–94	1960	18.77	8,160	6/21/82	17.76	7,910	N	15–25
02297251	Horse Creek near Limestone, FL	128	1981–88, 1990–93	1982	58.58	2,700	6/18/82	58.58	2,700	N	10–25
02298123	Prairie Creek near Fort Ogden, FL	233	1964–68, 1978–94	1982 1980	13.42 14.19	4,800 4,280	6/25/82	13.42	4,800	N	15–25
02299160	Deer Prairie Slough near North Port Charlotte, FL	--	1981–92	1988	19.37	971	9/09/88	19.37	971	N	5–15
02299950	Manatee River near Myakka Head, FL	65.3	1967–94	1988	17.85	5,410	9/07/88	17.85	5,410	N	>100
02300100	Little Manatee River near Ft. Lonesome, FL	31.4	1963–94	1979 1988	11.73 12.24	3,100 2,640	9/22/79 9/06/81	11.73 11.31	3,100 2,650	N N	25–50 50–100
02300500	Little Manatee River near Wimauma, FL	149	1939–94	1960 1988	19.76 20.14	14,000 12,600	9/08/88	20.14	12,600	N	50–55
02300530	Cypress Creek near Wimauma, FL	8.10	1981–91	1988	14.96	754	9/07/88	14.96	754	N	15–25
02301300	South Prong Alafia River near Lithia, FL	107	1963–94	1967 1988	17.88 17.93	2,600 2,400	9/07/88	17.93	2,400	N	10–15
02301350	Little Alafia River near Hopewell, FL	8.65	1966–79	1971 1979	14.30 16.70	974 722	9/12/71	14.30	974	N	10–20

Table 10. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Florida—Continued

Station number (fig. 31)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02301900	Fox Branch near Socrum, FL	9.50	1965–94	1988 1978	7.67 8.22	886 569	9/07/88	7.67	886	N	25–35
02301990	Hillsborough River above Crystal Springs near Zephyrhills, FL	82.0	1984–94	1988	56.44	2,050	9/08/88	56.44	2,050	N	5–15
02302500	Blackwater Creek near Knights, FL	110	1951–94	1960 1988	9.70 80.48	5,400 3,250	9/07/88	80.48	3,250	N	35–45
02303100	New River near Zephyrhills, FL	15.0	1965–75	1971 1974	8.48 9.50	261 255	9/12/71	8.48	261	N	2–5
02303350	Trout Creek near Sulphur Springs, FL	23.0	1974–94	1974	42.85	1,540	6/27/74	42.85	1,540	N	15–25
02303358	Cypress Creek near Darby, FL	7.11	1970–86	1979	16.13	732	9/30/79	16.13	732	N	5–10
02303400	Cypress Creek near San Antonio, FL	56.0	1963–94	1987	76.05	1,100	6/27/74 3/31/87	5.23 76.05	717 1,100	N N	10–25 25–50
02303420	Cypress Creek at Worthington Gardens, FL	117	1964–67, 1970–94	1987	12.62	1,450	4/03/87	12.62	1,450	N	10–20
02306289	Lake Magdalene outlet near Lutz, FL	2.20	1971–90	1979	6.25	111	9/24/79	6.25	111	N	15–25
02306500	Sweetwater Creek near Sulphur Springs, FL	7.43	1952–94	1960 1979	8.93 9.57	438 211	5/08/79	9.57	211	N	50–100
02307000	Rocky Creek near Sulphur Springs, FL	35.0	1953–92, 1994	1960	17.03	2,840	5/09/79	10.00	1,860	N	15–25
02307200	Brooker Creek at Van Dyke Road near Citrus Park, FL	5.01	1981–94	1988	21.53	208	9/09/88	21.53	208	N	5–15
02307323	Brooker Creek near Lake Fern, FL	17.0	1970–94	1988	6.09	472	9/09/88	6.09	472	N	15–25
02307359	Brooker Creek near Tarpon Springs, FL	30.0	1950–94	1960	13.32	1,600	9/09/88	13.01	1,350	N	45–55
02307697	Alligator Creek at Safety Harbor, FL	9.00	1950–58, 1961–74	1974 1950	7.52 8.15	1,030 490	6/26/74	7.52	1,030	N	50–60
02308889	Seminole Lake outlet near Largo, FL	14.0	1950–73	1971 1950	7.17 7.44	642 539	8/16/71	7.17	642	N	15–25
02309848	South Branch Anclote River near Odessa, FL	17.1	1970–94	1988	5.01	305	9/09/88	5.01	305	N	15–25
02309980	Anclote River near Odessa, FL	68.1	1981, 1984–94	1988	30.98	2,800	9/09/88	30.98	2,800	N	15–25
02310147	Hollin Creek near Tarpon Springs, FL	8.31	1982–83, 1985–88, 1990, 1992–94	1988	15.90	370	9/09/88	15.90	370	N	45–55
02310280	Pithlachascotee River near Fivay Junction, FL	150	1984–94	1988	54.37	294	9/09/88	54.37	294	N	15–25
02310300	Pithlachascotee River near New Port Richey, FL	180	1963–94	1988	24.67	1,480	9/09/88	24.67	1,480	N	25–50
02310947	Withlacoochee River near Cumpressco, FL	280	1968–94	1987	14.03	2,260	4/01/87	14.03	2,260	N	15–25
02311000	Withlacooche-Hillsborough overflow canal near Richland, FL	--	1960–79, 1981–94	1960	6.87	1,880	9/09/88	5.88	1,020	N	15–25
02311500	Withlacoochee River near Dade City, FL	390	1984–94	1988	77.08	3,020	9/10/88	77.08	3,020	N	15–25
02312000	Withlacoochee River at Trilby, FL	570	1931–94	1934 1960	-- 19.38	8,840 6,920	4/06/87	15.52	3,290	N	10–15

Table 10. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Florida—Continued

Station number (fig. 31)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02312180	Little Withlacoochee River near Tarrytown, FL	85.0	1967–94	1987 1979	6.51 6.58	1,210 1,130	3/31/87	6.51	1,210	N	20–30
02312500	Withlacoochee River at Croom, FL	810	1934, 1940–94	1960 1934	13.78 15.20	8,650 --	10/03/79	11.17	4,780	N	10–20
02312600	Withlacoochee River near Floral City, FL	995	1984–94	1987 1991	-- 42.58	4,480 2,480	4/11/87	--	4,480	N	10–20
02312635	Jumper Creek Canal near Sumterville, FL	28.6	1977, 1980–91	1987	8.55	147	4/02/87	8.55	147	N	25–50
02312640	Jumper Creek Canal near Bushnell, FL	40.0	1964–94	1982 1987	5.83 6.69	473 169	2/03/70 9/10/82	6.06 5.83	227 473	N N	10–20 50–100
02312645	Jumper Creek Canal near Wahoo, FL	50.6	1980–91	1987 1991	-- 47.74	235 67	3/31/87	--	235	N	10–20
02312667	Shady Brook near Sumterville, FL	8.00	1982–92, 1994	1983	50.76	340	4/23/83	50.76	340	N	10–25
02312690	Chitty Chatty Creek near Wildwood, FL	38.0	1979–92	1987	7.91	220	3/31/87	7.91	220	N	10–25
02312700	Outlet River at Panacoochee Retreats, FL	420	1963–94	1983 1970	-- 42.49	784 520	6/27/82 10/06/82	-- --	716 784	N N	15–25 25–35
02312720	Withlacoochee River at Wysong Dam at Carlson, FL	1,520	1966–94	1980 1971	-- 39.72	3,920 1,580	10/11/79	--	3,920	N	15–25
02313100	Rainbow Springs near Dunnellon, FL	--	1966–78, 1982–94	1988 1966	-- --	1,060 1,040	9/19/88	--	1,060	N	10–25
02313230	Withlacoochee River at Inglis Dam near Dunnellon, FL	2,020	1970–94	1980	-- --	4,500	10/12/79	--	4,500	Y	25–35
02313250	Withlacoochee River bypass channel near Inglis, FL	--	1971–78, 1982–92, 1994	1988	--	1,840	10/01/87	--	1,840	Y	15–25
02315000	Suwannee River near Benton, FL	2,090	1973, 1976–94	1973	102.80	27,700	4/06/73	102.80	27,700	N	>100
02315200	Deep Creek near Suwannee Valley, FL	88.6	1976–81, 1991–94	1980	15.08	961	3/11/80	15.08	961	N	20–30
02315500	Suwannee River at White Springs, FL	2,430	1907–08, 1928–94	1973 1984	40.02 85.40	38,100 26,200	4/10/73 4/10/84	40.02 85.40	38,100 26,200	N N	>100 25–30
02315520	Swift Creek at Facil, FL	65.3	1972, 1976–88	1972	8.54	1,180	6/27/72	8.54	1,180	N	20–30
02315550	Suwannee River at Suwannee Springs, FL	2,630	1961–89, 1991–94	1973	78.91	30,100	4/12/73	78.91	30,100	N	50–60
02317620	Alapaha River near Jennings, FL	1,680	1977–87	1986	32.10	18,800	2/17/86	32.10	18,800	N	10–20
02319000	Withlacoochee River near Pinetta, FL	2,120	1928, 1932–94	1948	38.64	79,400	2/15/86	38.20	47,600	N	40–50
02319500	Suwannee River at Ellaville, FL	6,970	1928–94	1948	40.88	95,300	4/13/73	37.75	77,100	N	70–80
02320500	Suwannee River at Branford, FL	7,880	1928, 1932–94	1948	34.07	83,900	4/18/73	30.76	54,700	N	40–50
02320700	Santa Fe River near Graham, FL	94.9	1958–94	1964	14.97	2,360	2/04/70	14.51	1,890	N	15–25
02322016	Blues Creek near Gainsville, FL	--	1985–94	1985	6.15	324	8/31/85	6.15	324	N	10–20
02323500	Suwannee River near Wilcox, FL	9,640	1931, 1942, 1944–94	1948	22.32	84,700	4/21/73 4/16/84	18.58 17.06	55,100 48,400	N N	40–50 25–35

Table 10. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Florida—Continued

Station number (fig. 31)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02324000	Steinhatchee River near Cross City, FL	350	1951–94	1964	18.90	17,600	8/15/70	16.78	7,140	N	15–25
02324400	Fenholloway River near Foley, FL	60.0	1956–94	1964	15.21	3,210	8/14/70	14.37	2,010	N	15–25
02324500	Fenholloway River at Foley, FL	120	1947–80, 1982–92, 1994	1964	18.52	4,810	8/15/70	17.93	3,500	N	25–35
02326000	Econfina River near Perry, FL	198	1951–94	1957 1979	12.78 18.60	2,540 450	4/07/73	12.37	2,210	N	15–25
02326250	Aucilla River near Aucilla, FL	345	1965–86	1973	80.79	4,030	4/07/73	80.79	4,030	N	10–25
02326261	Little Aucilla River near Cherry Lake, FL	13.9	1970–86	1973	8.70	1,020	4/05/73	8.70	1,020	N	20–30
02326300	Little Aucilla River near Greenville, FL	90.7	1963–82	1973	7.06	1,950	4/05/73	7.06	1,950	N	25–50
02326500	Aucilla River at Lamont, FL	747	1951–79, 1984–92	1973	16.57	11,500	4/08/73	16.57	11,500	N	>100
02326512	Aucilla River near Scanlon, FL	805	1957, 1973, 1977–94	1984 1973	20.47 23.50	7,460 2,760	4/08/84	20.47	7,460	N	20–30
02326598	Caney Creek near Monticello, FL	2.54	1969–81	1974	11.37	910	9/06/74	11.37	910	N	15–25
02326800	Copeland sink drain at Lloyd, FL	285	1965–82	1973	77.47	3,070	4/04/73	77.47	3,070	N	25–50
02326838	Northeast drainage ditch at Miccosukee Road at Tallahassee, FL	10.5	1979–89	1984	7.65	805	3/06/84	7.65	805	N	5–15
02326900	St. Marks River near Newport, FL	535	1957–76, 1978–93	1973	11.81	4,750	4/07/73	11.81	4,750	N	25–50
02327012	West drainage ditch at Roberts Avenue at Tallahassee, FL	20.9	1979–83, 1985–89	1983	9.87	1,150	3/06/83	9.87	1,150	N	10–25
02327014	St. Augustine Brook at Wahnish Way at Tallahassee, FL	2.18	1980–89	1980	9.48	1,210	6/17/80	9.48	1,210	N	5–15
02327100	Sopchoppy River near Sopchoppy, FL	102	1961–93	1975	34.47	5,260	7/31/75	34.47	5,260	N	25–50
02329000	Ochlockonee River near Havana, FL	1,140	1926–93	1948	35.08	55,900	3/09/84 2/13/86	32.29 33.13	28,400 33,100	N N	20–25 30–35
02329180	Megginnis Arm tributary at Tallahassee, FL	1.46	1972–82	1982 1972	7.70 7.80	480 230	7/05/82	7.70	480	N	25–50
02329181	Mall drainage ditch at Boone Boulevard at Tallahassee, FL	0.26	1979–88	1986	10.04	216	8/06/86	10.04	216	N	5–15
02329490	Willacoochee Creek near Quincy, FL	64.9	1975–77, 1979–90	1984	9.26	6,850	3/06/84	9.26	6,850	N	15–25
02329877	Ocklawaha Creek near Wetumpka, FL	28.8	1975–77, 1979–90	1984	6.86	2,930	3/06/84	6.86	2,930	N	15–25
02330100	Telogia Creek near Bristol, FL	126	1903, 1951–71, 1975–79, 1981–93	1969	16.65	20,600	3/07/84	12.86	10,900	N	15–25
02358000	Apalachicola River at Chattahoochee, FL	17,200	1920–93	1929 1990	34.70 74.04	293,000 181,000	1/28/78	32.14	174,000	Y	10–15
02358700	Apalachicola River near Blountstown, FL	17,600	1958–93	1990 1978	-- 24.75	185,000 172,000	1/29/78	24.75	172,000	N	15–20

Table 10. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Florida—Continued

Station number (fig. 31)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02358998	Holliman Branch near Altha, FL	2.04	1969–86	1972	10.57	1,370	5/08/72	10.57	1,370	N	45–55
02359000	Chipola River near Altha, FL	781	1913, 1922–27, 1930–31, 1944–93	1926	33.55	25,000	4/16/75	29.43	13,800	N	15–20
02359300	Sandy Creek near Panama City, FL	25.0	1961–82	1975	19.46	3,370	7/31/75	19.46	3,370	N	25–50
02359350	Econfina Creek near Compass Lake, FL	40.5	1962–78, 1982	1973	12.72	1,470	2/02/73	12.72	1,470	N	10–25
02359450	Econfina Creek near Fountain, FL	70.2	1962–78	1973	14.44	1,550	2/02/73	14.44	1,550	N	10–25
02359500	Econfina Creek near Bennett, FL	122	1926, 1936–93	1991 1926	14.37 15.00	5,850 --	6/10/89	11.50	2,880	N	25–30
02359550	Bear Creek near Youngstown, FL	67.2	1962–85	1975 1984	16.29 16.50	7,220 6,270	7/31/75	16.29	7,220	N	20–30
02365237	Fowler Branch near Leonia, FL	5.09	1969–86, 1989	1980	10.06	869	3/30/80	10.06	869	N	10–25
02365435	Wrights Creek near Bonifay, FL	72.4	1981–90	1989	16.76	6,770	6/09/89	16.76	6,770	N	10–20
02365700	Sandy Creek at Ponce de Leon, FL	116	1961–90	1989	16.82	15,900	7/31/75 6/09/89	15.23 16.82	11,200 15,900	N N	10–25 50–100
02366000	Holmes Creek at Vernon, FL	386	1951–79, 1986–90	1989 1960	22.95 23.35	13,100 10,900	6/11/89	22.95	13,100	N	40–50
02366500	Choctawhatchee River near Bruce, FL	4,384	1929, 1931–83, 1985–93	1929	25.00	220,000	4/15/75	17.54	76,800	N	35–45
02366859	Pate Branch near Freeport, FL	1.87	1969–86, 1989	1978	11.07	649	7/27/78	11.07	649	N	25–50
02367000	Alaqua Creek near Defuniak Springs, FL	65.6	1952–77	1975	21.35	17,500	7/30/75	21.35	17,500	N	>100
02367242	Little Rocky Creek near Niceville, FL	3.85	1969–82	1982	7.05	192	2/03/82	7.05	192	N	15–25
02367310	Juniper Creek at State Hwy 85 near Niceville, FL	27.6	1966–75, 1977–93	1975	9.56	1,110	9/23/75	9.56	1,110	N	50–100
02368000	Yellow River at Milligan, FL	624	1929, 1939–93	1929	26.20	137,000	4/12/75	17.71	38,600	N	50–60
02368300	Baggett Creek near Milligan, FL	7.80	1965–82	1979	63.30	672	3/03/79	63.30	672	N	5–15
02368500	Shoal River near Mossy Head, FL	123	1952–78, 1989	1989	24.73	12,100	6/09/89	24.73	12,100	N	25–35
02369000	Shoal River near Crestview, FL	474	1939–93	1975	15.58	25,200	8/01/75 6/10/89	15.58 14.24	25,200 20,600	N N	50–60 15–25
02369500	Yellow River near Holt, FL	1,210	1934–41, 1965–70, 1975, 1978–79, 1981	1975	34.18	35,600	8/03/75	34.18	35,600	N	15–25
02370000	Blackwater River near Baker, FL	205	1951–92	1970	25.61	26,200	6/04/70	25.61	26,200	N	35–45
02370500	Big Coldwater Creek near Milton, FL	237	1939–79, 1981–91	1990	22.98	36,900	6/04/70 8/01/75	21.41 20.56	32,000 29,000	N N	60–70 15–25
02370700	Pond Creek near Milton, FL	58.7	1958–78, 1989	1970	12.97	4,580	6/03/70	12.97	4,580	N	15–25

Table 10. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Florida—Continued

Station number (fig. 31)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02370750	Hurricane Branch near Milton, FL	2.95	1961–82, 1989	1989	6.10	2,950	6/08/89	6.10	2,950	N	20–30
02375500	Escambia River near Century, FL	3,817	1929, 1935–93	1929	37.80	315,000	4/12/75	23.32	92,300	N	15–25
02376079	Carpenter Creek at Pensacola, FL	6.02	1972–84	1979	13.80	3,150	3/03/79	13.80	3,150	N	10–25
02376300	Brushy Creek near Walnut Hill, FL	49.0	1958–91	1962	14.96	9,680	9/08/74	14.86	9,380	N	15–25
30254908415 2900	East drainage ditch at Apakin Nene at Tallahassee, FL	0.21	1979–89	1983	6.46	145	3/06/83	6.46	145	N	5–15

[1] Regulated during flood: N, no; Y, yes.

Georgia

Hydroclimatology

Georgia is located in the southeastern United States and is bordered on the southeast by the Atlantic Ocean. The Atlantic Ocean and the Gulf of Mexico are the primary sources of moisture for the State. Georgia's climate is also affected by the distance from the ocean and elevation, as northern Georgia is in part of the Appalachian Mountains. Annual precipitation, which varies greatly from year to year, averages about 44 in. in the east-central part of the State and about 76 in. in the highest mountains in extreme northeast Georgia (Paulson and others, 1991). The summers are characterized by warm, humid maritime airmasses that are pushed inland by a nearly stationary subtropical Atlantic high-pressure cell called the Bermuda High. Airmass and squall-line type thunderstorms can create localized torrential downpours and flash flooding. Late summer and fall brings the threat of Atlantic Ocean and Gulf of Mexico hurricanes and associated coastal flooding from storm surges and excessive rainfall. Winters in Georgia typically include frontal systems moving through or stalling out in the State. Significant flooding can occur anytime during the year.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Georgia is dependent upon physiographic region and the drainage area. The regions include the mountainous area of the north, the rolling piedmont to the southeast, and the fall-line region, which bisects the State and is a 10- to 50-mi wide band between the piedmont and the low-relief coastal plain. For urban areas, the percentage area of impervious surface in the drainage basin is an added factor.

Significant Floods

The deadliest flood in Georgia from 1970 through 1989 occurred in November 1977 when excessive rains in the Toccoa Creek Basin in northeastern Georgia resulted in the failure of the Kelley Barnes Dam. The resulting flash flood killed 39 persons and caused $2.8 million in damages (Paulson and others, 1991). Significant flooding also occurred statewide in the spring of 1973, when about 13 percent of the State's streamflow-gaging stations recorded significant discharges. In March 1976, about 7 percent of the gaging stations statewide recorded 20-year or greater recurrence-interval discharges. During 1979, widespread flooding occurred during March and April predominately in eight counties in the northern part of the State. Recurrence intervals were generally in the 10- to 20-year range, with some smaller streams having 50-year recurrence-interval flooding.

The location of streamflow-gaging stations in Georgia that had significant floods for 1970–89 is shown in figure 32 by station number. The specific data for each significant flood are listed in table 11. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

Reference

Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.

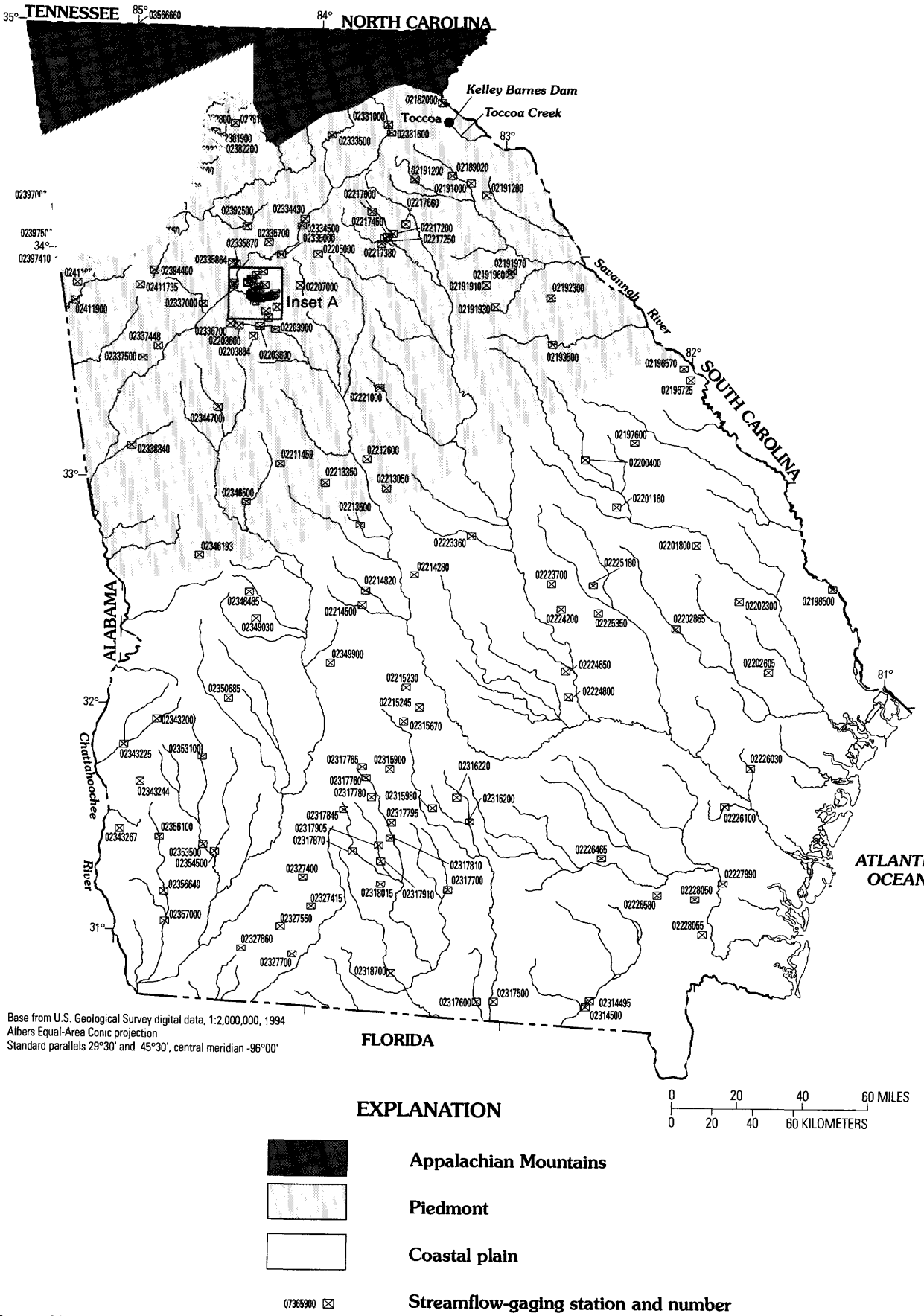


Figure 32. Location of streamflow-gaging stations with significant floods during 1970–89 for Georgia.

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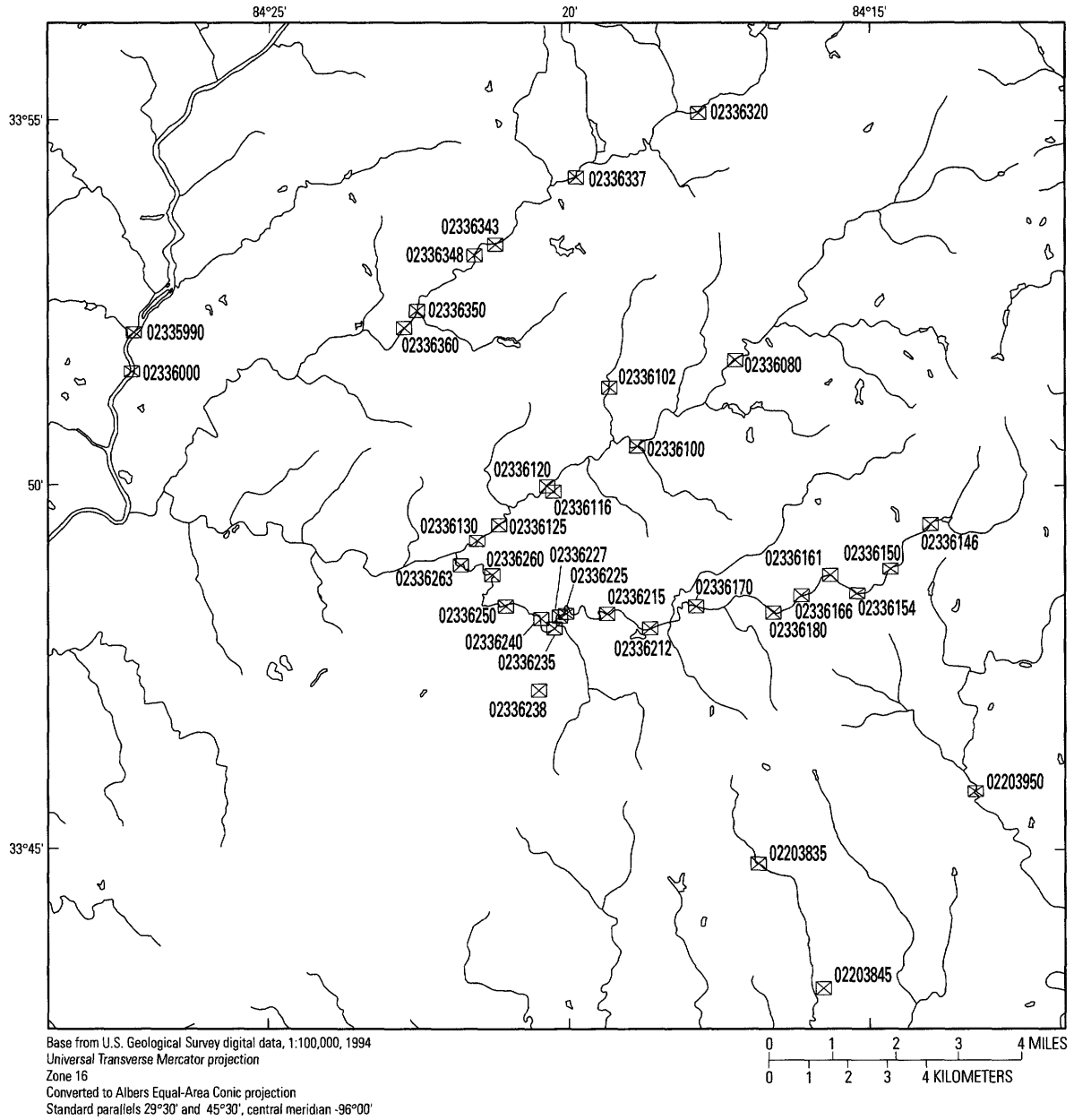

EXPLANATION

02203950⊠ **Streamflow-gaging station and number**

Figure 32. Location of streamflow-gaging stations with significant floods during 1970–89 for Georgia—Continued.

Table 11. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Georgia

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
Station number (fig. 32)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02178400	Tallulah River near Clayton, GA	56.5	1965–95	1973	12.00	8,500	5/28/73	12.00	8,500	N	25
02182000	Panther Creek near Toccoa, GA	32.5	1927–76, 1978	1949	18.00	15,100	3/13/75	16.73	12,200	N	50
02189020	Indian Creek near Carnesville, GA	7.63	1964–76	1976	9.94	3,150	5/29/76	9.94	3,150	N	100
02191000	North Fork Broad River near Carnesville, GA	119	1943–44, 1951, 1955–69, 1976	1976	14.80	11,800	5/29/76	14.80	11,800	Y	--
02191200	Hudson River at Homer, GA	60.9	1951–79	1976	14.73	7,050	5/29/76	14.73	7,050	N	25
02191280	Mill Shoal Creek near Royston, GA	0.32	1964–87	1982	5.96	232	1/04/82	5.96	232	N	25
02191910	Trouble Creek at Lexington, GA	2.70	1959–75, 1978	1971	10.12	569	3/03/71	10.12	569	N	10
02191930	Buffalo Creek near Lexington, GA	5.60	1964–95	1982	9.47	1,650	4/26/82 4/09/83	9.47 8.82	1,650 1,460	N N	25 25
02191960	Macks Creek near Lexington, GA	3.45	1959–75, 1978	1978	13.16	1,370	11/05/77	13.16	1,370	N	100
02191970	Little Macks Creek near Lexington, GA	1.73	1959–85	1978	10.49	853	11/05/77	10.49	853	N	50
02192300	Hog Fork Fishing Creek tributary near Tignall, GA	0.10	1959–87, 1990	1971	9.41	116	9/01/71 4/02/75	9.41 9.28	116 111	N N	25 25
02193500	Little River near Washington, GA	291	1950–71, 1990–95	1971	27.93	15,500	3/03/71	27.93	15,500	N	25
02196570	Raes Creek tributary number 2 at Skinner Mill Road at Augusta, GA	0.66	1979–88	1984 1986	7.26 9.98	177 --	5/03/84	7.26	177	N	--
02196725	Oates Creek at White Road at Augusta, GA	1.44	1979–89	1986 1983	5.59 5.88	201 --	10/03/88	5.59	201	N	--
02197600	Brushy Creek near Wrens, GA	28.0	1959–95	1991	14.02	11,400	3/03/71	8.03	1,200	N	25
02198500	Savannah River near Clyo, GA	9,850	1925–95	1930	29.70	270,000	4/02/80	18.40	58,600	Y	--
02200400	Rocky Comfort Creek at State Route 88 near Grange, GA	188	1979–95	1980	14.82	4,020	3/14/80	14.82	4,020	N	10
02201160	Boggy Gut Creek at U.S. Route 1 near Wadley, GA	7.05	1965–74	1970	10.04	1,800	8/08/70	10.04	1,800	N	100
02201800	Richardson Creek near Millen, GA	43.0	1963–83, 1991	1980	6.04	2,400	3/13/80	6.04	2,400	N	25
02202300	Mill Creek near Statesboro, GA	39.0	1963–74	1970	4.86	1,000	3/31/70	4.86	1,000	N	--
02202605	Mill Creek at State Route 119 near Pembroke, GA	5.39	1979–95	1994	5.98	657	2/11/86	4.16	376	N	--
02202865	Canoochee River at State Route 23–121 near Metter, GA	202	1970–86	1980	11.46	4,220	3/15/80	11.46	4,220	N	10
02203600	South River at East Point, GA	1.49	1964–73, 1975–78	1978	10.23	854	11/05/77	10.23	854	N	--

Table 11. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Georgia—Continued

Station number (fig. 32)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02203800	South River at Bouldercrest Road at Atlanta, GA	41.5	1951–87, 1990	1976	11.88	9,560	3/16/76	11.88	9,560	N	--
02203835	Shoal Creek at Line Street at Atlanta, GA	3.43	1973–95	1980	9.29	2,140	5/23/80	9.29	2,140	N	--
02203845	Shoal Creek tributary at Glendale Drive near Atlanta, GA	0.84	1963–65, 1973–78, 1980–95	1994	7.19	797	3/05/83	6.92	751	N	--
02203884	Conley Creek at Rock Cut Road near Forest Park, GA	1.88	1966–68, 1974–78, 1980–82, 1984–95	1978	9.72	1,230	11/05/77	9.72	1,230	N	--
02203900	South River at Flakes Mill Road near Atlanta, GA	99.0	1951–91	1961	21.30	12,500	3/16/76	19.89	11,000	N	--
02203950	Snapfinger Creek near Decatur, GA	13.2	1961, 1963–70, 1973, 1990	1963 1973	14.18 14.20	3,800 3,800	6/06/73	14.20	3,800	N	--
02205000	Wildcat Creek near Lawrenceville, GA	1.59	1954–84	1956 1980	8.20 9.80	806 730	5/23/80	9.80	730	N	--
02207000	Garner Creek near Snellville, GA	5.54	1954–63, 1983, 1995–96	1983	7.62	2,290	2/17/83	7.62	2,290	N	50
02211459	Big Towaliga Creek near Barnesville, GA	2.36	1969–81	1980	9.42	949	3/08/80	9.42	949	N	25
02212600	Falling Creek near Juliette, GA	72.2	1965–95	1971	23.00	7,700	3/02/71	23.00	7,700	N	25
02213050	Walnut Creek near Gray, GA	29.0	1962–94	1965	23.80	15,500	3/08/80	15.01	7,420	N	25
02213350	Tobesofkee Creek below Forsyth, GA	53.4	1963–72, 1974–87, 1990, 1994	1994	11.99	13,000	7/24/71	10.10	9,160	N	50
02213500	Tobesofkee Creek near Macon, GA	182	1929, 1938–95	1994	39.50	54,000	1/25/78	20.68	7,690	Y	--
02214280	Savage Creek at U.S. Highway 23 near Bullard, GA	33.0	1979–95	1980	11.49	2,700	3/13/80	11.49	2,700	N	25
02214500	Big Indian Creek at Perry, GA	108	1944–77, 1981, 1994	1994	21.00	28,000	4/02/81	10.28	3,690	N	25
02214820	Mossy Creek at U.S. Highway 41 near Perry, GA	92.9	1979–95	1994	19.86	24,000	4/01/81	8.27	788	N	<2
02215230	Cedar Creek near Pineview, GA	7.80	1965–75, 1991	1975	5.21	860	4/14/75	5.21	860	N	25
02215245	Folsom Creek tributary near Rochelle, GA	1.44	1964–95	1970	7.16	434	8/11/70	7.16	434	N	50
02217000	Allen Creek at Talmo, GA	18.2	1952–74, 1976	1976	13.50	4,600	5/29/76	13.50	4,600	N	50
02217200	Middle Oconee River near Jefferson, GA	135	1951–65, 1976	1976	15.00	11,000	5/29/76	15.00	11,000	N	50
02217250	Buffalo Creek tributary near Jefferson, GA	0.39	1964–76	1976	6.63	318	5/29/76	6.63	318	N	25
02217380	Mulberry River (GA Highway 11) near Winder, GA	142	1976, 1984–95	1984	13.79	5,710	12/06/83	13.79	5,710	N	<5
02217450	Mulberry River tributary number 2 near Jefferson, GA	0.72	1965–74, 1976	1976	5.60	400	5/29/76	5.60	400	N	25

Table 11. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Georgia—Continued

Station number (fig. 32)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02217660	Little Curry Creek near Jefferson, GA	0.87	1964–76	1976	6.03	558	5/29/76	6.03	558	N	25
02221000	Murder Creek near Monticello, GA	24.0	1952–76, 1990	1971	9.64	3,240	3/03/71	9.64	3,240	N	25
02223360	Big Sandy Creek at U.S. Highway 441 near Irwinton, GA	177	1970–87	1977	6.65	4,320	3/22/77	6.65	4,320	N	10
02223700	Indian Branch tributary near Scott, GA	2.13	1965–75	1973	2.99	220	2/02/73	2.99	220	N	10
02224200	Mercer Creek near Soperton, GA	16.1	1965–75	1966	5.48	1,210	2/02/73	5.48	1,210	N	2
02224650	Peterson Creek at Glenwood, GA	5.16	1965–74	1970	5.43	434	5/29/70	5.43	434	N	10
02224800	Oconee River tributary number 2 near Glenwood, GA	1.38	1965–74	1974	3.90	198	7/00/74	3.90	198	N	10
02225180	Mulepen Creek near Adrian, GA	13.8	1965–74	1973 1965	-- 5.49	1,000 703	2/02/73	--	1,000	N	25
02225350	Reedy Creek tributary near Soperton, GA	1.68	1965–88, 1991, 1993	1973	3.47	290	5/03/84	3.47	290	N	25
02226030	Doctors Creek near Ludowici, GA	33.0	1966–87, 1991	1970	10.05	1,500	3/31/70	10.05	1,500	N	10
02226100	Penholoway Creek at U.S. Highway 341 near Jesup, GA	210	1959–93	1979	14.96	4,420	9/30/79	14.96	4,420	N	10
02226465	Dryden Creek near Dixie Union, GA	14.7	1978–88	1986	7.51	955	2/11/86	7.51	955	N	10
02226580	Big Creek near Hoboken, GA	60.0	1966–87, 1991	1984	12.96	3,130	3/07/84	12.96	3,130	N	25
02227990	Satilla River tributary number 2 at Atkinson, GA	0.38	1977–95	1978	2.63	93	8/02/78	2.63	93	N	10
02228050	Buffalo Creek at U.S. Route 301 at Hickox, GA	62.0	1966–87, 1991	1977	10.69	4,330	11/29/76	10.69	4,330	N	25
02228055	Satilla River tributary number 3 near Winokur, GA	1.91	1980–89	1984	8.97	511	3/27/84	8.97	511	N	25
02314495	Suwannee River (auxiliary) above Fargo, GA	1,260	1972–91	1973	21.90	13,200	4/11/73	21.90	13,200	N	25
02314500	Suwannee River at Fargo, GA	1,260	1928–31, 1938–93	1929 1973	19.50 20.80	13,800 13,200	4/11/73	20.80	13,200	N	25
02315670	Alapaha River tributary number 3 near Rochelle, GA	3.95	1965–73, 1975, 1991	1970	4.15	230	3/31/70	4.15	230	N	5
02315900	Deep Creek near Ashburn, GA	137	1951–76, 1984, 1991	1970	13.84	4,600	4/01/70	13.84	4,600	N	25
02315980	Jacks Creek at U.S. Highway 19 near Ocilla, GA	1.21	1960–75, 1986, 1991	1986	5.81	640	2/11/86	5.81	640	N	50
02316200	Willacoochee River near Ocilla, GA	90.0	1948, 1950–77, 1984, 1986, 1991	1948	11.90	7,000	2/12/86	9.40	3,740	N	25
02316220	Little Brushy Creek near Ocilla, GA	1.65	1966–75, 1986	1986	3.85	258	2/10/86	3.85	258	N	25

Table 11. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Georgia—Continued

Station number (fig. 32)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02317500	Alapaha River at Statenville, GA	1,400	1928–95	1948	29.80	27,300	2/17/86	28.58	18,900	N	25
02317600	Little River (GA Highway 376) near Statenville, GA	199	1948, 1984–95	1984	17.36	11,000	3/28/84	17.36	11,000	N	25
02317700	Withlacoochee River near Nashville, GA	132	1948, 1951–77, 1984, 1986, 1991	1948	14.80	8,500	3/07/84	12.36	5,500	N	25
02317760	Little River near Ashburn, GA	8.54	1965–75, 1991	1975	5.01	787	4/14/75	5.01	787	N	10
02317765	Newell Branch near Worth, GA	0.98	1965–75	1971	4.59	279	3/03/71	4.59	279	N	25
02317780	Lime Sink Creek near Sycamore, GA	0.68	1965–84, 1991, 1993	1982	6.08	252	4/26/82	6.08	252	N	25
02317795	Mill Creek near Tifton, GA	6.21	1965–75, 1984, 1986, 1991	1986	11.06	1,400	2/11/86	11.06	1,400	N	50
02317810	Arnold Creek tributary near Tifton, GA	0.47	1965–95	1995	5.46	219	2/11/86	4.46	160	N	25
02317845	Warrior Creek tributary near Sylvester, GA	1.64	1965–75	1975	3.67	321	4/10/75	3.67	321	N	25
02317870	Warrior Creek near Sumner, GA	109	1966–87, 1991	1986	14.42	4,440	2/11/86	14.42	4,440	N	25
02317905	Little Creek near Omega, GA	4.22	1965–75, 1984, 1986, 1991	1986	5.28	820	2/11/86	5.28	820	N	50
02317910	Ty Ty Creek tributary at Crosland, GA	2.07	1960–74, 1984, 1986	1984	5.85	484	3/06/84	5.85	484	N	50
02318015	Bull Creek near Norman Park, GA	1.36	1965–75	1971	5.88	536	7/12/71	5.88	536	N	25
02318700	Okapilco Creek at State Route 33 near Quitman, GA	269	1980–95	1986	18.75	18,500	2/12/86	18.75	18,500	N	25
02327400	Sallys Branch tributary near Sale City, GA	3.70	1966–75, 1984, 1986, 1991	1986 1984	-- 6.64	1,400 1,200	2/11/86	--	1,400	N	25
02327415	Little Ochlockonee River at State Route 111 near Moultrie, GA	44.8	1981–95	1986	10.22	5,860	2/11/86	10.22	5,860	N	25
02327550	Barnetts Creek near Meigs, GA	15.0	1965–75, 1978–87	1984	7.59	3,980	3/06/84	7.59	3,980	N	50
02327700	Barnetts Creek near Thomasville, GA	104	1951–77, 1984, 1986, 1991	1965	20.40	17,700	3/07/84	19.46	15,200	N	50
02327860	Popple Branch at State Route 179 near Whigham, GA	1.71	1977–95	1986	6.92	609	2/11/86	6.92	609	N	25
02331000	Chattahoochee River near Leaf, GA	150	1940–95	1973	17.50	22,500	5/28/73	17.50	22,500	N	>100
02331600	Chattahoochee River near Cornelia, GA	315	1940–93	1949 1963	-- 20.55	27,000 26,400	5/28/73	20.30	25,800	N	25
02333500	Chestatee River at State Route 52 near Dahlonega, GA	153	1907, 1929–32, 1940–95	1967	25.17	22,700	5/28/73	23.60	20,300	N	50
02334430	Chattahoochee River at Buford Dam near Buford, GA	1,040	1972–95	1994	5.90	12,100	10/29/87	5.95	11,200	Y	--

Table 11. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Georgia—Continued

Station number (fig. 32)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02334500	Chattahoochee River near Buford, GA	1,060	1886, 1902, 1920, 1942–91	1946	32.60	55,000	10/29/87	--	11,200	Y	--
02335000	Chattahoochee River near Norcross, GA	1,170	1886, 1902–95	1946	27.70	55,000	3/16/73	12.47	12,200	Y	--
02335700	Big Creek near Alpharetta, GA	72.0	1961–95	1982	13.05	6,100	2/03/82	13.05	6,100	N	25
02335864	Sope Creek (Old Canton Road) near Marietta, GA	12.7	1966–67, 1969–70, 1972, 1977, 1982, 1989–95	1989 1977	16.20 18.80	2,190 --	9/30/89	16.20	2,190	N	10
02335870	Sope Creek (South Roswell Road) near Marietta, GA	29.2	1963, 1966–67, 1969–70, 1977, 1982, 1985–95	1989	16.22	6,630	9/30/89	16.22	6,630	N	10
02335990	Chattahoochee River (U.S. Highway 41 auxillary) at Atlanta, GA	1,440	1972–91	1977 1990	772.01 773.75	28,900 25,100	3/30/77	772.01	28,900	Y	--
02336000	Chattahoochee River at Atlanta, GA	1,450	1886, 1902, 1920, 1929–32, 1937–95	1920	29.00	64,000	3/30/77 4/13/79	20.57 22.29	28,900 26,700	Y Y	-- --
02336080	North Fork Peachtree Creek (Shallowford Road) near Chamblee, GA	19.1	1961, 1963–64, 1966–67, 1969, 1973–88, 1990	1975	15.27	3,050	3/13/75	15.27	3,050	N	5
02336100	North Fork Peachtree Creek at Clairmont Road near Atlanta, GA	27.8	1961, 1963–64, 1966–67, 1969, 1973, 1975–76, 1982	1975	846.80	4,000	3/13/75	846.80	4,000	N	10
02336102	North Fork Peachtree Creek tributary (Drew Valley Road) near Atlanta, GA	2.19	1973–78, 1980–95	1975	8.16	1,110	3/13/75	8.16	1,110	N	10
02336116	North Fork Peachtree Creek at North Druid Hills Road near Atlanta, GA	33.7	1961, 1963–64, 1966–67, 1969, 1973–76	1975 1963	-- 827.10	4,800 3,200	3/13/75	--	4,800	N	10
02336120	North Fork Peachtree Creek at Buford Highway near Atlanta, GA	34.8	1961, 1963–64, 1966–67, 1969, 1973–76	1975	15.75	5,000	3/13/75	15.75	5,000	N	10
02336125	North Fork Peachtree Creek (Lenox Road) at Atlanta, GA	38.1	1948, 1961, 1963–64, 1966–67, 1969, 1973–76	1975	813.20	5,200	3/13/75	813.20	5,200	N	10
02336130	North Fork Peachtree Creek at Lindberg Drive at Atlanta, GA	38.5	1961, 1963–64, 1966–67, 1969, 1973–76	1975 1963	-- 809.40	5,200 3,600	3/13/75	--	5,200	N	10

Table 11. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Georgia—Continued

Station number (fig. 32)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02336146	South Fork Peachtree Creek at Brockett Road near Clarkston, GA	4.15	1961, 1963–67, 1969, 1973, 1975–76	1973	987.20	1,450	6/05/73	987.20	1,450	N	10
02336150	South Fork Peachtree Creek (Montreal Drive) at Clarkston, GA	5.29	1961, 1963–67, 1969, 1973–78, 1990	1973	10.69	1,770	6/05/73	10.69	1,770	N	10
02336154	South Fork Peachtree Creek at Creekdale Drive near Clarkston, GA	5.99	1961, 1963–67, 1969, 1973, 1975–76	1973	936.84	1,750	6/05/73	936.84	1,750	N	10
02336161	South Fork Peachtree Creek at McLendon Road near Clarkston, GA	6.88	1961, 1963–67, 1969, 1973, 1975–76	1973	929.00	1,850	6/05/73	929.00	1,850	N	10
02336166	South Fork Peachtree Creek at North Druid Hills Road near Decatur, GA	7.22	1961, 1963–67, 1969, 1973, 1975–76	1973	921.20	2,000	6/05/73	921.20	2,000	N	10
02336170	South Fork Peachtree Creek at U.S. Highway 29 near Decatur, GA	8.36	1961, 1963–67, 1969, 1973, 1975–76	1973	915.06	2,100	6/05/73	915.06	2,100	N	10
02336180	South Fork Peachtree Creek at Willivee Drive near Decatur, GA	11.0	1961–67, 1969, 1973–79, 1990	1973 1963	-- 12.68	2,200 1,930	6/05/73	--	2,200	N	10
02336212	South Fork Peachtree Creek (Clairmont Road) near Decatur, GA	18.2	1961–67, 1969, 1973, 1975–76	1973	877.50	2,800	6/05/73	877.50	2,800	N	10
02336215	South Fork Peachtree Creek at Houston Mill Road near Emory University, GA	19.4	1961, 1963–67, 1969, 1973, 1975–76	1969	856.90	2,850	3/16/76	--	2,850	N	10
02336225	South Fork Peachtree Creek at Clifton Road at Emory University, GA	20.3	1961, 1963–67, 1969, 1973, 1975–76	1976	836.80	3,300	3/16/76	836.80	3,300	N	10
02336227	South Fork Peachtree Creek at Old Briarcliff Road near Atlanta, GA	20.3	1961, 1963–67, 1969, 1973, 1975–76	1976	835.60	3,300	3/16/76	835.60	3,300	N	10
02336235	South Fork Peachtree Creek at Briarcliff Road near Atlanta, GA	27.4	1961, 1963–67, 1969, 1973, 1975–76	1976	833.10	4,500	3/16/76	833.10	4,500	N	10
02336238	South Fork Peachtree Creek tributary (East Rock Springs Road) near Atlanta, GA	0.90	1974–95	1975	6.61	1,140	7/23/75	6.61	1,140	N	25
02336240	South Fork Peachtree Creek at Johnson Road near Atlanta, GA	28.7	1961, 1963–67, 1969, 1973, 1975–76	1976	828.25	4,900	3/16/76	828.25	4,900	N	25
02336250	South Fork Peachtree Creek (Lenox Road) at Atlanta, GA	29.6	1961, 1963–71, 1973, 1975–76, 1983, 1990	1976	14.71	5,000	3/16/76	14.71	5,000	N	25

Table 11. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Georgia—Continued

Station number (fig. 32)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02336260	South Fork Peachtree Creek at Cheshire Branch Road at Atlanta, GA	30.6	1961, 1963–67, 1969, 1973, 1975–76	1976	815.68	5,000	3/16/76	815.68	5,000	N	25
02336263	South Fork Peachtree Creek at Lambert Drive exit at Atlanta, GA	30.8	1961, 1963–67, 1969, 1973, 1975–76	1976 1969	-- 808.60	5,000 4,700	3/16/76	--	5,000	N	25
02336320	Nancy Creek (North Peachtree Road) near Doraville, GA	4.03	1961, 1963–67, 1969, 1973–75	1973 1969	935.70 935.70	1,750 880	6/05/73	935.70	1,750	N	10
02336337	Nancy Creek (Ashford-Dunwoody Road) at Chamblee, GA	14.0	1961, 1963–64, 1966–67, 1969, 1973–75, 1982, 1990	1973	867.60	4,000	6/05/73	867.60	4,000	N	10
02336343	Nancy Creek (Peachtree-Dunwoody Road) at Chamblee, GA	20.0	1961, 1963–64, 1966–67, 1969, 1973–75, 1982	1973	849.00	4,300	6/05/73	849.00	4,300	N	10
02336348	Nancy Creek (Windsor Parkway) at Atlanta, GA	21.2	1961, 1963–64, 1966–67, 1969, 1973–75, 1982, 1990	1973	843.70	4,300	6/05/73	843.70	4,300	N	10
02336350	Nancy Creek (Wieuca Road) at Atlanta, GA	23.6	1961, 1963–64, 1966–67, 1969, 1973–75, 1990	1973	829.18	4,420	6/05/73	829.18	4,420	N	10
02336360	Nancy Creek (Rickenbacker Way) at Atlanta, GA	26.6	1961, 1963–64, 1966–67, 1969, 1973–75, 1982, 1990	1973	14.84	4,500	6/05/73	14.84	4,500	N	10
02336700	South Utoy Creek tributary at Headland Drive at East Point, GA	0.79	1964–78, 1980–95	1971	7.88	533	8/02/71	7.88	533	N	5
02337000	Sweetwater Creek near Austell, GA	246	1904–05, 1916, 1937–95	1916	20.00	12,600	2/04/82	19.90	10,700	N	25
02337448	Hurricane Creek tributary at State Route 5 near Fairplay, GA	0.33	1977–95	1978	9.46	292	11/05/77	9.46	292	N	25
02337500	Snake Creek near Whitesburg, GA	35.5	1955–95	1961	14.40	7,690	2/03/82	13.40	6,680	N	25
02338840	Yellowjacket Creek at Hammett Road below Hogansville, GA	91.0	1979–85, 1991–93	1982	10.71	3,990	4/21/82	10.71	3,990	N	10
02343200	Pataula Creek near Lumpkin, GA	70.0	1949–78, 1990, 1994	1994	12.30	17,500	2/17/75	9.36	9,390	N	25
02343225	Pataula Creek near Georgetown, GA	295	1949, 1951–78, 1990, 1994	1994	14.30	65,000	2/17/75	9.69	19,400	N	25

Table 11. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Georgia—Continued

Station number (fig. 32)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02343244	Cemochechobee Creek (S1576) near Coleman, GA	15.3	1984–95	1994	11.84	5,160	5/02/84	7.46	965	N	2
02343267	Temple Creek at State Route 39 near Blakely, GA	2.78	1978–95	1994	6.13	746	1/26/78	2.03	110	N	<2
02344700	Line Creek near Senoia, GA	101	1965–95	1994	20.10	28,400	1/05/77	14.88	9,580	N	50
02346193	Scott Creek near Talbotton, GA	3.36	1969–87, 1990, 1994	1981	8.07	1,960	4/01/81	8.07	1,960	N	50
02346500	Potato Creek near Thomaston, GA	186	1938–73, 1990, 1994	1994	12.00	28,000	3/03/71	8.81	10,600	N	25
02348485	Whitewater Creek at State Route 137 near Butler, GA	17.3	1979–95	1994	10.78	518	4/01/81	8.74	248	N	10
02349030	Cedar Creek at U.S. Highway 19 near Rupert, GA	41.1	1979–95	1994	7.50	2,400	2/24/79	4.72	580	N	5
02349900	Turkey Creek at Byromville, GA	45.0	1951–95	1994	14.29	5,820	3/31/70 4/01/81	13.30 13.82	3,940 4,820	N N	50 >50
02350685	Choctahatchee Creek tributary at U.S. Highway 280 near Plains, GA	0.32	1977–79, 1981–95	1994	9.25	625	2/06/85	2.75	92	N	10
02353100	Ichawaynochaway Creek (U.S. Highway 82) near Graves, GA	118	1963–83, 1990	1970	10.05	3,960	3/31/70	10.05	3,960	N	25
02353500	Ichawaynochaway Creek at Milford, GA	620	1906–07, 1916, 1925, 1940–95	1994	23.20	53,000	1/27/78	15.08	11,900	N	25
02354500	Chickasawhatchee Creek at Elmodel, GA	320	1916, 1940–49, 1952–65, 1970–83, 1994	1994	20.00	16,000	1/27/78	12.38	4,300	N	10
02356100	Spring Creek near Arlington, GA	49.0	1951–65, 1970–73, 1975–80, 1991	1978	9.15	4,880	1/26/78	9.15	4,880	N	50
02356640	Spring Creek at U.S. Highway 27 at Colquitt, GA	281	1981–93	1994	12.92	13,800	2/06/82	11.23	6,240	N	25
02357000	Spring Creek near Iron City, GA	485	1938–78, 1983–95	1975 1994	19.43 19.95	17,700 12,900	4/12/75 1/28/78	19.43 18.35	17,700 13,400	N N	50 25
02381100	Mountaintown Creek tributary near Ellijay, GA	2.41	1965–74, 1977, 1979, 1990	1973	7.20	822	5/27/73	7.20	822	N	10
02381600	Fausett Creek near Talking Rock, GA	9.99	1966–93	1973	16.96	3,160	5/27/73	16.96	3,160	N	25
02381900	Ball Creek near Talking Rock, GA	3.50	1965–74, 1977, 1979, 1990	1979 1973	-- 6.69	1,400 1,240	3/04/79	--	1,400	N	25
02382200	Talking Rock Creek near Hinton, GA	119	1964–71, 1973–93	1973	15.45	18,400	5/28/73	15.45	18,400	N	50
02382600	Sugar Creek near Chatsworth, GA	7.30	1965–74, 1977, 1979, 1990	1979 1990	-- 8.63	1,300 1,100	3/04/79	--	1,300	N	10

Table 11. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Georgia—Continued

Station number (fig. 32)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02382800	Dry Creek at Oakman, GA	3.06	1965–74, 1977, 1979, 1990	1977	8.45	1,410	4/04/77	8.45	1,410	N	50
02383000	Rock Creek near Fairmount, GA	6.17	1952–74, 1977, 1979, 1990	1977	8.25	1,400	4/04/77	8.25	1,400	N	25
02383200	Redbud Creek near Ranger, GA	1.97	1964–74, 1977, 1979, 1990	1977	6.20	1,210	4/04/77	6.20	1,210	N	50
02383220	Redbud Creek tributary near Ranger, GA	0.56	1965–73, 1977, 1979, 1990	1977 1973	-- 5.64	500 410	4/04/77	--	500	N	50
02383500	Coosawattee River near Pine Chapel, GA	831	1938–95	1951	34.20	40,200	3/04/79	30.07	24,900	Y	--
02383520	Coosawattee River (auxillary) at Pine Chapel, GA	847	1938–91	1951	30.80	40,200	3/04/79	27.00	24,900	Y	--
02384500	Conasauga River near Eton, GA	252	1954–58, 1963–95	1990	20.50	33,200	3/17/73	18.59	25,200	N	50
02384600	Pinhook Creek near Eton, GA	4.28	1964–95	1967	7.30	960	7/25/79	7.25	940	N	25
02387530	Oostanaula River (GA Highway 136C) at Calhoun, GA	1,628	1949–60, 1971–85	1951	630.10	54,800	4/07/77	623.90	29,000	Y	--
02387560	Oothkalooga Creek tributary at Adairsville, GA	3.56	1965–74, 1977, 1979	1979	7.80	1,850	3/04/79	7.80	1,850	N	100
02387570	Oothkalooga Creek at Adairsville, GA	21.7	1964–74, 1977, 1979	1979 1966	-- 8.05	5,000 2,000	3/04/79	--	5,000	N	100
02387700	Rocky Creek at Curryville, GA	9.41	1965–74, 1977, 1979	1977	9.00	3,970	4/04/77	9.00	3,970	N	100
02387800	Bailey Creek near Villanow, GA	3.82	1965–74, 1977, 1979	1979 1977	-- 9.90	2,400 2,100	3/04/79	--	2,400	N	>100
02388300	Heath Creek near Rome, GA	14.7	1969–90	1979	10.03	1,660	3/04/79	10.03	1,660	N	<5
02388320	Heath Creek below Rocky Mountain Damsite near Armuchee, GA	16.6	1982–95	1982 1990	8.26 8.32	980 944	1/03/82	8.26	980	N	<2
02388400	Dozier Creek near Shannon, GA	3.00	1965–74, 1977, 1979	1977	6.26	1,330	4/04/77	6.26	1,330	N	25
02392500	Little River near Roswell, GA	60.0	1946, 1948–76, 1982, 1984	1946	18.00	5,000	2/03/82	14.78	4,600	Y	--
02394400	Pumpkinvine Creek below Dallas, GA	42.8	1951–77, 1982, 1984, 1990	1961	20.28	6,800	12/06/83	19.30	5,900	N	25
02394670	Etowah River at State Route 61 near Cartersville, GA	1,345	1886, 1920, 1938–44, 1946–90	1886	37.00	55,000	3/04/79 2/03/82	20.70 20.76	17,300 17,600	Y Y	-- --
02394820	Euharlee Creek (U.S. Highway 278) at Rockmart, GA	42.1	1961, 1974, 1979, 1984–95	1979	15.00	7,000	3/04/79	15.00	7,000	N	25
02394950	Hills Creek near Taylorsville, GA	25.0	1960–74, 1977, 1979, 1982, 1990	1979	11.18	7,500	3/04/79	11.18	7,500	N	100

Table 11. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Georgia—Continued

Station number (fig. 32)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02395000	Etowah River near Kingston, GA	1,634	1920, 1929–31, 1937–95	1920	31.00	52,000	3/30/77 2/03/82	21.53 21.97	30,000 28,000	Y Y	-- --
02395120	Two Run Creek at State Route 20 near Kingston, GA	33.1	1981–95	1982	7.91	3,180	2/03/82	7.91	3,180	N	10
02395990	Etowah River tributary at Atteiram Drive at Rome, GA	0.37	1979–95	1986	7.46	193	3/13/86	7.46	193	N	10
02396000	Etowah River at Rome, GA	1,819	1897–1995	1920 1938	-- 37.50	55,000 46,500	3/04/79	--	36,000	Y	--
02396050	Etowah River (2nd Avenuee auxillary) at Rome, GA	1,820	1940–91	1946 1949	-- 35.80	36,900 35,700	3/04/79	--	36,000	Y	--
02396510	Silver Creek tributary number 2 at Lindale Road near Rome, GA	0.04	1979–95	1989	3.48	44	2/28/89	3.48	44	N	10
02397000	Coosa River near Rome, GA	4,040	1886, 1897–1995	1886	43.00	100,000	3/05/79	35.00	60,500	Y	--
02397410	Cedar Creek at Georgia Avenue at Cedartown, GA	66.9	1949–58, 1974–75, 1979–80, 1982–95	1979	21.10	16,500	3/04/79	21.10	16,500	N	>100
02397500	Cedar Creek near Cedartown, GA	115	1943–75, 1977, 1979	1979	19.40	17,000	3/05/79	19.40	17,000	N	>100
02411735	McClendon Creek tributary at State Route 120 near Dallas, GA	0.88	1977–95	1981	8.23	860	5/27/81	8.23	860	N	50
02411900	Tallapoosa River at Tallapoosa, GA	236	1936, 1949, 1951–77, 1982, 1990	1977	29.30	29,500	3/31/77	29.30	29,500	N	>100
02411902	Mann Creek tributary at State Route 100 near Tallapoosa, GA	0.12	1977–95	1979	5.51	107	4/13/79	5.51	107	N	10
03545000	Hiwassee River at Presley, GA	45.5	1942–95	1952	15.24	5,700	5/28/73	13.96	5,080	N	25
03553500	Nottely River at Nottely Dam near Ivylog, GA	215	1942–75	1973	11.63	8,110	5/28/73	11.63	8,110	Y	--
03558000	Toccoa River near Dial, GA	177	1907, 1913–95	1907	18.50	28,000	3/04/79	11.19	10,400	N	25
03559000	Toccoa River near Blue Ridge, GA	233	1901–02, 1907, 1914–74	1907 1901	-- 14.00	34,000 15,500	5/28/73	13.61	10,300	Y	--
03566660	Sugar Creek near Ringgold, GA	4.44	1965–74, 1990	1973	7.77	2,620	3/16/73	7.77	2,620	N	>100
03566685	Little Chickamauga Creek near Ringgold, GA	35.5	1964–75	1973	10.19	7,120	3/16/73	10.19	7,120	N	50
03566687	Little Chickamauga Creek tributary near Ringgold, GA	3.36	1965–74, 1990	1973	9.13	1,970	3/16/73	9.13	1,970	N	50
03566700	South Chickamauga Creek at Ringgold, GA	169	1949–65, 1973, 1990	1973	27.39	33,400	3/17/73	27.39	33,400	N	>100
03568500	Chattanooga Creek near Flintstone, GA	50.6	1951–74	1973	13.59	6,300	3/16/73	13.59	6,300	N	25
03568933	Lookout Creek near New England, GA	149	1980–95	1982	20.73	20,000	8/17/82	20.73	20,000	N	50

[1] Regulated during flood: N, no; Y, yes.

Hawaii

Hydroclimatology

Hawaii consists of 132 islands, shoals, and reefs. The State stretches more than 1,600 mi across the Central Pacific Ocean in a northwest-to-southeast direction from approximately latitude 28^{o} N and longitude 179^{o} W to approximately latitude 19^{o} N and longitude 155^{o} W. Major islands include Hawaii, Maui, Molokai, Oahu, and Kauai. The northeast trade winds are the most dominant feature responsible for the circulation of air across the Hawaiian Islands. The combination of trade winds and mountainous topography produces orographic-effect precipitation as the moist subtropical air is lifted by the mountains. Mean annual rainfall ranges from less than 7 in. around Hawaihae Bay on the leeward side of the island of Hawaii to 451 in. at the top of Mt. Waialeale on the island of Kauai (Wong, 1994). Hawaii's climate is relatively warm year-round except in areas of high elevations where it is cooler. Major storm systems commonly occur from October to April and can be of three types—frontal systems, combinations of frontal and upper level low-pressure systems, and tropical storms or hurricanes.

Most of the drainage basins in the State of Hawaii are less than 10 mi^2 but, due to locally intense rainfall, can have unit discharge values of as much as 5,000 $(ft^3/s)/mi^2$. On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Hawaii is dependent primarily upon drainage area and some measure of precipitation, such as median annual precipitation or 2-year, 24-hour precipitation (Wong, 1994).

Significant Floods

On November 23, 1982, Hurricane Iwa caused severe flooding and damage on the southern coast of Kauai and on the western coast of Oahu. As the hurricane passed 30 mi west of Kauai, it caused the greatest property damage on record, estimated at $308 million (Paulson and others, 1991).

Floods caused by a winter storm in February 1979 caused $6 million in damages on the Island of Hawaii. Later in the same year during November, another large storm caused another $3.75 million in damages on the same island (Paulson and others, 1991).

The location of streamflow-gaging stations in Hawaii that had significant floods for 1970–89 is shown in figure 33 by station number. The specific data for each significant flood are listed in table 12. A significant flood is one that ranks in the top 5 percent of all maximum discharges for that station's period of record.

References

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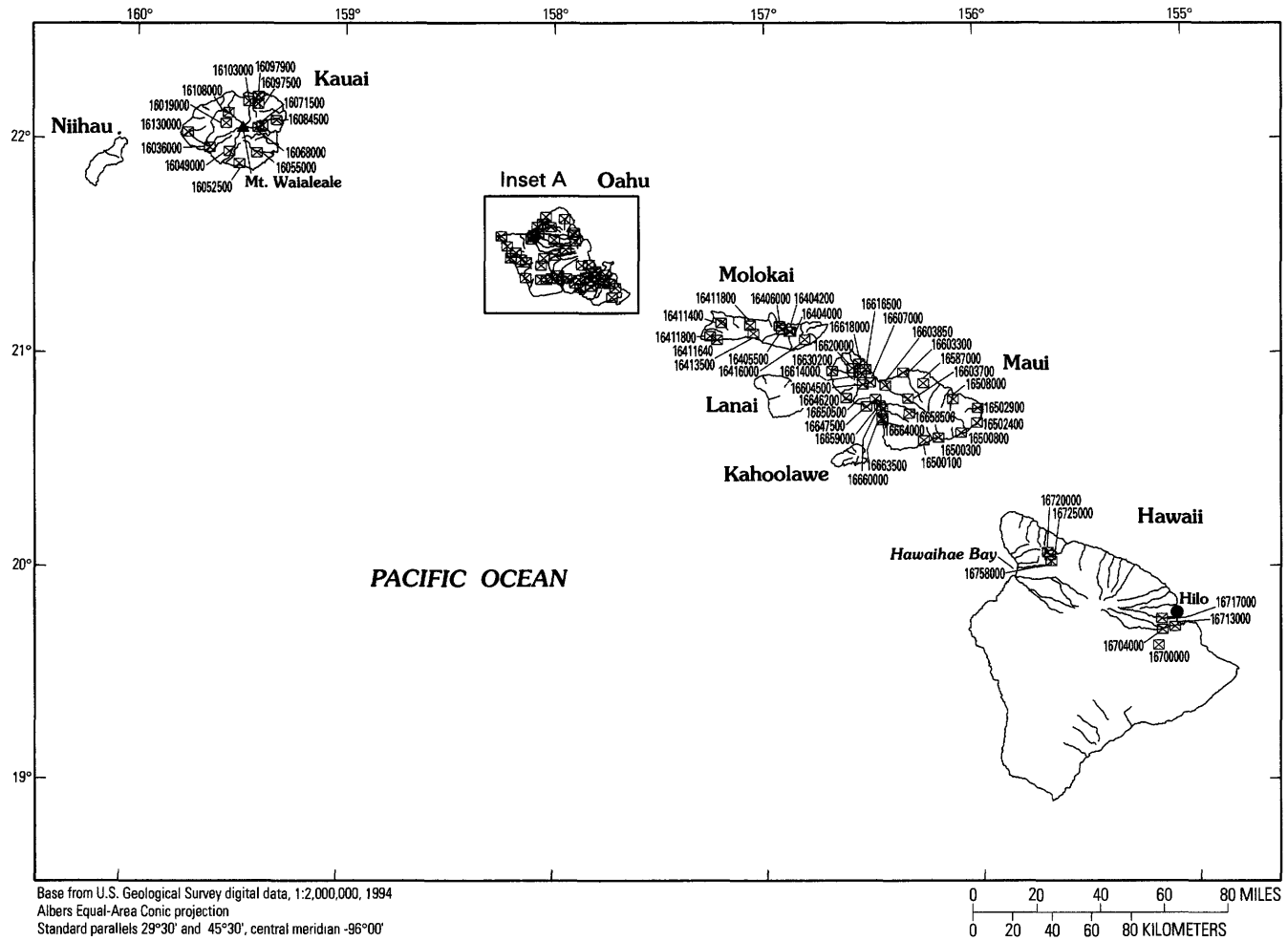
Wong, M.F., 1994, Estimation of magnitude and frequency of floods for streams on the island of Oahu, Hawaii: U.S. Geological Survey Water-Resources Investigations Report 94–4052, 37 p.



EXPLANATION

16770000 ⊠ **Streamflow-gaging station and number**

Figure 33. Location of streamflow-gaging stations with significant floods during 1970–89 for Hawaii.

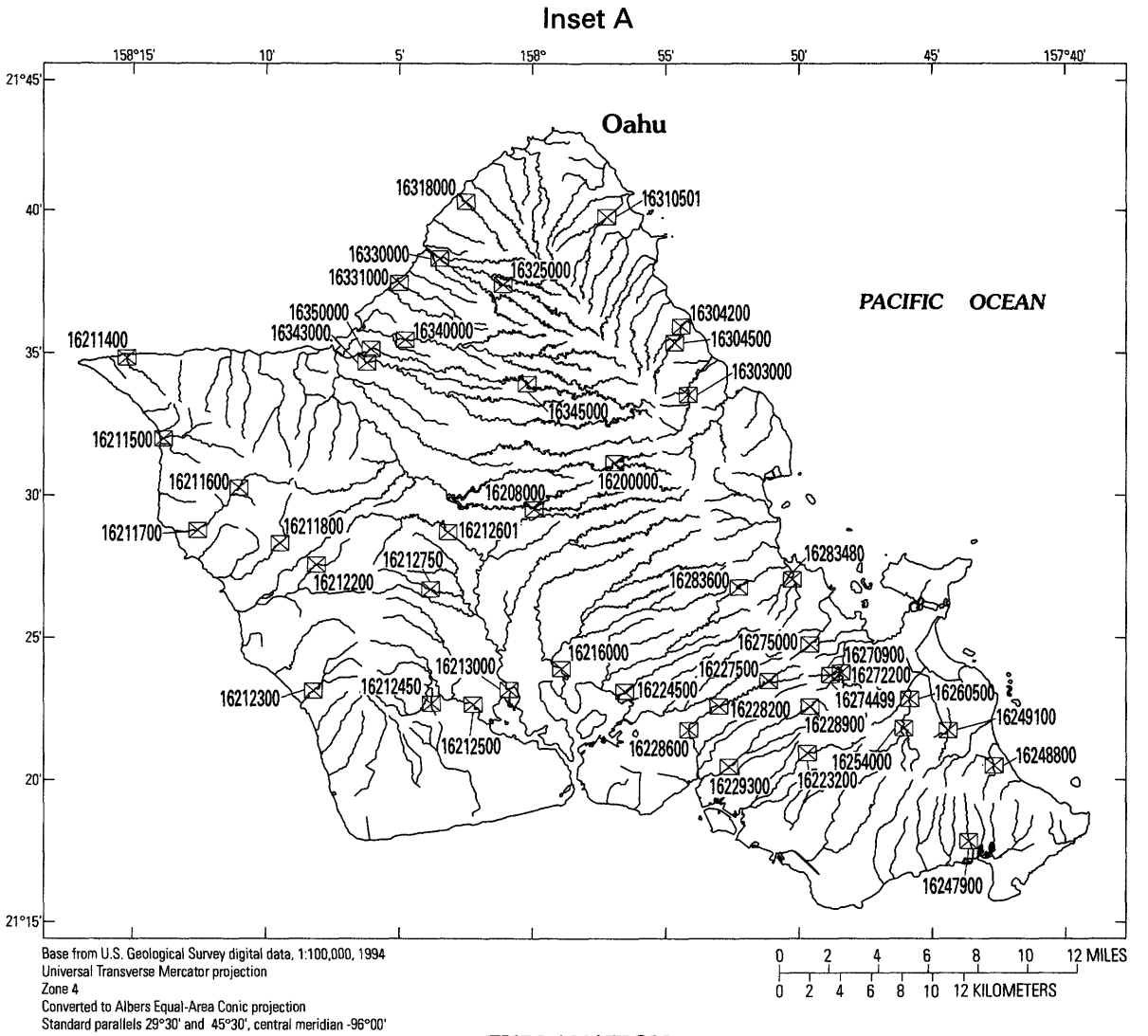


Figure 33. Location of streamflow-gaging stations with significant floods during 1970–89 for Hawaii—Continued.

Table 12. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Hawaii

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig. 33)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
					Island of Kauai						
16019000	Waialae Stream at altitude 3,820 feet near Waimea, Kauai, HI	1.79	1921–22, 1924, 1926–30, 1932, 1953–93	1921	8.44	4,530	11/21/74	8.31	4,400	N	20
16036000	Makaweli River near Waimea, Kauai, HI	26.0	1943, 1945–93	1975	15.51	26,000	1/31/75 10/30/82	15.51 14.35	26,000 22,550	N	50 30
16049000	Hanapepe River below Manuahi Stream near Eleele, Kauai, HI	18.5	1918–21, 1927–31, 1934–93	1963	14.87	39,000	1/31/75	13.14	27,300	N	70
16052500	Lawai Stream near Koloa, Kauai, HI	6.62	1962–93	1975	11.37	5,810	4/19/74 1/31/75	10.24 11.37	4,350 5,810	N N	20 40
16055000	Huleia Stream near Lihue, Kauai, HI	17.6	1962–93	1971	22.40	26,800	11/28/70 1/31/75	22.40 19.87	26,800 18,400	N N	35 15
16068000	East Branch of North Fork Wailua River near Lihue, Kauai, HI	6.27	1916–93	1956	14.70	18,400	1/31/75	9.99	7,560	N	30
16071500	Left Branch Opaekaa Stream near Kapaa, Kauai, HI	0.65	1961–93	1992 1969	6.60 7.72	1,060 221	1/31/75	5.58	724	N	35
16084500	Kapaa Stream at old highway crossing near Kealia, Kauai, HI	14.0	1962–93	1992	23.11	30,330	10/30/82	18.02	17,600	N	20
16097500	Halaulani Stream at altitude 400 feet near Kilauea, Kauai, HI	1.90	1958–93	1992	9.64	4,030	7/23/89	7.69	2,420	N	40
16097900	Puukumu Stream near Kilauea, Kauai, HI	0.91	1965–67, 1971–72, 1974–75, 1980–93	1971	17.27	1,430	4/07/71	17.27	1,430	N	30
16103000	Hanalei River near Hanalei, Kauai, HI	19.1	1962–93	1992	14.45	25,750	4/19/74	14.28	24,900	N	10
16108000	Wainiha River near Hanalei, Kauai, HI	10.2	1953–56, 1958–93	1956	14.10	40,000	4/19/74	9.47	28,100	N	40
16130000	Nahomalu Valley near Mana, Kauai, HI	3.81	1962–93	1972	7.15	2,120	4/15/72 10/30/82	7.15 7.07	2,120 2,070	N N	25 25
					Island of Oahu						
16200000	North Fork Kaukonahua Stream above right branch near Wahiawa, Oahu, HI	1.38	1916–25, 1927–43, 1945–53, 1961–93	1982	13.20	5,640	10/28/81	13.20	5,640	N	40
16208000	South Fork Kaukonahua Stream at East Pump Reservoir near Wahiawa, Oahu, HI	4.04	1958–93	1963	11.33	5,460	10/28/81	11.00	5,200	N	30
16211200	Poamoho Stream at Waialua, Oahu, HI	10.9	1967–93	1974	24.00	7,340	4/19/74	24.00	7,340	N	25
16211400	Manini Gulch at Kaena, Oahu, HI	1.08	1974–93	1988	19.61	1,000	1/01/88	19.61	1,000	N	10
16211500	Makua Stream at Makua, Oahu, HI	4.28	1958–73, 1975–93	1976 1990	8.00 9.27	3,220 580	2/07/76	8.00	3,220	N	50
16211600	Makaha Stream near Makaha, Oahu, HI	2.31	1960–93	1982	7.40	1,450	1/06/82	7.40	1,450	N	35

Table 12. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Hawaii—Continued

Station number (fig. 33)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
					Island of Oahu—Continued						
16211700	Makaha Stream at Makaha, Oahu, HI	5.25	1966–93	1976	16.40	4,310	2/07/76	16.40	4,310	N	45
							1/06/82	15.81	3,930	N	35
16211800	Kaupuni Stream at altitude 374 feet near Waianae, Oahu, HI	3.58	1961–93	1982	7.82	3,640	2/07/76	6.59	1,730	N	15
							1/06/82	7.82	3,640	N	55
16212200	Mailiilii Stream near Waianae, Oahu, HI	1.51	1958–93	1982	7.20	2,460	1/06/82	7.20	2,460	N	20
16212300	Nanakuli Stream at Nanakuli, Oahu, HI	3.98	1968–93	1976	26.20	3,320	2/07/76	26.20	3,320	N	20
				1986	26.28	2,500					
16212450	Kaloi Gulch tributary near Honouliuli, Oahu, HI	1.70	1968–93	1980	7.45	724	1/08/80	7.45	724	N	15
				1969	9.09	645					
16212500	Honouliuli Stream near Waipahu, Oahu, HI	11.0	1956–58, 1962–63, 1965–93	1982	10.28	3,500	1/06/82	10.28	3,500	N	20
16212601	Waikele Stream at Wheeler Field, Oahu, HI	6.35	1958, 1960–93	1982	22.50	1,850	1/06/82	22.50	1,850	N	25
16212750	Huliwai Gulch near Kunia Camp, Oahu, HI	0.84	1974–93	1979	8.63	600	2/10/79	8.63	600	N	--
				1992	13.49	100					
16213000	Waikele Stream at Waipahu, Oahu, HI	45.7	1952–59, 1961–93	1955	14.82	13,600	1/07/82	12.53	12,600	N	20
16216000	Waiawa Stream near Pearl City, Oahu, HI	26.4	1953–93	1982	22.46	27,900	10/28/81	22.46	27,900	N	25
16224500	Kalauao Stream at Moanalua Road at Aiea, Oahu, HI	2.59	1954–82, 1984–93	1963	6.63	2,580	10/28/81	6.23	2,130	N	15
				1955	7.29	1,620					
16227500	Moanalua Stream near Kaneohe, Oahu, HI	0.94	1969–78	1971	8.07	1,530	11/26/70	8.07	1,530	N	10
16228200	Moanalua Stream near Aiea, Oahu, HI	3.34	1969–93	1980	9.97	4,860	3/18/80	9.97	4,860	N	90
16228600	Moanalua Stream near Tripler Hospital, Oahu, HI	4.44	1971–93	1980	21.00	6,200	3/18/80	21.00	6,200	N	50
16228900	Kalihi Stream near Kaneohe, Oahu, HI	0.60	1968–93	1980	5.60	1,700	1/08/80	5.60	1,700	N	20
16229300	Kalihi Stream at Kalihi, Oahu, HI	5.18	1960, 1962–93	1974	9.98	7,110	4/19/74	9.98	7,110	N	15
16232000	Nuuanu Stream below reservoir 2 wasteway near Honolulu, Oahu, HI	3.35	1918–93	1921	8.74	6,990	8/25/82	6.52	2,460	Y	--
16247900	Kuliouou Valley at Kuliouou, Oahu, HI	1.18	1970–93	1988	36.55	4,700	12/31/87	36.55	4,700	N	>100
16248800	Inoaole Stream at Waimanalo, Oahu, HI	1.21	1958–93	1981	7.55	1,600	5/07/81	7.55	1,600	N	20
16249100	Kaelepulu Stream tributary at Kailua, Oahu, HI	0.16	1963–93	1988	7.53	467	11/26/70	6.99	418	N	10
							12/31/87	7.53	467	N	15
16254000	Makawao Stream near Kailua, Oahu, HI	2.04	1958–93	1965	12.41	6,000	2/14/85	10.89	3,940	N	20
16260500	Maunawili Stream at Highway 61 near Kailua, Oahu, HI	5.34	1958–93	1965	15.62	9,690	12/31/87	13.76	5,710	N	15
16270900	Luluku Stream at altitude 220 feet near Kaneohe, Oahu, HI	0.44	1967–83, 1985–87, 1989–93	1971	6.18	651	11/26/70	6.18	651	N	25

Table 12. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Hawaii—Continued

Station number (fig. 33)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
					Island of Oahu—Continued						
16272200	Kamooalii Stream below Luluku Stream near Kaneohe, Oahu, HI	3.81	1965, 1977–93	1965	--	6,460	12/31/87	5.72	1,650	Y	--
16274499	Keaahala Stream at Kamehameha Highway at Kaneohe, Oahu, HI	0.62	1959–93	1965	11.50	2,750	11/26/70	9.65	2,120	N	25
16275000	Haiku Stream near Heeia, Oahu, HI	0.97	1915–19, 1940–77, 1983–93	1965	7.94	5,740	11/25/70	6.52	4,420	N	60
16283480	Ahuimanu Stream near Kahaluu, Oahu, HI	2.31	1963–93	1969	14.30	7,300	11/25/70	11.80	7,300	N	50
16283600	South Fork Waihee Stream near Heeia, Oahu, HI	0.03	1963–93	1982	4.68	430	10/28/81	4.68	430	N	50
16303000	Punaluu Stream near Punaluu, Oahu, HI	2.78	1954–93	1991	8.02	6,900	7/17/74	7.60	5,700	N	45
16304200	Kaluanui Stream near Punaluu, Oahu, HI	1.11	1967–93	1982	11.90	2,390	1/06/82	11.90	2,390	N	25
16304500	Kaluanui Stream at Hauula, Oahu, HI	2.12	1958–93	1982	6.95	4,920	1/06/82	6.95	4,920	N	55
16310501	Malaekahana Stream at altitude 30 feet near Kahuku, Oahu, HI	4.05	1959–93	1963	12.10	4,640	3/21/82	11.35	3,950	N	10
16318000	Paumalu Gulch at Sunset Beach, Oahu, HI	2.59	1968–93	1974 1989	4.97 6.44	982 350	4/19/74	4.97	982	N	50
16325000	Kamananui Stream at Pupukea Mill Road near Maunawai, Oahu, HI	3.13	1964–93	1991	11.34	4,810	1/30/75	10.06	3,390	N	25
16330000	Kamananui Stream at Maunawai, Oahu, HI	12.4	1958–91, 1993	1991	15.84	16,800	3/18/80	11.46	8,540	N	20
16331000	Waimea Gulch near Kawailoa Camp, Oahu, HI	2.23	1968–93	1980	11.20	2,030	3/18/80	11.20	2,030	N	60
16340000	Anahulu River near Haleiwa, Oahu, HI	13.5	1958–93	1974	15.80	15,900	4/19/74	15.80	15,900	N	70
16343000	Helemano Stream at Haleiwa, Oahu, HI	14.2	1968–82	1974	22.50	18,200	4/19/74	22.50	18,200	N	15
16345000	Opaeula Stream near Wahiawa, Oahu, HI	2.98	1960–93	1974 1991	11.94 13.20	5,540 4,380	7/17/74 1/06/82	11.94 11.37	5,540 5,020	N N	50 35
16350000	Opaeula Stream near Haleiwa, Oahu, HI	5.96	1956–93	1974	20.70	7,600	4/19/74	20.70	7,600	N	40
					Island of Molokai						
16404000	Pelekunu Stream near Pelekunu, Molokai, HI	2.59	1921–29, 1940–41, 1949–52, 1956–57, 1972–82	1982 1929	7.20 11.50	6,850 2,060	1/07/82 1/08/80	7.20 7.16	6,850 6,750	N N	30 30
16404200	Pilipililau Stream near Pelekunu, Molokai, HI	0.49	1969–93	1982	4.25	835	1/25/82	4.25	835	N	40
16405500	Waikolu Stream at altitude 900 feet near Kalaupapa, Molokai, HI	1.99	1957–93	1962	13.62	6,220	1/25/82	6.64	3,570	N	20
16408000	Waikolu Stream below pipeline crossing near Kalaupapa, Molokai, HI	3.68	1920–32, 1938–93	1989 1962	8.50 12.75	13,200 6,640	3/31/82 4/08/89	7.63 8.50	8,740 13,200	N N	70 >100

Table 12. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Hawaii—Continued

Station number (fig. 33)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
			Island of Molokai—Continued								
16411400	Kakaako Gulch near Mauna Loa, Molokai, HI	5.34	1964–93	1989	8.47	2,860	2/11/89	8.47	2,860	N	30
16411600	Kaunalu Gulch near Mauna Loa, Molokai, HI	0.28	1964–69, 1971–93	1985	3.87	151	12/25/84	3.87	151	N	40
16411640	Halena Gulch near Mauna Loa, Molokai, HI	2.07	1965–69, 1971–93	1974	8.20	2,920	1/11/74	8.20	2,920	N	30
16411800	Kaluapeelua Gulch at Hoolehua, Molokai, HI	1.46	1964–81, 1983–91	1974	3.30	86	12/08/73	3.30	86	N	20
16413500	Manawainui Gulch near Kualapuu, Molokai, HI	10.4	1965–93	1989 1982	-- 10.86	3,620 2,600	4/04/89	--	3,620	N	70
16416000	Punaula Gulch near Pukoo, Molokai, HI	0.24	1948–72	1970	7.62	622	4/21/70	7.62	622	N	15
			Island of Maui								
16500100	Kepuni Gulch near Kahikinui House, Maui, HI	1.19	1963–93	1989	8.96	1,180	4/07/83 11/04/88	8.78 8.96	1,130 1,180	N N	25 25
16500300	Hawelewele Gulch near Kaupo, Maui, HI	11.3	1967–93	1980	13.20	13,600	1/08/80	13.20	13,600	N	35
16500800	Kukuiula Gulch near Kipahulu, Maui, HI	0.76	1963–93	1982	13.76	5,950	3/31/82 1/28/88	13.76 12.40	5,950 4,080	N N	60 25
16502400	Pukuilua Gulch near Hana, Maui, HI	0.48	1963–93	1965	9.30	788	3/31/82	7.87	607	N	20
16502900	Kawaipapa Gulch at Hana, Maui, HI	5.83	1965–93	1982 1987	11.03 13.95	16,880 16,100	8/01/82 1/18/87	11.03 13.95	16,880 16,100	N N	20 20
16508000	Hanawi Stream near Nahiku, Maui, HI	3.49	1915–16, 1922–93	1916	11.60	5,570	3/31/82	10.61	4,450	N	20
16587000	Honopou Stream near Huelo, Maui, HI	0.64	1911, 1913–14, 1916–93	1931	7.28	5,710	8/01/82 4/09/89	5.48 5.31	2,600 2,390	N N	25 20
16603300	Unnamed gulch at Maliko Bay, Maui, HI	0.43	1963–91	1979	17.28	171	3/27/79	17.28	171	N	75
16603700	Kalialinui Gulch tributary near Pukalani, Maui, HI	1.17	1967–93	1980	7.35	414	1/09/80 1/16/76	7.35 7.34	414 412	N N	5 5
16603850	Kalialinui Gulch near Kahului, Maui, HI	17.9	1967–93	1971	8.11	1,330	1/28/71	8.11	1,330	N	15
16604500	Iao Stream at Kepaniwai Park near Wailuku, Maui, HI	5.98	1984–93	1988	9.00	6,250	1/28/88	9.00	6,250	N	--
16607000	Iao Stream at Wailuku, Maui, HI	8.24	1951–93	1951 1971	6.21 7.67	7,540 5,820	1/28/71	7.67	5,820	N	15
16614000	Waihee River at dam near Waihee, Maui, HI	4.20	1984–93	1988	8.95	9,660	1/28/88	8.95	9,660	N	--
16616500	Unnamed gulch at Maluhia Camp, Maui, HI	0.12	1965–68, 1971–72, 1974–75, 1979–91	1982	7.68	101	3/31/82	7.68	101	N	5
16618000	Kahakuloa Stream near Honokohau, Maui, HI	3.47	1940–43, 1948–71, 1975–93	1988 1971	9.93 10.57	4,220 3,800	1/28/88 4/05/89	9.93 9.76	4,220 4,040	N N	30 25
16620000	Honokohau Stream near Honokohau, Maui, HI	4.11	1914–20, 1923–28, 1930–89, 1991–93	1988 1943	8.38 8.40	7,260 7,120	1/28/88 11/04/88	8.38 8.24	7,260 6,790	N N	45 40

Table 12. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Hawaii—Continued

Station number (fig. 33)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
					Island of Maui—Continued						
16630200	Honokowai Stream at Honokowai, Maui, HI	5.59	1962–63, 1965–93	1982	11.00	4,520	8/01/82	11.00	4,520	N	75–100
16646200	Olowalu Stream at Olowalu, Maui, HI	4.08	1962–93	1967	5.40	1,300	2/10/79 1/28/71	5.28 5.28	1,230 1,230	N N	15 15
16647500	Malalowaiaole Gulch near Maalaea, Maui, HI	0.64	1964–65, 1967–91, 1993	1980	12.95	350	1/10/80	12.95	350	N	25
16650500	Waikapu Stream near Kihei, Maui, HI	6.97	1963–88, 1990–93	1987	8.28	1,130	12/25/83 2/10/79 5/05/87	7.85 7.80 8.28	1,080 1,080 1,130	N N N	10 10 10
16658500	Waiakoa Gulch tributary near Waiakoa, Maui, HI	0.98	1964–91, 1993	1971	8.23	409	1/28/71	8.23	409	N	30
16659000	Waiakoa Gulch at Kihei, Maui, HI	10.1	1963, 1967–72, 1974–76, 1978–91	1971	9.66	1,560	1/28/71	9.66	1,560	N	20
16660000	Kulanihakoi Gulch near Kihei, Maui, HI	14.4	1963–91	1971	9.40	4,460	1/28/71	9.40	4,460	N	20
16663500	Kamaole Gulch at Kamaole, Maui, HI	4.28	1980–91	1982	9.01	291	3/17/82	9.01	291	N	15
16664000	Liilioholo Gulch at Kamaole, Maui, HI	4.12	1980–91	1982	13.73	526	2/11/82	13.73	526	N	--
					Island of Hawaii						
16700000	Waiakea Stream near Mountain View, Hawaii, HI	17.4	1931–90	1970 1931	4.45 4.70	565 231	8/26/70	4.45	310	N	--
16704000	Wailuku River at Piihonua, Hawaii, HI	230	1929–89	1940	28.60	80,200	11/17/79 12/13/87	26.16 26.95	60,200 66,400	N N	-- --
16713000	Wailuku River at Hilo, Hawaii, HI	256	1977–89	1988	38.66	79,800	12/13/87	38.66	79,800	N	--
16717000	Honolii Stream near Papaikou, Hawaii, HI	11.6	1967–89	1978	20.00	22,600	5/23/78	20.00	22,600	N	--
16720000	Kawainui Stream near Kamuela, Hawaii, HI	1.58	1964–89	1980	10.03	3,160	11/18/79	10.03	3,160	N	--
16725000	Alakahi Stream near Kamuela, Hawaii, HI	0.87	1964–89	1967	8.65	1,430	11/18/79	12.80	1,330	N	--
16758000	Waikoloa Stream at Marine Dam near Kamuela, Hawaii, HI	1.18	1948–89	1980 1958	6.84 6.99	3,410 3,390	11/18/79	6.84	3,410	N	--

[1] Regulated during flood: N, no; Y, yes.

Idaho

Hydroclimatology

Idaho is located in the Western Interior of the United States, and the State's topography is marked by several mountain ranges. The climate is controlled by general atmospheric circulation over the North Pacific Ocean. Sources of moisture are the North Pacific Ocean and the subtropical Pacific Ocean. Some moisture from the Gulf of Mexico arrives from the southeast during the summer monsoon season. The fall and winter are the wettest seasons in Idaho. The summers are typically dry with occasional thunderstorms. Precipitation is dependent on topography, with mean annual precipitation ranging from 8 in. in the Snake River Plain to as much as 48 in. in the northern mountains (Paulson and others, 1991).

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Idaho is dependent on drainage area, forest cover, latitude and longitude of the centroid of the basin, and area of lakes and ponds (Jennings and others, 1994).

Significant Floods

Idaho's largest flood during 1970–89 occurred in June 1986. Streamflow-gaging stations on the Cub River and several other tributaries of the Bear River recorded record floods. The maximum discharge of the Cub River near Preston (station 10093000, table 13) exceeded the 100-year recurrence interval. The discharge of the Bear River may have been the largest since 1907. Twenty-three percent of the streamflow-gaging stations recorded significant discharges during this flood.

Nineteen percent of the streamflow-gaging stations in the State recorded significant discharges during the flood of June 1974. This flood was the largest of record for the entire Salmon River Basin. The maximum discharge on the Little Salmon River at Riggins (station 13316500, table 13) of 12,600 ft^3/s was only slightly less than the maximum discharge of the historical flood that occurred in June 1894.

In June 1976, the failure of the Teton Dam caused unprecedented flooding on the Teton and Snake Rivers in eastern Idaho. The flood caused 11 deaths, $400 million in damages, and left 25,000 people homeless (Paulson and others, 1991).

The flood of May and June 1984 caused significant discharges at 20 percent of the streamflow-gaging stations. Flooding was a result of rapid runoff from the melting of thick snowpack in eastern and central Idaho.

The location of streamflow-gaging stations in Idaho that had significant floods for 1970–89 is shown in figure 34 by station number. The specific data for each significant flood are listed in table 13. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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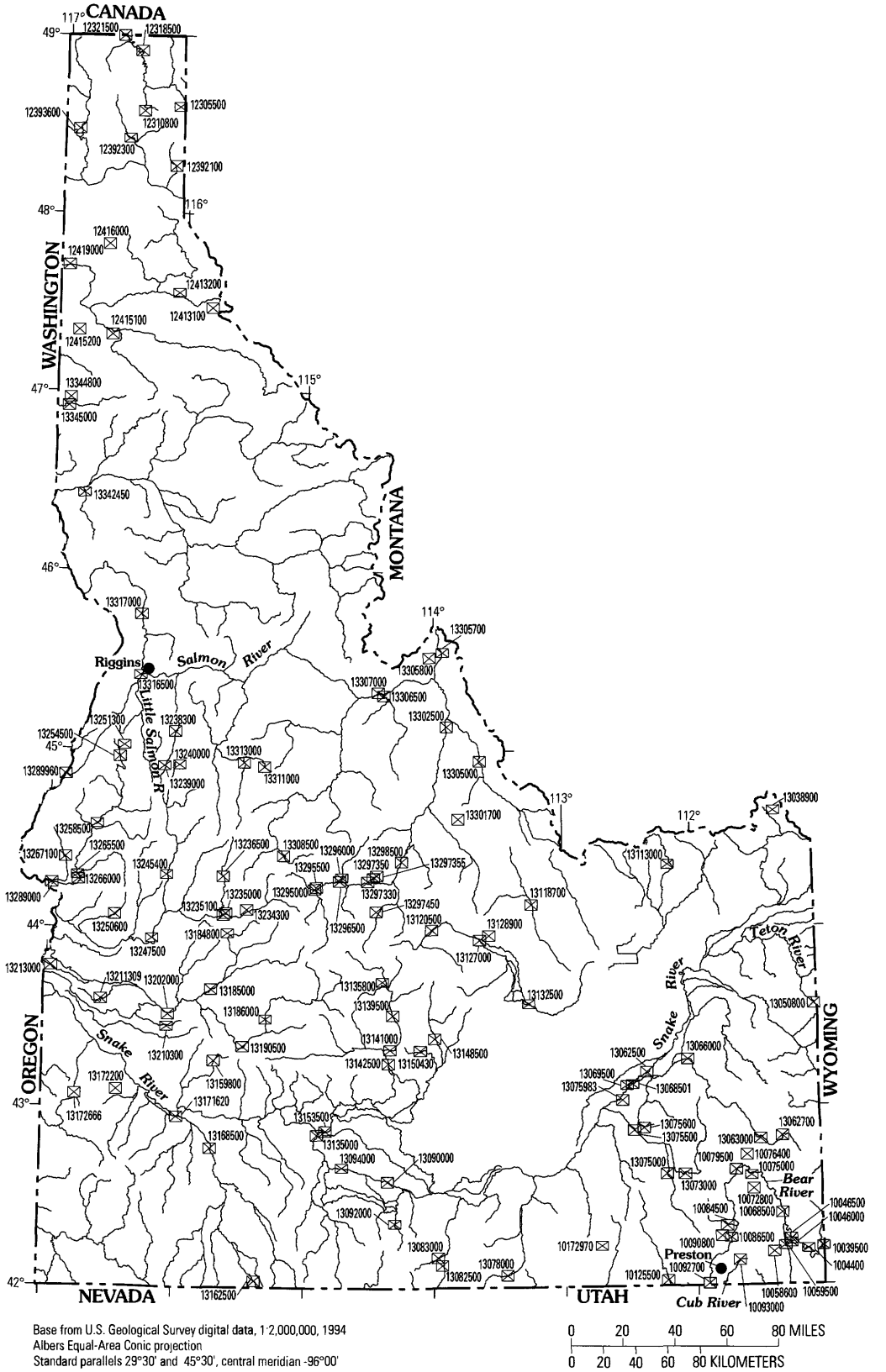

Figure 34. Location of streamflow-gaging stations with significant floods during 1970–89 for Idaho.

Table 13. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Idaho

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 34)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10039500	Bear River at Border, WY	2,486	1938–39, 1941–68, 1970–94	1983	9.69	4,880	6/07/83	9.69	4,880	Y	>50
							5/31/84	9.51	4,430	Y	>25
							6/14/86	--	4,180	Y	10–25
10044000	Bear River at Harer, ID	2,839	1914–86	1983	--	5,140	6/09/83	--	5,140	Y	>25
				1986	11.73	4,800	5/26/84	--	4,820	Y	10–25
							6/13/86	11.73	4,800	Y	10–25
10046000	Rainbow inlet canal near Dingle, ID	0.01	1977–89	1984	--	4,950	5/27/84	--	4,950	Y	--
				1980	7.42	2,950					
10046500	Bear River below Stewart Dam near Montpelier, ID	2,853	1922–92	1923	--	3,050	6/03/83	--	1,050	Y	>25
				1971	5.52	754					
10058600	Bloomington Creek at Bloomington, ID	24.0	1961–86	1986	4.47	249	6/05/86	4.47	249	N	10–25
				1971	4.66	248	6/11/71	4.66			
10059500	Bear Lake outlet canal near Paris, ID	0.01	1977–91	1986	--	3,080	6/00/86	--	3,080	Y	--
				1980	19.27	1,690					
10068500	Bear River at Pescadero, ID	3,705	1922–54, 1969–94	1986	--	4,280	6/21/86	--	4,280	Y	25–50
				1971	7.09	3,240	6/23/71				
10072800	Eightmile Creek near Soda Springs, ID	22.6	1961–86	1986	2.80	310	6/06/86	2.80	310	N	50–100
10075000	Bear River at Soda Springs, ID	3,972	1896, 1944–49, 1951–94	1896	8.40	6,a380	7/07/83	--	4,130	Y	25–50
							6/00/86	--	4,460	Y	25–50
10076400	Soda Creek at Fivemile Meadows near Soda Springs, ID	51.7	1965–86	1985	2.43	130	4/10/85	2.43	130	N	10
				1965	4.01	121	4/14/76	2.08	121	Y	5–10
10079500	Bear River at Alexander, ID	4,099	1911–12, 1914–94	1911	--	4,740	6/25/86	--	4,170	Y	10–25
				1966	4.67	2,660					
10084500	Cottonwood Creek near Cleveland, ID	61.7	1939–86	1984	4.34	1.090	5/16/75	4.01	788	N	10–25
							5/15/84	4.34	1,090	N	50–100
10086500	Bear River below UPL Company tailrace at Oneida, ID	4,456	1922–76, 1978–94	1922	--	5,480	6/13/84	--	4,790	Y	>25
				1986	9.00	5,370	12/05/84	8.45	5,090	Y	25–50
							6/13/86	9.00	5,370	Y	>50
10090800	Battle Creek tributary near Treasureton, ID	4.50	1961–71, 1973–80	1980	14.10	152	8/15/80	14.10	152	N	--
10092700	Bear River at ID-UT State line	4,881	1971–94	1984	9.20	4,870	6/14/84	9.20	4,870	Y	10–25
				1986	19.19	4,840					
10093000	Cub River near Preston, ID	31.6	1940–52, 1956–86	1986	3.95	1,070	6/18/82	2.80	840	N	10–25
							6/04/86	3.95	1,070	N	>100
10125500	Malad River at Woodruff, ID	472	1939–82	1962	8.93	2,530	1/14/80	8.78	2,330	Y	50–100
10172970	Rock Creek near Holbrook, ID	44.0	1962–71, 1973–80	1977	31.20	1,580	6/20/77	31.20	1,580	N	--
12305500	Boulder Creek near Leonia ID	56.0	1929–71, 1974–80	1974	8.16	3,140	1/16/74	8.16	3,140	N	50–100
12310800	Trail Creek at Naples, ID	16.1	1961–71, 1973–80	1974	21.80	1,100	1/16/74	21.80	1,100	N	--
12318500	Kootenai River near Copeland, ID	13,400	1925–92	1948	70.10	124,000	5/18/72	--	57,300	Y	--
				1956	71.78	112,000					
12321500	Boundary Creek near Porthill, ID	97.0	1929–94	1968	6.00	3,540	4/29/80	5.79	3,270	N	>25
12392100	Trapper Creek near Clark Fork, ID	1.12	1962–81	1981	21.86	3,100	12/26/80	21.86	3,100	N	--
12392300	Pack River near Colburn, IA	124	1959–82	1974	16.38	6,880	1/16/74	16.38	6,880	N	>100

Table 13. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Idaho—Continued

Station number (fig. 34)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12393600	Binarch Creek near Coolin, ID	10.7	1962–71, 1973–81	1974 1973	13.19 14.23	158 40	1/15/74	13.19	158	N	--
12413100	Boulder Creek at Mullan, ID	3.13	1961–71, 1973–80	1974 1971	13.60 16.08	220 114	6/03/74	13.60	220	N	--
12413200	Montgomery Creek near Kellogg, ID	4.53	1962–71	1971	5.95	155	1/31/71	5.95	155	N	--
12415100	Cherry Creek near St. Maries, ID	7.07	1961–71, 1974	1974	11.43	317	1/16/74	11.43	317	N	--
12415200	Plummer Creek tributarty at Plummer, ID	2.10	1961–81	1978 1974	10.63 11.13	165 150	2/14/77	10.63	165	N	--
12416000	Hayden Creek below North Fork near Hayden Lake, ID	22.0	1948–53, 1959, 1962–94	1982	5.69	1,280	2/21/82	5.69	1,280	N	25–50
12419000	Spokane River near Post Falls, ID	3,840	1913–94	1934 1917	-- 79.23	50,100 39,800	1/19/74	25.66	46,200	Y	35–45
13038900	Targhee Creek near Macks Inn, ID	20.8	1963–80	1970 1967	9.57 9.64	458 285	5/23/70	9.57	458	N	--
13050800	Moose Creek near Victor, ID	21.4	1962–71	1971	11.74	390	6/23/71	11.74	390	N	--
13062500	Snake River at Blackfoot, ID	9,950	1978–94	1984	10.18	28,600	5/18/84	10.18	28,600	Y	5–10
13062700	Angus Creek near Henry, ID	13.9	1963–71, 1974–80	1976	13.88	1,060	5/11/76	13.88	1,060	N	--
13063000	Blackfoot River above reservoir near Henry, ID	350	1914–25, 1968–82	1974 1976	8.60 8.68	2,150 2,120	4/26/74	8.60	2,150	Y	10–20
13066000	Blackfoot River near Shelley, ID	909	1903–31, 1933–45, 1947–51, 1976–94	1987	9.10	3,220	5/17/76 5/15/84 5/16/87	8.14 8.59 9.10	2,030 2,080 3,220	Y Y Y	10–25 10–25 >100
13068500	Blackfoot River and bypass channel near Blackfoot, ID	1,295	1913–94	1974 1962	-- 7.68	2,130 1,710	5/05/74 5/21/75 5/07/83 6/12/84	-- -- -- --	2,130 2,110 2,060 2,060	Y Y Y Y	50–100 75–85 70–80 70–80
13069500	Snake River near Blackfoot, ID	11,310	1911–94	1976	15.44	53,500	6/07/76	15.44	53,500	Y	>100
13073000	Portneuf River at Topaz, ID	570	1913–14, 1920–76, 1978–94	1962 1963	7.83 8.22	6,140 7,120	5/21/84	5.42	1,350	Y	10–25
13075000	Marsh Creek near McCammon, ID	353	1955–94	1962	13.25	1,120	1/15/80	11.98	856	Y	30–35
13075500	Portneuf River at Pocatello, ID	1,250	1897–99, 1912–16, 1918–76, 1978–94	1962 1984	11.35 13.85	2,990 2,870	5/31/83 5/17/84	11.19 13.85	1,990 2,870	Y Y	20–25 50–100
13075600	North Fork Pocatello Creek near Pocatello, ID	14.0	1961–71	1971	9.10	57	3/13/71	9.10	57	N	--
13075983	Spring Creek at Sheepskin Road near Fort Hall, ID	--	1980–94	1985 1994	4.88 4.95	530 397	4/01/85	4.88	530	N	--
13078000	Raft River above Onemile Creek near Malta, ID	412	1947–53, 1955–71, 1985–94	1971 1986	5.51 6.61	2,060 316	1/17/71	5.51	2,060	N	>100
13082500	Goose Creek above Trapper Creek near Oakley, ID	633	1912–16, 1919–94	1962	9.30	3,240	1/18/71 5/15/84	8.07 7.29	2,280 1,590	Y Y	80–90 35–40
13083000	Trapper Creek near Oakley, ID	53.7	1911–16, 1919–30, 1932–94	1941 1993	6.99 7.51	270 57	5/15/84	6.66	176	Y	40–45

Table 13. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Idaho—Continued

Station number (fig. 34)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
13090000	Snake River near Kimberly, ID	--	1924–94	1927	--	27,200	5/12/83	19.27	23,800	Y	10–15
				1965	17.32	15,800	6/14/84	19.70	25,600	Y	20–25
				1964	19.65	21,800					
13092000	Rock Creek near Rock Creek, ID	80.0	1910–13, 1939, 1944–74	1970	3.81	461	5/19/70	3.81	461	N	15–20
13094000	Snake River near Buhl, ID	--	1947–94	1984	11.90	25,300	6/14/84	11.90	25,300	Y	>25
13113000	Beaver Creek at Spencer, ID	120	1941–52, 1969–82, 1985–93	1975	9.84	1,190	5/18/75	9.84	1,190	Y	>100
13118700	Little Lost River below Wet Creek near Howe, ID	440	1961–94	1975	3.19	509	6/16/75	3.19	509	Y	20–25
				1966	3.90	123					
13120500	Big Lost River at Howell Ranch near Chilly, ID	450	1904–14, 1920–94	1967	6.02	4,420	6/11/83	5.52	3,720	Y	15–20
							6/04/86	5.48	3,860	Y	20–25
13127000	Big Lost River below MacKay Reservoir near MacKay, ID	813	1904–06, 1912–14, 1919–94	1921	5.79	2,990	6/17/74	5.93	2,790	Y	20–25
				1986	6.08	2,990	6/06/86	6.08	2,990	Y	35–40
13128900	Lower Cedar Creek above diversion near MacKay, ID	8.26	1963–73, 1980–84	1982	3.10	310	6/22/82	3.10	310	N	25–50
				1967	3.14	194					
13132500	Big Lost River near Arco, ID	1,410	1947–60, 1965–94	1967	7.68	1,890	6/09/86	7.26	1,860	Y	15–20
13135000	Snake River below Lower Salmon Falls near Hagerman, ID	--	1938–94	1964	15.73	31,200	4/27/71	15.58	30,400	Y	15–20
				1984	16.29	30,700	6/13/84	16.29	30,700	Y	15–20
13135800	Adams Gulch near Ketchum, ID	10.9	1962–71	1971	3.29	124	5/13/71	3.29	124	N	--
13139500	Big Wood River at Hailey, ID	640	1915–94	1983	7.93	6,150	6/16/74	7.20	4,970	Y	15–20
							5/30/83	7.93	6,150	Y	50–60
							5/30/86	6.82	5,300	Y	20–25
13141000	Big Wood River near Bellevue, ID	824	1912–94	1983	7.61	5,310	5/30/83	7.61	5,310	Y	70–80
				1986	8.48	4,610	6/04/86	8.48	4,610	Y	30–35
13142500	Big Wood River below Magic Dam near Richfield, ID	1,600	1911–94	1952	15.68	10,000	5/31/83	10.69	6,760	Y	20–25
							4/16/84	10.07	5,870	Y	15–20
13148500	Little Wood River near Carey, ID	312	1927–94	1982	16.74	20,000	4/24/82	16.74	20,000	Y	>100
13150430	Silver Creek at Sportsman Access near Picabo, ID	70.0	1975–94	1985	8.82	566	4/06/76	8.35	502	N	5–10
13153500	Malad River near Bliss, ID	--	1899, 1985–94	1986	--	4,150	2/18/86	--	4,150	Y	--
				1899	4.00	3,620					
13159800	Canyon Creek at Oregon Trail crossing near Mountain Home, ID	--	1984–94	1986	5.09	1,420	2/23/86	5.09	1,420	Y	--
13162500	East Fork Jarbidge River near Three Creek, ID	84.6	1929–32, 1954–71	1971	6.33	798	6/22/71	6.33	798	N	10–25
13168500	Bruneau River near Hot Spring, ID	2,630	1910–14, 1944–94	1984	13.03	6,860	5/15/84	13.03	6,860	Y	>50
13171620	Snake River below CJ Strike Dam near Grand View, ID	40,800	1985–94	1986	12.80	34,400	2/19/86	12.80	34,400	Y	--
13172200	Fossil Creek near Oreana, ID	19.70	1961–71, 1974–76, 1978–80	1979	7.95	2,860	8/13/79	7.95	2,860	N	--
				1965	16.88	195					
13172666	West Fork Reynolds Creek near Reynolds, ID	0.20	1965–78	1975	--	143	6/02/75	--	14.3	N	--

Table 13. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Idaho—Continued

Station number (fig. 34)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
13184800	Beaver Creek near Lowman, ID	9.30	1962–71	1971	9.66	195	5/4/71	9.66	195	N	--
13185000	Boise River near Twin Springs, ID	830	1871–72, 1911–94	1872 1965	-- 12.20	22,700 18,800	5/30/83	10.20	11,200	N	10
13186000	South Fork Boise River near Featherville, ID	635	1943, 1945–94	1983 1956	7.87 8.62	7,960 7,580	5/30/83	7.87	7,960	N	10–30
13190500	South Fork Boise River at Anderson Ranch Dam, ID	982	1943–94	1956 1986	10.56 10.77	9,850 9,530	6/01/86	10.77	9,530	Y	40–45
13202000	Boise River near Boise, ID	2,680	1895–1916, 1955–94	1896 1978	-- --	35,500 7,240	6/13/83	--	13,200	Y	<2
13210300	Bryans Run near Boise, ID	7.94	1961–76, 1978–80	1971	11.66	420	1/16/71	11.66	420	N	--
13211309	Indian Creek above wastewater plant near Nampa, ID	--	1982–94	1986 1991	2.52 2.98	174 74	4/12/86	2.52	174	Y	--
13213000	Boise River near Parma, ID	3,970	1972–94	1983	13.83	9,240	6/14/83	13.83	9,240	Y	5–10
13234300	Fivemile Creek near Lowman, ID	7.80	1962–71, 1973–80	1977	21.68	600	6/07/77	21.68	600	N	--
13235000	South Fork Payette River at Lowman, ID	456	1941–94	1974	8.36	8,980	6/11/72 6/16/74 6/01/86	7.49 8.36 7.58	7,190 8,980 7,290	N N N	20–25 >100 10–25
13235100	Rock Creek at Lowman, ID	14.6	1962–71	1971 1969	1.89 1.96	400 270	5/13/71	1.89	400	N	--
13236500	Deadwood River below Deadwood Reservior near Lowman, ID	112	1927–94	1953 1983	6.56 9.09	2,580 2,440	6/01/83	9.09	2,440	Y	25
13238300	Deep Creek near McCall, ID	4.38	1962–71	1970	16.07	540	6/26/71	16.02	540	N	--
13239000	North Fork Payette River at McCall, ID	144	1909–17, 1920–94	1974	8.16	4,950	6/19/74 3/01/86	8.16 7.37	4,950 4,040	Y Y	>100 10–15
13240000	Lake Fork Payette River above Jumbo Creek near McCall, ID	48.9	1946–94	1971 1948	9.15 9.19	2,770 2,600	6/26/71 6/16/74	9.15 8.96	2,770 2,710	Y Y	>100 >100
13245400	Tripod Creek at Smiths Ferry, ID	8.63	1962–71, 1973–80	1980	6.95	185	4/24/80	6.95	185	N	--
13247500	Payette River near Horseshoe Bend, ID	2,230	1906–16, 1920–94	1965	16.35	27,000	6/27/71	14.43	20,400	Y	>10
13250600	Big Willow Creek near Emmett, ID	47.4	1957, 1962–82	1982	8.70	2,570	2/16/82	8.70	2,570	N	25–50
13251300	West Branch Weiser River near Tamarack, ID	3.96	1960–77	1971 1975	4.56 4.64	87 83	5/04/71	4.56	87	N	10–25
13254500	Lost Creek near Tamarack, ID	29.4	1910–13, 1921, 1924–25, 1927–69, 1980–82	1921	4.29	688	4/29/80	3.90	671	Y	10–25
13258500	Weiser River near Cambridge, ID	605	1939–94	1956 1982	-- 12.83	10,100 8,400	1/17/74	9.57	8,410	Y	10–15
13265500	Crane Creek at mouth near Weiser, ID	288	1921–73, 1981–82	1982	7.30	4,800	1/27/70 2/17/82	6.24 7.30	3,000 4,800	Y Y	-- --
13266000	Weiser River near Weiser, ID	1,460	1890–91, 1895–1904, 1911–14, 1953–94	1993 1974	11.96 14.60	21,700 13,400	2/22/82	12.04	21,000	Y	60–70

Table 13. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Idaho—Continued

Station number (fig. 34)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
13267100	Deer Creek near Midvale, ID	4.60	1962–71	1970	16.50	156	1/27/70	16.50	156	N	--
13269000	Snake River at Weiser, ID	69,200	1910–94	1910 1952	-- 14.67	120,000 84,500	4/20/84	13.66	80,000	Y	15–20
13289960	Wildhorse River at Brownlee Dam, ID	177	1979–94	1986 1983	9.07 9.12	3,590 2,290	3/08/86	9.07	3,590	N	30–40
13295000	Valley Creek at Stanley, ID	147	1911–13, 1921–72, 1974, 1993–94	1956 1921	3.92 4.40	2,000 1,850	6/26/71	3.62	1,650	N	15–20
13295500	Salmon River below Valley Creek at Stanley, ID	501	1926–60, 1974	1974	4.95	5,650	6/17/74	4.95	5,650	N	40–50
13296000	Yankee Fork Salmon River near Clayton, ID	195	1921–48, 1974	1974	11.50	4,900	6/17/74	11.50	4,900	N	>100
13296500	Salmon River below Yankee Fork near Clayton, ID	802	1922–91	1974	11.86	10,500	6/08/72 6/17/74 6/01/86	10.59 11.86 10.55	8,740 10,500 8,540	N N N	15–20 60–70 15–20
13297330	Thompson Creek near Clayton, ID	29.1	1973–94	1974 1982	5.61 5.74	332 329	6/16/74	5.61	332	N	10–20
13297350	Bruno Creek near Clayton, ID	6.29	1971–94	1972 1986	2.45 3.21	42 22	5/31/72	2.45	42	N	10–20
13297355	Squaw Creek below Bruno Creek near Clayton, ID	79.0	1973–94	1986 1973	6.31 7.09	755 266	5/29/86	6.31	755	N	10–25
13297450	Little Boulder Creek near Clayton, ID	18.4	1970–86	1972	5.84	570	6/01/72	5.84	570	N	25–50
13298500	Salmon River near Challis, ID	1,800	1929–41, 1943–76	1974	11.40	17,300	6/17/74	11.40	17,300	Y	>100
13301700	Morse Creek above diversion near May, ID	18.0	1962–71, 1973–76, 1978–80	1978 1975	5.49 6.49	275 270	6/09/78	5.49	275	N	--
13302500	Salmon River at Salmon, ID	3,760	1912–16, 1920–94	1974	8.67	17,700	6/08/72 6/17/74	7.77 8.67	16,200 17,700	N N	20–25 30–35
13305000	Lemhi River near Lemhi, ID	895	1956–94	1984	7.19	2,430	7/06/75 6/21/84	6.72 7.19	1,990 2,430	Y Y	15–20 >50
13305700	Dahlonega Creek at Gibbonsville, ID	32.0	1962–71	1971	3.73	235	5/13/71	3.73	235	N	--
13305800	Hughes Creek near North Fork, ID	15.7	1962–80	1974 1976	3.74 6.20	250 --	1/16/74	3.74	250	N	--
13306500	Panther Creek near Shoup, ID	529	1945–77	1974	5.95	3,050	5/31/71 6/16/74	5.86 5.95	3,030 3,050	N N	10–15 10–15
13307000	Salmon River near Shoup, ID	6,270	1945–81	1974	13.13	25,700	6/18/74	13.13	25,700	N	35–40
13308500	Middle Fork Salmon River near Capehorn, ID	138	1929–72, 1974	1974	7.00	3,320	6/17/74	7.00	3,320	N	>100
13311000	East Fork of South Fork Salmon River at Stibnite, ID	19.6	1929–42, 1983–94	1986	7.11	394	5/31/86	7.11	394	N	25–50
13313000	Johnson Creek at Yellow Pine, ID	213	1929–94	1974	8.32	6,230	6/17/74	8.32	6,230	Y	>100
13316500	Little Salmon River at Riggins, ID	576	1948, 1951–54, 1957–94	1974	11.05	12,600	6/17/74	11.05	12,600	Y	>100
13317000	Salmon River at White Bird, ID	13,550	1894, 1911–17, 1920–94	1974 1971	35.81 39.90	130,000 90,000	6/17/74	35.81	130,000	N	50–100

Table 13. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Idaho—Continued

Station number (fig. 34)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
13342450	Lapwai Creek near Lapwai, ID	235	1975–94	1986	10.22	3,380	2/23/86	10.22	3,380	N	25–30
13344800	Deep Creek near Potlatch, ID	36.6	1961–71, 1974–81	1974	16.22	2,330	1/16/74	16.22	2,330	N	--
13345000	Palouse River near Potlatch, ID	317	1915–19, 1967–94	1974	21.08	10,100	1/16/74	21.08	10,100	N	75–85
							2/19/82	18.32	6,760	N	10–15

[1] Regulated during flood: N, no; Y, yes.

Illinois

Hydroclimatology

Illinois is located in the midcontinent interior and is affected by various weather patterns during the year. Moisture sources include the Gulf of Mexico, the Pacific Ocean, and, to a small degree, Lake Michigan. Frontal systems are quite active in Illinois as warm humid airmasses from the Gulf of Mexico are displaced by continental polar air from Canada or maritime polar air from the North Pacific Ocean. Winter storms usually become stronger as they cross the State and intensify as a result of temperature differences across the polar front. Mean annual precipitation ranges from 35 in. in the north to 46 in. in the south. Areas within 10 to 20 mi of Lake Michigan are affected by lake-effect snowfall in the winter and have greater annual values of precipitation. During the winter, floods can be caused by ice jams that force localized flooding. Thunderstorms associated with frontal systems and squall lines are responsible for flash flooding in the State during the summer months. Rainfall rates of 16 in. in 12 hours have been recorded from these systems. Persistent upper atmospheric patterns can result in repeating storm systems that can lead to regional flooding.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Illinois is dependent on drainage area, main-channel slope, and 2-year, 24-hour rainfall (Jennings and others, 1994).

Significant Floods

Twenty percent of the streamflow-gaging stations in the State recorded significant discharges during the flood of December 1982. Rainfall in the Illinois River Basin totaling 3 to 5 in. on wet soil caused the flooding. This flood was responsible for eight deaths. During February to March 1985, excessive rain on snow in northern Illinois caused $10 million in damages. From September 20 to October 3, 1986, excessive rains in northern Illinois resulted in four deaths and $50 million in damages. Parts of Chicago were inundated by as much as 9.4 in. of rain on August 13 and 14, 1987, that resulted in four deaths and $77.6 million in damages (Paulson and others, 1991).

The location of streamflow-gaging stations in Illinois that had significant floods for 1970–89 is shown in figure 35 by station number. The specific data for each significant flood are listed in table 14. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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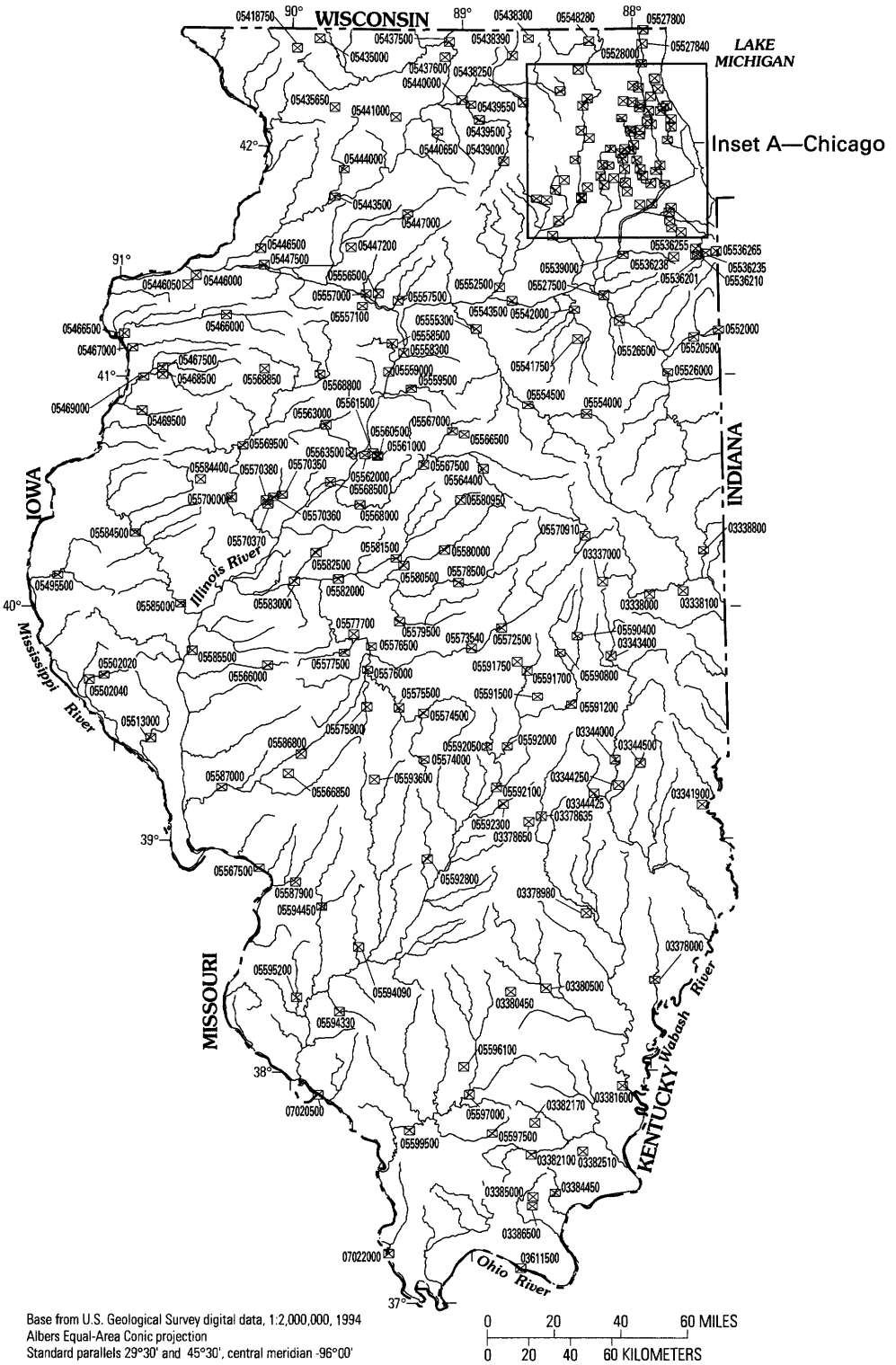
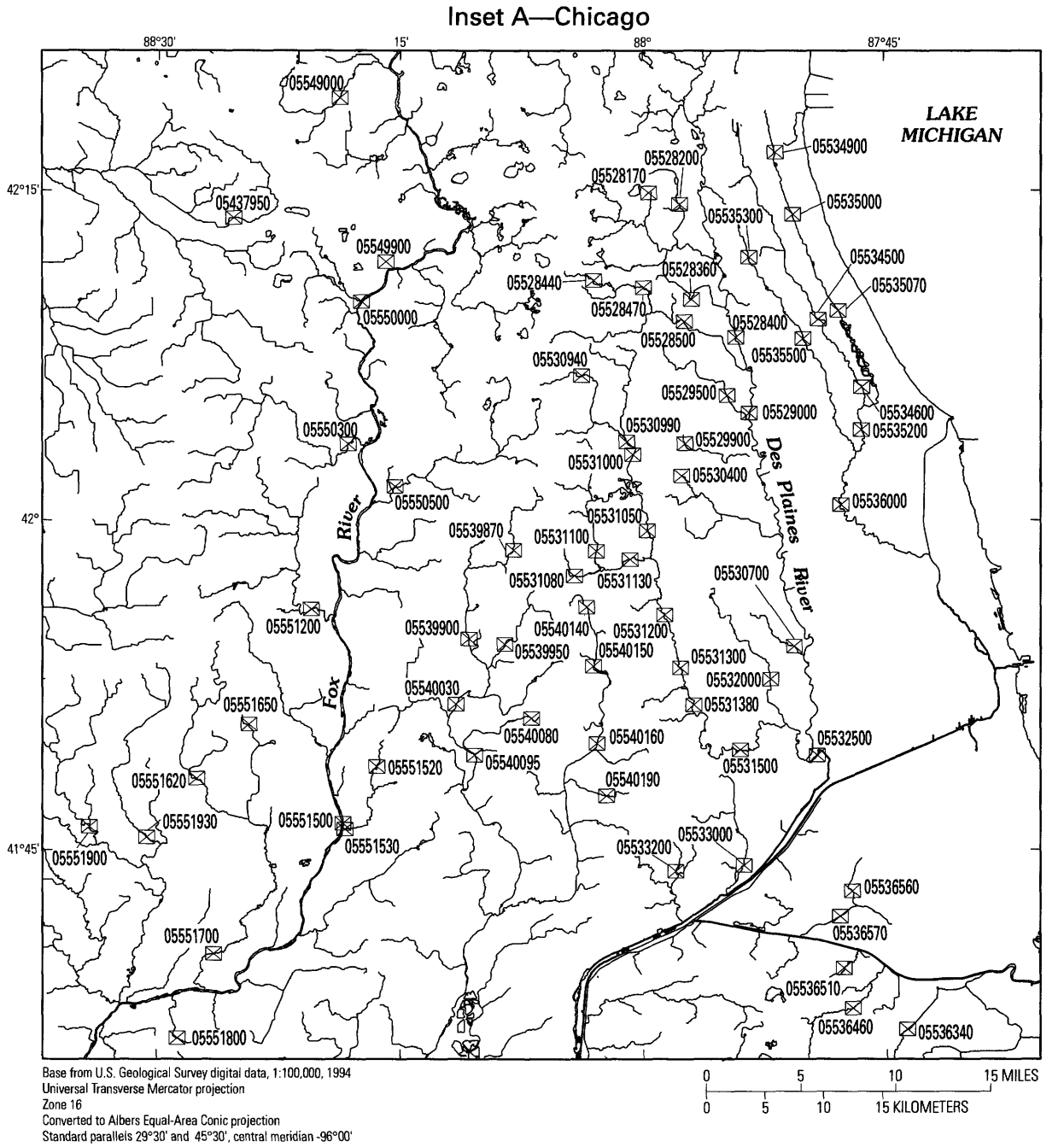
Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.



EXPLANATION

03386500 ⊠ **Streamflow-gaging station and number**

Figure 35. Location of streamflow-gaging stations with significant floods during 1970–89 for Illinois.



EXPLANATION

05533200 ⊠ **Streamflow-gaging station and number**

Figure 35. Location of streamflow-gaging stations with significant floods during 1970–89 for Illinois—Continued.

Table 14. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Illinois

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
Station number (fig. 35)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03337000	Boneyard Creek at Urbana, IL	4.46	1948–96	1979 1993	8.94 9.93	982 905	7/30/79	8.94	982	Y	--
03338000	Salt Fork near Homer, IL	340	1939, 1945–73, 1975–82	1964 1939	15.69 18.60	10,100 --	3/04/79	15.48	9,200	N	25–50
03338100	Salt Fork tributary near Catlin, IL	2.20	1959–80	1980	15.00	640	6/02/80	15.00	640	N	--
03338800	North Fork Vermilion River tributary near Danville, IL	1.31	1956–76	1974	26.29	1,600	5/19/74	26.29	1,600	N	--
03341900	Raccoon Creek tributary near Annapolis, IL	0.04	1956–80	1974 1958	16.84 17.86	48 43	9/29/74	16.84	48	N	--
03343400	Embarras River near Camargo, IL	186	1961–96	1994	17.33	8,040	6/23/74 3/04/79	16.72 16.38	6,230 6,240	N N	10–25 10–25
03344000	Embarras River near Diona, IL	919	1939–40, 1943, 1945–47, 1971–92	1985	22.90	20,400	2/24/85	22.90	20,400	N	10–25
03344250	Embarras River tributary near Greenup, IL	0.08	1956–80	1974	12.83	68	5/15/74	12.83	68	N	--
03344425	Muddy Creek tributary at Woodbury, IL	0.07	1959–76	1974	16.55	112	9/29/74	16.55	112	N	--
03344500	Range Creek near Casey, IL	7.61	1951–91	1961	12.50	3,500	9/14/89	12.14	2,990	N	20–25
03378000	Bonpas Creek at Browns, IL	228	1941–96	1961	26.04	7,500	5/03/83	23.43	6,040	N	20–25
03378635	Little Wabash River near Effingham, IL	240	1967–96	1996	21.19	17,800	4/20/70	19.95	10,300	Y	10–20
03378650	Second Creek tributary at Keptown, IL	1.62	1956–72	1970	20.86	930	6/16/70	20.86	930	N	--
03378980	Little Wabash River tributary at Clay City, IL	0.43	1959–80	1971	18.82	409	6/19/71	18.82	409	N	--
03380450	White Feather Creek near Marlow, IL	0.43	1956–80	1975	15.01	323	4/24/75	15.01	323	N	--
03380500	Skillet Fork at Wayne City, IL	464	1909–12, 1915–21, 1929–96	1990 1961	25.75 25.80	59,400 51,000	11/20/85	24.60	32,900	N	30–35
03381600	Little Wabash River tributary near New Haven, IL	0.16	1960–76	1974	18.18	484	8/03/74	18.18	484	N	--
03382100	South Fork Saline River near Carrier Mills, IL	147	1966–96	1982	16.32	5,160	1/31/82	16.32	5,160	N	30–40
03382170	Brushy Creek near Harco, IL	13.3	1969–82	1977	14.78	2,590	3/28/77	14.78	2,590	N	>50
03382510	Eagle Creek near Equality, IL	8.51	1967–82	1973	11.25	668	5/27/73	11.25	668	N	10–25
03384450	Lusk Creek near Eddyville, IL	42.9	1968–96	1985	27.78	16,100	8/24/85	27.78	16,100	N	>100
03385000	Hayes Creek at Glendale, IL	19.1	1950–95	1985	19.14	9,450	5/27/73 8/24/85	17.33 19.14	6,400 9,450	N N	30–40 >100
03386500	Sugar Creek near Dixon Springs, IL	9.93	1950–81	1973	9.68	6,290	5/27/73	9.68	6,290	Y	--

Table 14. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Illinois—Continued

Station number (fig. 35)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03611500	Ohio River at Metropolis, IL	203,000	1913, 1928–96	1937 1937	-- 66.60	1,850,000 --	4/01/75	58.63	1,190,000	Y	10–15
05418750	South Fork Apple River near Nora, IL	1.93	1961–80	1974	17.93	520	4/29/74	17.93	520	N	--
05435000	Cedar Creek near Winslow, IL	1.31	1952–76	1974	6.02	698	6/21/74	6.02	698	N	15–25
05435650	Lost Creek tributary near Shannon, IL	1.95	1961–76	1974	16.92	660	4/29/74	16.92	660	N	--
05437500	Rock River at Rockton, IL	6,363	1904–08, 1915–19, 1937, 1940–96	1916 1975	-- 15.54	32,500 30,000	3/25/75	15.54	30,000	N	30–35
05437600	Rock River tributary near Rockton, IL	2.21	1961–76	1974	15.77	308	6/08/74	15.77	308	N	--
05437950	Kishwaukee River near Huntley, IL	14.4	1965–78	1972	3.07	192	9/18/72	3.07	192	N	--
05438250	Coon Creek at Riley, IL	85.1	1962–91	1978	9.73	5,090	4/22/73 7/02/78	8.46 9.73	3,020 5,090	N N	10–20 >100
05438300	Lawrence Creek tributary near Harvard, IL	0.84	1961–80	1972	14.07	180	4/21/72	14.07	180	N	--
05438390	Piscasaw Creek below Mokeler Creek near Capron, IL	88.1	1970–79	1973	4.47	4,000	4/22/73	4.47	4,000	N	--
05439000	South Branch Kishwaukee River at Dekalb, IL	77.7	1926–33, 1980–96	1983	15.80	3,500	7/02/83	15.80	3,500	N	>100
05439500	South Branch Kishwaukee River near Fairdale, IL	387	1937, 1940–96	1996	13.37	25,400	4/22/73 3/19/79	10.22 10.45	8,460 7,600	N N	10–15 5–10
05439550	South Branch Kishwaukee River tributary near Irene, IL	1.71	1959–76	1971	15.63	452	3/14/71	15.63	452	N	--
05440000	Kishwaukee River near Perryville, IL	1,099	1938, 1940–96	1996 1938	23.54 23.85	24,200 --	3/21/79	20.48	16,700	N	15
05440650	Stillman Creek tributary near Holcomb, IL	1.00	1959–76	1971	15.92	297	3/18/71	15.92	297	N	--
05441000	Leaf River at Leaf River, IL	103	1938, 1940–82	1972 1938	15.07 15.90	7,950 --	9/13/72 4/22/73	15.07 14.90	7,950 7,600	N N	15–25 15–25
05443500	Rock River at Como, IL	8,753	1915–76, 1978–86, 1990–96	1973 1938	15.66 17.51	59,700 --	4/21/73	15.66	59,700	N	>100
05444000	Elkhorn Creek near Penrose, IL	146	1938, 1940–96	1974 1938	16.53 19.60	6,770 --	8/25/72 4/21/73 5/17/74	15.94 15.74 16.53	6,360 6,220 6,770	N N N	25–30 20–25 40–45
05446500	Rock River near Joslin, IL	9,549	1940–96	1993	18.35	46,500	3/22/79	17.81	41,600	N	10–15
05447000	Green River at Amboy, IL	201	1940–76, 1978–82	1981 1955	11.79 12.26	7,600 6,120	6/13/81	11.79	7,600	N	>100
05447200	Normandy Ditch at Normandy, IL	5.23	1956–71	1971 1965	13.53 14.36	114 90	3/15/71	13.53	114	N	--
05447500	Green River near Geneseo, IL	1,003	1936–96	1974 1969	16.75 18.59	12,100 8,000	4/22/73 6/22/74 3/19/79	16.00 16.75 14.19	10,900 12,100 12,000	N N N	20–25 50 45–50
05448000	Mill Creek at Milan, IL	62.4	1936, 1940–86, 1990–96	1973	12.65	9,300	4/22/73	12.65	9,300	N	35–40
05448050	Sand Creek near Milan, IL	0.22	1956–80	1980	22.20	168	5/29/80	22.20	168	N	--
05466000	Edwards River near Orion, IL	155	1924, 1941–96	1951 1924	13.41 20.20	8,910 --	6/23/74 8/15/81	15.52 15.44	5,760 5,510	N N	15–20 10–15

Table 14. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Illinois—Continued

Station number (fig. 35)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05466500	Edwards River near New Boston, IL	445	1935–96	1973	23.33	18,000	4/22/73	23.33	18,000	N	>100
05467000	Pope Creek near Keithsburg, IL	174	1935–86, 1991–96	1973 1993	27.88 29.08	8,900 7,270	4/22/73 7/07/82	27.88 28.36	8,900 7,200	N N	>100 45–50
05467500	Henderson Creek near Little York, IL	151	1924, 1941–58, 1960–82	1982 1924	19.78 23.20	23,400 --	7/07/82	19.78	23,400	N	>100
05468500	Cedar Creek at Little York, IL	132	1924, 1941–78, 1980–96	1993	18.76	18,100	7/07/82 3/04/85	17.34 16.87	12,600 8,380	N N	40–50 15–20
05469000	Henderson Creek near Oquawka, IL	432	1924, 1935–96	1982 1993	31.05 32.65	34,600 30,800	7/08/82	31.05	34,600	N	>100
05469500	South Henderson Creek at Biggsville, IL	82.9	1924, 1940–76, 1978–82	1982 1973	-- 20.51	10,500 9,100	4/21/73 7/07/82	20.51 --	9,100 10,500	N N	50–75 75–100
05495500	Bear Creek near Marcelline, IL	349	1944–96	1985 1996	28.38 --	29,500 35,500	3/04/85	28.38	29,500	N	50–75
05502020	Hadley Creek near Barry, IL	40.9	1956–90, 1992–93	1973	15.31	9,000	4/21/73 4/11/79	15.31 12.89	9,000 9,000	N N	25 25
05502040	Hadley Creek at Kinderhook, IL	72.7	1939–81, 1983–86	1944 1939	15.91 17.93	15,000 --	5/01/83	12.95	13,600	N	10–20
05513000	Bay Creek at Nebo, IL	148	1916, 1940–86	1946	19.31	23,500	4/11/79	17.75	18,400	N	15–25
05520000	Singleton Ditch at Illinoi, IL	220	1945–77	1976	10.51	3,610	1/10/75 3/05/76	10.06 10.51	2,150 3,610	N N	5–10 >100
05520500	Kankakee River at Momence, IL	2,294	1915–96	1979	10.51	16,000	3/05/76 3/06/79 3/20/82	6.44 10.51 6.03	11,900 16,000 11,000	N N N	40–50 >100 20–25
05526000	Iroquois River near Chebanse, IL	2,091	1913, 1924–96	1913 1979	21.60 21.68	34,000 27,000	3/07/79	21.68	27,000	N	30–35
05526500	Terry Creek near Custer Park, IL	12.1	1950–75	1970 1957	9.32 11.15	1,710 545	5/14/70	9.32	1,710	N	>100
05527500	Kankakee River near Wilmington, IL	5,150	1883, 1887, 1915–96	1957 1883	11.40 16.73	75,900 --	5/15/70 12/03/82	9.40 8.53	54,500 62,700	N N	20–25 40–50
05527800	Des Plaines River at Russell, IL	123	1960–66, 1968–96	1979 1976	9.69 10.75	2,120 1,990	3/06/76 3/21/79	10.75 9.69	1,990 2,120	N N	15–25 15–25
05527840	Des Plaines River at Wadsworth, IL	145	1962–76	1976	5.32	2,170	3/06/76	5.32	2,170	N	--
05528000	Des Plaines River near Gurnee, IL	232	1946–58, 1960–96	1986	11.95	3,530	9/27/86	11.95	3,530	N	75–100
05528170	Diamond Lake drain at Mundelein, IL	2.57	1961–76	1971	3.53	110	2/19/71	3.53	110	N	--
05528200	Hawthorn drainage ditch near Mundelein, IL	5.88	1961–76	1970	3.58	543	6/02/70	3.58	543	N	--
05528360	Aptakisic Creek at Aptakisic, IL	2.85	1961–76	1972	1.09	390	6/20/72	1.09	390	N	--
05528400	Des Plaines River at Wheeling, IL	325	1962–63, 1967, 1969–70, 1972–77	1970	4.14	3,240	6/03/70	4.14	3,240	N	--
05528440	Buffalo Creek near Lake Zurich, IL	1.03	1961–76	1972	2.21	203	8/25/72	2.21	203	N	--
05528470	Buffalo Creek at Long Grove, IL	7.88	1961–76	1972	3.03	539	8/25/72	3.03	539	N	--

Table 14. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Illinois—Continued

Station number (fig. 35)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05528500	Buffalo Creek near Wheeling, IL	19.6	1953–96	1982	7.94	887	8/25/72	7.27	802	N	15–25
							7/22/82	7.94	887	N	40–50
05529000	Des Plaines River near Des Plaines, IL	360	1938, 1941–96	1938	9.00	5,000	10/01/86	10.88	4,900	N	50–75
				1987	10.88	4,900					
05529500	McDonald Creek near Mount Prospect, IL	7.93	1953–96	1987	8.08	806	6/20/72	7.58	664	N	15–25
							8/14/87	8.08	806	N	40–50
05529900	Weller Creek at Mount Prospect, IL	9.02	1961–77, 1979	1972	7.21	1,190	8/26/72	7.21	1,190	N	--
05530400	Higgins Creek near Mount Prospect, IL	2.24	1961–79	1972	3.60	463	8/26/72	3.60	463	N	--
05530700	Silver Creek at Melrose Park, IL	11.2	1955, 1961–80	1972	3.57	752	9/18/72	3.57	752	N	--
05530940	Salt Creek at Palatine, IL	6.26	1961–76, 1978–80	1972	3.27	513	8/26/72	3.27	513	N	--
05530990	Salt Creek at Rolling Meadows, IL	30.5	1974–96	1987	14.03	1,650	8/14/87	14.03	1,650	N	50–100
05531000	Salt Creek near Arlington Heights, IL	32.1	1951–76	1967	10.15	1,060	8/26/72	--	1,060	N	15–25
05531050	Salt Creek near Wood Dale, IL	53.6	1955, 1957, 1960–79	1979	5.19	1,740	3/04/79	5.19	1,740	N	--
05531080	Spring Brook at Bloomingdale, IL	5.63	1961–79	1972	6.57	645	8/26/72	6.57	645	N	--
05531100	Meacham Creek at Medinah, IL	3.94	1956–72, 1978–79	1972	13.35	256	8/26/72	13.35	256	N	--
05531130	Spring Brook at Walnut Avenue at Itasca, IL	14.2	1961–76, 1978–79	1972	3.57	770	8/26/72	3.57	770	N	--
05531200	Salt Creek at Addison, IL	83.7	1948, 1950, 1955, 1957, 1960–76	1972	7.62	2,110	8/27/72	7.62	2,110	N	--
05531300	Salt Creek at Elmhurst, IL	91.2	1948, 1950, 1955, 1957, 1960–80, 1989–96	1972	7.27	2,230	8/27/72	7.27	2,230	N	>100
				1989	13.56	1,580	8/06/89	13.56	1,580	N	15–25
05531380	Salt Creek at Oak Brook, IL	101	1948, 1950, 1955, 1957, 1960–76	1972	4.48	1,790	8/27/72	4.48	1,790	N	--
05531500	Salt Creek at Western Springs, IL	115	1946–96	1987	10.54	3,540	8/17/87	10.54	3,540	N	>100
05532000	Addison Creek at Bellwood, IL	17.9	1952–96	1987	12.84	1,120	8/14/87	12.84	1,120	N	>100
05532500	Des Plaines River at Riverside, IL	630	1914–96	1987	9.90	9,770	8/15/87	9.90	9,770	N	>100
05533000	Flag Creek near Willow Springs, IL	16.5	1951–96	1961	13.71	2,680	6/13/76	10.22	2,230	N	25–35
05533200	Sawmill Creek tributary near Tiedtville, IL	2.33	1961–77, 1979	1976	2.66	315	6/13/76	2.66	315	N	--
05534500	North Branch Chicago River at Deerfield, IL	19.7	1953–96	1987	11.52	933	7/22/82	10.93	756	N	30–40
							8/14/87	11.52	933	N	>100
05534600	North Branch Chicago River at Northfield, IL	23.8	1960–76, 1978–80	1976	2.33	481	4/25/76	2.33	481	N	--
				1978	1.26	307					
05534900	Skokie River at Lake Bluff, IL	8.17	1962–76	1976	3.22	395	3/04/76	3.22	395	N	--
05535000	Skokie River at Lake Forest, IL	13.0	1952–96	1986	8.27	492	7/22/82	8.35	435	N	25–35
				1982	8.35	435	9/26/86	8.27	492	N	75–100

Table 14. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Illinois—Continued

Station number (fig. 35)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05535070	Skokie River near Highland Park, IL	21.1	1967–96	1987	9.09	895	8/14/87	9.09	895	N	75–100
05535200	North Branch Chicago River at Glenview, IL	60.5	1960–77	1976	4.53	1,200	4/25/76	4.53	1,200	N	--
05535300	West Fork of North Branch Chicago River at Bannockburn, IL	2.55	1961–76	1972	4.44	387	6/20/72	4.44	387	N	--
05535500	West Fork of North Branch Chicago River at Northbrook, IL	11.5	1953–96	1987	10.10	1,190	7/22/82 8/14/87	9.66 10.10	1,070 1,190	N N	40–50 100
05536000	North Branch Chicago River at Niles, IL	100	1951–96	1987	11.35	2,590	8/14/87	11.35	2,590	N	>100
05536201	Thorn Creek at Park Forest, IL	6.28	1955, 1957, 1962–78	1974	5.74	1,460	6/06/74	5.74	1,460	N	--
05536210	Thorn Creek near Chicago Heights, IL	17.2	1965–79	1974	8.31	2,220	6/06/74	8.31	2,220	N	25–50
05536235	Deer Creek near Chicago Heights, IL	23.1	1948–96	1957 1991	11.75 11.79	1,380 809	6/13/81	11.49	848	N	10–20
05536238	Butterfield Creek near Lincoln Estates, IL	1.77	1961–79	1979	4.55	573	3/04/79	4.55	573	N	--
05536255	Butterfield Creek at Flossmoor, IL	23.5	1948–96	1996	12.59	2,220	5/22/82	11.97	2,160	N	25–35
05536265	Lansing Ditch near Lansing, IL	8.84	1948–96	1948 1955	9.24 10.18	461 302	6/13/81	9.35	204	N	2–5
05536340	Midlothian Creek at Oak Forest, IL	12.60	1951–96	1973 1957	7.67 9.00	627 550	4/22/73	7.67	627	N	50–100
05536460	Tinley Creek near Oak Forest, IL	7.95	1961–79	1970 1978	3.99 4.67	999 853	4/30/70	3.99	999	N	--
05536510	Navajo Creek at Palos Heights, IL	1.69	1961–79	1976	4.35	434	7/21/76	4.35	434	N	--
05536560	Melvina Ditch near Oak Lawn, IL	5.58	1962–80	1976	5.62	408	6/13/76	5.62	408	N	--
05536570	Stony Creek (West) at Worth, IL	18.0	1962–76, 1979	1976	10.52	1,570	6/13/76	10.52	1,570	N	--
05539000	Hickory Creek at Joliet, IL	107	1902, 1926, 1942, 1945–96	1981	14.90	17,300	6/13/81	14.90	17,300	N	>100
05539870	West Branch Du Page River at Ontarioville, IL	10.1	1961–79	1972	4.66	630	8/26/72	4.66	630	N	--
05539900	West Branch Du Page River near West Chicago, IL	28.5	1961–96	1983 1987	10.44 10.63	984 958	12/03/82 8/14/87	10.44 10.63	984 958	N N	35–45 30–40
05539950	Klein Creek at Carol Stream, IL	8.81	1961–79	1972	3.91	888	8/26/72	3.91	888	N	--
05540030	West Branch Du Page River at West Chicago, IL	60.2	1955, 1961–79	1972	2.52	1,670	8/26/72	2.52	1,670	N	--
05540080	Spring Brook at Wheaton, IL	2.10	1961–79	1972	7.10	552	8/26/72	7.10	552	N	--
05540095	West Branch Du Page River near Warrenville, IL	90.4	1969–96	1996	6.41	3,470	8/15/87	5.85	3,050	N	50–100
05540140	East Branch Du Page River near Bloomingdale, IL	2.36	1961–79	1972	2.25	204	8/26/72	2.25	204	N	--

Table 14. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Illinois—Continued

Station number (fig. 35)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05540150	East Branch Du Page River at Glen Ellyn, IL	13.6	1961, 1963–76, 1978–80	1972	3.58	912	8/26/72	3.58	912	N	--
05540160	East Branch Du Page River near Downers Grove, IL	26.6	1955, 1961–76, 1990–96	1972 1996	4.73 16.13	1,720 936	8/26/72	4.73	1,720	N	50–100
05540190	St. Joseph Creek at Belmont, IL	8.83	1961–77	1972	4.08	642	8/26/72	4.08	642	N	--
05541750	Mazon River tributary near Gardner, IL	4.52	1959–80	1979	15.25	173	4/12/79	15.25	173	N	--
05542000	Mazon River near Coal City, IL	455	1924, 1940–95	1983 1924	19.51 21.00	22,400 --	12/04/82 2/24/85	19.51 17.80	22,400 18,800	N N	45–55 15–20
05543500	Illinois River at Marseilles, IL	8,259	1892, 1894–98, 1900, 1904–96	1983 1922	16.78 20.10	94,100 60,600	5/15/70 6/14/81 12/04/82	15.08 14.73 16.78	92,500 88,500 94,100	Y Y Y	>100 -- >100
05548280	Nippersink Creek near Spring Grove, IL	192	1960, 1966–96	1986	14.26	2,910	9/26/86	14.26	2,910	N	15–25
05549000	Boone Creek near McHenry, IL	15.5	1949–92	1986	5.37	345	6/02/70 9/27/86	4.87 5.37	276 345	N N	15–25 50–100
05549900	Fox River tributary near Cary, IL	0.07	1956–75, 1977–79	1972	16.50	59	7/18/72	16.50	59	N	--
05550000	Fox River at Algonquin, IL	1,403	1916–96	1960 1916	4.01 4.50	6,610 5,850	4/02/79 10/03/86	4.00 3.99	6,610 6,170	N N	40–45 20–25
05550300	Tyler Creek at Elgin, IL	38.9	1962–63, 1965–76, 1978–80	1973	1.63	488	4/22/73	1.63	488	N	--
05550500	Poplar Creek at Elgin, IL	35.2	1952–96	1973 1989	5.45 5.79	896 700	4/22/73	5.45	896	N	30–40
05551200	Ferson Creek near St. Charles, IL	51.7	1961–96	1996	7.79	1,990	2/20/71 4/22/73	7.64 7.47	1,970 1,850	N N	15–25 10–20
05551500	Fox River at Aurora, IL	1,705	1960, 1962–76	1973	2.23	11,000	4/23/73	2.23	11,000	N	--
05551520	Indian Creek near North Aurora, IL	5.21	1961–79	1978	1.98	402	9/13/78	1.98	402	N	--
05551530	Indian Creek at Aurora, IL	16.7	1961–79	1978	5.41	744	9/13/78	5.41	744	N	--
05551620	Blackberry Creek near Kaneville, IL	21.6	1961–63, 1965–67, 1969–79	1974	3.09	640	5/16/74	3.09	640	N	--
05551650	Lake Run tributary near Batavia, IL	2.13	1961–76	1970	16.36	346	6/02/70	16.36	346	N	--
05551700	Blackberry Creek near Yorkville, IL	70.2	1961–96	1996	13.16	5,510	7/03/83	9.91	2,060	N	15–25
05551800	Fox River tributary number 2 near Fox, IL	0.45	1961–78, 1980	1978	15.71	320	6/25/78	15.71	320	N	--
05551900	East Branch Big Rock Creek near Big Rock, IL	32.6	1965–79	1974	3.80	1,580	5/16/74	3.80	1,580	N	--
05551930	Welch Creek near Big Rock, IL	22.1	1965–80	1974	4.56	694	5/16/74	4.56	694	N	--
05552500	Fox River at Dayton, IL	2,642	1915–96	1996	--	55,400	3/20/79 3/05/85	17.35 17.70	29,800 28,400	N N	30–35 20–25
05554000	North Fork Vermilion River near Charlotte, IL	186	1943–96	1987	17.09	4,900	5/14/70 10/03/86	16.13 17.09	4,550 4,900	N N	10–20 25–30
05554500	Vermilion River at Pontiac, IL	579	1933, 1943–62, 1964–96	1983	19.16	13,100	6/03/80 12/04/82	18.12 19.16	11,300 13,100	N N	15–20 30–35

Table 14. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Illinois—Continued

Station number (fig. 35)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05555300	Vermilion River near Leonore, IL	1,251	1931–96	1958	--	33,500	5/15/70	--	24,800	N	10–15
				1983	27.13	31,800	12/04/82	27.13	31,800	N	30–35
05556500	Big Bureau Creek at Princeton, IL	196	1937–96	1974	16.01	12,500	6/15/72	15.16	10,000	N	15–20
							5/17/74	16.01	12,500	N	65–70
05557000	West Bureau Creek at Wyanet, IL	86.7	1932, 1937–76, 1978–91	1974	16.14	20,100	6/15/72	14.30	10,800	N	45–50
							5/17/74	16.14	20,100	N	>100
05557100	West Bureau Creek tributary near Wyanet, IL	0.33	1956–75, 1977, 1979	1973	25.05	261	4/20/73	25.05	261	N	--
05557500	East Bureau Creek near Bureau, IL	99.0	1937–96,	1974	17.15	7,500	5/17/74	17.15	7,500	N	45–50
				1938	17.39	6,200	3/04/85	16.31	6,630	N	25
05558300	Illinois River at Henry, IL	13,543	1982–96	1983	--	108,000	12/07/82	--	108,000	Y	--
				1985	32.02	--					
05558500	Crow Creek (west) near Henry, IL	56.2	1950–82	1970	10.34	6,930	5/14/70	10.34	6,930	N	50–100
05559000	Gimlet Creek at Sparland, IL	5.66	1924, 1946–47, 1950–82	1974	10.03	1,940	6/21/74	10.03	1,940	N	25
05559500	Crow Creek near Washburn, IL	115	1945–79, 1981–82	1954	11.85	5,750	6/21/74	11.64	5,200	N	25
05560500	Farm Creek at Farmdale, IL	27.4	1949–85	1980	4.43	1,050	6/02/80	4.43	1,050	Y	--
				1950	7.58	--					
05561000	Ackerman Creek at Farmdale, IL	11.2	1954–80	1980	16.58	5,100	6/03/80	16.58	5,100	N	>100
05561500	Fondulac Creek near East Peoria, IL	5.54	1948–85	1979	4.66	560	3/03/79	4.66	560	Y	--
05562000	Farm Creek at East Peoria, IL	61.2	1943–80	1947	15.00	22,000	7/09/78	6.55	9,330	Y	2–5
							6/02/80	10.62	12,800	Y	2–5
05563000	Kickapoo Creek near Kickapoo, IL	119	1945–96	1967	17.08	27,500	6/22/74	16.40	26,000	N	25
05563500	Kickapoo Creek at Peoria, IL	297	1927, 1943–96	1974	29.68	48,500	6/22/74	29.68	48,500	N	>100
							8/16/81	--	31,000	N	45–50
							4/17/82	--	20,300	N	15–20
05564400	Money Creek near Towanda, IL	49.0	1958–82	1980	11.70	2,600	6/02/80	11.70	2,600	N	50–100
05566500	East Branch Panther Creek at El Paso, IL	30.5	1950–82	1951	14.21	5,300	3/02/79	12.37	2,790	N	35–45
05567000	Panther Creek near El Paso, IL	93.9	1950–96	1951	15.15	10,900	6/02/80	12.96	7,400	N	10–20
05567500	Mackinaw River near Congerville, IL	767	1945–96	1983	20.21	44,800	12/04/82	20.21	44,800	N	>100
05568000	Mackinaw River near Green Valley, IL	1,073	1922–58, 1960–96	1983	16.13	51,000	4/21/73	14.94	29,700	N	20–25
				1993	28.29	16,000	6/03/80	15.98	46,700	N	75–85
							12/05/82	16.13	51,000	N	>100
05568500	Illinois River at Kingston Mines, IL	15,818	1939–96	1983	23.86	88,800	12/07/82	23.86	88,800	Y	40–45
				1943	26.02	83,100	3/06/85	25.55	78,800	Y	15–20
05568800	Indian Creek near Wyoming, IL	62.7	1960–96	1974	23.81	6,540	6/22/74	23.81	6,540	N	>100
05568850	Forman Creek tributary near Victoria, IL	1.00	1961–76	1975	17.09	391	4/18/75	17.09	391	N	--
05569500	Spoon River at London Mills, IL	1,072	1943–96	1974	28.03	41,000	6/23/74	28.03	41,000	N	>100
							3/04/85	25.15	30,900	N	45–50
							10/04/86	24.36	26,400	N	25–30
05570000	Spoon River at Seville, IL	1,636	1914–96	1924	30.77	37,300	6/24/74	31.82	36,400	N	65–70
				1993	33.10	34,700	3/06/85	29.85	29,200	N	20–25

Table 14. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Illinois—Continued

Station number (fig. 35)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05570350	Big Creek at St. David, IL	28.0	1972–86	1974	10.25	2,080	6/23/74	10.25	2,080	N	50–100
				1980	10.54	1,090					
05570360	Evelyn Branch near Bryant, IL	5.78	1972–92	1986	3.69	325	6/05/86	3.69	325	Y	--
05570370	Big Creek near Bryant, IL	41.2	1972–92	1974	12.90	1,220	6/23/74	12.90	1,220	N	10–20
				1983	13.22	1,130					
05570380	Slug Run near Bryant, IL	7.12	1975–92	1986	8.91	685	5/01/83	6.41	322	N	10–20
05570910	Sangamon River at Fisher, IL	240	1979–96	1994	21.58	13,000	11/20/85	18.30	8,550	N	5–10
05572500	Sangamon River near Oakley, IL	774	1951–77	1974	18.40	16,000	6/23/74	18.40	16,000	N	25–35
				1961	18.85	15,300					
05573540	Sangamon River at Route 48 at Decatur, IL	938	1983–96	1994	21.12	17,100	11/19/85	22.61	13,900	Y	--
				1983	23.04	12,400					
05574000	South Fork Sangamon River near Nokomis, IL	11.0	1951–82	1957	14.84	8,600	6/15/70	14.10	6,000	N	50–75
05574500	Flat Branch near Taylorville, IL	276	1950–82	1957	19.55	13,000	4/12/79	18.79	11,300	N	30–40
05575500	South Fork Sangamon River at Kincaid, IL	562	1908–12, 1915–27, 1929–30, 1932–33, 1943, 1945–92	1957	30.02	21,500	4/12/79	27.45	17,500	N	50
05575800	Horse Creek at Pawnee, IL	52.2	1968–85	1983	20.41	3,300	5/01/83	20.41	3,300	N	5–10
05576000	South Fork Sangamon River near Rochester, IL	867	1950–96	1994	32.40	20,300	4/14/79	31.92	14,900	Y	15–25
05576500	Sangamon River at Riverton, IL	2,618	1908–96	1943	31.52	68,700	4/12/79	26.78	44,200	N	50–60
				1927	32.04	41,000	5/02/83	25.42	38,800	N	20–25
05577500	Spring Creek at Springfield, IL	107	1948–96	1996	16.23	10,700	12/03/82	14.44	8,080	N	25–35
05577700	Sangamon River tributary at Andrew, IL	1.50	1956–75, 1977–80	1979	17.16	660	4/11/79	17.16	660	N	--
05578500	Salt Creek near Rowell, IL	335	1908–12, 1943–96	1968	29.21	24,500	3/05/79	22.76	7,140	Y	2–5
05579500	Lake Fork near Cornland, IL	214	1943, 1948–96	1943	23.40	29,000	4/12/79	23.11	8,930	N	65–75
05580000	Kickapoo Creek at Waynesville, IL	227	1948–96	1981	16.91	24,600	4/11/79	16.55	21,400	N	50–75
							8/15/81	16.91	24,600	N	75–100
05580500	Kickapoo Creek near Lincoln, IL	306	1929, 1943, 1945–92	1983	16.60	23,300	4/12/79	16.55	23,200	N	75–100
				1929	17.40	--	12/03/82	16.60	23,300	N	75–100
05580950	Sugar Creek near Bloomington, IL	34.4	1975–96	1983	14.02	6,600	12/03/82	14.02	6,600	Y	--
05581500	Sugar Creek near Hartsburg, IL	333	1945–92	1983	17.90	41,200	8/15/81	16.57	33,000	N	40–50
							12/04/82	17.90	41,200	N	75–100
05582000	Salt Creek near Greenview, IL	1,804	1942–96	1943	20.50	41,200	6/24/74	19.81	38,100	N	30–40
							12/04/82	20.21	37,500	N	25–35
05582500	Crane Creek near Easton, IL	26.5	1950–81	1979	8.54	534	5/31/74	8.54	508	N	5–10
				1959	9.08	425	3/03/79	8.54	534	N	10–20
05583000	Sangamon River near Oakford, IL	5,093	1910–12, 1915–18, 1921–22, 1926–29, 1931–96	1943	25.63	123,000	4/15/79	22.56	55,900	N	15–20
							12/05/82	23.65	68,700	N	40–50
05584400	Drowning Fork at Bushnell, IL	26.3	1961–86, 1988–92	1980	12.92	3,500	11/01/77	10.78	1,680	N	10–20
				1961	13.26	1,650	6/02/80	12.92	3,500	N	>100

Table 14. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Illinois—Continued

Station number (fig. 35)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05584500	La Moine River at Colmar, IL	655	1945–96	1985	26.61	38,900	3/05/85	26.61	38,900	N	75–100
							10/04/86	25.69	28,700	N	25–30
05585000	La Moine River at Ripley, IL	1,293	1921–96	1985	29.07	28,000	9/27/70	28.42	24,100	N	20–25
							3/07/85	29.07	28,000	N	40–50
							10/07/86	28.10	23,400	N	20–25
05585500	Illinois River at Meredosia, IL	26,029	1921–83, 1985–89	1943	28.61	123,000	12/12/82	26.40	112,000	Y	20–25
							3/10/85	27.62	122,000	Y	40–50
05586000	North Fork Mauvaise Terre Creek near Jacksonville, IL	29.1	1950–90, 1992–96	1994	12.35	7,160	5/06/77	11.62	4,700	N	25–35
				1990	12.77	4,600	12/03/82	11.62	4,700	N	25–35
05586800	Otter Creek near Palmyra, IL	61.1	1960–80	1966	11.91	11,900	5/13/78	11.60	8,940	Y	10–25
05586850	Bear Creek tributary near Reeders, IL	0.02	1956–80	1973	20.80	42	6/19/73	20.80	42	N	--
05587000	Macoupin Creek near Kane, IL	868	1921–33, 1941–90, 1992–96	1943	28.50	40,000	4/12/79	26.51	27,800	N	15–20
				1994	28.32	40,100	12/04/82	26.30	26,700	N	15–20
05587500	Mississippi River at Alton, IL	171,500	1858, 1928–86	1858	--	573,000	4/29/73	--	535,000	Y	75–100
				1985	425.23	40,300					
05587900	Cahokia Creek at Edwardsville, IL	212	1969–96	1979	24.74	8,200	4/12/79	24.74	8,200	N	--
05590400	Kaskaskia River near Pesotum, IL	109	1965–79	1974	15.92	3,310	6/23/74	15.92	3,310	N	10–25
05590800	Lake Fork at Atwood, IL	149	1973–96	1979	14.03	4,030	3/05/79	14.03	4,030	N	25
				1994	15.39	--					
05591200	Kaskaskia River at Cooks Mills, IL	473	1971–93	1994	17.30	9,950	2/23/85	16.72	9,250	N	10–20
05591500	Asa Creek at Sullivan, IL	8.05	1951–82	1974	12.06	1,460	5/19/74	12.06	1,460	N	40–50
05591700	West Okaw River near Lovington, IL	112	1980–96	1996	16.40	10,300	5/02/83	15.07	5,300	N	5–10
05591750	Stringtown Branch tributary near Lake City, IL	0.70	1961–80	1978	15.56	150	8/02/78	15.56	150	N	--
05592000	Kaskaskia River at Shelbyville, IL	1,054	1908–13, 1939–96	1957	22.37	25,900	3/08/82	12.82	5,090	Y	<2
05592050	Robinson Creek near Shelbyville, IL	93.1	1980–96	1983	13.37	11,300	5/02/83	13.37	11,300	N	25–40
				1993	14.92	10,700					
05592100	Kaskaskia River near Cowden, IL	1,330	1971–96	1979	18.97	19,700	4/12/79	18.97	19,700	Y	--
				1985	19.12	16,800					
05592300	Wolf Creek near Beecher City, IL	47.9	1959–82	1970	13.17	7,480	4/19/70	13.17	7,480	N	15–25
05592800	Hurricane Creek near Mulberry Grove, IL	152	1971–96	1983	19.99	17,900	12/25/82	19.99	17,900	N	15–25
				1990	20.91	15,100					
05593600	Blue Grass Creek near Raymond, IL	17.3	1961–91	1973	12.80	2,140	4/21/73	12.80	2,140	N	50–100
				1970	14.79	2,130					
05594090	Sugar Creek at Albers, IL	124	1973–82	1973	22.70	10,500	11/02/72	22.70	10,500	N	10–25
05594330	Mud Creek near Marissa, IL	72.4	1971–82	1979	16.74	5,520	4/12/79	16.74	5,520	N	10–25
				1977	16.82	4,900					
05594450	Silver Creek near Troy, IL	154	1967–96	1979	17.52	10,600	4/12/79	17.52	10,600	N	15–25
				1990	17.94	9,170					
05595200	Richland Creek near Hecker, IL	129	1970–96	1996	44.40	23,400	11/02/72	42.88	14,900	N	35–45
05596100	Andy Creek tributary at Valier, IL	1.03	1956–72	1970	18.58	835	6/16/70	18.58	835	N	--

Table 14. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Illinois—Continued

Station number (fig. 35)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05597000	Big Muddy River at Plumfield, IL	794	1909–12, 1914–96	1961 1983	29.67 31.84	42,900 11,800	5/04/83	31.84	11,800	Y	2–5
05597500	Crab Orchard Creek near Marion, IL	31.7	1952–96	1996	13.60	9,270	1/31/82 4/30/83	12.63 12.66	3,520 3,570	N N	20–25 20–25
05599500	Big Muddy River at Murphysboro, IL	2,169	1916–96	1961 1996	37.77 36.12	33,300 33,800	5/05/83	36.88	32,100	Y	25–30
07020500	Mississippi River at Chester, IL	708,600	1844, 1926–96	1844 1993	39.80 49.74	1,350,000 1,000,000	4/30/73	43.32	886,000	Y	5–10
07022000	Mississippi River at Thebes, IL	713,200	1844, 1933–96	1844 1995	-- 45.91	1,375,000 --	4/30/73	43.43	886,000	Y	5–10

[1] Regulated during flood: N, no; Y, yes.

Indiana

Hydroclimatology

Indiana's location in the midcontinent interior allows several different sources of moisture to affect the climate. These sources originate from the Pacific Ocean, Lake Michigan, the Gulf of Mexico, and the subtropical Atlantic Ocean. Tropical airmasses dominate the climate in the late spring, summer, and early fall. These airmasses originate in the Gulf of Mexico and the subtropical Atlantic. Polar continental airmasses control the late fall, winter, and early spring climate. These typically dry airmasses carry frontal systems that form over Alberta, Canada, and move southeastward. However, lake-effect moisture from Lake Michigan combines with the polar airmasses to cause greater precipitation in northern and northwestern Indiana. A well-defined, north-south climatic gradient across the State results in a cool, temperate, continental climate in the north and a warm, temperate, continental climate in the south. Mean annual precipitation ranges from 37 in. in the northwestern and north-central parts of the State to 44 in. in the south-central part (Paulson and others, 1991).

Flooding in Indiana is most widespread in late winter when excessive rainfall caused by frontal systems is combined with snowmelt. Frozen or saturated soil can result in an increase in runoff. Indiana also receives flooding due to the remnants of hurricanes tracking across the State. Summer floods typically are caused by thunderstorms and affect a smaller area than the floods associated with the remnants of hurricanes.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, factors affecting the magnitude of maximum discharges for streams in Indiana are contributing drainage area of the basin; storage, which is the percentage of the contributing drainage area covered by lakes, ponds, and wetlands; runoff coefficient, which relates storm runoff to soil permeability; main-channel slope; precipitation, using 2-year, 24-hour measurements; and main-channel length (Jennings and others, 1994).

Significant Floods

Moderate rainfall combined with a melting snowpack produced the floods of March 1982. Northern Indiana was most affected by the floods. Thirteen percent of the streamflow-gaging stations in the State recorded significant discharges. Flooding on the Kankakee River and its tributaries caused extensive damage in three counties in northwestern Indiana.

The summer of 1979 was plagued by flooding. The first storm arrived in June, and an excess of 10 in. of rain fell in parts of southwestern Indiana. Remnants of Hurricane Bob caused the second major storm. Rainfall lasting all day caused local flooding in areas of southwestern, central, and eastern Indiana. The third and largest storm of the summer was caused when remnants of Tropical Storm Claudette combined with a stationary weather front. Intense rains caused flash flooding, and a total of 9 in. of rain was recorded in some areas. The recurrence intervals of the floods on some smaller creeks were greater than 100 years (Paulson and others, 1991).

The location of streamflow-gaging stations in Indiana that had significant floods for 1970–89 is shown figure 36 by station number. The specific data for each significant flood are listed in table 15. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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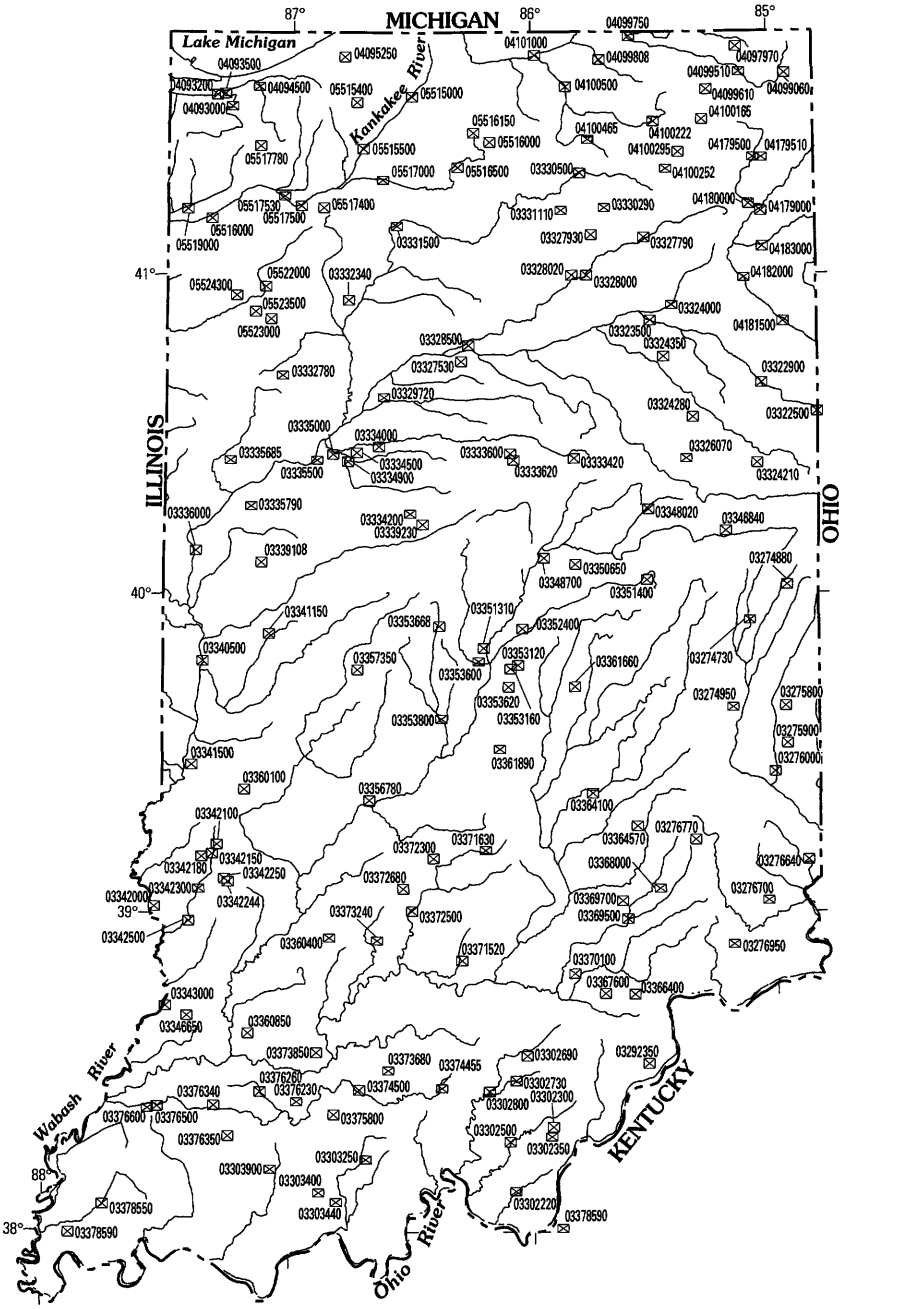
Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.



EXPLANATION

03376350 ⊠ **Streamflow-gaging station and number**

Figure 36. Location of streamflow-gaging stations with significant floods during 1970–89 for Indiana.

Table 15. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Indiana

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig. 36)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03274730	Whitewater River tributary near Hagerstown, IN	0.12	1973–82	1978	6.95	28	5/23/78	6.95	28	N	10
03274880	Greens Fork tributary near Lynn, IN	0.78	1973–82	1979 1978	8.05 8.24	240 210	8/01/79	8.05	240	N	10–25
03274950	Little Williams Creek at Connersville, IN	9.16	1969–91	1974	10.13	3,560	6/22/74	10.13	3,560	N	>100
03275800	West Run near Liberty, IN	0.30	1973–89	1989	11.78	255	5/26/89	11.78	255	N	25
03275900	Templeton Creek near Fairfield, IN	5.39	1973–82	1980	25.02	1,900	8/18/80	25.02	1,900	N	25–50
03276000	East Fork Whitewater River at Brookville, IN	380	1954–78, 1980–94	1959 1968	16.50 17.35	36,100 31,600	3/05/75	8.21	6,550	Y	20
03276640	Tanners Creek tributary near Lawrenceburg, IN	0.25	1973–89	1974	15.59	300	6/22/74	15.59	300	N	50
03276700	South Hogan Creek near Dillsboro, IN	38.1	1959, 1962–93	1959	14.00	16,300	4/29/70	12.70	13,000	N	40
03276770	Laughery Creek tributary near Napoleon, IN	0.11	1973–82	1978	7.77	58	6/19/78	7.77	58	N	25
03276950	Uhlman Creek tributary near Avonburg, IN	0.16	1973–82	1982	8.51	86	6/08/82	8.51	86	N	10
03292350	Flag Run tributary near New Washington, IN	0.16	1973–89	1973	7.71	51	7/21/73	7.71	51	N	50
03302220	Buck Creek near New Middletown, IN	65.2	1970–95	1970	14.40	12,700	4/02/70	14.40	12,700	N	25
03302300	Little Indian Creek near Galena, IN	16.1	1969–95	1973	9.30	5,500	7/21/73	9.30	5,500	N	25
03302350	Georgetown Creek tributary near Georgetown, IN	0.56	1973–82	1980	13.15	1,000	7/02/80	13.15	1,000	N	80
03302500	Indian Creek near Corydon, IN	129	1943–93	1964	22.64	26,700	7/22/73	22.31	24,400	N	100
03302690	Middle Fork Blue River tributary near Farabee, IN	0.07	1973–82	1982	7.20	45	1/23/82	7.20	45	N	10–25
03302730	South Fork Blue River near Palmyra, IN	64.3	1975–89	1983 1976	22.40 28.43	9,000 4,500	5/01/83	22.40	9,000	N	25–50
03302800	Blue River at Fredericksburg, IN	283	1969–95	1983	24.37	13,500	5/02/83	24.37	13,500	N	<10
03303250	Sigler Creek tributary at Uniontown, IN	0.15	1973–89	1979	10.68	170	7/26/79	10.68	170	N	25
03303400	Crooked Creek near Santa Claus, IN	7.86	1970–95	1970 1989	9.74 10.13	4,100 4,010	4/28/70	9.74	4,100	N	30
03303440	East Fork Crooked Creek tributary near Fulda, IN	0.26	1973–82	1977	10.60	182	8/24/77	10.60	182	N	10–25
03303900	Little Red Creek tributary near Heilman, IN	0.25	1973–82	1979	9.38	120	7/26/79	9.38	120	N	25
03322500	Wabash River near New Corydon, IN	262	1952–88	1959	20.47	8,720	2/24/85	19.44	6,840	N	15
03322900	Wabash River at Linn Grove, IN	453	1964–95	1978	13.87	9,560	3/17/78	13.87	9,560	N	15
03323500	Wabash River at Huntington, IN	721	1913, 1943, 1951–95	1959	23.20	14,900	3/24/82	--	6,230	Y	<10

Table 15. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Indiana—Continued

Station number (fig. 36)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03324000	Little River near Huntington, IN	263	1944–95	1950	16.90	5,990	3/14/82	19.39	5,700	N	70
				1985	19.50	5,750	2/25/85	19.50	5,750	N	70
03324210	Blaine Run at Blaine, IN	0.45	1973–82	1981	7.80	78	6/25/81	7.80	78	N	50
03324260	Salamonie River tributary near Montpelier, IN	1.26	1973–82, 1984–89	1984	7.89	144	7/05/84	7.89	144	N	10
03324350	Brook Creek tributary near Warren, IN	0.52	1972–82	1972	8.23	116	9/14/72	8.23	116	N	10
03326070	Big Lick Creek near Hartford City, IN	29.2	1972–89, 1991–95	1981	16.14	1,940	6/06/81	16.14	1,940	N	50
03327530	Minnow Creek tributary near Logansport, IN	0.50	1973–82	1973	7.04	105	8/28/73	7.04	105	N	10
03327790	Eel River tributary near Columbia City, IN	0.17	1973–82	1980	7.71	50	6/04/80	7.71	50	N	10
03327930	Koontz Ditch near Sidney, IN	2.50	1973–82	1981	--	375	6/13/81	--	375	N	10–25
				1980	11.58	355					
03328000	Eel River at North Manchester, IN	417	1883, 1913, 1924–95	1991	14.81	8,740	3/13/82	13.72	8,180	N	50
				1913	15.50	--	2/24/85	13.76	8,240	N	50
03328020	Otter Creek tributary near North Manchester, IN	0.92	1973–84	1981	6.92	195	4/14/81	6.92	195	N	25–50
03328500	Eel River near Logansport, IN	789	1943–95	1985	12.68	17,700	2/24/85	12.68	17,700	N	100
				1943	13.20	17,000					
03329720	Robinson Branch near Delphi, IN	5.49	1973–82	1981	7.33	350	5/15/81	7.33	350	N	<10
				1975	7.59	190					
03330290	Shanton Ditch near Pierceton, IN	0.70	1973–82	1981	6.52	35	6/13/81	6.52	35	N	50–100
03330500	Tippecanoe River at Oswego, IN	113	1943, 1950–95	1943	9.40	1,050	3/21/82	9.25	950	Y	100
							3/04/85	8.89	758	Y	30
03331110	Walnut Creek near Warsaw, IN	19.6	1970–95	1981	5.38	561	6/13/81	5.38	561	N	15–20
03331500	Tippecanoe River near Ora, IN	856	1944–88, 1990–95	1981	15.08	8,660	6/15/81	15.08	8,660	N	50
				1990	15.22	7,110	3/15/82	14.98	8,460	N	40
							2/25/85	15.05	8,640	N	50
03332340	Weltzin Ditch tributary near Francesville, IN	0.50	1973–84	1978	7.98	68	3/21/78	7.98	68	N	>100
03332780	Big Creek near Wolcott, IN	1.35	1973–82	1982	10.96	250	5/22/82	10.96	250	N	10–25
03333420	Grassy Fork tributary at Point Isabel, IN	0.67	1973–82	1980	7.20	125	6/03/80	7.20	125	N	<10
03333600	Kokomo Creek near Kokomo, IN	24.7	1960–95	1964	9.88	1,040	6/02/80	9.45	959	N	20
03333620	Scott Youngman Ditch near Kokomo, IN	0.86	1973–82	1980	9.75	156	6/02/80	9.75	156	N	25
03334000	Wildcat Creek at Owasco, IN	396	1913, 1943–81, 1989–95	1980	11.58	10,800	6/04/80	11.58	10,800	N	25
				1913	16.00	--					
03334200	Prairie Creek tributary near Frankfort, IN	2.61	1973–89	1978	11.87	236	6/22/78	11.87	236	N	<10
03334500	South Fork Wildcat Creek near Lafayette, IN	243	1943–95	1943	16.80	17,900	5/02/83	15.68	15,100	N	50
							5/26/89	15.36	14,400	N	45
03334900	South Fork Wildcat Creek tributary near Monitor, IN	0.10	1973–82	1981	7.35	84	6/25/78	7.32	84	N	10
							8/31/81	7.35	84	N	10

Table 15. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Indiana—Continued

Station number (fig. 36)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03335000	Wildcat Creek near Lafayette, IN	794	1955–92, 1994–95	1958	21.52	25,000	5/02/83	20.59	22,100	N	25
03335500	Wabash River at Lafayette, IN	7,267	1901–02, 1904, 1907–95	1913 1943	-- 28.47	190,000 131,000	2/25/85	24.32	80,400	Y	<10
03335685	Big Pine Creek tributary near Pine Village, IN	0.21	1973–82	1974	7.61	200	5/29/74	7.61	200	N	10–25
03335790	Big Shawnee Creek tributary near Attica, IN	1.00	1973–82	1974	8.31	240	6/22/74	8.31	240	N	<10
03336000	Wabash River at Covington, IN	8,218	1913, 1927–92, 1994–95	1913	35.10	200,000	2/25/85	28.39	93,900	Y	10
03339108	East Fork Coal Creek near Hillsboro, IN	33.4	1969–91	1983	10.47	2,680	5/01/83	10.47	2,680	N	35–45
03339230	Woods Ditch near Frankfort, IN	1.12	1972–82	1975 1978	11.13 11.59	276 244	5/22/75	11.13	276	N	10
03340500	Wabash River at Montezuma, IN	11,118	1913, 1925–95	1913	34.00	230,000	2/26/85	30.89	115,000	Y	10
03341150	Demeree Creek tributary near Byron, IN	0.15	1973–89	1979	7.99	80	8/21/79	7.99	80	N	10
03341500	Wabash River at Terre Haute, IN	12,263	1828, 1858, 1867, 1875, 1883, 1892–97, 1902–95	1913	31.10	245,000	2/26/85	26.60	114,000	Y	10
03342000	Wabash River at Riverton, IN	13,161	1912–14, 1939–95	1913 1943	26.40 29.36	250,000 201,000	3/01/85	24.46	118,000	Y	10
03342100	Busseron Creek near Hymera, IN	16.7	1967–95	1974 1982	18.58 19.16	1,890 1,160	9/12/74	18.58	1,890	Y	25
03342150	West Fork Busseron Creek near Hymera, IN	14.4	1967–86	1973	13.23	1,930	7/26/73	13.23	1,930	N	25
03342180	Kettle Creek tributary near Shelburn, IN	0.48	1973–82	1979	11.52	490	7/27/79	11.52	490	N	25
03342244	Mud Creek near Cass, IN	9.16	1982–91	1989	12.16	996	7/12/89	12.16	996	N	50
03342250	Mud Creek near Dugger, IN	11.9	1967–81	1979	14.83	1,270	7/27/79	14.83	1,270	Y	25
03342300	Busseron Creek near Sullivan, IN	138	1967–86	1979	16.28	6,050	7/29/79	16.28	6,050	Y	25
03342500	Busseron Creek near Carlisle, IN	228	1944–95	1950 1961	20.05 20.30	8,800 8,580	7/30/79	19.01	6,210	Y	20
03343000	Wabash River at Vincennes, IN	13,706	1913–94	1913 1943	26.30 29.33	255,000 189,000	3/02/85	29.26	104,000	Y	10
03346650	River Deshee tributary near Frichton, IN	0.82	1973–82	1979	10.56	250	7/26/79	10.56	250	N	10–25
03346840	White River tributary at Parker City, IN	0.20	1973–82	1978	7.00	26	3/15/78	7.00	26	N	25
03348020	Killbuck Creek near Gaston, IN	25.5	1968–91	1980	12.70	1,200	6/02/80	12.70	1,200	N	<10
03348700	White River tributary near Strawtown, IN	0.42	1973–82	1979	8.42	80	8/03/79	8.42	80	N	10
03350650	Stony Creek tributary near Lapel, IN	0.60	1973–82	1978	7.55	180	3/17/78	7.55	180	N	10–25
03351310	Crooked Creek at Indianapolis, IN	17.9	1970–95	1978	13.31	5,500	6/26/78	13.31	5,500	N	50

Table 15. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Indiana—Continued

Station number (fig. 36)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03351400	Sugar Creek near Middletown, IN	5.80	1969–89	1974	7.72	1,100	6/30/74	7.72	1,100	N	15
03352400	Blue Creek near Castleton, IN	0.95	1972–81	1979	7.18	76	6/09/79	7.18	76	N	<10
03353120	Pleasant Run at Arlington Avenue at Indianapolis, IN	7.58	1956, 1960–95	1978 1956	13.86 16.00	2,600 --	6/25/78 10/04/86	13.86 11.48	2,600 1,990	N N	15 <10
03353160	Pleasant Run at Brookville Road at Indianapolis, IN	10.1	1960–80	1978	11.28	3,000	6/25/78	11.28	3,000	N	15
03353600	Little Eagle Creek at Speedway, IN	24.3	1960–95	1979	12.13	3,330	7/28/79	12.13	3,330	N	50
03353620	Lick Creek at Indianapolis, IN	15.6	1971–95	1978	9.61	2,500	6/25/78	9.61	2,500	N	<10
03353668	White Lick Creek tributary near Brownsburg, IN	0.31	1973–84	1978	7.61	110	6/25/78	7.61	110	N	10
03353800	White Lick Creek at Mooresville, IN	212	1950, 1957–95	1979	23.31	19,000	7/13/79	23.31	19,000	N	25
03356780	Limestone Creek tributary near Gosport, IN	0.72	1973–82	1977	7.73	250	8/06/77	7.73	250	N	10–25
03357350	Plum Creek near Bainbridge, IN	3.00	1970–95	1989	6.50	940	9/14/89	6.50	940	N	80
03360100	Clear Branch at Cory, IN	0.27	1973–82	1980	8.38	94	6/01/80	8.38	94	N	10
03360400	Doans Creek tributary near Doans, IN	0.20	1973–89	1982	10.00	190	9/01/82	10.00	190	N	25–50
03360850	Veales Creek tributary at Washington, IN	0.27	1973–82	1982	10.21	325	5/29/82	10.21	325	N	10–25
03361660	Little Sugar Creek tributary at Carrollton, IN	0.70	1973–82	1980	7.96	150	8/18/80	7.96	150	N	50
03361890	Gilmore Creek near Bargersville, IN	0.71	1973–82	1978	10.93	312	6/26/78	10.93	312	N	50
03364100	Tough Creek near Norristown, IN	1.50	1973–89	1978	11.43	395	6/25/78	11.43	395	N	10–25
03364570	Fall Fork Clifty Creek tributary near Horace, IN	0.83	1973–82	1979	10.29	270	6/20/79	10.29	270	N	<10
03366400	Lewis Creek tributary near Kent, IN	0.20	1973–82	1979	7.71	130	7/28/79	7.71	130	N	10–25
03367600	Flat Creek tributary at New Frankfort, IN	0.34	1973–82	1978	8.21	200	8/03/78	8.21	200	N	25
03368000	Brush Creek near Nebraska, IN	11.4	1956–95	1981	12.99	9,360	6/10/81	12.99	9,360	N	>500
03369500	Vernon Fork Muscatatuck River at Vernon, IN	198	1940–95	1959	32.83	56,800	6/10/81	22.72	21,200	Y	<10
03369700	Sixmile Creek tributary near North Vernon, IN	0.39	1973–82	1978	7.52	80	6/26/78	7.52	80	N	<10
03370100	Blau Ditch tributary near Crothersville, IN	1.31	1973–82	1974	7.76	40	9/12/74	7.76	40	N	25
03371520	Back Creek at Leesville, IN	24.1	1913, 1971–94	1973 1913	14.00 18.10	15,300 --	7/21/73	14.00	15,300	N	>100
03371630	North Fork Salt Creek tributary near Nashville, IN	0.22	1973–89	1983	7.69	50	5/02/83	7.69	50	N	25

Table 15. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Indiana—Continued

Station number (fig. 36)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03372300	Stephens Creek near Bloomington, IN	10.9	1971–91	1979	13.18	5,400	7/13/79	13.18	5,400	N	100–150
03372500	Salt Creek near Harrodsburg, IN	432	1956–95	1960 1961	32.76 35.35	22,000 20,200	1/19/73	20.97	3,340	Y	<5
03372680	Clear Creek tributary near Bloomington, IN	0.38	1973–82	1981	9.93	220	5/24/81	9.93	220	N	10–25
03373240	Spring Creek tributary near Springville, IN	0.54	1973–82	1974	9.36	285	5/31/74	9.36	285	N	10–25
03373680	French Lick Creek tributary near French Lick, IN	0.30	1973–83, 1985–89	1979	9.06	215	7/27/79	9.06	215	N	<10
03373850	Slate Creek tributary near Haysville, IN	0.14	1973–82	1973	7.59	125	8/01/73	7.59	125	N	10–25
03374455	Patoka River near Hardinsburg, IN	12.8	1969–95	1979	11.35	9,270	7/26/79	11.35	9,270	N	>500
03374500	Patoka River near Cuzco, IN	171	1913, 1962–95	1964	20.02	14,700	5/27/83	--	2,810	Y	<10
03375800	Hall Creek near St. Anthony, IN	21.8	1971–95	1979	15.30	11,500	7/26/79	15.30	11,500	N	>200
03376230	Shiloh Drain near Jasper, IN	0.57	1973–82	1979	10.85	350	6/10/79	10.85	350	N	25–50
03376260	Flat Creek near Otwell, IN	21.3	1964–82	1978 1964	12.34 12.58	1,680 --	5/12/78	12.34	1,680	N	100
03376340	Patoka River tributary near Glezen, IN	0.84	1973–89	1979	10.71	350	6/09/79	10.71	350	N	50
03376350	South Fork Patoka River near Spurgeon, IN	42.8	1964–86	1979	15.07	5,900	4/28/70 6/09/79	12.79 15.07	3,600 5,900	N Y	<10 >100
03376500	Patoka River near Princeton, IN	822	1935–95	1937 1989	22.43 23.07	18,700 10,200	4/08/89 5/6/83	23.07 19.89	10,200 12,100	Y Y	<10 10
03376600	Patoka River tributary near Patoka, IN	0.40	1973–82	1979	11.98	170	8/16/79	11.98	170	N	<10
03378550	Big Creek near Wadesville, IN	104	1966–95	1983 1975	19.07 19.72	7,880 7,610	5/01/83	19.07	7,880	N	15
03378590	Olive Creek tributary near Solitude, IN	0.31	1973–82	1974	9.89	222	5/31/74	9.89	222	N	10–25
04093000	Deep River at Lake George outlet at Hobart, IN	124	1947–95	1991	17.58	4,230	6/14/81	16.70	4,000	N	50
04093200	Little Calumet River at Gary, IN	--	1955, 1959–67, 1969–71, 1986–88	1970 1955	11.35 13.09	250 --	5/16/70	11.35	250	N	<10
04093500	Burns Ditch at Gary, IN	160	1944–91	1955 1944	15.90 16.44	3,430 2,000	6/15/81	16.18	3,260	N	15
04094500	Salt Creek near McCool, IN	74.6	1945–91	1955	14.12	3,180	7/02/83	12.34	3,120	N	100
04095250	East Branch Trail Creek tributary near Springville, IN	0.17	1973–82	1974	6.75	34	4/04/74	6.75	34	N	10
04097970	Lime Lake outlet at Panama, IN	17.5	1970–86	1985	4.87	52	4/10/85	4.87	52	Y	50
04099060	Pigeon Creek tributary near Ellis, IN	1.22	1973–82	1981	7.89	110	6/14/81	7.89	110	N	10–25
04099510	Pigeon Creek near Angola, IN	106	1946–95	1982 1950	13.90 14.95	795 744	3/22/82	13.90	795	N	60

Table 15. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Indiana—Continued

Station number (fig. 36)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04099610	Pretty Lake inlet near Stroh, IN	1.96	1964–80	1971	9.30	33	2/05/71	9.30	33	N	25–50
04099750	Pigeon River near Scott, IN	361	1969–95	1982	7.85	2,370	3/21/82	7.85	2,370	N	25
04099808	Little Elkhart River at Middlebury, IN	97.6	1980–95	1985	10.52	2,470	2/24/85	10.52	2,470	N	100
04100165	Wible Lake inlet near Kendallville, IN	2.47	1973–82	1982 1973	5.87 6.70	50 22	3/14/82	5.87	50	N	10–25
04100222	North Branch Elkhart River at Cosperville, IN	142	1972–95	1982	8.12	919	3/23/82	8.12	919	N	40
04100252	Forker Creek near Burr Oak, IN	19.2	1970–95	1985 1991	7.00 7.03	480 323	2/24/85	7.00	480	Y	>100
04100295	Rimmell Branch near Albion, IN	10.7	1980–95	1980 1981	9.88 12.82	495 397	4/03/80	9.88	495	N	10
04100465	Turkey Creek at Syracuse, IN	43.8	1970–87	1985	5.52	243	3/31/85	5.52	243	Y	25
04100500	Elkhart River at Goshen, IN	594	1925–28, 1932–95	1985 1982	11.87 11.94	6,360 6,180	3/14/82 2/24/85	11.94 11.87	6,180 6,360	N N	80 100
04101000	St. Joseph River at Elkhart, IN	3,370	1903–27, 1943, 1948–95	1908 1982	-- 27.91	26,000 18,600	2/27/85	27.05	18,800	Y	50
04179000	St. Joseph River at Cedarville, IN	763	1932, 1956–82	1982	21.94	14,500	3/17/82	21.94	14,500	Y	100
04179500	Cedar Creek at Auburn, IN	87.3	1943–78, 1980–82	1982	10.63	2,100	3/14/82	10.63	2,100	N	100
04179510	Cecil Metcaff Ditch near Auburn, IN	0.78	1973–82	1982	10.50	140	3/14/82	10.50	140	N	25
04180000	Cedar Creek near Cedarville, IN	270	1947–95	1991	13.38	5,580	3/14/82	12.98	5,340	N	25
04181500	St. Marys River at Decatur, IN	621	1932–95	1943 1982	23.40 24.40	12,000 10,900	3/14/82	24.40	10,900	N	25
04182000	St. Marys River near Fort Wayne, IN	762	1931–95	1959 1982	19.42 19.66	13,600 12,600	3/14/82	19.66	12,600	N	35
04183000	Maumee River at New Haven, IN	1,967	1947–95	1982	25.49	26,600	3/17/82 2/27/85	25.49 24.19	26,600 23,800	N N	60 25
05515000	Kankakee River near North Liberty, IN	174	1951–95	1982 1968	9.01 9.04	908 629	3/17/82 2/24/85	9.01 8.64	908 820	N N	>100 100
05515400	Kingsbury Creek near Laporte, IN	7.08	1971–86	1984 1981	6.35 6.83	188 73	6/23/84	6.35	188	N	50–100
05515500	Kankakee River at Davis, IN	537	1926–29, 1932–95	1982 1985	-- 13.52	1,920 1,620	3/20/82 5/03/83	-- 12.86	1,920 1,730	N N	>100 50
05516000	Yellow River near Bremen, IN	135	1956–82	1982 1978	15.17 17.68	2,800 2,750	3/16/82	15.17	2,800	N	>100
05516150	Walt Kimble Ditch near Lapaz, IN	1.50	1973–82	1982	10.08	290	3/13/82	10.08	290	N	10–25
05516500	Yellow River at Plymouth, IN	294	1949–95	1955	17.13	5,390	3/16/82	16.37	4,730	N	>100
05517000	Yellow River at Knox, IN	435	1944–95	1955	13.75	5,660	3/18/82 2/28/85	13.25 12.15	5,280 4,010	N N	>100 25
05517400	West Arm Payne Ditch near North Judson, IN	2.58	1973–82	1981	8.33	230	6/13/81	8.33	230	N	25–50
05517500	Kankakee River at Dunns Bridge, IN	1,352	1949–95	1982 1955	-- 13.20	5,870 5,300	3/23/82 3/04/85	-- 13.18	5,870 5,370	N N	100 40

Table 15. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Indiana—Continued

Station number (fig. 36)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05517530	Kankakee River near Kouts, IN	1,376	1975–95	1982	14.52	6,420	3/24/82	14.52	6,420	N	>100
05517780	Cobb Ditch tributary near Valparaiso, IN	0.39	1973–89	1983	9.54	82	7/02/83	9.54	82	N	10–25
05518000	Kankakee River at Shelby, IN	1,779	1923–95	1982 1985	-- 12.25	7,650 6,340	3/26/82 3/09/85	-- 12.25	7,650 6,340	N N	>100 30
05519000	Singleton Ditch at Schneider, IN	123	1949–88, 1990–95	1976 1991	11.24 12.54	3,550 2,460	3/05/76	11.24	3,550	N	>100
05522000	Iroquois River near North Marion, IN	144	1949–93	1958	15.09	2,040	3/06/79	14.68	1,820	N	50
05523000	Bice Ditch near South Marion, IN	21.8	1949–93	1979 1958	11.41 12.02	1,080 780	3/04/79	11.41	1,080	N	50
05523500	Slough Creek near Collegeville, IN	83.7	1949–51, 1953–82	1968 1979	16.88 17.19	2,390 1,420	5/15/70	16.16	2,180	N	15
05524300	Yeoman Ditch tributary near Rensselaer, IN	0.57	1972–81	1979	9.82	250	3/04/79	9.82	250	N	10–25

[1] Regulated during flood: N, no; Y, yes.

Iowa

Hydroclimatology

Iowa is located in the midcontinent interior and is affected by various weather patterns during the year. Iowa's climate is governed by airmasses from the Gulf of Mexico and the Pacific Ocean. These airmasses are supplemented by moisture evaporated from the land surface and from lakes and reservoirs. Moisture from the Gulf of Mexico predominates the air movement from April to September and accounts for more than 70 percent of the precipitation in Iowa (Paulson and others, 1991).

Iowa's annual precipitation ranges from 25 in. in the northwest to 38 in. in eastern and southern Iowa. The statewide mean annual precipitation is 32 in. (Paulson and others, 1991).

Floods in Iowa typically are caused by two types of weather conditions. During the winter, low temperatures and a stationary jetstream can produce large snow accumulations over extensive areas. When the snowpack melts, frozen soil prevents any absorption, resulting in swollen streams and occasional floods. In the late spring and early summer, floods are caused by thunderstorms in which local rains of 4 or more inches per day can occur.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the factors affecting the magnitude of maximum discharges for streams in Iowa include contributing-drainage area, a relative-relief factor, a drainage-frequency factor, and the 2-year, 24-hour precipitation intensity. The relative-relief factor is the ratio of basin relief (difference between the highest and lowest basin elevations) and the basin perimeter as measured along the entire drainage-basin divide on 125,000-scale topographic maps. The drainage-frequency factor is the number of first-order streams per square mile (Eash, 1993).

Significant Floods

In June 1975, parts of Ames, Iowa, were affected by severe flooding from Squaw Creek and the South Shunk River. Maximum discharges at two gaging stations exceeded the 100-year recurrence interval. The flood was caused by intense storms, which were all the more unusual because, statewide, the climate at that time subsequently was deemed to be a drought.

Significant flooding occurred in June and July 1982 in east-central, south-central, and southwestern Iowa. Rain from locally intense thunderstorms falling on saturated ground resulted in maximum discharges exceeding the 25-year recurrence interval at 7 percent of the State's streamflow-gaging stations. Maximum discharges at three stations exceeded the 100-year recurrence interval.

The location of streamflow-gaging stations in Iowa that had significant floods for 1970–89 is shown in figure 37 by station number. The specific data for each significant flood are listed in table 16. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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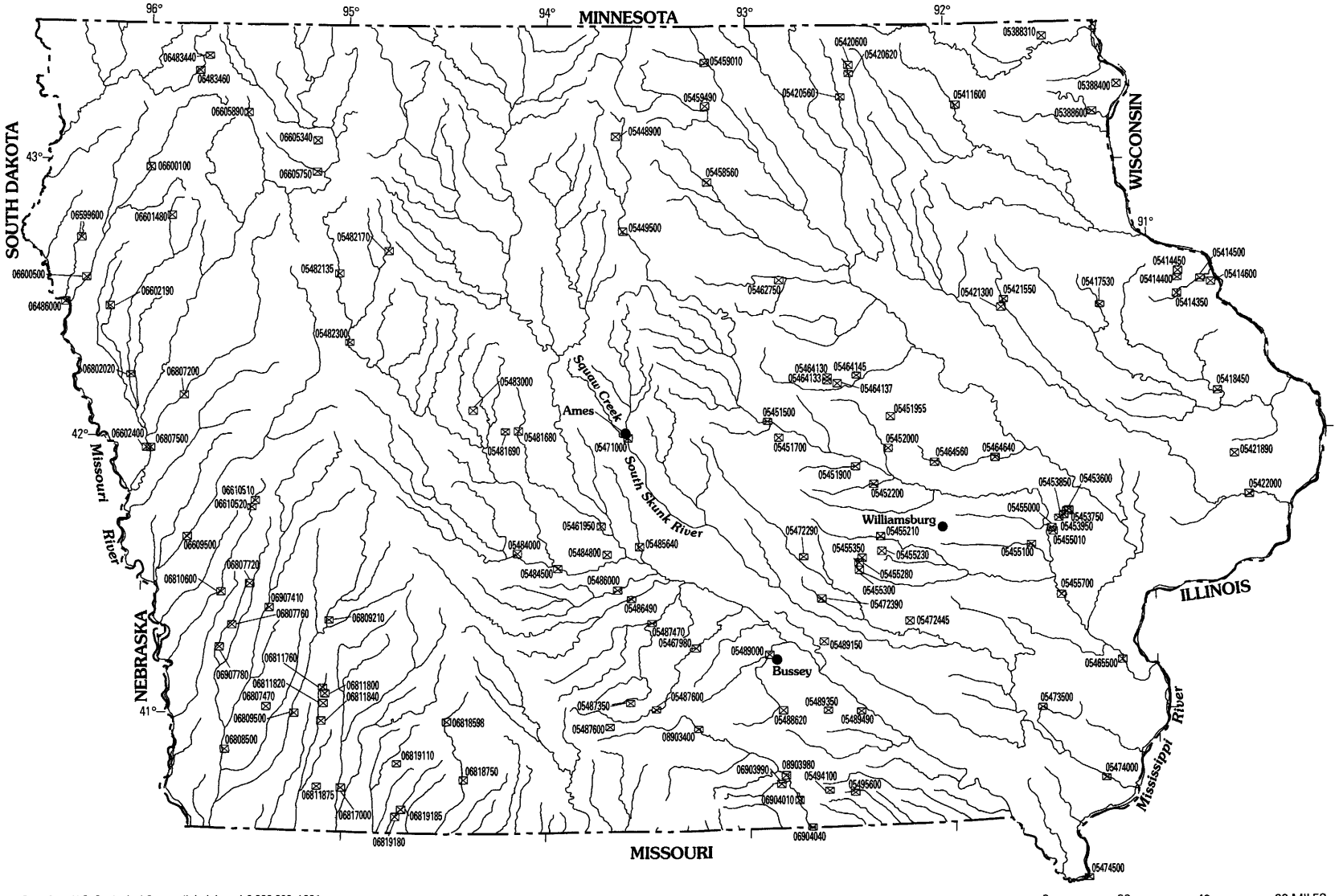

Figure 37. Location of streamflow-gaging stations with significant floods during 1970–89 for Iowa.

Table 16. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Iowa

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 37)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05388310	Waterloo Creek near Dorchester, IA	43.6	1970–87, 1989–93	1978	704.80	9,380	7/01/78	704.80	9,380	N	--
05388400	Wexford Creek near Harpers Ferry, IA	11.9	1953–87, 1989	1978	9.78	8,100	7/01/78 8/05/81	9.78 9.01	8,100 5,800	N N	-- --
05388600	Paint Creek near Waterville, IA	56.0	1951, 1953–85	1974	19.24	19,000	6/20/74	19.24	19,000	N	--
05411600	Turkey River at Spillville, IA	177	1947, 1956–73, 1978–91	1947	18.40	10,000	7/12/72	16.73	8,600	N	15–20
05414350	Little Maquoketa River near Graf, IA	39.6	1951–94	1951	15.78	7,220	8/02/72	14.59	6,100	N	--
05414400	Middle Fork Little Maquoketa River near Rickardsville, IA	30.2	1951–72, 1976–89, 1991–94	1972	27.70	23,000	8/02/72	27.70	23,000	N	--
05414450	North Fork Little Maquoketa River near Rickardsville, IA	21.6	1951–94	1972	14.02	7,180	8/02/72	14.02	7,180	N	>100
05414500	Little Maquoketa River near Durango, IA	130	1925, 1935–83, 1986–92, 1994	1972	23.13	40,000	8/02/72	23.13	40,000	N	>100
05414600	Little Maquoketa River tributary at Dubuque, IA	1.54	1951–65, 1967–92, 1994	1957 1972	7.98 15.31	1,650 1,250	11/01/71	15.31	1,250	N	30–35
05417530	Plum Creek at Earlville, IA	41.1	1966–91	1974	88.75	6,200	6/21/74	88.75	6,200	N	50–60
05418450	North Fork Maquoketa River at Fulton, IA	516	1974, 1977–91	1981	17.26	10,700	8/31/81	17.26	10,700	N	5–20
05420560	Wapsipinicon River near Elma, IA	95.2	1959–92	1974 1979	14.94 15.38	10,100 6,420	6/04/74 6/17/84	14.94 14.81	10,100 6,580	N N	20–30 5–10
05420600	Little Wapsipinicon River tributary near Riceville, IA	0.90	1953–94	1993	5.71	2,470	6/17/84	5.08	920	N	10–15
05420620	Little Wapsipinicon River near Acme, IA	7.76	1953–91, 1993	1962	9.02	2,380	6/17/84	8.91	2,100	N	35–40
05421300	Pine Creek tributary number 2 at Winthrop, IA	0.70	1953–87, 1989, 1993	1968	7.26	570	6/14/70	7.17	470	N	--
05421550	Buffalo Creek above Winthrop, IA	68.2	1957–86, 1989–90	1968	19.36	14,100	8/30/79	19.11	11,000	N	--
05421890	Silver Creek at Welton, IA	9.03	1966–94	1974 1986	89.77 89.82	4,820 2,050	5/17/74	89.77	4,820	N	20
05422000	Wapsipinicon River near De Witt, IA	2,330	1935–94	1990	14.19	31,100	4/22/73 5/17/74	12.76 13.07	27,000 29,900	N N	30–35 50
05448900	East Branch Iowa River tributary near Garner, IA	5.98	1952–86	1984	10.46	660	6/07/84	10.46	660	N	--
05449500	Iowa River near Rowan, IA	429	1941–76, 1978–94	1954 1984	14.88 15.00	8,460 8,450	6/17/84	15.00	8,450	N	60–70
05451500	Iowa River at Marshalltown, IA	1,532	1903, 1915–27, 1929–30, 1933–94	1918 1993	17.74 20.77	42,000 20,400	3/19/79	19.77	20,900	N	15–20
05451700	Timber Creek near Marshalltown, IA	118	1947, 1950–94	1977	17.69	12,000	8/16/77 6/15/82	17.69 17.30	12,000 9,940	N N	95–100 35–40

Table 16. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Iowa—Continued

Station number (fig. 37)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05451900	Richland Creek near Haven, IA	56.1	1918, 1950–94	1991	26.71	12,200	5/28/74	24.00	7,000	N	50–55
05451955	Stein Creek near Clutier, IA	23.4	1972–87, 1989–94	1982	77.92	11,400	6/15/82	77.92	11,400	N	>100
05452000	Salt Creek near Elberon, IA	201	1944, 1946–94	1993	20.85	36,600	6/15/82	20.00	33,200	N	70–75
05452200	Walnut Creek near Hartwick, IA	70.9	1947, 1950–94	1991 1947	16.93 17.70	7,900 --	7/02/83	16.65	7,100	N	15–20
05453600	Rapid Creek below Morse, IA	8.12	1951–92	1987	25.99	3,000	7/17/72 6/21/87	25.66 25.99	2,800 3,000	N N	20 25
05453750	Rapid Creek southwest of Morse, IA	15.2	1951–87, 1989–92	1972	29.74	4,300	7/17/72	29.74	4,300	N	30–35
05453850	Rapid Creek tributary number 3 near Oasis, IA	1.62	1951–86, 1990–92	1965	24.16	1,200	7/17/72	24.11	1,200	N	--
05453950	Rapid Creek tributary near Iowa City, IA	3.43	1951–86, 1988, 1990–92	1972	26.57	2,000	7/17/72	26.57	2,000	N	40
05455000	Ralston Creek at Iowa City, IA	3.01	1925–87	1971 1956	4.15 9.06	2,200 1,690	2/19/71 7/17/72	4.15 9.01	2,200 1,760	N N	75 35
05455010	South Branch Ralston Creek at Iowa City, IA	2.94	1962, 1964–86, 1988–94	1972 1962	9.47 10.50	1,070 --	7/17/72	9.47	1,070	N	10–25
05455100	Old Mans Creek near Iowa City, IA	201	1951–87, 1989–94	1982 1993	15.25 17.61	13,500 13,000	5/15/82	15.25	13,500	N	50
05455210	North English River at Guernsey, IA	81.5	1960, 1966–94	1982	87.43	7,460	9/18/77 6/15/82	87.36 87.43	7,000 7,460	N N	20–25 35–40
05455230	Deep River at Deep River, IA	30.5	1960, 1966–93	1970	83.85	6,200	5/14/70	83.85	6,200	N	--
05455280	South English River tributary near Barnes City, IA	2.51	1953–76	1970	9.04	900	3/02/70	9.04	900	N	10–25
05455300	South English River near Barnes City, IA	11.5	1953–87	1982	13.77	2,200	8/05/70 7/18/82	13.16 13.77	1,850 2,200	N N	30 50
05455350	South English River tributary number 2 near Montezuma, IA	0.52	1953–85	1961	13.65	344	5/28/74	13.53	340	N	50
05455700	Iowa River near Lone Tree, IA	4,293	1944, 1957–94	1993	22.94	57,100	5/19/74	18.97	35,700	Y	25–35
05458560	Beaverdam Creek near Sheffield, IA	123	1966–89	1979 1969	57.51 59.82	4,400 --	8/22/79	57.51	4,400	N	--
05459010	Elk Creek at Kensett, IA	58.1	1966–89	1986	91.91	1,450	3/20/86	91.91	1,450	N	25–50
05459490	Spring Creek near Mason City, IA	29.3	1966–91, 1993	1980	90.32	4,500	5/30/80	90.32	4,500	N	--
05462750	Beaver Creek tributary near Aplington, IA	11.6	1966–91	1983	94.27	3,000	5/19/83	94.27	3,000	N	10–25
05464130	Fourmile Creek near Lincoln, IA	13.8	1963–67, 1970–74, 1977–80	1979 1974	13.51 13.98	1,100 893	7/03/79	13.51	1,100	N	10–25
05464133	Half Mile Creek near Gladbrook, IA	1.33	1963–67, 1970–74, 1977–80	1979	9.57	611	6/12/79	9.57	611	N	75–100
05464137	Fourmile Creek near Traer, IA	19.5	1963–74, 1976–80	1979 1974	11.93 12.91	1,450 1,040	3/18/79	11.93	1,450	N	25–50
05464145	Twelvemile Creek near Traer, IA	43.8	1966–87, 1989–92	1979 1990	88.36 88.93	3,800 --	7/03/79	88.36	3,800	N	--

Table 16. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Iowa—Continued

Station number (fig. 37)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05464560	Prairie Creek at Blairstown, IA	87.0	1966–84, 1986–87	1982 1970	84.65 85.05	4,750 4,600	6/15/82	84.65	4,750	N	25–50
05464640	Prairie Creek at Fairfax, IA	178	1967–82	1979	14.63	8,140	3/19/79	14.63	8,140	N	10–25
05465500	Iowa River at Wapello, IA	12,499	1903–94	1993 1990	28.10 28.91	111,000 86,600	4/22/73	28.63	92,000	Y	50
05471000	South Skunk River below Squaw Creek near Ames, IA	556	1944, 1953–79, 1990, 1992–94	1993 1975	25.55 25.57	26,500 14,700	3/27/75	25.57	14,700	N	40–45
05472290	Sugar Creek near Searsboro, IA	52.7	1966–88	1974	92.85	4,600	5/18/74	92.85	4,600	N	50–75
05472390	Middle Creek near Lacey, IA	23.0	1966–94	1976	90.06	9,650	4/24/76	90.06	9,650	N	>100
05472445	Rock Creek at Sigourney, IA	26.3	1966–88	1970	91.29	4,100	9/17/70	91.29	4,100	N	50–100
05473500	Big Creek near Mount Pleasant, IA	106	1948, 1956–79	1973 1948	25.58 27.00	10,500 --	4/22/73	25.58	10,500	N	>100
05474000	Skunk River at Augusta, IA	4,303	1903, 1915–94	1973	27.05	66,800	4/23/73	27.05	66,800	N	>200
05474500	Mississippi River at Keokuk, IA	119,000	1851, 1878–1989, 1991–94	1993	27.58	446,000	4/24/73	--	344,000	Y	75–100
05481680	Beaver Creek at Beaver, IA	38.5	1966–90	1979	89.99	1,950	3/19/79	89.99	1,950	N	--
05481690	West Beaver Creek at Grand Junction, IA	12.6	1966–87, 1989	1986 1979	89.01 89.51	880 --	6/30/86	89.01	880	N	--
05481950	Beaver Creek near Grimes, IA	358	1960–94	1993	16.58	14,300	6/30/86	14.73	7,980	N	20–30
05482135	North Raccoon River near Newell, IA	233	1983–93	1984	16.73	2,850	6/17/84	16.73	2,850	N	5–15
05482170	Big Cedar Creek near Varina, IA	80.0	1960–91	1962 1979	13.68 16.29	2,080 2,050	3/24/79	16.29	2,050	N	15–20
05482300	North Raccoon River near Sac City, IA	700	1954, 1959–94	1979 1990	18.02 20.14	13,100 9,930	3/23/79	18.02	13,100	N	25
05483000	East Fork Hardin Creek near Churdan, IA	24.0	1952–91	1990 1986	10.20 10.78	754 737	6/30/86	10.78	737	N	100
05484000	South Raccoon River at Redfield, IA	994	1940–94	1993 1958	26.98 29.04	44,000 35,000	7/01/86	25.15	26,300	N	20
05484500	Raccoon River at Van Meter, IA	3,441	1915–94	1993	26.34	70,100	7/04/73 7/01/86	21.74 22.69	35,600 40,200	N N	20 25
05484800	Walnut Creek at Des Moines, IA	78.4	1972–94	1986	18.32	12,500	5/10/86	18.32	12,500	N	45
05485640	Fourmile Creek at Des Moines, IA	92.7	1972–79, 1981–94	1977 1974	14.64 14.84	5,380 5,340	8/28/77	14.64	5,380	N	15
05486000	North River near Norwalk, IA	349	1940–94	1947 1990	25.30 25.33	32,000 22,600	6/11/84	23.03	13,700	N	20
05486490	Middle River near Indianola, IA	503	1940–94	1947	26.40	34,000	8/27/87	23.79	15,500	N	15
05487350	South Otter Creek tributary near Woodburn, IA	0.71	1955–70, 1972–74, 1976, 1978–84	1981	14.06	1,670	6/07/81	14.06	1,670	N	--
05487470	South River near Ackworth, IA	460	1930, 1940–94	1990 1981	31.25 32.85	38,100 32,700	7/05/81	32.85	32,700	N	40

Table 16. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Iowa—Continued

Station number (fig. 37)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05487600	South White Breast Creek near Osceola, IA	28.0	1953–81	1981	15.66	11,800	6/07/81	15.66	11,800	N	>100
05487800	White Breast Creek at Lucas, IA	128	1953–88, 1990–91	1981	18.27	15,500	7/04/81 8/26/87	18.27 17.52	15,500 11,500	N N	50–100 20–25
05487980	White Breast Creek near Dallas, IA	342	1962–94	1982	33.45	37,300	7/16/82	33.45	37,300	N	>200
05488620	Coal Creek near Albia, IA	13.5	1966–87, 1989–91	1982	88.51	12,700	7/03/82	88.51	12,700	N	50–100
05489000	Cedar Creek near Bussey, IA	374	1946, 1948–94	1982	34.61	96,000	7/03/82	34.61	96,000	N	>200
05489150	Little Muchakinock Creek at Oskaloosa, IA	9.12	1966–88	1970	89.06	4,500	9/17/70	89.06	4,500	N	>100
05489350	South Avery Creek near Blakesburg, IA	33.1	1965–90, 1992–94	1982	90.20	21,000	7/03/82	90.20	21,000	N	--
05489490	Bear Creek at Ottumwa, IA	22.9	1965–94	1982	93.91	4,030	7/03/82	93.91	4,030	N	25–50
05494100	South Fox Creek tributary near West Grove, IA	0.55	1953–56, 1958–60, 1962–66, 1968–70, 1972–74, 1976–83	1980 1982	6.43 7.25	788 490	6/02/80	6.43	788	N	--
05495600	South Wyaconda River near West Grove, IA	4.69	1953–75	1970	10.11	3,100	9/15/70	10.11	3,100	N	25–50
06483440	Dawson Creek near Sibley, IA	4.35	1952–94	1985 1993	6.28 8.84	4,500 --	5/15/85	6.28	4,500	N	--
06483460	Otter Creek near Ashton, IA	88.0	1952–72, 1974–88	1979	12.39	18,000	8/21/79	12.39	18,000	N	>100
06486000	Missouri River at Sioux City, IA	314,600	1929–94	1952 1971	24.28 30.65	441,000 80,000	2/19/71	30.65	80,000	Y	20–25
06599800	Perry Creek near Merrill, IA	8.17	1953–84, 1986–87, 1989–94	1953 1962	9.51 12.22	2,540 2,000	6/23/77	9.38	2,100	N	25
06600100	Floyd River at Alton, IA	268	1953, 1956–94	1953 1983	-- 18.54	45,500 16,300	6/20/83	18.54	16,300	N	30–35
06600500	Floyd River at James, IA	886	1935–94	1953 1983	25.30 28.85	71,500 18,000	6/21/83	28.85	18,000	N	20
06601480	Big Whiskey Slough near Remsen, IA	12.9	1967, 1969–71, 1973, 1975, 1978–86, 1988–90, 1993–94	1985 1979	93.49 94.87	1,120 --	4/23/85	93.49	1,120	N	--
06602020	West Fork Ditch at Hornick, IA	403	1975–94	1984	22.80	9,960	6/19/84	22.80	9,960	N	20
06602190	Elliott Creek at Lawton, IA	34.8	1966–90, 1993	1984	86.14	3,150	6/12/84	86.14	3,150	N	25–50
06602400	Monona-Harrison Ditch near Turin, IA	900	1940–94	1954 1984	23.40 24.80	21,000 13,300	2/19/71 6/18/84	23.03 24.80	19,900 13,300	N N	50–55 10
06605340	Prairie Creek near Spencer, IA	22.3	1966–94	1971 1994	90.77 91.05	2,200 --	7/04/71	90.77	2,200	N	25–50
06605750	Willow Creek near Cornell, IA	78.6	1966–92	1979	91.49	4,200	3/22/79	91.49	4,200	N	25–50
06605890	Waterman Creek at Hartley, IA	28.7	1966–89	1975 1987	87.88 89.68	2,100 --	6/04/75	87.88	2,100	N	10–25

Table 16. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Iowa—Continued

Station number (fig. 37)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06607200	Maple River at Mapleton, IA	669	1942–94	1978	16.74	20,800	9/12/78	16.74	20,800	N	30
				1950	22.10	13,000	6/21/83	16.84	17,200	N	15
06607500	Little Sioux River near Turin, IA	3,526	1940–94	1983	26.54	31,200	2/19/71	27.44	30,000	N	10
				1971	27.44	30,000	6/21/83	26.54	31,200	N	10
							6/16/84	22.60	31,000	N	10
06609500	Boyer River at Logan, IA	871	1881, 1918–25, 1938–94	1990	22.54	30,800	2/19/71	22.65	25,000	N	15
				1881	25.00	--					
06610510	Moser Creek near Earling, IA	21.6	1966–90, 1993–94	1984	87.89	9,600	6/15/84	87.89	9,600	N	10–25
06610520	Mosquito Creek near Earling, IA	32.0	1965–79	1972	31.18	12,000	9/11/72	31.18	12,000	N	45–50
06610600	Mosquito Creek at Neola, IA	131	1952–94	1958	23.26	17,300	9/11/72	31.23	13,700	N	20
				1978	31.28	11,900					
06807410	West Nishnabotna River at Hancock, IA	609	1960–94	1993	23.52	30,100	9/13/72	22.12	26,400	N	20–25
06807470	Indian Creek near Emerson, IA	37.3	1966–91, 1993	1982	92.63	15,800	6/15/82	92.63	15,800	N	>100
06807720	Middle Silver Creek near Avoca, IA	3.21	1953–84, 1986	1976	11.21	1,200	9/26/73	10.65	1,040	N	--
							6/14/76	11.21	1,200	N	--
06807760	Middle Silver Creek near Oakland, IA	25.7	1953–94	1991	15.54	2,500	7/04/73	14.73	2,110	N	40
06807780	Middle Silver Creek at Treynor, IA	42.7	1953–55, 1957–90	1973	17.06	3,700	7/04/73	17.06	3,700	N	50–100
							8/08/87	14.06	2,920	N	25
06808500	West Nishnabotna River at Randolph, IA	1,326	1947, 1949–94	1987	24.50	40,800	5/26/87	24.50	40,800	N	50
				1949	24.60	16,000					
06809210	East Nishnabotna River near Atlantic, IA	436	1958, 1961–94	1958	22.49	34,200	9/12/72	22.81	26,700	N	30–35
				1972	22.81	26,700					
06809500	East Nishnabotna River at Red Oak, IA	894	1917–25, 1936–94	1972	27.43	38,000	9/13/72	27.43	38,000	N	>100
06811760	Tarkio River near Elliott, IA	10.7	1952–87, 1989–91, 1993	1993	12.98	4,640	5/26/87	12.26	3,210	N	25–50
				1982	13.57	2,500					
06811800	East Tarkio Creek near Stanton, IA	4.66	1952–91, 1993–94	1967	13.74	4,790	5/26/87	12.94	3,600	N	25–50
06811820	Tarkio River tributary near Stanton, IA	0.67	1952–84, 1987, 1992–93	1967	5.18	835	5/26/87	--	398	N	--
06811840	Tarkio River at Stanton, IA	49.3	1952, 1954–56, 1958–91	1967	28.56	22,500	5/26/87	19.86	10,100	N	15
06811875	Snake Creek near Yorktown, IA	9.10	1966–91	1987	95.24	3,080	7/09/87	95.24	3,080	N	10–25
06817000	Nodaway River at Clarinda, IA	762	1918–25, 1936–94	1947	25.30	31,100	6/15/82	19.70	29,100	N	20
							9/09/89	23.27	28,700	N	15
06818598	Platte River near Stringtown, IA	51.7	1966–88	1974	92.09	3,120	10/11/73	92.09	3,120	N	25–50
06818750	Platte River near Diagonal, IA	217	1967–91	1989	23.60	8,630	9/09/89	23.60	8,630	N	20–25
				1987	23.67	8,580					
06819110	Middle Fork 102 River near Gravity, IA	34.5	1966–87, 1989, 1993–94	1973	83.65	5,800	2/01/73	83.65	5,800	N	--
06819185	East Fork 102 River at Bedford, IA	85.4	1984–94	1986	23.47	9,570	7/14/86	23.47	9,570	N	20
				1993	23.85	9,170					
06819190	East Fork 102 River near Bedford, IA	92.1	1960–83	1974	20.72	9,980	10/11/73	20.72	9,980	N	20

Table 16. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Iowa—Continued

Station number (fig. 37)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06903400	Chariton River near Chariton, IA	182	1947, 1960, 1966–94	1992	29.32	37,700	7/04/81	23.14	16,600	N	25
06903980	Chariton River near Udell, IA	631	1973–87, 1991–94	1982	860.22	8,000	7/16/82	860.22	8,000	Y	--
06903990	Cooper Creek at Centerville, IA	47.8	1966–89	1982	80.41	7,000	7/16/82	80.41	7,000	N	25–50
06904010	Chariton River near Moulton, IA	740	1980–89, 1991–94	1982	36.83	11,200	7/16/82	36.83	11,200	Y	--
06904040	Chariton River at Coal City, IA	816	1973–74, 1976, 1978–84	1981 1982	823.94 823.97	7,400 7,400	7/05/81	823.94	7,400	Y	--

[1] Regulated during flood: N, no; Y, yes.

Kansas

Hydroclimatology

Kansas' location in the midcontinent provides for several sources of moisture that affect the State's climate. The Gulf of Mexico provides the primary source of moisture for the State. The Pacific Ocean is a secondary source of moisture for Kansas. Moisture from Pacific airmasses is reduced as it crosses the orographic barrier of the Rocky Mountains prior to reaching Kansas. During the winter, cold, dry Canadian airmasses dominate the weather patterns resulting in relatively dry winters. Precipitation in the State results mostly from thunderstorms that occur in the late spring and continue throughout the summer. Annual precipitation in the southeast corner of the State averages 40 in. Along the western border of the State, mean annual precipitation is 15 in. or less (Paulson and others, 1991).

Frontal boundaries between the cold, dry Canadian air and the warmer and wetter air from the Gulf of Mexico can produce storm systems with excessive precipitation anytime during the year. During the spring and summer, the frontal systems commonly trigger severe thunderstorms with intense rainfall. Regional floods occur usually after recurring storm systems move along stalled frontal boundaries. Slow-moving or "training" thunderstorms can cause localized flash floods.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, factors affecting the magnitude of maximum discharges for streams in Kansas are contributing-drainage area, 2-year, 24-hour rainfall, main-channel slope, and soil permeability index (Jennings and others, 1994).

Significant Floods

Significant flooding occurred in September and October 1973. This flood affected south-central, north-central, and east-central Kansas. The flood was a result of abundant precipitation that continued for several weeks. During this period, as much as 11 in. of rain fell in the Solomon, Smoky Hill, and Big Blue River Basins in the 4 days from September 25–28. Some areas reported as much as 7 in. of rain on September 26.

Significant flooding occurred in Kansas in 1986. Eleven percent of the streamflow-gaging stations in the State recorded significant discharges. There were two flooding periods; the first was in late June and early July when streams in the northern part of the State flooded, and the second was in October when significant flooding occurred in the southern two-thirds of the State.

The location of streamflow-gaging stations in Kansas that had significant floods for 1970–89 is shown in figure 38 by station number. The specific data for each significant flood are listed in table 17. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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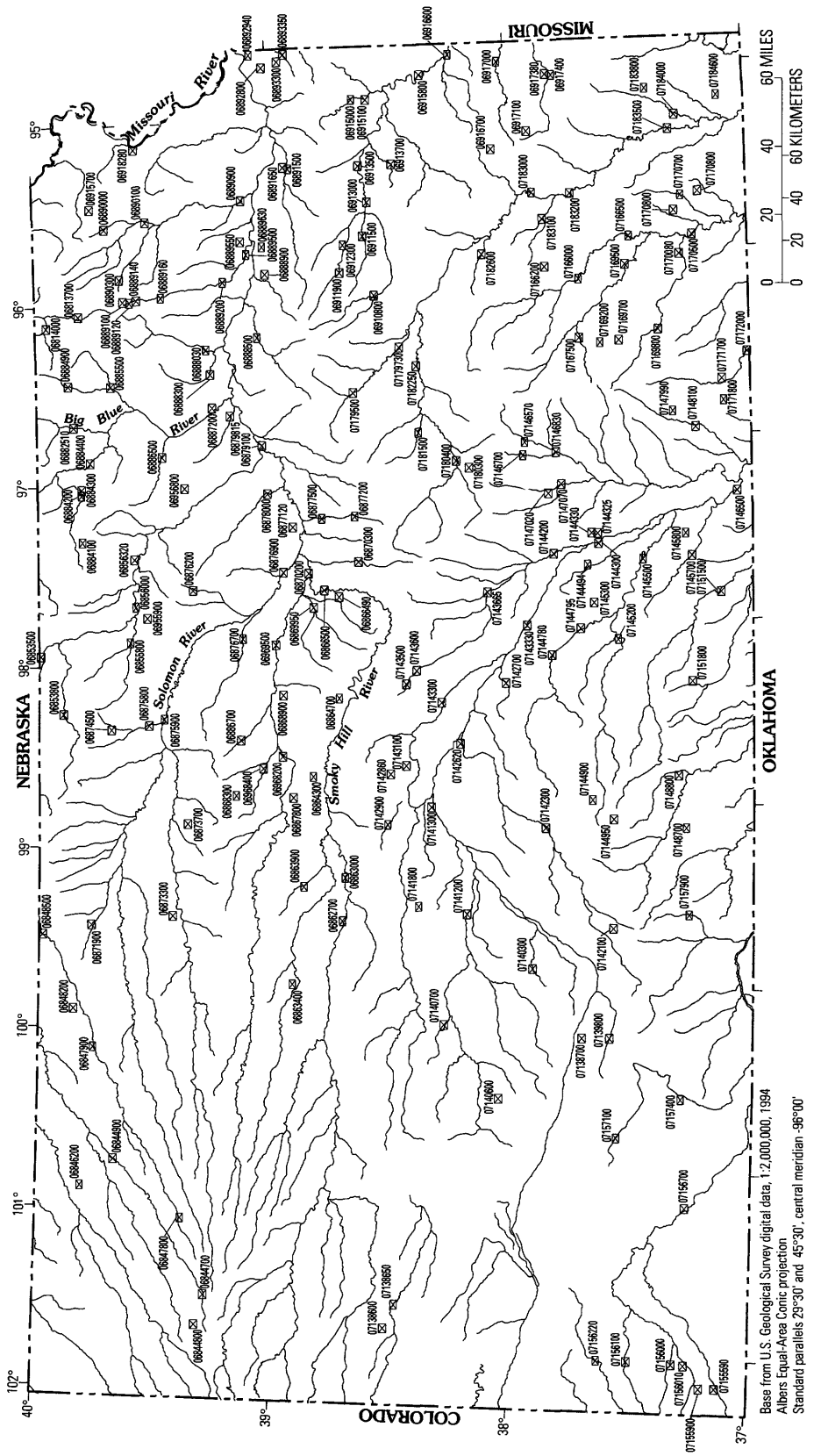

Figure 38. Location of streamflow-gaging stations with significant floods during 1970-89 for Kansas.

Table 17. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kansas

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 38)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06813700	Tennessee Creek tributary near Seneca, KS	0.90	1957–89	1959	18.64	1,220	9/12/77	18.49	1,150	N	20–25
06814000	Turkey Creek near Seneca, KS	276	1949–94	1974 1949	24.77 25.17	21,400 12,000	10/11/73	24.77	21,400	N	15
06815700	Buttermilk Creek near Willis, KS	3.74	1957–93	1984	20.18	6,000	6/08/84	20.18	6,000	N	50
06818260	White Clay Creek at Atchison, KS	13.1	1972–94	1982	16.07	5,410	6/08/82	16.07	5,410	N	40
06844700	South Fork Sappa Creek near Brewster, KS	74.0	1968–89	1979	8.65	1,770	5/02/79	8.65	1,770	N	20–25
06844800	South Fork Sappa Creek tributary near Goodland, KS	4.98	1957–89	1979	18.49	3,450	5/02/79	18.49	3,450	N	30
06844900	South Fork Sappa Creek near Achilles, KS	446	1960–94	1975 1982	10.47 11.42	5,310 2,340	6/19/75	10.47	5,310	N	25–50
06846200	Beaver Creek tributary near Ludell, KS	10.2	1957–89	1975	15.54	880	6/11/70 6/18/75	15.37 15.54	850 880	N N	5–10 5–10
06847600	Prairie Dog Creek tributary at Colby, KS	7.53	1957–94	1975	27.44	4,300	6/18/75	27.44	4,300	N	>100
06847900	Prairie Dog Creek above Keith Sebelius Lake, KS	590	1963–94	1972 1977	12.81 13.15	8,880 1,590	9/06/72	12.81	8,880	N	>100
06848200	Prairie Dog Creek tributary near Norton, KS	1.02	1957–91	1957	14.15	620	6/21/86	14.06	595	N	10–25
06848500	Prairie Dog Creek near Woodruff, KS	1,007	1929–32, 1945–94	1947 1957	-- 26.70	15,000 8,910	9/03/77	23.48	4,580	Y	2–5
06853500	Republican River near Hardy, NE	22,401	1903–15, 1932–94	1935	19.40	225,000	10/01/83	13.65	17,400	Y	2–5
06853800	White Rock Creek near Burr Oak, KS	227	1950, 1958–94	1973 1950	25.06 32.60	15,800 --	9/03/73 7/01/89	25.06 23.76	15,800 11,100	N N	>100 50–100
06855800	Buffalo Creek near Jamestown, KS	330	1960–90	1974	19.65	27,800	10/12/73	19.65	27,800	N	>100
06855900	Wolf Creek near Concordia, KS	56.0	1963–81	1974	17.95	4,180	10/11/73	17.95	4,180	N	25–50
06856000	Republican River at Concordia, KS	23,560	1903, 1915, 1935, 1941–94	1935 1993	19.77	207,000 37,700	10/12/73	13.98	28,900	Y	2–5
06856320	Elk Creek at Clyde, KS	73.0	1970–71, 1973–94	1973	15.30	6,000	9/26/73	15.30	6,000	N	50–100
06856800	Moll Creek near Green, KS	3.60	1957–90	1964 1972	17.94 17.95	1,780 1,070	9/06/72	17.95	1,070	N	5–10
06862700	Smoky Hill River near Schoenchen, KS	5,750	1965–94	1970 1993	16.17 16.55	20,400 20,200	6/14/70	16.17	20,400	Y	--
06863000	Smoky Hill River at Pfeifer, KS	6,033	1970–85	1970	19.30	30,000	6/14/70	19.30	30,000	Y	--
06863400	Big Creek tributary near Ogallah, KS	4.81	1957–94	1987	15.20	4,100	3/24/87	15.20	4,100	N	40–50
06863900	North Fork Big Creek near Victoria, KS	54.0	1963–87	1974	21.34	26,400	8/09/74	21.34	26,400	N	>100
06864300	Smoky Hill River tributary at Dorrance, KS	5.39	1957–94	1975	14.62	2,400	9/03/75	14.62	2,400	N	50
06864700	Spring Creek near Kanopolis, KS	9.84	1957–89	1967	16.29	3,000	6/11/71	15.94	2,500	N	10–15

Table 17. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kansas—Continued

Station number (fig. 38)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06866490	Dry Creek at Mentor, KS	37.0	1971–77, 1979–89, 1991	1974	24.83	--	10/11/73	24.85	--	N	--
06866500	Smoky Hill River near Mentor, KS	8,358	1903, 1923–32, 1935, 1938, 1948–94	1903 1938	-- 26.14	32,000 24,000	10/11/73	24.82	20,300	Y	25–50
06867800	Cedar Creek tributary near Bunker Hill, KS	0.99	1957–77	1975	11.64	450	9/03/75	11.64	450	N	50
06868200	Saline River at Wilson Dam, KS	1,917	1964–94	1973	18.84	3,320	4/06/73	18.84	3,320	Y	--
06868300	Coon Creek tributary near Luray, KS	6.53	1957–94	1982	21.13	4,210	8/26/77 7/02/82	20.30 21.13	2,000 4,210	N N	10–15 50
06868400	Wolf Creek near Lucas, KS	163	1959–90	1987 1982	31.43 31.45	15,400 9,080	7/02/82 4/14/87	31.45 31.43	9,080 15,400	N N	25–30 100
06868700	North Branch Spillman Creek near Ash Grove, KS	26.1	1963–77	1974	17.58	3,720	10/11/73	17.58	3,720	N	25–30
06868900	Bullfoot Creek tributary near Lincoln, KS	2.64	1957–89	1989	17.48	740	5/22/71 7/15/89	14.02 17.48	500 740	N N	25–30 50–60
06869500	Saline River at Tescott, KS	2,820	1919–94	1951 1993	30.06 30.14	61,400 8,430	4/01/73 4/16/87	29.59 29.77	9,800 9,110	Y Y	10 5–10
06869950	Mulberry Creek near Salina, KS	250	1961–89, 1991–94	1971 1974	26.94 27.09	7,500 7,200	5/22/71	26.94	7,500	N	15
06870200	Smoky Hill River at New Cambria, KS	11,730	1963–94	1974 1993	30.91 31.72	26,400 18,600	9/29/73 10/12/73	30.26 30.91	22,000 26,400	Y Y	-- --
06870300	Gypsum Creek near Gypsum, KS	120	1903, 1929, 1951, 1955–90	1965 1903	20.71 22.20	11,400 --	10/11/73	20.30	8,100	N	20–25
06871900	Deer Creek near Phillipsburg, KS	65.0	1967–81	1977	25.60	5,190	9/03/77	25.60	5,190	N	5–10
06873300	Ash Creek tributary near Stockton, KS	0.89	1957–93	1987 1993	11.19 15.54	760 530	5/31/87	11.19	760	N	25–50
06873700	Kill Creek near Bloomington, KS	52.0	1964–81	1981	19.40	5,220	9/25/81	19.40	5,220	N	15–20
06874500	East Limestone Creek near Ionia, KS	25.6	1934–38, 1957–89	1935	22.55	3,920	9/26/73	22.54	2,100	N	15–20
06875800	Limestone Creek near Glen Elder, KS	210	1965–86	1974 1985	-- 20.97	5,500 2,080	10/12/73	--	5,500	N	>100
06875900	Solomon River near Glen Elder, KS	5,340	1965–94	1993	29.57	9,410	4/14/87	28.31	7,470	Y	--
06876200	Middle Pipe Creek near Miltonvale, KS	10.2	1957–77	1973	24.86	6,400	9/26/73	24.86	6,400	N	>100
06876700	Salt Creek near Ada, KS	384	1960–94	1961	23.25	16,000	7/03/82	22.81	12,800	N	20–25
06876900	Solomon River at Niles, KS	6,770	1897–1903, 1918–94	1951 1903	31.76 33.80	178,000 30,000	9/28/73 10/11/73	30.38 30.92	28,500 52,400	Y Y	25 >100
06877120	Mud Creek at Abilene, KS	87.0	1970–94	1974	15.77	7,500	10/11/73	15.77	7,500	N	10–15
06877200	West Turkey Creek near Elmo, KS	26.6	1957–77	1971	20.35	2,700	5/23/71	20.35	2,700	N	5–10
06877500	Turkey Creek near Abilene, KS	143	1951, 1959–90	1951	29.70	23,700	5/22/71	27.36	16,000	N	25–35
06878000	Chapman Creek near Chapman, KS	300	1951, 1954–94	1951	25.50	46,700	10/12/73	24.08	15,800	N	35

Table 17. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kansas—Continued

Station number (fig. 38)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06879100	Kansas River at Fort Riley, KS	44,870	1964–94	1993	27.93	87,600	10/14/73	23.74	59,400	Y	--
06879815	Wildcat Creek at Manhattan, KS	74.0	1974–89	1977	25.30	8,600	6/18/77	25.30	8,600	N	35
06882510	Big Blue River at Marysville, KS	4,777	1985–94	1986	38.90	39,700	7/06/86	38.90	39,700	N	5–10
06884100	Mulberry Creek tributary near Haddam, KS	1.64	1957–72, 1974–89	1968	23.30	2,000	10/11/73	19.20	1,200	N	20–25
06884200	Mill Creek at Washington, KS	344	1960–94	1993	29.35	14,600	6/18/83	29.13	12,300	N	10–15
06884300	Mill Creek tributary near Washington, KS	3.20	1957–94	1983	19.90	2,500	6/18/83	19.90	2,500	N	25
06884400	Little Blue River near Barnes, KS	3,324	1958–94	1974	27.70	53,700	10/12/73	27.70	53,700	N	70–75
06884900	Robidoux Creek at Beattie, KS	40.0	1957–89	1960	22.46	6,200	7/21/73	22.30	6,000	N	5–10
06885500	Black Vermillion River near Frankfort, KS	410	1948, 1951, 1954–94	1959 1993	29.40 30.28	38,300 18,700	10/11/73	30.06	36,400	N	25–35
06886500	Fancy Creek at Winkler, KS	174	1944, 1951, 1954–73, 1975–89	1972 1944	21.60 22.30	24,000 --	9/07/72	21.60	24,000	N	75–100
06887200	Cedar Creek near Manhattan, KS	13.4	1957–94	1972 1993	22.38 22.93	8,800 --	9/06/72	22.38	8,800	N	25–35
06888030	Vermillion Creek near Louisville, KS	297	1970–85	1982 1984	39.35 43.40	14,000 --	6/09/82	39.35	14,000	N	20–25
06888300	Rock Creek near Louisville, KS	128	1959–90	1968	35.50	20,000	6/09/84	34.76	17,000	N	20–25
06888500	Mill Creek near Paxico, KS	316	1951, 1954–94	1951	34.70	77,200	9/26/73	32.21	42,200	N	25–35
06888900	Blacksmith Creek tributary near Valencia, KS	1.31	1957–89	1985	14.45	2,000	9/12/77 2/22/85	13.47 14.45	1,300 2,000	N N	10–25 50
06889100	Soldier Creek near Goff, KS	2.06	1965–87	1970	15.18	7,080	5/10/70	15.18	7,080	N	>100
06889120	Soldier Creek near Bancroft, KS	10.5	1965–88	1970	16.09	13,100	5/10/70	16.09	13,100	N	>100
06889140	Soldier Creek near Soldier, KS	16.9	1965–94	1970	16.46	11,700	5/10/70 6/09/84	16.46 15.31	11,700 8,660	N N	>100 80–100
06889160	Soldier Creek near Circleville, KS	49.3	1965–94	1984	21.52	25,300	6/09/82 6/09/84	21.40 21.52	23,900 25,300	N N	>100 >100
06889200	Soldier Creek near Delia, KS	157	1959–94	1982	23.95	29,400	6/09/82 6/10/84	23.95 22.81	29,400 16,700	N N	>100 40–50
06889500	Soldier Creek near Topeka, KS	290	1929–94	1982 1929	27.44 28.25	30,400 10,000	9/13/77 7/27/81 6/09/82	21.31 25.90 27.44	21,900 25,000 30,400	N N N	20–25 30–40 50–100
06889550	Indian Creek near Topeka, KS	9.72	1970–94	1981	17.87	2,700	7/27/81	17.87	2,700	N	10–25
06889630	Shunganunga Creek at Topeka, KS	33.5	1970–94	1973 1993	15.18 15.37	3,300 3,200	7/20/73	15.18	3,300	N	10
06890000	Lower Delaware River near Horton, KS	19.0	1951, 1955–61, 1963–64, 1977–78	1977	18.45	1,530	9/12/77	18.45	1,530	Y	--
06890100	Delaware River near Muscotah, KS	431	1970–94	1977	30.83	28,000	9/13/77	30.83	28,000	N	25

Table 17. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kansas—Continued

Station number (fig. 38)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06890300	Spring Creek near Wetmore, KS	21.0	1957–77	1970	23.00	11,000	5/10/70	23.00	11,000	N	25–50
06890900	Delaware River below Perry Dam, KS	1,117	1970–94	1984	--	12,100	7/09/84	--	12,100	Y	--
06891500	Wakarusa River near Lawrence, KS	425	1921, 1929–72, 1981–94	1951	31.59	24,200	6/30/88	28.55	9,230	Y	2–5
06891650	Naismith Creek at Lawrence, KS	1.54	1974–88	1977	15.80	2,500	6/24/77	15.80	2,500	N	25–50
06892800	Turkey Creek at Merriam, KS	6.76	1974–86	1977	21.65	5,300	9/12/77	21.65	5,300	N	>100
06892940	Turkey Creek at Kansas City, KS	22.3	1974–87	1983	25.80	12,500	5/01/83	25.80	12,500	N	10–25
06893300	Indian Creek at Overland Park, KS	26.6	1964–94	1984	17.78	12,800	6/09/84	17.78	12,800	N	50–100
06893350	Tomahawk Creek near Overland Park, KS	23.9	1970–82	1982	19.17	8,250	8/13/82	19.17	8,250	N	10–25
06910800	Marais des Cygnes River near Reading, KS	177	1969–94	1982	27.47	67,400	5/29/82	27.47	67,400	N	100
06911500	Salt Creek near Lyndon, KS	111	1940–94	1951	17.00	36,400	6/16/75	15.51	18,000	N	25–50
06911900	Dragoon Creek near Burlingame, KS	114	1961–94	1982	22.64	34,400	6/19/77 5/29/82	22.05 22.64	24,800 34,400	N N	25–35 50–100
06912300	Dragoon Creek tributary near Lyndon, KS	3.76	1957–90	1981 1982	18.11 18.20	8,200 7,600	6/11/81 5/29/82	18.11 18.20	8,200 7,600	N N	25–30 20–25
06913000	Marais des Cygnes River near Pomona, KS	1,040	1923–37, 1969–94	1929 1986	-- 30.59	69,400 25,700	10/10/85	30.59	25,700	Y	10–25
06913500	Marais des Cygnes River near Ottawa, KS	1,250	1895, 1897–98, 1902–05, 1909, 1912–13, 1915, 1919–94	1951 1929	-- 38.65	142,000 87,400	6/12/81 10/12/85	35.07 35.11	25,100 25,000	Y Y	5 5
06913700	Middle Creek near Princeton, KS	52.0	1951, 1957–89	1981 1961	28.49 29.73	16,000 10,000	6/11/81	28.49	16,000	N	>100
06915000	Big Bull Creek near Hillsdale, KS	147	1951, 1958–94	1951	21.20	45,200	10/22/85	10.20	2,910	Y	--
06915100	Big Bull Creek at Paola, KS	230	1970–91, 1993–94	1974	25.18	39,000	10/11/73	25.18	39,000	N	>100
06915800	Marais des Cygnes River at La Cygne, KS	2,669	1985–94	1985	32.20	50,100	2/24/85	32.20	50,100	Y	--
06916600	Marais des Cygnes River near KS-MO State line, KS	3,230	1959–94	1987	34.31	64,100	6/25/77 10/04/86	32.83 34.31	49,300 64,100	Y Y	-- --
06916700	Middle Creek near Kincaid, KS	2.02	1957–90	1957	15.96	2,500	8/20/89	15.94	2,000	N	10–15
06917000	Little Osage River at Fulton, KS	295	1949–94	1987	35.21	62,800	10/03/86	35.21	62,800	N	>100
06917100	Marmaton River tributary near Bronson, KS	0.88	1957–90	1969 1973	16.82 17.34	590 590	4/22/73	17.34	590	N	25
06917380	Marmaton River near Marmaton, KS	292	1972–94	1987	42.87	105,600	10/03/86	42.87	105,600	N	>100
06917400	Marmaton River tributary near Fort Scott, KS	2.80	1957–94	1968 1987	16.62 16.65	1,900 1,900	10/03/86	16.65	1,900	N	25

Table 17. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kansas—Continued

Station number (fig. 38)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07138600	White Woman Creek tributary near Selkirk, KS	38.0	1957–90, 1992–94	1972	13.06	1,000	7/09/72	13.06	1,000	N	100
07138650	White Woman Creek near Leoti, KS	750	1967–86	1972 1982	13.10 17.15	5,600 4,880	7/10/72	13.10	5,600	N	10–25
07139700	Arkansas River tributary near Dodge City, KS	8.66	1957–89, 1992–94	1978	16.22	1,150	4/30/78	16.22	1,150	N	25–50
07139800	Mulberry Creek near Dodge City, KS	73.8	1969–90	1978	12.07	1,330	4/30/78	12.07	1,330	N	10–25
07140300	White Woman Creek near Bellefont, KS	14.0	1957–89	1987	14.88	3,410	7/04/87	14.88	3,410	N	25–35
07140600	Pawnee River tributary near Kalvesta, KS	6.89	1957–89	1987	13.38	5,490	7/04/87	13.38	5,490	N	>100
07140700	Guzzlers Gulch near Ness City, KS	58.2	1962–80	1971	14.29	3,050	7/29/71	14.29	3,050	N	10–25
07141200	Pawnee River near Larned, KS	2,148	1925–94	1958 1993	28.22 33.75	16,300 6,210	7/25/79	22.13	9,780	N	20–25
07141300	Arkansas River at Great Bend, KS	34,356	1921, 1941–94	1965 1981	13.10 16.56	27,800 14,000	4/03/73	10.62	16,500	Y	--
07141800	Otter Creek near Rush Center, KS	17.0	1957–89	1958	20.71	5,080	7/11/72	18.73	1,700	N	10–20
07142100	Rattlesnake Creek tributary near Mullinville, KS	10.3	1957–89	1963	16.10	5,500	9/26/73	15.00	3,110	N	5–10
07142300	Rattlesnake Creek near Macksville, KS	784	1960–94	1973	11.02	17,700	9/26/73	11.02	17,700	N	>100
07142620	Rattlesnake Creek near Raymond, KS	1,167	1961–94	1973	8.74	2,140	9/29/73	8.74	2,140	Y	50
07142700	Salt Creek near Partridge, KS	85.0	1957–89	1973	20.12	4,600	9/26/73 10/11/73	20.12 19.86	4,600 4,000	N N	25–50 25
07142860	Cow Creek near Claflin, KS	43.0	1967–88	1975	16.15	5,060	8/29/75	16.15	5,060	N	25–30
07142900	Blood Creek near Boyd, KS	61.0	1957–89	1981 1957	15.95 21.48	7,700 3,400	6/22/81	15.95	7,700	N	50–60
07143100	Lower Cheyenne Creek tributary near Claflin, KS	1.48	1957–94	1981	16.70	570	6/22/81	16.70	570	N	>100
07143300	Cow Creek near Lyons, KS	728	1929, 1938–51, 1960–94	1929	22.75	28,000	9/26/73	20.38	24,100	N	80–100
07143330	Arkansas River near Hutchinson, KS	38,910	1960–94	1973	12.95	24,700	9/28/73 10/13/73	12.95 11.81	24,700 18,000	Y Y	25–50 15–25
07143500	Little Arkansas River near Geneseo, KS	25.0	1957–77	1973	23.89	1,800	9/26/73	23.89	1,800	N	10–25
07143600	Little Arkansas River near Little River, KS	71.0	1960–86	1972 1973	18.83 21.49	9,000 --	9/02/72	18.83	9,000	N	>100
07143665	Little Arkansas River at Alta Mills, KS	736	1973–94	1974	27.42	30,100	10/12/73	27.42	30,100	N	10–25
07144200	Little Arkansas River at Valley Center, KS	1,327	1916–17, 1919, 1921–94	1945	22.05	32,000	4/21/74 10/31/79	-- --	26,600 29,000	N N	10–25 25
07144300	Arkansas River at Wichita, KS	40,490	1898–1994	1980 1904	-- 17.30	48,400 39,000	10/01/73 10/31/79 10/11/85	-- -- --	39,400 48,400 32,500	N N N	25–50 50–100 25–50
07144325	Gypsum Creek at Oliver Street, Wichita, KS	16.4	1968–77 1983–84	1973	99.20	2,300	3/10/73	99.20	2,300	N	10

Table 17. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kansas—Continued

Station number (fig. 38)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07144330	Dry Creek at Lincoln Street, Wichita, KS	2.94	1964–77	1970	29.51	1,550	6/11/70	29.51	1,550	N	25–35
07144494	Cowskin Creek tributary at Westfield Drive, Wichita, KS	3.53	1968–77	1977	21.87	900	8/11/77	21.87	900	N	50
07144780	North Fork Ninnescah River above Cheney Reservior, KS	787	1966–94	1980	11.65	87,000	10/30/79	11.65	87,000	N	50–100
07144795	North Fork Ninnescah River at Cheney Dam, KS	901	1965–94	1980 1987	4.80 5.51	2,070 1,990	11/13/79 7/13/87	4.80 5.51	2,070 1,990	Y Y	-- --
07144850	South Fork South Fork Ninnescah River near Pratt, KS	21.0	1962–80	1974	10.05	7,050	4/20/74	10.05	7,050	N	>100
07144900	South Fork Ninnescah River tributary near Pratt, KS	1.48	1957–89	1987	15.82	2,310	8/19/85 7/05/87	14.93 15.82	1,000 2,310	N N	10 >100
07145200	South Fork Ninnescah River near Murdock, KS	650	1951–94	1980	12.84	28,700	10/31/79	12.84	28,700	N	25–35
07145300	Clear Creek near Garden Plain, KS	5.03	1957–89	1986	15.28	1,600	10/09/85	15.28	1,600	N	15–20
07145500	Ninnescah River near Peck, KS	2,129	1923, 1938–94	1923	26.40	70,000	6/17/75 10/11/85	20.88 21.33	31,700 34,800	Y Y	20–25 25
07145700	Slate Creek at Wellington, KS	154	1960–94	1975 1965	25.82 26.44	28,500 9,000	6/17/75 7/02/76	25.82 23.80	28,500 10,700	N N	>100 10
07145800	Antelope Creek tributary near Dalton, KS	0.41	1957–90	1986	18.40	692	5/06/86	18.40	692	N	>100
07146500	Arkansas River at Arkansas City, KS	43,713	1903–06, 1922–94	1923	28.43	103,000	10/12/85	26.10	85,200	Y	25–50
07146570	Cole Creek near Degraff, KS	30.0	1962–80	1979	15.40	22,500	6/08/79	15.40	22,500	N	>100
07146700	West Branch Walnut River tributary near Degraff, KS	11.0	1957–77	1976	21.63	5,600	7/02/76	21.63	5,600	N	50
07146830	Walnut River at U.S. Highway 54 east of El Dorado, KS	350	1982–94	1986	14.52	9,350	10/10/85	14.52	9,350	Y	--
07147020	Whitewater River tributary near Towanda, KS	0.17	1963–94	1965	16.32	510	6/08/79	16.30	230	N	5–10
07147070	Whitewater River at Towanda, KS	426	1962–94	1979	29.73	58,400	6/08/79 10/10/85	29.73 28.21	58,400 41,600	N N	50–75 25
07147990	Cedar Creek tributary near Cambridge, KS	2.41	1961–94	1977 1961	14.42 14.70	3,000 2,670	6/21/77	14.42	3,000	N	10–25
07148100	Grouse Creek near Dexter, KS	170	1960–89	1976	31.19	51,000	7/03/76	31.19	51,000	N	50–100
07148700	Dog Creek near Deerhead, KS	5.31	1957–77	1970	26.76	3,600	5/28/70	26.76	3,600	N	25–50
07148800	Medicine Lodge River tributary near Medicine Lodge, KS	2.04	1957–77	1974	15.84	1,600	10/11/73	15.84	1,600	N	25
07151500	Chikaskia River near Corbin, KS	794	1923, 1950–65, 1976–94	1923	28.00	60,000	10/11/85	22.75	39,300	N	20–25
07151600	Rush Creek near Harper, KS	12.0	1957–89	1977	16.82	4,500	5/23/77 5/06/87	16.82 16.70	4,500 4,260	N N	25–35 25

Table 17. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kansas—Continued

Station number (fig. 38)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07155590	Cimarron River near Elkhart, KS	2,899	1972–94	1977	9.17	21,500	5/26/77	9.17	21,500	N	10–25
07155900	North Fork Cimarron River tributary near Elkhart, KS	75.0	1957–89	1976	17.50	10,000	4/28/76	17.50	10,000	N	25–50
07156000	North Fork Cimarron River tributary near Richfield, KS	103	1957–77	1976	21.10	11,000	4/27/76	21.10	11,000	N	50
07156010	North Fork Cimarron River at Richfield, KS	463	1972–86	1976	17.50	32,000	4/27/76	17.50	32,000	N	>100
07156100	Sand Arroyo Creek near Johnson, KS	619	1972–86	1982	9.00	2,300	7/08/82	9.00	2,300	N	25–35
07156220	Bear Creek near Johnson, KS	835	1967–94	1982	15.00	15,000	7/08/82	15.00	15,000	N	25–50
07156700	Cimarron River tributary near Satanta, KS	2.41	1957–94	1962 1994	14.12 16.12	2,040 725	6/18/82	13.95	1,600	N	25–50
07157100	Crooked Creek near Copeland, KS	44.0	1957–89	1965 1989	17.27 14.83	5,500 758	8/31/72	18.85	4,000	N	20–25
07157400	Crooked Creek tributary at Meade, KS	6.57	1957–89	1981	16.83	4,400	4/30/78 7/30/81	16.33 16.83	3,500 4,400	N N	10–25 10–25
07157900	Cavalry Creek at Coldwater, KS	39.0	1957–88	1978 1958	8.47 10.68	4,620 1,700	9/26/73 5/26/78	9.40 8.47	3,550 4,620	N N	25–35 50–75
07166000	Verdigris River near Coyville, KS	747	1940–94	1951	41.25	130,000	10/04/86	31.85	8,740	Y	<2
07166200	Sandy Creek near Yates Center, KS	6.80	1957–94	1972	19.80	3,000	7/12/72	19.80	3,000	N	20–25
07166500	Verdigris River near Altoona, KS	1,138	1939–94	1951	31.09	71,000	10/03/86	28.81	48,900	Y	10–15
07167500	Otter Creek at Climax, KS	129	1947–93	1976	31.47	107,000	7/03/76	31.47	107,000	N	>100
07169200	Salt Creek near Severy, KS	7.59	1957–77	1976	22.56	9,200	7/03/76	22.56	9,200	N	15–25
07169500	Fall River at Fredonia, KS	827	1904, 1923, 1927–28, 1939–94	1945	36.17	49,000	10/03/86	32.26	32,800	Y	5
07169700	Snake Creek near Howard, KS	1.84	1957–77	1976	19.33	3,090	7/03/76	19.33	3,090	N	>100
07169800	Elk River at Elk Falls, KS	220	1968–94	1976	34.85	200,000	7/03/76	34.85	200,000	N	>100
07170060	Elk River below Elk City Lake, KS	634	1966–94	1987	33.36	11,900	10/04/86	33.36	11,900	Y	--
07170500	Verdigris River at Independence, KS	2,892	1885, 1904–05, 1907–08, 1915, 1918, 1922–94	1945 1943	47.28 47.60	117,000 114,000	10/04/86	46.79	109,000	Y	100
07170600	Cherry Creek near Cherryvale, KS	15.0	1957–77	1976	26.26	19,000	7/03/76	26.26	19,000	N	>100
07170700	Big Hill Creek near Cherryvale, KS	37.0	1958–94	1976	23.02	36,000	7/03/76 10/02/86	23.02 15.32	36,000 1,380	N Y	>100 <2
07170800	Mud Creek near Mound Valley, KS	4.22	1957–90	1976	20.40	7,500	7/03/76 5/27/84	20.40 19.26	7,500 4,800	N N	>100 100
07171700	Spring Branch near Cedar Vale, KS	3.10	1957–94	1987	17.60	3,650	6/18/78 10/02/86	14.44 17.60	3,100 3,650	N N	10 10–20
07171800	Cedar Creek tributary near Hooser, KS	0.56	1957–90	1987	16.13	720	10/03/86 6/13/89	16.13 15.90	720 680	N N	40–50 25–35

Table 17. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kansas—Continued

Station number (fig. 38)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07172000	Caney River near Elgin, KS	445	1939–94	1987	42.35	104,000	10/03/86	42.35	104,000	N	>100
07179500	Neosho River at Council Grove, KS	250	1932, 1938–94	1951 1942	35.50 37.13	121,000 65,900	5/22/71	15.53	3,720	Y	<2
07179730	Neosho River near Americus, KS	622	1964–94	1993 1969	27.84 28.30	17,400 10,900	10/10/85	27.43	17,000	Y	--
07180300	Spring Creek tributary near Florence, KS	0.55	1957–90	1975	18.36	710	6/16/75	18.36	710	N	30–50
07180400	Cottonwood River near Florence, KS	754	1962–94	1975	28.03	56,000	6/17/75	28.03	56,000	Y	25–35
07181500	Middle Creek near Elmdale, KS	92.0	1917, 1938–51, 1960–62, 1965–82, 1984–90	1969 1938	19.92 21.00	90,000 20,000	6/20/77	18.48	22,000	N	10–20
07182250	Cottonwood River near Plymouth, KS	1,740	1964–94	1986 1965	35.45 35.70	58,200 57,500	10/10/85	35.45	58,200	Y	--
07182600	North Big Creek near Burlington, KS	46.0	1957–89	1961	23.81	9,200	10/11/73	22.39	6,600	N	10–25
07183000	Neosho River near Iola, KS	3,818	1885, 1895–1904, 1918–94	1951	43.00	436,000	10/03/86	31.78	64,100	Y	10
07183100	Owl Creek near Piqua, KS	177	1960–70	1970 1961	20.97 21.78	27,700 22,000	4/19/70	20.97	27,700	N	20
07183200	Neosho River near Chanute, KS	4,195	1963–74	1970	32.09	41,600	4/20/70	32.09	41,600	Y	--
07183500	Neosho River near Parsons, KS	4,905	1922–94	1951	40.20	410,000	10/05/86	27.20	92,700	Y	25–35
07183800	Limestone Creek near Beulah, KS	12.0	1957–89	1985	22.15	11,000	6/22/85	22.15	11,000	N	10–25
07184000	Lightning Creek near McCune, KS	197	1938–46, 1960–94	1987 1993	18.48 19.79	84,000 67,500	10/01/86	18.48	84,000	N	100
07184600	Fly Creek near Faulkner, KS	27.0	1957–77	1976 1964	23.52 23.65	28,000 20,000	7/03/76	23.52	28,000	N	25

[1] Regulated during flood: N, no; Y, yes.

Kentucky

Hydroclimatology

Kentucky is located in the south-central United States. This location results in the Gulf of Mexico being the primary source of moisture for the State. The Pacific Ocean can be a secondary source during the winter months. The moisture evaporated from the land surface, as well as the moisture evaporated from the lakes and reservoirs, supplement both the moisture from the Gulf and the Pacific. The precipitation in Kentucky varies from north to south as a result of the southern part of the State being closer to the Gulf of Mexico. Mean annual precipitation in the north is 41 in. and in the south, 52 in. (Paulson and others, 1991).

Floods in Kentucky are caused either by frontal systems that occur in winter and early summer, airmass-type thunderstorms from summer to early fall, or tropical storms from the Gulf of Mexico from late summer to early fall. Floods associated with frontal systems are generally the longest lasting and the most widespread. Floods associated with summer thunderstorms are more local and can be of short duration. Rainfall associated with tropical cyclones is infrequent but can produce widespread flooding.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Kentucky is dependent on contributing-drainage area; main-channel slope; basin-shape index, which is the ratio of basin length squared to total drainage area; and main-channel sinuosity, which is the ratio of main-channel length to basin length (Jennings and others, 1994).

Significant Floods

Significant flooding occurred in December 1978 in central and north-central Kentucky as a result of widespread rainfall associated with a slow-moving, low-pressure system. Twenty-two percent of the streamflow-gaging stations recorded significant discharges. The discharge of the Kentucky River at Lock 4 at Frankfort (station 03287500, table 18) was the largest ever recorded at that station.

In early May 1984, central Kentucky was affected by a series of thunderstorms producing widespread and flash flooding. Twenty-two percent of the streamflow-gaging stations in the State recorded significant discharges.

Widespread flooding occurred again throughout central Kentucky in February 1989. Flooding was particularly severe in northern areas of the Kentucky River Basin and in the Rolling Fork Basin. Some areas received more than 10 in. of rain.

The location of streamflow-gaging stations in Kentucky that had significant floods for 1970–89 is shown in figure 39 by station number. The specific data for each significant flood are listed in table 18. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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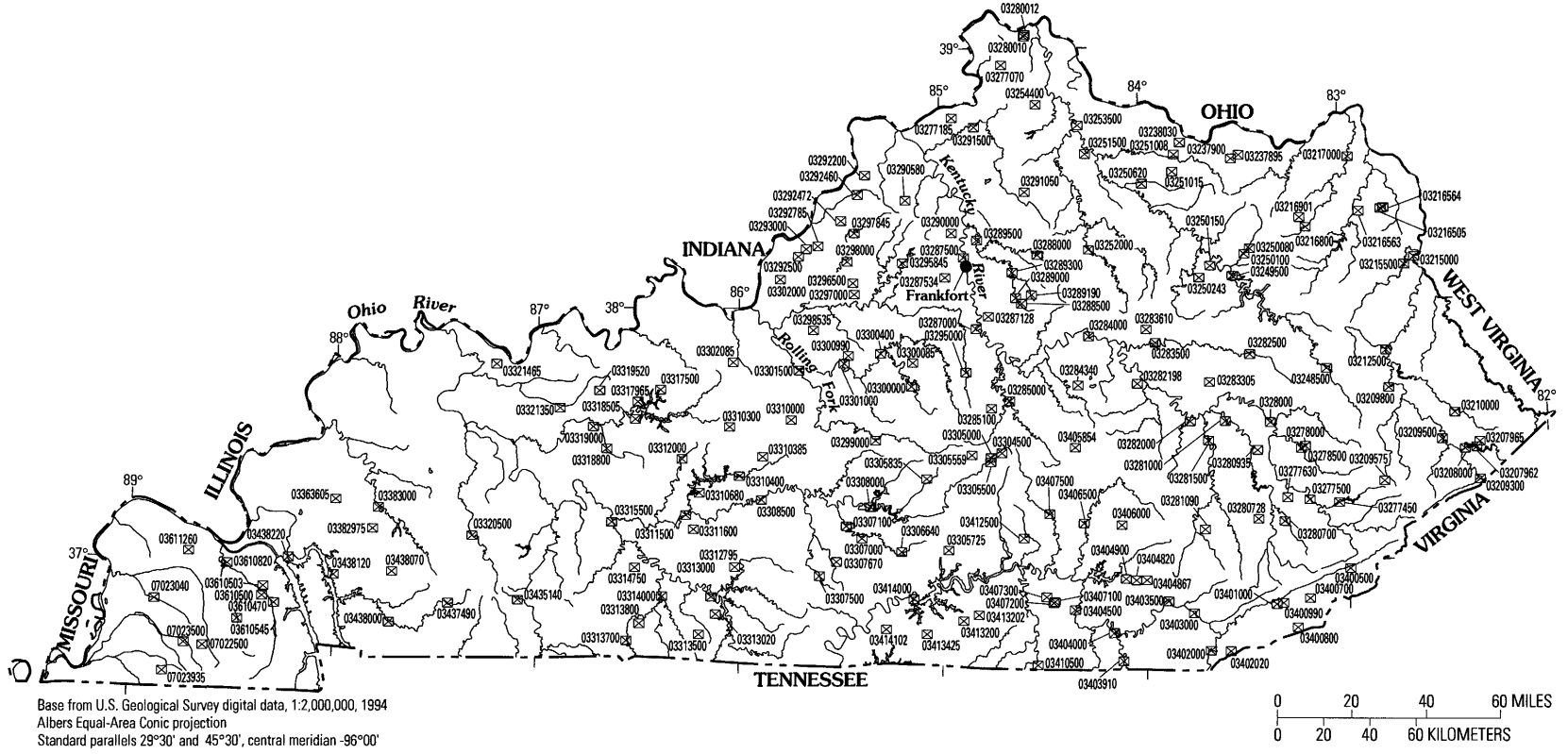

EXPLANATION

03313000 ⊠ **Streamflow-gaging station and number**

Figure 39. Location of streamflow-gaging stations with significant floods during 1970–89 for Kentucky.

Table 18. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kentucky

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
Station number (fig. 39)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03207962	Dicks Fork at Phyllis, KY	0.82	1975–84	1984	3.89	178	5/07/84	3.89	178	N	5–10
03207965	Grapevine Creek near Phyllis, KY	6.20	1974–82, 1989–92	1974 1981	3.45 3.95	1,650 1,220	6/01/74	3.45	1,650	N	25–50
03208000	Levisa Fork below Fishtrap Dam, KY	392	1929, 1938–92	1957 1974	33.90 85.77	33,000 8,540	1/17/74	85.77	8,540	Y	<2
03209300	Russell Fork at Elkhorn City, KY	554	1957–92	1977	24.80	54,200	4/04/77	24.80	54,200	Y	25
03209500	Levisa Fork at Pikeville, KY	1,238	1862, 1903, 1908–15, 1917–93	1957	52.72	85,500	4/05/77	51.46	81,700	Y	40
03209575	Bill D Branch near Kite, KY	3.17	1976–86	1984	10.89	900	5/07/84	10.89	900	N	25–50
03209800	Levisa Fork at Prestonsburg, KY	1,702	1957, 1964–81	1957	48.78	69,700	4/05/77	45.71	45,500	Y	--
03210000	Johns Creek near Meta, KY	56.3	1938–39, 1942–93	1963 1984	17.38 19.62	7,380 5,950	6/07/81 5/07/84	19.30 19.62	6,010 5,950	N N	15–20 15–20
03212500	Levisa Fork at Paintsville, KY	2,144	1862, 1918, 1929–93	1957 1862	45.92 46.60	69,700 --	4/06/77 5/09/84	42.19 40.45	43,700 43,400	Y Y	<5 <5
03215000	Big Sandy River at Louisa, KY	3,897	1939–77	1955 1958	46.36 46.37	89,400 77,900	4/07/77	45.00	84,200	Y	10
03215500	Blaine Creek at Yatesville, KY	217	1916–20, 1938–84	1962	29.64	21,000	12/09/78	27.50	17,000	N	50
03216505	Beckwith Branch tributary near Grayson, KY	0.51	1977–86	1979	14.44	80	5/01/83	14.43	80	N	5
03216563	Mile Branch near Rush, KY	0.94	1976–87	1980	7.11	378	7/03/80	7.11	378	N	10–25
03216564	Mile Branch at Coalton, KY	1.61	1977–86	1980	15.43	450	7/03/80	15.43	450	N	5
03216800	Tygarts Creek at Olive Hill, KY	59.6	1957–93	1972 1975	17.06 19.04	9,470 7,900	4/22/72	17.06	9,470	N	15–20
03216901	Trough Camp Creek tributary near Olive Hill, KY	1.11	1976–85	1979	8.50	445	9/21/79	8.50	445	N	25–50
03217000	Tygarts Creek near Greenup, KY	242	1934, 1937, 1941–93	1979	22.75	30,300	4/22/72 12/09/78	21.25 22.75	18,200 30,300	N N	25 >100
03237895	Indian Run tributary near Tollesboro, KY	0.23	1975–86	1983	87.98	170	5/02/83	87.98	170	N	10–25
03237900	Cabin Creek near Tollesboro, KY	22.4	1972–91	1972	14.42	8,370	4/22/72	14.42	8,370	N	15–25
03238030	Lawrence Creek near Maysville, KY	1.90	1975–86	1982	94.93	790	1/22/82	94.93	790	N	10–25
03248500	Licking River near Salyersville, KY	140	1939–89, 1991–92	1939	25.40	14,300	12/09/78	24.91	11,700	N	25
03249500	Licking River at Farmers, KY	827	1938–93	1962 1967	26.70 31.13	24,000 16,900	1/15/74	23.62	8,100	Y	<2
03250080	Jacks Branch near Moorehead, KY	0.19	1976–86	1979	15.42	85	12/08/78	15.42	85	N	10–25
03250100	North Fork Triplett Creek near Morehead, KY	84.7	1968–87, 1989–93	1989	20.62	10,600	2/15/89	20.62	10,600	N	50
03250150	Indian Creek near Owingsville, KY	2.43	1975–86	1979	73.57	1,610	7/27/79	73.57	1,610	N	>100

Table 18. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kentucky—Continued

Station number (fig. 39)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03250243	Rose Run tributary near Olympia, KY	0.70	1975–86	1980	89.91	470	--/--/80	89.91	470	N	100
03250620	Johnson Creek tributary near Fairview, KY	0.33	1976–86	1979	6.97	154	9/14/79	6.97	154	N	10–25
03251008	Wells Creek tributary near Washington, KY	0.14	1977–86	1982	17.71	398	1/22/82	17.71	398	N	10–25
03251015	Lee Creek tributary at Mays Lick, KY	0.45	1975–85	1976	97.44	285	10/17/75	97.44	285	N	100
03251500	Licking River at McKinneysburg, KY	2,326	1922, 1925–26, 1937, 1939–93	1964	50.26	59,100	2/16/89	43.75	44,300	Y	5–10
03252000	Stoner Creek at Paris, KY	239	1954–80, 1982–91	1979	20.55	19,400	12/09/78	20.55	19,400	N	100
03253500	Licking River at Catawba, KY	3,300	1854, 1888–1993	1964	52.60	95,000	2/16/89	43.98	76,800	Y	15
03254400	North Fork Grassy Creek near Piner, KY	13.6	1968–80, 1982–83	1970	19.92	20,200	4/30/70	19.92	20,200	N	>100
03260010	Pleasant Run Creek at Crescent Springs, KY	0.68	1973–83, 1985–86	1979	10.87	640	6/08/79	10.87	640	N	10–25
03260012	Pleasant Run Creek tributary at Fort Mitchell, KY	1.62	1973–87	1973	10.60	1,900	7/24/73	10.60	1,900	N	>50
03277070	Fowlers Fork at Union, KY	1.54	1976–86	1977	11.44	1,250	4/02/77	11.44	1,250	N	100
03277185	Craigs Creek tributary near Warsaw, KY	0.68	1976–86	1986	8.26	770	7/12/86	8.26	770	N	25–50
03277450	Carr Fork near Sassafras, KY	60.6	1963–93	1972 1967	17 89 19.24	5,420 5,220	4/12/72 1/24/79	17.89 11.82	5,420 1,840	N Y	10–25 <2
03277500	North Fork Kentucky River at Hazard, KY	466	1900, 1940–92	1957	37.54	47,800	4/05/77	32.06	39,000	Y	25
03277630	Brier Fork near Hazard, KY	1.32	1976–85	1984	90.94	563	11/19/84	90.94	563	N	10–25
03278000	Bear Branch near Noble, KY	2.21	1955–82	1972	3.97	568	4/12/72	3.97	568	N	15–20
03278500	Troublesome Creek at Noble, KY	177	1939, 1950–81	1963	29.75	22,800	6/22/74	28.87	21,400	N	15–20
03280000	North Fork Kentucky River at Jackson, KY	1,101	1905–07, 1917–21, 1927–31, 1935–93	1957 1939	40.41 43.10	53,500 46,800	5/08/84	41.97	53,500	Y	20
03280700	Cutshin Creek at Wooton, KY	61.3	1958–93	1963	16.23	14,200	6/15/89	16.10	14,000	N	25–50
03280728	Bull Creek near Hyden, KY	1.84	1976–86	1976	12.55	890	3/30/76	12.55	890	N	10–25
03280935	Stamper Fork at Canoe, KY	1.57	1975–86	1981	94.42	1,060	6/06/81	94.42	1,060	N	25–50
03281000	Middle Fork Kentucky River at Tallega, KY	537	1929, 1931–32, 1935, 1937, 1939–93	1957	43.33	52,700	6/07/81	24.90	8,620	Y	<2
03281090	Paces Creek near Garrard, KY	0.47	1976–85	1976	20.16	76	8/15/76	20.16	76	N	--
03281500	South Fork Kentucky River at Booneville, KY	722	1926–31, 1937, 1939–93	1957	43.40	66,100	5/08/84	41.12	51,600	N	10–20

Table 18. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kentucky—Continued

Station number (fig. 39)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03282000	Kentucky River at Lock 14 at Heidelberg, KY	2,657	1921–79, 1981–93	1939	35.60	120,000	5/08/84	30.90	94,600	Y	5–10
03282198	Clear Creek tributary near West Irvine, KY	0.59	1975–85	1975	101.18	348	4/25/75	101.18	348	N	10–25
03282500	Red River near Hazel Green, KY	65.8	1955–93	1962	22.12	9,080	12/09/78	20.50	7,930	N	50
03283305	Middle Fork Red River at Zachariah, KY	0.58	1975–85	1976	102.94	250	10/17/75	102.94	250	N	25
03283500	Red River at Clay City, KY	362	1931–32, 1937–93	1979	26.75	28,800	12/09/78	26.75	28,800	N	100
03283610	Lulbegrud Creek tributary at West Bend, KY	0.33	1975–76, 1978–86	1985	88.55	105	8/26/85	88.55	105	N	10
03284000	Kentucky River at Lock 10 near Winchester, KY	3,955	1908–93	1979	40.15	101,000	12/10/78	40.15	101,000	Y	35
03284340	Old Town Branch tributary near Richmond, KY	1.83	1976–85	1979	10.22	860	12/08/78	10.22	860	N	10–25
03285000	Dix River near Danville, KY	318	1943–93	1979	21.81	44,400	4/28/70 12/09/78 5/07/84	17.16 21.81 15.77	33,400 44,400 29,500	N N N	40 >100 25
03285100	Balls Branch tributary near Danville, KY	0.13	1976, 1978–86	1978	6.02	68	10/01/77	6.02	68	N	5
03287000	Kentucky River at Lock 6 near Salvisa, KY	5,102	1895–1986, 1988–93	1979	49.04	144,000	4/16/72 12/10/78	41.30 49.04	107,000 144,000	Y Y	15–20 >100
03287128	Tanners Creek at Mortonsville, KY	1.49	1976–87	1976	7.18	680	2/17/76	7.18	680	N	>50
03287500	Kentucky River at Lock 4 at Frankfort, KY	5,412	1895–1931, 1933–56, 1958–93	1979	48.47	118,000	12/09/78 2/16/89	48.47 44.17	118,000 106,000	Y Y	70 25
03287534	South Benson Creek near Frankfort, KY	4.47	1976–86	1978 1976	9.71 10.08	760 590	12/05/77	9.71	760	N	10
03288000	North Elkhorn Creek near Georgetown, KY	119	1948, 1951–83, 1989–93	1979 1948	15.60 22.00	8,730 --	12/09/78	15.60	8,730	N	25–50
03288500	Cave Creek near Fort Spring, KY	2.53	1953–79	1979	3.49	405	9/21/79	3.49	405	N	10–25
03289000	South Elkhorn Creek at Fort Spring, KY	24.0	1951–92	1989	9.50	2,280	2/15/89	9.50	2,280	N	25
03289190	Wolf Run at Cambridge Drive at Lexington, KY	5.30	1976–87	1978	9.15	1,620	8/25/78	9.15	1,620	N	10–25
03289300	South Elkhorn Creek near Midway, KY	105	1983–86, 1988–93	1989	21.28	7,270	2/15/89	21.28	7,270	N	--
03289500	Elkhorn Creek near Frankfort, KY	473	1916–20, 1932, 1937, 1940–83, 1989–93	1932	17.50	31,000	2/16/89	15.26	28,700	N	100
03290000	Flat Creek near Frankfort, KY	5.63	1952–87	1979	11.80	8,500	9/14/79	11.80	8,500	N	>100
03290580	Town Creek at New Castle, KY	5.62	1976–86	1979	15.04	1,300	9/13/79	15.04	1,300	N	10–25
03291050	South Rays Fork near Corinth, KY	0.58	1976–86	1979	15.30	525	9/22/79	15.30	525	N	25–50

Table 18. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kentucky—Continued

Station number (fig. 39)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03291500	Eagle Creek at Glencoe, KY	437	1913, 1915–20, 1928–31, 1937, 1939–87, 1989–93	1964	26.05	58,200	9/14/79	24.19	46,500	N	50
03292200	Jeff Branch near Sligo, KY	0.87	1976–83, 1985–86	1978	17.23	960	10/01/77	17.23	960	N	25–50
03292460	Harrods Creek near La Grange, KY	24.1	1968–93	1989 1979	9.80 9.93	6,100 5,310	4/04/89	9.80	6,100	N	50
03292472	South Fork Harrods Creek near Crestwood, KY	0.97	1975–87	1978	14.50	640	10/01/77	14.50	640	N	10–25
03292500	South Fork Beargrass Creek at Louisville, KY	17.2	1940–83, 1988–93	1964	17.17	4,940	4/02/70 7/22/73	16.89 16.52	4,610 3,790	N N	50 25
03292785	Middle Fork Beargrass Creek at St. Matthews, KY	6.59	1954, 1958–64, 1967, 1970–83	1970	563.02	2,200	4/02/70	563.02	2,200	N	25
03293000	Middle Fork Beargrass Creek at Louisville, KY	18.9	1943, 1945–83, 1985–93	1970	9.60	5,200	4/02/70	9.60	5,200	N	100
03295000	Salt River near Harrodsburg, KY	41.4	1953–83	1979	17.02	12,000	4/28/70 12/08/78	15.65 17.02	7,620 12,000	N N	25 >100
03295845	Bradshaw Creek near Shelbyville, KY	1.36	1976–86	1984	17.50	1,600	6/11/84	17.50	1,600	N	25–50
03296500	Plum Creek near Wilsonville, KY	19.1	1954–80	1980	10.82	7,950	7/02/80	10.82	7,950	N	>100
03297000	Little Plum Creek near Waterford, KY	5.15	1954–78, 1980–83	1980	6.30	4,420	7/02/80	6.30	4,420	N	25–50
03297845	Floyds Fork near Crestwood, KY	46.7	1980–91	1989	21.52	5,370	4/04/89	21.52	5,370	N	--
03298000	Floyds Fork at Fisherville, KY	138	1937, 1943, 1945–93	1970 1937	16.15 16.80	28,500 --	4/02/70 9/14/79	16.15 15.26	28,500 24,900	N N	100 50
03298535	Elm Lick near Clermont, KY	0.68	1976–85	1979	13.55	880	9/19/79	13.55	880	N	25–50
03299000	Rolling Fork near Lebanon, KY	239	1913, 1939–92	1970 1913	24.51 24.70	54,800 --	4/28/70 12/08/78	24.51 23.17	54,800 37,600	N N	>100 30–40
03300000	Beech Fork near Springfield, KY	85.9	1953–83	1970	30.34	10,600	4/28/70	30.34	10,600	N	25–50
03300065	North Prong near Willisburg, KY	1.71	1975–78, 1980–87	1984	19.04	960	5/07/84	19.04	960	N	10
03300400	Beech Fork at Maud, KY	436	1964, 1973–93	1979	26.16	33,300	12/09/78	26.16	33,300	N	10–15
03300990	Town Creek tributary at Bardstown, KY	0.32	1975–86	1979	16.52	120	9/22/79	16.52	120	N	10–15
03301000	Beech Fork at Bardstown, KY	669	1940–85	1979	46.00	39,900	12/09/78 5/08/84	46.00 45.50	39,900 38,000	N N	50 25–35
03301500	Rolling Fork near Boston, KY	1,299	1937, 1939–93	1989 1937	52.62 55.20	66,500 --	12/10/78 5/09/84 2/17/89	51.73 48.49 52.62	65,000 60,500 66,500	N N N	100 90 100
03302000	Pond Creek near Louisville, KY	64.0	1937, 1945–93	1964	22.69	8,020	4/02/70 4/30/83	22.52 20.90	5,970 5,180	N N	15–25 10
03302085	Otter Creek tributary near Vine Grove, KY	0.90	1975–78, 1980–86	1975	7.33	250	3/29/75	7.33	250	N	<5

Table 18. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kentucky—Continued

Station number (fig. 39)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03304500	McGills Creek near McKinney, KY	2.14	1952–79	1972	6.57	1,480	4/12/72	6.57	1,480	N	25
03305000	Green River near McKinney, KY	22.4	1952–83	1974	10.75	20,000	4/12/72 1/10/74	9.26 10.75	13,700 20,000	N N	15–25 50
03305500	Green River near Mount Salem, KY	36.3	1954–83	1979	12.39	16,400	9/21/79	12.39	16,400	N	25
03305559	Carpenter Creek tributary near Houstonville, KY	0.88	1976–85	1980	13.52	730	11/24/79	13.52	730	N	10–25
03305725	Irvin Branch near Salem, KY	1.37	1976–86	1984	26.20	2,650	5/07/84	26.20	2,650	N	>50
03305835	Gum Lick Creek tributary near Clementsville, KY	0.71	1976–86	1976	8.56	515	6/03/76	8.56	515	N	10–25
03306000	Green River near Campbellsville, KY	682	1931–32, 1962, 1964–93	1962 1989	72.60 113.68	60,700 6,730	1/08/70	56.97	10,100	Y	<2
03306640	White Oak Creek tributary near Montpelier, KY	0.50	1976–85	1982	16.45	790	9/01/82	16.45	790	N	--
03307000	Russell Creek near Columbia, KY	188	1937, 1940–93	1982	26.12	40,600	9/01/82 5/07/84	26.12 24.41	40,600 29,600	N N	75 25
03307100	Russell Creek near Gresham, KY	265	1965–83	1979	33.41	68,000	12/09/78	33.41	68,000	N	50–100
03307500	South Fork Little Barren River at Edmonton, KY	18.3	1942–83	1975	14.82	10,600	3/12/75 3/21/76	14.82 9.96	10,600 3,570	N N	>100 10
03307670	Prices Creek near Gradyville, KY	2.53	1976–86	1984	14.60	2,350	5/07/84	14.60	2,350	N	25–50
03308500	Green River at Munfordville, KY	1,673	1913, 1916–22, 1925–79, 1981–93	1962	57.72	76,800	5/08/84	53.78	65,300	Y	50
03310000	North Fork Nolin River at Hodgenville, KY	36.4	1942–78, 1980–82	1970 1964	15.75 15.80	9,380 8,860	4/28/70	15.75	9,380	N	15–25
03310300	Nolin River at White Mills, KY	357	1960–93	1970	34.86	19,400	4/29/70 2/14/89	34.86 34.65	19,400 19,200	N N	15–25 15–25
03310385	Bacon Creek tributary near Upton, KY	0.56	1975–85	1984	18.64	440	5/07/84	18.64	440	N	10
03310400	Bacon Creek near Priceville, KY	85.4	1958, 1960–93	1984 1958	20.11 21.80	6,800 --	12/08/78 5/07/84	19.88 20.11	6,600 6,800	N N	35–45 35–45
03310880	Brier Creek tributary near Ollie, KY	0.31	1976–85	1984	8.20	280	5/07/84	8.20	280	N	10–25
03311500	Green River at Lock 6 at Brownsville, KY	2,762	1907–50, 1952–91	1937	44.94	120,000	5/09/84	--	73,000	Y	20
03311600	Beaverdam Creek at Rhoda, KY	10.9	1973–93	1984 1973	11.38 61.50	4,850 965	5/07/84	11.38	4,850	N	25–50
03312000	Bear Branch near Leitchfield, KY	30.8	1937, 1950–83	1979	21.68	8,380	9/14/79	21.68	8,380	N	30–40
03312795	Little Beaver Creek near Glasgow, KY	0.89	1976–79, 1981–86	1985 1986	7.50 7.79	345 285	8/01/85	7.50	345	N	5–10
03313000	Barren River near Finney, KY	942	1942–50, 1961–93	1962 1943	-- 99.50	78,000 23,500	3/02/77	88.20	5,160	Y	<2
03313020	Solomon Creek tributary near Scottsville, KY	0.24	1976–84, 1986	1980	9.59	175	12/13/79	9.59	175	N	5–10
03313500	West Bays Fork at Scottsville, KY	7.47	1951–83	1969	8.34	7,050	12/09/78	6.73	2,660	N	10–20

Table 18. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kentucky—Continued

Station number (fig. 39)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03313700	West Fork Drakes Creek near Franklin, KY	110	1969–90, 1992–93	1975	23.20	27,300	3/12/75	23.20	27,300	N	100
03313800	Lick Creek near Franklin, KY	21.6	1959–83	1975	9.97	11,400	3/12/75	9.97	11,400	N	>100
03314000	Drakes Creek near Alvaton, KY	478	1937, 1940–82	1969	40.43	96,400	3/12/75	35.93	63,700	N	50
03314750	Barren River tributary near Bowling Green, KY	0.50	1976–84, 1986	1982	12.81	700	8/30/82	12.81	700	N	>100
03315500	Green River at Lock 4 at Woodbury, KY	5,404	1913, 1937–92	1937	43.10	205,000	12/11/78	34.07	102,000	Y	5–10
03317500	North Fork Rough River near Westview, KY	42.0	1955–64, 1966–76, 1978–80, 1982–83	1983	20.62	4,150	5/02/83	20.62	4,150	N	25–50
03317965	Long Lick Creek tributary near Axtel, KY	0.38	1975–79, 1982–86	1984	24.70	570	4/29/84	24.70	570	N	25–50
03318505	Pleasant Run tributary near Falls of Rough, KY	0.22	1975–81, 1983–85, 1987	1976	19.37	250	2/17/76	19.37	250	N	5–10
03318800	Caney Creek near Horse Branch, KY	124	1957–92	1984 1958	13.96 14.43	13,600 10,000	4/29/83 5/07/84	13.19 13.96	11,300 13,600	N N	25 50–100
03319000	Rough River near Dundee, KY	757	1937, 1940–92	1979 1937	29.05 31.80	22,200 --	9/22/79 5/07/84	29.05 29.75	22,200 19,800	Y Y	25 15
03319520	West Fork Adams Fork tributary near Fordsville, KY	0.26	1976–86	1983	7.95	175	5/02/83	7.95	175	N	5–10
03320500	Pond River near Apex, KY	194	1937, 1941–93	1984	22.83	35,700	12/09/78 5/07/84 2/15/89	21.34 22.83 22.60	22,800 35,700 24,000	N N N	25 >100 40
03321350	South Fork Panther Creek near Whitesville, KY	58.2	1969–83	1979 1970	17.88 18.18	3,860 2,490	12/04/78	17.88	3,860	N	10
03321465	Rhodes Creek tributary near Owensboro, KY	0.29	1975–79, 1982–86	1979	8.67	295	12/04/78	8.67	295	N	>50
03382975	Ward Creek at Lewiston, KY	0.91	1975–79, 1981–86	1985	21.57	1,120	5/22/85	21.57	1,120	N	10–25
03383000	Tradewater River at Olney, KY	255	1937, 1941–83, 1986–93	1937	19.27	17,000	2/16/89	18.85	14,600	N	75
03383605	West Fork Donaldson Creek near Fredonia, KY	2.52	1975–80, 1982–86	1984 1975	21.30 21.33	2,000 1,860	4/29/84	21.30	2,000	N	10–25
03400500	Poor Fork at Cumberland, KY	82.3	1927, 1940–92	1957 1977	11.50 15.88	11,800 10,700	4/04/77	15.88	10,700	N	50
03400700	Clover Fork at Evarts, KY	82.4	1960–78, 1981–86	1977	14.87	18,100	4/04/77	14.87	18,100	N	25–50
03400800	Martins Fork near Smith, KY	55.8	1968–93	1977	24.24	9,000	3/17/73	13.88	6,040	Y	<5
03400990	Clover Fork at Harlan, KY	222	1978–87, 1989–92	1984	20.09	21,700	5/07/84	20.09	21,700	Y	--
03401000	Cumberland River near Harlan, KY	374	1918, 1929, 1940–88, 1990–93	1977	30.26	64,500	12/31/69 4/05/77	24.90 30.26	43,200 64,500	N N	25 100
03402000	Yellow Creek near Middlesboro, KY	60.6	1929, 1939, 1941–64, 1966–70, 1972–93	1977	23.35	11,700	12/30/69 11/28/73 4/04/77	20.99 20.24 23.35	9,980 9,980 11,700	N N N	50 50 75–100

Table 18. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kentucky—Continued

Station number (fig. 39)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03402020	Shillalah Creek near Page, KY	2.96	1976–86	1977	59.40	856	4/04/77	59.40	856	N	10–25
03403000	Cumberland River near Pineville, KY	809	1929, 1939–75, 1977, 1979–91	1977	54.86	80,500	12/31/69 4/05/77	49.77 54.86	56,200 80,500	N N	10–25 100
03403500	Cumberland River at Barbourville, KY	960	1923–31, 1946, 1949–93	1977	45.91	56,100	1/01/70 11/29/73 4/06/77	42.30 42.65 45.91	48,800 49,500 56,100	N N N	10–25 10–25 25
03403910	Clear Fork at Saxton, KY	331	1969–90	1977	41.51	22,800	4/05/77	41.51	22,800	N	10
03404000	Cumberland River at Williamsburg, KY	1,607	1929, 1946, 1951–93	1957 1977	33.78 35.03	49,700 46,600	4/07/77	35.03	46,600	N	40
03404500	Cumberland River at Cumberland Falls, KY	1,977	1916–31, 1933–93	1918 1984	-- 14.72	59,600 58,600	5/07/84	14.72	58,600	N	30
03404820	Laurel River at municipal dam near Corbin, KY	140	1974–92	1984	27.46	18,300	5/07/84	27.46	18,300	N	25–50
03404867	Gozey Hollow near Corbin, KY	0.31	1976–85	1984	7.90	54	5/07/84	7.90	54	N	5
03404900	Lynn Camp Creek at Corbin, KY	53.8	1957–93	1957	22.50	9,000	5/07/84	13.49	6,190	N	10–25
03405854	Big Hurricane Branch at Conway, KY	1.91	1976–85	1984	12.69	1,360	5/07/84	12.69	1,360	N	10–25
03406000	Wood Creek near London, KY	3.89	1954–86	1984	7.17	694	4/28/70 5/07/84	6.32 7.17	524 694	N N	5–10 10–25
03406500	Rockcastle River at Billows, KY	604	1913, 1937–93	1979	47.17	50,100	12/09/78	47.17	50,100	N	40
03407100	Cane Branch near Parkers Lake, KY	0.67	1957–86	1981 1957	2.39 2.43	411 198	8/09/70 6/06/81	2.00 2.39	236 411	N N	10 75
03407200	West Fork Cane Branch near Parkers Lake, KY	0.26	1957–86	1957	2.20	129	12/09/78	1.99	103	N	25
03407300	Helton Branch at Greenwood, KY	0.85	1956–86	1981	1.70	195	6/06/81	1.70	195	N	15–20
03407500	Buck Creek near Shopville, KY	165	1953–91	1962	23.21	19,900	12/08/78	21.94	18,100	N	15–20
03410500	South Fork Cumberland River near Stearns, KY	954	1929, 1943–91, 1993	1973 1929	45.31 52.90	93,200 --	5/28/73 3/13/75	45.31 44.15	93,200 88,900	N N	75 50
03412500	Pitman Creek at Somerset, KY	31.3	1954–83	1962	9.95	3,460	12/09/78	9.80	3,420	N	15
03413200	Beaver Creek near Monticello, KY	43.4	1969–83, 1991–93	1979	8.37	9,240	12/09/78	8.37	9,240	N	10–25
03413202	Elk Spring Creek near Spann, KY	0.57	1976–86	1984	10.36	609	5/07/84	10.36	609	N	10–25
03413425	Williams Creek tributary near Cartwright, KY	0.76	1976–86	1979	8.62	235	12/09/78	8.62	235	N	5
03414000	Cumberland River near Rowena, KY	5,790	1826, 1940–77, 1979–92	1946 1826	64.82 69.50	162,000 --	3/29/75	29.55	42,600	Y	<2
03414102	Bear Creek near Burksville, KY	3.52	1976–86	1977	12.39	1,750	7/01/77	12.39	1,750	N	10–25
03435140	Whippoorwill Creek near Claymour, KY	20.8	1973–91	1975	17.75	8,380	3/12/75	17.75	8,380	N	15–35
03437490	South Fork Little River tributary near Hopinsville, KY	2.62	1977–86	1984	20.72	600	5/07/84	20.72	600	N	15–35

Table 18. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Kentucky—Continued

Station number (fig. 39)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03438000	Little River near Cadiz, KY	244	1940–93	1984	22.45	20,200	3/12/75	22.28	19,400	N	50
							12/08/78	22.33	19,600	N	50
							5/07/84	22.45	20,200	N	50
03438070	Muddy Fork Little River near Cerulean, KY	30.5	1969–83	1970	19.87	7,320	8/10/70	19.87	7,320	N	10–25
03438120	North Fork Dryden Creek tributary near Confederate, KY	--	1975–85	1975	6.77	51	3/29/75	6.77	51	N	--
03438220	Cumberland River near Grand Rivers, KY	17,598	1900, 1965–93	1975	--	209,000	3/16/75	--	209,000	Y	--
				1979	41.14	146,000					
03610470	York Creek near Benton, KY	0.96	1975–82, 1984–87	1985	20.60	820	9/05/85	20.60	820	N	10–25
03610500	Clarks River near Benton, KY	227	1939–83	1958	17.10	36,000	3/13/75	16.73	33,400	N	50
03610503	Chestnut Creek near Benton, KY	0.82	1975–79, 1981–86	1985	17.91	1,350	9/05/85	17.91	1,350	N	25–50
03610545	West Fork Clarks River near Brewers, KY	68.7	1969–83, 1989–93	1975	17.61	9,370	3/12/75	17.61	9,370	N	5–10
03610820	Clarks River tributary near Reidland, KY	0.13	1975–79, 1981, 1983–86	1975	11.97	290	7/04/75	11.97	290	N	25–50
03611260	Massac Creek near Paducah, KY	14.6	1972–93	1985	15.86	5,990	9/05/85	15.86	5,990	N	25–50
07022500	Perry Creek near Mayfield, KY	1.72	1952–65, 1968–87	1983	12.02	2,760	6/03/83	12.02	2,760	N	>100
07023040	Lick Creek tributary near Kirbyton, KY	0.53	1975–85, 1987	1980	18.20	438	6/29/80	18.20	438	N	25–50
07023500	Obion Creek at Pryorsburg, KY	36.8	1949, 1952–83	1979	14.05	6,320	3/12/75	13.79	6,030	N	10–20
							12/03/78	14.05	6,320	N	15–25
07023935	South Fork Bayou de Chein at Water Valley, KY	0.23	1975–87	1975	19.69	215	3/29/75	19.69	215	N	10

[1] Regulated during flood: N, no; Y, yes.

Louisiana

Hydroclimatology

Louisiana is located in the south-central part of the United States and is bordered on the south by the Gulf of Mexico. More than one-half of Louisiana can be considered a flood plain, as much of the State is in the Mississippi River Delta. Louisiana is located along the southernmost part of the Mississippi River Basin, which has the largest drainage of any basin in North America. The major source of moisture is the Gulf of Mexico. Rainfall occurs from summer airmass thunderstorms, tropical storms and hurricanes in the late summer and fall, and from frontal systems in the winter and spring. Pacific moisture can reach Louisiana as well and is a prevalent effector of climate during the winter and spring. Precipitation at locations in Louisiana is dependent on the distance to the Gulf of Mexico. The delta area in southeastern Louisiana receives an average of about 64 in. of precipitation annually. Mean annual precipitation decreases to the west and north, with the northwest corner of the State receiving an average of 48 in. (Paulson and others, 1991).

Large-scale flooding in Louisiana most commonly is caused by frontal systems, particularly in the northern part of the State. Flooding along the Mississippi and Red Rivers can become severe as these rivers are quite large. Flooding from tropical cyclones and hurricanes usually is caused by the storm surge and can result in loss of lives and can be most destructive to property. Flash flooding usually is the result of convective thunderstorms.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in the Mississippi River alluvial plain is a function of drainage area, channel slope, and channel length. For the rest of Louisiana, drainage area of the basin, mean annual precipitation, and channel slope are the most important factors (Jennings and others, 1994).

Significant Floods

The most significant flood during 1970–89 occurred from April 6 through 9, 1983. Twenty-three percent of the streamflow-gaging stations in Louisiana recorded significant discharges. The flood was a result of a frontal system that brought warm, moist air inland from the Gulf of Mexico and produced intense thunderstorms of long duration. The flood affected southeastern Louisiana the most. Maximum discharges were recorded at 27 gaging stations. Some stations recorded maximum discharges that exceeded the 50-year recurrence interval.

A large flood came down the Mississippi River from the upstream parts of the basin in May 1973. Flood-control structures, including the old river structure upstream from Baton Rouge, were damaged by excessive flow and scour. The flood on the Mississippi River in 1973 was considered a 50-year flood.

The location of streamflow-gaging stations in Louisiana that had significant floods for 1970–89 is shown in figure 40 by station number. The specific data for each significant flood are listed in table 19. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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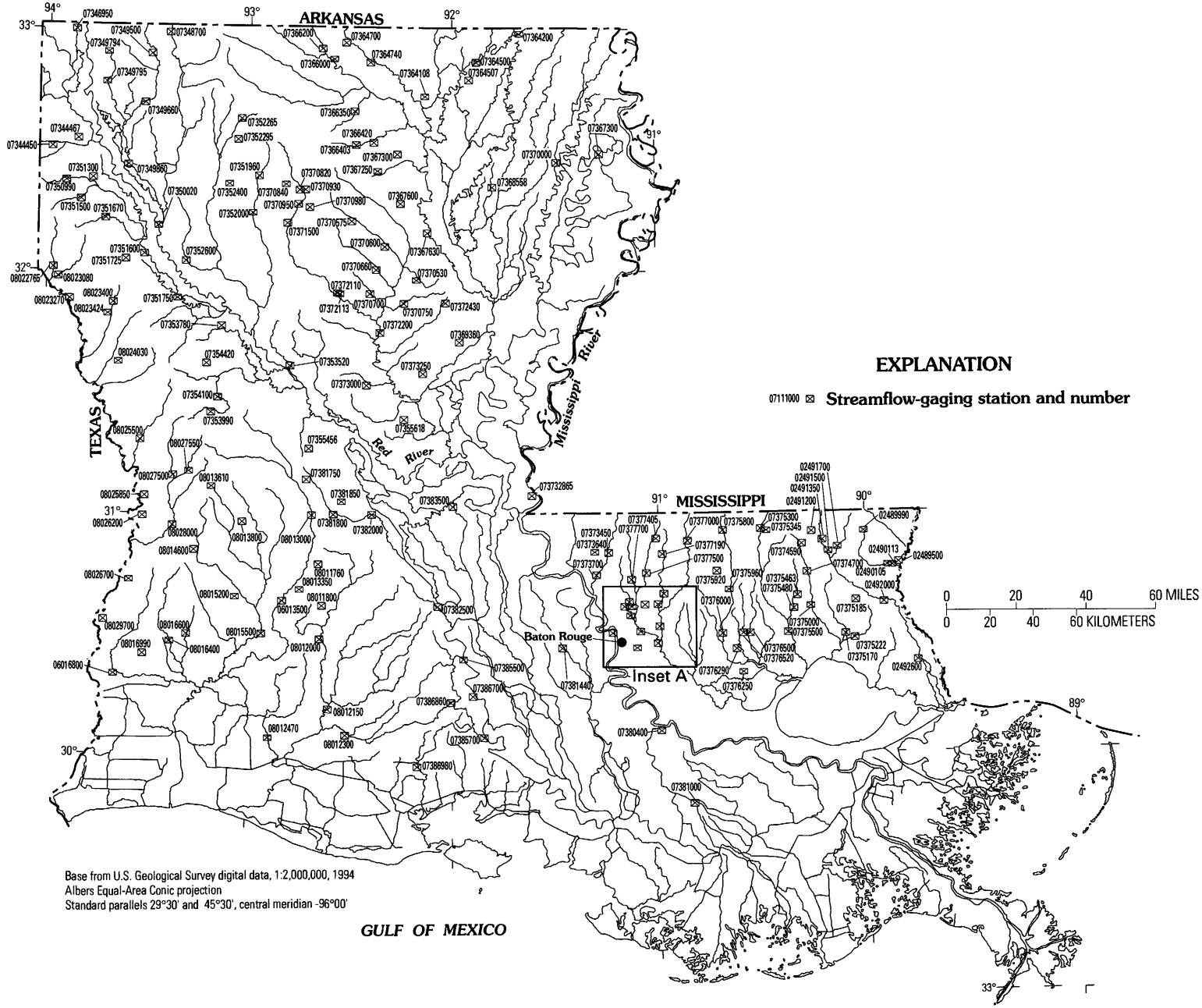

Figure 40. Location of streamflow-gaging stations with significant floods during 1970–89 for Louisiana.

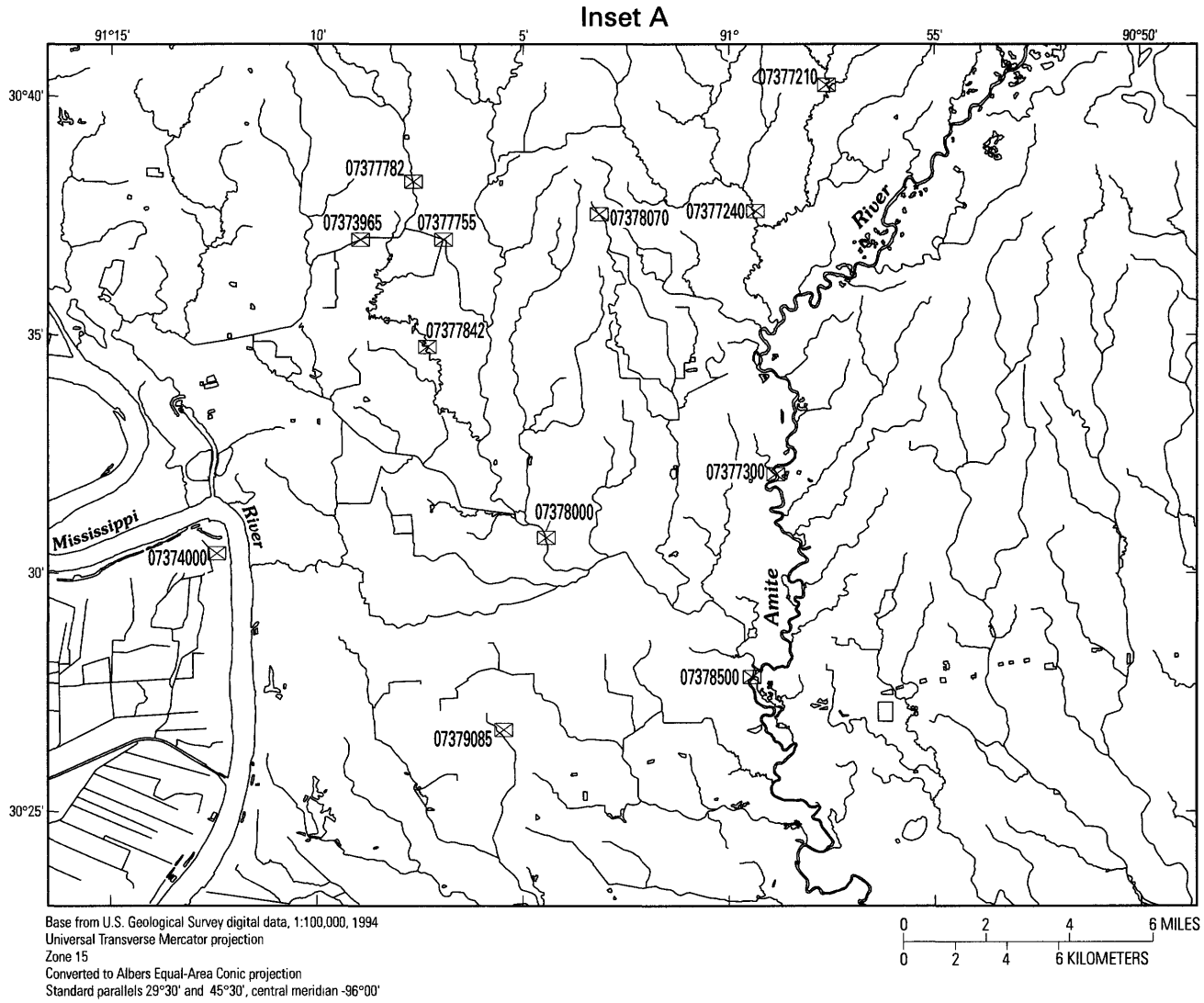

Figure 40. Location of streamflow-gaging stations with significant floods during 1970–89 for Louisiana—Continued.

Table 19. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Louisiana

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig. 40)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02489500	Pearl River near Bogalusa, LA	6,573	1938–93	1979	23.23	129,000	4/24/79	23.23	129,000	N	>100
							3/31/80	22.42	107,000	N	>100
							4/08/83	22.78	114,000	N	>100
02489990	Bogue Lusa Creek tributary near Franklinton, LA	0.41	1966–76	1973	10.15	400	4/24/73	10.15	400	N	--
02490105	Bogue Lusa Creek at State Highway 439 at Bogalusa, LA	72.7	1964–85	1983	13.80	9,350	4/07/83	13.80	9,350	N	25
02490113	Bogue Lusa Creek at Louisiana Highway 21 at Bogalusa, LA	75.9	1961, 1969–82	1977 1961	79.10 81.40	7,250 --	4/22/77	79.10	7,250	N	10
02491200	Silver Creek near Clifton, LA	50.1	1966–83	1983	12.03	12,200	4/07/83	12.03	12,200	N	25
02491350	Hays Creek near Franklinton, LA	42.2	1966–86	1983	17.06	10,600	4/07/83	17.06	10,600	N	25
02491500	Bogue Chitto at Franklinton, LA	990	1900, 1922–93	1983 1900	24.69 29.60	125,000 --	3/30/80 4/07/83	20.55 24.69	56,700 125,000	N N	10–15 >100
02491700	Lawrence Creek near Franklinton, LA	44.2	1964–83	1983	15.32	15,800	4/07/83	15.32	15,800	N	25
02492000	Bogue Chitto near Bush, LA	1,213	1938–93	1983	21.22	131,700	3/31/80	17.31	57,400	N	15
							4/08/83	21.22	131,700	N	>100
02492600	Pearl River at Pearl River, LA	8,494	1874, 1900–93	1980 1983	19.75 21.05	173,800 230,000	4/02/80 4/09/83	19.75 21.05	173,800 230,000	N N	>100 >100
07344450	Paw Paw Bayou near Greenwood, LA	80.5	1956–86	1986	15.97	19,100	6/27/86	15.97	19,100	N	>100
07344467	Logan Bayou near Shreveport, LA	2.60	1968–79, 1981	1974 1979	8.56 10.03	1,230 --	12/03/73	8.56	1,230	N	--
07346950	Kelly Bayou near Ida, LA	73.0	1969–83	1974	44.70	4,160	4/22/74	44.70	4,160	N	50–100
07348700	Byu Dorcheat near Springhill, LA	605	1958–93	1958	22.79	36,400	6/10/74	20.81	30,500	N	25–50
07349500	Bodcau Bayou near Sarepta, LA	546	1905, 1930, 1939–91, 1993	1958 1930	25.14 27.00	18,600 --	12/29/88	23.52	13,200	N	20–25
07349660	Bayou Bodcau (reservior outlet) near Shreveport, LA	683	1930, 1950–78	1975 1930	165.32 170.80	2,880 --	2/14/75 3/15/76	165.32 162.85	2,880 1,680	N N	-- --
07349794	Collinsburg Creek near Plain Dealing, LA	7.39	1967–81	1974	13.92	1,320	12/03/74	13.92	1,320	N	10–25
07349795	Cypress Bayou above Benton, LA	88.9	1975–86	1975	11.99	3,970	2/03/75	11.99	3,970	N	--
07349860	Red Chute Bayou at Sligo, LA	980	1960–93	1991 1963	38.26 148.00	6,800 --	7/02/89	36.46	4,480	N	--
07350020	Loggy Bayou near East Point, LA	2,648	1948–52, 1959–64, 1984–85	1984 1964	24.98 32.53	11,300 --	3/06/84	24.98	11,300	N	--
07350990	Boggy Bayou at Woolworth Road near Keithville, LA	41.3	1963–83	1979	43.59	9,940	5/04/79	43.59	9,940	N	25–50
07351300	Brush Bayou near Shreveport, LA	27.1	1960–93	1974	165.53	13,600	12/03/73	165.53	13,600	N	25–50
07351500	Cypress Bayou near Keithville, LA	66.0	1939–93	1955	13.62	23,700	3/05/84	11.92	15,100	N	20

Table 19. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Louisiana—Continued

Station number (fig. 40)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07351600	Bayou Pierre near Grand Bayou, LA	661	1933, 1947–54, 1956–57, 1961–85	1962 1933	27.10 35.40	7,350 --	1/22/79	26.93	7,260	N	--
07351670	Rambin Bayou near Frierson, LA	59.6	1966–93	1983	15.15	13,600	5/21/83	15.15	13,600	N	50
07351725	Buffalo Bayou tributary near Mansfield, LA	0.79	1967–69, 1972–75, 1977–81	1975 1979	8.44 15.50	1,180 --	5/06/75	8.44	1,180	N	--
07351750	Bayou Pierre near Lake End, LA	860	1960–93	1989	33.58	11,700	5/18/89	33.58	11,700	N	--
07351980	Saline Bayou near Bienville, LA	54.9	1966–83	1983	45.25	3,870	12/27/82	45.25	3,870	N	10–25
07352000	Saline Bayou near Lucky, LA	154	1941–93	1945	12.90	13,500	5/19/89	11.30	10,300	N	20
07352265	Leatherman Creek tributary at Athens, LA	2.90	1968–81	1971	15.81	770	12/20/70	15.81	770	N	--
07352295	Black Lake Creek at Gibsland, LA	44.8	1968–83	1975 1976	47.88 50.63	7,460 --	5/03/75	47.88	7,460	N	50
07352400	Kepler Creek at Sparta, LA	21.1	1954–68, 1974–93	1984 1988	46.04 43.36	5,280 712	12/10/83	46.04	5,280	N	50–100
07352800	Grand Bayou near Coushatta, LA	93.9	1957–77, 1980–93	1989	14.04	15,400	5/18/89	14.04	15,400	N	>100
07353520	Nantachie Lake near Aloha, LA	80.4	1969–87, 1989–93	1983	9.39	10,200	12/27/82	9.39	10,200	N	25
07353780	Sibley Lake tributary near Natchitoches, LA	0.65	1966–77, 1979–81	1974	10.34	665	4/12/74	10.34	665	N	--
07353990	Kisatchie Bayou at Kisatchie, LA	37.3	1966–93	1983	26.13	17,800	12/27/82	26.13	17,800	N	25–50
07354100	Kisatchie Bayou at Lotus, LA	140	1939–42, 1956–93	1983 1939	18.17 18.19	33,700 --	12/27/82 6/28/89	18.17 17.09	33,700 11,700	N N	-- --
07354420	Bayou Provencal tributary near Provencal, LA	0.82	1968–81	1975	17.36	1,200	5/06/75	17.36	1,200	N	--
07355456	Williamson Branch at Gardner, LA	0.57	1966–81	1971 1979	12.62 13.63	310 470	10/12/70 9/21/79	12.62 13.63	310 470	N N	5–10 10–25
07355618	Slash Bayou tributary at Holloway, LA	0.22	1968–81	1973 1979	13.08 13.09	190 --	4/17/73	13.08	190	N	--
07364108	Cook Creek tributary at Spencer, LA	0.49	1968–81	1975	16.28	330	7/08/75	16.28	330	N	--
07364200	Bayou Bartholomew near Jones, LA	1,187	1958–93	1991	29.16	7,530	7/19/89	27.30	6,990	N	10–25
07364500	Bayou Bartholomew near Beekman, LA	1,645	1927, 1929–80	1958	28.30	14,700	3/18/73	26.79	10,400	N	10
07364507	Horse Bayou at Bastrop, LA	2.05	1967–81	1975 1978	8.94 10.25	800 --	4/30/75	8.94	800	N	10
07364700	Bayou De Loutre near Laran, LA	141	1956–77	1974	20.43	23,900	6/09/74	20.43	23,900	N	>100
07364740	Bayou De Loutre near Farmerville, LA	241	1966–83	1974	51.34	17,300	6/10/74	51.34	17,300	N	>100
07366000	Corney Bayou near Lillie, LA	462	1941–83	1958	25.20	48,200	6/09/74	24.24	43,600	N	>100
07366200	Little Corney Bayou near Lillie, LA	208	1956–93	1974	17.54	24,000	6/09/74	17.54	24,000	N	100

Table 19. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Louisiana—Continued

Station number (fig. 40)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07366350	Stowe Creek near Farmerville, LA	29.0	1954–68, 1974–83	1983	49.90	12,800	12/28/82	49.90	12,800	N	50–100
07366403	Bayou Choudrant tributary near Tremont, LA	0.54	1966–87, 1989–93	1989	12.49	1,280	5/05/89	12.49	1,280	N	>100
07366420	Bayou Choudrant near Calhoun, LA	113	1966–93	1983	48.50	26,800	12/27/82	48.50	26,800	N	50–100
07367250	Guyton Creek near Eros, LA	8.76	1968–93	1983	14.38	2,770	12/27/82	14.38	2,770	N	50
07367300	North Cheniere Creek at Cheniere, LA	38.0	1954–68, 1974–83	1983	46.29	7,620	12/27/82	46.29	7,620	N	50–100
07367600	Cypress Creek near Vixen, LA	16.0	1954–68, 1974–83	1974	48.83	8,820	4/12/74	48.83	8,820	N	25–50
07367630	Ouachita River at Columbia Lock and Dam near Riverton, LA	15,630	1913–71, 1973–93	1983 1927	44.77 47.91	79,700 --	12/24/85 3/11/87 1/10/83	-- -- 44.77	35,600 50,000 79,700	N N Y	-- --
07368558	Dry Fork at Archibald, LA	--	1968–81	1973 1979	10.33 11.64	165 --	3/16/73	10.33	165	N	--
07369360	Bushley Creek at Manifest, LA	64.7	1984–93	1988	42.94	15,500	11/16/87	42.94	15,500	N	--
07370000	Bayou Macon near Delhi, LA	782	1882, 1885–95, 1926–93	1991 1882	22.87 37.50	12,600 --	6/10/74 1/21/79 5/20/83	-- 22.87 25.34	9,320 9,480 9,350	N N N	10–25 10–25 10–25
07370530	Black Bayou near Kelly, LA	51.9	1966–83	1983	42.66	14,600	12/28/82	42.66	14,600	N	>100
07370575	Caney Creek near Chatham, LA	48.8	1966–83	1983 1966	45.73 48.76	14,700 --	12/27/82	45.73	14,700	N	50–100
07370600	Beaucoup Creek near Cotton Plant, LA	127	1951–68, 1974–93	1983	13.93	17,200	12/28/82	13.93	17,200	N	50–100
07370660	Flat Creek near Olla, LA	103	1966–83	1974	50.98	17,500	4/12/74	50.98	17,500	N	10–25
07370700	Beech Creek near Olla, LA	58.0	1954–68, 1974–83	1974	46.78	23,900	4/12/74	46.78	23,900	N	25–50
07370750	Chickasaw (Big Chickasaw) Creek near Olla, LA	47.6	1954–83	1966	43.22	10,400	12/27/82	42.87	8,440	N	50–100
07370820	Dugdemona River near Quitman, LA	117	1965–83	1983	47.29	14,000	12/27/82	47.29	14,000	N	50–100
07370840	Choctaw Creek near Hodge, LA	16.5	1966–83	1983	45.89	5,310	12/27/82	45.89	5,310	N	50–100
07370930	Cypress Creek at Quitman, LA	91.8	1966–83	1983	47.74	21,700	12/27/82	47.74	21,700	N	50–100
07370950	Coulee Creek tributary near Hodge, LA	0.46	1966–81	1974	8.61	408	2/21/74	8.61	408	N	10–15
07370980	Little Dugdemona River near Hodge, LA	20.0	1965–83	1983	48.25	7,400	12/27/82	48.25	7,400	N	100
07371500	Dugdemona River near Jonesboro, LA	355	1939–93	1983	21.20	41,500	12/28/82 5/19/89	21.20 19.27	41,500 26,200	N N	>100 25
07372110	Brushy Creek near Joyce, LA	24.0	1965–93	1988	47.77	16,000	11/16/87	47.77	16,000	N	25–50
07372113	Dugdemona River tributary near Joyce, LA	0.14	1967–81	1975	11.51	161	6/10/75	11.51	161	N	10–15
07372200	Little River near Rochelle, LA	1,899	1958–93	1983	45.88	108,000	12/29/82 11/18/87	45.88 41.09	108,000 60,600	N N	50 10–15

Table 19. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Louisiana—Continued

Station number (fig. 40)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07373000	Big Creek at Pollock, LA	51.0	1942–93	1953 1988	16.90 18.58	23,500 15,400	11/16/87	18.58	15,400	N	10–15
07373250	Hemphill Creek at Nebo, LA	35.3	1979–93	1988	14.93	15,800	11/16/87	14.93	15,800	N	--
073732865	Old river outflow channel at Knox Landing, LA	1,128,700	1961–78	1975 1973	54.83 59.30	626,000 --	4/13/75	54.83	626,000	N	--
07373450	Thompson Creek at Jackson, LA	99.3	1949–59, 1972–73, 1975–88	1973	92.26	40,300	3/24/73	92.26	40,300	N	10–25
07373640	Hammer Creek tributary near Jackson, LA	0.20	1968–77, 1979–88	1985	8.23	614	10/23/84	8.23	614	N	>100
07373700	Thompson Creek near Starhill, LA	249	1949–68, 1973, 1975–83	1979	47.62	98,400	4/22/79 4/06/83	47.62 47.61	98,400 98,200	N N	25–50 25–50
07373965	South Canal near Baker, LA	--	1965–93	1983 1967	79.40 79.52	2,430 --	4/06/83	79.40	2,430	N	--
07374000	Mississippi River at Baton Rouge, LA	1,129,810	1828, 1832, 1844, 1849–52, 1858–59, 1862, 1869, 1871–1978	1945 1927	45.18 47.22	1,473,000 --	5/10/73	41.58	1,380,000	N	--
07374590	North Carson Creek tributary near Sunny Hill, LA	0.22	1968–76, 1978–81	1973	9.36	261	3/24/73	9.36	261	N	10–25
07374700	Tchefuncta River near Franklinton, LA	53.1	1949–68, 1975–83	1983	51.04	26,900	4/06/83	51.04	26,900	N	>100
07375000	Tchefuncta River near Folsom, LA	95.5	1944–93	1983	24.12	29,800	4/06/83	24.12	29,800	N	25–50
07375170	Bogue Falaya at Covington, LA	88.2	1964–83	1983	23.58	12,700	4/08/83	23.58	12,700	N	25–50
07375185	Little Bogue Falaya near Blond, LA	0.91	1967–81	1972 1981	9.13 9.67	502 --	1/12/72	9.13	502	N	10–25
07375222	Abita River north of Abita Springs, LA	46.1	1966–93	1980	24.07	4,750	3/29/80	24.07	4,750	N	5–10
07375300	Tangipahoa River near Kentwood, LA	237	1951–68, 1974–83	1983	17.20	43,300	4/06/83	17.20	43,300	N	100
07375345	Ashleys Brook near Kentwood, LA	1.74	1966–81	1973	10.65	1,200	3/24/73	10.65	1,200	N	10–25
07375463	Chappepeela Creek near Husser, LA	31.7	1966–83	1983	30.04	18,000	4/07/83	30.04	18,000	N	50
07375480	Chappepeela Creek southeast of Loranger, LA	91.0	1964–83	1983	18.69	30,800	4/07/83	18.69	30,800	N	25–50
07375500	Tangipahoa River at Robert, LA	646	1921, 1939–93	1983 1921	25.87 27.10	85,000 --	5/23/74 4/07/83	21.76 25.87	39,500 85,000	N N	10–15 --
07375800	Tickfaw River at Liverpool, LA	89.7	1956–93	1983	13.30	32,000	4/06/83	13.30	32,000	N	75–100
07375920	Hoffman Creek near Greensburg, LA	0.78	1967–81	1973	8.07	715	3/24/73	8.07	715	N	5–10
07375960	Tickfaw River at Montpelier, LA	220	1951–68, 1974–83	1974	108.31	28,400	5/23/74	108.31	28,400	N	25–50
07376000	Tickfaw River at Holden, LA	247	1941–93	1983	21.04	22,400	5/23/74 4/07/83	20.37 21.04	19,000 22,400	N N	25 25–50

Table 19. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Louisiana—Continued

Station number (fig. 40)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07376250	Killian Brook near Maurepas, LA	1.88	1969–77, 1979–81	1973	9.30	340	3/24/73	9.30	340	N	10–25
07376290	Blood River near Springfield, LA	26.6	1964–69, 1971–83	1983	19.94	2,850	4/08/83	19.94	2,850	N	25–50
07376500	Natalbany River at Baptist, LA	79.5	1944–93	1983	20.80	9,810	4/07/83	20.80	9,810	N	50–75
07376520	Little Natalbany River at Albany, LA	40.6	1966–83	1983 1967	29.79 30.95	10,800 7,950	4/07/83	29.79	10,800	N	100
07377000	Amite River near Darlington, LA	580	1949–93	1990	22.05	104,000	4/22/77	21.76	76,400	N	10–25
07377190	Sandy Creek southeast of Clinton, LA	17.2	1966–83	1983	16.22	13,000	4/06/83	16.22	13,000	N	25–50
07377210	Sandy Creek near Pride, LA	69.9	1976–93	1983 1992	21.31 18.21	11,800 5,730	4/06/83	21.31	11,800	N	50–75
07377240	Little Sandy Creek near Greenwell Springs, LA	28.2	1975–93	1983 1989	26.69 64.32	14,700 --	4/06/83	26.69	14,700	N	75–100
07377300	Amite River at Magnolia, LA	884	1949–83, 1993	1977	51.91	85,100	4/23/77 4/08/83	51.91 50.97	85,100 75,700	N N	50 25–50
07377405	Pretty Cree tributary near Clinton, LA	0.29	1968–81	1980	10.33	735	5/16/80	10.33	735	N	25–50
07377500	Comite River near Olive Branch, LA	145	1943–93	1977 1961	22.88 23.37	22,400 19,900	4/22/77 4/22/79	22.88 20.36	22,400 21,300	N N	10–25 10–25
07377700	Redwood Creek near Slaughter, LA	41.1	1966–83	1983	18.63	7,020	4/06/83	18.63	7,020	N	75–100
07377755	White Bayou East Division Canal near Baton Rouge, LA	--	1965–82, 1984, 1986–87, 1989–93	1979 1989	17.19 77.77	1,550 --	4/23/79	17.19	1,550	N	--
07377782	White Bayou southeast of Zachary, LA	45.0	1965–93	1983	23.24	4,730	4/06/83	23.24	4,730	N	25–50
07377842	White Bayou near Baker, LA	--	1973–84, 1986–93	1983 1977	16.78 17.25	888 661	4/07/83	16.78	888	N	--
07378000	Comite River near Comite, LA	284	1944–93	1983 1953	29.72 30.64	37,000 20,500	4/23/77 4/07/83	27.52 29.72	24,100 37,000	N N	10 50–75
07378070	Beaver Bayou near Fred, LA	0.17	1975–81, 1984–88	1981	12.46	27	7/26/75	12.40	27	N	--
07378500	Amite River near Denham Springs, LA	1,280	1921, 1939–93	1983	41.50	112,000	4/23/77 4/08/83	41.08 41.50	110,000 112,000	N N	50 50
07379085	North Branch Ward Creek tributary at Baton Rouge, LA	0.13	1969–82, 1984–88	1976	11.86	127	--/--/76	11.86	127	N	--
07380400	Bayou LaFourche at Donaldsonville, LA	--	1958–81	1980 1979	-- 9.44	642 510	4/13/80	--	642	N	--
07381000	Bayou LaFourche at Thibodaux, LA	--	1966–88, 1993	1988 1973	7.46 7.64	1,230 --	4/02/88	7.46	1,230	N	--
07381440	Bayou Grosse Tete at Rosedale, LA	--	1965–80, 1984–86, 1988, 1990–93	1988 1966	11.00 14.33	5,170 --	2/19/88	11.00	5,170	N	--
07381750	Spring Creek tributary near Hineston, LA	0.18	1967–81	1973	9.76	194	3/24/73	9.76	194	N	10–25
07381800	Spring Creek near Glenmora, LA	68.3	1953–86	1985 1953	18.00 20.50	9,200 --	12/26/82 10/21/84	17.57 18.00	7,570 9,200	N N	10–25 25–50
07381850	Hurricane Creek tributary at Forest Hills, LA	0.95	1968–81	1980 1979	9.40 10.25	740 --	12/13/79	9.40	740	N	5–10

Table 19. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Louisiana—Continued

Station number (fig. 40)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07382000	Bayou Cocodrie near Clearwater, LA	240	1923–24, 1938–88, 1990–93	1953	26.72	28,200	12/28/82	23.28	7,240	N	50–100
							10/31/85	22.63	5,270	N	25–50
07382500	Bayou Courtableau at Washington, LA	715	1940, 1947–88, 1990–93	1953	35.29	9,490	12/29/71	--	7,520	N	25–50
07383500	Bayou des Glaises diversion channel at Moreauville, LA	270	1944–88, 1990–93	1953	22.68	6,340	12/06/71	20.54	4,980	N	25–50
07385500	Bayou Teche at Arnaudville, LA	1,530	1944–88, 1990–93	1953	--	4,630	4/21/77	--	4,000	Y	--
				1967	21.14	2,650					
07385700	Bayou Teche at Keystone Lock near St. Martinville, LA	--	1913–88, 1990–93	1973	12.95	3,970	12/06/71	13.80	3,500	N	--
				1927	23.50	--	9/05/73	12.95	3,970	N	--
							6/06/78	12.58	3,380	N	--
07386700	Ruth Canal near Ruth, LA	--	1940, 1947–85	1983	--	622	12/04/82	--	622	N	--
				1940	18.40	--	5/16/84	--	558	N	--
07386880	Vermilion River at Surrey Street at Lafayette, LA	--	1968–74, 1985–88, 1990–93	1988	--	5,660	2/23/88	--	5,660	N	--
				1972	14.00	--					
07386980	Vermilion River at Perry, LA	--	1979–88, 1990–93	1986	--	15,800	10/28/85	--	15,800	N	--
				1980	12.05	--					
08011760	West Fork Caney Creek tributary (Mitchell) near Oakdale, LA	1.25	1967–81	1973	6.54	426	3/24/73	6.54	426	N	10
				1979	8.23	--					
08011800	Castor Creek near Oberlin, LA	43.9	1964–93	1979	49.93	8,560	9/20/79	49.93	8,560	N	25
							10/28/85	48.93	7,120	N	10–25
08012000	Bayou Nezpique near Basile, LA	527	1939–93	1953	34.39	35,800	11/01/85	30.65	29,100	N	--
08012150	Mermentau River at Mermentau, LA	1,381	1940–80, 1985–93	1986	--	58,000	9/24/85	--	34,900	N	--
				1940	14.50	--	11/02/85	--	58,000	N	--
							7/05/89	--	38,200	N	--
08012300	Bayou Queue de Tortue at Riceville, LA	--	1898, 1943–49, 1986–88, 1990–93	1986	--	6,980	10/31/85	--	6,980	N	--
				1990	11.17	5,200					
08012470	Bayou Laccassine near Lake Arthur, LA	299	1969–86, 1988–93	1986	--	9,790	10/30/85	--	9,790	N	--
				1980	12.72	--					
08013000	Calcasieu River near Glenmora, LA	499	1944–93	1953	21.55	59,900	6/29/89	20.46	47,300	N	20–25
08013350	Chinquapin Creek near Oberlin, LA	1.80	1966–81	1979	10.29	668	9/20/79	10.29	668	N	10–25
08013500	Calcasieu River near Oberlin, LA	753	1923–24, 1939–93	1953	26.53	72,800	12/30/82	24.33	51,000	N	25–35
							7/02/89	25.70	54,000	N	30–40
08013610	Whiskey Chitto Creek tributary near Leesville, LA	0.32	1966–93	1989	11.50	645	6/28/89	11.50	645	N	5–10
08013800	Little Sixmile Creek near Pitkin, LA	10.4	1954–83	1978	16.70	4,200	10/11/77	16.70	4,200	N	30–40
08014600	Flat Creek near de Ridder, LA	26.3	1964–83	1983	13.79	8,450	12/27/82	13.79	8,450	N	50–100
08015200	Dry Creek at Dry Creek, LA	42.7	1954–68, 1975–93	1983	24.66	7,430	9/20/79	24.60	7,300	N	10–20
							12/27/82	24.66	7,430	N	10–20
08015500	Calcasieu River near Kinder, LA	1,700	1913, 1923–24, 1939–93	1953	32.00	182,000	12/29/82	26.22	100,000	N	25–35
							7/02/89	26.28	101,000	N	25–35
08016400	Beckwith Creek near de Quincy, LA	148	1946–84	1983	23.71	15,900	12/27/82	23.71	15,900	N	50–60
				1955	24.45	13,800					

Table 19. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Louisiana—Continued

Station number (fig. 40)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08016600	Hickory Branch near Kernan, LA	82.2	1946–83	1983	28.60	12,900	12/28/82	28.60	12,900	N	25
08016800	Bear Head Creek near Starks, LA	177	1954–84	1983	18.32	19,100	10/28/70 12/28/82	17.63 18.32	11,200 19,100	N N	20–25 >100
08016990	Cowards Gully near de Quincy, LA	15.3	1954–68, 1971–72	1971	17.30	7,000	10/10/70	17.30	7,000	N	25–50
08022765	Bayou Castor near Funston, LA	91.5	1972–86	1984	15.29	4,860	3/06/84	15.29	4,860	N	5–10
08023080	Bayou Grand Cane near Stanley, LA	72.5	1981–93	1989	15.37	9,450	5/18/89	15.37	9,450	N	25–50
08023270	Bull Bayou near Hunter, LA	8.54	1964–83	1980	14.57	672	4/12/80	14.57	672	N	50–100
08023400	Bayou San Patricio near Benson, LA	80.2	1954–68, 1978–93	1958 1989	20.36 21.19	21,300 16,700	5/18/89	21.19	16,700	N	25–35
08023424	Bayou San Patricio tributary number 2 near Converse, LA	0.89	1967–81	1980 1978	8.24 10.33	450 --	5/16/80	8.24	450	N	5–10
08024030	Bayou Scie at Zwolle, LA	45.9	1950–68, 1974–93	1989	17.90	22,400	5/18/89	17.90	22,400	N	100
08025500	Bayou Toro near Toro, LA	148	1956–86, 1990–93	1968	25.73	31,200	4/12/74	24.69	23,900	N	40–50
08025850	Pearl Creek at State Highway 111 at Burr Ferry, LA	9.66	1967–86, 1988–93	1984	12.78	3,300	2/13/84	12.78	3,300	N	>100
08026200	Red Bank Creek at Evans, LA	17.2	1953, 1966–83	1983	21.95	6,010	12/27/82	21.95	6,010	N	10–25
08027500	Bayou Anacoco near Leesville, LA	115	1949–64, 1983	1983	48.11	33,600	12/28/82	48.11	33,600	N	10–25
08027550	Prairie Creek near Leesville, LA	40.0	1949–68, 1974–83	1983	48.11	34,200	12/27/82	48.11	34,200	N	75–100
08028000	Bayou Anacoco near Rosepine, LA	369	1952–93	1953	28.38	64,300	12/28/82	27.80	58,600	N	40–50
08028700	Hoosier Creek near Merryville, LA	13.1	1956–81, 1983	1983	13.12	3,860	12/28/82	13.12	3,860	N	>100
08029700	Brushy Creek at Bancroft, LA	25.9	1954–68, 1974–83	1983	18.52	8,440	12/27/82	18.52	8,440	N	50

[1] Regulated during flood: N, no; Y, yes.

Maine

Hydroclimatology

Maine is located in the extreme northeastern part of the United States with Canada to the north and east and the Atlantic Ocean to the south. Three airmasses dominate Maine's climate. These are the polar continental, which are cold, dry airmasses originating in Canada and Arctic areas; tropical maritime, which are warm, moist airmasses originating in the Gulf of Mexico and adjacent subtropical water of the Atlantic Ocean; and polar maritime, which are cool, damp airmasses from the North Atlantic. Land-recycled moisture is also an important source of moisture because it supplements the major sources of moisture with evaporation from lakes and reservoirs and from the land surface.

Maine receives abundant precipitation annually. There is a generally uniform distribution of precipitation throughout the entire year. Mean annual precipitation in the northeast is 34 in. and 55 in. in the southeast. The statewide mean annual precipitation is about 42 in. (Paulson and others, 1991).

Maine receives widespread flooding when frontal systems stall over the eastern seaboard causing intense rainfall. Flooding also occurs from rapid snowmelt, ice jams, and hurricanes. Smaller scale flooding in Maine results from convective thunderstorms in the summer months.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Maine is dependent on drainage area of the basin, channel slope, and storage, which is the area of lakes and ponds in the basin as a percentage of total area (Jennings and others, 1994).

Significant Floods

The flood of April 1987 was the most destructive in Maine's history. The flood was caused by a slow-moving frontal system. The intense rains associated with the frontal system combined with the melting snowpack and resulted in flooding conditions. Thirteen streamflow-gaging stations recorded record maximum discharges. During the April 1987 flood, 61 percent of the gaging stations in the State recorded significant discharges. Fourteen of Maine's 16 counties were declared disaster areas, and damage estimates exceeded $100 million (Paulson and others, 1991).

Seventeen percent of the streamflow-gaging stations in the State recorded significant discharges in April 1983. The flood occurred in the Allagash River Basin. The maximum discharge of record was recorded on the Allagash River at Allagash (station 01011000, table 20).

The location of streamflow-gaging stations in Maine that had significant floods for 1970–89 is shown in figure 41 by station number. The specific data for each significant flood are listed in table 20. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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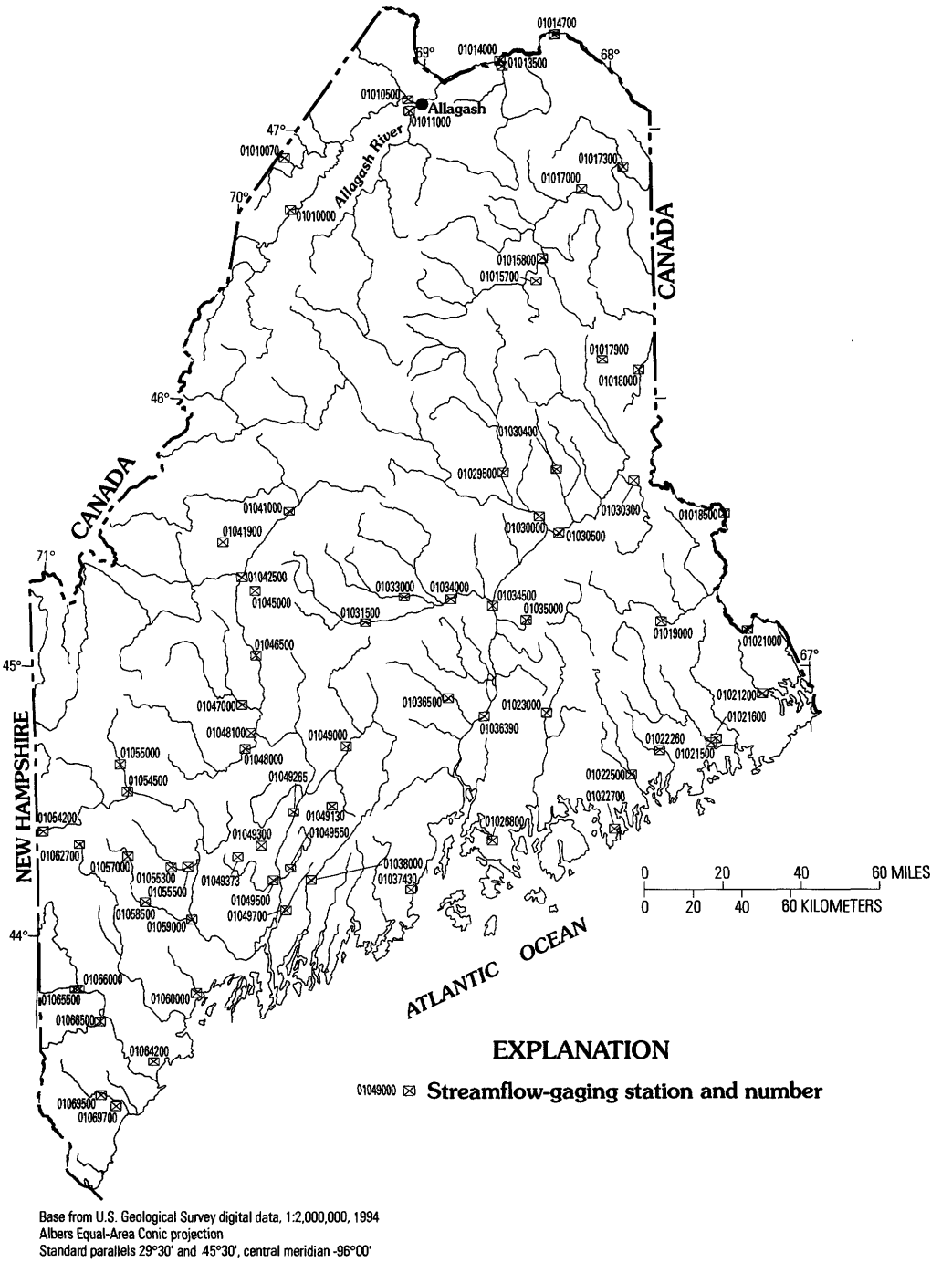

Base from U.S. Geological Survey digital data, 1:2,000,000, 1994
Albers Equal-Area Conic projection
Standard parallels 29°30' and 45°30', central meridian -96°00'

Figure 41. Location of streamflow-gaging stations with significant floods during 1970–89 for Maine.

Table 20. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Maine

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals (calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
Station number (fig. 41)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01010000	St. John River at Ninemile Bridge, ME	1,341	1951–95	1974	12.63	44,400	5/01/74	12.63	44,400	N	40–50
							8/06/81	11.30	39,000	N	15–20
01010070	Big Black River near Depot Mountain, ME	171	1984–95	1987	15.62	8,680	4/01/87	15.62	7,420	N	25–50
01010500	St. John River at Dickey, ME	2,680	1947–95	1979	19.13	91,700	5/01/74	18.67	87,200	N	20
							4/29/79	19.13	91,700	N	25–30
01011000	Allagash River near Allagash, ME	1,229	1932–95	1983	13.68	36,900	4/29/73	12.33	29,400	N	30
							4/18/83	13.68	36,900	N	>100
01013500	Fish River near Fort Kent, ME	873	1904–08, 1930–95	1973	12.43	15,800	4/30/73	12.43	15,800	N	>100
							4/26/83	11.75	14,000	N	40
01014000	St. John River below Fish River at Fort Kent, ME	5,665	1927–95	1979	27.31	151,000	5/01/74	26.95	148,000	N	50
							4/30/79	27.31	151,000	N	60
01014700	Factory Brook near Madawaska, ME	5.87	1964–74	1974	9.91	281	5/02/74	9.91	281	N	10–25
01015700	Houlton Brook near Oxbow, ME	5.45	1964–74	1973	7.89	236	4/29/73	7.89	236	N	20–30
01015800	Aroostook River near Masardis, ME	892	1958–95	1983	17.70	23,100	4/19/83	17.70	23,100	N	20
01017000	Aroostook River at Washburn, ME	1,654	1931–95	1983	13.73	43,400	4/30/73	13.68	43,100	N	30–35
							5/02/74	13.58	42,500	N	30
							4/19/83	13.73	43,400	N	30–35
01017300	Nichols Brook near Caribou, ME	3.99	1964–74	1971	13.47	281	10/03/70	13.47	281	N	10–25
01017900	Marley Brook near Ludlow, ME	1.47	1965–82	1973	10.36	335	7/05/73	10.36	335	N	>50
01018000	Meduxnekeag River near Houlton, ME	175	1941–82	1976	9.98	6,640	4/03/76	9.98	6,640	N	20
01018500	St. Croix River at Vanceboro, ME	413	1929–95	1984	11.28	6,730	4/29/73	10.43	6,040	Y	5–10
							4/04/76	10.88	6,670	Y	10–15
							6/03/84	11.28	6,730	Y	10–15
01019000	Grand Lake Stream at Grand Lake Stream, ME	227	1929–95	1952	6.35	2,840	4/25/83	6.69	2,600	Y	35
01021000	St. Croix River at Baring, ME	1,374	1923, 1960–95	1923	--	24,100	4/04/76	12.27	20,600	Y	20
01021200	Dennys River at Dennysville, ME	92.9	1956–95	1973	9.35	3,930	4/29/73	9.35	3,930	Y	>100
01021500	Machias River at Whitneyville, ME	458	1906–21, 1930–77	1961	16.92	14,800	4/03/76	15.15	12,400	N	40–45
01021600	Middle River near Machias, ME	8.26	1965–74	1970	5.19	302	4/02/70	5.19	302	N	10
01022260	Pleasant River near Epping, ME	60.6	1981–91	1989	10.77	1,240	5/13/89	10.77	1,240	N	10–25
01022500	Narraguagus River at Cherryfield, ME	227	1948–95	1961	17.40	10,400	5/12/89	15.70	7,250	N	10–15
01022700	Forbes Pond Brook near Prospect Harbor, ME	9.15	1965–74	1970	4.94	402	4/02/70	4.94	402	N	10
01023000	West Branch Union River at Amherst, ME	148	1909–10, 1912–19, 1930–79	1979	9.44	4,220	3/25/79	9.44	4,220	N	100
01026800	Frost Pond Brook near Sedgwick, ME	4.84	1965–74	1970	8.82	350	2/04/70	8.82	350	N	10–25
01029500	East Branch Penobscot River at Grindstone, ME	1,086	1903–82	1923	16.90	37,000	4/29/73	14.71	30,600	Y	50–60

Table 20. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Maine—Continued

Station number (fig. 41)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01030000	Penobscot River near Mattawamkeag, ME	3,356	1941–91	1973	16.89	66,000	4/29/73	16.89	66,000	Y	75
							4/29/79	13.01	53,000	Y	20–25
							4/02/87	12.90	55,400	Y	30
01030300	Trout Brook near Danforth, ME	4.19	1964–73	1970	6.50	354	4/25/70	6.50	354	N	10–25
01030400	Gulliver Brook near Monarda, ME	11.0	1964–74	1973	5.25	562	7/05/73	5.25	562	N	25–50
01030500	Mattawamkeag River near Mattawamkeag, ME	1,418	1903–95	1936	15.34	29,200	4/06/76	14.70	27,600	N	20
01031500	Piscataquis River near Dover-Foxcroft, ME	298	1903–95	1987	22.62	37,300	4/28/79	16.15	19,300	N	25
							4/01/87	22.62	37,300	N	>500
01033000	Sebec River at Sebec, ME	326	1925–82, 1985–93	1936	14.46	14,300	4/02/87	12.89	11,000	Y	100
01034000	Piscataquis River at Medford, ME	1,162	1925–82, 1987, 1990–95	1987	18.65	85,000	4/29/79	14.17	50,200	N	25–30
							4/01/87	18.65	85,000	N	250–500
01034500	Penobscot River at West Enfield, ME	6,671	1902–95	1923	25.15	153,000	4/30/73	21.66	128,000	Y	35
							4/19/83	20.81	118,000	Y	25
							4/02/87	23.58	147,000	Y	100
01035000	Passadumkeag River at Lowell, ME	297	1916–79	1923	9.40	5,680	4/05/76	7.05	3,660	N	20
01036390	Penobscot River at Eddington, ME	7,764	1979–95	1987	23.53	159,000	4/03/87	23.53	159,000	Y	--
01036500	Kenduskeag Stream near Kenduskeag, ME	176	1909–19, 1942–79, 1987	1987	15.84	7,400	4/01/87	15.84	7,400	N	50–75
01037430	Goose River at Rockport, ME	8.25	1964–74	1972	7.83	624	3/23/72	7.83	624	N	5–10
01038000	Sheepscot River at North Whitefield, ME	145	1939–95	1987	13.71	7,350	12/18/73	12.52	6,420	N	75
							4/01/87	13.71	7,350	N	>100
01041000	Kennebec River at Moosehead, ME	1,268	1920–82	1974	9.74	16,700	5/03/74	9.74	16,700	Y	30
							9/25/81	9.76	16,700	Y	30
01041900	Mountain Brook near Lake Parlin, ME	4.09	1964–74	1973	10.05	918	7/05/73	10.05	918	N	>50
01042500	Kennebec River at the Forks, ME	1,590	1902–95	1984	13.78	30,300	12/22/73	12.68	24,900	Y	30
							4/18/83	14.41	28,300	Y	60–70
							6/01/84	13.78	30,300	Y	100
01045000	Dead River at the Forks, ME	867	1903–07, 1911–17, 1919–79	1974	8.92	20,100	--/--74	8.92	20,100	Y	30–40
01046500	Kennebec River at Bingham, ME	2,715	1908–09, 1931–95	1984	15.61	65,200	6/01/84	15.61	65,200	Y	75–100
							4/01/87	15.46	63,400	Y	50–75
01047000	Carrabassett River near North Anson, ME	353	1926–95	1987	26.66	50,700	4/01/87	26.66	50,700	N	>100
01048000	Sandy River near Mercer, ME	516	1929–79, 1987–95	1987	19.25	51,100	4/01/87	19.25	51,100	N	>100
01048100	Pelton Brook near Anson, ME	14.9	1965–74	1974	9.79	2,080	12/21/73	9.79	2,080	N	20–30
01049000	Sebasticook River near Pittsfield, ME	572	1929–95	1987	15.53	17,600	4/03/87	15.53	17,600	N	>100
01049130	Johnson Brook at South Albion, ME	2.92	1981–91	1987	12.34	178	4/01/87	12.34	178	N	10–25
01049265	Kennebec River at North Sidney, ME	5,403	1979–93	1987	39.31	232,000	4/02/87	39.31	232,000	Y	>100

Table 20. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Maine—Continued

Station number (fig. 41)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01049300	North Branch Tanning Brook near Manchester, ME	0.93	1964–83	1974	3.89	195	12/17/73	3.89	195	N	50–100
01049373	Mill Stream at Winthrop, ME	32.7	1978–92	1987	6.16	1,330	4/02/87	6.16	1,330	N	50–100
01049500	Cobbosseecontee Stream at Gardiner, ME	217	1891–1964, 1977–95	1936	--	5,020	4/01/87	10.04	4,240	Y	30–35
01049550	Togus Stream at Togus, ME	23.7	1982–95	1987	7.50	1,010	4/01/87	7.50	1,010	N	25–50
01049700	Gardiner Pond Brook at Dresden Mills, ME	8.00	1965–74	1974	8.96	456	12/17/73	8.96	456	N	>50
01054200	Wild River at Gilead, ME	69.6	1960, 1965–95	1960	15.60	18,100	3/31/87	13.03	13,600	N	15
01054500	Androscoggin River at Rumford, ME	2,068	1892–1995	1936	--	74,000	4/06/84 4/01/87	-- 23.22	47,000 63,900	Y Y	20 100–250
01055000	Swift River near Roxbury, ME	96.9	1930–95	1960	12.87	16,800	4/01/87	12.54	15,900	N	25
01055300	Bog Brook near Buckfield, ME	10.4	1964–74	1970	8.75	289	2/11/70	8.75	289	N	10
01055500	Nezinscot River at Turner Center, ME	169	1942–95	1953	11.18	13,900	3/15/77 4/01/87	8.69 10.20	8,530 11,600	N N	30 >100
01057000	Little Androscoggin River near South Paris, ME	73.5	1914–23, 1932–95	1987	12.22	9,340	4/06/84 4/01/87	10.47 12.22	5,890 9,340	N N	30–35 >100
01058500	Little Androscoggin River near Auburn, ME	328	1936, 1941–82	1977	10.42	8,230	3/16/77	10.42	8,230	Y	20–25
01059000	Androscoggin River near Auburn, ME	3,263	1870, 1896, 1929–95	1936	27.57	135,000	4/02/87	23.71	103,000	Y	>100
01060000	Royal River at Yarmouth, ME	141	1950–95	1977	8.46	11,500	3/13/77 4/01/87	8.46 7.83	11,500 8,440	N N	>100 20–25
01062700	Patte Brook near Bethel, ME	5.65	1965–74	1973	6.34	664	7/01/73	6.34	664	N	10–25
01064200	Mill Brook near Old Orchard Beach, ME	2.15	1965–74	1973	4.96	208	4/02/73	4.96	208	N	10–25
01065500	Ossipee River at Cornish, ME	452	1917–95	1936	16.32	17,200	4/02/87	10.90	9,460	N	25
01066000	Saco River at Cornish, ME	1,293	1917–95	1936	21.90	46,600	4/03/87	16.54	31,300	N	>100
01066500	Little Ossipee River near South Limington, ME	168	1936, 1941–82	1936	--	8,530	3/15/77	7.04	5,760	N	40–50
01069500	Mousam River near West Kennebunk, ME	99.0	1940–84	1983	5.64	4,020	3/14/77 3/20/83	5.82 5.64	3,540 4,020	Y Y	50 75–100
01069700	Branch Brook near Kennebunk, ME	10.3	1965–74	1972	6.34	723	5/04/72	6.34	723	N	10–25

[1]Regulated during flood: N, no; Y, yes.

Maryland and the District of Columbia

Hydroclimatology

Maryland is located in the mid-Atlantic region of the eastern seaboard. The three main airmasses affecting Maryland's climate are cool, moist maritime air from the Atlantic Ocean, warm, moist tropical air from the Gulf of Mexico and subtropical Atlantic, and cool, dry continental air from Canada. During the summer and early fall, moisture from the Atlantic Ocean often originates from a tropical airmass having surface dewpoints greater than about 70 °F. During winter, air moving inland from the Atlantic Ocean at low elevations is considered to be polar maritime air. Air from the Gulf of Mexico, moving northward both east and west of the Appalachian Mountains, is considered to be tropical maritime in origin. During winter, this tropical air often will overrun colder air near the land surface between the mountains and the coast. This overrunning typically creates slow, steady rainfall.

Mean annual precipitation is greatest (52 in.) in the mountainous, extreme western part of Maryland. Precipitation just east of the mountains decreases to approximately 40 in., then increases again to nearly 48 in. along the eastern coast. Statewide mean annual precipitation in Maryland averages 42 in. The District of Columbia has mean annual precipitation of 43 in. (Paulson and others, 1991).

Floods in Maryland typically are caused by intense "northeasters" or by hurricanes. These floods tend to be widespread and result in extensive damage. Floods also can be the result of convective thunderstorms. These storms tend to result in flash floods that affect only a local area. Melting of a large snowpack, especially when combined with rainfall, can result in some flooding.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the factors affecting the magnitude of maximum discharges for streams in Maryland and the District of Columbia are drainage area; channel slope; percentage of basin area covered by forests; percentage of basin occupied by lakes, ponds, and swamps; 2-year, 24-hour precipitation; and soil permeability. The equations are applicable only to streams draining natural basins without urban development or regulated flow (Jennings and others, 1994).

Significant Floods

The flood of June 1972 was the largest flood that occurred during 1970–89. Forty-four percent of the streamflow-gaging stations in Maryland and the District of Columbia recorded signficant discharges. The flood was caused by Hurricane Agnes. It affected central Maryland, the District of Columbia, and the Susquehanna River Basin. Maximum discharges greater than the 100-year recurrence interval were recorded throughout a wide area. In some areas, discharges more than twice the 100-year recurrence interval were recorded. This flood was probably the largest natural disaster in Maryland history.

Twenty percent of the streamflow-gaging stations in Maryland and the District of Columbia recorded significant discharges during the flood of September 1975. The flood was a result of Hurricane Eloise.

Two floods occurred during 1979. The combination of the two floods caused 22 percent of the gaged streams to have significant discharges. In February 1979, flooding was caused by rapid melting of 10 to 18 in. of snow that had fallen on February 19. With the ground frozen, nearly all of the snowmelt became runoff. Moderate temperatures resulted in rapid melting of the snow, and the ground quickly became saturated. The second flood of 1979 was a result of Hurricane David in early September, and the severest flooding was limited to small areas in and near Baltimore and in Washington, D.C.

The location of streamflow-gaging stations in Maryland and the District of Columbia that had significant floods for 1970–89 is shown in figure 42 by station number. The specific data for each significant flood are listed in table 21. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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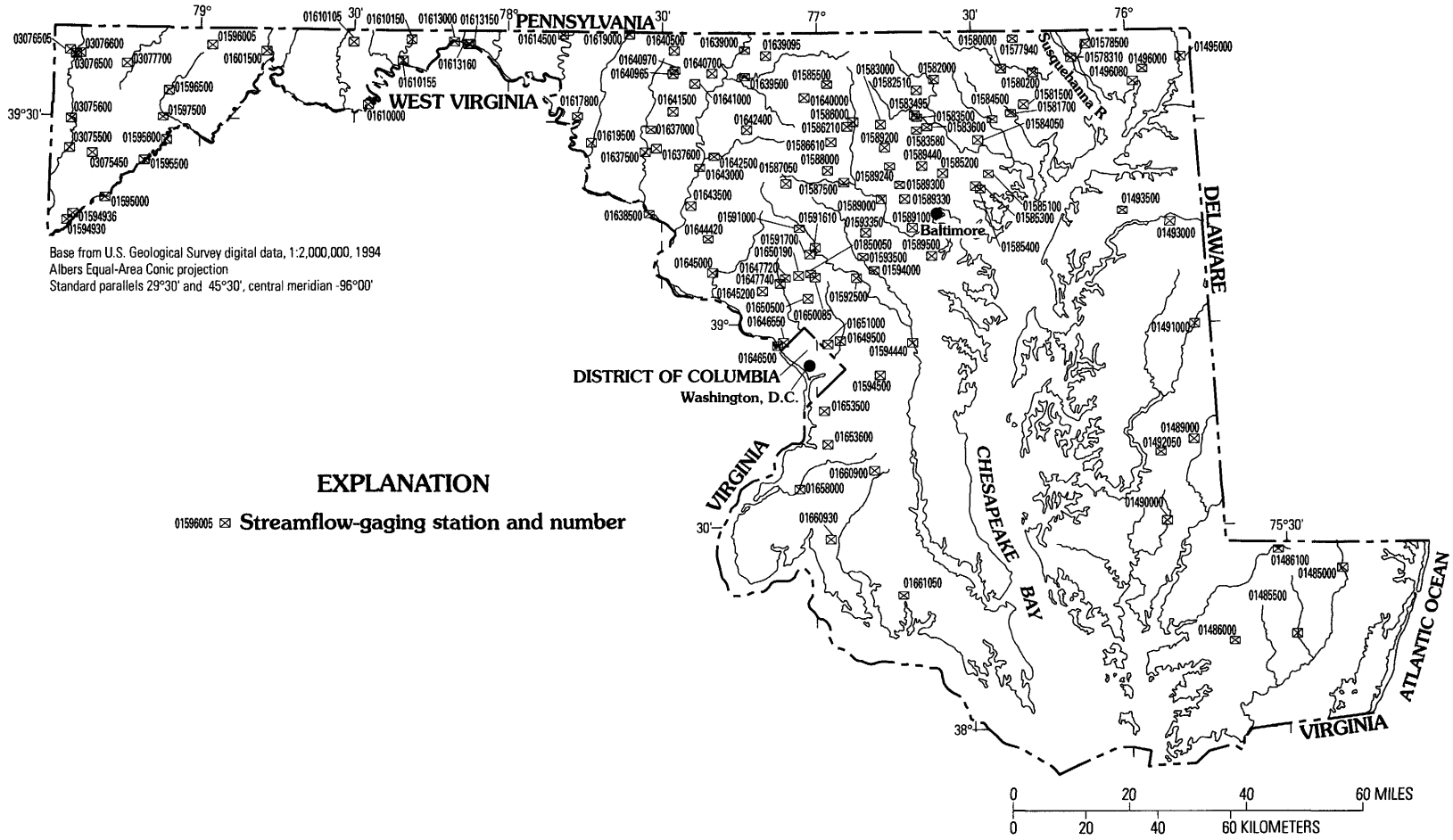

Figure 42. Location of streamflow-gaging stations with significant floods during 1970–89 for Maryland and District of Columbia.

Table 21. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Maryland and District of Columbia

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 42)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01485000	Pocomoke River near Willards, MD	60.5	1950–94	1989	15.41	2,820	2/26/79	13.88	1,870	N	40
							8/20/89	15.41	2,820	N	>100
01485500	Nassawango Creek near Snow Hill, MD	44.9	1950–94	1979	7.95	1,940	2/26/79	7.95	1,940	N	>100
				1989	9.07	1,070					
01486000	Manokin Branch near Princess Anne, MD	4.80	1951–71, 1975–94	1969	5.44	547	9/06/79	5.28	361	N	15
				1985	7.08	347					
01486100	Andrews Branch near Delmar, MD	4.10	1967–76	1973	8.00	191	8/22/73	8.00	191	N	15
01489000	Faulkner Branch at Federalsburg, MD	7.10	1950–91	1975	5.98	1,680	7/13/75	5.98	1,680	N	50
							5/30/84	5.59	1,290	N	25
01490000	Chicamacomico River near Salem, MD	15.0	1951–80	1979	4.99	715	8/03/73	4.48	542	Y	15
							2/26/79	4.99	715	Y	35
01491000	Choptank River near Greensboro, MD	113	1948–94	1967	14.47	6,970	2/26/79	13.61	6,110	N	35
01492050	Gravel Run at Beulah, MD	8.40	1966–76	1975	7.40	690	7/13/75	7.40	690	N	20
01493000	Unicorn Branch near Millington, MD	22.3	1948–94	1960	7.17	1,060	6/22/72	7.03	1,020	N	25
01493500	Morgan Creek near Kennedyville, MD	12.7	1951–94	1972	13.07	7,500	6/22/72	13.07	7,500	N	>100
01495000	Big Elk Creek at Elk Mills, MD	52.6	1884, 1932–94	1884	19.00	18,000	6/22/72	13.46	8,720	N	25
01496000	Northeast Creek at Leslie, MD	24.3	1949–84	1972	8.41	4,800	6/22/72	8.41	4,800	N	40–45
01496080	Northeast River tributary near Charlestown, MD	1.70	1967–76	1975	7.70	700	7/20/75	7.70	700	N	>50
01577940	Broad Creek tributary at Whiteford, MD	0.77	1971–86	1984	12.40	1,390	7/01/84	12.40	1,390	N	>25
01578310	Susquehanna River at Conowingo, MD	27,100	1968–94	1972	36.83	1,130,000	6/24/72	36.83	1,130,000	Y	>100
01578500	Octoraro Creek near Rising Sun, MD	193	1884, 1918, 1932–58, 1963, 1965–77	1884	24.30	60,000	6/22/72	18.92	29,000	Y	35
01580000	Deer Creek at Rocks, MD	94.4	1927–94	1933	17.70	13,600	6/22/72	17.09	12,200	N	50
01580200	Deer Creek near Kalmia, MD	125	1967–77	1972	16.08	16,800	6/22/72	16.08	16,800	N	>50
01581500	Bynum Run at Bel Air, MD	8.52	1945–50, 1955–72	1972	8.32	4,650	6/22/72	8.32	4,650	N	60
01581700	Winters Run near Benson, MD	34.8	1967–94	1972	11.60	7,600	6/22/72	11.60	7,600	N	20
01582000	Little Falls at Blue Mount, MD	52.9	1933, 1945–94	1972	18.54	8,280	6/22/72	18.54	8,280	N	50
							9/26/75	15.29	6,840	N	25
01582510	Piney Creek near Hereford, MD	1.50	1966–79	1979	20.60	1,450	9/06/79	20.60	1,450	N	25
01583000	Slade Run near Glyndon, MD	2.09	1948–81	1972	4.80	515	6/22/72	4.80	515	N	20
01583495	Western Run tributary at Western Run, MD	0.26	1967–76	1972	8.10	515	6/22/72	--	515	N	25
				1975	9.70	195					
01583500	Western Run at Western Run, MD	59.8	1945–94	1972	26.00	38,000	6/22/72	26.00	38,000	N	>500
							9/26/75	12.56	7,990	N	15
							9/06/79	13.22	8,800	N	20

Table 21. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Maryland and District of Columbia—Continued

Station number (fig. 42)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01583580	Baisman Run at Broadmoor, MD	1.47	1965–76	1972	6.08	692	6/22/72	6.08	692	N	20
01583600	Beaverdam Run at Cockeysville, MD	20.9	1983–94	1984	12.10	3,370	7/01/84	12.10	3,370	N	20
01584050	Long Green Creek at Glen Arm, MD	9.40	1976–94	1984	6.70	3,250	7/01/84	6.70	3,250	N	20
01584500	Little Gunpowder Falls at Laurel Brook, MD	36.1	1927–73, 1975–85	1984	11.40	11,800	6/22/72 7/01/84	10.18 11.40	9,030 11,800	N N	20 55–60
01585100	Whitemarsh Run at White Marsh, MD	7.61	1960–89, 1992–94	1971	14.05	8,000	8/01/71 8/27/78	14.05 11.73	8,000 3,880	N N	>100 25
01585200	West Branch Herring Run at Idlewylde, MD	2.13	1958–87	1971	6.80	1,740	9/11/71 9/06/79	6.80 6.68	1,740 1,660	N N	20 15
01585300	Stemmers Run at Rossville, MD	4.46	1960–72, 1974–89	1971	11.34	5,950	8/01/71	11.34	5,950	N	>100
01585400	Brien Run at Stemmers Run, MD	1.97	1959–87	1971	10.75	3,500	8/01/71	10.75	3,500	N	>100
01585500	Cranberry Branch near Westminster, MD	3.29	1949–94	1975	7.47	2,220	9/26/75 1/20/88	7.47 3.10	2,220 1,400	N N	50 20
01586000	North Branch Patapsco River at Cedarhurst, MD	56.6	1946–94	1972	20.75	27,800	6/22/72 9/26/75	20.75 16.59	27,800 15,300	N N	>100 80–85
01586210	Beaver Run near Finksburg, MD	14.0	1983–94	1989	5.70	2,150	5/06/89	5.70	2,150	N	10
01586610	Morgan Run near Louisville, MD	28.0	1983–94	1989	8.30	3,400	5/06/89	8.30	3,400	N	10
01587050	Haymeadow Branch tributary at Poplar Springs, MD	0.54	1966–76	1971	10.60	630	9/11/71	10.60	630	N	20
01587500	South Branch Patapsco River at Henryton, MD	64.4	1949–80	1972	28.14	26,900	6/22/72 9/26/75	28.14 21.16	26,900 14,600	N N	>100 35
01588000	Piney Run near Sykesville, MD	11.4	1932–74	1972 1956	11.00 12.00	9,700 7,380	6/22/72	11.00	9,700	N	>100
01589000	Patapsco River at Hollofield, MD	285	1933, 1945–91, 1994	1972	31.30	80,600	6/22/72 9/26/75	31.30 22.80	80,600 46,500	Y Y	>100 55
01589100	East Branch Herbert Run at Arbutus, MD	2.47	1956, 1958–89	1979 1984	6.80 7.51	2,460 1,060	9/06/79 6/14/81	6.80 5.89	2,460 2,130	N N	55 35
01589200	Gwynns Falls near Owings Mills, MD	4.90	1959–75	1972	5.70	5,500	6/22/72	5.70	5,500	N	>100
01589240	Gwynns Falls at McDonogh, MD	19.3	1958, 1960, 1962–67, 1971–73, 1975–84	1972	18.80	14,700	6/22/72	18.80	14,700	N	>100
01589300	Gwynns Falls at Villa Nova, MD	32.5	1956–88	1972	21.50	16,200	6/22/72 8/13/84	21.50 15.50	16,200 8,690	N N	>100 35
01589330	Dead Run at Franklintown, MD	5.52	1960–87	1972	12.50	7,400	6/22/72	12.50	7,400	N	45
01589440	Jones Falls at Sorrento, MD	25.2	1958–88	1972	18.11	13,800	6/22/72 9/06/79	18.11 17.20	13,800 11,700	N N	>100 85
01589500	Sawmill Creek at Glen Burnie, MD	4.97	1933, 1945–52, 1965–70, 1984–94	1989	5.12	178	8/29/89	5.12	178	N	20–25
01591000	Patuxent River near Unity, MD	34.8	1945–94	1971	18.60	21,800	9/11/71 6/22/72	18.60 16.10	21,800 14,500	N N	>100 55

Table 21. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Maryland and District of Columbia—Continued

Station number (fig. 42)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01591610	Patuxent River below Brighton Dam near Brighton, MD	78.6	1981–94	1989	10.26	2,650	5/06/89	10.26	2,650	Y	--
01591700	Hawlings River near Sandy Spring, MD	27.0	1979–94	1979	8.80	4,300	9/06/79	8.80	4,300	N	15
01592500	Patuxent River near Laurel, MD	132	1945–94	1972	25.00	26,000	9/12/71 6/22/72 9/26/75	18.50 25.00 19.84	12,000 26,000 17,000	Y Y Y	-- -- --
01593350	Little Patuxent River tributary at Guilford Downs, MD	0.95	1966–67, 1969–76	1972 1975	10.30 13.40	620 410	6/22/72	10.30	620	N	15
01593500	Little Patuxent River at Guilford, MD	38.0	1933–94	1972	18.38	12,400	6/22/72 9/26/75	18.38 13.39	12,400 5,370	N N	>100 20
01594000	Little Patuxent River at Savage, MD	98.4	1933, 1940–66, 1968, 1972, 1975–80, 1986–94	1972	25.40	35,400	6/22/72 9/26/75	25.40 16.74	35,400 12,300	N N	>100 25
01594440	Patuxent River near Bowie, MD	348	1978–94	1979	18.52	11,500	9/06/79	18.52	11,500	Y	20–25
01594500	Western Branch near Largo, MD	30.2	1950–74	1971	8.97	1,760	8/27/71	8.97	1,760	N	10
01594930	Laurel Run at Dobbin Road near Wilson, MD	8.23	1980–94	1986	10.10	863	1/05/85	10.10	863	N	25–30
01594936	North Fork Sand Run near Wilson, MD	1.91	1980–94	1985	10.47	895	5/31/85	10.47	895	N	25
01595000	North Branch Potomac River at Steyer, MD	73.0	1955–94	1986	13.14	11,500	1/05/85	13.14	11,500	N	50
01595500	North Branch Potomac River at Kitzmiller, MD	225	1950–94	1986 1955	14.85 16.50	50,400 33,400	1/05/85	14.85	50,400	N	>100
01595800	North Branch Potomac River at Barnum, WV	266	1967–94	1978	13.37	27,100	7/03/78 5/06/88	13.37 8.29	27,100 7,150	N Y	25 --
01596005	Savage River near Frostburg, MD	1.50	1971–76, 1978–86	1985	20.65	150	2/24/85	20.65	150	N	25
01596500	Savage River near Barton, MD	49.1	1949–94	1955	8.45	7,510	1/05/85	6.57	4,320	N	30
01597500	Savage River below Savage River Dam near Bloomington, MD	106	1949–94	1986	7.81	8,550	1/04/85	7.81	8,550	Y	--
01601500	Wills Creek near Cumberland, MD	247	1924, 1930–94	1936	20.20	38,100	8/13/84	14.94	24,000	N	55
01610000	Potomac River at Paw Paw, WV	3,109	1877, 1889, 1924, 1928, 1936, 1939–94	1936	54.00	240,000	1/05/85	53.58	235,000	N	>100
01610105	Pratt Hollow tributary at Pratt, MD	0.70	1971–83, 1985–86	1972	12.80	110	6/22/72	12.80	110	N	30
01610150	Bear Creek at Forest Park, MD	10.4	1965–69, 1971–83	1972	11.70	1,450	6/22/72	11.70	1,450	N	50
01610155	Sideling Hill Creek near Bellegrove, MD	102	1968–77	1972	12.44	14,200	6/22/72	12.44	14,200	N	100
01613000	Potomac River at Hancock, MD	4,073	1889, 1924, 1929, 1933–94	1936	47.60	340,000	1/06/85	41.20	207,000	N	50
01613150	Ditch Run near Hancock, MD	4.80	1965–86	1978	9.90	650	8/04/78	9.90	650	N	30

Table 21. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Maryland and District of Columbia—Continued

Station number (fig. 42)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01613160	Potomac River tributary near Hancock, MD	1.20	1965–76	1974	6.50	250	10/29/73	6.50	250	N	75–80
01614500	Conococheague Creek at Fairview, MD	494	1889, 1924, 1929–94	1972	24.50	32,400	6/23/72	24.50	32,400	N	>100
							2/15/84	17.97	21,500	N	50
01617800	Marsh Run at Grimes, MD	18.9	1964–94	1985	4.45	459	2/26/79	4.41	450	N	15
							2/12/85	4.45	459	N	15
01619000	Antietam Creek near Waynesboro, PA	93.5	1949–51, 1966–81	1972	12.33	5,430	6/22/72	12.33	5,430	N	30
01619500	Antietam Creek near Sharpsburg, MD	281	1928–94	1956	16.73	12,600	6/23/72	14.30	9,880	N	40
							9/26/75	14.71	10,100	N	40
01637000	Little Catoctin Creek at Harmony, MD	8.83	1948–77	1952	8.49	5,400	10/09/76	9.29	4,770	N	60
				1977	9.29	4,770					
01637500	Catoctin Creek near Middletown, MD	66.9	1948–94	1977	14.13	12,000	6/22/72	12.28	9,390	N	30
							10/09/76	14.13	12,000	N	55
01637600	Hollow Road Creek near Middletown, MD	2.30	1965–74, 1977	1977	13.30	2,000	10/09/76	13.30	2,000	N	>100
01638500	Potomac River at Point of Rocks, MD	9,651	1889, 1895–1994	1936	41.03	480,000	6/23/72	37.43	347,000	N	55
01639000	Monocacy River at Bridgeport, MD	173	1933, 1942–94	1933	25.00	23,000	6/22/72	24.05	21,300	N	50–55
							10/09/76	23.18	19,200	N	35
01639095	Piney Creek tributary at Taneytown, MD	0.62	1967–76	1975	12.00	300	9/26/75	12.00	300	N	10
01639500	Big Pipe Creek at Bruceville, MD	102	1948–94	1975	18.98	28,000	6/22/72	17.86	22,800	N	85
							9/26/75	18.98	28,000	N	>100
01640000	Little Pipe Creek at Avondale, MD	8.10	1948–56, 1959–80	1972	10.45	2,400	6/22/72	10.45	2,400	N	25
							9/26/75	9.94	2,240	N	20–25
01640500	Owens Creek at Lantz, MD	5.93	1932–84	1935	8.40	3,270	10/09/76	7.13	2,180	N	20–25
							9/05/79	7.75	2,680	N	30–35
01640700	Owens Creek tributary near Rocky Ridge, MD	1.20	1967–77	1977	17.70	1,370	10/09/76	17.70	1,370	N	>100
01640965	Hunting Creek near Foxville, MD	2.14	1982–94	1988	4.71	814	5/19/88	4.71	814	N	35
01640970	Hunting Creek tributary near Foxville, MD	4.01	1982–91	1988	3.78	1,905	5/19/88	3.78	1,905	N	20–25
01641000	Hunting Creek at Jimtown, MD	18.4	1950–92	1977	6.32	2,670	10/09/76	6.32	2,670	N	30–35
							9/06/79	6.12	2,470	N	25
01641500	Fishing Creek near Lewistown, MD	7.29	1948–84	1977	5.75	2,200	10/09/76	5.75	2,200	N	85–90
							9/05/79	3.83	678	N	10–15
01642400	Dollyhyde Creek at Libertytown, MD	2.70	1967–76	1972	13.20	1,620	6/21/72	13.20	1,620	N	15–20
01642500	Linganore Creek near Frederick, MD	82.3	1933–82	1972	19.46	20,100	6/22/72	19.46	20,100	N	>100
							9/26/75	13.85	7,850	Y	20
01643000	Monocacy River at Jug Bridge near Frederick, MD	817	1889, 1930–94	1972	35.90	81,600	6/23/72	35.90	81,600	N	>100
							9/26/75	30.80	61,200	N	100
01643500	Bennett Creek at Park Mills, MD	62.8	1949–58, 1960–94	1972	22.10	32,200	9/12/71	14.33	13,000	N	35
							6/21/72	22.10	32,200	N	>100
01644420	Bucklodge Branch tributary near Barnesville, MD	0.27	1967–76	1972	13.80	400	6/21/72	13.80	400	N	45
01645000	Seneca Creek at Dawsonville, MD	101	1931–94	1972	16.40	26,100	9/12/71	16.32	25,900	N	100
							6/22/72	16.40	26,100	N	100
							9/06/79	12.69	16,000	N	35

Table 21. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Maryland and District of Columbia—Continued

Station number (fig. 42)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01645200	Watts Branch at Rockville, MD	3.70	1958–87	1975	7.32	3,400	6/21/72	7.22	2,900	N	25
							9/26/75	7.32	3,400	N	30
01646500	Potomac River near Washington, D.C., Little Falls pump station	11,560	1931–94	1936	28.10	484,000	6/24/72	22.03	359,000	N	35
01646550	Little Falls Branch near Bethesda, MD	4.10	1945–84	1966	6.82	2,680	6/21/72	6.62	2,540	N	20
				1945	7.50	2,340					
01647720	North Branch Rock Creek near Norbeck, MD	9.73	1967–77	1972	14.10	10,100	6/22/72	14.10	10,100	N	>100
01647740	North Branch Rock Creek near Rockville, MD	12.5	1968–77	1972	6.10	420	6/22/72	6.10	420	Y	25
01649500	Northeast Branch Anacostia River at Riverdale, MD	72.8	1933, 1939–94	1972	9.52	12,000	6/22/72	9.52	12,000	N	65
				1933	15.50	10,500	9/26/75	10.57	10,800	N	45
01650050	Northwest Branch Anacostia River at Norwood, MD	2.45	1967–76	1972	6.25	3,750	6/21/72	6.25	3,750	N	>100
01650085	Nursery Run at Cloverly, MD	0.35	1967–76	1972	4.85	695	6/21/72	4.85	695	N	35
01650190	Batchellors Run at Oakdale, MD	0.47	1967–76	1975	4.36	750	7/15/75	4.36	750	N	25
01650500	Northwest Branch Anacostia River near Colesville, MD	21.1	1924–83	1972	15.89	11,000	6/22/72	15.89	11,000	N	>100
							7/15/75	12.24	6,640	N	50
							9/05/79	11.47	6,300	N	45
01651000	Northwest Branch Anacostia River near Hyattsville, MD	49.4	1933, 1939–94	1972	14.47	18,000	6/22/72	14.47	18,000	N	100
							9/26/75	11.17	14,800	N	60
							9/06/79	9.40	12,000	N	35
01653500	Henson Creek at Oxon Hill, MD	16.7	1949–78	1971	7.63	3,440	8/04/71	7.63	3,440	N	20
01653600	Piscataway Creek at Piscataway, MD	39.5	1966–94	1979	11.21	8,500	9/06/79	11.21	8,500	N	70–75
01658000	Mattawoman Creek near Pomonkey, MD	54.8	1950–86	1955	7.52	9,300	9/26/75	7.40	8,700	N	40
01660900	Wolf Den Branch near Cedarville, MD	2.30	1967–80	1975	9.60	750	9/25/75	9.60	750	N	55
01660930	Clark Run near Bel Alton, MD	11.2	1966–76	1972	8.91	4,800	6/22/72	8.91	4,800	N	70
01661050	St. Clement Creek near Clements, MD	18.5	1969–94	1979	6.96	4,500	9/06/79	6.96	4,500	N	30
03075450	Little Youghiogheny River tributary at Deer Park, MD	0.57	1965–76	1972	5.30	40	6/29/72	5.30	40	N	5
03075500	Youghiogheny River near Oakland, MD	134	1936, 1942–94	1955	12.16	11,800	1/05/85	12.07	11,700	N	50
				1936	15.30	--					
03075600	Toliver Run tributary near Hoyes Run, MD	0.53	1965–86	1984	8.84	195	4/05/84	8.84	195	N	>100
03076500	Youghiogheny River at Friendsville, MD	295	1899–1905, 1923–31, 1940–94	1924	14.20	15,600	1/05/85	8.59	13,000	N	30
03076505	Youghiogheny River tributary near Friendsville, MD	0.22	1965–76	1974	3.80	18	5/18/74	3.70	18	N	5
03076600	Bear Creek at Friendsville, MD	48.9	1965–94	1971	9.60	4,650	9/14/71	9.60	4,650	N	65–70
							7/09/85	6.58	2,630	N	10

Table 21. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Maryland and District of Columbia—Continued

Station number (fig. 42)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03077700	North Branch Casselman River tributary at Foxtown, MD	1.00	1965–76	1971	6.30	84	9/14/71	6.30	84	N	10

[1] Regulated during flood: N, no; Y, yes.

Massachusetts

Hydroclimatology

Massachusetts is located in the northeastern part of the United States with the Atlantic Ocean on its eastern side. Massachusetts' climate is governed by airmasses from Canada, which are cold and dry, from the northern Atlantic, which are cool and damp, and from the Gulf of Mexico, which are warm and moist. Mean monthly precipitation throughout the year in Massachusetts is fairly uniform. Mean annual precipitation increases from east to west. The western part of the State receives about 52 in. of precipitation annually, whereas the coastal areas of the State typically receive 45 in. of precipitation per year (Paulson and others, 1991).

Floods in Massachusetts can be caused by intense spring rains in conjunction with the melting of the snowpack. Hurricanes in the late summer and fall and coastal "northeasters" during the winter can also produce widespread flooding.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Massachusetts is affected by drainage area and hydraulic head, which is measured as the difference between the mean basin elevation and the elevation at the most downstream streamflow-gaging station (Jennings and others, 1994).

Significant Floods

The most significant flood during 1970–89 occurred from March 31 to April 10, 1987. This flood was caused by two major storms. The first storm to hit the area was a fast-moving weather system that caused rains on a near-record snowpack. The second storm to hit the area was a slow-moving weather system that produced intense rainfall. Flooding was most severe in the northeastern and northwestern areas of the State. Twenty-seven percent of the streamflow-gaging stations in Massachusetts recorded significant discharges.

The flood of 1979 was caused by intense rains from January 21 to 25. Central and eastern Massachusetts were affected by this flood. Twenty-three percent of the streamflow-gaging stations in the State recorded significant discharges. The flood of 1984 was caused by a prolonged 6-day storm. The flood affected all but the southeastern part of the State. Thirteen percent of the streamflow-gaging stations recorded significant discharges.

The location of streamflow-gaging stations in Massachusetts that had significant floods for 1970–89 is shown in figure 43 by station number. The specific data for each significant flood are listed in table 22. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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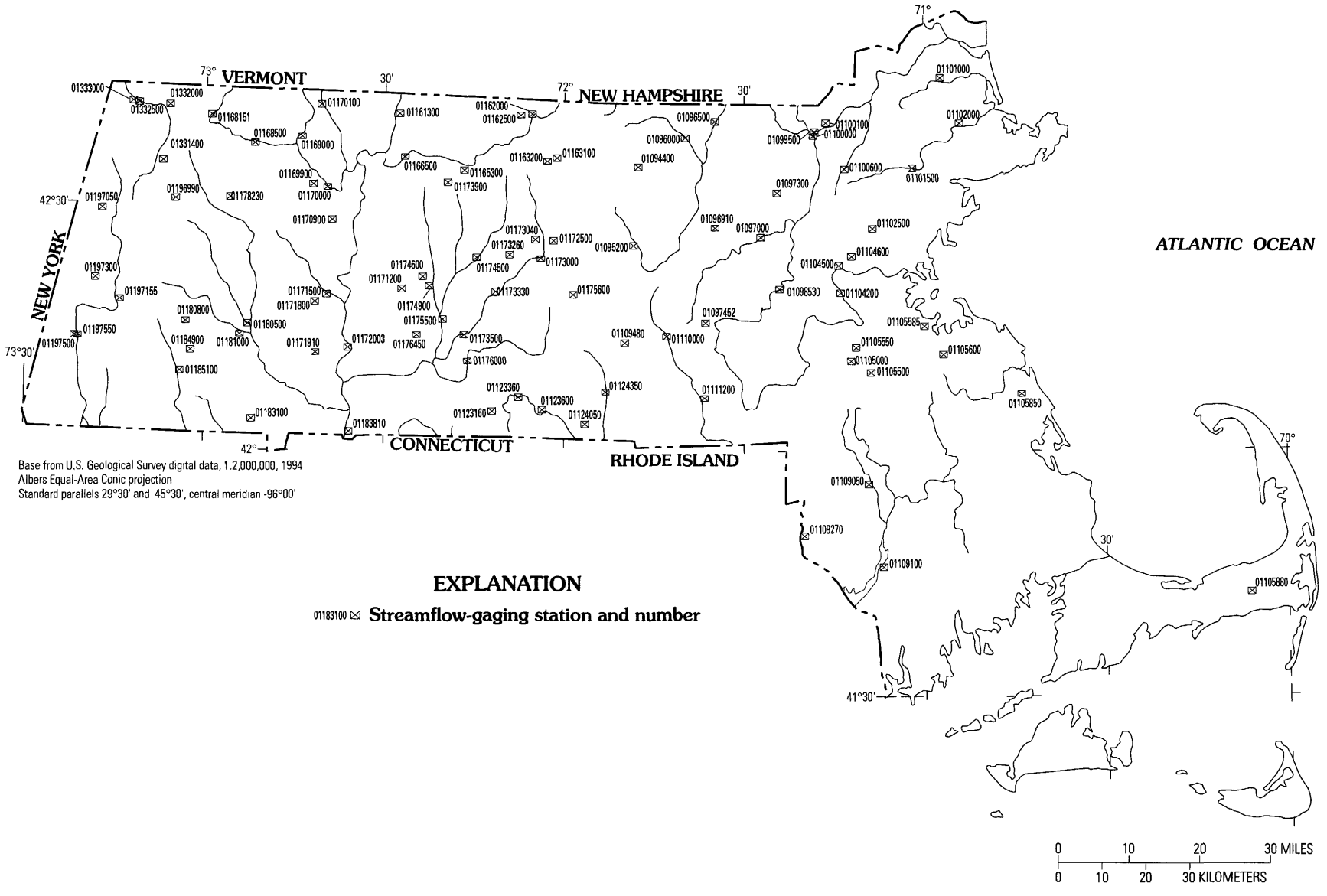


Figure 43. Location of streamflow-gaging stations with significant floods during 1970–89 for Massachusetts.

Table 22. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Massachusetts

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 43)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01094400	North Nashua River at Fitchburg, MA	63.4	1973–94	1987	7.78	3,510	4/05/87	7.78	3,510	Y	10–25
01095200	Houghton Brook near Oakdale, MA	0.69	1964–83	1979	9.82	60	1/25/79	9.82	60	N	10–25
01096000	Squannacook River near West Groton, MA	65.9	1950–94	1987	8.16	4,220	4/06/87	8.16	4,220	N	10–25
01096500	Nashua River at East Pepperell, MA	435	1936–94	1936	19.10	20,900	4/07/87	16.19	11,700	Y	10–25
01096910	Boulder Brook at East Bolton, MA	1.60	1972–83	1979	3.69	208	1/25/79	3.69	208	N	--
01097000	Assabet River at Maynard, MA	116	1942–94	1955	8.94	4,250	1/26/79	8.11	3,420	Y	10–25
01097300	Nashoba Brook near Acton, MA	12.8	1964–94	1979	5.57	679	1/26/79 4/07/87	5.57 4.91	679 337	N Y	10–25
01097452	Jackstraw Brook at Hopkinton Road, Westborough, MA	1.24	1964–83	1979	9.59	77	1/25/79	9.59	77	N	2–5
01098530	Sudbury River at Saxonville, MA	106	1980–94	1982 1987	13.30 13.47	2,420 2,240	6/07/82 4/08/87	13.30 13.47	2,420 2,240	Y Y	10–25 10–25
01099500	Concord River below River Meadow Brook at Lowell, MA	400	1938–94	1979	9.60	5,410	1/28/79 4/10/87	9.60 9.60	5,410 5,120	Y Y	10–25 10–25
01100000	Merrimack River below Concord River at Lowell, MA	4,635	1852, 1924–94	1936	68.40	173,000	4/07/87	57.16	84,700	Y	10–25
01100100	Richardson Brook near Lowell, MA	4.22	1963–83	1979	19.15	424	1/25/79	19.15	424	N	10–25
01100600	Shawsheen River near Wilmington, MA	36.5	1964–94	1979	9.85	1,660	1/26/79 4/06/87	9.85 --	1,660 1,200	N Y	10–25 5–10
01101000	Parker River at Byfield, MA	21.3	1946–94	1987	7.35	790	4/07/87	7.35	790	N	25–50
01101500	Ipswich River at South Middleton, MA	44.5	1938–94	1987	7.51	1,010	1/26/79 4/07/87	7.12 7.51	839 1,010	Y Y	10–25 10–25
01102000	Ipswich River near Ipswich, MA	125	1931–94	1987	9.43	3,550	4/08/87	9.43	3,550	Y	25–50
01102500	Aberjona River at Winchester, MA	24.7	1940–94	1979	15.46	1,330	1/25/79 6/06/82 4/07/87	15.46 14.12 14.20	1,330 850 877	Y Y Y	25–50 5–10 10–25
01104200	Charles River at Wellesley, MA	211	1960–94	1968	6.20	2,410	1/28/79	6.11	2,310	Y	5–10
01104500	Charles River at Waltham, MA	251	1932–94	1976	6.54	4,150	2/03/76 1/25/79 6/07/82	6.54 6.48 5.44	4,150 3,480 2,960	Y Y Y	25–50 10–25 10–25
01104600	Beaver Brook at Belmont, MA	4.00	1963–83	1979	16.20	300	1/25/79	16.20	300	N	10–25
01105000	Neponset River at Norwood, MA	34.7	1938, 1940–94	1955	14.65	1,490	5/31/84	10.22	943	Y	10–25
01105500	East Branch Neponset River at Canton, MA	27.2	1953–94	1955	8.18	1,790	2/25/75	3.21	1,790	Y	10–25
01105550	Plantingfield Brook at Norwood, MA	1.52	1964–74	1974 1968	14.83 15.06	185 178	3/21/74	14.83	185	N	10–25
01105585	Town Brook at Quincy, MA	4.22	1973–86	1975	7.40	381	5/13/75	7.40	381	Y	2–5

Table 22. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Massachusetts—Continued

Station number (fig. 43)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01105600	Old Swamp River near South Weymouth, MA	4.50	1967–94	1984 1968	5.02 5.22	590 566	5/31/84	5.02	590	N	5–10
01105850	Furnace Brook near Marshfield, MA	1.56	1964–83	1977	10.94	101	3/23/77	10.94	101	N	5–10
01105880	Herring River at North Harwich, MA	9.40	1967–88	1983 1967	3.71 4.88	75 54	2/12/83	3.71	75	Y	10–25
01109050	Threemile River tributary near Oakland, MA	0.51	1964–74	1974 1969	7.04 7.25	32 18	12/18/73	7.04	32	N	10–25
01109100	Taunton River tributary near Fall River, MA	0.23	1964–80, 1982–83	1983	13.73	108	4/10/83	13.73	108	N	10–25
01109270	Runnins River at Seekonk, MA	4.27	1967–83	1978	7.52	157	1/26/78	7.52	157	N	5–10
01109480	Kettle Brook diversion weir at Auburn, MA	31.6	1979–83, 1985–86, 1988–90	1979	489.45	1,900	1/25/79	489.45	1,900	Y	10–25
01110000	Quinsigamond River at North Grafton, MA	25.6	1940–94	1955	5.15	820	1/26/79 4/07/87	4.59 3.96	652 488	Y Y	25–50 10–25
01111200	West River below West Hill Dam near Uxbridge, MA	27.9	1962–90	1984	4.27	607	6/06/84	4.27	607	Y	10–25
01123160	Wales Brook tributary near Wales, MA	0.73	1964–83	1979 1970	9.44 9.53	63 52	1/25/79	9.44	63	N	5–10
01123360	Quinebaug River below East Brimfield Dam at Fiskdale, MA	67.4	1936, 1938, 1955, 1973–90	1955 1977	-- 6.52	15,400 1,020	1/30/76	6.42	1,040	Y	<2
01123600	Quinebaug River below Westville Dam near Southbridge, MA	99.0	1963–90	1980	6.83	1,850	3/23/80	6.83	1,850	Y	2–5
01124050	Tufts Branch at Dudley, MA	1.10	1963–83	1973	13.49	128	2/03/73	13.49	128	N	5–10
01124350	French River below dam at Hodges Village, MA	31.2	1962–80, 1982–90	1978	3.47	628	1/28/78	3.47	628	Y	5–10
01161300	Millers Brook at Northfield, MA	2.30	1964, 1966–83	1975	20.12	680	9/26/75	20.12	680	N	10–25
01162000	Millers River near Winchendon, MA	81.8	1918–94	1938	21.55	8,500	6/01/84 4/01/87	-- --	3,500 4,000	Y Y	10–25 25–50
01162500	Priest Brook near Winchendon, MA	19.4	1917, 1919–94	1938	9.90	3,000	4/01/87	6.55	871	Y	5–10
01163100	Wilder Brook near Gardner, MA	2.35	1964–74	1973	12.19	56	3/23/72	12.18	56	N	5–10
01163200	Otter River at Otter River, MA	34.1	1965–94	1979	5.02	948	3/07/79 4/05/87	5.02 4.95	948 919	N N	10–25 5–10
01165300	Lake Rohunta outlet near Athol, MA	20.3	1965–85	1984	7.36	760	5/31/84	7.36	760	Y	10–25
01166500	Millers River at Erving, MA	372	1915–94	1938 1984	-- 7.63	29,000 6,810	3/07/79	--	7,200	Y	5–10
01168151	Deerfield River near Rowe, MA	254	1975–94	1984 1976	14.73 14.79	20,900 16,400	5/29/84	14.73	20,900	Y	5–10
01168500	Deerfield River at Charlemont, MA	361	1914–94	1938	20.17	56,300	4/04/87	16.25	36,200	Y	10–25
01169000	North River at Shattuckville, MA	89.0	1940–94	1987	11.19	14,200	2/20/81 4/05/87	9.83 11.19	10,600 14,200	N N	5–10 10–25
01169900	South River near Conway, MA	24.1	1967–94	1987	10.16	5,750	4/04/87	10.16	5,750	N	10–25

Table 22. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Massachusetts—Continued

Station number (fig. 43)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01170000	Deerfield River near West Deerfield, MA	557	1941–94	1987	17.71	61,700	4/05/87	17.71	61,700	Y	25–50
01170100	Green River near Colrain, MA	41.4	1968–94	1974	8.20	4,560	2/21/73	8.20	4,560	N	5–10
01170900	Mill River near South Deerfield, MA	6.42	1963–74	1970 1973	12.16 12.17	300 130	4/03/70	12.16	300	N	25–50
01171200	Scarboro Brook at Dwight, MA	2.90	1963–66, 1968–74	1974	16.23	148	12/21/73	16.23	148	N	10–25
01171500	Mill River at Northampton, MA	54.0	1939–94	1955	11.78	6,300	6/06/82	10.98	4,790	Y	10–25
01171800	Bassett Brook near Northampton, MA	5.56	1963–74	1974	6.82	102	12/21/73	6.82	102	N	5–10
01171910	Broad Brook near Holyoke, MA	2.27	1965–83	1982	19.84	393	6/06/82	19.84	393	N	25–50
01172003	Connecticut River below Holyoke Dam at Holyoke, MA	8,309	1984–94	1984	25.62	153,000	6/01/84	25.62	153,000	Y	--
01172500	Ware River near Barre, MA	55.1	1947–94	1956	6.31	1,890	4/13/87	5.56	1,630	Y	10–25
01173000	Ware River at intake works near Barre, MA	96.3	1929–91	1938 1929	-- --	14,000 990	4/14/87	--	1,590	Y	2–5
01173040	Pleasant Brook near Barre, MA	1.22	1965–74	1974	10.52	123	12/21/73	10.52	123	N	25–50
01173260	Moose Brook near Barre, MA	4.63	1963–74	1974	3.43	309	12/21/73	3.43	309	N	25–50
01173330	Fish Brook near Gilbertville, MA	1.20	1964–74	1974	15.37	104	12/21/73	15.37	104	N	10–25
01173500	Ware River at Gibbs Crossing, MA	197	1913–94	1938	18.20	22,700	3/06/79	7.94	5,050	Y	5–10
01173900	Middle Branch Swift River at North New Salem, MA	4.77	1964–74	1974	9.45	320	12/21/73	9.45	320	N	25–50
01174500	East Branch Swift River near Hardwick, MA	43.7	1937–94	1938 1944	15.05 22.49	6,780 2,300	3/07/79	22.38	2,180	N	10–25
01174600	Cadwell Creek near Pelham, MA	0.60	1962–94	1990	5.29	65	3/06/79	5.26	62	N	5–10
01174900	Cadwell Creek near Belchertown, MA	2.55	1962–94	1990 1979	7.39 7.42	283 271	3/06/79	7.42	271	N	5–10
01175500	Swift River at West Ware, MA	189	1911–94	1936	15.00	7,590	6/01/84	11.58	3,070	Y	5–10
01175600	Caruth Brook near Paxton, MA	2.27	1965–83	1979 1968	10.10 10.20	203 163	3/06/79	10.10	203	N	5–10
01176000	Quaboag River at West Brimfield, MA	150	1913–94	1955 1987	-- 7.78	12,800 2,170	6/02/84	7.66	2,510	N	5–10
01176450	Roaring Brook near Belchertown, MA	2.74	1963–74	1970	12.78	185	4/03/70	12.78	185	N	10–25
01178230	Mill Brook at Plainfield, MA	4.45	1964–76, 1978–83	1976	16.79	470	8/01/76	16.79	470	N	5–10
01180500	Middle Brook Westfield River at Goss Heights, MA	52.7	1911–90	1938 1955	10.61 11.33	19,900 16,500	3/26/80	5.93	1,670	Y	<2
01180800	Walker Brook near Becket Center, MA	2.94	1963–77	1976	7.57	499	8/10/76	7.57	499	N	5–10

Table 22. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Massachusetts—Continued

Station number (fig. 43)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01181000	West Branch Westfield River at Huntington, MA	94.0	1936–94	1955 1938	15.27 15.50	26,100 21,800	3/21/80	12.49	17,600	N	10–25
01183100	Dickinson Brook tributary at Granville, MA	0.70	1964–77, 1979–83	1975	14.24	208	9/27/75	14.24	208	N	5–10
01183810	Longmeadow Brook at Pondside Road near Longmeadow, MA	4.40	1963–77, 1979–83	1974 1982	6.13 6.22	118 112	12/21/73	6.13	118	N	5–10
01184900	Haley Pond outlet near Otis, MA	0.26	1964–74	1974	12.01	30	12/21/73	12.01	30	N	10–25
01185100	Fall River below Otis Reservoir near Otis, MA	16.5	1970–82	1972	5.41	422	7/02/72	5.41	422	Y	5–10
01196990	Windsor Brook tributary at Windsor, MA	0.30	1964–74	1974	11.64	52	12/21/73	11.64	52	N	10–25
01197050	Churchill Brook at Pittsfield, MA	1.16	1964–74	1974 1973	-- 12.64	139 69	12/21/73	--	139	N	50–100
01197155	Housatonic River tributary number 2 at Lee, MA	0.73	1965–74	1974	7.72	88	12/21/73	7.72	88	N	10–25
01197300	Marsh Brook at Lenox, MA	2.12	1963–74	1973 1974	-- 3.70	150 20	2/03/73	--	150	N	>100
01197500	Housatonic River near Great Barrington, MA	282	1914–94	1949	12.08	12,200	5/31/84	10.96	10,300	Y	25–50
01197550	Housatonic River tributary at Risingdale, MA	0.67	1963–83	1974	17.14	47	12/21/73	17.14	47	N	5–10
01331400	Dry Brook near Adams, MA	7.67	1963–74	1974	5.52	947	12/21/73	5.52	947	N	25–50
01332000	North Branch Hoosic River at North Adams, MA	40.9	1928, 1932–90	1928 1976	-- 12.24	9,980 8,450	8/10/76	12.24	8,450	N	10–25
01332500	Hoosic River near Williamstown, MA	126	1941–94	1949	14.85	13,000	8/10/76	13.02	11,200	Y	10–25
01333000	Green River at Williamstown, MA	42.6	1949–94	1974 1949	5.68 7.50	4,060 --	12/21/73 6/30/76	5.68 5.64	4,060 3,980	N N	10–25 10–25

[1]Regulated during flood: N, no; Y, yes.

Michigan

Hydroclimatology

Michigan is located in the north-central United States. The State consists of two peninsulas in the Great Lakes Region. The Upper Peninsula is bordered on the south by Lakes Michigan and Huron and on the north by Lake Superior. The Lower Peninsula is bordered on the east by Lakes Huron and Erie and on the west by Lake Michigan. The Great Lakes have a significant effect on the climate of Michigan. The large volume and surface area of the lakes have a moderating effect on the temperature. Michigan has a milder winter and cooler summer when compared to areas to the west at the same latitude.

Seventy-five percent of Michigan's moisture originates from the Gulf of Mexico. Polar maritime airmasses from the Pacific and Atlantic Oceans contribute very little moisture to the Michigan area. The Great Lakes are a significant source of moisture, especially during the winter months. Michigan's mean annual precipitation is about 31 in. statewide and ranges from 28 to 36 in. (Paulson and others, 1991). More than one-half of the precipitation occurs during the growing season. Summer precipitation occurs in the form of rain showers or thunderstorms and is caused by convective air circulation. Winter precipitation occurs more steadily and is typically the result of frontal systems. Lake-effect snowstorms add significantly to the total annual precipitation. The Upper Peninsula's annual snowfall is one of the largest east of the Rocky Mountains.

Flooding in Michigan is not a common occurrence. When flooding does occur, however, it typically occurs in late winter or early spring when rain associated with rapid warming causes quick melting of the snowpack.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the factors affecting the magnitude of maximum discharges for streams in the State are the contributing-drainage area; main-channel slope; main-channel swamp, which is the percentage of main-channel length that passes through swamps, lakes, or ponds; slenderness ratio, which is the square of the channel length divided by the contributing-drainage area; the 100-year, 24-hour rainfall; a regional factor; and seven characteristics of surficial geologic material, each measured as a percentage of the contributing-drainage area. The surficial geologic variables are: (1) lacustrine clay and silt; (2) coarse-textured glacial till; (3) end moraines of fine-textured till; (4) medium-textured glacial till and end moraines of fine-textured till; (5) peat and muck; (6) postglacial alluvium or glacial outwash sand and gravel and postglacial alluvium, and ice-contact outwash sand and gravel; and (7) thin to discontinuous glacial till over bedrock (Jennings and others, 1994).

Significant Floods

The most severe flood on record occurred in September 1985. It was caused by a storm system that remained nearly stationary for several days, resulting in as much as 13 in. of rain in some areas of the central Lower Peninsula. The flood produced maximum discharges for the period of record at eight streamflow-gaging stations. Flooding caused six deaths and an estimated $500 million in damages (Paulson and others, 1991).

A large amount of flooding occurred during 1985. Significant flooding was recorded at two separate times during that year. From April 20 to 24, the Escanaba, Michigamme, Chocolay, and Manistique River Basins in the Upper Peninsula had floods that recorded signficant discharges. In September 1985, a stalled frontal system caused flooding in the Flint River Basin. The flooding was intensified by successive storms following the same path.

Snowmelt, in addition to record precipitation, resulted in the flood of April 1975. The southern area of the Lower Peninsula was affected by the flood. Flooding was most severe in Lansing, where an estimated $50 million in damages occurred (Paulson and others, 1991). Sixteen percent of the streamflow-gaging stations in the State recorded significant discharges.

The location of streamflow-gaging stations in Michigan that had significant floods for 1970–89 is shown in figure 44 by station number. The specific data for each significant flood are listed in table 23. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

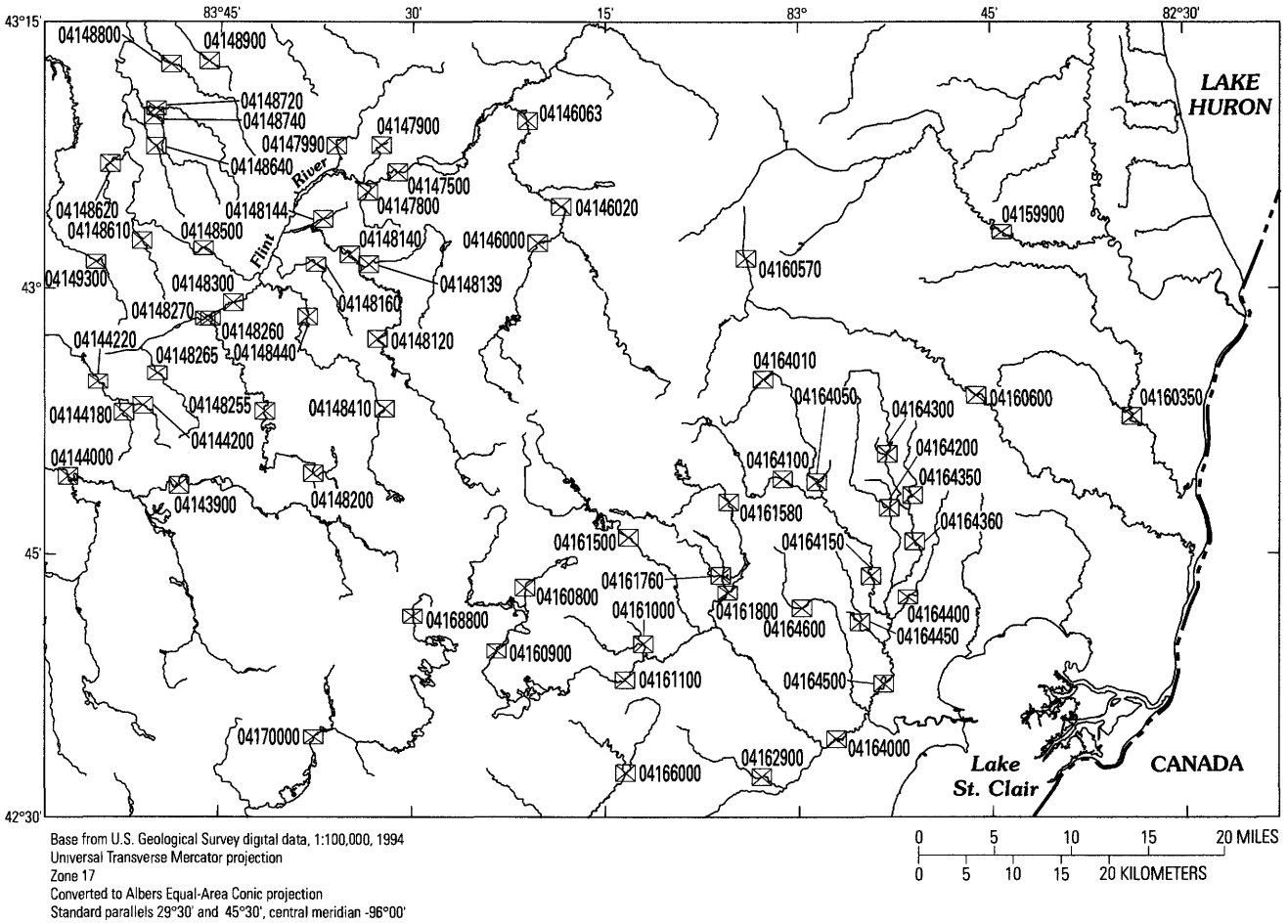
References

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.

Figure 44. Location of streamflow-gaging stations with significant floods during 1970–89 for Michigan.

Inset A



Base from U.S. Geological Survey digital data, 1:100,000, 1994
Universal Transverse Mercator projection
Zone 17
Converted to Albers Equal-Area Conic projection
Standard parallels 29°30' and 45°30', central meridian -96°00'

0 5 10 15 20 MILES
0 5 10 15 20 KILOMETERS

EXPLANATION

04166000 ⊠ **Streamflow-gaging station and number**

Figure 44. Location of streamflow-gaging stations with significant floods during 1970–89 for Michigan—Continued.

Table 23. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Michigan

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 44)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04001000	Washington Creek at Windigo, Isle Royale, MI	13.2	1965–94	1972	6.82	480	5/01/72	6.82	480	N	20
04039500	South Branch Ontonagon River at Ewen, MI	348	1939–82, 1986	1960	22.07	13,500	4/01/86	20.99	9,850	N	20
04040000	Ontonagon River near Rockland, MI	1,340	1942–94	1942	28.60	42,000	4/01/86	20.12	26,400	Y	25
04040500	Sturgeon River near Sidnaw, MI	171	1913–15, 1943–94	1960	11.63	4,630	4/20/85	11.07	4,570	N	50
04041000	Perch River near Sidnaw, MI	63.1	1913–15, 1957–91	1960	11.07	1,100	4/20/85	10.85	940	N	25–50
04041500	Sturgeon River near Alston, MI	346	1932–94	1960	53.09	7,360	4/21/85	11.43	5,950	Y	25
04043050	Trap Rock River near Lake Linden, MI	28.0	1967–94	1979	10.72	1,590	5/10/79	10.72	1,590	N	50
04044200	Carp Creek at Ishpeming, MI	16.5	1970–91	1985	11.32	403	4/20/85	11.32	403	N	25–50
04044400	Carp River near Negaunee, MI	51.4	1962–86	1985	6.83	918	4/20/85	6.83	918	Y	100
04044813	Two Hearted River near Paradise, MI	201	1973–93	1985 1991	8.42 12.36	3,210 1,720	4/25/85	8.42	3,210	N	25
04045500	Tahquamenon River near Paradise, MI	790	1954–94	1960	10.26	6,990	4/25/85	10.07	6,700	N	25
04045538	West Branch Waiska River near Brimley, MI	40.7	1973–93	1974 1988	9.19 9.84	1,200 1,140	4/18/74	9.19	1,200	N	25
04045559	East Branch Waiska River near Brimley, MI	31.9	1973–91	1985 1986	13.86 14.82	1,380 740	4/21/85	13.86	1,380	N	25
04057000	Indian River near Manistique, MI	302	1938–82	1960 1943	7.56 7.79	2,030 1,550	4/28/79	6.27	1,150	N	10
04057510	Sturgeon River near Nahma Junction, MI	183	1967–94	1985	11.50	2,120	4/21/85	11.50	2,120	N	50–100
04057800	Middle Branch Escanaba River at Humboldt, MI	46.0	1960–94	1985	9.21	1,930	4/20/85	9.21	1,930	N	100
04057900	Black River near Republic, MI	34.4	1962–68, 1970–91	1985	6.32	1,160	4/20/85	6.32	1,160	N	100
04058100	Middle Branch Escanaba River near Princeton, MI	210	1962–82, 1985, 1990–94	1985	11.84	4,200	5/06/72 4/22/85	7.85 11.84	2,580 4,200	N Y	25–50 >100
04058200	Schweitzer Creek near Palmer, MI	23.6	1961–94	1970	6.50	860	5/31/70 4/20/85	6.50 6.44	860 751	Y Y	50 25
04058300	Warner Creek near Palmer, MI	14.2	1962–68, 1970–78	1970	8.95	600	5/31/70	8.95	600	N	>50
04058400	Goose Lake outlet near Sands Station, MI	37.5	1966–86	1985	6.84	710	5/31/70 --/--/85	5.89 --	458 710	N N	10 >100
04058500	East Branch Escanaba River at Gwinn, MI	124	1955–80, 1985	1985	15.75	2,700	4/21/85	15.75	2,700	Y	50
04059000	Escanaba River at Cornell, MI	870	1906–08, 1911–12, 1951–94	1979	5.00	10,700	4/26/79 4/22/85	5.00 4.95	10,700 10,600	Y Y	25 25
04059400	Tenmile Creek at Perronville, MI	38.4	1971–93	1975 1986	5.42 5.76	810 800	4/24/75	5.42	810	N	25
04059500	Ford River near Hyde, MI	450	1955–94	1960	8.27	7,590	4/14/71	7.09	4,900	N	25

Table 23. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Michigan—Continued

Station number (fig. 44)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04061500	Paint River at Crystal Falls, MI	597	1945–94	1960	9.82	10,900	4/22/85	7.95	7,250	N	25
04062200	Peshekee River near Champion, MI	133	1962–82, 1985	1985	10.90	6,100	4/21/85	10.90	6,100	N	100
04062230	Michigamme River near Michigamme, MI	194	1969–82	1976	7.77	3,180	4/19/76	7.77	3,180	N	25
04062300	Michigamme River at Republic, MI	240	1962–91	1985	9.94	5,270	4/24/85	9.94	5,270	N	50
04065300	West Branch Sturgeon River near Randville, MI	56.1	1959–81	1981	6.64	610	6/15/81	6.64	610	N	50
04065393	East Branch Sturgeon River below Skunk Creek near Felch, MI	61.8	1974–84	1979 1981	4.28 6.13	628 438	4/26/79	4.28	628	N	25
04096272	Beebe Creek near Hillsdale, MI	42.4	1975–91	1982 1985	7.61	620 618	3/20/82	--	620	N	25
04096340	St. Joseph River at Clarendon, MI	144	1975–91	1989	8.02	1,000	6/04/89	8.02	1,000	N	25
04096400	St. Joseph River near Burlington, MI	201	1963–91	1989	5.82	1,390	6/05/89	5.82	1,390	N	25
04096515	South Branch Hog Creek near Allen, MI	48.7	1970–94	1985 1989	6.00 6.20	664 646	2/25/85	6.00	664	N	25
04096600	Coldwater River near Hodunk, MI	293	1963–89	1989	9.17	2,800	6/02/89	9.17	2,800	N	50
04096900	Nottawa Creek near Athens, MI	162	1967–94	1989	7.85	2,190	6/02/89	7.85	2,190	N	100
04097060	Little Portage Creek at 38th Street near Fulton, MI	27.0	1965–67, 1972–79	1978	8.82	900	6/26/78	8.82	900	N	50
04097170	Portage River near Vicksburg, MI	68.2	1947–51, 1965–70, 1972–92	1989	5.81	416	6/02/89	5.81	416	N	50
04097370	Flowerfield Creek at Flowerfield, MI	42.6	1964–79	1978 1969	2.51 2.58	105 87	9/17/78	2.51	105	N	25–50
04097500	St. Joseph River at Three Rivers, MI	1,350	1950, 1952–83, 1993–94	1950 1982	10.60 10.69	8,260 8,180	3/21/82	10.69	8,180	Y	>100
04097540	Prairie River near Nottawa, MI	106	1963–94	1985	6.30	797	3/20/82 2/26/85	6.12 6.30	698 797	N N	25 50
04099000	St. Joseph River at Mottville, MI	1,866	1924–94	1989	10.41	11,400	3/21/82 6/04/89	9.81 10.41	10,100 11,400	Y Y	50 100
04101500	St. Joseph River at Niles, MI	3,666	1931–94	1950 1982	13.10 14.97	20,200 19,900	3/21/82 2/25/85	14.97 14.96	19,900 19,900	Y Y	50 50
04101800	Dowagiac River at Sumnerville, MI	255	1961–94	1985	9.26	1,590	2/24/85 10/04/86	9.26 8.84	1,590 1,460	Y Y	50 25
04102500	Paw Paw River at Riverside, MI	390	1952–94	1987	10.90	3,580	2/27/85 10/04/86	10.42 10.90	2,980 3,580	N N	25 100
04102700	South Branch Black River near Bangor, MI	83.6	1967–94	1986	13.63	1,860	9/30/86	13.63	1,860	N	25
04105000	Battle Creek at Battle Creek, MI	241	1931, 1933–93	1947	4.48	3,640	4/21/75	4.44	3,590	N	50
04105500	Kalamazoo River near Battle Creek, MI	824	1938–93	1947 1985	-- 7.95	7,290 5,760	2/26/85	7.95	5,760	Y	25–50
04105700	Augusta Creek near Augusta, MI	38.9	1965–93	1978	3.41	560	6/27/78	3.41	560	N	>100

Table 23. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Michigan—Continued

Station number (fig. 44)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04105800	Gull Creek near Galesburg, MI	38.1	1965–74	1974	3.82	142	2/22/74	3.82	142	N	10–25
04106000	Kalamazoo River at Comstock, MI	1,010	1933–79, 1985–93	1947 1989	7.94 9.37	6,910 4,910	2/28/85	7.91	6,410	Y	50
04106180	Portage Creek at Portage, MI	16.5	1983–93	1989	3.87	118	5/31/89	3.87	118	N	50–100
04106300	Portage Creek near Kalamazoo, MI	22.4	1965–93	1989 1978	3.09 4.49	407 290	5/30/89	3.09	407	N	>100
04106400	West Fork Portage Creek at Kalamazoo, MI	18.7	1960–93	1975	3.32	41	4/19/75	3.32	41	N	100
04108500	Kalamazoo River near Fennville, MI	1,600	1929, 1931–36, 1938–93	1947 1978	-- 14.30	17,500 9,030	6/27/78 3/20/82	14.30 13.43	9,030 7,970	Y Y	25 10–15
04108600	Rabbit River near Hopkins, MI	71.4	1966–94	1989	9.57	1,860	5/31/89	9.57	1,860	N	100
04108645	Rabbit River at Hamilton, MI	274	1979–94	1989	18.20	5,260	6/01/89	18.20	5,260	N	50
04108800	Macatawa River near Zeeland, MI	65.8	1961–94	1981	15.81	7,220	5/11/81 7/17/82	15.81 14.37	7,220 4,600	N N	50–100 10–15
04111000	Grand River at Eaton Rapids, MI	661	1949–82	1950 1968	8.15 8.19	3,860 3,220	2/21/71	7.52	3,500	N	10–15
04111379	Red Cedar River near Williamston, MI	163	1975–89	1975	10.41	2,670	4/19/75	10.41	2,670	N	50–100
04111500	Deer Creek near Dansville, MI	16.3	1955–94	1975	12.18	962	4/19/75	12.18	962	N	100
04112000	Sloan Creek near Williamston, MI	9.34	1955–94	1975	9.99	1,290	4/18/75	9.99	1,290	N	100
04112500	Red Cedar River at East Lansing, MI	355	1903–04, 1911–94	1904	13.40	8,000	4/20/75	11.95	5,940	N	>100
04112700	Sycamore Creek near Mason, MI	39.5	1975–94	1975	12.53	1,080	4/19/75	12.53	1,080	N	25
04113090	Carrier Creek near Grand Ledge, MI	7.18	1975–94	1986	10.01	465	6/12/86	10.01	465	N	25–50
04114000	Grand River at Portland, MI	1,385	1953–81, 1989–94	1975	12.98	12,400	4/21/75	12.98	12,400	N	100
04114500	Looking Glass River near Eagle, MI	281	1945–94	1947 1982	7.70 8.43	2,860 2,000	3/04/79	6.84	2,240	N	25
04115000	Maple River at Maple Rapids, MI	434	1945–94	1986	12.33	8,770	9/12/86	12.33	8,770	N	100
04116500	Flat River at Smyrna, MI	528	1951–86, 1993–94	1986	9.05	4,700	9/13/86	9.05	4,700	N	>100
04117000	Quaker Brook near Nashville, MI	7.60	1955–94	1975	9.45	470	4/19/75	9.45	470	N	100
04117500	Thornapple River near Hastings, MI	385	1945–94	1947	10.20	6,810	4/21/75 2/27/85	9.72 9.80	5,040 5,140	N N	25 25
04118000	Thornapple River near Caledonia, MI	773	1931–38, 1952–81, 1984–94	1985	11.43	6,700	2/27/85	11.43	6,700	Y	25–50
04118500	Rogue River near Rockford, MI	234	1952–82, 1988–94	1976	9.29	3,540	3/06/76	9.29	3,540	N	100
04119055	Plaster Creek at Grand Rapids, MI	46.6	1974–94	1979 1991	-- 11.99	1,700 1,550	3/04/79	--	1,700	N	25–50

Table 23. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Michigan—Continued

Station number (fig. 44)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04119160	Buck Creek at Grandville, MI	50.5	1974–94	1981	10.30	1,580	5/12/81	10.30	1,580	N	50
04120295	Black Creek near Muskegon, MI	39.0	1975, 1977, 1979–89, 1991	1986	4.47	656	9/12/86	4.47	656	N	--
04121300	Clam River at Vogel Center, MI	243	1967–94	1989	7.31	1,710	3/29/89	7.31	1,710	N	100
04121500	Muskegon River at Evart, MI	1,433	1931, 1934–94	1989	14.99	9,040	3/29/76 3/31/89	14.07 14.99	7,790 9,040	N N	25 100
04121900	Little Muskegon River near Morley, MI	121	1967–94	1986	8.57	2,300	9/12/86	8.57	2,300	N	100
04122000	Muskegon River at Newaygo, MI	2,350	1910–15, 1917, 1919, 1931–93	1986 1945	19.54 53.76	23,200 11,600	9/12/86	19.54	23,200	Y	>100
04122100	Bear Creek near Muskegon, MI	14.8	1966–94	1976 1980	11.00 16.29	930 468	3/05/76	11.00	930	N	>100
04122200	White River near Whitehall, MI	406	1958–94	1975	7.46	5,400	9/01/75 9/13/86	7.46 7.33	5,400 4,990	N N	50–100 50
04122223	Pentwater River near Hart, MI	78.0	1975–84	1984	5.03	528	5/26/84	5.03	528	Y	25–50
04122230	North Branch Pentwater River near Pentwater, MI	44.0	1975–94	1986	6.33	2,680	9/11/86	6.33	2,680	N	>100
04122500	Pere Marquette River at Scottville, MI	681	1940–94	1986	8.07	6,440	9/13/86 3/30/89	8.07 5.92	6,440 3,110	N N	>100 10–20
04124000	Manistee River near Sherman, MI	857	1904–16, 1931, 1934–94	1913 1990	-- 15.99	3,570 3,100	3/29/76	15.72	3,430	N	50
04124500	East Branch Pine River near Tustin, MI	60.0	1953–65, 1968–76, 1978–90, 1992–94	1956	6.23	1,410	4/13/71	--	1,000	N	25
04125500	Pine River near Hoxeyville, MI	251	1953–82	1956	6.82	2,440	4/14/71	6.60	1,970	N	25
04126000	Manistee River near Manistee, MI	1,677	1952–93	1987 1975	8.44 8.70	7,280 5,810	3/30/76 10/05/86	8.37 8.44	7,120 7,280	Y Y	10–25 10–25
04126200	Little Manistee River near Freesoil, MI	200	1957–82	1976	3.88	595	3/30/76	3.88	595	N	25
04126600	Betsie River near Benzonia, MI	170	1975–94	1989	5.46	993	3/28/89	5.46	993	N	25
04127000	Boardman River near Mayfield, MI	186	1953–89	1961	6.90	1,220	8/16/87	6.70	1,100	Y	25
04127800	Jordan River near East Jordan, MI	67.9	1967–94	1975	6.51	1,360	7/19/75	6.51	1,360	N	50–100
04127850	Boyne River near Boyne City, MI	65	1975–76, 1978–91	1975 1990	3.93 4.66	662 590	7/19/75	3.93	662	N	25
04127918	Pine River near Rudyard, MI	184	1973–94	1986	18.44	4,500	3/30/86	18.44	4,500	N	25
04128000	Sturgeon River near Wolverine, MI	192	1943–94	1972 1961	3.72 4.48	1,290 1,180	9/29/72	3.72	1,290	N	50–100
04128500	Indian River (Burt Lake) at Indian River, MI	583	1942–82	1979 1943	-- 5.65	1,250 1,010	5/07/72 5/03/79	-- --	1,220 1,250	Y Y	25 25
04130000	Cheboygan River (Mullett Lake) near Cheboygan, MI	865	1943–82	1979 1952	-- 2.68	1,970 1,550	5/22/79	--	1,970	Y	100
04131500	Rainy River near Ocqueoc, MI	87.9	1953–82	1960	6.33	946	3/27/76	5.96	748	N	25

Table 23. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Michigan—Continued

Station number (fig. 44)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04132000	Black River near Cheboygan, MI	597	1943–76, 1978	1976	4.50	2,700	4/24/72	--	2,700	N	25
							3/30/76	4.50	2,700	N	25
04133500	Thunder Bay River near Bolton, MI	588	1946–80	1976	10.29	4,290	3/26/76	10.29	4,290	Y	25
04134000	North Branch Thunder Bay River near Bolton, MI	184	1946–80	1976	7.46	2,950	3/28/76	7.46	2,950	N	25
				1950	7.98	1,300					
04135000	Thunder Bay River near Alpena, MI	1,238	1902–08, 1980–90	1986	--	12,100	3/28/86	--	12,100	Y	25
				1902	--	3,800					
04135600	East Branch Au Sable River at Grayling, MI	76.0	1958–84	1976	5.24	207	3/28/76	5.24	207	N	50–100
04135700	South Branch Au Sable River near Luzerne, MI	401	1967–89, 1991–94	1976	7.30	1,120	3/28/76	7.30	1,120	Y	50–100
04136500	Au Sable River at Mio, MI	1,361	1953–94	1986	6.16	4,380	3/28/76	6.14	4,170	Y	50–100
							9/30/86	6.16	4,380	Y	50–100
04138500	Au Gres River near National City, MI	169	1951–81	1976	8.64	2,720	3/06/74	10.64	2,500	N	25
				1974	10.64	2,500	3/21/76	8.64	2,720	N	25
04140200	Klacking Creek near Selkirk, MI	7.51	1953–63, 1965–91	1959	6.59	738	3/20/76	2.93	175	N	10
04140500	Rifle River at Selkirk, MI	117	1951–94	1959	6.76	2,760	3/27/89	5.17	2,160	N	50
04141000	South Branch Shepards Creek near Selkirk, MI	1.15	1952–87	1956	4.42	181	9/30/86	4.29	166	N	25
04141100	Shepards Creek near Selkirk, MI	4.44	1953–63, 1965–78, 1988–89	1973	4.88	838	5/28/73	4.88	838	N	50
				1989	5.00	240					
04142000	Rifle River near Sterling, MI	320	1937–94	1950	13.74	5,340	3/28/89	11.39	4,010	N	25
04143500	North Branch Kawkawlin River near Kawkawlin, MI	101	1951–82	1974	10.92	1,610	5/18/74	10.92	1,610	N	25
04143900	Shiawassee River at Linden, MI	83.7	1968–94	1975	7.43	476	4/22/75	7.43	476	Y	50
04144000	Shiawassee River at Byron, MI	368	1948–83	1975	15.25	3,880	4/22/75	15.25	3,880	N	50–100
04144180	Jones Creek near Gaines, MI	7.60	1970–83	1982	8.86	266	10/01/81	8.86	266	N	25–50
				1975	9.04	190					
04144200	Porter Drain near Gaines, MI	4.68	1970–83	1982	6.73	186	10/01/81	6.73	186	N	25–50
04144220	Jones Creek at Duffield, MI	23.4	1970–83	1982	10.30	630	10/01/81	10.30	630	N	25
04144500	Shiawassee River at Owosso, MI	538	1931–94	1947	10.35	6,240	10/01/81	10.25	5,460	N	25–50
04145000	Shiawassee River near Fergus, MI	637	1940–84, 1989–94	1947	12.50	7,500	10/02/81	14.84	7,340	N	25
				1973	14.89	5,300					
04146000	Farmers Creek near Lapeer, MI	55.3	1933–94	1985	20.95	1,380	9/09/85	20.95	1,380	N	50–100
04146020	South Branch Flint River near Millville, MI	160	1974–91	1985	10.33	2,510	9/09/85	10.33	2,510	N	50
04146063	South Branch Flint River near Columbiaville, MI	221	1980–94	1985	9.60	3,090	9/09/85	9.60	3,090	N	25–50
04147500	Flint River near Otisville, MI	530	1953–89, 1991–94	1960	14.97	6,150	4/07/85	14.80	5,850	Y	25
04147800	Powers Cullen Drain near Genesee, MI	9.17	1970–83	1982	6.42	775	6/28/82	6.42	775	N	50

Table 23. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Michigan—Continued

Station number (fig. 44)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04147900	Lefler-Scothan Drain near Otisville, MI	4.90	1970–83	1981	7.40	193	9/04/81	7.40	193	N	25
04147990	Butternut Creek near Genesee, MI	34.7	1970–83	1982 1976	9.00 9.46	1,800 772	10/01/81	9.00	1,800	N	10–25
04148120	Kearsley Creek near Atlas, MI	55.6	1970–83	1975	7.91	1,250	4/20/75	7.91	1,250	N	50
04148139	Black Creek near Davison, MI	22.8	1970–83	1975 1982	7.50 8.39	460 427	4/20/75	7.50	460	N	10–25
04148140	Kearsley Creek near Davison, MI	99.4	1966–94	1985	11.85	1,500	9/09/85	11.85	1,500	N	50
04148144	Chipmunk Creek near Genesee, MI	5.49	1970–83	1982	6.61	506	6/28/82	6.61	506	N	25
04148160	Gilkey Creek near Flint, MI	6.43	1970–83	1982	8.93	393	10/01/81	8.93	393	N	25
04148200	Swartz Creek near Holly, MI	12.1	1956–84	1975	4.81	177	4/19/75	4.81	177	N	50–100
04148255	Swartz Creek near Grand Blanc, MI	36.0	1970–83	1975	5.65	210	4/19/75	5.65	210	N	25
04148260	Swartz Creek near Swartz Creek, MI	67.3	1970–83	1975	11.09	1,600	4/19/75	11.09	1,600	N	25
04148265	Kimball Drain near Swartz Creek, MI	10.6	1970–88	1982 1975	9.08 9.21	465 300	10/01/81	9.08	465	N	25
04148270	West Branch Swartz Creek near Swartz Creek, MI	40.6	1970–83	1975	11.03	1,770	4/19/75	11.03	1,770	N	25
04148300	Swartz Creek at Flint, MI	115	1970–83, 1991–94	1975	9.02	3,160	4/19/75	9.02	3,160	N	25
04148410	Thread Creek near Goodrich, MI	28.8	1970–83	1975	7.75	355	4/19/75	7.75	355	N	25
04148440	Thread Creek near Flint, MI	54.4	1970–83, 1991–94	1975	7.65	1,260	4/19/75	7.65	1,260	N	25
04148500	Flint River near Flint, MI	956	1933–92, 1994	1947 1985	16.35 16.95	14,900 11,400	9/06/85	16.95	11,400	Y	25–50
04148610	Cole Creek near Flushing, MI	8.51	1970–88	1985 1982	7.82 7.83	755 362	9/06/85	7.82	755	N	100
04148620	Freeman Drain near Montrose, MI	8.21	1970–83	1982	7.28	400	10/01/81	7.28	400	N	25
04148640	Armstrong Creek near Montrose, MI	11.9	1970–88	1982 1985	7.15 10.10	357 --	10/01/81	7.15	357	N	25
04148720	Brent Run near Montrose, MI	20.8	1970–83	1982	6.63	735	10/01/81	6.63	735	N	10–25
04148740	Central Stadler Drain near Montrose, MI	15.0	1970–83	1975 1979	6.11 7.12	340 160	4/19/75	6.11	340	N	10–25
04148800	Pine Run near Montrose, MI	28.2	1970–83	1973 1982	9.55 9.79	730 723	2/31/72	9.55	730	N	10
04148900	Silver Creek near Clio, MI	3.70	1970–83	1976 1971	4.08 4.19	123 85	3/03/76	4.08	123	N	25
04149300	Misteguay Creek near Flushing, MI	17.3	1970–83	1982	11.74	1,640	10/01/81	11.74	1,640	N	25
04150000	South Branch Cass River near Cass City, MI	238	1949–80	1967	14.86	6,400	3/06/76	13.90	5,630	N	25
04150500	Cass River at Cass City, MI	359	1948–94	1986	19.82	12,500	4/06/85 9/12/86	15.61 19.82	8,650 12,500	N N	25 100

Table 23. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Michigan—Continued

Station number (fig. 44)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04150800	Cass River at Wahjamega, MI	645	1969–94	1986	26.66	20,000	9/12/86	26.66	20,000	N	100
04151000	Cass River at Vassar, MI	710	1948–82	1948	20.8	18,000	3/06/76	17.70	11,900	N	10–25
04151500	Cass River at Frankenmuth, MI	841	1908, 1936, 1940–94	1986	27.52	22,200	9/12/86	27.52	22,200	N	100
04153500	Salt River near North Bradley, MI	138	1935–82	1974	18.30	8,500	5/17/74	18.30	8,500	N	25–50
04154000	Chippewa River near Mount Pleasant, MI	416	1931, 1933–94	1986	15.58	6,660	9/12/86	15.58	6,660	N	>100
04155500	Pine River near Midland, MI	390	1935–38, 1948–94	1986 1968	11.74 12.08	9,360 2,900	9/12/86	11.74	9,360	N	>100
04156000	Tittabawassee River at Midland, MI	2,400	1876, 1907, 1910–94	1986	33.89	38,700	9/13/86	33.89	38,700	N	50
04159900	Mill Creek near Avoca, MI	169	1964–79, 1988–94	1975	8.87	4,570	4/19/75	8.87	4,570	N	25
04160350	Pine River at U.S. Highway 25 near Rattle Run, MI	135	1974–94	1975	23.87	5,400	4/19/75	23.87	5,400	N	50
04160570	North Branch Belle River at Imlay City, MI	18.0	1966–94	1986 1975	6.66 9.33	354 334	6/12/86	6.66	354	N	50
04160600	Belle River at Memphis, MI	151	1963–94	1975	8.96	4,520	4/19/75	8.96	4,520	N	50
04160800	Sashabaw Creek near Drayton Plains, MI	20.9	1960–94	1982	4.53	181	2/23/74 10/01/81	4.38 4.53	161 181	N N	25–50 25–50
04160900	Clinton River near Drayton Plains, MI	79.2	1960–94	1974	4.95	276	3/12/74 3/07/76	4.95 4.65	276 221	N N	100 25
04161000	Clinton River at Auburn Heights, MI	123	1936–40, 1957–91	1981	5.41	1,780	9/30/81 8/24/85	5.41 5.38	1,780 1,730	N N	10–25 10–25
04161100	Galloway Creek near Auburn Heights, MI	17.9	1960–91	1985 1968	5.62 6.27	536 368	8/24/85 6/21/89	5.62 5.33	536 390	N N	50 25
04161500	Paint Creek near Lake Orion, MI	38.5	1956–91	1975	4.26	428	3/05/76 4/19/75	3.59 4.26	253 428	Y Y	5–10 25
04161580	Stony Creek near Romeo, MI	25.6	1965–94	1975	5.19	290	3/05/74 4/19/75	-- 5.19	246 290	N N	25 50
04161760	West Branch Stony Creek near Washington, MI	22.5	1967–94	1975 1985	4.42 4.72	470 220	4/19/75	4.42	470	N	50
04161800	Stony Creek near Washington, MI	68.2	1959–94	1988 1959	6.44 6.71	552 400	6/10/88	6.44	552	Y	100
04162900	Big Beaver Creek near Warren, MI	23.5	1954–88	1968	14.45	1,240	10/01/81	12.05	772	N	10
04164000	Clinton River near Fraser, MI	444	1947–94	1947	20.00	9,000	10/01/81	19.56	8,840	N	50
04164010	North Branch Clinton River at Almont, MI	9.56	1959–94	1985 1975	8.60 8.62	818 691	4/19/75 9/06/85	8.62 8.60	691 818	N N	50 100
04164050	North Branch Clinton River near Romeo, MI	49.7	1959–94	1975 1968	5.44 6.03	3,500 2,630	4/19/75	5.44	3,500	N	100
04164100	East Pond Creek at Romeo, MI	21.8	1959–94	1965 1962	4.48 4.56	358 105	7/25/87	4.26	327	N	25
04164150	North Branch Clinton River near Meade, MI	89.6	1959–94	1975 1962	7.76 7.85	4,500 1,600	4/19/75	7.76	4,500	N	50
04164200	Coon Creek near Armada, MI	10.0	1959–94	1975 1985	6.25 6.95	480 422	4/19/75	6.25	480	N	25
04164300	East Branch Coon Creek at Armada, MI	13.0	1959–94	1975	6.69	910	4/19/75	6.69	910	N	50–100

Table 23. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Michigan—Continued

Station number (fig. 44)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04164350	Highbank Creek near Armada, MI	14.9	1959–94	1985	16.77	2,240	4/19/75	15.88	1,890	N	25
							9/06/85	16.77	2,240	N	25–50
04164360	East Branch Coon Creek at 29-Mile Road near New Haven, MI	36.1	1959–94	1975	8.95	2,700	4/19/75	8.95	2,700	N	50
				1985	9.48	2,600	9/06/85	9.48	2,600	N	50
04164400	Deer Creek near Meade, MI	12.7	1959–94	1985	8.90	691	9/06/85	8.90	691	N	25
04164450	McBride Drain near Macomb, MI	5.79	1960–94	1965	8.82	220	2/24/85	9.07	212	N	50
				1968	9.55	180					
04164500	North Branch Clinton River near Mount Clemens, MI	199	1948–94	1968	18.62	6,700	4/20/75	18.48	6,500	N	25–50
04164600	Middle Branch Clinton River at Schoenherr Road near Macomb, MI	22.2	1959–69, 1971–94	1968	12.17	1,400	4/19/75	11.80	1,220	N	25–50
04166000	River Rouge at Birmingham, MI	33.3	1951–94	1968	8.70	1,390	10/01/81	7.26	1,050	N	50–100
04166100	River Rouge at Southfield, MI	87.9	1959–94	1968	19.04	4,900	10/01/81	18.20	4,400	N	100
04166200	Evans Ditch at Southfield, MI	9.49	1959–94	1982	15.03	1,200	10/01/81	15.03	1,200	N	100
04166300	Upper River Rouge at Farmington, MI	17.5	1959–94	1968	8.70	1,500	6/21/89	7.10	885	N	25
04166500	River Rouge at Detroit, MI	187	1931–94	1947	--	13,000	10/01/81	21.08	6,830	N	25–50
				1968	21.40	7,300					
04167000	Middle River Rouge near Garden City, MI	99.9	1931–33, 1948–94	1968	9.96	2,330	4/14/79	9.71	1,970	N	10–25
				1948	10.50	2,150					
04168800	Huron River near Andersonville, MI	14.0	1974–92	1975	3.17	120	4/19/75	3.17	120	N	50
04170000	Huron River at Milford, MI	132	1949–94	1982	7.87	648	10/03/81	7.87	648	N	50
				1968	8.26	567					
04173000	Huron River near Dexter, MI	522	1946–79	1947	8.17	3,120	3/05/76	--	2,500	N	25
04173250	Mill Creek near Lima Center, MI	47.3	1973–92	1983	10.24	669	5/02/83	10.24	669	N	10–25
				1982	10.72	640					
04174500	Huron River at Ann Arbor, MI	729	1902, 1904, 1906–47, 1949–94	1918	--	5,840	3/09/74	16.74	4,650	Y	25
				1968	17.50	4,610					
04174800	Huron River at Ypsilanti, MI	807	1975–84, 1990–94	1983	12.64	4,500	5/02/83	12.64	4,500	Y	10
04175340	Stony Creek at Oakville, MI	68.0	1970–81	1981	8.25	865	2/19/81	8.25	865	N	10
04175600	River Raisin near Manchester, MI	132	1970–81, 1985–94	1985	7.21	869	2/24/85	7.21	869	N	100
04175960	South Branch River Raisin near Adrian, MI	165	1979–91	1985	11.96	3,460	2/25/85	11.96	3,460	N	50–100
04176000	River Raisin near Adrian, MI	463	1931, 1933–38, 1954–94	1982	15.77	6,660	3/15/82	15.77	6,660	N	50–100
							2/25/85	15.62	5,610	N	25–50
04176500	River Raisin near Monroe, MI	1,042	1938–94	1982	10.40	15,300	9/06/81	10.22	14,500	N	25–50
							3/16/82	10.40	15,300	N	50
							2/26/85	10.06	13,100	N	25

[1]Regulated during flood: N, no; Y, yes.

Minnesota

Hydroclimatology

Minnesota is located in the north-central United States. During the summer, the climate is controlled either by dry, tropical continental airmasses from the desert Southwest or by warm, moist, tropical maritime airmasses from the Gulf of Mexico. Winter is dominated by cold, dry, polar continental airmasses that originate over northwestern Canada. The Gulf of Mexico provides the majority of moisture for Minnesota. The Pacific Ocean provides a small amount. Precipitation usually occurs in mature cyclonic systems that can draw moisture from the Gulf of Mexico. Late spring and summer cold fronts can spawn severe thunderstorms and associated intense rainfall from June through August when Minnesota receives 45 percent of its precipitation. Mean annual rainfall ranges from 20 in. in the northwest to approximately 31 in. in the southeast (Paulson and others, 1991).

Floods in Minnesota typically are a result of melting of a large snowpack in combination with precipitation. Summer floods are usually a result of intense thunderstorms.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the factors affecting the magnitude of maximum discharges for streams in Minnesota are drainage area; storage, which includes all lakes, ponds, and wetlands in the basin and is expressed as a percentage of the contributing-drainage area; mean annual runoff; and main-channel slope (Jennings and others, 1994).

Significant Floods

Three significant floods took place during the spring and summer of 1979. The flood that occurred from April 10 to May 31 was the most severe of the year. The Red River of the North and its tributaries were flooded by a rapidly melting, thick snowpack. Flood maximum discharges were the largest of record in several areas. Flooding in June 1979 occurred locally in the area between St. Cloud and Paynesville. The flood was a result of intense rainfall that lasted 2 hours. The flood of August 1979, a result of intense thunderstorms, affected the Des Moines and Blue Earth River Basins in south-central Minnesota.

The flood during the summer of 1978 was a result of a series of intense thunderstorms. The area of greatest rainfall was centered over the headwaters of the South Fork Zumbro and Cedar Rivers. A quarter of Rochester was inundated. Discharges twice the 100-year recurrence interval were recorded on the South Fork Zumbro River at Rochester (station 05372995, table 24).

In July 1972, flooding affected central Minnesota from Little Falls to the eastern border of the State. The storm that caused the flood produced the largest 24-hour rainfall recorded in Minnesota. Excessive rainfall occurred on September 20, 1972, producing a flash flood in Duluth.

The location of streamflow-gaging stations in Minnesota that had significant floods for 1970–89 is shown in figure 45 by station number. The specific data for each significant flood are listed in table 24. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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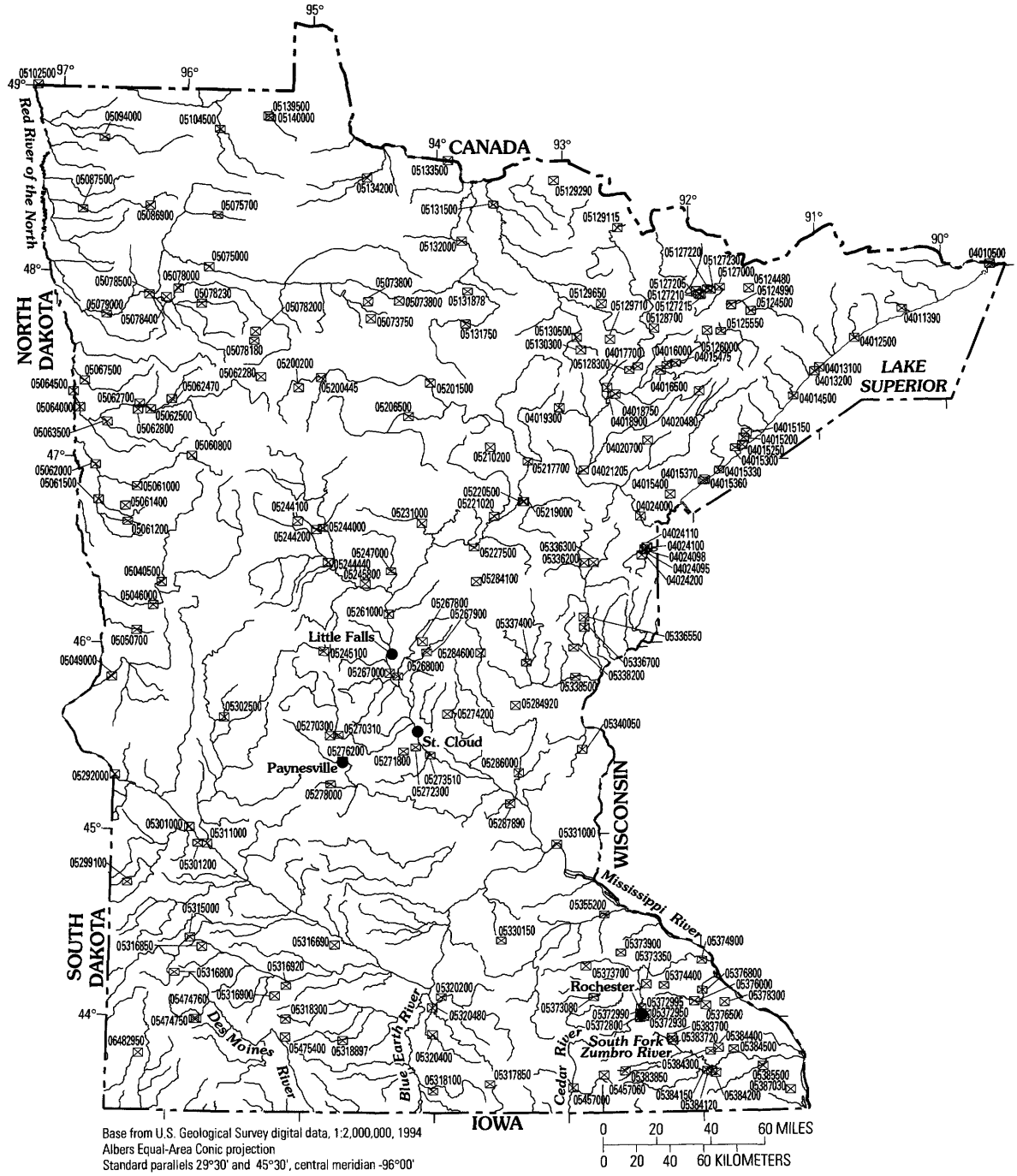

EXPLANATION

05318100⊠ **Streamflow-gaging station and number**

Figure 45. Location of streamflow-gaging stations with significant floods during 1970–89 for Minnesota.

Table 24. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Minnesota

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
Station number (fig. 45)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04010500	Pigeon River at Middle Falls near Grand Portage, MN	600	1924–28, 1930–95	1934 1977	-- 12.37	11,000 10,500	9/24/77	12.37	10,500	N	50
04011390	Little Devil Track River tributary near Grand Marais, MN	0.47	1966–80, 1982	1977	16.75	77	9/24/77	16.75	77	N	25–50
04012500	Poplar River at Lutsen, MN	114	1913–17, 1930–32, 1934–47, 1953–61, 1976–87	1977	8.09	4,780	9/25/77	8.09	4,780	N	>100
04013100	Lake Superior tributary near Taconite Harbor, MN	1.58	1964–81	1972 1977	14.05 14.60	600 416	8/21/72	14.05	600	N	25–50
04013200	Caribou River near Little Marais, MN	22.6	1961–85	1977	27.00	4,430	9/24/77	27.00	4,430	N	>100
04014500	Baptism River near Beaver Bay, MN	137	1930–47, 1949–93	1977 1993	8.33 11.38	10,000 3,930	9/24/77	8.33	10,000	N	75–85
04015150	Crow Creek near Silver Creek, MN	1.04	1960–75	1972	11.34	196	9/20/72	11.34	196	N	25–50
04015200	Encampment River tributary at Silver Creek, MN	0.96	1960–90	1968	11.49	245	9/20/72	11.49	225	N	50–60
04015250	Silver Creek tributary near Two Harbors, MN	3.62	1965–95	1972	17.08	1,880	9/20/72	17.08	1,880	N	50–100
04015300	Little Stewart River near Two Harbors, MN	4.96	1960–95	1972	15.18	598	9/20/72 5/10/79	15.18 14.34	598 500	N N	50–100 40–50
04015330	Knife River near Two Harbors, MN	83.6	1975–95	1979	11.16	7,440	5/10/79	11.16	7,440	N	40–60
04015360	Lake Superior tributary number 2 at French River, MN	1.44	1964–81	1972	31.58	748	9/20/72	31.58	748	N	15–30
04015370	Talmadge River at Duluth, MN	5.86	1964–95	1979	21.76	1,180	9/20/72 5/09/79	20.54 21.76	1,020 1,180	N N	35–45 50–100
04015400	Miller Creek at Duluth, MN	4.91	1960–85	1979	19.95	525	5/09/79	19.95	525	N	15–25
04015475	Partridge River above Colby Lake at Hoyt Lakes, MN	106	1979–88	1979	10.89	2,020	4/22/79	10.89	2,020	N	>50
04016000	Partridge River near Aurora, MN	159	1943–82	1950	7.86	3,230	4/24/79	6.78	2,090	Y	10
04016500	St. Louis River near Aurora, MN	293	1943–93	1950	8.37	5,380	4/21/71 4/24/79	5.31 6.06	2,370 3,170	Y Y	5 20
04017700	McKinley Lake tributary at McKinley, MN	0.37	1960–81	1978	11.90	41	7/18/78	11.90	41	N	15–20
04018750	St. Louis River at Forbes, MN	713	1964–89	1979	17.71	6,200	4/25/79	17.71	6,200	Y	50–100
04018900	East Two River near Iron Junction, MN	40.9	1967–79	1974	10.01	640	10/12/73	10.01	640	N	10–25
04019300	West Swan River near Silica, MN	16.3	1964–79	1974	5.68	573	10/10/73	5.68	573	N	5
04020480	North Branch Whiteface River near Fairbanks, MN	17.1	1979–95	1979	13.67	660	4/23/79	13.67	660	N	25–50

Table 24. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Minnesota—Continued

Station number (fig. 45)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04020700	Bug Creek at Shaw, MN	24.8	1979–95	1979	15.12	590	4/23/79	15.12	590	N	25–50
04021205	Floodwood River above Floodwood, MN	198	1972–87	1979	22.87	2,300	4/23/79	22.87	2,300	N	10–25
04024000	St. Louis River at Scanlon, MN	3,430	1908–95	1950 1979	-- 13.93	37,900 34,200	10/13/73 4/23/79	12.76 13.93	28,900 34,200	Y Y	15 40–45
04024095	Nemadji River near Holyoke, MN	127	1972–95	1985	17.38	4,420	9/03/85	17.38	4,420	N	45–55
04024098	Deer Creek near Holyoke, MN	7.7	1977–95	1985	32.76	2,000	9/03/85	32.76	2,000	N	25–50
04024100	Rock Creek near Blackhoof, MN	4.85	1961–65, 1967–87	1985	38.95	2,350	9/03/85	38.95	2,350	N	50–100
04024110	Rock Creek tributary near Blackhoof, MN	0.49	1961–86	1985	24.32	115	9/02/85	24.32	115	N	50–100
04024200	South Fork Nemadji River near Holyoke, MN	19.9	1961–85	1970 1983	17.99 18.52	2,100 1,950	5/21/70	17.99	2,100	N	20
05040500	Pelican River near Fergus Falls, MN	486	1910–12, 1943–47, 1949–80	1943 1967	5.53 6.99	756 655	4/12/74	6.08	725	N	20
05046000	Otter Tail River below Orwell Dam near Fergus Falls, MN	1,740	1931–95	1953	5.60	1,710	5/27/86	4.75	1,600	Y	25
05049000	Mustinka River above Wheaton, MN	810	1916–17, 1919–24, 1931–58, 1985–95	1952 1989	-- 20.01	7,320 5,400	3/29/86	18.91	5,500	N	20
05050700	Rabbit River near Nashua, MN	99.2	1979–95	1986 1989	14.27 15.08	1,280 760	9/21/86	14.27	1,280	N	5–15
05060800	Buffalo River near Callaway, MN	76.4	1960–95	1993	24.90	1,630	5/12/85	17.13	635	N	10
05061000	Buffalo River near Hawley, MN	325	1921, 1945–95	1921	11.30	3,000	7/01/75	9.76	2,050	N	20
05061200	Whisky Creek at Barnesville, MN	76.3	1961–95	1985 1966	7.12 8.25	660 260	6/29/75 5/31/85	6.97 7.12	610 660	N N	35–45 50–60
05061400	Spring Creek above Downer, MN	7.93	1961–95	1975 1986	13.52 13.78	1,460 839	6/29/75	13.52	1,460	N	>100
05061500	South Branch Buffalo River at Sabin, MN	305	1945–95	1975	19.90	8,500	7/02/75	19.90	8,500	N	50–100
05062000	Buffalo River near Dilworth, MN	975	1931–95	1975	27.10	13,600	7/02/75	27.10	13,600	N	>100
05062280	Mosquito Creek near Bagley, MN	4.0	1961–85	1979 1966	10.53 11.37	90 60	4/20/79	10.53	90	N	15
05062470	Marsh Creek tributary near Mahnomen, MN	13.0	1961–85	1979 1978	14.00 16.07	460 375	4/19/79	14.00	460	N	20–30
05062500	Wild Rice River at Twin Valley, MN	934	1909–17, 1931–95	1909 1989	-- 13.65	9,200 5,260	4/07/78 4/18/79 4/05/89	13.64 12.93 13.65	6,470 6,010 5,260	N N N	40–50 30–40 20–30
05062700	Wild Rice River tributary near Twin Valley, MN	4.75	1961–85	1970 1966	14.76 15.70	324 91	6/16/70	14.76	324	N	20–30
05062800	Coon Creek near Twin Valley, MN	50.1	1962–84	1975	14.59	2,700	6/29/75	14.59	2,700	N	20
05063500	South Branch Wild Rice River near Borup, MN	254	1944–49, 1972–84	1975	20.59	3,700	7/01/75	20.59	3,700	N	25–50
05064000	Wild Rice River at Hendrum, MN	1,560	1944–95	1978 1979	31.42 32.30	9,350 8,800	4/10/78 4/21/79	31.42 32.30	9,350 8,800	Y Y	50–75 50–60

Table 24. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Minnesota—Continued

Station number (fig. 45)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05067500	Marsh River near Shelly, MN	220	1944–95	1979	23.36	4,880	4/19/79	23.36	4,880	Y	30–35
05073600	South Branch Battle River at Northome, MN	2.80	1960–85	1975 1979	15.09 16.50	126 60	7/02/75	15.09	126	N	20–30
05073750	Spring Creek near Blackduck, MN	8.23	1960–85	1975 1985	16.85 18.70	896 --	7/02/75	16.85	896	N	>100
05073800	Perry Creek near Shooks, MN	1.16	1960–85	1975	9.91	140	7/02/75	9.91	140	N	50–100
05075000	Red Lake River at High Landing near Goodridge, MN	2,300	1930–93	1975 1950	13.39 13.42	4,060 3,720	7/07/75 4/25/79	13.39 12.30	4,060 3,660	Y Y	15 10
05075700	Mud River near Grygla, MN	150	1979–95	1979	18.49	1,480	4/26/79	18.49	1,480	N	15–35
05078000	Clearwater River at Plummer, MN	555	1939–95	1979	12.31	3,940	4/25/79	12.31	3,940	N	30
05078180	Silver Creek near Clearbrook, MN	5.05	1960–85	1985 1962	12.69 14.35	194 132	5/11/85	12.69	194	N	50–100
05078200	Silver Creek tributary at Clearbrook, MN	6.18	1960–81	1973	16.11	152	9/02/73	16.11	152	N	20–30
05078230	Lost River at Oklee, MN	254	1950, 1961–95	1969 1950	14.91 18.39	3,210 2,790	4/09/78	16.64	3,140	N	20
05078400	Clearwater River tributary near Plummer, MN	6.61	1961–90	1981	16.92	420	6/28/81	16.92	420	N	>100
05078500	Clearwater River at Red Lake Falls, MN	1,380	1910–17, 1919, 1935–95	1979	12.38	10,300	4/19/78 4/25/79	11.56 12.38	9,890 10,300	N N	30–35 35–40
05079000	Red Lake River at Crookston, MN	5,270	1897, 1902, 1904–20, 1922–95	1969	27.33	28,400	4/26/79	24.99	21,900	N	25
05086900	Middle River near Newfolden, MN	88.8	1979–95	1979	17.10	1,000	4/25/79	17.10	1,000	N	25–50
05087500	Middle River at Argyle, MN	255	1945, 1950–95	1975	16.59	4,260	7/03/75	16.59	4,260	N	50–75
05094000	South Branch Two Rivers at Lake Bronson, MN	422	1929–37, 1941–47, 1954–95	1966	18.23	5,410	6/01/70	14.51	4,140	Y	25–30
05102500	Red River of the North at Emerson, MN	40,200	1861, 1913–95	1950 1861	90.89 95.00	95,500 --	4/09/87 5/01/79	-- 91.19	37,400 92,700	N Y	5 >100
05104500	Roseau River below South Fork near Malung, MN	424	1929–38, 1940–95	1968 1966	22.32 23.37	5,750 5,050	4/25/79 6/29/85	21.78 21.14	5,480 5,170	N N	20 20
05124480	Kawishiwi River near Ely, MN	254	1967–95	1976	5.92	1,720	4/24/76	5.92	1,720	N	20
05124500	Isabella River near Isabella, MN	339	1953–61, 1976–77	1976	9.73	3,900	4/19/76	9.73	3,900	N	10–25
05124990	Filson Creek near Ely, MN	9.66	1975–85	1980	8.87	426	9/13/80	8.87	426	N	25–50
05125550	Stony River near Babbitt, MN	215	1976–80, 1986–95	1976	8.71	2,490	4/19/76	8.71	2,490	N	25–50
05126000	Dunka River near Babbitt, MN	55.1	1952–62, 1976–80	1979	8.02	876	4/22/79	8.02	876	N	25–50
05127000	Kawishiwi River near Winton, MN	1,229	1906–07, 1913–19, 1924–95	1950 1906	-- --	16,000 3,330	4/23/76	--	8,740	Y	15
05127205	Burntside River near Ely, MN	68.9	1968–78	1970	8.59	455	6/12/70	8.59	455	N	25–50

Table 24. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Minnesota—Continued

Station number (fig. 45)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05127210	Armstrong Creek near Ely, MN	5.99	1968–78	1970	5.88	131	5/21/70	5.88	131	N	10–25
05127215	Longstorff Creek near Ely, MN	8.6	1968–78	1970	6.52	230	6/10/70	6.52	230	N	25–50
05127220	Burgo Creek near Ely, MN	2.84	1968–78	1970 1974	12.14 12.59	732 133	6/10/70	12.14	732	N	>50
05127230	Shagawa River at Ely, MN	99.0	1968–78	1970	6.89	640	6/12/70	6.89	640	N	40–60
05128300	Pike River near Gilbert, MN	0.73	1966–81	1978	9.85	89	7/18/78	9.85	89	N	50–100
05128700	Pike River tributary near Wahlsten, MN	2.71	1961–81	1974 1966	8.22 8.91	105 25	10/10/73	8.22	105	N	15–25
05129115	Vermilion River near Crane Lake, MN	905	1979–95	1985	15.20	4,360	4/25/85	15.20	4,360	N	15–25
05129290	Gold Portage outlet from Kabetogama Lake near Ray, MN	--	1983–94	1988	19.23	897	9/21/88	19.23	897	N	25–50
05129650	Little Fork River at Cook, MN	68.2	1968–84	1970	21.40	2,200	6/11/70	21.40	2,200	N	>50
05129710	Johnson Creek near Britt, MN	7.95	1961–64, 1966–75	1971 1966	8.19 9.19	37 35	4/16/71	8.19	37	N	10–25
05130300	Boriin Creek near Chisholm, MN	13.7	1959–92	1969	13.40	700	4/20/79	13.37	560	N	30
05130500	Sturgeon River near Chisholm, MN	180	1943–95	1950 1979	6.41 6.60	3,630 2,460	4/22/79	6.60	2,460	N	25
05131500	Little Fork River at Littlefork, MN	1,680	1910–17, 1929–95	1916	37.00	25,000	4/25/79	32.59	20,600	N	20
05131750	Big Fork River near Bigfork, MN	605	1973–95	1979	15.48	2,830	4/22/79	15.48	2,830	N	40–60
05131878	Bowerman Brook near Craigville, MN	25.7	1979–95	1979	14.73	650	4/21/79	14.73	650	N	10–25
05132000	Big Fork River at Big Falls, MN	1,480	1910–12, 1929–94	1950	17.08	14,800	4/22/79	15.90	14,000	N	25–30
05133500	Rainy River at Manitou Rapids, MN	19,400	1929–95	1950	21.04	71,600	6/10/74	19.04	61,600	N	15
05134200	Rapid River near Baudette, MN	543	1950, 1957–85	1985	22.78	7,580	4/26/79 6/26/85	21.13 22.78	7,550 7,580	N N	20–30 20–30
05139500	Warroad River near Warroad, MN	170	1946–80	1979 1965	9.66 9.95	2,070 1,780	4/25/79	9.66	2,070	N	20
05140000	Bulldog Run near Warroad, MN	11.8	1946–51, 1967–83	1979	7.54	498	4/18/79	7.54	498	N	15–20
05200200	Hennepin Creek near Becida, MN	36.0	1979–93	1985	15.25	375	5/11/85	15.25	375	N	>75
05200445	Mississippi River at Bemidji, MN	358	1973–95	1979	13.04	1,690	4/23/79	13.04	1,690	N	40–60
05201500	Mississippi River at Winnibigoshish Dam, MN	1,442	1982–94	1989 1982	-- --	1,460 1,440	6/27/89	--	1,460	Y	5–10
05206500	Leech Lake River at Federal Dam, MN	1,163	1982–94	1982	--	1,300	5/17/82	--	1,300	Y	25–50
05210200	Smith Creek near Hill City, MN	8.01	1961–95	1981	7.95	445	8/05/81	7.95	445	N	35–40
05217700	Bluff Creek near Jacobson, MN	1.46	1961–81	1978	9.99	139	8/23/78	9.99	139	N	30–50

Table 24. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Minnesota—Continued

Station number (fig. 45)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05219000	Sandy River at Sandy Lake Dam at Libby, MN	421	1982–94	1986 1982	-- --	2,040 1,840	5/21/86	--	2,040	Y	10–25
05220500	Mississippi River below Sandy River near Libby, MN	5,060	1930–90	1950	20.02	16,000	5/09/75	16.18	8,770	Y	15
05221020	Willow River below Palisade, MN	523	1972–95	1979	17.25	3,730	4/25/79	17.25	3,730	N	20–30
05227500	Mississippi River at Aitkin, MN	6,140	1888, 1899, 1902–95	1950	22.49	20,000	5/03/75 4/26/79	-- --	14,500 13,300	Y Y	25 15
05231000	Pine River at Cross Lake Dam at Cross Lake, MN	562	1982–95	1985 1982	-- --	2,150 1,600	7/21/85	--	2,150	Y	25–50
05244000	Crow Wing River at Nimrod, MN	1,010	1910–14, 1931–74, 1976–87, 1992–95	1974 1965	7.35 7.57	3,700 2,890	10/10/73 4/18/79	7.35 7.24	3,700 3,610	N N	50–75 50–75
05244100	Kitten Creek near Sebeka, MN	18.9	1961–78	1974 1965	10.95 11.14	400 320	10/10/73	10.95	400	N	10–25
05244200	Cat River near Nimrod, NM	57.1	1961–95	1974	9.43	560	10/12/73	9.43	560	N	25–35
05244440	Leaf River near Aldrich, MN	870	1972–95	1979	16.15	5,170	4/22/79	16.15	5,170	N	20
05245100	Long Prairie River at Long Prairie, MN	434	1972–95	1972	9.37	3,270	7/22/72	9.37	3,270	N	>100
05245800	Sevenmile Creek near Pillager, MN	20.1	1979–93	1983	13.08	285	6/14/83	13.08	285	N	10–25
05247000	Gull River at Gull Lake Dam near Brainerd, MN	287	1982–94	1986 1982	-- --	672 568	5/16/86	--	672	Y	10–25
05261000	Mississippi River near Fort Ripley, MN	11,010	1972–95	1979	47.42	28,000	4/19/79	47.42	28,000	N	20–30
05267000	Mississippi River near Royalton, MN	11,600	1924–95	1965 1924	-- --	37,700 6,380	4/29/75 4/24/79	-- --	30,700 35,100	Y Y	20 35–40
05267800	Big Mink Creek tributary near Lastrup, MN	1.31	1961–80	1972	12.56	86	7/22/72	12.56	86	N	30–50
05267900	Hillman Creek near Pierz, MN	45.0	1964–95	1969	15.48	2,960	7/22/72	15.25	2,490	N	30–40
05268000	Platte River at Royalton, MN	432	1930–36, 1972–95	1972 1986	7.84 12.85	6,850 2,390	7/26/72	7.84	6,850	N	>100
05270300	Sauk River tributary at Spring Hill, MN	7.11	1960–90	1978	22.76	1,440	7/06/78	22.76	1,440	N	50–100
05270310	Sauk River tributary number 2 near St. Martin, MN	0.26	1960, 1962–85	1978 1984	12.12 12.19	559 376	7/06/78	12.12	559	N	>100
05271800	Johnson Creek tributary at Luxemburg, MN	3.89	1964–89	1985	11.25	218	9/09/85	11.25	218	N	>100
05272300	Johnson Creek near St. Augusta, MN	45.6	1964–95	1985	16.37	2,350	6/26/83 9/09/85	15.30 16.37	1,100 2,350	N N	25 >100
05273510	Mississippi River at Clearwater, MN	--	1972–94	1975	19.28	35,600	4/30/75	19.28	35,600	N	20
05274200	Stony Brook tributary near Foley, MN	2.63	1960–89	1972	14.29	204	7/22/72 5/10/86	14.29 13.08	204 180	N N	25 20
05276200	North Fork Crow River at Paynesville, MN	243	1973–95	1984	10.59	2,300	6/22/84	10.59	2,300	N	20–30
05278000	Middle Fork Crow River near Spicer, MN	163	1949–87	1986 1957	6.47 6.67	571 387	6/22/83 7/28/86	6.02 6.47	509 571	N N	15 25

Table 24. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Minnesota—Continued

Station number (fig. 45)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05284100	Mille Lacs Lake tributary near Wealthwood, MN	0.54	1961–72	1972	12.34	53	7/22/72	12.34	53	N	10–25
05284600	Robinson Brook near Onamia, MN	4.73	1960–85	1972	19.32	458	7/22/72	19.32	458	N	50–100
05284920	Stanchfield Creek tributary near Day, MN	1.34	1961–85	1972	10.22	203	7/22/72	10.22	203	N	>100
05286000	Rum River near St. Francis, MN	1,360	1930–95	1969	11.63	10,100	7/29/72	11.20	9,540	N	20
05287890	Elm Creek near Champlin, MN	86.0	1979–95	1986	9.93	597	3/27/86	9.93	597	N	10
05292000	Minnesota River at Ortonville, MN	1,160	1938–95	1952	12.92	3,060	3/27/89	10.76	2,780	N	20
05299100	Lazarus Creek tributary near Canby, MN	2.95	1960–90	1963	18.49	1,000	6/16/70	14.92	486	N	10
05301000	Minnesota River near Lac Qui Parle, MN	4,050	1943–94	1969	39.75	29,400	4/08/86	36.80	13,200	Y	25
05301200	Minnesota River tributary near Montevideo, MN	0.40	1960–75	1970 1969	10.57 14.40	58 30	6/15/70	10.57	58	N	10–25
05302500	Little Chippewa River near Starbuck, MN	96.2	1979–95	1979 1982	12.54 13.22	195 140	4/16/79	12.54	195	N	10
05311000	Minnesota River at Montevideo, MN	6,180	1910–95	1969	21.68	35,100	4/08/86	17.26	14,000	Y	15
05315000	Redwood River near Marshall, MN	259	1940–95	1993	17.00	6,380	5/07/83	14.70	3,270	N	15
05316690	Spring Creek tributary near Sleepy Eye, MN	4.13	1966–90	1979	7.49	130	7/20/79	7.49	130	N	15
05316800	Cottonwood River tributary near Balaton, MN	0.90	1959–85	1979	10.84	486	6/19/79	10.84	486	N	40–50
05316850	Meadow Creek tributary near Marshall, MN	0.47	1961–72	1971 1972	15.05 16.59	112 29	4/07/71	15.05	112	N	10–25
05316900	Dry Creek near Jeffers, MN	3.16	1961–85	1984 1965	10.20 10.64	530 400	6/12/84	10.20	530	N	15
05316920	Cottonwood River tributary near Sanborn, MN	0.38	1966–90	1977 1972	6.84 8.59	103 7	6/16/77	6.84	103	N	10
05317850	Foster Creek near Alden, MN	2.34	1959–84	1981	8.19	223	7/15/81	8.19	223	N	10
05318100	East Branch Blue Earth River tributary near Blue Earth, MN	9.66	1960–85	1981	12.08	610	6/23/81	12.08	610	N	30–40
05318300	Watonwan River near Delft, MN	13.5	1960–95	1993 1965	17.70 18.42	1,000 810	5/30/80	17.82	900	N	20
05318897	South Fork Watonwan River near Ormsby, MN	107	1979–95	1980	18.40	1,920	5/31/80	18.40	1,920	N	10–25
05320200	Le Sueur River tributary near Mankato, MN	0.06	1959–85	1981 1968	24.91 24.99	377 36	6/23/81	24.91	377	N	>100
05320400	Maple River tributary near Mapleton, MN	5.74	1959–85	1981	23.35	2,000	7/27/81	23.35	2,000	N	>100
05320480	Maple River near Rapidan, MN	338	1972–95	1983	12.73	4,550	3/01/83	12.73	4,550	N	20–30
05330150	Sand Creek tributary near Montogomery, MN	0.35	1961–81	1979	11.01	82	8/21/79	11.01	82	N	>100

Table 24. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Minnesota—Continued

Station number (fig. 45)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05331000	Mississippi River at St. Paul, MN	36,800	1867–70, 1872–1995	1965	26.01	171,000	5/06/86	16.10	83,300	Y	10
05336200	Glaisby Brook near Kettle River, MN	27.0	1960–93	1972	10.18	1,370	7/22/72 5/10/79	10.18 9.02	1,370 1,080	N N	40–50 25–35
05336300	Moose River tributary at Moose Lake, MN	1.45	1960–81	1972	13.26	479	7/22/72	13.26	479	N	50–100
05336550	Wolf Creek tributary near Sandstone, MN	4.02	1960–89	1979	20.03	240	7/22/72 5/10/79	19.68 20.03	224 240	N N	15 20
05336700	Kettle River below Sandstone, MN	868	1965, 1968–95	1972	15.38	17,200	7/23/72	15.38	17,200	N	40–50
05337400	Knife River near Mora, MN	102	1975–95	1979	6.31	1,840	5/10/79	6.31	1,840	N	10
05338200	Mission Creek near Hinckley, MN	4.12	1960–85	1972 1971	15.39 15.72	217 56	7/22/72	15.39	217	N	30–40
05338500	Snake River near Pine City, MN	974	1914–17, 1950, 1952–87, 1992–95	1972	10.38	14,300	7/27/72	10.38	14,300	N	50–100
05340050	Sunrise River near Lindstrom, MN	231	1966–85	1975	7.65	745	7/03/75	7.65	745	N	30–50
05355200	Cannon River at Welch, MN	1,340	1888, 1911–13, 1931–87, 1992–95	1965	14.01	36,100	9/22/86	13.80	33,700	N	>100
05372800	South Fork Zumbro River on Belt Line at Rochester, MN	155	1969–83	1978	5.97	20,500	7/06/78	5.97	20,500	N	>100
05372930	Bear Creek at Rochester, MN	78.8	1969–83	1978	7.87	24,900	7/06/78	7.87	24,900	N	>100
05372950	Silver Creek at Rochester, MN	17.7	1969–83	1978	16.18	9,290	7/06/78	16.18	9,290	N	>100
05372990	Cascade Creek at Rochester, MN	38.2	1969–83	1974	83.52	2,050	6/21/74	83.52	2,050	N	25–50
05372995	South Fork Zumbro River at Rochester, MN	303	1951–95	1978	23.36	30,500	7/06/78	23.36	30,500	N	>100
05373080	Milliken Creek near Concord, MN	22.1	1979–95	1982	14.50	580	5/31/82	14.50	580	N	5–10
05373350	Zumbro River tributary near South Troy, MN	0.11	1962–85	1978	14.07	138	7/17/78	14.07	138	N	20–30
05373700	Spring Creek near Wanamingo, MN	10.0	1960–86	1979	18.08	2,850	8/28/79	18.08	2,850	N	40–60
05373900	Trout Brook tributary near Goodhue, MN	0.37	1960–86	1978	13.98	759	7/01/78	13.98	759	N	>100
05374400	Long Creek near Potsdam, MN	4.44	1966–90	1974	26.50	773	6/20/74	26.50	773	N	25–35
05374900	Zumbro River at Kellogg, MN	1,400	1976–90	1986	16.07	22,300	9/23/86	16.07	22,300	N	25–50
05376000	North Fork Whitewater River near Elba, MN	101	1940–41, 1967–93	1974	16.32	16,100	6/21/74	16.32	16,100	N	50–100
05376500	South Fork Whitewater River near Altura, MN	77.4	1940–87	1974	10.84	5,620	6/21/74 7/05/78	10.84 10.83	5,620 5,610	N N	25 25
05376800	Whitewater River near Beaver, MN	271	1938, 1940–56, 1974–85, 1991–95	1974 1978	11.00 12.88	19,200 15,400	6/21/74 7/06/78	11.00 12.88	19,200 15,400	N N	50–100 35–45

Table 24. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Minnesota—Continued

Station number (fig. 45)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05378300	Straight Valley Creek near Rollingstone, MN	5.02	1959–85	1978	18.10	1,500	7/05/78	18.10	1,500	N	20–30
05383700	Mill Creek tributary near Chatfield, MN	2.39	1959–75	1974	17.32	1,030	6/20/74	17.32	1,030	N	50–100
05383720	Mill Creek near Chatfield, MN	22.6	1962–85	1978	17.79	8,580	7/06/78	17.79	8,580	N	50–100
05383850	South Fork Bear Creek near Grand Meadow, MN	14.1	1962–85	1978	23.18	8,500	7/17/78	23.18	8,500	N	>100
05384120	South Branch Root River at Lanesboro, MN	297	1973–86, 1988	1981	13.48	9,500	7/11/81	13.48	9,500	N	10–25
05384150	Root River tributary near Whalan, MN	0.09	1959–81	1980	10.07	172	5/30/80	10.07	172	N	20–30
05384200	Gribben Creek near Whalen, MN	7.78	1959–85	1974	22.24	5,200	6/20/74	22.24	5,200	N	30–40
05384300	Big Springs Creek near Arendahl, MN	0.15	1959–81	1974	11.61	256	6/20/74	11.61	256	N	>100
05384400	Pine Creek near Arendahl, MN	28.2	1959–85	1978	15.58	4,150	7/01/78	15.58	4,150	N	25–35
05384500	Rush Creek near Rushford, MN	132	1942–95	1950	13.54	11,600	7/01/78	11.20	7,930	N	15
05385500	South Fork Root River near Houston, MN	275	1950, 1953–83, 1985–95	1974 1976	13.81 14.75	11,000 10,800	6/21/74 7/01/78	13.81 13.79	11,000 11,000	N N	35–40 35–40
05387030	Crooked Creek at Freeburg, MN	44.8	1979–95	1984 1992	15.66 19.02	1,430 --	6/17/84	15.66	1,430	N	5–10
05457000	Cedar River near Austin, MN	399	1910–14, 1945–95	1978	20.35	12,400	7/17/78	20.35	12,400	N	25–50
05457080	Rose Creek tributary near Dexter, MN	1.13	1962–85	1978	11.82	1,090	7/17/78	11.82	1,090	N	>100
05474750	Beaver Creek tributary number 2 near Slayton, MN	5.01	1961–85	1979 1962	20.87 21.22	228 211	7/20/79	20.87	228	N	20–30
05474760	Beaver Creek tributary above Slayton, MN	2.22	1961–85	1979 1962	20.80 21.56	160 116	7/20/79	20.80	160	N	20–30
05475400	Warren Lake tributary near Windom, MN	3.29	1960–87	1980 1966	12.84 13.76	666 395	5/29/80	12.84	666	N	>100
06482950	Mound Creek near Hardwick, MN	2.52	1959–85	1979	11.66	459	8/09/79	11.66	459	N	45–55

[1]Regulated during flood: N, no; Y, yes.

Mississippi

Hydroclimatology

Mississippi is located in the southeastern United States and is bordered on the south by the Gulf of Mexico and on the west by the Mississippi River. Mississippi has a humid climate. The principal source of moisture is the Gulf of Mexico. During most of the year, tropical airmasses bring moisture inland from the Gulf. Occasionally, Pacific moisture reaches Mississippi, but this is rare. The summer months usually bring airmass-type thunderstorm activity with locally intense rainfall. The threat of hurricanes and tropical storms exists from mid-summer to late fall. Rainfall in the late fall to late spring is usually caused by frontal systems that can stall out and persist for several days. Mean annual precipitation ranges from about 50 in. in the north to about 68 in. near the coast of the Gulf of Mexico in southeastern Mississippi.

Flooding in Mississippi usually is associated with excessive rainfall from stalled frontal systems during the winter and spring months. Flooding from severe thunderstorms associated with cold fronts or squall lines can occur in any month. Tropical storm and hurricane flooding can be caused by excessive rainfall and from storm surges along the coast.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Mississippi is dependent upon the drainage area, main-channel slope, and the main-channel length, from the point of discharge to the drainage divide (Jennings and others, 1994).

Significant Floods

Significant flooding occurred in April and May 1983 when a series of storms produced excessive rainfall statewide. In April, 15 streamflow-gaging stations recorded maximum discharges with recurrence intervals equal to or greater than the 100-year recurrence interval. Forty percent of the streamflow-gaging stations in the southern part of the State recorded maximum discharges with recurrence intervals greater than the 20-year recurrence interval. The flooding in May was caused by excessive rainfall over the northern two-thirds of the State. This flooding caused one death and damages of approximately $500 million (Paulson and others, 1991).

The Easter flood of April 1979 on the Pearl River was the largest and most damaging flood in recent history. The flood was a result of a major storm that produced rainfall totals of 12 to 21 in. in the headwaters of the Pearl River. The discharges recorded on the main stem of the Pearl River were generally equal to or greater than the 100-year recurrence interval. Twenty percent of the streamflow-gaging stations in the State recorded significant discharges at this time.

During the flood of 1973 that occurred from March through May, 15 percent of the gaging stations in the State recorded significant discharges. The March flood resulted in maximum discharges greater than the 100-year recurrence interval at some stations in the Tombigbee River Basin, and in the Yazoo River Basin floodwater passed over the emergency spillways of four flood-control dams. These floods were part of a major regional flood that extended from Mississippi and Tennessee to Alabama and Georgia. As a result of the 1973 floods, 19 lives were lost, and more than $200 million in damages were sustained in Mississippi (Paulson and others, 1991).

The location of streamflow-gaging stations in Mississippi that had significant floods for 1970–89 is shown in figure 46 by station number. The specific data for each significant flood are listed in table 25. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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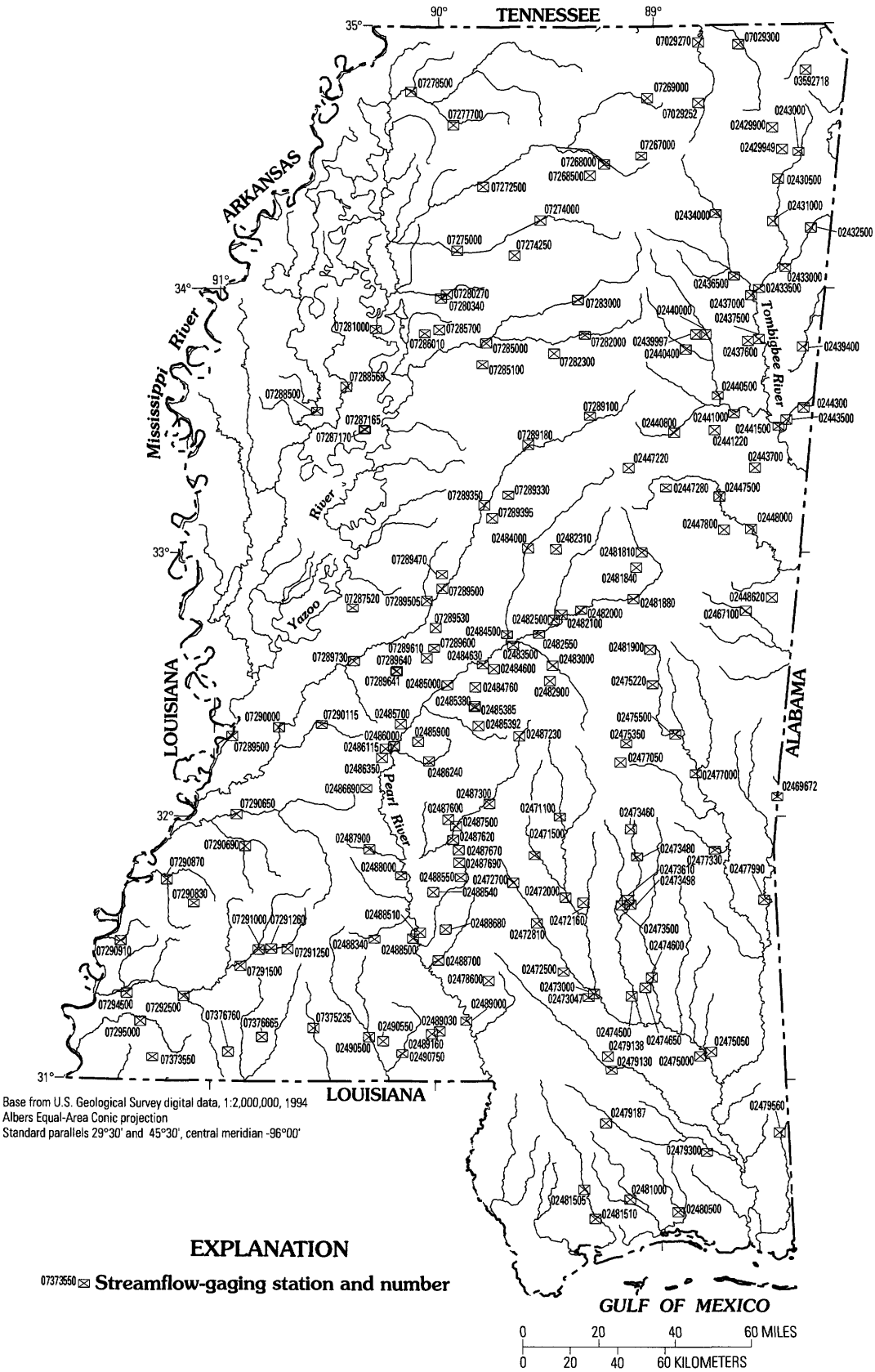

Base from U.S. Geological Survey digital data, 1:2,000,000, 1994
Albers Equal-Area Conic projection
Standard parallels 29°30' and 45°30', central meridian -96°00'

Figure 46. Location of streamflow-gaging stations with significant floods during 1970–89 for Mississippi.

Table 25. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Mississippi

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
Station number (fig. 46)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02429900	Big Brown Creek near Booneville, MS	27.1	1953–93	1970	99.97	3,900	4/17/70	99.97	3,900	N	10
02429949	Little Brown Creek near New Site, MS	42.2	1974–85, 1987–89	1983	14.65	8,390	5/19/83	14.65	8,390	N	25–50
02430000	Mackeys Creek near Dennis, MS	66.9	1939–79	1955	28.44	16,300	3/16/73	22.83	7,030	N	--
02430500	Tombigbee River near Marietta, MS	308	1938–51, 1955, 1968–77, 1991–93	1973 1991	12.30 15.24	30,600 --	3/16/73	12.30	30,600	N	10–25
02431000	Tombigbee River near Fulton, MS	612	1929–93	1955 1991	25.75 27.72	82,200 73,800	3/17/73 12/27/82	23.00 23.70	56,700 59,400	N Y	30–40 35–45
02432500	Bull Mountain Creek at Tremont, MS	136	1941–64, 1973–83, 1991–93	1975 1983	9.80 14.06	15,000 --	3/13/75	9.80	15,000	Y	10–25
02433000	Bull Mountain Creek near Smithville, MS	336	1927, 1941–91	1973	18.26	44,400	3/16/73	18.26	44,400	N	>100
02433500	Tombigbee River at Bigbee, MS	1,226	1927, 1937–42, 1944, 1946–55, 1957–58, 1962, 1964–93	1973	27.64	112,000	3/17/73	27.64	112,000	N	50–100
02434000	Town Creek at Tupelo, MS	111	1939–46, 1949–93	1955	27.72	23,000	5/19/83	25.66	15,000	N	10
02436500	Town Creek near Nettleton, MS	620	1927, 1940–93	1955	33.88	151,000	3/16/73	32.73	72,600	N	40–50
02437000	Tombigbee River near Amory, MS	1,928	1892, 1927, 1938–93	1973	34.65	162,000	3/17/73	34.65	162,000	N	75–100
02437500	Tombigbee River at Aberdeen, MS	2,171	1892, 1909–83	1973	45.02	123,000	3/18/73	45.02	123,000	N	50–75
02437600	James Creek at Aberdeen, MS	28.4	1963–94	1985 1991	15.21 24.82	6,970 6,280	2/03/83 10/22/84	14.85 15.21	6,330 6,970	N N	10–25 10–25
02439400	Buttahatchee River near Aberdeen, MS	798	1967–93	1973	23.48	80,000	3/17/73	23.48	80,000	N	>100
02439997	Chuquatonchee Creek tributary near Trebloc, MS	0.72	1966–84	1971	9.18	540	2/21/71	9.18	540	N	25–50
02440000	Chuquatonchee Creek near Egypt, MS	167	1950–83, 1985–93	1973	16.61	36,300	3/16/73	16.61	36,300	N	200
02440400	Houlka Creek near McCondy, MS	189	1963–93	1973	18.65	40,000	3/16/73	18.65	40,000	N	>100
02440500	Chuquatonchee Creek near West Point, MS	505	1941–46, 1948–93	1973	24.58	57,100	3/17/73	24.58	57,100	N	75–100
02440800	Trim Cane Creek near Starkville, MS	44.9	1940, 1952–94	1983	28.10	9,980	4/13/79 5/19/83	27.95 28.10	9,600 9,980	N N	25 25–50
02441000	Tibbee Creek near Tibbee, MS	926	1927, 1929–30, 1940–93	1973	32.26	81,600	3/17/73	32.26	81,600	N	50
02441220	Sand Creek tributary near Mayhew, MS	0.44	1966–93	1984	8.75	395	4/27/84	8.75	395	N	25

Table 25. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Mississippi—Continued

Station number (fig. 46)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02441500	Tombigbee River at Columbus, MS	4,463	1892–1985, 1989–93	1892 1973	40.09 42.22	268,000 194,000	3/19/73	42.22	194,000	N	40–50
02443000	Luxapallila Creek at Steens, MS	309	1940–93	1949	19.20	16,000	4/14/79	18.73	14,200	N	10–25
02443500	Luxapallila Creek near Columbus, MS	715	1892, 1927, 1929–30, 1938–39, 1948–49, 1951, 1961–62, 1964–65, 1968–69, 1973–93	1979 1892	32.35 35.30	40,400 --	4/14/79	32.35	40,400	N	25
02443700	Cedar Creek near Brooksville, MS	0.49	1965–84	1984	8.32	552	4/27/84	8.32	552	N	50–100
02447220	Bogue Fallah tributary near Ackerman, MS	0.34	1966–84	1979	9.17	472	4/12/79	9.17	472	N	>100
02447280	Lawson Brook near Betheden, MS	1.11	1965–77	1977	10.43	964	1/09/77	10.43	964	N	50–100
02447500	Noxubee River near Brooksville, MS	446	1940–73, 1979	1979	28.30	76,000	4/12/79	28.30	76,000	N	>100
02447800	Hashuqua Creek near Macon, MS	96.2	1951–70, 1976, 1979	1979	100.04	28,000	4/12/79	100.04	28,000	N	>100
02448000	Noxubee River at Macon, MS	768	1892, 1927, 1929–32, 1939–93	1979	38.97	125,000	4/13/79	38.97	125,000	N	>200
02448620	Flat Scooba Creek tributary near Scooba, MS	0.44	1967–93	1979	8.87	427	4/12/79	8.87	427	N	50–100
02467100	Hamilton Brook near Dekalb, MS	0.97	1965–77	1974	7.58	662	4/13/74	7.58	662	N	10–25
02469672	Little Okatuppa Creek near Quitman, MS	4.35	1966–84	1984	9.01	1,850	2/27/84	9.01	1,850	N	10–25
02471100	Leaf River near Raleigh, MS	143	1856, 1900, 1940–43, 1957–81, 1983–93	1974	28.17	17,000	4/13/74	28.17	17,000	N	25–50
02471500	Oakohay Creek at Mize, MS	185	1942–49, 1961, 1968–76, 1978–93	1974	17.26	28,900	4/13/74 4/07/83	17.26 15.62	28,900 16,900	N N	>100 25
02472000	Leaf River near Collins, MS	743	1856, 1900, 1939–93	1856	33.00	56,000	4/14/74	32.60	54,200	N	50–100
02472160	Big Creek tributary near Laurel, MS	0.17	1966–84	1983	6.50	211	4/06/83	6.50	211	N	10
02472500	Bouie Creek near Hattiesburg, MS	304	1900, 1939–93	1900	33.50	50,000	4/14/74	28.18	45,500	N	200
02472700	Okatoma Creek tributary at Mt. Olive, MS	0.33	1965–77	1974	6.21	318	4/13/74	6.21	318	N	10–25
02472810	Okatoma Creek tributary number 2 near Collins, MS	0.21	1967–84	1983	8.61	314	4/06/83	8.61	314	N	25
02473000	Leaf River at Hattiesburg, MS	1,748	1900, 1905–93	1974	34.03	121,000	4/15/74	34.03	121,000	N	>200

Table 25. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Mississippi—Continued

Station number (fig. 46)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02473047	Gordon Creek at Hattiesburg, MS	8.83	1969–93	1983	61.89	6,920	4/06/83	61.89	6,920	N	>100
02473460	Tallahala Creek at Waldrup, MS	102	1961, 1969–93	1974	23.18	17,900	4/13/74	23.18	17,900	N	50–100
02473480	Tallahattah Creek near Waldrup, MS	30.4	1965–93	1979 1974	17.20 18.14	7,200 --	3/03/79	17.20	7,200	N	25–50
02473498	Tallahala Creek tributary at 8th Street at Laurel, MS	1.12	1974–84	1983 1976	39.15 39.23	856 821	5/20/83	39.15	856	N	5–10
02473500	Tallahala Creek at Laurel, MS	238	1900, 1920, 1938–93	1920	26.00	38,300	4/14/74	23.28	23,300	N	30–40
02473610	Tallahala Creek tributary number 2 at Grandview at Laurel, MS	1.52	1974–84	1976	32.30	920	3/30/76	32.30	920	N	10–25
02474500	Tallahala Creek near Runnelstown, MS	612	1900, 1920, 1940–93	1900	30.50	38,000	4/16/74	28.44	27,900	N	25
02474600	Bogue Homo near Richton, MS	344	1941–43, 1971–77, 1979–93	1974	27.63	21,900	2/28/73	27.63	21,900	N	10–25
02474650	Buck Creek near Runnelstown, MS	20.8	1951–77, 1979–81, 1983–93	1979 1961	91.41 94.89	5,700 3,900	4/03/79	91.41	5,700	N	50
02475000	Leaf River near McLain, MS	3,495	1900, 1938, 1940–72, 1974–93	1900	31.80	131,000	4/18/74	30.38	110,000	N	35–45
02475050	Waterfall Branch near McLain, MS	0.65	1955–93	1959	11.71	764	4/06/83	10.73	655	N	10–25
02475220	Little Rock Creek tributary near Little Rock, MS	0.22	1965–84	1979	7.79	265	4/12/79	7.79	265	N	10–25
02475350	Tarlow Creek near Newton, MS	16.1	1953–70, 1979	1979	18.86	3,500	3/04/79	18.86	3,500	N	25–50
02475500	Chunky River near Chunky, MS	369	1939–93	1979	26.64	40,900	4/13/74 3/04/79	25.45 26.64	29,800 40,900	N N	20 50
02477000	Chickasawhay River at Enterprise, MS	918	1871, 1900, 1905–93	1961 1979	37.94 41.90	61,700 49,800	4/14/74 4/14/79	40.25 41.90	45,300 49,800	N N	15–20 20
02477050	Souinlovie Creek near Baxter, MS	1.14	1964–93	1993	13.56	1,150	4/18/73	12.56	1,050	N	25–50
02477330	Shubuta Creek near Shubuta, MS	75.5	1963–66, 1968–93	1973	24.88	12,700	4/25/73	24.88	12,700	N	25–50
02477990	Buckatunna Creek near Denham, MS	492	1972–93	1979	34.90	12,200	3/06/79	34.90	12,200	N	5–10
02478600	Granny Branch at Piave, MS	0.69	1967–84	1984	6.77	433	5/03/84	6.77	433	N	10
02479130	Black Creek near Brooklyn, MS	355	1961, 1971–93	1983	29.96	42,500	4/07/83	29.96	42,500	N	>100
02479138	Walls Creek tributary near Brooklyn, MS	0.37	1966–77, 1983	1974	10.39	490	4/13/74	10.39	490	N	50–100
02479187	Red Creek tributary near Wiggins, MS	0.22	1966–84	1983	9.54	390	4/06/83	9.54	390	N	>100
02479300	Red Creek at Vestry, MS	441	1959–93	1987	21.48	28,000	4/08/83 8/15/87	21.18 21.48	26,800 28,000	N N	25 25–50
02479560	Escatawpa River near Agricola, MS	562	1974–86, 1989–94	1983	22.39	33,700	4/09/83	22.39	33,700	N	25–50

Table 25. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Mississippi—Continued

Station number (fig. 46)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02480500	Tuxachanie Creek near Biloxi, MS	92.4	1906, 1948, 1953–93	1906 1987	23.20 23.63	21,000 19,600	8/15/87	23.63	19,600	N	>100
02481000	Biloxi River at Wortham, MS	96.2	1948, 1953–93	1983	25.30	10,300	4/08/83	25.30	10,300	N	25–50
02481505	Mill Creek tributary near Lizana, MS	2.29	1967–77	1973	7.68	1,240	3/24/73	7.68	1,240	N	10–25
02481510	Wolf River near Landon, MS	308	1971–93	1983 1993	21.53 27.12	18,400 16,600	4/08/83	21.53	18,400	N	10–25
02481810	Tallahaga Creek near Noxapater, MS	58.6	1953–70, 1974, 1979	1979	97.09	22,600	4/13/79	97.09	22,600	N	>100
02481840	Noxapater Creek near Noxapater, MS	31.7	1952–70, 1979	1979	98.10	23,000	3/13/79	98.10	23,000	N	>100
02481880	Pearl River at Burnside, MS	520	1935, 1938–39, 1962, 1979, 1981–93	1979	23.60	76,600	4/13/79	23.60	76,600	N	>100
02481900	Coonshuck Creek tributary near House, MS	0.20	1965–77, 1979	1975	5.55	208	4/12/79	5.55	208	N	10–25
02482000	Pearl River at Edinburg, MS	904	1878, 1902, 1909–93	1979	30.06	77,900	4/14/79 5/22/83	30.06 28.35	77,900 52,300	N N	>200 100
02482100	Indian Branch near Edinburg, MS	1.91	1965–84	1979	5.47	710	4/12/79	5.47	710	N	10–25
02482310	Lobutcha Creek tributary at Wamba, MS	0.94	1964–84	1979	12.77	1,240	4/12/79	12.77	1,240	N	>100
02482500	Lobutcha Creek near Carthage, MS	309	1938–70, 1979	1979	19.99	44,000	4/13/79	19.99	44,000	N	>100
02482550	Pearl River near Carthage, MS	1,346	1874, 1900, 1902, 1932, 1938–39, 1962–93	1979	28.74	102,000	4/14/79 5/22/83	28.74 27.07	102,000 69,500	N N	>200 100–200
02482900	Tallabogue Creek tributary near Harperville, MS	0.12	1965–77	1975	5.74	108	2/23/74	5.74	108	N	5–10
02483000	Tuscolameta Creek at Walnut Grove, MS	411	1900, 1902, 1939–93	1950 1974	23.00 30.20	34,600 26,600	4/14/74	30.20	26,600	N	15–20
02483500	Pearl River near Lena, MS	1,981	1902, 1937–53, 1962, 1974, 1979, 1983	1979	32.20	122,000	4/--/79	32.20	122,000	N	>200
02484000	Yockanookany River near Kosciusko, MS	303	1933, 1938–93	1979	23.06	40,700	3/15/75 4/13/79	18.86 23.06	18,600 40,700	N N	10–15 >200
02484500	Yockanookany River near Ofahoma, MS	469	1938–93	1979 1991	23.27 23.48	46,500 13,200	4/14/79 5/22/83	23.27 20.20	46,500 21,900	N N	>200 20
02484600	Coffee Bogue at Ludlow, MS	77.0	1971–80, 1982–87, 1989–93	1989	15.93	9,550	7/04/89	15.93	9,550	N	25–50
02484760	Fannegusha Creek near Sand Hill, MS	52.3	1971–93	1980 1973	13.35 13.36	9,000 7,100	4/12/80	13.35	9,000	N	10–25
02485000	Pearl River at Meeks Bridge near Canton, MS	2,755	1933, 1938–63, 1979, 1983	1979	29.50	145,000	4/--/79	29.50	145,000	N	>200
02485380	Hollybush Creek tributary number 1 near Pisgah, MS	0.59	1965–84	1983	8.03	470	4/06/83	8.03	470	N	25–50
02485385	Hollybush Creek tributary number 2 near Pisgah, MS	0.25	1965–77	1975	7.04	306	8/01/75	7.04	306	N	25

Table 25. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Mississippi—Continued

Station number (fig. 46)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02485392	Clear Creek tributary near Pelahatchie, MS	0.12	1965–84	1977	6.97	152	10/05/76	6.97	152	N	10–25
02485700	Hanging Moss Creek near Jackson, MS	16.8	1953–93	1953	99.60	5,320	1/30/77	20.07	4,500	N	20
02485900	Neely Creek near Brandon, MS	1.09	1964–84	1983	9.50	1,180	4/13/83	9.50	1,180	N	50–100
02486000	Pearl River at Jackson, MS	3,171	1874, 1881, 1900–93	1979	43.28	128,000	5/25/83 4/17/79	39.58 43.28	79,500 128,000	N Y	30 >200
02486115	Three Mile Creek at Jackson, MS	1.05	1962–78,	1974	31.52	1,720	2/26/71 8/30/74	31.50 31.52	1,710 1,720	N N	10–25 10–25
02486240	Richland Creek tributary near Brandon, MS	0.12	1966–77	1975	6.10	100	2/16/75	6.10	100	N	5–10
02486350	Cany Creek at Jackson, MS	8.38	1961–77	1973 1977	70.89 72.87	4,400 4,000	4/16/73	70.89	4,400	N	10–25
02486690	Rhodes Creek near Terry, MS	21.0	1948–67, 1969, 1973	1973 1949	23.70 24.50	5,000 4,470	4/16/73	23.70	5,000	N	25–50
02487230	Strong River near Morton, MS	16.2	1959–69, 1974–75	1975	22.00	5,600	2/24/74	22.00	5,600	N	25–50
02487300	Strong River near Puckett, MS	248	1950, 1955–70, 1972–93	1950	27.06	19,000	4/07/83	26.47	18,600	N	10–20
02487500	Strong River at D'Lo, MS	425	1900, 1929–93	1983	33.48	26,400	4/07/83	33.48	26,400	N	30–40
02487600	Dabbs Creek near D'Lo, MS	57.2	1948–69, 1980	1980	25.94	16,000	4/12/80	25.94	16,000	N	>100
02487620	Riles Creek near Mendenhall, MS	25.5	1949–50, 1954–70, 1974	1950 1974	26.29 26.31	9,050 9,050	4/00/74	26.31	9,050	N	>100
02487670	Boggans Ditch near Mendenhall, MS	0.94	1955–84	1955	8.16	764	4/06/83	8.09	747	N	10–25
02487690	Baking Powder Draw near Prentiss, MS	0.84	1955–77	1973	6.97	532	3/24/73	6.97	532	N	10–25
02487900	Copiah Creek near Hazlehurst, MS	47.4	1950, 1953, 1955–81, 1983–84, 1986–93	1980	25.11	32,000	4/12/80	25.11	32,000	N	>100
02488000	Pearl River near Rockport, MS	4,556	1874, 1900, 1938–51, 1979, 1983, 1985–93	1979	42.83	123,000	4/--/79	42.83	123,000	N	>200
02488340	Small Pine Ditch near Monticello, MS	0.16	1955, 1957–77, 1980–84	1973	8.24	281	3/24/73	8.24	281	N	25–50
02488500	Pearl River near Monticello, MS	4,993	1874, 1900, 1902, 1924–93	1979 1874	34.08 34.50	122,000 --	4/20/79 3/31/80 4/09/83	34.08 30.50 30.53	122,000 79,800 80,400	N N N	>200 30–40 30–40
02488510	Roadside park ditch near Monticello, MS	0.25	1955–77, 1983	1974	7.06	289	4/12/74	7.06	289	N	25
02488540	New Hebron Gulley at New Hebron, MS	2.50	1957, 1965–77, 1983	1974	17.05	2,650	4/12/74	17.05	2,650	N	>100
02488550	Goines Draw near Prentiss, MS	0.34	1955, 1957–74, 1978–84	1974	9.10	610	4/12/74	9.10	610	N	>100
02488680	Plum Ditch near Prentiss, MS	0.23	1955–76, 1983	1983	9.01	333	4/06/83	9.01	333	N	50–100

Table 25. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Mississippi—Continued

Station number (fig. 46)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02488700	Whitesand Creek near Oakvale, MS	130	1966–93	1974	18.76	25,400	4/13/74	18.76	25,400	N	>100
02489000	Pearl River near Columbia, MS	5,720	1874, 1900, 1905–86, 1989–93	1874	31.00	165,000	4/15/74 4/22/79	27.00 27.80	93,900 120,000	N N	75–100 >200
02489030	Elmers Draw near Columbia, MS	0.91	1955–93	1983	16.22	1,620	4/06/83	16.22	1,620	N	>100
02489160	Kokomo Draw at Kokomo, MS	1.26	1955–77, 1983	1983	12.86	2,040	4/06/83	12.86	2,040	N	>100
02490500	Bogue Chitto near Tylertown, MS	492	1936, 1945–93	1983 1936	34.62 34.70	64,200 49,000	4/07/83	34.62	64,200	N	>100
02490550	Middle Fork Hickory Flat near Tylertown, MS	1.46	1953, 1955–84	1953	13.95	2,300	4/06/83	13.30	2,060	N	>100
02490750	McGees Creek at Tylertown, MS	152	1900, 1943, 1952–74, 1980, 1983	1983	31.38	30,000	4/07/83	31.38	30,000	N	>200
03592718	Little Yellow Creek East near Burnsville, MS	24.7	1974–93	1983 1991	19.83 20.14	5,180 3,900	4/05/83	19.83	5,180	N	10–25
07029252	Pool Brook near Ripley, MS	1.24	1965–75, 1977	1973 1974	5.24 5.74	527 350	10/--/73	5.24	527	N	5–10
07029270	Hatchie River near Walnut, MS	274	1947–80	1955 1973	30.70 33.23	23,200 21,600	3/16/73	33.23	21,600	N	10–25
07029300	Tuscumbia River Canal near Corinth, MS	277	1950–80	1973	15.72	30,300	3/15/73	15.72	30,300	N	50
07267000	Hell Creek near New Albany, MS	27.3	1939, 1942, 1952–58, 1960–74, 1976, 1978–80, 1982–93	1983 1955	13.50 17.32	8,420 3,210	2/26/82	13.50	8,420	N	25–50
07268000	Little Tallahatchie River at Etta, MS	526	1937, 1939–93	1983 1955	29.02 29.32	85,200 79,000	5/19/83 12/04/83	29.02 28.18	85,200 67,500	N N	50–75 20–25
07268500	Cypress Creek near Etta, MS	28.5	1939–42, 1952–76, 1979–80, 1983–93	1983	19.94	11,300	5/19/83 11/09/86	19.94 19.28	11,300 10,700	N N	10–20 10–15
07269000	North Tippah Creek near Ripley, MS	20.0	1939–42, 1948, 1952–66, 1968–80, 1983–85, 1988–93	1969 1979	21.17 21.60	7,100 --	5/19/83	20.64	6,660	N	10–15
07272500	Little Tallahatchie River at Sardis Dam, MS	1,545	1940–83	1973 1940	-- --	11,900 4,730	4/28/73 2/25/83	-- --	11,900 7,000	Y Y	-- --
07274000	Yocona River near Oxford, MS	262	1947–93	1955 1983	23.72 28.38	44,100 32,000	5/11/70	23.10	33,100	N	25–30
07274250	Otoucalofa Creek at Water Valley, MS	84.1	1952–76, 1978–80, 1982–93	1983	28.07	15,900	5/19/83 2/04/83	28.07 27.45	15,900 13,600	N N	40–50 25–30
07275000	Yocona River at Enid Dam, MS	560	1927–83	1948	21.61	36,300	3/29/83	--	5,000	Y	--
07277700	Hickahala Creek near Senatobia, MS	121	1943–84, 1986–93	1947	20.60	30,000	7/13/88	19.87	18,800	N	5–10
07278500	Coldwater River at Arkabutla Dam, MS	1,000	1938–83	1938	12.90	30,200	4/25/73	--	10,200	Y	--

Table 25. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Mississippi—Continued

Station number (fig. 46)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07280270	Tillatoba Creek below Oakland, MS	37.1	1975–84	1984	16.20	9,200	5/07/84	16.20	9,200	N	10–25
				1975	17.72	5,820					
07280340	South Fork Tillatoba Creek near Charleston, MS	53.9	1976–88	1983	23.96	11,900	2/26/82	23.96	11,900	N	10–25
07281000	Tallahatchie River at Swan Lake, MS	5,130	1907, 1911, 1914–83	1933	33.20	49,200	3/17/73	31.59	44,900	Y	>200
				1932	35.00	30,000					
07282000	Yalobusha River at Calhoun City, MS	305	1949–93	1983	25.75	70,100	3/16/73	24.58	52,100	N	10
							12/26/82	25.75	70,100	N	30
07282300	Sabougla Creek tributary at Sabougla, MS	0.50	1967–77	1974	7.69	401	7/11/74	7.69	401	N	25–50
07283000	Skuna River at Bruce, MS	254	1948–93	1955	24.11	61,400	12/03/83	29.83	39,400	N	10–15
				1991	31.13	35,700					
07285000	Yalobusha River at Grenada Dam near Grenada, MS	1,320	1954–83	1983	--	8,850	2/12/74	--	6,510	Y	--
				1954	--	3,790	5/22/83	--	8,850	Y	--
07285100	Tie Plant Brook near Grenada, MS	0.13	1955, 1966–77	1974	6.23	205	6/07/74	6.23	205	N	25–50
07285700	Long Creek near Cascilla, MS	1.64	1965–93	1984	12.70	1,860	5/08/84	12.70	1,860	N	25–50
07286010	Brushy Creek tributary near Oxberry, MS	1.49	1965–77	1974	8.31	1,320	1/27/73	8.31	1,320	N	10–25
07287165	Mosquito Lake tributary number 1 at Itta Bena, MS	0.11	1966–81, 1984	1980	6.46	121	1/10/79	6.46	121	N	50–100
07287170	Mosquito Lake tributary number 2 at Itta Bena, MS	0.13	1966–78, 1981–84	1981	5.00	110	10/27/80	5.00	110	N	25–50
07287520	Short Creek tributary near Yazoo City, MS	1.49	1964–73	1971	10.06	1,130	2/21/71	10.06	1,130	N	10
07288500	Big Sunflower River at Sunflower, MS	767	1936–83	1973	28.37	15,000	3/18/73	28.37	15,000	N	200
07288568	Quiver River near Schlater, MS	0.18	1967–79	1975	5.97	41	3/13/75	5.97	41	N	5–10
				1978	6.43	--					
07289000	Mississippi River at Vicksburg, MS	1,140,500	1858, 1885, 1897–98, 1903–04, 1906–07, 1909, 1912–13, 1916–17, 1920, 1922, 1927–88	1927	--	2,278,000	5/12/73	--	1,962,000	N	25
				1929	55.10	1,730,000					
07289100	Big Black River tributary near Eupora, MS	2.29	1965–77	1977	8.13	1,200	3/03/77	8.13	1,200	N	10–25
07289180	Big Black River near Kilmichael, MS	549	1937–60, 1962, 1964–83	1983	18.10	50,000	3/16/73	17.53	38,000	N	10–25
							5/20/83	18.10	50,000	N	25–50
07289330	Zilpha Creek near Kosciusko, MS	90.0	1953–70, 1979	1979	28.70	21,600	4/12/79	28.70	21,600	N	50–100
07289350	Big Black River at West, MS	1,027	1927, 1930, 1937–93	1983	26.08	71,200	5/21/83	26.08	71,200	N	60–80
07289395	Sharkey Creek tributary near West, MS	0.30	1967–79, 1982–84	1979	9.53	300	1/20/79	9.53	300	N	25–50
07289470	Tacketts Creek near Pickens, MS	0.15	1965–84	1982	7.07	222	1/23/82	7.07	222	N	10
				1979	7.90	--					

Table 25. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Mississippi—Continued

Station number (fig. 46)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07289500	Big Black River at Pickens, MS	1,493	1892, 1927, 1930, 1937–83	1983 1927	-- 23.70	72,000 58,900	4/13/79 5/--/83	23.60 --	66,000 72,000	N N	40–50 50–75
07289505	Big Cypress Creek near Vaughn, MS	89.3	1960–70, 1979	1979	33.30	16,000	4/13/79	33.30	16,000	N	>50
07289530	Doaks Creek near Canton, MS	161	1948–51, 1953–70, 1973, 1979	1979	23.30	39,000	4/13/79	23.30	39,000	N	>100
07289600	Tilda Bogue near Canton, MS	24.4	1948–51, 1953–93	1953 1983	19.00 19.44	8,800 --	8/01/75	19.16	8,300	N	40–50
07289610	Bachelor Creek at Canton, MS	3.85	1953–70, 1973, 1975, 1979	1975	20.65	4,400	7/31/75	20.65	4,400	N	>100
07289640	Panther Creek near Flora, MS	0.26	1965–77, 1979	1973	7.17	252	3/10/73	7.17	252	N	10–25
07289641	Panther Creek tributary near Flora, MS	0.07	1964–85	1973	7.42	140	3/10/73	7.42	140	N	10–25
07289730	Big Black River near Bentonia, MS	2,340	1929–83	1983 1930	32.48 34.70	86,000 61,800	4/--/79 5/--/83	31.81 32.48	80,000 86,000	N N	50–75 75–100
07290000	Big Black River near Bovina, MS	2,812	1936–93	1983	40.77	92,300	4/16/79 5/24/83	40.56 40.77	83,300 92,300	N N	60–80 >100
07290115	Unnamed creek near Bolton, MS	3.10	1960–70, 1979	1979	98.00	1,500	4/12/79	98.00	1,500	N	10–25
07290650	Bayou Pierre near Willows, MS	654	1959–93	1983	29.36	88,000	4/13/80 4/07/83	28.16 29.36	63,800 88,000	N N	25 5–100
07290690	Clarks Creek near Pattison, MS	75.0	1962–93	1980	27.90	31,000	5/08/78 4/12/80	27.46 27.90	28,000 31,000	N N	>100 >100
07290830	Little Creek near Fayette, MS	1.71	1967–93	1974	15.45	1,800	4/12/74	15.45	1,800	N	50
07290870	Coles Creek near Fayette, MS	257	1961–64, 1966–93	1974	31.96	75,000	4/12/74 5/11/78	31.96 31.39	75,000 71,000	N N	100 50–100
07290910	Spanish Bayou at Natchez, MS	2.59	1966–77	1971	15.12	1,990	10/12/70	15.12	1,990	N	25
07291000	Homochitto River at Eddiceton, MS	181	1939–93	1974 1990	19.53 21.06	55,400 33,600	4/13/74 5/07/78 4/06/83	19.53 17.52 16.43	55,400 43,500 35,200	N N N	>100 50 15–20
07291250	McCall Creek near Lucien, MS	60.8	1953, 1955–70, 1972–81, 1983–93	1974	92.70	23,000	4/13/74	92.70	23,000	N	50
07291260	Beaver Run near McCall Creek, MS	2.61	1955, 1957–77	1974	10.85	1,220	4/13/74	10.85	1,220	N	10–25
07291500	Homochitto River near Bude, MS	399	1942–50, 1961, 1965, 1972–74	1974	22.00	95,000	4/14/74	22.00	95,000	N	>100
07292500	Homochitto River at Rosetta, MS	787	1949–93	1974 1949	28.60 37.80	150,000 --	4/13/74	28.60	150,000	N	15–20
07294500	Homochitto River near Doloroso, MS	1,120	1938, 1940–51, 1953–84	1974 1953	33.00 33.00	148,000 --	2/06/71 4/14/74	31.50 33.00	134,000 148,000	N N	10–25 25–50
07295000	Buffalo River near Woodville, MS	180	1942–93	1973	22.30	65,000	3/25/73 4/22/79	22.30 22.02	65,000 57,400	N N	100 25–50
07373550	Moores Branch near Woodville, MS	0.21	1955, 1957–93	1973	9.90	455	3/24/73 2/01/83	9.90 9.19	455 423	N N	50–100 25–50

Table 25. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Mississippi—Continued

Station number (fig. 46)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07375235	Tangipahoa River tributary near McComb, MS	2.71	1966–84	1973	10.23	1,460	3/24/73	10.23	1,460	N	25–50
07376665	Stock Pond Draw near Liberty, MS	0.38	1955, 1965–77	1976	8.26	443	10/16/75	8.26	443	N	10–25
07376760	CRS Draw near Liberty, MS	0.80	1955, 1965–84	1975	11.81	993	6/08/75	11.81	993	N	>100

[1] Regulated during flood: N, no; Y, yes.

Missouri

Hydroclimatology

Missouri is located in the continent's interior near the center of the United States. The Mississippi River forms the east border of the State. Due to the State's location, the climate in Missouri is temperate with moderate seasonality. Airmasses from the Gulf of Mexico supply the majority of the moisture. The Pacific Ocean is a secondary source of moisture both in the summer and winter. Continental polar airmasses from Canada can clash with Gulf of Mexico moisture at any time during the year. These clashes can produce intense snowstorms in winter, persistent rainstorms from stalled cyclonic systems, and severe thunderstorms in spring and summer months.

Missouri receives the majority of its annual precipitation during the spring and early summer months. Annual precipitation in southeastern Missouri averages about 48 in., decreasing to approximately 34 in. in the northwest (Paulson and others, 1991).

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Missouri is dependent on drainage area and channel slope. For urban areas, runoff depends on drainage area and a basin development factor (an index of urban drainage improvements) or percentage of the drainage area that is impervious (Jennings and others, 1994).

Significant Floods

Throughout December 1982, widespread, excessive rainfall plagued southeastern Missouri. The resulting flood set record maximum stages and discharges. Discharges at several streamflow-gaging stations had recurrence intervals of more than 100 years. Twenty-two percent of the streamflow-gaging stations in the State recorded significant discharges during this flood.

The duration, magnitude, and the areal extent of the 1973 flood in the Mississippi River Basin was excessive. The flood began in the upper Mississippi River in early March from snowmelt and rainfall. Twelve percent of the streamflow-gaging stations in Missouri recorded significant discharges during this flood. The streamflow-gaging station on the Fox River at Wayland (station 05495000, fig. 47) recorded a maximum discharge of record. The flood on the Mississippi River extended from Wisconsin to Louisiana, with maximum stages occurring during April 1973.

The flood of September to October 1986 was caused by intense rainfall in central and western Missouri. Ten percent of the streamflow-gaging stations in the State had significant discharges.

The location of streamflow-gaging stations in Missouri that had significant floods for 1970–89 is shown in figure 47 by station number. The specific data for each significant flood are listed in table 26. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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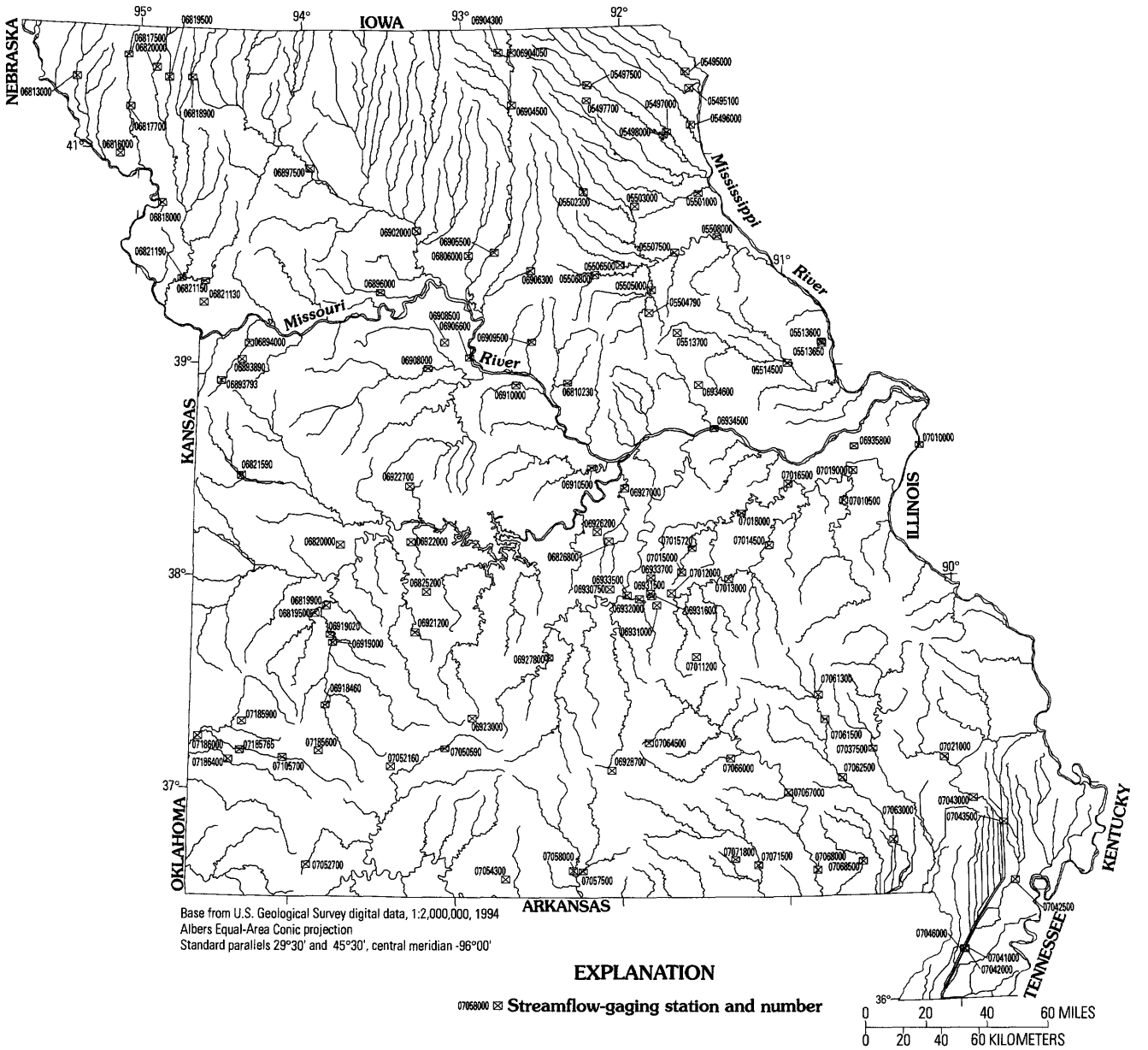

Figure 47. Location of streamflow-gaging stations with significant floods during 1970–89 for Missouri.

Table 26. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Missouri

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 47)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05495000	Fox River at Wayland, MO	400	1922–94	1973	21.71	26,400	4/22/73	21.71	26,400	N	75–100
05495100	Big Branch tributary near Wayland, MO	0.70	1956–82	1973	11.50	941	4/22/73	11.50	941	N	20–30
05496000	Wyaconda River above Canton, MO	393	1922–72, 1976, 1978–92, 1994	1933 1986	30.00 31.33	17,700 17,300	9/22/86	31.33	17,300	N	10
05497000	North Fabius River at Monticello, MO	452	1922–94	1973	33.03	20,700	4/22/73	33.03	20,700	N	15
05497500	Middle Fabius River near Baring, MO	185	1931–82	1973	25.94	12,100	4/22/73 7/05/82	25.94 25.80	12,100 12,000	N N	10 10
05497700	Bridge Creek Branch near Baring, MO	2.38	1955–79	1970	17.30	1,090	8/08/70	17.30	1,090	N	5–10
05498000	Middle Fabius River near Monticello, MO	393	1946–94	1973	27.14	17,700	4/23/73	27.14	17,700	N	15
05501000	North River at Palmyra, MO	373	1935–94	1973	29.70	57,400	4/21/73 12/03/82	29.70 26.11	57,400 34,500	N N	>100 >100
05502300	Salt River at Hagers Grove, MO	365	1975–92, 1994	1983	18.80	22,000	4/03/83	18.80	22,000	N	20–30
05503000	Oak Dale Branch near Emden, MO	2.64	1956–80	1973	10.96	1,740	4/20/73 5/30/74	10.96 9.66	1,740 1,390	N N	25–35 10–20
05504700	Bean Creek near Mexico, MO	3.02	1960–79	1973	14.80	2,960	7/24/73	14.80	2,960	N	>100
05505000	South Fork Salt River at Santa Fe, MO	295	1940–68, 1976–86	1983 1986	21.25 22.00	14,500 14,000	5/02/83 1/20/85	21.25 22.00	14,500 14,000	N N	-- --
05506500	Middle Fork Salt River at Paris, MO	356	1940–94	1973	33.50	45,000	4/21/73	33.50	45,000	N	>100
05506800	Elk Fork Salt River near Madison, MO	200	1967, 1969–71, 1973–94	1973	33.40	42,300	4/21/73	33.40	42,300	N	>100
05507500	Salt River near Monroe City, MO	2,230	1928, 1940–80	1973	39.10	102,000	4/22/73	39.10	102,000	N	>100
05508000	Salt River near New London, MO	2,480	1858, 1922–94	1973	31.80	107,000	4/22/73 7/29/81	31.80 31.09	107,000 74,200	N Y	100 --
05513600	Camp Creek near Elsberry, MO	1.50	1955–79	1977	7.39	3,800	5/07/77	7.39	3,800	N	100
05513650	Hurricane Creek near Elsberry, MO	3.06	1955–79	1978	9.21	2,300	5/12/78	9.21	2,300	N	20–30
05513700	Mams Slough Creek near Wellsville, MO	5.08	1955–57, 1961–79	1974	15.31	1,850	5/30/74	15.31	1,850	N	10–25
05514500	Cuivre River near Troy, MO	903	1922–72, 1974–81, 1983–93	1942	33.40	120,000	12/03/82	31.28	89,200	N	>100
06813000	Tarkio River at Fairfax, MO	508	1922–70, 1972–90	1942	18.91	16,300	8/30/82	24.75	14,300	N	5
06816000	Mill Creek at Oregon, MO	4.90	1950–76	1974	9.10	4,700	5/18/74	9.10	4,700	N	>100
06817500	Nodaway River near Burlington Junction, MO	1,240	1922–83	1974	19.85	46,000	10/11/73	19.85	46,000	N	25
06817700	Nodaway River near Graham, MO	1,380	1983–92, 1994	1989	23.34	26,600	9/10/89	23.34	26,600	N	--

Table 26. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Missouri—Continued

Station number (fig. 47)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06818000	Missouri River at St. Joseph, MO	420,300	1844, 1881, 1903, 1922–68, 1970–92, 1994	1952 1881	26.82 27.20	397,000 370,000	10/13/73 5/27/87	25.63 23.83	200,000 207,000	Y Y	-- --
06818900	Platte River at Ravenwood, MO	486	1922–23, 1929–32, 1959–81, 1983–89	1989	21.50	16,500	8/29/79 9/09/89	21.45 21.50	16,500 16,500	N N	5–10 5–10
06819500	One Hundred and Two River at Maryville, MO	515	1926, 1933–91	1974	19.25	28,000	10/12/73 7/15/86	19.25 17.00	28,000 16,800	N N	25 5
06820000	White Cloud Creek near Maryville, MO	6.06	1949–71, 1973–78	1974	14.58	7,200	10/10/73	14.58	7,200	N	>100
06821130	First Creek near Nashua, MO	0.55	1959–78, 1980	1974	18.84	1,250	5/18/74	18.84	1,250	N	>100
06821150	Little Platte River at Smithville, MO	234	1965–92, 1994	1965	44.80	76,600	8/13/82	36.44	21,000	Y	--
06821190	Platte River at Sharps Station, MO	2,380	1979–90, 1992, 1994	1984	34.55	29,000	6/10/84	34.55	29,000	N	--
06893793	Little Blue River below Longview dam site at Kansas City, MO	50.3	1967–92, 1994	1982	21.24	18,700	8/13/82 9/13/77	21.24 21.07	18,700 18,100	N N	>100 >100
06893890	East Fork Little Blue River near Blue Springs, MO	34.4	1970–92, 1994	1982	22.14	11,000	8/13/82	22.14	11,000	Y	--
06894000	Little Blue River near Lake City, MO	184	1948–92, 1994	1982	27.06	42,300	9/13/77 8/13/82	23.30 27.06	17,000 42,300	N N	40 10
06896000	Wakenda Creek at Carrollton, MO	248	1948–70, 1972–80, 1989	1987	26.60	13,100	10/03/86	26.60	13,100	N	10
06897500	Grand River near Gallatin, MO	2,250	1909, 1922–94	1993	41.50	89,800	10/13/73	33.22	57,400	N	10
06902000	Grand River near Sumner, MO	6,880	1909, 1922–85, 1987–93	1947	39.50	180,000	3/06/79	34.84	119,000	N	--
06904050	Chariton River at Livonia, MO	864	1976–94	1982	28.33	9,200	7/18/82	28.33	9,200	Y	--
06904300	Shoal Creek near Hartford, MO	155	1963–80	1974	22.70	8,100	7/04/74	22.70	8,100	N	--
06904500	Chariton River at Novinger, MO	1,370	1917, 1922–52, 1955–94	1917	28.60	27,000	10/10/85	23.40	18,600	Y	--
06905500	Chariton River near Prairie Hill, MO	1,870	1929–94	1973	21.96	31,900	4/23/73	21.96	31,900	Y	--
06906000	Mussel Fork near Musselfork, MO	267	1949–51, 1963–89	1981	22.47	23,800	4/22/73 6/25/81	22.11 22.47	23,100 23,800	N N	20–30 20–30
06906300	East Fork Little Chariton River near Huntsville, MO	220	1963–92, 1994	1973	20.78	30,000	4/21/73	20.78	30,000	Y	--
06906600	Burge Branch near Arrow Rock, MO	0.33	1960–73	1973	9.27	276	4/20/73	9.27	276	N	10
06908000	Blackwater River at Blue Lick, MO	1,120	1905, 1923–33, 1938–90, 1992	1929 1987	41.25 41.53	54,000 44,800	4/21/73 10/03/86	38.06 41.53	35,300 44,800	N N	25 50

Table 26. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Missouri—Continued

Station number (fig. 47)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06908500	Shiloh Branch near Marshall, MO	2.87	1953–65, 1968–73, 1975–80	1973	10.39	1,160	4/21/73	10.39	1,160	N	5–10
06909500	Moniteau Creek near Fayette, MO	81.0	1944, 1949–80	1973 1944	22.23 22.90	13,700 --	4/20/73	22.23	13,700	N	50–60
06910000	Petite Saline Creek near Booneville, MO	182	1921, 1949–67, 1970	1970	25.16	12,000	5/15/70	25.16	12,000	N	--
06910230	Hinkson Creek at Columbia, MO	70.2	1967–80, 1988–91	1979 1990	19.62 19.77	10,000 9,270	4/11/79	19.62	10,000	N	10–25
06910500	Moreau River near Jefferson City, MO	561	1948–80	1985	30.61	33,000	12/03/82 2/22/85	29.83 30.61	30,000 33,000	N N	15 20
06918460	Turnback Creek above Greenfield, MO	252	1966–94	1987 1993	23.74 26.34	44,000 42,700	10/01/86	23.74	30,500	N N	25–50 100
06919000	Sac River near Stockton, MO	1,160	1896, 1909, 1922–89	1943	31.80	120,000	3/04/75	16.54	9,020	Y	--
06919020	Sac River at Highway J below Stockton, MO	1,292	1974–94	1993	23.71	13,300	2/23/85	23.51	10,100	Y	--
06919500	Cedar Creek near Pleasant View, MO	420	1909, 1923–26, 1943, 1949–94	1958 1909	27.35 27.70	37,000 --	10/01/86	27.28	36,300	N	50
06919900	Sac River near Caplinger Mills, MO	1,810	1975–94	1994	30.95	61,500	10/02/86	30.00	60,000	Y	--
06920800	Big Muddy Creek at Lowry City, MO	0.31	1955–79	1973 1960	9.45 10.08	210 180	4/20/79	9.45	210	N	5
06921200	Lindley Creek near Polk, MO	112	1957–94	1987 1961	23.32 23.60	31,900 28,000	10/01/86	23.32	31,900	N	100
06921590	South Grand River at Archie, MO	256	1970–86	1986	21.25	24,200	9/30/86	21.25	24,200	N	20–30
06922600	Little Turkey Creek tributary near Warsaw, MO	0.18	1959–67, 1969, 1971–79	1972	12.12	230	4/14/72	12.12	230	N	10
06922700	Chub Creek near Lincoln, MO	2.86	1958–79	1973 1978	21.56 22.12	970 920	4/21/73	21.56	970	N	--
06923000	Niangua Branch at Marshfield, MO	0.82	1951–58, 1960–61, 1963–68, 1970, 1972–75, 1977–79	1977	8.76	605	6/20/77	8.76	605	N	10
06925200	Starks Creek at Preston, MO	4.18	1957–80	1977	10.78	2,200	9/26/77	10.78	2,200	N	50
06926200	Van Cleve Branch near Meta, MO	0.75	1957–79	1970	7.85	1,870	4/23/70	7.85	1,870	N	>100
06926800	Long Branch near Vienna, MO	0.32	1957–58, 1960–68, 1970, 1972–79	1975	10.82	450	4/24/75	10.82	450	N	20–30
06927000	Maries River at Westphalia, MO	257	1937, 1948–80	1970	21.31	27,300	6/05/73 12/03/82	20.12 21.31	24,400 27,300	N N	15–20 20–25
06927800	Osage Fork Gasconade River at Drynob, MO	404	1963–80	1979	17.96	21,300	4/12/79	17.96	21,300	N	5–10
06928700	Beeler Branch near Cabool, MO	7.78	1968–79	1972	8.90	4,700	4/15/72	8.90	4,700	N	--

Table 26. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Missouri—Continued

Station number (fig. 47)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06930750	Prewett Hollow near Dixon, MO	0.46	1960–64, 1966–79	1970	16.30	752	6/14/70	16.30	752	N	50–100
06931000	Beaver Creek near Rolla, MO	13.7	1949–58, 1960–79	1979	9.50	12,000	11/24/73 7/28/79	5.95 9.50	5,100 12,000	N N	20–30 >100
06931500	Little Beaver Creek near Rolla, MO	6.41	1945, 1948–79	1958	8.57	7,420	4/11/79	7.65	5,150	N	50–100
06931600	Paulsell Branch near Rolla, MO	2.33	1949–79	1979	7.00	10,000	4/11/79	7.00	10,000	N	>100
06932000	Little Piney Creek at Newburg, MO	200	1915, 1929–94	1946 1915	16.20 16.70	32,500 30,000	2/03/82	16.11	29,300	N	30–35
06933500	Gasconade River at Jerome, MO	2,840	1897, 1904–05, 1915, 1923–92, 1994	1983	31.34	136,000	2/05/82	31.34	136,000	N	50
06933700	Penzer Hollow near Rolla, MO	0.27	1956–58, 1960–70, 1972–79	1970	18.61	280	4/30/70	18.61	280	N	5–10
06934500	Missouri River at Hermann, MO	524,200	1844, 1903, 1929–94	1844 1993	35.50 36.97	892,000 750,000	10/05/86	35.79	549,000	Y	--
06934600	Rumbo Branch at Danville, MO	1.40	1953–79	1970	11.40	1,090	6/13/70	11.40	1,090	N	40–50
06935800	Shotwell Creek at Highway 340 near Ellisville, MO	0.81	1960–79	1970	23.16	1,030	8/09/70	23.16	1,030	N	--
07010000	Mississippi River at St. Louis, MO	97,000	1844, 1861–1987, 1989–94	1844 1993	41.32 49.58	1,300,000 1,070,000	4/28/73 2/07/82	43.23 --	852,000 739,000	Y Y	-- --
07011200	Love Creek near Salem, MO	0.89	1955–58, 1960–66, 1969–70, 1972–82	1979	7.13	365	4/11/79	7.13	365	N	20–30
07012000	Behmke Branch near Rolla, MO	1.05	1949–79	1979	5.59	4,000	2/22/79	5.59	4,000	N	>100
07013000	Meramec River near Steelville, MO	781	1915, 1917–94	1915	26.50	60,000	2/04/82 6/18/85	25.59 26.15	49,300 51,200	N N	15–20 15–20
07014500	Meramec River near Sullivan, MO	1,480	1915, 1922–33, 1944–93	1915	33.50	90,000	12/04/82	32.22	67,700	N	50
07015000	Bourbeuse River near St. James, MO	21.3	1948–80	1979	11.17	8,390	4/11/79	11.17	8,390	N	40–50
07015720	Bourbeuse River near High Gate, MO	135	1965–94	1983	23.65	49,300	4/11/79 12/03/82	21.15 23.65	33,500 49,300	N N	25–50 >100
07016000	Bourbeuse River near Spring Bluff, MO	608	1915, 1944–79	1915	35.70	60,000	4/12/79	32.00	36,000	N	20–30
07016500	Bourbeuse River at Union, MO	808	1897, 1915–94	1983	33.80	73,300	12/05/82	33.80	73,300	N	>100
07018500	Big River at Byrnesville, MO	917	1915, 1923–88, 1990, 1992–94	1915	30.20	80,000	11/21/85	26.47	43,000	N	15–20
07019000	Meramec River near Eureka, MO	3,790	1904–05, 1915–16, 1922–90, 1992–93	1915 1983	40.20 42.89	175,000 145,000	12/06/82	42.89	145,000	N	20–25

Table 26. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Missouri—Continued

Station number (fig. 47)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07021000	Castor River at Zalma, MO	423	1915, 1920–91	1983 1935	29.92 28.20	97,100 40,000	12/04/82 3/31/85	29.92 27.85	97,100 52,600	N N	>100 50–60
07037500	St. Francis River near Patterson, MO	956	1915, 1921–75, 1977–94	1983	35.77	155,000	12/03/82	35.77	155,000	N	>100
07041000	Little River Ditch 81 near Kennett, MO	111	1927–79	1979	10.15	3,280	4/23/73 3/28/75 4/02/79	9.83 9.70 10.15	3,090 3,030 3,280	N N N	10 10 15–20
07042000	Little River Ditch 1 near Kennett, MO	235	1927–79	1973	14.55	7,900	4/23/73 4/03/79	14.55 14.40	7,900 7,700	N N	25 25
07042500	Little River Ditch 251 near Lilbourn, MO	235	1945–91	1975	14.17	6,580	3/29/75 4/02/79	14.17 14.43	6,580 6,090	N N	25–30 20–25
07043000	Castor River at Aquilla, MO	175	1945–80	1977 1964	15.67 15.71	7,510 5,900	3/28/77	15.67	7,510	N	75–100
07043500	Little River Ditch 1 near Morehouse, MO	450	1945–91	1989	19.50	12,200	3/31/85 2/15/89	18.42 19.50	11,200 12,200	N N	75–100 75–100
07046000	Little River Ditch 259 near Kennett, MO	89.0	1927–79	1927	15.57	4,140	4/24/73 3/29/75	11.91 12.05	3,680 3,760	N N	25–30 30–35
07050580	James River near Strafford, MO	165	1974–86	1977	18.90	24,900	9/27/77	18.90	24,900	N	25–50
07052160	Wilsons Creek near Battlefield, MO	55.0	1969–70, 1973–80	1979	14.03	7,240	5/20/79	14.03	7,240	N	--
07052700	Brawley Hollow near Cassville, MO	2.61	1960–79	1975	19.25	960	11/03/74	19.25	960	N	5–10
07054300	Gray Branch at Lutie, MO	0.23	1955–69, 1971, 1973–79	1973	15.42	335	7/24/73	15.42	335	N	10
07057500	North Fork River near Tecumseh, MO	561	1945–94	1986	28.10	133,000	2/23/85 11/19/85	26.28 28.10	108,000 133,000	N N	>100 >100
07058000	Bryant Creek near Tecumseh, MO	570	1945–85	1983	26.74	71,100	3/11/73 12/03/82	21.93 26.74	33,200 71,100	N N	5–10 100
07061300	East Fork Black River at Lesterville, MO	94.5	1961–90	1986	12.53	35,800	11/02/72 11/19/85	11.13 12.53	10,400 35,800	N Y	5 >100
07061500	Black River near Annapolis, MO	484	1939–94	1994	27.38	109,000	11/19/85	25.81	98,500	Y	>100
07062500	Black River at Leeper, MO	987	1904, 1915, 1922–94	1904	22.30	125,000	12/03/82	15.15	40,900	Y	--
07063000	Black River at Poplar Bluff, MO	1,250	1904, 1923–94	1904 1983	-- 21.68	100,000 65,600	3/28/77 12/04/82	20.17 21.68	21,700 65,600	Y Y	-- --
07064500	Big Creek near Yukon, MO	8.36	1950–79	1971	5.54	5,520	10/27/70 4/15/72	5.54 6.38	5,520 5,470	N N	50–100 50–100
07066000	Jacks Fork at Eminence, MO	398	1895, 1904, 1922–94	1994 1895	17.82 25.00	58,500 --	4/30/83 2/23/85 11/19/85	17.03 17.15 17.58	50,300 51,500 55,800	N N N	50–75 50–75 75–100
07067000	Current River at Van Buren, MO	1,670	1904, 1913–91, 1993–94	1915	25.90	125,000	12/03/82	23.89	89,200	N	20–25
07068000	Current River at Doniphan, MO	2,040	1904, 1915, 1919–94	1904 1983	24.90 25.49	130,000 122,000	12/03/82	25.49	122,000	N	40–50
07068500	Little Black River near Fairdealing, MO	187	1940–42, 1955–79	1977	23.63	52,800	3/27/77 12/03/82	23.63 --	52,800 54,200	N N	>100 >100
07071500	Eleven Point River near Bardley, MO	793	1915, 1922–94	1983	21.64	49,800	12/03/82	21.64	49,800	N	50–75

Table 26. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Missouri—Continued

Station number (fig. 47)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07071800	Williams Spring Branch near Alton, MO	4.24	1955–57, 1959–61, 1963–64, 1966, 1968–70, 1972–79	1973	16.21	1,800	5/26/73	16.21	1,800	N	10
07185600	South Fork Stahl Creek near Miller, MO	0.94	1951–52, 1954–61, 1963–79	1973	7.52	1,000	11/01/72	7.52	1,000	N	50–75
07185700	Spring River at Larussell, MO	306	1958–80	1973	17.58	22,500	11/01/72	17.58	22,500	N	10
07185765	Spring River at Carthage, MO	425	1967–80	1973	17.15	24,800	11/01/72	17.15	24,800	N	5–10
07185900	O'Possum Creek at Jasper, MO	9.67	1955–77	1976	15.82	3,290	7/03/76	15.82	3,290	N	25–50
07186000	Spring River near Waco, MO	1,161	1923–94	1993	34.06	151,000	2/24/85 10/02/86	28.80 28.39	69,700 64,800	N N	15–20 15–20
07186400	Center Creek near Carterville, MO	232	1963–81, 1983–91	1976	17.68	36,300	7/03/76	17.68	36,300	N	50–100

[1] Regulated during flood: N, no; Y, yes.

Montana

Hydroclimatology

Montana is located in the northwestern part of the United States, and its climate is controlled by the topographic features in the State. The western and south-central regions of Montana are characterized by rugged mountains and intermontane valleys. The eastern and north-central areas of the State are characterized by plains and small mountains. In the mountainous regions of the State, winter and summer climates are regulated by maritime airmasses that bring moisture from the Pacific Ocean. The climate in the plains region is dominated by dry, polar continental or arctic airmasses in the winter and by moist airmasses from the Gulf of Mexico or the Pacific Ocean during the summer.

Mean annual precipitation ranges from an arid 6 in. in the south-central part of Montana to 100 in. in the mountainous northwest. The majority of precipitation in the mountainous parts of the State falls as snow during the winter. Rain from large-scale frontal systems in May and June together with snowmelt are generally the cause of floods in this region. In the eastern and north-central areas of Montana, spring and summer thunderstorms often produce large floods, particularly on small streams.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Montana depends on drainage area; mean annual precipitation; basin high elevation, which is the percentage of the total basin area above 6,000 ft; and mean basin elevation. The regression equations apply to unregulated streams having drainage areas ranging from 0.04 to 2,554 mi^2 but are not valid where unique topographic or geologic features affect floods (Jennings and others, 1994).

Significant Floods

The most severe and widespread flooding in Montana for 1970–89 occurred in 1975 along the eastern edge of the Rocky Mountains in north-central Montana, in 1978 in the southeastern part of the State, in 1981 in east-central Montana, and in 1986 in the northeastern part of the State. The flooding in 1975 was the result of intense rainfall on already saturated soils combined with high-elevation snowmelt runoff. Flooding throughout the area was generally greater than the 50-year recurrence interval. Intense rainfall in May 1978 produced record flooding on many streams in southeastern Montana. Maximum discharges of record were recorded at 25 streamflow-gaging stations. The floods of May 1981 were the result of large rainfall and snowmelt primarily in small-stream basins in the upper Missouri River Basin in east-central Montana. Flooding in September 1986 in northeastern Montana occurred as a result of excessive rainfall of as much as 10 in. in 18 hours. Many streams in the Milk River Basin had record maximum discharges.

The location of streamflow-gaging stations in Montana that had significant floods for 1970–89 is shown in figure 48 by station number. The specific data for each significant flood are listed in table 27. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

Reference

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

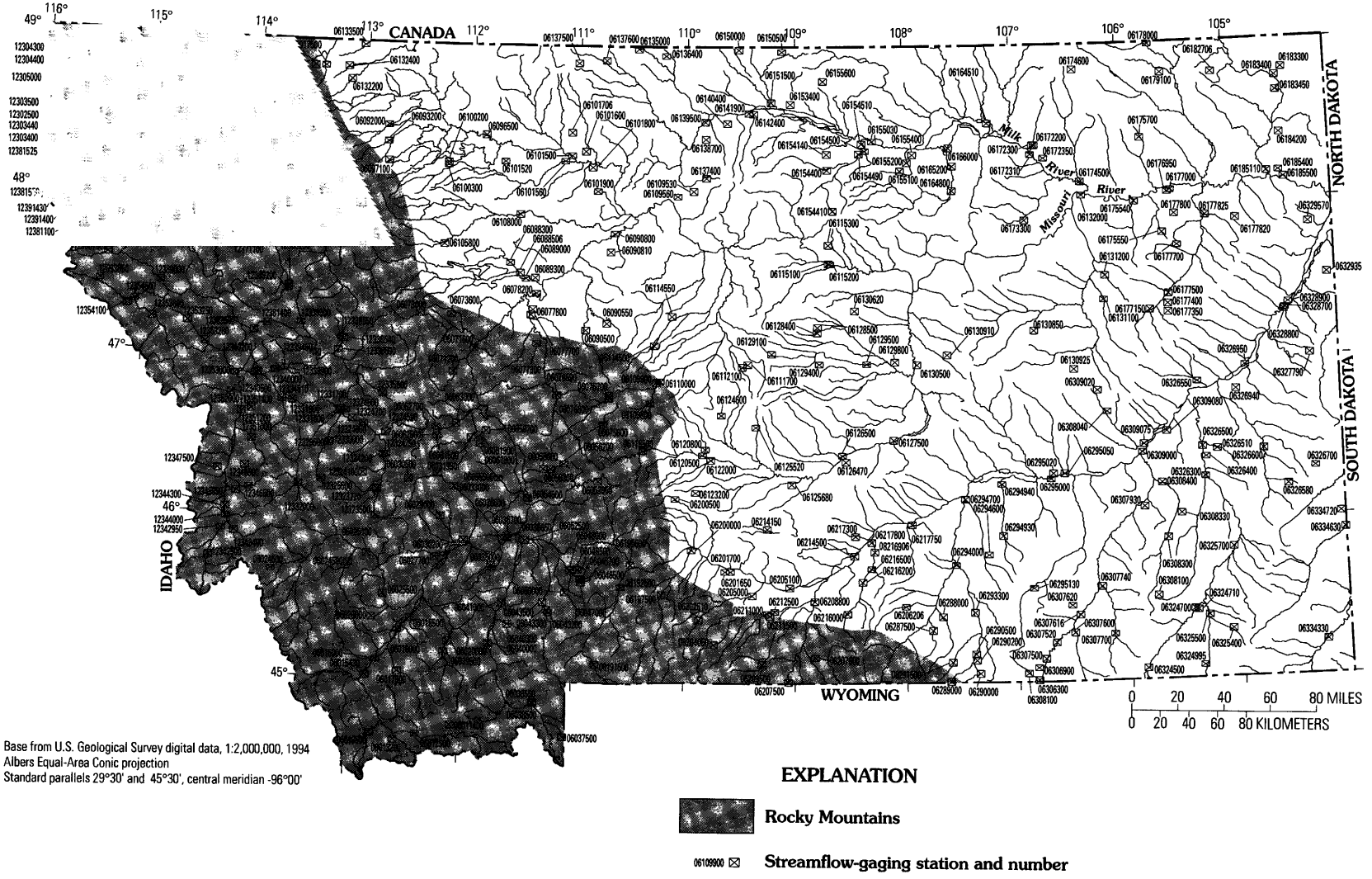

Figure 48. Location of streamflow-gaging stations with significant flooding during 1970–89 for Montana.

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 *in Montana*

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 48)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05014000	Grinnell Creek near Many Glacier, MT	3.32	1950–78	1975	4.90	540	6/19/75	4.90	540	N	50–100
05014500	Swiftcurrent Creek at Many Glacier, MT	31.4	1913–87, 1989–94	1964	10.00	6,700	6/20/75	7.92	3,310	N	50
05016000	Swiftcurrent Creek at Sherburne, MT	64.6	1913–71, 1973–94	1969	7.63	2,420	6/21/75	7.75	2,280	Y	--
05017500	St. Mary River near Babb, MT	276	1902, 1911–25, 1951–94	1964	12.96	16,500	6/21/75	11.65	13,600	Y	--
06011400	Long Creek near Lakeview, MT	36.0	1960–67, 1969, 1984	1984	--	1,850	5/--/84	--	1,850	N	>100
06012500	Red Rock River below Lima Reservoir near Monida, MT	570	1912–18, 1926–69, 1974–82, 1985–94	1933	5.40	2,500	5/30/88	4.00	844	Y	--
06013200	Traux Creek near Lima, MT	4.06	1960–74, 1984	1984	--	40	4/18/84	--	40	N	5–10
06013500	Big Sheep Creek below Muddy Creek near Dell, MT	278	1946–53, 1960–91	1984	7.87	1,400	5/17/84	7.87	1,400	N	>100
06015430	Clark Canyon near Dillon, MT	18.0	1969, 1974–94	1984	7.10	415	5/17/84	7.10	415	N	>100
06016000	Beaverhead River at Barretts, MT	2,737	1908–94	1908	6.10	3,720	6/20/75 6/22/84	3.59 5.04	1,680 3,000	Y Y	-- --
06017500	Blacktail Deer Creek near Dillon, MT	312	1946–53, 1955–66, 1984	1984	4.86	910	5/17/84	4.86	910	N	>100
06018000	Beaverhead River near Dillon, MT	3,484	1951–52, 1964–70, 1972–83	1964	5.52	1,570	5/20/76	4.70	1,050	Y	--
06018500	Beaverhead River near Twin Bridges, MT	3,619	1936–44, 1946–94	1984	7.88	2,200	6/25/84	7.88	2,200	Y	--
06019500	Ruby River above reservoir near Alder, MT	538	1939–94	1984	6.24	3,810	6/10/70 5/16/84	5.62 6.24	1,670 3,810	N N	10–25 >100
06020600	Ruby River below reservoir near Alder, MT	596	1963–94	1984	8.52	3,010	5/16/84 6/10/70	8.52 5.37	3,010 1,610	Y Y	-- --
06024500	Trail Creek near Wisdom, MT	71.4	1948–53, 1967–72	1972	6.64	1,350	6/02/72	6.64	1,350	N	100
06024590	Wise River near Wise River, MT	214	1973–85	1974	8.43	2,730	6/16/74	8.43	2,730	N	25
06025100	Quartz Hill Gulch near Wise River, MT	14.3	1974–94	1980	2.40	102	9/11/80	2.40	102	N	25
06025500	Big Hole River near Melrose, MT	2,476	1924–40, 1942–94	1927 1972	-- 8.04	23,000 14,300	6/10/72	8.04	14,300	N	25
06026000	Birch Creek near Glen, MT	36.0	1946–53, 1955–76	1975	5.21	427	7/05/75	5.21	427	Y	--
06027700	Fish Creek near Silver Star, MT	38.9	1959–91	1978	1.97	250	6/19/75 3/31/78	1.91 1.97	240 250	N N	25 25
06029000	Whitetail Creek near Whitehall, MT	30.8	1950–53, 1955–68, 1981	1981	4.40	142	5/22/81	4.40	142	N	25
06030200	Jefferson River tributary near Whitehall, MT	1.85	1960–75	1975	3.09	107	7/31/75	3.09	107	N	--

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06030500	Boulder River above Rock Creek near Basin, MT	23.9	1947–53, 1955–57, 1975, 1981	1981	5.31	1,020	5/22/81	5.31	1,020	N	100
06031950	Cataract Creek near Basin, MT	30.6	1973–94	1981	6.88	3,150	5/22/81	6.88	3,150	N	>100
06033000	Boulder River near Boulder, MT	381	1929–32, 1934–72, 1975, 1981, 1985–94	1981	12.30	7,000	6/19/75 5/22/81	10.90 12.30	3,500 7,000	N N	25–50 >100
06035000	Willow Creek near Harrison, MT	83.8	1938–94	1963	4.24	813	6/19/75	3.47	566	N	25
06036600	Jefferson River tributary number 4 near Three Forks, MT	0.53	1960–74, 1982–83	1982	7.87	320	6/13/82	7.87	320	N	>100
06036650	Jefferson River near Three Forks, MT	9,532	1979–94	1981	8.06	15,900	5/24/81	8.06	15,900	N	--
06036700	Jefferson River tributary number 5 near Three Forks, MT	3.69	1960–73, 1980, 1982–83	1982	7.21	578	6/13/82	7.21	578	N	--
06037500	Madison River near West Yellowstone, MT	420	1914–17, 1919–73, 1984–86, 1989–94	1986	3.56	2,340	5/31/86	3.56	2,340	N	>100
06038500	Madison River below Hebgen Lake near Grayling, MT	905	1940–67, 1969–94	1959	5.30	10,200	6/10/70	3.76	5,170	Y	--
06038550	Cabin Creek near West Yellowstone, MT	30.3	1974–94	1974	4.00	1,500	-/--/74	4.00	1,500	N	>100
06040000	Madison River near Cameron, MT	1,669	1952–58, 1960–63, 1968–70	1970	5.31	8,830	6/11/70	5.31	8,830	Y	--
06040300	Jack Creek near Ennis, MT	51.5	1974–86, 1991–92	1974	3.97	555	6/14/74	3.97	555	N	25
06041000	Madison River below Ennislake near McAllister, MT	2,186	1943–94	1970	8.01	9,550	6/12/70 6/28/71	8.01 7.92	9,550 8,730	Y Y	-- --
06043200	Squaw Creek near Gallatin Gateway, MT	40.4	1959–75	1970	2.25	690	5/09/70	2.25	690	N	25–50
06043300	Logger Creek near Gallatin Gateway, MT	2.48	1959–94	1981	2.22	92	5/22/81 5/14/84	2.22 1.20	92 47	N N	>100 10–25
06043500	Gallatin River near Gallatin Gateway, MT	825	1890–94, 1931–81, 1985–94	1974	7.38	9,100	6/09/70 6/27/71 6/17/74	6.48 6.49 7.38	7,600 7,610 9,100	N N N	10 10 50
06046500	Rocky Creek near Bozeman, MT	50.5	1952–53, 1959–91	1971	3.11	1,230	4/24/71 5/22/81	3.11 4.90	1,230 1,140	N N	50–100 50
06046700	Pitcher Creek near Bozeman, MT	2.33	1960–75, 1981	1981	4.45	142	5/22/81	4.45	142	N	50–100
06047000	Bear Canyon near Bozeman, MT	17.0	1952–53, 1959–73, 1975, 1981	1981	--	489	5/22/81	--	489	N	25–50
06048000	East Gallatin River at Bozeman, MT	148	1940–61, 1981	1981	--	2,460	5/22/81	--	2,460	N	>100
06048500	Bridger Creek near Bozeman, MT	62.5	1946–69, 1971–72, 1981, 1987	1981	7.11	1,140	5/22/81	7.11	1,140	N	50–100

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06050000	Hyalite Creek at Hyalite River South near Bozeman, MT	48.2	1898–99, 1902, 1935–94	1898	--	956	5/22/81	3.70	948	Y	--
06052500	Gallatin River at Logan, MT	1,795	1895–1900, 1902–05, 1929–33, 1935–94	1899	--	9,840	6/10/70 6/28/71 6/18/74	9.03 8.74 9.02	9,390 8,480 9,170	N N N	25–50 10–25 25
06053050	Lost Creek near Ringling, MT	9.59	1974–94	1974	3.46	297	1/16/74	3.46	297	N	10–25
06054500	Missouri River at Toston, MT	14,669	1890, 1910–16, 1941–94	1948	11.77	32,000	6/10/70	11.16	28,200	N	10
06055500	Crow Creek near Radersburg, MT	76.6	1901, 1920–29, 1966–72, 1975, 1981, 1989–90	1981	8.14	3,640	5/22/81	8.14	3,640	N	>100
06056200	Castle Creek tributary near Ringling, MT	2.51	1960–74, 1981, 1989–90	1970	3.70	47	5/19/70	3.70	47	N	10–25
06056300	Cabin Creek near Townsend, MT	11.8	1960–94	1960	2.00	70	5/17/75	1.66	50	N	10
06056600	Deep Creek below North Fork Deep Creek near Townsend, MT	87.7	1959–73, 1975, 1981, 1989–90	1981	5.10	740	5/22/81	5.10	740	N	50–100
06058700	Mitchell Gulch near East Helena, MT	8.09	1959–94	1986	1.76	195	9/07/73 2/25/86	0.51 1.76	139 195	N N	10–25 25
06061500	Prickly Pear Creek near Clancy, MT	192	1911–16, 1923–33, 1946–53, 1955–69, 1975, 1979–94	1981	8.82	2,300	6/19/75 5/22/81	6.56 8.82	1,200 2,300	N N	50 >100
06061800	Crystal Creek near East Helena, MT	3.77	1961–75, 1981, 1989–90	1975	3.33	80	6/19/75	3.33	80	N	25
06061900	McClellan Creek near East Helena, MT	33.2	1960–75, 1981, 1989–90	1981	--	1,730	5/22/81	--	1,730	N	>100
06062500	Tenmile Creek near Rimini, MT	32.7	1915–94	1981	6.20	3,290	6/19/75 5/22/81	4.89 6.20	995 3,290	N N	10–25 >100
06062700	Little Porcupine Creek tributary near Helena, MT	0.39	1959–73, 1981, 1989	1981	--	20	5/22/81	--	20	N	25–50
06063000	Tenmile Creek near Helena, MT	102	1909–54, 1975, 1981	1981	--	3,770	6/19/75 5/22/81	-- --	1,360 3,770	N N	25 >100
06071200	Lyons Creek near Wolf Creek, MT	29.9	1959–73, 1975	1975	4.16	580	5/07/75	4.16	580	N	10–25
06071600	Wegner Creek at Craig, MT	35.7	1960–91	1966	4.64	1,020	5/07/75	3.15	640	N	10–25
06073000	Dearborn River near Clemons, MT	123	1921–23, 1929–53, 1964, 1975	1964	9.15	17,400	6/19/75	--	17,000	N	>100
06073600	Black Rock Creek near Augusta, MT	5.54	1974–94	1989	8.71	555	3/13/89	8.71	555	N	10–25
06075600	Fivemile Creek near White Sulphur Springs, MT	6.42	1960–74	1970	3.36	52	5/04/70	3.36	52	N	25

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06076690	Smith River near Fort Logan, MT	846	1978–87, 1989–94	1981	7.80	4,600	5/22/81	7.80	4,600	N	10
06076700	Sheep Creek near Neihart, MT	5.22	1960–91	1965	2.40	138	6/12/70	2.30	132	N	10–25
06076800	Nugget Creek near Neihart, MT	1.50	1959–73	1970	1.94	37	5/30/70	1.94	37	N	25–50
06077300	Trout Creek near Eden, MT	13.2	1974–84	1975	4.70	430	6/30/75	4.70	430	N	25
06077700	Smith River tributary near Eden, MT	1.44	1960–73, 1975	1975	--	80	5/07/75	--	80	N	25–50
06077800	Goodman Coulee near Eden, MT	22.1	1959–82	1975	7.43	1,340	5/07/75	7.43	1,340	N	50
06078200	Missouri River near Ulm, MT	20,941	1948, 1953, 1958–94	1953	17.00	35,000	5/24/81	14.99	28,500	Y	5
06088300	Muddy Creek near Vaughn, MT	282	1968–87	1981	14.72	3,560	5/22/81	14.72	3,560	N	--
06088500	Muddy Creek at Vaughn, MT	391	1925, 1934–37, 1939–68, 1971–90, 1992–94	1953	16.70	7,600	5/07/75 5/22/81	11.88 12.78	3,830 3,910	N N	25–50 25–50
06089000	Sun River near Vaughn, MT	1,854	1934–94	1964	23.40	53,500	6/03/72 6/20/75	-- 22.28	10,000 32,600	Y Y	5 >100
06089300	Sun River tributary near Great Falls, MT	21.1	1956–73, 1975, 1979–80	1980	6.50	690	6/25/80	6.50	690	N	10–25
06090500	Belt Creek near Monarch, MT	368	1952–82	1953	10.12	11,000	5/22/81	10.32	8,270	N	25–50
06090550	Little Otter Creek near Raynesford, MT	39.5	1974–94	1975	8.90	245	5/08/75	8.90	245	N	10–25
06090800	Missouri River at Fort Benton, MT	24,749	1891–99, 1901–83, 1985–94	1908	--	140,000	6/21/75	11.85	62,000	Y	25
06090810	Ninemile Coulee near Fort Benton, MT	16.90	1972–73, 1975–90	1979	9.58	2,110	3/07/79	9.58	2,110	N	25
06092000	Two Medicine River near Browning, MT	317	1907, 1909–12, 1914–24, 1951–77	1964	13.50	100,000	6/20/75	14.10	74,500	N	>100
06093200	Badger Creek below Four Horns Canal near Browning, MT	152	1974–91, 1993–94	1975	13.58	20,700	6/19/75	13.58	20,700	N	>100
06097100	Blacktail Creek near Heart Butte, MT	16.4	1975–91	1975	5.93	1,390	6/19/75	5.93	1,390	N	25
06099500	Marias River near Shelby, MT	3,242	1902–04, 1906–07, 1911–26, 1928–46, 1948–91, 1993–94	1964	23.64	241,000	6/20/75	18.21	75,700	N	>100
06100200	Heines Coulee tributary near Valier, MT	0.60	1960–75, 1986	1975	15.02	249	6/30/75	15.02	249	N	25–50
06100300	Lone Man Coulee near Valier, MT	14.1	1960–94	1975	6.02	5,440	6/30/75	6.02	5,440	N	50–100
06101500	Marias River near Chester, MT	4,927	1921, 1946, 1956–94	1964	10.63	10,400	6/24/75	7.83	5,840	Y	--

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06101520	Favot Coulee tributary near Ledger, MT	0.86	1974–94	1981	5.31	92	5/21/81	5.31	92	N	5–10
06101560	Pondera Coulee near Chester, MT	598	1964, 1976–78, 1980–85	1978	13.30	3,580	3/26/78	13.30	3,580	N	--
06101600	Marias River tributary number 3 near Chester, MT	0.26	1962–76, 1978	1978	3.87	38	3/18/78	3.87	38	N	10–25
06101700	Fey Coulee tributary near Chester, MT	2.47	1963–91	1974	6.20	675	8/11/74	6.20	675	N	25–50
06101800	Sixmile Coulee near Chester, MT	30.3	1963–77, 1979, 1986	1986	10.70	1,000	2/26/86	10.70	1,000	N	50–100
06101900	Dead Indian Coulee near Fort Benton, MT	2.73	1963–77, 1986	1986	6.75	403	2/26/86	6.75	403	N	10–25
06105800	Bruce Coulee tributary near Choteau, MT	1.70	1963–94	1972	5.06	390	6/09/72 9/18/86	5.06 2.73	390 284	N N	10–25 10–25
06108000	Teton River near Dutton, MT	1,307	1955–78, 1980–94	1964	20.48	71,300	6/20/75	14.80	16,000	N	25–50
06109530	Little Sandy Creek tributary near Virgelle, MT	0.80	1972, 1974–94	1972	4.10	47	--/--/72	4.10	47	N	50
06109560	Alkali Coulee tributary near Virgelle, MT	0.96	1974–94	1976 1994	2.03 3.39	112 41	3/18/76	2.03	112	N	25–50
06109800	South Fork Judith River near Utica, MT	58.7	1959–79	1979	7.70	1,950	6/19/79	7.70	1,950	N	25–50
06109900	Judith River tributary near Utica, MT	7.15	1960–74	1974 1969	2.21 4.69	125 20	1/15/74	2.21	125	N	10
06110000	Judith River near Utica, MT	328	1920–32, 1934–75	1975	6.52	1,750	6/20/75	6.52	1,750	N	>100
06111700	Mill Creek near Lewistown, MT	3.14	1960–91	1975	7.25	87	5/06/75	7.25	87	N	25
06112100	Cottonwood Creek near Moore, MT	47.9	1958–73, 1975, 1978	1975	8.92	1,740	5/06/75	8.92	1,740	N	10–25
06114500	Wolf Creek near Stanford, MT	112	1950–53, 1955–58, 1960–62, 1975, 1978	1975	5.25	990	5/--/75	5.25	990	N	>100
06114550	Wolf Creek tributary near Coffee Creek, MT	1.73	1974–94	1978	5.55	780	7/04/78	5.55	780	N	25–50
06115100	Missouri River tributary near Landusky, MT	3.39	1962–77, 1986	1972	5.20	1,950	6/09/72	5.20	1,950	N	25–50
06115200	Missouri River near Landusky, MT	40,987	1934–94	1953	--	137,000	3/25/78	34.17	108,000	Y	50
06115300	Duval Creek near Landusky, MT	3.31	1963–94	1991	13.83	660	9/25/86	13.34	640	N	25–50
06118500	South Fork Musselshell River above Martinsdale, MT	287	1942–79	1975	7.27	5,240	6/19/75 6/19/79	7.27 7.26	5,240 5,150	N N	>100 >100
06120500	Musselshell River at Harlowton, MT	1,125	1909–94	1975	10.01	7,270	6/20/75 6/20/79	10.01 9.14	7,270 4,680	N N	>100 25–50
06120800	Alkali Creek near Harlowton, MT	21.2	1956–91	1976	6.50	5,390	6/22/76	6.50	5,390	N	50–100
06122000	American Fork below Lebo Creek near Harlowton, MT	166	1947–67, 1975	1975	6.34	2,050	6/19/75	6.34	2,050	N	50–100

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06123200	Sadie Creek near Harlowton, MT	2.07	1971, 1973–94	1971	5.69	204	--/--/71	5.69	204	N	25
06124600	East Fork Roberts Creek tributary near Judith Gap, MT	0.74	1974–94	1974	3.89	82	--/--/74	3.89	82	N	10
06125520	Swimming Woman Creek tributary near Living Springs, MT	1.27	1974–94	1986	9.95	403	8/31/86	9.95	403	N	--
06125680	Big Coulee Creek tributary near Cushman, MT	2.41	1974–94	1986	10.35	460	6/06/86	10.35	460	N	50
06126470	Halfbreed Creek near Klein, MT	53.2	1978–91	1986	8.69	630	7/16/86	8.69	630	N	25–50
06126500	Musselshell River near Roundup, MT	4,023	1946–48, 1950–71, 1973–94	1967 1975	12.45 12.89	9,610 7,240	6/22/75	12.89	7,240	N	25
06127500	Musselshell River at Musselshell, MT	4,568	1929–30, 1932, 1946–79, 1983–94	1967 1979	11.57 12.96	9,850 3,800	3/24/78	11.18	8,040	N	25–50
06128400	South Fork Bear Creek near Roy, MT	39.6	1962–76	1975	5.66	2,200	7/01/75	5.66	2,200	N	25–50
06128500	South Fork Bear Creek tributary near Roy, MT	5.40	1962–94	1992	5.96	235	6/06/86	5.28	190	N	10–25
06129100	North Fork McDonald Creek tributary near Heath, MT	2.24	1960–75	1975	2.20	60	5/06/75	2.20	60	N	25
06129400	South Fork McDonald Creek tributary near Grassrange, MT	0.51	1963–77	1975	4.75	141	5/--/75	4.75	141	N	50–100
06129500	McDonald Creek at Winnett, MT	421	1931–32, 1934–45, 1953–73, 1975	1975	10.31	1,590	1/--/75	10.31	1,590	N	25–50
06129800	Gorman Coulee tributary near Cat Creek, MT	0.81	1955–94	1972	5.80	380	6/09/72	5.80	380	N	10–25
06130500	Musselshell River at Mosby, MT	7,846	1929, 1931–32, 1934–46, 1948–94	1944	--	18,000	3/27/78	14.10	16,100	N	10–25
06130610	Bair Coulee near Mosby, MT	1.79	1974–94	1974 1993	4.60 8.67	420 208	10/--/74	4.60	420	N	10–25
06130620	Blood Creek tributary near Valentine, MT	1.97	1974–94	1975	7.15	533	6/20/75	7.15	533	N	50–100
06130850	Second Creek tributary number 2 near Jordan, MT	2.08	1958–90	1964	8.40	760	8/14/72	5.06	270	N	10–25
06130925	Thompson Creek tributary near Cohagen, MT	1.23	1974–94	1976	6.21	510	8/09/76	6.21	510	N	25–50
06131100	Terry Coulee near Van Norman, MT	0.48	1974–94	1986	5.80	158	6/29/86	5.80	158	N	10–25
06131200	Nelson Creek near Van Norman, MT	100	1976–85, 1991	1978	9.30	1,750	7/04/78	9.30	1,750	N	10–25
06132000	Missouri River below Fort Peck Dam, MT	57,556	1934–94	1946	--	51,000	7/07/75	--	35,400	Y	--
06132200	South Fork Milk River near Babb, MT	70.4	1961–94	1964	6.61	12,000	6/20/75	6.78	10,000	N	>100

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06132400	Dry Fork Milk River near Babb, MT	17.9	1962–91	1986	7.45	2,640	6/20/75	5.55	2,200	N	25
							2/24/86	7.45	2,640	N	25–50
06133500	North Fork Milk River above St. Mary Canal near Browning, MT	60.2	1911–12, 1924, 1926–27, 1937, 1941–42, 1944–45, 1948, 1950–51, 1953–94	1967	7.95	3,090	2/24/86	8.24	2,500	N	25–50
06135000	Milk River at eastern crossing of international boundary, MT	2,506	1910–11, 1913–15, 1917, 1919–94	1986	11.40	12,000	2/27/86	11.40	12,000	N	50–100
06136400	Spring Coulee tributary near Simpson, MT	2.49	1972, 1974–94	1972	4.12	35	--/--/72	4.12	35	N	--
06137400	Big Sandy Creek at reservoir boundary near Rocky Boy, MT	24.7	1982–94	1986	4.84	371	5/23/86	4.84	371	N	--
06137580	Sage Creek near Whitlash, MT	7.26	1977–82, 1985–90	1982	3.04	100	8/10/82	3.04	100	N	--
06137600	Sage Creek tributary number 2 near Joplin, MT	2.21	1974–94	1975	3.52	67	6/19/75	3.52	67	N	10–25
06138700	South Fork Spring Coulee near Havre, MT	6.47	1960–94	1966	4.42	190	2/20/82	4.70	145	N	10–25
06139500	Big Sandy Creek near Havre, MT	1,805	1946–53, 1955–67, 1969, 1978, 1984–94	1978	15.15	6,000	3/30/78	15.15	6,000	N	25
06140400	Bullhook Creek near Havre, MT	39.6	1960–71, 1973–75, 1986	1971	6.04	700	1/20/71	6.04	700	N	10–25
06141900	Milk River tributary near Lohman, MT	0.11	1960–74	1972	5.33	72	6/09/72	5.33	72	N	25–50
06142400	Clear Creek near Chinook, MT	135	1984–94	1986	8.21	571	9/25/86	8.21	571	N	--
06150000	Woodpile Coulee near international boundary, MT	60.2	1927–30, 1932–47, 1950–63, 1965–71, 1974–76, 1986	1986	--	7,280	9/25/86	--	7,280	N	>100
06150500	East Fork Battle Creek near international boundary, MT	89.5	1927–33, 1935–63, 1965–67, 1969, 1971, 1974–76, 1986	1986	11.23	2,780	9/25/86	11.23	2,780	N	50
06151500	Battle Creek near Chinook, MT	1,623	1905–14, 1917–21, 1952, 1984, 1986–94	1986	22.91	19,400	9/26/86	22.91	19,400	N	>100
06153400	Fifteenmile Creek tributary near Zurich, MT	1.60	1974–94	1986	18.36	1,250	9/25/86	18.36	1,250	N	>100
06154140	Fifteenmile Creek tributary near Harlem, MT	2.31	1983–92	1986	3.61	180	2/25/86	3.61	180	N	---

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06154400	Peoples Creek near Hays, MT	220	1967–94	1972	15.03	8,460	6/08/72	15.03	8,460	N	50–100
06154410	Little Peoples Creek near Hays, MT	13.0	1973–94	1974	4.57	576	5/25/74	4.57	576	N	25–50
06154490	Willow Coulee near Dodson, MT	5.16	1983–92	1986	7.84	2,310	9/25/86	7.84	2,310	N	--
06154500	Peoples Creek near Dodson, MT	670	1952–66, 1968–73, 1982–88	1986	15.67	7,590	9/25/86	15.67	7,590	N	50–100
06154510	Kuhr Coulee tributary near Dodson, MT	1.25	1983–94	1986	15.82	436	9/25/86	15.82	436	N	--
06155030	Milk River near Dodson, MT	11,192	1983–94	1986	29.79	13,200	9/26/86	29.79	13,200	N	--
06155100	Black Coulee near Malta, MT	7.03	1956–67, 1986	1986	5.53	2,350	9/25/86	5.53	2,350	N	>100
06155200	Alkali Creek near Malta, MT	162	1956–59, 1961–73, 1986	1986 1967	-- 4.43	22,900 --	9/25/86	--	22,900	N	>100
06155400	Taylor Coulee near Malta, MT	3.89	1956–73, 1986	1986	3.88	220	6/29/86	3.88	220	N	10–25
06155600	Murphy Coulee tributary near Hogeland, MT	2.62	1974–94	1974	6.28	403	10/--/74	6.28	403	N	10–25
06164510	Milk River at Juneberg Bridge near Saco, MT	17,670	1978–94	1978 1987	24.20 24.45	12,400 11,400	4/03/78 --/--/87	24.20 24.45	12,400 11,400	N N	-- --
06164800	Beaver Creek above Dix Creek near Malta, MT	929	1967–69, 1974, 1976–82, 1986	1986	22.75	26,500	9/25/86	22.75	26,500	N	>100
06165200	Guston Coulee near Malta, MT	2.06	1974–94	1989	3.02	48	3/10/89	3.02	48	N	25
06166000	Beaver Creek below Guston Coulee near Saco, MT	1,208	1982–87, 1989–93	1986	14.68	23,500	9/26/86	14.68	23,500	N	>100
06172200	Buggy Creek near Tampico, MT	105	1958–67, 1972, 1982	1972	8.30	7,660	6/09/72	8.30	7,660	N	25
06172300	Unger Creek near Vandalia, MT	11.1	1958–94	1972	6.31	4,460	6/09/72 7/05/79	6.31 5.92	4,460 3,450	N N	50–100 50
06172310	Milk River at Tampico, MT	21,078	1974–77, 1988–94	1991	25.40	7,240	5/26/74	23.65	8,210	N	--
06172350	Mooney Coulee near Tampico, MT	14.3	1961–75, 1982	1982	2.63	450	5/28/82	2.63	450	N	10–25
06173300	Willow Creek tributary near Fort Peck, MT	0.86	1972, 1974–91	1972	9.38	940	10/--/72	9.38	940	N	50
06174500	Milk River at Nashua, MT	22,332	1940–94	1952	31.38	45,300	4/05/78	28.93	18,900	N	5–10
06174600	Snow Coulee at Opheim, MT	3.11	1972, 1974–94	1972 1978	4.56 5.11	245 170	--/--/72 --/--/78	4.56 5.11	245 170	N N	10–25 10
06175540	Prairie Elk Creek near Oswego, MT	352	1976–85	1984	6.41	3,080	6/20/84	6.41	3,080	N	10–25
06175550	East Fork Sand Creek near Vida, MT	8.51	1963–77	1972	5.96	1,220	8/21/72	5.96	1,220	N	25–50
06175700	East Fork Wolf Creek near Lustre, MT	9.61	1956–94	1970	6.42	2,230	6/30/70	6.42	2,230	N	>100
06176950	Missouri River number 6 near Wolf Point, MT	0.53	1973–91	1983	11.65	74	7/10/83	11.65	74	N	25

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06177000	Missouri River near Wolf Point, MT	82,290	1929–94	1939	14.40	66,800	7/12/75	10.91	38,800	Y	--
06177150	Redwater River at Brockway, MT	216	1957–73, 1986	1986	8.78	3,550	6/29/86	8.78	3,550	N	25–50
06177350	South Fork Dry Ash Creek near Circle, MT	5.74	1955–60, 1962–72, 1986	1986	--	350	7/05/86	--	350	N	>100
06177400	McCune Creek near Circle, MT	29.9	1955–58, 1960–73, 1982–86	1986	--	4,870	6/29/86	--	4,870	N	>100
06177500	Redwater River at Circle, MT	547	1929–30, 1932–72, 1975–93, 1995	1986	12.85	6,960	6/29/86	12.85	6,960	N	25
06177700	Cow Creek tributary near Vida, MT	1.71	1963–94	1991	4.95	1,500	2/26/86	4.37	950	N	25–50
06177800	Gady Coulee near Vida, MT	0.91	1962–91	1962	8.58	1,250	7/10/83	7.12	1,040	N	25
06177820	Horse Creek tributary near Richey, MT	0.63	1974–94	1989	6.16	148	3/10/89	6.16	148	N	10–25
06177825	Redwater River near Vida, MT	1,974	1976–85	1979	8.82	8,230	4/10/79	8.82	8,230	N	10
06178000	Poplar River at international boundary, MT	362	1931, 1933–94	1954	10.25	12,700	4/23/75	9.38	8,520	N	25–50
06179100	Butte Creek tributary near Four Buttes, MT	1.60	1972, 1974–94	1975	7.60	609	7/01/75	7.60	609	N	25–50
06182700	Middle Fork Big Muddy Creek near Flaxville, MT	3.12	1972, 1974–83	1976	3.89	200	3/18/76	3.89	200	N	10
06183300	Marron Creek tributary near Plentywood, MT	6.08	1955–94	1979	5.84	524	4/15/79	5.84	524	N	>100
06183400	Spring Creek at highway near Plentywood, MT	16.9	1956–73, 1976	1976	3.80	690	6/11/76	3.80	690	N	5–10
06183450	Big Muddy Creek near Antelope, MT	967	1979–94	1982	17.37	2,890	4/14/82	17.37	2,890	N	10–25
06184200	Lost Creek tributary near Homestead, MT	1.90	1972, 1974–94	1976	12.60	1,260	6/11/76	12.60	1,260	N	50–100
06185110	Big Muddy Creek near mouth near Culbertson, MT	2,684	1982–92	1982	10.40	1,860	4/16/82	10.40	1,860	N	--
06185400	Missouri River tributary number 5 at Culbertson, MT	3.67	1963–94	1976	10.52	1,320	6/11/76	10.52	1,320	N	50–100
06185500	Missouri River near Culbertson, MT	91,557	1942–51, 1959–94	1943	15.12	78,200	4/18/79	--	52,000	Y	--
06191500	Yellowstone River at Corwin Springs, MT	2,623	1890–93, 1911–94	1918	11.50	32,000	6/17/74	10.71	30,900	N	50
06192500	Yellowstone River near Livingston, MT	3,551	1897–1905, 1929–32, 1938–94	1974	9.21	36,300	6/23/71 6/17/74	8.45 9.21	29,200 36,300	N N	25–50 50–100
06195600	Shields River near Livingston, MT	852	1979–94	1979	6.80	5,600	6/20/79	6.80	5,600	N	--

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06197500	Boulder River near Contact, MT	226	1910–16, 1929, 1951–69, 1971–75, 1982–83	1975	7.48	6,800	6/18/74 6/19/75	6.96 7.48	6,130 6,800	N N	25–50 100
06200000	Boulder River at Big Timber, MT	523	1947–53, 1955–94	1956	7.84	9,840	7/05/75	7.89	9,450	N	50
06200500	Sweet Grass Creek above Melville, MT	54.4	1914–24, 1937–69, 1971	1971	6.69	3,510	8/30/71	6.69	3,510	N	>100
06201650	Work Creek near Reed Point, MT	32.5	1959–73, 1978	1978	6.30	3,200	5/18/78	6.30	3,200	N	50
06201700	Hump Creek near Reed Point, MT	7.61	1960–94	1962	2.96	307	5/07/75	2.96	307	N	10–25
06202510	Stillwater River above Nye Creek near Nye, MT	193	1980–91	1983	7.60	6,400	7/10/83	7.60	6,400	N	--
06204050	West Rosebud Creek near Roscoe, MT	52.1	1966–94	1975	4.71	1,630	7/10/83 7/06/75	4.68 4.71	1,570 1,630	N N	10–25 10–25
06205000	Stillwater River near Absarokee, MT	975	1911–14, 1935–94	1967	7.17	12,000	6/28/70	6.69	10,300	N	10–25
06205100	Allen Creek near Park City, MT	7.17	1961–94	1961	5.68	1,580	7/10/87	3.72	462	N	10
06207500	Clarks Fork Yellowstone River near Belfry, MT	1,154	1922–94	1981	9.97	14,800	6/17/74 7/06/75 6/09/81	8.27 8.77 9.97	10,500 12,700 14,800	N N N	10 50 >100
06207600	Jack Creek tributary near Belfry, MT	0.85	1975–91	1979	5.21	90	4/07/79	5.21	90	N	10–25
06208800	Clarks Fork Yellowstone River near Silesia, MT	2,093	1970–86	1981	8.36	13,500	6/10/81	8.36	13,500	N	--
06209500	Rock Creek near Red Lodge, MT	124	1932, 1934–82, 1985–86	1957 1937	4.78 4.80	3,110 1,930	7/02/75	4.59	2,060	N	10
06211000	Red Lodge Creek above Cooney Reservoir near Boyd, MT	143	1937–94	1967	7.00	2,260	5/18/78	6.59	2,050	N	10–25
06211500	Willow Creek near Boyd, MT	53.3	1937–72, 1974–94	1967	7.08	1,720	5/12/75 5/19/78	7.01 6.65	1,540 1,520	N N	25–50 25–50
06212500	Red Lodge Creek below Cooney Reservoir near Boyd, MT	210	1938–94	1967	10.17	3,470	5/08/88	6.91	1,590	Y	--
06214150	Mills Creek at Rapelje, MT	3.32	1974–94	1988	8.53	77	5/07/88	8.53	77	N	25
06214500	Yellowstone River at Billings, MT	11,795	1904–05, 1918, 1929–94	1918	--	78,100	6/19/74 7/07/75	14.60 13.48	69,500 67,600	N N	25–50 25–50
06216000	Pryor Creek at Pryor, MT	117	1922–24, 1967–71, 1973–94	1978	8.88	2,280	5/19/78 5/07/88	8.88 8.17	2,280 1,720	N N	>100 50–100
06216200	West Wets Creek near Billings, MT	8.80	1955–94	1964	6.90	565	5/19/78	6.81	545	N	25–50
06216500	Pryor Creek near Billings, MT	440	1912–24, 1938–53, 1955–73, 1978	1978	18.90	14,900	5/19/78	18.90	14,900	N	>100
06216900	Pryor Creek near Huntley, MT	582	1978–94	1978	--	17,500	5/18/78	--	17,500	N	--

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06217000	Pryor Creek at Huntley, MT	606	1905–06, 1908, 1910–15, 1978	1978	-- 7.80	18,200 1,750	5/18/78	--	18,200	N	--
06217300	Twelvemile Creek near Shepherd, MT	9.05	1973–94	1978	3.04	250	5/18/78	3.04	250	N	10–25
06217750	Fly Creek at Pompeys Pillar, MT	285	1969–81	1978	15.94	10,300	5/19/78	15.94	10,300	N	>100
06287500	Soap Creek near St. Xavier, MT	98.3	1939–53, 1963, 1968–72, 1978	1978	16.95	7,810	5/19/78	16.95	7,810	N	>100
06288000	Rotten Grass Creek near St. Xavier, MT	147	1914–17, 1968–72, 1978	1978	13.60	9,740	5/19/78	13.60	9,740	N	>100
06288200	Beauvais Creek near St. Xavier, MT	100	1968–78	1978	9.54	7,350	5/19/78	9.54	7,350	N	>100
06289000	Little Bighorn River at State line near Wyola, MT	193	1939–94	1944	4.87	2,730	6/25/75	4.36	2,030	N	10–25
06290000	Pass Creek near Wyola, MT	111	1935–49, 1951–56, 1978, 1983–94	1978	10.90	5,560	5/19/78	10.90	5,560	N	>100
06290200	Little Bighorn River tributary near Wyola, MT	4.43	1973–86	1977	3.79	226	6/10/77	3.79	226	N	10–25
06290500	Little Bighorn River below Pass Creek near Wyola, MT	428	1939–58, 1960–75, 1977–94	1978	10.02	8,010	5/19/78	10.02	8,010	N	>100
06291500	Lodge Grass Creek above Willow Creek Diversion near Wyola, MT	80.7	1939–74, 1978, 1983–94	1964	6.14 6.20	1,130 --	5/19/78	6.27	990	N	25
06293300	Long Otter Creek near Lodge Grass, MT	11.7	1973–94	1978	8.04	298	5/19/78	8.04	298	N	10–25
06294000	Little Bighorn River near Hardin, MT	1,294	1953–94	1978	11.20	22,600	5/19/78	11.20	22,600	N	>100
06294600	East Cabin Creek tributary near Hardin, MT	8.63	1973–94	1975	3.38	171	3/03/75	3.38	171	N	10–25
06294700	Bighorn River at Bighorn, MT	22,885	1945–81	1978	14.15	59,200	5/20/78	14.15	59,200	Y	--
06294930	Sarpy Creek tributary near Colstrip, MT	4.44	1972–94	1978	4.84	590	3/18/78	4.84	590	N	>100
06294940	Sarpy Creek near Hysham, MT	453	1974–84	1975	12.43	428	3/04/75	12.43	428	N	5–10
06295000	Yellowstone River at Forsyth, MT	40,339	1921–23, 1978–94	1978	14.53	109,800	5/21/78	14.53	109,800	N	--
06295020	Short Creek near Forsyth, MT	3.23	1962–94	1991	14.86	2,790	9/19/85	6.95	1,000	N	10–25
06295050	Little Porcupine Creek near Forsyth, MT	614	1958–73, 1975, 1978, 1986, 1993	1986	13.16	13,000	9/25/86	13.16	13,000	N	100
06295130	Rosebud Creek tributary near Busby, MT	1.14	1963–77	1975	1.56	11	3/03/75	1.56	11	N	--
06306100	Squirrel Creek near Decker, MT	33.6	1976–85	1978	7.27	584	5/18/78	7.27	584	N	50–100

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06306300	Tongue River at State line near Decker, MT	1,477	1961–94	1978	14.25	17,500	5/19/78	14.25	17,500	N	>100
06306900	Spring Creek near Decker, MT	34.7	1958–86	1971	6.50	1,400	2/14/71	6.50	1,400	N	25–50
06307500	Tongue River at Tongue River Dam near Decker, MT	1,770	1939–94	1978	10.00	10,800	5/28/84 5/20/78	5.13 10.00	2,950 10,800	Y Y	-- --
06307520	Canyon Creek near Birney, MT	50.2	1972–91	1982	5.56	2,490	7/25/82	5.56	2,490	N	25–50
06307600	Hanging Woman Creek near Birney, MT	470	1974–84, 1986–94	1978	11.56	2,060	5/19/78	11.56	2,060	N	10–25
06307616	Tongue River at Birney Day School Brook near Birney, MT	2,621	1980–94	1984	6.43	4,520	6/14/84	6.43	4,520	N	--
06307620	Tie Creek near Birney, MT	18.7	1973–84, 1991	1979	2.41	60	7/24/79	2.41	60	N	--
06307700	Cow Creek near Fort Howes Ranger Station near Otter, MT	8.37	1972–94	1984	2.72	200	6/09/84	2.72	200	N	25–50
06307740	Otter Creek at Ashland, MT	707	1973–85, 1988–94	1978	8.65	425	3/21/78	8.65	425	N	25
06307930	Jack Creek near Volborg, MT	5.47	1973–94	1978	5.62	448	5/18/78	5.62	448	N	10–25
06308100	Sixmile Creek tributary near Epsie, MT	0.80	1972–91	1972	7.82	290	10/--/72	7.82	290	N	10–25
06308300	Basin Creek near Volborg, MT	11.1	1955–73	1971	5.86	990	6/16/71	5.86	990	N	10–25
06308330	Deer Creek tributary near Volborg, MT	1.65	1973–94	1973	11.55	1,170	--/--/73	11.55	1,170	N	50–100
06308400	Pumpkin Creek near Miles City, MT	697	1973–78, 1980–85	1975	12.27	2,890	5/06/75	12.27	2,890	N	10–25
06309000	Yellowstone River at Miles City, MT	48,253	1923, 1929–94	1978	16.50	102,000	7/08/75 5/22/78	13.33 16.50	70,100 102,000	N Y	25 100
06309020	Rock Springs Creek tributary at Rock Springs, MT	0.96	1963–78, 1987	1987	4.97	66	5/28/87	4.97	66	N	--
06309040	Dry House Creek near Angela, MT	38.6	1963–77, 1987	1987	6.73	1,560	5/28/87	6.73	1,560	N	10–25
06309075	Sunday Creek near Miles City, MT	714	1975–84	1975	13.30	6,760	5/07/75	13.30	6,760	N	10–25
06309080	Deep Creek near Kinsey, MT	11.5	1962–94	1991	23.14	3,490	6/09/72	16.78	2,430	N	25–50
06324500	Powder River at Moorhead, MT	8,088	1923, 1929–72, 1975–94	1923	19.00	100,000	5/20/78	15.24	33,000	N	50
06324700	Sand Creek near Broadus, MT	10.2	1955–84	1972	5.39	715	6/09/72	5.39	715	N	50–100
06324710	Powder River at Broadus, MT	8,748	1976–92	1978	12.96	30,000	5/21/78	12.96	30,000	N	50
06324995	Badger Creek at Biddle, MT	6.06	1972–94	1982	24.00	2,530	7/25/82	24.00	2,530	N	50–100
06325400	East Fork Little Powder River tributary near Hammond, MT	3.45	1974–84	1976	6.18	155	6/23/76	6.18	155	N	10

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06325500	Little Powder River near Broadus, MT	1,974	1947–53, 1956–72, 1978	1978	9.85	3,160	5/20/78	9.85	3,160	N	25–50
06325700	Deep Creek near Powderville, MT	3.00	1973–94	1973	16.91	480	10/--/73	16.91	480	N	50–100
06326300	Mizpah Creek near Mizpah, MT	797	1975–86	1986	9.59	2,270	9/25/86	9.59	2,270	N	10–25
06326400	Meyers Creek near Locate, MT	9.42	1962–76, 1982	1982	10.54	2,230	6/29/82	10.54	2,230	N	50–100
06326500	Powder River near Locate, MT	13,189	1938–94	1943	11.23	31,000	3/22/78	11.59	30,000	N	50
06326510	Locate Creek tributary near Locate, MT	0.91	1973–91	1978	6.00	130	7/19/78	6.00	130	N	10–25
06326550	Cherry Creek tributary near Terry, MT	2.52	1973–91	1978	4.97	466	5/30/78	4.97	466	N	50–100
06326580	Lame Jones Creek tributary near Willard, MT	0.51	1974–94	1974	4.76	28	10/--/74	4.76	28	N	25–50
06326600	O'Fallon Creek near Ismay, MT	669	1962–92	1976	9.50	4,700	3/06/72 7/03/76	8.87 9.50	4,100 4,700	N N	10–25 10–25
06326700	Deep Creek near Baker, MT	3.79	1962–76, 1978	1978	4.55	260	10/--/78	4.55	260	N	25–50
06326940	Spring Creek tributary near Fallon, MT	3.10	1972–94	1972	8.93	303	10/--/72	8.93	303	N	25
06326950	Yellowstone River tributary number 5 near Marsh, MT	0.87	1962–94	1974	9.64	267	7/03/74 6/14/77	9.64 7.92	267 202	N N	10–25 10–25
06327790	Krug Creek tributary number 2 near Wibaux, MT	0.44	1974–94	1986	4.58	77	2/26/86	4.58	77	N	>100
06328700	Linden Creek at Intake, MT	4.20	1958–73, 1980	1980	4.80	160	6/13/80	4.80	160	N	>100
06328800	Indian Creek at Intake, MT	0.46	1958–73	1972	3.90	150	6/09/72	3.90	150	N	25
06328900	War Dance Creek near Intake, MT	3.69	1958–73, 1980	1980	4.04	240	6/13/80	4.04	240	N	50–100
06329350	Alkali Creek near Sidney, MT	0.49	1974–94	1986	11.60	305	7/17/86	11.60	305	N	>100
06329570	First Hay Creek near Sidney, MT	29.1	1963–94	1979	3.50	950	6/14/76 4/18/79	2.93 3.50	700 950	N N	10–25 25–50
06334330	Little Missouri River tributary near Albion, MT	1.49	1972–94	1984	5.56	90	7/07/84	5.56	90	N	50
06334630	Box Elder Creek at Webster, MT	1,092	1960–73, 1975	1975	16.93	23,000	5/06/75	16.93	23,000	N	>100
06334720	Soda Creek tributary near Webster, MT	2.22	1962–91	1986	7.67	250	2/25/86	7.67	250	N	50–100
12300400	Cayuse Creek near Trego, MT	5.29	1972–84	1974	2.55	187	1/15/74	2.55	187	N	50
12300800	Deep Creek near Fortine, MT	18.9	1959–91	1964	4.90	310	5/25/72	4.31	210	N	10–25
12301810	Big Creek near Rexford, MT	137	1973–82	1976	6.78	2,680	5/11/76	6.78	2,680	N	5–10
12301933	Kootenai River below Libby Dam near Libby, MT	8,985	1972–82, 1984–94	1974	27.50	47,200	8/05/74	27.50	47,200	Y	--

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12301993	Wolf Creek tributary near Libby, MT	2.76	1974–84	1982	0.88	33	5/18/82	0.88	33	N	25
12301997	Richards Creek near Libby, MT	9.50	1973–91	1985	1.30	100	6/07/85	1.30	100	N	10–25
12302000	Fisher River near Jennings, MT	780	1948, 1951–69, 1974	1974	--	8,700	1/16/74	--	8,700	N	--
12302055	Fisher River near Libby, MT	838	1948, 1969–94	1974	9.29	8,720	1/16/74	9.29	8,720	N	>100
12302400	Shaughnessy Creek near Libby, MT	1.16	1959–91	1974	--	200	1/15/74 2/27/80	-- 3.68	200 96	N N	>100 50
12302500	Granite Creek near Libby, MT	23.6	1933, 1937–44, 1948, 1959–69, 1974	1974	6.30	2,000	1/15/74	6.30	2,000	N	>100
12303100	Flower Creek near Libby, MT	11.1	1960–92	1974	5.53	709	1/16/74 6/21/84	5.53 4.07	709 495	N N	>100 25
12303400	Ross Creek near Troy, MT	23.8	1972–91	1981	8.01	3,820	2/27/80	8.01	3,820	N	100
12303440	Camp Creek near Troy, MT	11.3	1972–91	1972	3.87	980	10/--/72	3.87	980	N	>100
12303500	Lake Creek at Troy, MT	210	1945–57, 1974, 1983–94	1974	8.30	7,000	1/15/74	8.30	7,000	N	>100
12304120	Zulu Creek near Yaak, MT	5.27	1972–84	1972	2.56	190	10/--/72	2.56	190	N	100
12304250	Whitetail Creek near Yaak, MT	2.48	1960–74	1974	2.10	100	1/15/74	2.10	100	N	50–100
12304300	Cyclone Creek near Yaak, MT	5.73	1960–91	1991	1.75	485	1/15/74	3.68	350	N	>100
12304400	Fourth of July Creek near Yaak, MT	7.84	1960–74	1974	5.01	400	1/15/74	5.01	400	N	100
12305000	Kootenai River at Leonia, ID	11,740	1928–94	1948	--	123,000	1/16/74	24.15	62,000	Y	--
12323500	German Gulch Creek near Ramsay, MT	40.6	1955–69, 1975	1975	4.04	692	6/19/75	4.04	692	N	>100
12323770	Warm Springs Creek at Warm Springs, MT	163	1984–94	1984	4.61	462	6/21/84	4.61	462	N	--
12324100	Racetrack Creek below Granite Creek near Anaconda, MT	39.5	1958–73, 1975	1975	5.66	580	6/19/75	5.66	580	N	10–25
12324200	Clark Fork at Deer Lodge, MT	1,005	1979–94	1981	5.35	2,500	5/23/81	5.35	2,500	N	<2
12324250	Cottonwood Creek at Deer Lodge, MT	45.4	1964, 1975–91	1981	9.75	1,820	5/22/81	9.75	1,820	N	50
12324590	Little Blackfoot River near Garrison, MT	398	1973–94	1981	8.79	8,650	5/22/81	8.79	8,650	N	>100
12324680	Clark Fork at Goldcreek, MT	1,704	1978–94	1981	11.17	12,000	5/22/81	11.17	12,000	N	--
12324700	Clark Fork tributary near Drummond, MT	4.61	1958–94	1986	3.04	280	1/05/84 2/24/86	2.78 3.04	213 280	N N	10–25 25–50
12324800	Morris Creek near Drummond, MT	12.6	1960–74, 1980	1980	2.16	40	5/25/80	2.16	40	N	--
12325500	Flint Creek near Southern Cross, MT	52.6	1941–82, 1984–94	1942	1.86	174	6/29/70 6/19/80	1.95 2.60	156 172	Y Y	-- --

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12329500	Flint Creek at Maxville, MT	208	1942–94	1943	6.79	1,680	2/24/86	6.54	900	Y	--
12330000	Boulder Creek at Maxville, MT	71.3	1940–94	1975	4.55	1,460	6/19/75	4.55	1,460	N	>100
12331600	Clark Fork at Drummond, MT	2,378	1967, 1973–83	1981	12.44	15,800	5/23/81	12.44	15,800	N	25–50
12331700	Edwards Gulch at Drummond, MT	4.69	1960–62, 1974–91	1974	10.60	318	6/20/74	10.60	318	N	50–100
12331900	Clark Fork near Clinton, MT	2,629	1980–90, 1992–94	1981	10.90	16,000	5/24/81	10.90	16,000	N	--
12332000	Middle Fork Rock Creek near Philipsburg, MT	123	1938–94	1974	5.58	1,680	6/02/72 6/16/74	5.23 5.58	1,590 1,680	N N	25 25–50
12334510	Rock Creek near Clinton, MT	885	1972–94	1972	8.50	6,500	6/01/72	8.50	6,500	N	10–25
12335500	Nevada Creek above reservoir near Finn, MT	116	1940–94	1953	--	1,800	5/22/81	5.45	1,750	N	10–25
12338540	Monture Creek above Dunham Creek near Ovando, MT	64.7	1978–91	1978	2.94	1,140	6/08/78	2.94	1,140	N	--
12338550	Dunham Creek at mouth near Ovando, MT	31.7	1978–91	1982	1.96	900	6/13/82	1.96	900	N	--
12338690	Monture Creek near Ovando, MT	140	1974–83	1974	4.18	2,120	6/16/74	4.18	2,120	N	10–25
12339300	Deer Creek near Seeley Lake, MT	19.8	1974–91	1975	3.15	425	5/16/75	3.15	425	N	25
12339450	Clearwater River near Clearwater, MT	345	1975–92	1975	7.85	2,900	5/17/75	7.85	2,900	N	50
12339900	West Twin Creek near Bonner, MT	7.33	1959–91	1982	1.54	370	5/18/82 2/26/86	1.54 2.40	370 330	N N	50–100 25–50
12340000	Blackfoot River near Bonner, MT	2,290	1899–1901, 1903–05, 1940–72, 1974–94	1964	10.89	19,200	6/20/75	10.74	18,100	N	25–50
12340200	Marshall Creek near Missoula, MT	5.63	1959–73, 1980	1980 1964	0.84 1.05	60 50	5/25/80	0.84	60	N	50
12340500	Clark Fork above Missoula, MT	5,999	1908, 1930–94	1908	--	48,000	6/21/75	13.75	32,300	N	25–50
12342500	West Fork Bitterroot River near Conner, MT	317	1941–94	1947	6.18	4,060	5/13/71	5.16	2,780	N	5
12342950	Trapper Creek near Conner, MT	28.5	1974–91	1974	4.37	1,800	6/17/74	4.37	1,800	N	50–100
12343400	East Fork Bitterroot River near Conner, MT	381	1956–72	1972	7.17	4,000	6/02/72	7.17	4,000	N	25
12344000	Bitterroot River near Darby, MT	1,049	1938–94	1947	8.18	11,500	6/03/72 6/17/74	7.83 8.42	10,500 11,100	N N	10–25 25
12344300	Burke Gulch near Darby, MT	6.50	1958–82	1971	1.66	25	5/05/71	1.66	25	N	--
12345850	Sleeping Child Creek near Hamilton, MT	65.2	1972–91	1972	6.25	1,500	6/--/72	6.25	1,500	N	100
12346500	Skalkaho Creek near Hamilton, MT	87.8	1948–54, 1958–79	1972	4.84	1,210	6/01/72	4.84	1,210	N	100
12347500	Blodgett Creek near Corvallis, MT	25.9	1947–69, 1972	1972	6.50	1,170	6/01/72	6.50	1,170	N	>100

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12348500	Willow Creek near Corvallis, MT	21.9	1920–22, 1958–73	1972	2.31	170	6/02/72	2.31	170	N	25
12351000	Burnt Fork Bitterroot River near Stevensville, MT	73.2	1920, 1922–24, 1938–73	1967	5.82	1,100	6/01/72	4.62	730	Y	25
12351200	Bitterroot River near Florence, MT	2,354	1958–66, 1972, 1974, 1982	1974	11.20	28,400	6/20/74	11.20	28,400	N	100
12351400	Eightmile Creek near Florence, MT	19.5	1958–73	1964 1970	3.60 4.25	104 104	6/05/70	4.25	104	N	25
12352000	Lolo Creek above Sleeman Creek near Lolo, MT	250	1951–60, 1972, 1974	1972	6.54	2,660	6/--/72	6.54	2,660	N	100
12353000	Clark Fork below Missoula, MT	9,003	1930–94	1948	12.08	52,800	6/21/75 6/03/72	11.67 11.71	49,200 52,200	N Y	10–25 25
12353250	Ninemile Creek near Alberton, MT	50.2	1972, 1974–82	1972	4.36	1,280	10/--/72	4.36	1,280	N	25–50
12353280	Ninemile Creek near Huson, MT	170	1974–83	1974	--	1,700	1/16/74	--	1,700	N	10–25
12353800	Thompson Creek near Superior, MT	12.2	1961–79, 1982	1974	3.52	230	1/16/74	3.52	230	N	50
12353850	East Fork Timber Creek near Haugan, MT	2.72	1961–75, 1979	1979	2.31	112	10/--/79	2.31	112	N	100
12354100	North Fork Little Joe Creek near St. Regis, MT	14.7	1960–74	1972	2.31	295	5/14/72	2.31	295	N	25
12354500	Clark Fork at St. Regis, MT	10,709	1911–23, 1929–94	1948	19.96	68,900	6/03/72 6/18/74	19.50 19.39	63,900 63,100	N Y	10–25 10–25
12355500	North Fall Flathead River near Columbia Falls, MT	1,548	1911–17, 1929–94	1964	18.60	69,100	6/02/72 6/18/74	12.00 12.58	31,400 34,300	N N	10–25 25
12356000	Skyland Creek near Essex, MT	8.37	1946–52, 1954, 1959–75	1975	8.40	3,820	6/19/75	8.40	3,820	N	>100
12358500	Middle Fork Flathead River near West Glacier, MT	1,128	1940–94	1964	36.46	140,000	6/20/75	19.42	63,600	N	50–100
12363000	Flathead River at Columbia Falls, MT	4,464	1894, 1922–23, 1928–94	1964	25.58	176,000	6/20/75	16.85	77,600	Y	--
12363900	Rock Creek near Olney, MT	3.61	1961–75	1974	1.40	40	6/20/74	1.40	40	N	25
12363920	Stillwater River at Olney, MT	146	1973–82	1974	4.42	1,740	6/18/74	4.42	1,740	N	50
12369200	Swan River near Condon, MT	69.1	1973–92	1974	4.88	1,540	6/18/74	4.88	1,540	N	50
12369250	Holland Creek near Condon, MT	22.3	1974–91	1974	2.73	385	10/--/74	2.73	385	N	25
12370000	Swan River near Bigfork, MT	671	1922–94	1974	7.34	8,890	6/20/74	7.34	8,890	N	50–100
12370500	Dayton Creek near Proctor, MT	18.5	1959–91	1965	5.09	131	3/31/78	3.21	102	N	10–25
12370900	Teepee Creek near Polson, MT	2.18	1960–74, 1980, 1983–87	1980	4.07	66	5/25/80	4.07	66	N	50

Table 27. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Montana—Continued

Station number (fig. 48)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12371100	Hell Roaring Creek near Polson, MT	6.22	1917–32, 1948, 1959–67, 1980	1980	2.28	160	5/25/80	2.28	160	N	50
12381400	South Fork Jocko River near Arlee, MT	56.0	1983–94	1989	3.54	596	5/10/89	3.54	596	N	--
12383500	Big Knife Creek near Arlee, MT	6.88	1982–94	1982	--	100	5/26/82	--	100	N	--
12389000	Clark Fork near Plains, MT	19,958	1912–94	1948	19.17	134,000	5/31/71	14.78	89,600	N	2–5
12389150	McGregor Creek tributary near Marion, MT	2.55	1972–82	1972	2.60	80	10/--/72	2.60	80	N	50–100
12390700	Prospect Creek at Thompson Falls, MT	182	1956–80, 1982–94	1974	9.86	5,490	1/16/74	9.86	5,490	N	>100
12391100	White Pine Creek near Trout Creek, MT	8.75	1974–84	1981	5.44	781	2/26/80	5.44	781	N	>100
12391200	Canyon Creek near Trout Creek, MT	8.64	1972, 1974–91	1974	2.70	250	5/09/74	2.70	250	N	10–25
12391400	Clark Fork below Noxon Rapids Dam near Noxon, MT	21,833	1960–72, 1974–94	1964	--	124,900	6/22/75	--	106,000	Y	--
12391430	Skeleton Creek, Noxon, MT	2.10	1973–84	1974	1.94	46	1/17/74	1.94	46	N	25
12391525	Snake Creek near Noxon, MT	3.11	1972–84	1972	3.87	126	10/--/72	3.87	126	N	10–25
12391550	Bull River near Noxon, MT	139	1973–82	1974	9.73	3,890	1/16/74	9.73	3,890	N	10–25

[1]Regulated during flood: N, no; Y, yes.

Nebraska

Hydroclimatology

Nebraska is located in the continent's interior, and the climate is considered subhumid continental. Nebraska's climate is defined by hot summers, cold winters, and large variations in temperature and precipitation from year to year. Frequent changes in weather from day to day are typical of Nebraska's climate.

The principal source of moisture is the Gulf of Mexico. The Pacific Ocean supplies a smaller percentage of moisture because the Rocky Mountains to the west deplete the Pacific airmasses of their moisture. Throughout the year precipitation occurs along frontal systems moving across the plains. Mean annual precipitation ranges from about 14 in. in the western part of the State to about 35 in. in the southeastern part (National Oceanic and Atmospheric Administration, 1986).

Most floods in Nebraska are a result of intense summer thunderstorms associated with frontal systems or squall lines. The extent of these floods is limited to the range of the thunderstorms and to the area downstream from these storms. Snowmelt and ice jams also contribute to floods in Nebraska.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, factors affecting the magnitude of maximum discharges for streams in Nebraska are total drainage area, contributing-drainage area, mean annual precipitation, main-stream length, main-stream slope, normal daily maximum March temperature, mean minimum January temperature, and 50-year, 24-hour rainfall (Jennings and others, 1994).

Significant Floods

Greater-than-normal precipitation throughout the spring and early summer of 1984 produced saturated soils. Rain from a series of thunderstorms from June 11 to June 15 fell on these already saturated soils and caused flooding in eastern Nebraska. Ten percent of the streamflow-gaging stations in the State recorded significant discharges. Damages were estimated at $79 million (Paulson and others, 1991).

Many of the floods in Nebraska, especially those along the North Platte, South Platte, and Platte Rivers, are caused by the melting of the snowpack in the Rocky Mountains. This was the case in the flood of June 1983. Twelve percent of the streamflow-gaging stations in the State recorded significant discharges.

The location of streamflow-gaging stations in Nebraska that had significant floods for 1970–89 is depicted in figure 49 by station number. The specific data for each significant flood are listed in table 28. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

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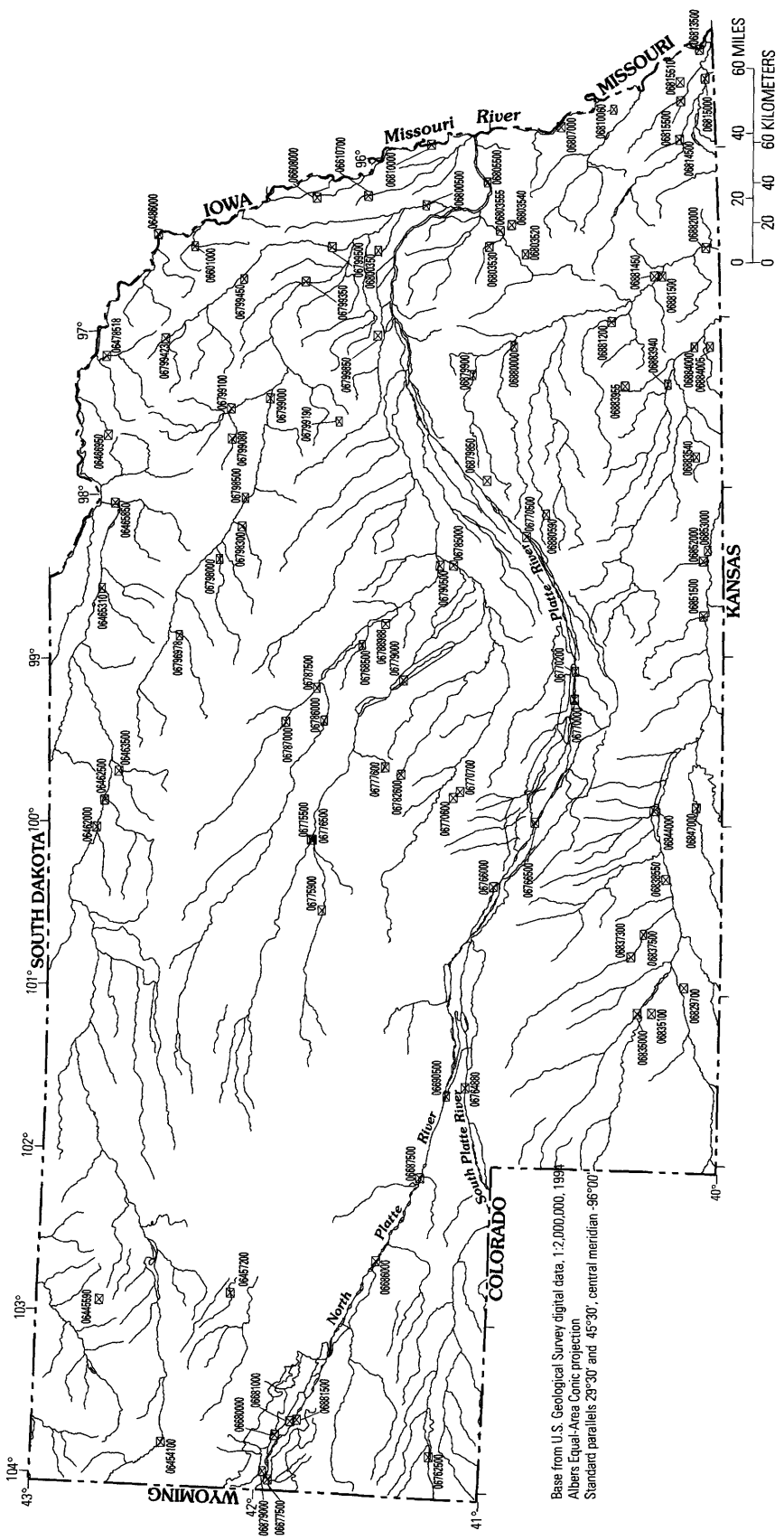

Figure 49. Location of streamflow-gaging stations with significant floods during 1970–89 for Nebraska.

Table 28. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Nebraska

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig. 49)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06445590	Big Bordeaux Creek near Chadron, NE	9.42	1969–79	1977	12.00	5,670	5/06/77	12.00	5,670	N	--
06454100	Niobrara River at Agate, NE	840	1958–92	1959 1991	5.00 6.09	181 93	3/14/71	4.50	141	Y	15–20
06457200	Berea Creek near Alliance, NE	32.3	1953–78	1977 1978	13.55 13.90	130 125	5/26/77	13.55	130	N	10–20
06462000	Niobrara River near Norden, NE	8,390	1953–83, 1986	1983	8.79	9,600	6/17/83	8.79	9,600	Y	25–75
06462500	Plum Creek at Meadville, NE	600	1948–75, 1977–94	1967 1984	4.98 5.38	2,070 1,240	6/30/83	4.38	1,520	N	15–30
06463500	Long Pine Creek near Riverview, NE	458	1949–53, 1955–96	1962	15.68	9,650	7/09/77	10.18	6,100	N	25–40
06465310	Eagle Creek near Redbird, NE	206	1979–91	1981 1986	8.55 9.22	3,300 3,000	8/05/81	8.55	3,300	N	10–25
06465850	Bingham Creek near Niobrara, NE	6.50	1968–78	1973	12.47	150	7/24/73	12.47	150	N	10–25
06466950	Weigand Creek near Crofton, NE	3.50	1968–78	1970	15.09	928	5/11/70	15.09	928	N	--
06478518	Bow Creek near St. James, NE	304	1979–93	1984	13.23	21,400	6/21/84	13.23	21,400	N	15–40
06486000	Missouri River at Sioux City, IA	318,559	1929–96	1952 1971	24.28 30.65	441,000 80,000	2/19/71	30.65	80,000	Y	15
06601000	Omaha Creek at Homer, NE	168	1940, 1946–96	1940	32.50	51,000	2/19/71	26.47	18,100	N	20–35
06608000	Tekamah Creek at Tekamah, NE	23.0	1950–89	1963	16.62	6,180	4/28/75	16.51	6,110	N	10–20
06610000	Missouri River at Omaha, NE	326,759	1929–96	1952 1993	46.20 30.26	396,000 115,000	6/27/84	29.02	116,000	Y	15–20
06610700	Big Papillion Creek near Orum, NE	8.52	1968–78	1971	15.46	800	3/06/71	15.46	800	N	5–15
06677500	Horse Creek near Lyman, NE	1,570	1931–94	1967 1979	-- 9.52	5,110 4,210	7/27/79 5/24/80	9.52 8.42	4,210 3,080	Y Y	30–70 20–30
06678000	Sheep Creek near Morrill, NE	362	1933–93	1978	6.62	516	7/21/78 8/05/87	6.62 6.30	516 497	Y Y	50–65 30–50
06680000	Tub Springs near Scottsbluff, NE	67.1	1949–79	1952 1955	-- 6.80	1,610 1,180	6/21/77	6.75	1,260	Y	15–30
06681000	Winters Creek near Scottsbluff, NE	92.3	1932–79	1977 1957	8.07 8.95	1,160 1,090	6/21/77	8.07	1,160	Y	30–50
06681500	Gering Drain near Gering, NE	79.8	1933–45, 1949–93	1958 1992	-- 12.12	9,560 3,860	6/27/83 6/13/86	7.65 6.70	8,500 6,710	N N	25–30 15–20
06686000	North Platte River at Lisco, NE	26,700	1916–17, 1932–94	1917 1971	-- 5.05	20,100 13,200	6/03/71	5.05	13,200	Y	30–40
06687500	North Platte River at Lewellen, NE	28,600	1941–91	1971 1984	-- 7.65	13,500 9,770	6/04/71 5/27/73 6/19/84	-- -- 7.65	13,500 9,770 9,770	Y Y Y	50–100 15–30 15–30
06690500	North Platte River near Keystone, NE	29,400	1917, 1942–94	1917 1983	-- 7.57	20,300 9,470	6/10/71 8/10/83	7.25 7.57	8,850 9,470	Y Y	>25 >50
06762500	Lodgepole Creek at Bushnell, NE	1,350	1932–91	1950 1981	9.98 10.06	16,500 9,390	7/06/78 7/02/81	7.61 10.06	5,270 9,390	Y Y	15–25 30–40
06764880	South Platte River at Roscoe, NE	23,900	1983–96	1983	9.31	14,700	7/02/83	9.31	14,700	Y	5–20

Table 28. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Nebraska—Continued

Station number (fig. 49)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06766000	Platte River at Brady, NE (total flow)	56,200	1938–93	1983 1938	-- --	23,500 6,800	5/14/73 6/29/83	-- --	18,600 23,500	Y Y	20–30 40–60
06766500	Platte River near Cozad, NE (total flow)	56,500	1938, 1940–92	1983 1938	-- --	21,500 7,200	5/29/73 6/29/83	-- --	18,400 21,500	Y Y	25 35–55
06770000	Platte River near Odessa, NE	58,100	1937–93	1983	5.82	22,900	5/31/73 6/29/83	5.42 5.82	18,500 22,900	Y Y	20–30 40–60
06770200	Platte River near Kearney, NE	58,420	1982–96	1983	7.42	23,700	6/29/83	7.42	23,700	Y	>15
06770500	Platte River near Grand Island, NE	58,800	1934–96	1935	5.99	30,000	6/30/83	5.97	23,900	Y	35
06770600	Wood River tributary near Lodi, NE	2.02	1952–78	1972	13.20	100	7/26/72	13.20	100	N	15–30
06770700	Wood River near Lodi, NE	12.9	1952–78	1978	13.03	194	7/22/78	13.03	194	N	10–20
06775500	Middle Loup River at Dunning, NE	1,830	1946–96	1989 1991	3.55 4.23	2,160 879	4/20/71 3/08/89	2.50 3.55	1,020 2,160	N N	<20 >25
06775900	Dismal River near Thedford, NE	966	1967–96	1983 1988	3.83 4.50	1,160 1,090	8/23/83	3.83	1,160	N	>30
06776500	Dismal River at Dunning, NE	2,040	1932, 1946–95	1983 1953	2.40 3.76	1,290 550	8/25/77 6/13/83	2.06 2.40	1,170 1,290	N N	>25 >50
06777600	Lillian Creek tributary near Broken Bow, NE	2.02	1952–78	1962	12.51	20	8/11/78	12.35	20	N	20–30
06779000	Middle Loup River at Arcadia, NE	5,040	1938–94	1947 1960	6.24 6.41	18,500 5,000	6/27/83	4.67	7,700	Y	15–20
06782600	South Branch Mud Creek tributary near Broken Bow, NE	0.40	1951–78	1972 1978	13.33 13.83	218 50	7/20/72	13.33	218	N	15–30
06785000	Middle Loup River at St. Paul, NE	8,090	1895–99, 1903, 1929–96	1947 1978	-- 12.21	72,000 23,000	6/12/84	6.46	29,100	Y	25–40
06786000	North Loup River at Taylor, NE	2,350	1937–96	1983 1978	5.94 7.17	3,210 2,220	5/07/77 6/27/83	5.98 5.94	2,870 3,210	Y Y	20–25 30–40
06787000	Calamus River near Harrop, NE	693	1978–96	1983	3.36	801	6/30/83	3.36	801	N	5–10
06787500	Calamus River near Burwell, NE	994	1941–95	1964 1993	4.35 5.13	1,790 933	8/22/84	4.78	1,410	Y	>15
06788500	North Loup River at Ord, NE	3,760	1937–38, 1952–94	1962	5.52	10,100	8/05/81	5.41	8,110	Y	>20
06788988	Mira Creek near North Loup, NE	65.8	1980–93	1981	10.56	3,460	8/05/81	10.56	3,460	N	10–20
06790500	North Loup River near St. Paul, NE	4,290	1896–97, 1899, 1903, 1929–96	1896 1966	-- 9.36	90,000 36,400	8/05/81	7.38	18,600	Y	15
06796978	Holt Creek near Emmet, NE	289	1979–89	1987 1982	6.83 6.90	948 562	3/19/87	6.83	948	N	5–20
06798000	South Fork Elkhorn River at Ewing, NE	314	1944, 1947–53, 1961–72, 1978–93	1987	7.59	5,640	3/18/87	7.59	5,640	N	40–70
06798300	Clearwater Creek near Clearwater, NE	210	1962–64, 1978–93	1987	9.00	1,510	3/18/87	9.00	1,510	N	>20
06798500	Elkhorn River at Neligh, NE	2,200	1932–58, 1960–93	1987 1947	11.99 12.53	14,100 12,000	3/19/87	11.99	14,100	N	50
06799000	Elkhorn River at Norfolk, NE	2,790	1897–1903, 1940–96	1967 1944	8.52 11.80	16,900 14,300	2/19/71	8.28	15,000	N	15

Table 28. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Nebraska—Continued

Station number (fig. 49)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06799080	Willow Creek near Foster, NE	137	1976–93	1987 1978	7.94 8.21	574 270	3/18/87	7.94	574	N	10–20
06799100	North Fork Elkhorn River near Pierce, NE	700	1961–96	1971	15.10	15,200	2/19/71	15.10	15,200	N	>35
06799190	South Fork Union Creek tributary near Cornlea, NE	6.54	1967–78	1977	15.11	1,830	5/21/77	15.11	1,830	N	10–20
06799350	Elkhorn River at West Point, NE	5,100	1940, 1944, 1946–96	1967 1940	13.21 15.46	44,000 --	2/20/71	--	31,500	N	10–15
06799423	North Logan Creek near Laurel, NE	25.3	1965, 1967–78	1971	15.02	3,020	2/19/71	15.02	3,020	N	10–20
06799450	Logan Creek at Pender, NE	731	1966–93	1971	23.11	36,900	2/19/71	23.11	36,900	N	50–75
06799500	Logan Creek near Uehling, NE	1,030	1940–96	1971 1940	20.15 20.60	25,200 22,200	2/20/71	20.15	25,200	N	60–90
06799850	Pond Creek near Schuyler, NE	0.54	1968–78	1972 1975	11.78 12.93	500 --	9/11/72	11.78	500	N	>10
06800350	Elkhorn River tributary near Nickerson, NE	6.53	1968–78	1975	15.67	225	8/02/75	15.67	225	N	5–15
06800500	Elkhorn River at Waterloo, NE	6,900	1881, 1899–1903, 1911–15, 1929–96	1944 1962	16.60 19.12	100,000 50,200	6/18/84	18.12	43,100	N	20
06803520	Stevens Creek near Lincoln, NE	47.8	1969–96	1989 1984	19.42 19.57	12,900 4,620	9/08/89	19.42	12,900	N	30
06803530	Rock Creek near Ceresco, NE	119	1970–96	1987	19.60	23,300	8/25/87	19.60	23,300	N	25–100
06803540	Dee Creek near Alvo, NE	7.88	1962–78	1978	20.38	2,800	7/22/78	20.38	2,800	N	5–15
06803555	Salt Creek at Greenwood, NE	1,050	1952–96	1984 1993	26.50 26.57	46,800 42,000	6/13/84	26.50	46,800	N	10–30
06805500	Platte River at Louisville, NE	85,370	1953–96	1993 1960	11.90 12.45	160,000 124,000	6/14/84	11.35	144,000	Y	25–30
06807000	Missouri River at Nebraska City, NE	413,959	1930–96	1952 1993	24.48 27.19	414,000 196,000	6/15/84	24.78	182,000	Y	20–30
06810060	Honey Creek near Peru, NE	3.43	1968–78	1973	19.22	3,200	7/03/73	19.22	3,200	N	25–50
06813500	Missouri River at Rulo, NE	418,859	1881, 1950–96	1952	25.60	358,000	6/16/84	24.40	242,000	Y	20–50
06814500	North Fork Big Nemaha River at Humboldt, NE	548	1953–96	1982 1958	31.25 31.70	59,500 51,000	8/13/82	31.25	59,500	N	40
06815000	Big Nemaha River at Falls City, NE	1,340	1941, 1944–96	1974	31.40	71,600	10/11/73	31.40	71,600	N	>100
06815500	Muddy Creek at Verdon, NE	186	1953–73	1973	32.71	35,000	8/12/73	32.71	35,000	N	20–30
06815510	Temple Creek near Falls City, NE	2.99	1968–78	1973	12.83	1,050	8/12/73	12.83	1,050	N	--
06829700	Thompson Canyon near Trenton, NE	9.06	1966–78	1977	12.70	1,800	5/20/77	12.70	1,800	N	15–30
06835000	Stinking Water Creek near Palisade, NE	1,500	1950–94	1956	11.30	3,030	6/16/84	10.85	2,340	N	20–40
06835100	Bobtail Creek near Palisade, NE	30.2	1966–78	1972	27.17	15,200	6/17/72	27.17	15,200	N	15–50

Table 28. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Nebraska—Continued

Station number (fig. 49)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06837300	Red Willow Creek above Hugh Butler Lake, NE	582	1961–94	1972	13.27	4,020	6/16/72	13.27	4,020	N	35–70
06837500	Red Willow Creek near McCook, NE	740	1935, 1941–47, 1958–93	1935	33.45	45,000	6/15/71	12.77	341	Y	15–40
06838550	Dry Creek at Bartley, NE	42.0	1961–93	1965 1976	10.50 12.48	712 633	6/23/76	12.48	633	N	15–30
06844000	Muddy Creek at Arapahoe, NE	246	1947, 1951–72, 1978–93	1986 1947	28.90 31.00	10,800 --	5/08/86	28.90	10,800	N	40–50
06847000	Beaver Creek near Beaver City, NE	2,080	1937–94	1983	15.68	9,510	6/14/83	15.68	9,510	N	>100
06851500	Thompson Creek at Riverton, NE	290	1949–56, 1962–75, 1978–94	1950 1993	13.22 14.70	12,200 7,000	5/11/82	12.17	7,480	N	20
06852000	Elm Creek at Amboy, NE	39.2	1948–53, 1959, 1961–93	1983 1959	16.96 17.05	7,800 6,000	9/29/83	16.96	7,800	N	40–50
06853000	Republican River near Guide Rock, NE	22,040	1950–84	1957	20.73	29,200	9/29/83	19.91	12,400	Y	15–20
06879850	Big Blue River tributary near Hordville, NE	4.07	1968–78	1971	14.48	550	6/29/71	14.48	550	N	--
06879900	Big Blue River at Surprise, NE	345	1964–93	1965	11.52	10,700	6/30/86	10.64	4,860	N	15
06880000	Lincoln Creek near Seward, NE	438	1954–94	1957	20.53	10,100	7/19/85	19.60	5,300	N	15
06880590	North Branch West Fork Big Blue River tributary at Giltner, NE	7.52	1968–78	1974	13.04	945	6/09/74	13.04	945	N	10–20
06881200	Turkey Creek near Wilber, NE	461	1960–94	1984	21.43	33,000	6/13/84 7/01/86	21.43 18.33	33,000 8,820	N N	>100 10–20
06881450	Indian Creek at Beatrice, NE	74.7	1960–89, 1991–96	1974	17.82	5,700	10/10/73	17.82	5,700	N	30–50
06881500	Big Blue River at Beatrice, NE	3,900	1902–03, 1906–94	1984 1974	31.27 33.02	55,100 49,100	10/12/73 6/14/84 3/26/87	33.02 31.27 27.44	49,100 55,100 32,400	N N N	>50 >75 15–25
06882000	Big Blue River at Barneston, NE	4,447	1903, 1919–25, 1929–96	1941	34.30	57,700	10/12/73 6/14/84	32.69 30.21	47,000 55,800	N N	>50 >100
06883540	Spring Creek tributary near Ruskin, NE	2.11	1967–78	1976	15.16	1,660	4/24/76	15.16	1,660	N	20–50
06883940	Big Sandy Creek at Alexandria, NE	607	1980–93	1984	16.71	21,900	6/13/84	16.71	21,900	N	15–30
06883955	Little Sandy Creek near Ohiowa, NE	11.6	1968–78	1977	16.39	1,370	8/16/77	16.39	1,370	N	10–20
06884000	Little Blue River near Fairbury, NE	2,350	1908–15, 1929–96	1992	24.33	54,000	10/12/73 6/13/84	18.96 16.98	37,800 41,900	N N	25–30 35
06884005	Dry Branch tributary near Fairbury, NE	4.51	1968–78	1973	16.09	1,270	7/20/73	16.09	1,270	N	10–20

[1] Regulated during flood: N, no; Y, yes.

Nevada

Hydroclimatology

Nevada is located in the western intermontane region of the United States. Because most of the State is in the precipitation shadow of the Cascade-Sierra Nevada Mountains to the west, Nevada is the driest State in the United States. However, the climate in Nevada is diverse due to the large difference in elevation from valley floor to mountaintop and to the 7-degree difference in latitude from north to south. From April to September, the principal sources of moisture are the Eastern Pacific Ocean and the Gulf of Mexico. The Pacific Ocean is the primary source of moisture from October until March.

The statewide mean annual precipitation is 9 in. (Paulson and others, 1991). The winter season typically receives the most rainfall in Nevada. Intense rains result when a broad low-pressure trough located over the Eastern Pacific Ocean converges with unstable subtropical air from the southwest and a cool, moist airmass from the Gulf of Alaska. The accumulation of excessive snow in the mountains can lead to flooding during the spring thaw.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Nevada is dependent on drainage area, mean basin elevation, and latitude of the basin (Jennings and others, 1994).

Significant Floods

Twenty-one percent of the streamflow-gaging stations in Nevada recorded significant discharges during the flood of April through June 1984. Some areas recorded maximum stages as high as the 100-year recurrence interval. The flooding occurred in the Humboldt River Basin and was due to the melting of the snowpack in the mountains of northern Nevada. This flood is considered the largest snowmelt flood known in the Humboldt River Basin.

The Humboldt River Basin flooded in 1983 as well, and more than 15 percent of the gaging stations in the State recorded significant discharges. The February 1986 flood affected the Sierra Nevada drainage area. Nineteen percent of the gaging stations in the State recorded significant discharges. Flash floods of July 1975 occurred in the Las Vegas area. As much as 3 in. of rain fell within a 4-hour period.

The location of streamflow-gaging stations in Nevada that had significant floods for 1970–89 is shown in figure 50 by station number. The specific data for each significant flood are listed in table 29. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.

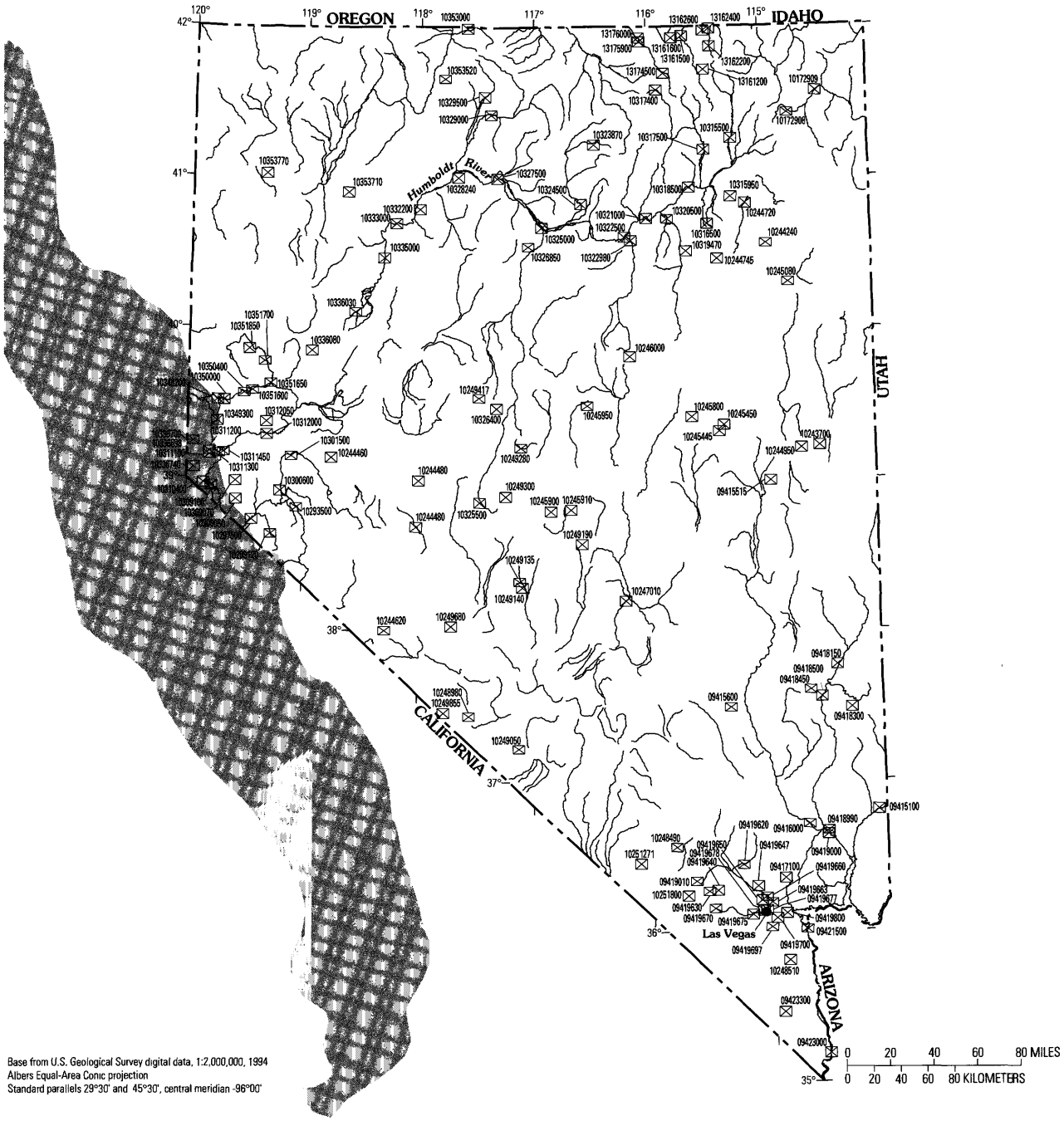

Figure 50. Location of streamflow-gaging stations with significant floods during 1970–89 for Nevada.

Table 29. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Nevada

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 50)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09415100	Pulsipher Wash near Mesquite, NV	4.58	1963–78, 1980–81	1971 1980	13.41 16.68	1,880 1,240	8/14/71	13.41	1,880	N	10–25
09415515	Water Canyon Creek near Preston, NV	11.0	1983–87, 1990–94	1984	5.92	90	8/16/84	5.92	90	N	>50
09415600	Pahranagat Valley tributary near Hiko, NV	17.0	1964–81	1972	9.99	162	6/22/72	9.99	162	N	--
09416000	Muddy River near Moapa, NV	3,820	1913–17, 1945–81, 1983–94	1990 1979	13.33 13.64	5,760 4,860	8/13/79	13.64	4,860	N	25–50
09417100	Dry Lake tributary near Nellis Air Force Base, NV	10.0	1964–75	1974	2.51	180	7/23/74	2.51	180	N	--
09418150	Caselton Wash near Panaca, NV	70.2	1963–81	1975 1970	7.10 8.20	1,710 800	7/29/75	7.10	1,710	N	>10
09418300	Pine Canyon Wash near Caliente, NV	45.0	1959–61, 1963–84	1978	4.12	303	3/03/78	4.12	303	Y	--
09418450	Meadow Valley Wash tributary near Caliente, NV	0.50	1964–81	1978	4.48	26	3/--/78	4.48	26	N	50
09418500	Meadow Valley Wash near Caliente, NV	1,670	1951–60, 1963–83, 1985–94	1978 1982	9.41 9.54	2,400 1,320	3/05/78 2/14/79	9.41 9.13	2,400 2,370	Y Y	10–25 10–25
09418990	Weiser Wash near Glendale, NV	43.0	1966–81	1972	10.11	584	8/15/72	10.11	584	N	>10
09419000	Muddy River near Glendale, NV	6,780	1950–94	1981	27.10	16,400	8/10/81	27.10	16,400	Y	>100
09419610	Lee Canyon near Charleston Park, NV	9.20	1961–92, 1994	1969	3.60	880	7/23/74	3.18	790	N	10–25
09419620	Mormon Wells Wash near Las Vegas, NV	115	1962–94	1984	--	480	8/--/84	--	480	N	>25
09419630	Telephone Canyon near Charleston Park, NV	7.20	1962–94	1967	7.78	2,500	7/20/85	3.81	320	N	10–25
09419640	Kyle Canyon near Charleston Park, NV	35.9	1961–94	1967	6.00	1,660	9/--/76	2.41	70	N	>10
09419647	Las Vegas Wash tributary near North Las Vegas, NV	62.0	1963–89	1975	8.04	5,130	7/03/75	8.04	5,130	N	25–50
09419650	Las Vegas Wash at North Las Vegas, NV	1,300	1963–78, 1982–94	1975	9.64	12,010	7/03/75	9.64	12,010	Y	>100
09419660	Las Vegas Wash tributary near Nellis Air Force Base, NV	18.1	1961–84, 1986–94	1973	4.73	618	10/09/72 7/22/84	4.73 6.28	618 380	N N	>25 10–25
09419663	Las Vegas Wash tributary south of Nellis Air Force Base, NV	1.20	1963–81, 1983–94	1963	--	296	8/14/84	--	240	N	>25
09419670	Red Rock Wash near Blue Diamond, NV	8.09	1962–94	1969 1983	6.60 26.88	7,470 1,990	7/22/84	--	2,660	N	>10
09419675	Flamingo Wash at Las Vegas, NV	86.0	1966–81, 1985–89	1975	7.23	3,910	7/03/75	7.23	3,910	N	>50
09419677	Flamingo Wash at Maryland Parkway at Las Vegas, NV	106	1969–87	1983	12.15	4,700	8/10/83	12.15	4,700	N	10–25
09419678	Flamingo Wash near mouth at Las Vegas, NV	117	1969–78, 1980–87	1984 1975	-- 14.60	4,000 2,870	7/28/84	--	4,000	N	>10

Table 29. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Nevada—Continued

Station number (fig. 50)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09419697	Las Vegas Wash tributary near Henderson, NV	1.17	1967–81, 1984–89	1984	12.36	1,950	--/--/84	12.36	1,950	N	10–25
09419700	Las Vegas Wash near Henderson, NV	2,125	1957–83, 1985–88	1975	10.67	6,510	7/04/75 8/11/83	10.67 12.15	6,510 2,200	Y Y	>100 >10
09419800	Las Vegas Wash near Boulder City, NV	2,193	1964–65, 1970–84	1984 1975	11.32 12.32	7,760 2,430	8/14/84	11.32	7,760	Y	>50
09421500	Colorado River below Hoover Dam, AZ-NV	171,700	1934–94	1939	--	51,200	7/29/83	--	50,800	Y	--
09423000	Colorado River below Davis Dam, NV-AZ	173,300	1950–89, 1992–94	1983 1952	-- 513.91	46,200 31,200	7/02/83 10/03/83	-- --	46,200 40,700	Y Y	-- --
09423300	Piute Wash tributary at Searchlight, NV	3.40	1967–82, 1984	1982	13.56	400	8/13/82	13.56	400	N	5–10
10172908	Thousand Springs Creek at Wilkens, NV	79.0	1968–78, 1985	1985 1971	1.70 5.46	62 --	4/04/85	1.70	62	N	--
10172909	Burnt Creek near Shores, NV	10.5	1968–78, 1981–90	1989	--	450	8/09/89	--	450	N	>100
10243700	Cleve Creek near Ely, NV	31.8	1914–16, 1960–81, 1983–87, 1990–94	1983	--	440	5/30/83 5/14/84	-- 1.11	440 189	N N	>100 25
10244240	Clover Valley tributary near Arthur, NV	3.00	1968–83	1973	4.99	43	10/08/72	4.99	43	N	10–25
10244460	Rawhide Flats tributary near Schurz, NV	0.96	1967–81, 1983	1977	13.28	52	--/--/77	13.28	52	N	10–25
10244480	Gabbs Valley tributary near Gabbs, NV	7.00	1965, 1968–78, 1980	1970	12.40	860	8/28/70	12.40	860	N	10–25
10244490	Finger Rock Wash near Gabbs, NV	207	1974–78, 1981–88	1974 1984	8.74 9.73	2,430 2,330	8/05/74	8.74	2,430	N	>10
10244620	Teels Marsh tributary at Basalt, NV	1.07	1967–81, 1984	1984	9.46	110	--/--/84	9.46	110	N	--
10244720	Franklin River near Arthur, NV	10.3	1965–83	1975	2.79	197	6/06/75	2.79	197	N	25
10244745	Overland Creek near Ruby Valley, NV	9.00	1960–81	1973 1967	2.29 2.44	225 110	6/16/73	2.29	225	N	>25
10244950	Steptoe Creek near Ely, NV	11.1	1967–94	1985 1983	3.06 3.21	85 75	7/21/85	3.06	85	N	50
10245080	Nelson Creek tributary near Currie, NV	0.70	1961–78, 1980–87, 1990–94	1977	5.43	52	8/--/77	5.43	52	N	--
10245445	Illipah Creek near Hamilton, NV	31.5	1983–87, 1990–94	1984	6.05	446	8/22/84	6.05	446	N	>25
10245450	Illipah Creek tributary near Hamilton, NV	5.47	1962–87, 1990–94	1983 1970	-- 9.07	1,120 287	8/--/70 8/09/83	9.07 --	287 1,120	N N	10–25 >50
10245800	Newark Valley tributary near Hamilton, NV	157	1962–86	1979	6.70	291	3/09/79	6.70	291	N	>10
10245900	Pine Creek near Belmont, NV	12.2	1978–94	1983	4.66	340	5/29/83	4.66	340	N	>50
10245910	Mosquito Creek near Belmont, NV	15.1	1978–82, 1984–85, 1987–94	1978	3.55	92	6/07/78	3.55	92	N	>25
10245950	Bean Flat tributary near Austin, NV	1.10	1961–81	1979	3.16	21	3/--/79	3.16	21	N	--
10246000	Garden Pass Creek tributary near Eureka, NV	2.12	1962–86, 1988–90	1983 1968	-- 6.91	190 47	8/--/83	--	190	N	>50

Table 29. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Nevada—Continued

Station number (fig. 50)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10247010	Hot Creek tributary near Warm Springs, NV	2.10	1964–78, 1980–81	1976	4.93	100	8/01/76	4.93	100	N	--
10248490	Indian Springs Valley tributary near Indian Springs, NV	29.0	1964–82, 1984–87, 1991–94	1972 1984	-- 3.97	497 130	8/14/72	--	497	N	25–50
10248510	Eldorado Valley tributary near Nelson, NV	1.41	1964–81	1970	9.00	530	8/04/70	9.00	530	N	>10
10248980	Lida Pass tributary near Lida, NV	1.59	1968–81	1976	--	1	9/--/76	--	1	N	--
10249050	Sarcobatus Flat tributary near Springdale, NV	37.1	1961–81	1980 1965	4.23 4.39	63 38	9/09/80	4.23	63	N	>10
10249135	San Antonio Wash tributary near Tonopah, NV	3.42	1965–82, 1984	1972	9.65	660	8/13/72	9.65	660	N	--
10249140	Ralston Valley tributary near Tonopah, NV	0.20	1961–81	1971 1969	-- 4.30	48 45	8/29/71	--	48	N	--
10249190	Willow Creek near Warm Springs, NV	16.4	1978–92	1978	2.70	92	3/31/78	2.70	92	N	10–25
10249280	Kingston Creek below Cougar Canyon near Austin, NV	23.4	1967–94	1983 1973	3.19 3.58	385 150	5/28/83	3.19	385	Y	--
10249300	South Twin River near Round Mountain, NV	20.0	1965–94	1983	4.39	510	6/03/75 5/29/83	3.69 4.39	128 510	N N	10 >100
10249417	Smith Creek Valley tributary near Austin, NV	0.62	1968–79, 1981–82, 1984, 1988, 1993–94	1984 1969	-- 5.44	130 37	7/--/84	--	130	N	>25
10249680	Big Smoky Valley tributary near Blair Junction, NV	11.4	1961–85	1985	5.50	460	7/--/85	5.50	460	N	>10
10249855	Palmetto Wash tributary near Oasis, CA	0.24	1968–79, 1981	1976	5.05	30	8/01/76	5.05	30	N	--
10251271	Amargosa River tributary number 1 near Johnnie, NV	2.21	1967–81, 1984–87, 1991–94	1970 1991	8.20 8.40	350 330	8/04/70	8.20	350	N	10
10251890	Peak Spring Canyon Creek near Charleston Peak, NV	3.09	1978, 1980–83, 1985–94	1983	8.68	228	8/17/83	8.68	228	N	>100
10293500	East Walker River above Strosnider Ditch near Mason, NV	1,100	1947–92	1986 1963	7.49 7.60	2,820 2,380	6/07/86	7.49	2,820	Y	>25
10297500	West Walker River at Hoye Bridge near Wellington, NV	497	1921–22, 1924–32, 1958–94	1983	8.75	2,310	7/08/83	8.75	2,310	Y	5–10
10299120	Obanion Canyon near Wellington, NV	5.05	1965–81	1971	10.90	336	8/05/71	10.90	336	N	>50
10300600	Walker River near Mason, NV	2,400	1974–84	1983	9.30	2,790	6/19/83	9.30	2,790	Y	--
10301500	Walker River near Wabuska, NV	2,600	1903–07, 1920–32, 1934–35, 1940–43, 1945–94	1906 1986	-- 10.60	3,280 2,770	6/06/86	10.60	2,770	N	>10
10309050	Pine Nut Creek near Gardnerville, NV	10.1	1981–94	1986 1992	3.70 4.32	165 33	3/08/86	3.70	165	N	50
10309070	Buckeye Creek near Minden, NV	46.3	1981–94	1984 1991	7.81 8.13	1,070 850	8/29/84	7.81	1,070	N	>25

Table 29. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Nevada—Continued

Station number (fig. 50)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10309100	East Fork Carson River at Minden, NV	392	1975–84, 1994	1980	11.40	8,000	1/14/80	11.40	8,000	Y	--
10310400	Daggett Creek near Genoa, NV	3.82	1966–83, 1989–94	1971	2.78	63	8/05/71	2.78	63	N	>50
10311100	Kings Canyon Creek near Carson City, NV	4.06	1977–94	1986	5.44	150	2/19/86	5.44	150	N	25
10311200	Ash Canyon Creek near Carson City, NV	5.20	1977–89, 1991–94	1986 1980	-- 3.85	584 33	2/17/86	--	584	N	>50
10311300	Eagle Valley Creek at Carson City, NV	34.4	1979, 1982, 1985–94	1986	8.85	1,110	2/19/86	8.85	1,110	N	>10
10311450	Brunswick Canyon near New Empire, NV	12.7	1966–78, 1980–94	1986	--	180	2/19/86	--	180	N	10
10312000	Carson River near Fort Churchill, NV	1,302	1911–94	1986	8.35	16,600	2/19/86	8.35	16,600	Y	100
10312050	Lahontan Reservoir near Silver Springs, NV	4.39	1962–78, 1981–94	1974 1971	-- 4.01	920 56	8/05/74	--	920	N	50–100
10315500	Marys River above Hot Springs Creek near Deeth, NV	415	1943–80, 1982–94	1962 1984	7.63 8.39	4,210 2,110	5/15/84	8.39	2,110	Y	>50
10315950	Secret Creek tributary near Arthur, NV	3.00	1967–79	1972 1975	19.58 20.10	42 37	3/03/72	19.58	42	N	5–10
10316500	Lamoille Creek near Lamoille, NV	25.0	1915–16, 1918–20, 1922, 1944–89, 1991–94	1986 1982	6.08 6.23	838 829	9/26/82 6/03/86	6.23 6.08	829 838	N N	>25 >25
10317400	North Fork Humboldt River near North Fork, NV	11.0	1966–81	1975 1970	4.10 4.43	170 152	6/07/75	4.10	170	N	>10
10317500	North Fork Humboldt River at Devils Gate near Halleck, NV	830	1914–19, 1921, 1944–82	1962	16.12	10,400	1/18/71	11.75	2,890	Y	>10
10318500	Humboldt River near Elko, NV	2,800	1896–1902, 1945–94	1983 1962	12.18 12.30	7,100 7,070	3/04/83	12.18	7,100	Y	>50
10319470	Willow Creek tributary near Jiggs, NV	0.82	1962–78, 1982–94	1962 1983	-- 3.80	15 15	3/--/83	3.80	15	N	5–10
10320500	South Fork Humboldt River near Elko, NV	1,310	1897–1909, 1911–18, 1921, 1924–32, 1937–73, 1975	1962	8.00	2,830	10/--/75	--	2,100	Y	>25
10321000	Humboldt River near Carlin, NV	4,310	1910, 1944–94	1910	--	15,000	3/05/83 5/17/84	10.17 10.04	7,130 8,250	Y Y	>25 >50
10322500	Humboldt River at Palisade, NV	5,010	1903–06, 1910, 1912–94	1910	17.00	17,000	3/06/83 5/18/84	9.75 10.08	7,240 7,870	Y Y	25–50 >50
10322980	Cole Creek near Palisade, NV	11.4	1962–83, 1985–94	1983	--	1,090	6/--/83	--	1,090	N	>100
10323870	Willow Creek above Willow Creek Reservoir near Tuscarora, NV	81.0	1968–78	1972	4.19	820	4/11/72	4.19	820	N	>10
10324500	Rock Creek near Battle Mountain, NV	875	1896, 1918–23, 1946–94	1962 1980	6.89 7.80	4,800 2,860	1/13/80	7.80	2,860	Y	>10

Table 29. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Nevada—Continued

Station number (fig. 50)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10325000	Humboldt River at Battle Mountain, NV	8,870	1896–97, 1921–23, 1946–81, 1992–94	1952	--	5,800	6/10/80	9.87	5,460	Y	10–25
10325500	Reese River near Ione, NV	53.0	1952–80, 1983	1983 1956	-- 4.86	1,000 512	5/24/83	--	1,000	N	>50
10326400	Reese River tributary near Austin, NV	8.27	1968–79, 1981–82, 1987	1981 1969	-- 6.22	80 50	6/--/81	--	80	N	>10
10326850	Reese River tributary near Battle Mountain, NV	0.20	1962–79, 1981–82	1976	4.50	26	9/15/76	4.50	26	N	10–25
10327500	Humboldt River at Comus, NV	12,100	1895–1909, 1911–23, 1925–26, 1946–94	1984	12.25	9,900	6/14/83 4/24/84	11.76 12.25	5,210 9,900	Y Y	>25 >100
10328240	Humboldt River tributary near Bliss, NV	1.90	1968–78, 1980–94	1973	5.96	113	7/18/73	5.96	113	N	>50
10329000	Little Humboldt River near Paradise Valley, NV	1,030	1922–23, 1925–27, 1944–94	1969	8.40	2,380	5/15/84	6.46	678	Y	>25
10329500	Martin Creek near Paradise Valley, NV	172	1922–27, 1929–33, 1935–94	1943	11.10	9,000	2/17/86	8.80	4,350	N	25–50
10332200	Raspberry Creek near Mill City, NV	9.38	1961–78, 1981	1973	4.60	25	5/31/73	4.60	25	N	25–50
10333000	Humboldt River near Imlay, NV	15,700	1936–41, 1945–94	1984	13.20	9,270	6/17/83 5/27/84	12.03 13.20	4,190 9,270	Y Y	>25 >100
10335000	Humboldt River near Rye Patch, NV	16,100	1896–98, 1900–09, 1911–22, 1927–28, 1930–31, 1936–41, 1944–94	1984	13.65	7,960	6/16/83 5/28/84 5/28/86	10.20 13.65 13.65	3,940 7,960 7,960	Y Y Y	>50 >100 >100
10336030	Toulon Drain tributary near Lovelock, NV	0.80	1962–78, 1981	1976	6.95	350	8/22/76	6.95	350	N	>100
10336080	Humboldt Slough tributary near Bradys Hot Springs, NV	11.0	1962–81, 1984–85, 1987–94	1984	10.29	710	8/--/84	10.29	710	N	25–50
10336698	Third Creek near Crystal Bay, NV	6.05	1970–73, 1975, 1978–94	1982	3.40	150	6/18/82	3.40	150	N	10–25
10336700	Incline Creek near Crystal Bay, NV	7.00	1970–73, 1975, 1988–94	1970	2.60	87	1/21/70	2.60	87	N	>5
10336740	Logan House Creek near Glenbrook, NV	2.08	1984–94	1986	4.60	6	4/22/86	4.60	6	N	5
10348200	Truckee River near Sparks, NV	1,070	1978–94	1986	15.22	14,900	2/17/86	15.22	14,900	Y	>10
10349300	Steamboat Creek at Steamboat, NV	123	1962–94	1986	6.79	3,600	2/17/86	6.79	3,600	Y	>50
10350000	Truckee River at Vista, NV	1,431	1900–07, 1933–54, 1959–94	1963	16.76	18,900	2/18/86	15.82	16,100	Y	25
10350400	Truckee River below Tracy, NV	1,590	1973–94	1986	15.20	17,500	2/19/86	15.20	17,500	Y	10–25

Table 29. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Nevada—Continued

Station number (fig. 50)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10351600	Truckee River below Derby Dam near Wadsworth, NV	1,676	1909–10, 1916, 1918–94	1963	14.26	18,400	2/19/86	13.56	16,900	Y	25
10351650	Truckee River at Wadsworth, NV	1,728	1966–86, 1994	1986	15.11	16,800	2/19/86	15.11	16,800	Y	10–25
10351700	Truckee River near Nixon, NV	1,827	1956, 1958–94	1986 1963	13.01 14.39	16,300 14,400	2/19/86	13.01	16,300	Y	10–25
10351850	Pyramid Lake tributary near Nixon, NV	1.94	1968–79, 1981–90, 1992–94	1986 1969	3.87 6.61	950 160	2/19/86	3.87	950	N	25
10353000	East Fork Quinn River near McDermitt, NV	140	1949–81	1956	8.51	1,270	1/22/70	8.10	940	N	5–10
10353520	Eagle Creek near Orovada, NV	3.44	1962–78, 1981–94	1984	6.26	10	6/--/84	6.26	10	N	>25
10353710	Black Rock Desert tributary near Sulphur, NV	33.0	1967–78, 1980–81	1976	7.60	3,940	8/22/76	7.60	3,940	N	>10
10353770	South Willow Creek near Gerlach, NV	31.0	1963–78, 1980–94	1963	7.30	1,730	2/17/86	4.64	780	N	10–25
13161200	Seventy Six Creek near Charleston, NV	3.52	1963–78	1975	12.35	89	5/--/75	12.35	89	N	>10
13161500	Bruneau River at Rowland, NV	382	1913–18, 1962–94	1984	12.01	2,140	5/14/84	12.01	2,140	Y	>25
13161600	McDonald Creek near Rowland, NV	10.8	1963–78	1975	9.02	85	6/--/75	9.02	85	N	>10
13162200	Jarbidge River at Jarbidge, NV	22.6	1964–78	1970	16.31	700	6/--/70	16.31	700	N	>10
13162400	Buck Creek near Jarbidge, NV	20.2	1963–78	1971	21.00	380	6/--/71	21.00	380	N	>25
13162600	Columbet Creek near Jarbidge, NV	3.37	1963–78	1975	8.68	46	5/--/75	8.68	46	N	25
13174500	Owyhee River near Gold Creek, NV	209	1916–18, 1920–25, 1937–94	1922 1952	-- 6.70	1,810 1,210	4/25/83 5/14/84	5.45 5.20	1,700 1,590	Y Y	-- --
13175900	Reed Creek near Owyhee, NV	6.51	1963–79	1975	4.96	95	5/--/75	4.96	95	N	>10
13176000	Owyhee River above China Diversion Dam near Owyhee, NV	458	1939–84	1975	10.84	2,790	5/18/75	10.84	2,790	Y	25

[1]Regulated during flood: N, no; Y, yes.

New Hampshire

Hydroclimatology

New Hampshire is located in the northeastern United States. The southeast corner of the State is a coastal region bordering the Atlantic Ocean. New Hampshire's climate is affected by airmasses originating in the Gulf of Mexico, in the Canadian and Arctic areas, and in the Northern Atlantic Ocean. Pacific airmasses, which typically have been modified by land-recycled moisture, can affect the State to a small degree. The Gulf of Mexico airmasses provide the majority of the moisture to the New Hampshire area. These warm, moist airmasses interact with cold, dry airmasses from Canada to create frontal storm systems that result in precipitation.

Mean annual precipitation varies across the State depending on the proximity to the Atlantic Ocean and also on the topography. The mountain ranges in northern New Hampshire reach heights of almost 6,300 ft above sea level. Forty-two inches of precipitation is the statewide annual mean for New Hampshire, ranging from about 34 in. in the Connecticut River Valley to more than 89 in. in the White Mountains (National Oceanic and Atmospheric Administration, 1970).

New Hampshire experiences flooding as a result of tropical cyclones, rapid snowmelt, severe spring storms combined with snowmelt, a series of closely spaced major storms, or ice jams on the river. Hurricanes and tropical storms have caused widespread flooding in the late summer and fall.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the dependent variables for the magnitude of maximum discharges for streams in New Hampshire are drainage area, channel slope, and 2-year, 24-hour precipitation. The equations are applicable to streams whose flows are not affected significantly by regulation, diversion, or urbanization, and whose drainage areas are between 0.27 and 622 mi^2 (Jennings and others, 1994).

Significant Floods

The largest flood during 1970–89 occurred in April 1987. Twenty-nine percent of the unregulated and minimumly regulated streamflow-gaging stations in the State recorded significant discharges. The Lamprey River Basin in southeastern New Hampshire was affected by this flood, which was caused by a slow-moving storm system and snowmelt.

A flood in the Ammonoosuc River Basin in the northwestern White Mountains occurred on June 30, 1973. The flood caused 26 percent of unregulated and minimumly regulated streamflow-gaging stations in the State to record significant discharges.

The location of streamflow-gaging stations in New Hampshire that had significant floods for 1970–89 is shown in figure 51 by station number. The specific data for each significant flood are listed in table 30. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

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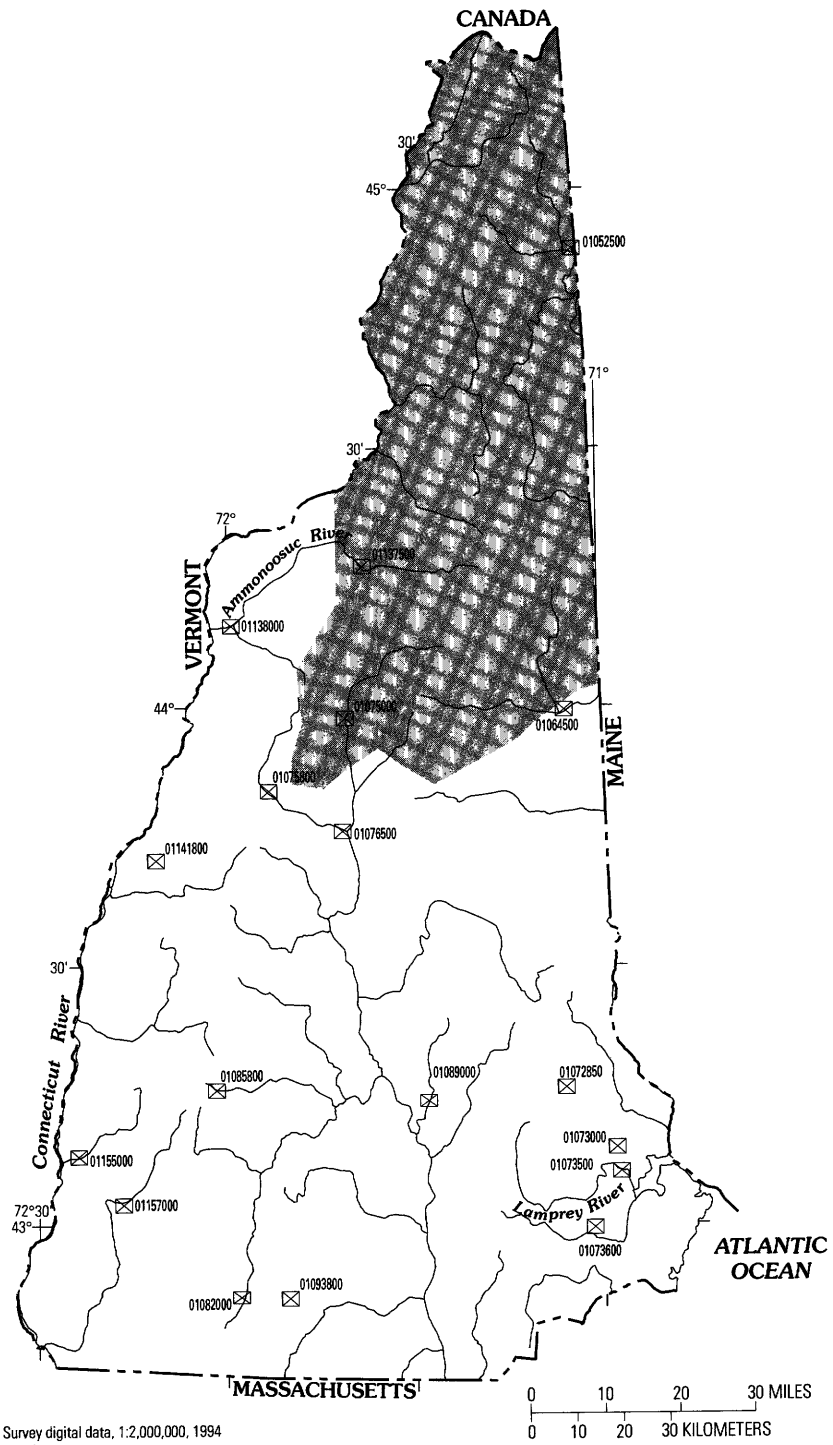

Base from U.S. Geological Survey digital data, 1:2,000,000, 1994
Albers Equal-Area Conic projection
Standard parallels 29°30' and 45°30', central meridian -96°00'

EXPLANATION

White Mountains

01091500 ⊠ Streamflow-gaging station and number

Figure 51. Location of streamflow-gaging stations with significant floods during 1970–89 for New Hampshire.

Table 30. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Hampshire

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
Station number (fig. 51)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01052500	Diamond River near Wentworth location, NH	152	1942–95	1943 1981	10.66 12.23	8,630 3,620	4/01/87	10.31	8,330	N	50
01064500	Saco River near Conway, NH	385	1904–09, 1929–95	1953	17.20	47,200	4/01/87	17.04	46,600	N	25–50
01072850	Mohawk Brook near Center Strafford, NH	8.87	1965–77	1977	5.81	1,890	3/14/77	5.81	1,890	N	25–50
01073000	Oyster River near Durham, NH	12.1	1935–96	1954 1936	5.47 7.45	862 548	2/27/81 3/19/83	5.30 5.64	615 709	N N	10–25 25–50
01073500	Lamprey River near New Market, NH	183	1935–95	1987	15.14	7,570	3/15/77 4/07/87	12.22 15.14	5,000 7,570	Y Y	25 100–200
01073600	Dudley Brook near Exeter, NH	4.97	1963–85	1973	7.74	358	4/02/73	7.74	358	N	25
01075000	Pemigewasset River at Woodstock, NH	193	1940–80, 1985–96	1960	16.13	47,000	6/30/73 4/01/87	13.40 14.01	29,500 33,000	N N	10–25 25
01075800	Stevens Brook near Wentworth, NH	2.94	1964–96	1973	6.36	1,120	6/30/73 6/07/84	6.36 4.74	1,120 776	N N	25–50 10–25
01076500	Pemigewasset River at Plymouth, NH	622	1904–96	1936	29.00	65,400	4/01/87	23.43	53,200	N	50
01082000	Contoocook River at Peterborough, NH	68.1	1938, 1946–77, 1980, 1982–96	1987 1938	6.62 15.00	2,860 --	4/06/87	6.62	2,860	Y	50
01085800	West Branch Warner River near Bradford, NH	5.75	1963–96	1984 1980	-- 8.75	800 590	4/01/76 5/29/84	8.49 --	603 800	N N	10 25
01089000	Soucook River near Concord, NH	76.8	1952–87	1977	14.50	3,700	3/14/77 6/01/84	14.50 13.37	3,700 2,880	N N	50 10–25
01093800	Stony Brook tributary near Temple, NH	3.60	1964–96	1987 1977	5.32 7.13	508 336	4/05/87	5.32	508	N	25–50
01137500	Ammonoosuc River at Bethlehem Junction, NH	87.6	1940–96	1960	12.09	10,800	6/30/73	11.96	10,600	N	25–50
01138000	Ammonoosuc River near Bath, NH	395	1936–80	1936 1973	15.40 17.55	27,900 26,900	6/30/73	17.55	26,900	N	25–50
01141800	Mink Brook near Etna, NH	4.60	1963–96	1986	3.93	629	8/15/76 8/01/86	3.80 3.93	560 629	N N	10–25 10–25
01155000	Cold River at Drewsville, NH	82.7	1941–78	1974	12.30	6,710	12/21/73	12.30	6,710	N	50–100
01157000	Ashuelot River near Gilsum, NH	71.1	1923–80	1938 1936	11.24 12.80	5,220 4,400	12/21/73	10.84	4,710	Y	50–100

[1]Regulated during flood: N, no; Y, yes.

New Jersey

Hydroclimatology

New Jersey is located along the East Coast of the United States and has a considerable amount of coastline along the Atlantic Ocean. The climate is classified as modified continental. The area's moisture is provided by the Gulf of Mexico and the Atlantic Ocean. Land-recycled moisture, water evaporated from local and upwind land surfaces and from local lakes and reservoirs, plays an important role in contributing moisture to New Jersey. Cold, dry continental airmasses originate in Canada and move southeastward to clash with the warm, moist airmasses and produce rain.

During the winter, the climate is controlled by a semipermanent high-pressure system that is located over central Canada and the north-central United States. This system is the major source of cold airmasses that affect the State. The pressure patterns switch in the summer, and the Bermuda High in the Atlantic Ocean dominates. This system is a semipermanent high-pressure cell located in the western Atlantic Ocean and the eastern Gulf of Mexico. The Bermuda High delivers warm, moist air to New Jersey during the summer months. Mean annual precipitation ranges from 40 in. along the southeastern coast to 52 in. in north-central New Jersey (Paulson and others, 1991).

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the dependent variables for the magnitude of maximum discharges of streams in New Jersey are drainage area, channel slope, storage area, which is the percentage of the basin occupied by lakes and swamps, and the percentage of the basin that has an impervious cover, which is a function of population density (Jennings and others, 1994).

Significant Floods

An intense frontal system followed by the remnants of Tropical Storm Doria caused widespread flooding in August 1971. Rainfall for 32 hours ranged from 3 to 11 in. The Raritan, Passaic, and central Delaware Rivers were most affected by flooding. Twenty-four percent of the streamflow-gaging stations in the State recorded significant discharges during this flood. Damages exceeded $100 million (Paulson and others, 1991).

Maximum rainfalls exceeding 9 in. fell on New Jersey producing the "Election Day" flood that lasted from November 8 to 10, 1977. The Passaic River Basin and the northern Atlantic coastal areas were most affected by this flood. Sixteen percent of the streamflow-gaging stations in the State recorded significant discharges.

Frozen ground and an unusually wet winter were the major components contributing to the flood of April 1984. A frontal system moving through New Jersey dropped 2 to 8 in. of rain on the State. The area's water-supply reservoirs were already full due to the winter's substantial precipitation, and therefore, the reservoirs provided little flood storage. Frozen ground and snowmelt caused greater-than-normal runoff. Twenty-one percent of the streamflow-gaging stations in the State recorded significant discharges. Damages were estimated at $109 million (Paulson and others, 1991).

The location of streamflow-gaging stations in New Jersey that had significant floods for 1970–89 is shown in figure 52 by station number. The specific data for each significant flood are listed in table 31. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

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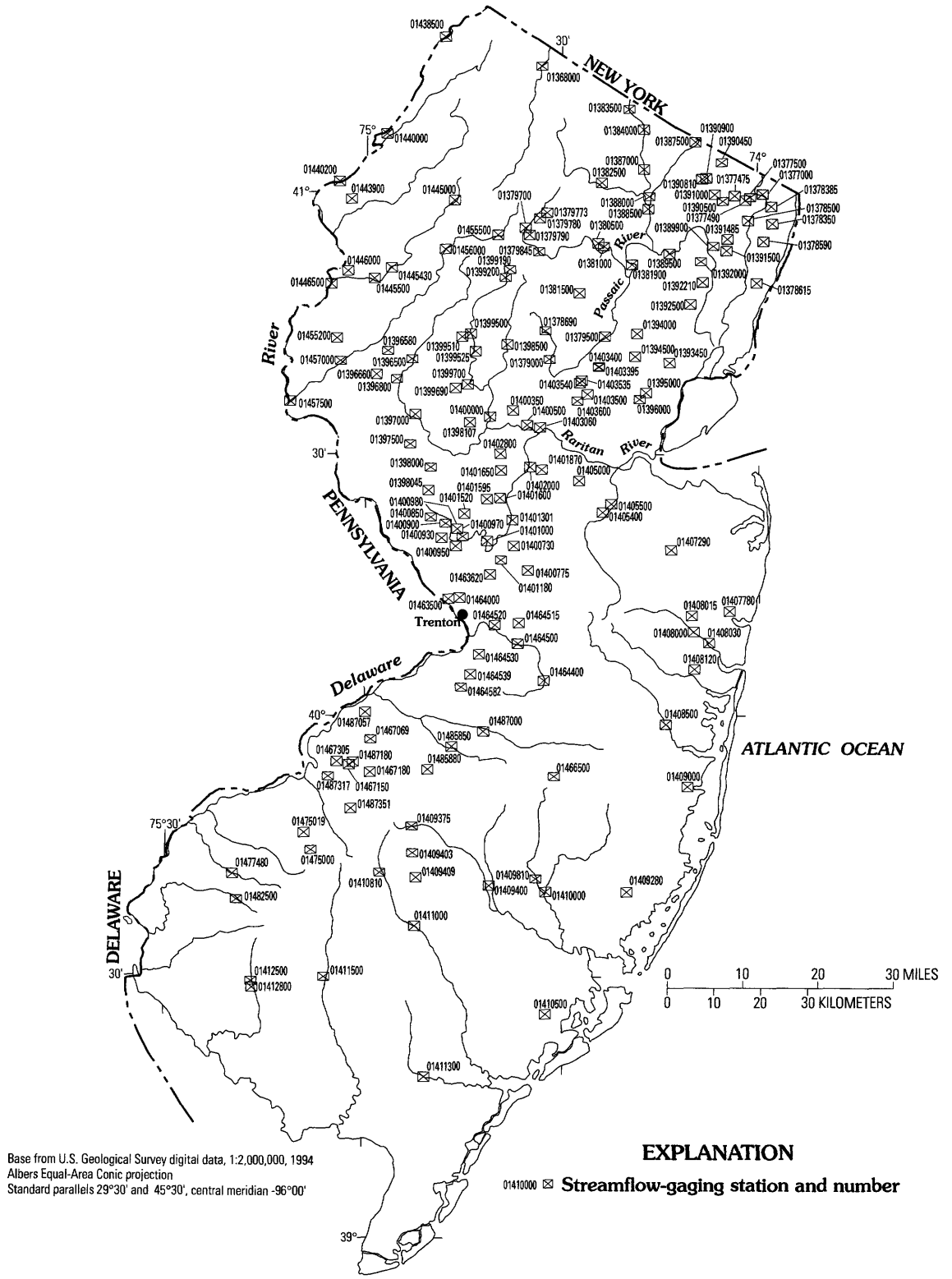

Figure 52. Location of streamflow-gaging stations with significant floods during 1970–89 for New Jersey.

Table 31. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Jersey

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
Station number (fig. 52)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01368000	Wallkell River near Unionville, NY	140	1938–81, 1984, 1989–93	1955	13.35	6,880	4/04/70 4/05/84	9.99 9.80	2,560 2,360	N N	5–10 5–10
01377000	Hackensack River at Rivervale, NJ	58.0	1942–95	1989	8.08	2,530	5/30/84 5/17/89	7.85 8.08	2,440 2,530	Y Y	30 35
01377475	Musquapsink Brook near Westwood, NJ	2.12	1965–72, 1974–86	1978 1971	3.99 4.70	1,060 1,000	11/08/77	3.99	1,060	N	20
01377490	Musquapsink Brook at Westwood, NJ	6.53	1966–86	1978	2.09	460	11/08/77	2.09	460	N	40–50
01377500	Pascack Brook at Westwood, NJ	29.6	1935–95	1971	7.57	2,440	9/12/71 2/03/73 11/08/77	7.57 6.75 6.24	2,440 1,940 1,790	Y Y Y	55 20 15
01378350	Tenakill Brook at Cresskill, NJ	3.01	1965–78	1978	5.27	215	11/08/77	5.27	215	N	10–25
01378385	Tenakill Brook at Closter, NJ	8.56	1965–95	1990 1978	3.63 4.68	930 920	11/08/77	4.68	920	N	10
01378500	Hackensack River at New Milford, NJ	113	1922–95	1989	8.23	4,630	9/27/75 11/09/77 4/05/84 5/17/89	7.54 7.95 7.96 8.23	4,300 4,500 4,500 4,630	Y Y Y Y	20 25 25 30
01378590	Metzler Brook at Englewood, NJ	1.54	1965–95	1978 1966	2.84 3.47	470 205	6/19/72 11/08/77	2.53 2.84	310 470	N N	10 50–100
01378615	Wolf Creek at Ridgefield, NJ	1.75	1965–86	1981	6.88	652	9/09/81	6.88	652	N	10
01378690	Passaic River near Bernardsville, NJ	8.83	1968–95	1971 1984	8.56 16.46	3,850 2,240	8/28/71	18.56	3,850	N	25–50
01379000	Passaic River near Millington, NJ	55.4	1904–06, 1922–87, 1989–95	1905 1971	7.80 9.73	2,000 2,170	8/29/71	9.73	2,170	N	80
01379500	Passaic River near Chatham, NJ	100	1904–11, 1938–95	1973	9.36	3,380	8/02/73	9.36	3,380	N	80
01379700	Rockaway River at Berkshire Valley, NJ	24.4	1936, 1984–87, 1989–95	1984	9.05	1,290	4/05/84	9.05	1,290	N	25–50
01379773	Green Pond Brook at Picatinny Arsenal, NJ	7.65	1983–95	1984	3.51	333	4/05/84	3.51	333	N	10–25
01379780	Green Pond Brook below Picatinny Lake at Picatinny Arsensal, NJ	9.16	1985–95	1987	3.70	243	9/13/87	3.70	243	N	10–25
01379790	Green Pond Brook at Wharton, NJ	12.6	1983–95	1984	5.11	572	4/05/84	5.11	572	N	10–25
01379845	Rockaway River at Warren Street at Dover, NJ	52.1	1981–95	1984	7.20	2,170	4/06/84	7.20	2,170	N	25–50
01380500	Rockaway River above reservoir at Boonton, NJ	116	1938–95	1984	7.23	5,590	1/25/79 4/05/84	7.06 7.23	5,430 5,590	N N	40 45
01381000	Rockaway River below reservoir at Boonton, NJ	119	1904, 1913–95	1904 1979	7.80 8.30	7,560 4,380	1/25/79 4/06/84	8.30 8.17	4,380 4,260	Y Y	-- --
01381500	Whippany River at Morristown, NJ	29.4	1922–95	1971	8.60	2,800	8/28/71 1/25/79	8.60 7.40	2,800 2,080	N N	>100 25
01381900	Passaic River at Pine Brook, NJ	349	1904, 1936, 1938, 1945, 1966–73, 1975, 1978–95	1984 1904	22.90 23.20	8,000 --	4/18/83 4/07/84	20.23 22.90	5,530 8,000	N N	10 40–50

Table 31. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Jersey—Continued

Station number (fig. 52)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01382500	Pequannock River at Macopin Intake Dam, NJ	63.7	1904, 1936–89, 1993–95	1904 1984	17.40	6,100 4,880	4/05/84	16.90	4,880	Y	--
01383500	Wanaque River at Awosting, NJ	27.1	1919–95	1984	6.65	2,800	3/22/80 4/05/84	6.26 6.65	2,160 2,800	N N	30 70
01384000	Wanaque River at Monks, NJ	40.4	1935–85	1984	4.84	3,100	9/06/79 3/21/80 4/05/84	4.24 4.30 4.84	2,670 2,710 3,100	N N N	15 20 25
01387000	Wanaque River at Wanaque, NJ	90.4	1913–15, 1919–95	1984	10.82	10,500	4/05/84	10.82	10,500	Y	100
01387500	Ramapo River near Mahwah, NJ	120	1904–14, 1923–95	1984	13.35	15,500	11/08/77 4/05/84	12.44 13.35	11,800 15,500	N N	40 80
01388000	Ramapo River at Pompton Lakes, NJ	160	1882, 1896, 1902, 1922–95	1984	15.21	15,400	4/05/84	15.21	15,400	N	80
01388500	Pompton River at Pompton Plains, NJ	355	1904, 1941–95	1904 1984	-- 24.47	28,340 25,400	4/06/84	24.47	25,400	Y	60
01389500	Passaic River at Little Falls, NJ	762	1882, 1896, 1898–1995	1904 1984	-- 12.91	31,700 18,400	4/07/84	12.91	18,400	Y	40
01389900	Fleischer Brook at Market Street at Elmwood Park, NJ	1.37	1967–93, 1995	1978	6.47	470	11/08/77	6.47	470	N	>100
01390450	Saddle River at Upper Saddle River, NJ	10.9	1966–95	1978 1988	5.25 5.61	4,150 1,750	11/08/77	5.25	4,150	N	30–40
01390500	Saddle River at Ridgewood, NJ	21.6	1936, 1945, 1955–95	1945 1978	-- 12.25	6,800 4,650	11/08/77	12.25	4,650	N	50
01390810	Hohokus Brook at Allendale, NJ	9.11	1969–95	1978	8.28	1,380	11/08/77	8.28	1,380	N	50–100
01390900	Ramsey Brook at Allendale, NJ	2.55	1975–95	1978	5.39	980	11/08/77	5.39	980	N	25–50
01391000	Hohokus Brook at Hohokus, NJ	16.4	1954–95	1978	7.06	3,700	11/08/77 4/05/84	7.06 5.26	3,700 3,130	N N	40–50 30–40
01391485	Sprout Brook at Rochelle Park, NJ	5.56	1965–78	1971 1978	7.11 9.64	520 --	9/12/71	7.11	520	N	10–25
01391500	Saddle River at Lodi, NJ	54.6	1924–95	1978	12.36	4,500	9/12/71 11/09/77 4/05/84	10.98 12.36 9.51	3,770 4,500 3,350	N N N	10–20 40–50 5–10
01392000	Weasel Brook at Clifton, NJ	4.45	1938–76, 1978, 1989–90	1990	6.65	1,900	6/26/89	6.51	1,780	N	40–50
01392210	Third River at Passaic, NJ	11.8	1978–95	1978	8.25	2,300	11/08/77	8.25	2,300	N	50–100
01392500	Second River at Belleville, NJ	11.6	1937–73, 1975–95	1971	9.80	6,500	8/28/71 8/02/73 7/27/81	9.80 8.46 8.70	6,500 4,800 5,000	N N N	100 25 35
01393450	Elizabeth River at Ursino Lake at Elizabeth, NJ	16.9	1973–95	1973	25.77	3,800	8/02/73	25.77	3,800	Y	20–30
01394000	West Branch Rahway River at Millburn, NJ	7.10	1938, 1940–50, 1973	1973	4.40	2,270	8/02/73	4.40	2,270	N	50–100
01394500	Rahway River near Springfield, NJ	25.5	1938–94	1973	9.76	5,430	8/28/71 8/02/73	8.54 9.76	3,430 5,430	N N	40 100
01395000	Rahway River at Rahway, NJ	40.9	1922–87, 1989–95	1973	7.88	5,420	8/02/73 7/15/75	7.88 7.62	5,420 5,070	Y Y	90 70
01396000	Robinsons Branch at Rahway, NJ	21.6	1940–95	1975 1969	5.83 6.02	3,110 2,590	7/15/75 9/20/89	5.83 5.83	3,110 2,980	N N	60 45

Table 31. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Jersey—Continued

Station number (fig. 52)	Station name	Total drainage area (mi^2)	Maximum atage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01396500	South Branch Raritan River near High Bridge, NJ	65.3	1896, 1902, 1904, 1919–24, 1926–95	1896 1984	-- 14.26	7,560 2,000	1/25/79 4/05/84	12.07 11.02	6,910 4,510	N N	>100 30
01396580	Spruce Run at Glen Gardner, NJ	11.3	1979–88, 1992–95	1979	7.60	1,820	1/24/79	7.60	1,820	N	10–25
01396660	Mulhockaway Creek at Van Syckel, NJ	11.8	1978–95	1989	7.41	3,590	9/20/89	7.41	3,590	N	20–30
01396800	Spruce Run at Clinton, NJ	41.3	1960–95	1970 1960	5.17 6.80	6,410 2,220	4/02/70 7/07/84	5.17 4.67	6,410 4,830	Y Y	10–25 10–25
01397000	South Branch Raritan River at Stanton, NJ	147	1904–06, 1919–95	1955	15.22	18,000	1/25/79 7/07/84	12.72 12.04	12,100 10,600	Y Y	30 20
01397500	Walnut Brook near Flemington, NJ	2.24	1937–95	1971	4.61	1,570	8/28/71 7/07/84	4.61 3.98	1,570 1,070	N N	50 20
01398000	Neshanic River at Reaville, NJ	25.7	1931–95	1971	13.84	15,900	8/28/71	13.84	15,900	N	>100
01398045	Back Brook tributary near Ringoes, NJ	1.98	1978–87, 1989–95	1979	5.05	1,290	8/03/79	5.05	1,290	N	10–25
01398107	Holland Brook at Readington, NJ	9.00	1979–95	1984	8.08	1,300	7/07/84	8.08	1,300	N	25–50
01398500	North Branch Raritan River near Far Hills, NJ	26.2	1919, 1922–95	1919	7.60	7,000	8/28/71 1/24/79 7/07/84	7.28 5.93 6.40	6,390 3,780 4,610	N N N	90 20 30
01399190	Lamington (Black) River at Succasunna, NJ	7.37	1977–87	1979	5.20	176	1/24/79	5.20	176	N	10–25
01399200	Lamington (Black) River near Ironia, NJ	10.9	1936, 1976–87	1984 1979	5.15 5.27	389 348	7/07/84	5.15	389	N	10–25
01399500	Lamington (Black) River near Pottersville, NJ	32.8	1896, 1922–95	1984	5.94	3,460	8/28/71 1/24/79 7/07/84	5.39 5.30 5.94	2,700 2,620 3,460	N N N	40 35 80
01399510	Upper Cold Brook near Pottersville, NJ	2.18	1973–95	1984	3.91	2,000	7/07/84 5/11/81	3.91 3.29	2,000 961	N N	50–100 10–25
01399525	Axle Brook near Pottersville, NJ	1.22	1978–82, 1984–95	1988	6.13	914	7/26/88	6.13	914	N	10–25
01399690	South Branch Rockaway Creek at Whitehouse Station, NJ	12.3	1978–91	1984	15.84	2,190	7/07/84	15.89	2,190	N	25–50
01399700	Rockaway Creek at Whitehouse, NJ	37.1	1978–95	1984	11.33	4,600	7/07/84	11.33	4,600	N	25–50
01400000	North Branch Raritan River near Raritan, NJ	190	1896, 1924–95	1971	15.47	28,600	8/28/71 7/07/84	15.47 15.30	28,600 27,900	N N	>100 >100
01400350	Macs Brook at Somerville, NJ	0.77	1982–95	1986 1990	4.66 5.12	549 326	4/16/86	4.66	549	Y	5–10
01400500	Raritan River at Manville, NJ	490	1904–06, 1909–15, 1922–85, 1987–95	1971	23.80	36,300	8/28/71	23.80	36,300	N	70
01400730	Millstone River at Plainsboro, NJ	65.8	1938, 1955, 1965–95	1975	8.96	3,970	7/21/75	8.96	3,970	N	25–40
01400775	Bear Brook at Route 535 near Locust Corner, NJ	6.69	1971, 1975, 1979–95	1989 1975	7.95 8.90	1,550 --	6/10/89	7.95	1,550	N	25–50
01400850	Woodsville Brook at Woodsville, NJ	1.78	1957–58, 1964–80	1971	6.40	1,480	8/28/71	6.40	1,480	N	25–50
01400900	Stony Brook at Glenmoore, NJ	17.0	1957–95	1971	11.02	6,100	8/28/71	11.02	6,100	N	>100

Table 31. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Jersey—Continued

Station number (fig. 52)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01400930	Baldwins Creek at Pennington, NJ	1.99	1957, 1960–67, 1969–95	1971	8.64	1,260	8/28/71	8.64	1,260	N	>100
01400950	Hart Brook near Pennington, NJ	0.57	1968–95	1987 1971	5.27 6.77	470 --	7/14/87	5.27	470	N	50–100
01400960	Honey Branch near Mount Rose, NJ	1.28	1969–78	1971	5.84	1,370	8/28/71	5.84	1,370	N	10–25
01400970	Honey Branch near Rosedale, NJ	3.83	1967–78	1971	11.84	2,500	8/28/71	11.84	2,500	N	25–50
01401000	Stony Brook at Princeton, NJ	44.5	1954–95	1971	14.26	8,960	8/28/71	14.26	8,960	N	>100
01401160	Duck Pond Run near Princeton Junction, NJ	1.81	1980–95	1989	6.68	275	6/10/89	6.68	275	N	10–25
01401301	Millstone River at Carnegie Lake at Princeton, NJ	159	1938, 1955, 1971, 1973–74, 1977–95	1971	7.09	13,000	8/28/71	7.09	13,000	N	>100
01401520	Beden Brook near Hopewell, NJ	6.67	1967–85	1971	10.80	7,240	8/28/71	10.80	7,240	N	50–100
01401595	Rock Brook near Blawenburg, NJ	9.03	1967–76, 1978–95	1971	10.00	4,530	8/28/71	10.00	4,530	N	50–100
01401600	Beden Brook near Rocky Hill, NJ	27.0	1967–95	1971	16.83	12,100	8/28/71	16.83	12,100	N	>100
01401650	Pike Run at Belle Mead, NJ	5.36	1971, 1980–95	1984 1971	11.76 12.10	2,010 --	7/07/84	11.76	2,010	N	>100
01401870	Six Mile Run near Middlebush, NJ	10.7	1966–73, 1975–81, 1983–95	1975	11.77	10,200	7/14/75	11.77	10,200	N	50
01402000	Millstone River at Blackwells Mills, NJ	258	1921–95	1971	18.68	22,200	8/28/71 7/15/75	18.68 16.84	22,200 17,100	N N	>100 45
01402600	Royce Brook tributary near Belle Mead, NJ	1.20	1967–74, 1980–94	1971	7.01	1,450	8/28/71 7/07/84	7.01 6.32	1,450 915	N Y	50–100 10–25
01403060	Raritan River below Calco Dam at Bound Brook, NJ	785	1904–09, 1936–39, 1942, 1945–94	1971	37.47	46,100	8/28/71	37.47	46,100	N	>100
01403395	Blue Brook at Seeleys Pond Dam near Berkeley Heights, NJ	3.59	1927, 1969, 1973, 1981–95	1973	7.55	2,080	8/02/73	7.55	2,080	N	50–100
01403400	Green Brook at Seeley Mills, NJ	6.23	1916, 1927, 1938, 1942, 1969–95	1973	16.10	6,240	8/02/73	16.10	6,240	N	>100
01403500	Green Brook at Plainfield, NJ	9.75	1916, 1927, 1936, 1938–95	1938 1970	5.82	2,890	8/02/73	5.75	2,080	N	25–30
01403535	East Branch Stony Brook at Best Lake at Watchung, NJ	1.57	1973, 1980–95	1973	5.40	2,840	8/02/73	5.40	2,840	N	>100
01403540	Stony Brook at Watchung, NJ	5.51	1973, 1975–95	1973	14.50	11,400	8/02/73	14.50	11,400	N	>100
01403600	Green Brook at Rock Avenue at Plainfield, NJ	18.2	1972–79, 1991–95	1973	10.65	10,400	8/02/73	10.65	10,400	N	>100
01405000	Lawrence Brook at Farrington Dam, NJ	34.4	1927–95	1975	26.93	4,920	8/28/71 7/21/75 9/21/89	26.34 26.93 26.77	2,920 4,920 4,360	Y Y Y	25 >100 5–10

Table 31. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Jersey—Continued

Station number (fig. 52)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01405400	Manalapan Brook at Spotswood, NJ	40.7	1957–95	1989	19.97	1,700	9/20/89	19.97	1,700	Y	25–40
01405500	South River at Old Bridge, NJ	94.6	1940–88	1944 1971	11.71 11.73	4,250 4,210	8/28/71	11.73	4,210	Y	20
01407290	Big Brook near Marlboro, NJ	6.42	1980–95	1989	10.16	1,370	9/20/89	10.16	1,370	N	5–10
01407760	Jumping Brook near Neptune City, NJ	6.46	1967–95	1971 1992	6.34 7.43	1,830 779	9/12/71	6.34	1,830	N	25–50
01408000	Manasquan River at Squankum, NJ	44.0	1932–95	1938	12.45	2,940	11/08/77	10.37	2,040	N	20
01408015	Mingamahone Brook at Farmingdale, NJ	6.20	1969–95	1975	7.31	425	7/21/75	7.31	425	N	25–50
01408030	Manasquan River at Allenwood, NJ	63.9	1969–94	1975	11.24	3,700	9/27/75	11.24	3,700	N	20
01408120	North Branch Metedeconk River near Lakewood, NJ	34.9	1973–95	1978	9.28	1,370	11/08/77	9.28	1,370	N	25–50
01408500	Toms River near Toms River, NJ	123	1929–95	1938	12.50	2,000	2/26/79 5/31/84	11.61 11.71	1,770 1,810	N N	30 35
01409000	Cedar Creek at Lanoka Harbor, NJ	53.3	1933–58, 1971, 1979–85, 1993	1944 1938	4.50 5.55	1,050 786	5/30/84	4.45	1,030	N	40
01409280	Westecunk Creek at Stafford Forge, NJ	15.8	1974–88, 1991	1978 1987	3.70 11.72	256 108	7/04/78	3.70	256	N	10–25
01409375	Mullica River near Atco, NJ	3.22	1975–87	1985	5.78	58	9/27/85	5.78	58	N	10–25
01409400	Mullica River near Batsto, NJ	46.7	1958–95	1979	6.14	1,840	9/26/75 2/26/79	5.50 6.14	1,380 1,840	N N	15 40
01409403	Wildcat Branch at Chesilhurst, NJ	1.03	1975–87	1975	5.73	20	10/19/74	5.73	20	N	10–25
01409409	Blue Anchor Brook near Blue Anchor, NJ	3.01	1975–87	1978	4.79	25	5/25/78	4.79	25	N	5–10
01409810	West Branch Wading River near Jenkins, NJ	84.1	1975–95	1979	16.14	1,320	2/26/79	16.14	1,320	N	10–25
01410000	Oswego River at Harrisville, NJ	72.5	1931–95	1939	9.54	1,390	8/13/78	6.71	930	N	20
01410500	Absecon Creek at Absecon, NJ	17.9	1924–29, 1934–40, 1946–84	1935	--	295	2/26/79	--	265	Y	15
01410810	Fourmile Branch at New Brooklyn, NJ	7.74	1973–91	1989	5.32	148	7/23/89	5.32	148	N	10–25
01411000	Great Egg Harbor River at Folsom, NJ	57.1	1926–95	1940 1979	-- 7.25	1,440 771	2/27/79	7.25	771	N	20
01411300	Tuckahoe River at Head of River, NJ	30.8	1971–95	1984 1994	6.17 6.51	510 433	5/31/84	6.17	510	N	25–50
01411500	Maurice River at Norma, NJ	112	1933–95	1940	8.72	7,360	8/29/71 2/28/79	5.13 5.09	1,550 1,510	N N	20 20
01412500	West Branch Cohansey River at Seeley, NJ	2.58	1952–73, 1975–79, 1981–95	1983	11.17	885	6/20/83 2/12/88	11.17 2.60	885 820	N N	45 40
01412800	Cohansey River at Seeley, NJ	28.0	1978–95	1983	8.50	10,000	6/21/83	8.50	10,000	N	>100
01438500	Delaware River at Montague, NJ	3,480	1936–95	1955	35.15	250,000	6/30/73 2/12/85	23.40 23.28	115,000 114,000	N N	10 10

Table 31. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Jersey—Continued

Station number (fig. 52)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01440000	Flat Brook near Flatbrookville, NJ	64.0	1924–95	1955 1994	12.58 77.00	9,560 2,315	2/21/73 4/16/83	8.56 9.52	4,060 5,110	N N	20 40
01440200	Delaware River near Delaware Water Gap, NJ	--	1955, 1965–95	1955	37.4	260,000	6/30/73 3/16/86	23.82 24.00	103,000 110,000	N N	10 10
01443900	Yards Creek near Blairstown, NJ	5.34	1967–95	1979 1977	3.73 3.92	468 583	2/24/77	3.92	583	Y	--
01445000	Pequest River at Huntsville, NJ	31.0	1940, 1942–95	1979	5.44	640	2/21/73 1/25/79	4.81 5.44	512 640	N N	15–20 40
01445430	Pequest River at Townsbury, NJ	92.5	1938, 1978–93	1982 1938	5.10 488.40	2,570 --	2/04/82	5.10	2,570	N	10–25
01445500	Pequest River at Pequest, NJ	106	1922–95	1979	5.97	2,130	4/02/70 1/25/79 9/21/89	4.94 5.97 5.15	1,590 2,130 1,640	N N N	5–10 70 10
01446000	Beaver Brook near Belvidere, NJ	36.7	1923–95	1936	5.76	1,510	2/21/73 1/25/79 4/16/83	4.97 5.43 4.83	1,100 1,350 1,030	N N N	20 50 15
01446500	Delaware River at Belvidere, NJ	4,535	1903, 1922–95	1955	30.21	273,000	6/30/73 3/16/86	19.95 20.34	122,000 126,000	N N	10 10
01455200	Pohatcong Creek at New Village, NJ	33.3	1960–95	1979	8.10	3,570	1/25/79 9/21/89	8.10 7.18	3,570 2,450	N N	>100 25–50
01455500	Musconetcong River at outlet of Lake Hopatcong, NJ	25.3	1929–95	1955 1984	3.85 4.52	795 425	4/07/84	4.52	425	Y	--
01456000	Musconetcong River near Hackettstown, NJ	68.9	1922–95	1955 1936	3.97 5.88	2,170 1,430	1/25/79 4/16/83 5/30/84	3.79 3.30 3.46	2,000 1,500 1,630	Y Y Y	45 15–20 20
01457000	Musconetcong River near Bloomsbury, NJ	141	1904–06, 1922–95	1979	8.50	7,200	6/23/73 1/25/79	7.78 8.50	6,310 7,200	N N	45–50 80–90
01457500	Delaware River at Riegelsville, NJ	6,328	1841, 1904, 1907–95	1955	38.85	340,000	3/16/86	25.16	147,000	Y	5–10
01463500	Delaware River at Trenton, NJ	6,780	1902, 1904–95	1955	28.60	329,000	5/30/84	20.64	152,000	Y	10
01463620	Assunpink Creek near Clarksville, NJ	34.3	1971, 1973–81, 1992–95	1971	10.90	1,500	7/21/75 8/21/71	9.36 10.90	1,050 1,500	Y	5–10 10–25
01464000	Assunpink Creek at Trenton, NJ	90.6	1924–95	1975	14.61	5,450	8/28/71 7/21/75	13.46 14.61	3,920 5,450	N N	60 >100
01464400	Crosswicks Creek at New Egypt, NJ	41.2	1968–79, 1981–95	1978	30.27	4,500	9/01/78	30.27	4,500	N	>100
01464500	Crosswicks Creek at Extonville, NJ	81.5	1938, 1940–51, 1953–95	1978	14.18	4,860	8/28/71 9/01/78	13.93 14.18	4,640 4,860	N N	30 35
01464515	Doctors Creek at Allentown, NJ	17.4	1968–95	1978 1971	7.48 7.30	-- 1,250	8/28/71	7.30	1,250	N	10–25
01464520	Doctors Creek at Groveville, NJ	25.3	1968–79	1978	9.33	2,080	1/26/78	9.33	2,080	N	10–25
01464530	Blacks Creek at Mansfield Square, NJ	19.7	1978–95	1978	11.20	2,500	8/31/78	11.20	2,500	N	10–25
01464538	Crafts Creek at Columbus, NJ	5.38	1978–90, 1992–95	1989	10.25	880	7/06/89	10.25	880	N	10–25
01464582	Assiscunk Creek near Columbus, NJ	10.9	1978–80, 1982–95	1978	11.10	1,480	8/31/78	11.10	1,480	N	25–50
01465850	South Branch Rancocas Creek at Vincentown, NJ	64.5	1962–95	1978	7.98	1,320	8/28/78 2/25/79	7.98 7.82	1,320 1,250	N N	20–30 10–15

Table 31. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Jersey—Continued

Station number (fig. 52)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01465880	Southwest Branch Rancocas Creek at Medford, NJ	47.2	1983–95	1989	15.30	3,300	7/05/89	15.30	3,300	N	25–50
01466500	McDonalds Branch in Lebanon State Forest, NJ	2.35	1954–95	1958	2.33	35	6/06/79	2.08	29	N	10
01467000	North Branch Rancocas Creek at Pemberton, NJ	118	1922–95	1939	10.77	1,730	8/28/71 2/26/79	4.18 3.79	1,710 1,660	N N	30 25
01467057	Pompeston Creek at Cinnaminson, NJ	5.77	1975–88	1979	6.39	1,300	2/21/79	6.39	1,300	N	10–25
01467069	North Branch Pennsauken Creek near Moorestown, NJ	12.8	1975–88	1978	7.44	1,720	8/28/78	7.44	1,720	N	10–25
01467150	Cooper River at Haddonfield, NJ	17.0	1964–95	1971	5.46	3,300	8/28/71 7/05/89	5.46 4.18	3,300 1,710	N N	80–100 15
01467160	North Branch Cooper River near Marlton, NJ	5.34	1964–88	1983 1968	3.80 4.47	480 320	4/16/83	3.80	480	N	25–50
01467180	North Branch Cooper River at Ellisburg, NJ	10.5	1964–75	1971	6.65	1,000	8/28/71	6.65	1,000	N	15–25
01467305	Newton Creek at Collingswood, NJ	1.33	1964–75, 1977–95	1994	6.82	328	9/01/78	6.40	307	N	50–100
01467317	South Branch Newton Creek at Haddon Heights, NJ	0.63	1964–95	1978	4.62	295	9/01/78 7/05/89	4.62 4.55	295 185	N N	25–50 10–25
01467351	North Branch Big Timber Creek at Laurel Road at Laurel Springs, NJ	7.17	1975–88	1987 1975	2.18 2.19	515 340	8/10/87	2.18	515	N	5–10
01475000	Mantua Creek at Pitman, NJ	6.05	1940, 1942–94	1940	6.64	4,200	8/28/71	2.72	470	N	15–20
01475019	Mantua Creek at Salina, NJ	14.1	1975–88	1975	7.49	650	7/15/75	7.49	650	N	10–25
01477480	Oldmans Creek near Harrisonville, NJ	13.8	1975–95	1978	6.51	800	1/26/78	6.51	800	N	10–25
01482500	Slem River at Woodstown, NJ	14.6	1940–95	1940	17.98	22,000	6/20/83 2/12/85	13.07 13.10	2,090 2,120	N N	5–10 5–10

[1]Regulated during flood: N, no; Y, yes.

New Mexico

Hydroclimatology

New Mexico is located in the southwestern United States. The State lies in a continental subtropical region, and most regions receive limited precipitation. New Mexico's mountainous topography has a substantial effect on local climate and weather in the State. New Mexico receives its moisture from the Northern Pacific and subtropical Pacific Oceans and the Gulf of Mexico. The principal sources of moisture vary by season in New Mexico. During the summer, the majority of the moisture is provided by the Gulf of Mexico. When the wintertime jetstream is in its normal position north of the State, the New Mexico winters are clear and mild. When the jetstream dips southward, however, the temperatures in New Mexico become colder, and the possibility of precipitation increases.

Precipitation in the summer is usually the result of monsoon-type thunderstorm activity that can produce locally excessive rainfall that can result in flash floods. Mean annual precipitation varies according to the topography. In some of the mountains, annual precipitation averages about 20 in. The lowest mean annual precipitation is in the northwest and is about 7 in. (Paulson and others, 1991). Winter precipitation is usually caused by Pacific storms crossing southern California and Arizona.

New Mexico is divided into several hydrologic regions for regionalization procedures that relate flood characteristics to watershed and climatic characteristics. The magnitude of maximum discharges for streams in New Mexico depends on one or more of the following variables: drainage area, mean basin elevation, 24-hour, 100-year rainfall, 24-hour rainfall at various frequencies, average channel elevation, and mean minimum January temperature. Which of the variables to use to determine maximum discharge depends upon the hydrologic region in which the stream is located (Jennings and others, 1994).

Significant Floods

Due to the characteristically dry nature of New Mexico climate, not many significant floods occurred in the State from 1970 through 1989. One significant flood occurred in December 1978. The flood affected the Gila River Basin and was a result of intense, localized rainfall. Eleven percent of the streamflow-gaging stations in the State recorded significant discharges in 1978. Another significant flood occurred on June 9, 1988, in the Vermejo River Basin. This flood had a recurrence interval of 60 to 80 years.

The location of streamflow-gaging stations in New Mexico that had significant floods for 1970–89 is shown in figure 53 by station number. The specific data for each significant flood are listed in table 32. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.

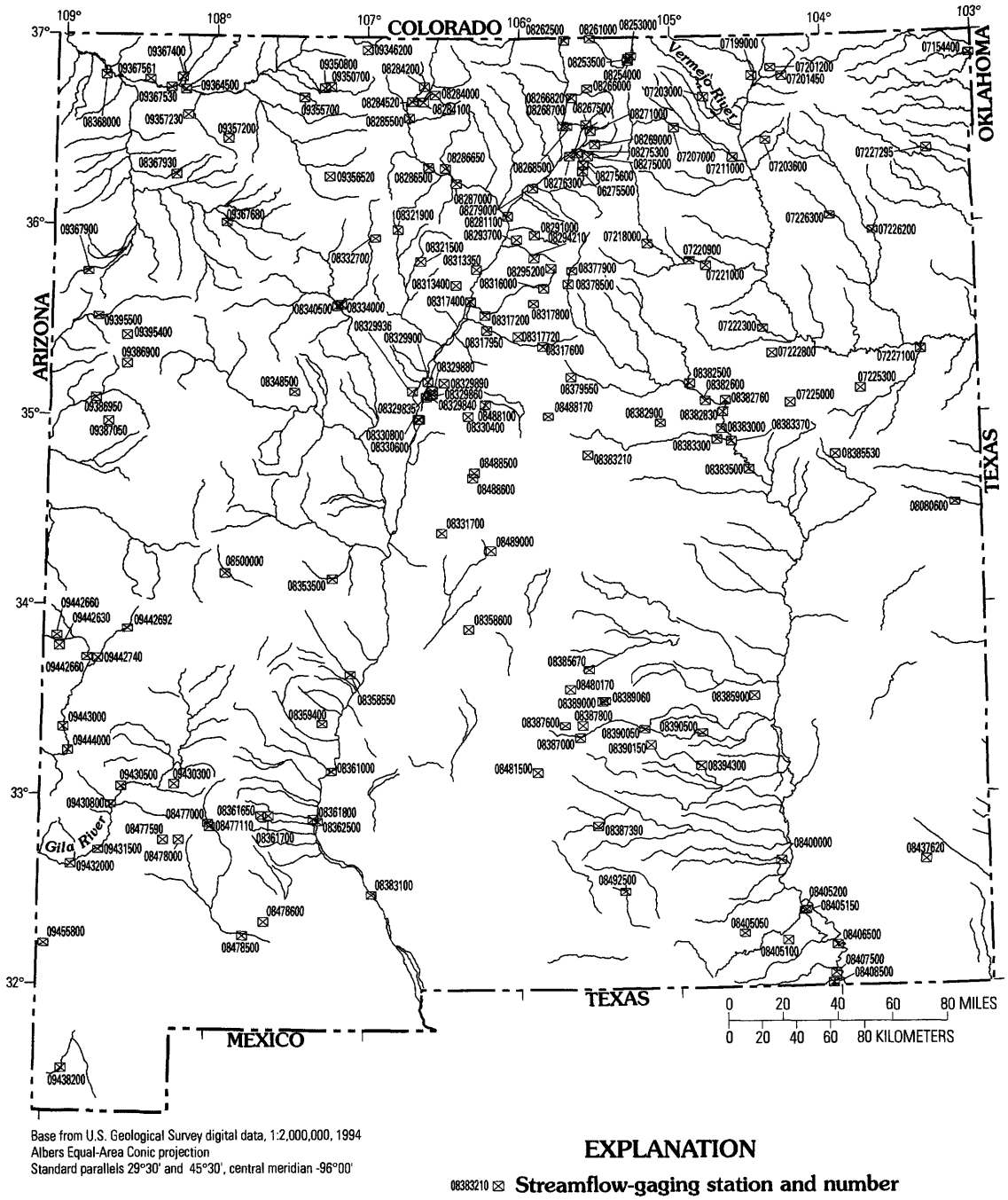


Figure 53. Location of streamflow-gaging stations with signficant floods during 1970–89 for New Mexico.

Table 32. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Mexico

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig. 53)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07154400	Carrizozo Creek near Kenton, OK	111	1953–95	1958 1965	12.22 12.60	15,600 5,950	5/14/77	11.94	14,300	N	30–35
07199000	Canadian River near Hebron, NM	229	1947–86	1965	28.20	62,400	8/12/81	9.70	11,500	N	10
07201200	Chicorica Creek tributary near Raton, NM	5.18	1971–95	1982	18.30	1,340	8/05/82	18.30	1,340	N	30
07201450	Green Mountain Arroyo near Raton, NM	18.2	1971–82	1973	9.79	5,030	7/02/73	9.79	5,030	N	20
07203000	Vermejo River near Dawson, NM	301	1929–95	1965	15.25	12,600	6/09/88	14.23	10,400	N	60–80
07203600	Rio del Plano tributary near Taylor Springs, NM	6.71	1971–82	1982	12.31	724	7/29/82	12.31	724	N	35–45
07207000	Cimarron River near Cimarron, NM	294	1950–95	1965	12.42	15,500	6/09/88	4.30	870	Y	--
07211000	Cimarron River at Springer, NM	1,032	1930–93	1965	19.96	29,500	7/28/71	9.20	5,370	Y	20
07218000	Coyote Creek near Golondrinas, NM	215	1929–93	1961	9.60	4,050	7/01/71	8.51	3,070	N	25
07220900	Dog Creek near Shoemaker, NM	18.4	1954–94	1982	14.90	7,180	7/08/82	14.90	7,180	N	45
07221000	Mora River near Shoemaker, NM	1,104	1915–22, 1924, 1927–93	1948	12.79	15,200	7/08/82	11.18	11,000	N	20
07222300	Trementina Creek at Trementina, NM	65.0	1959–82, 1985–94	1965	12.00	14,100	6/20/82	11.66	12,900	N	35
07222800	Garita Creek tributary near Variadero, NM	12.0	1971–94	1977	17.37	7,020	8/29/77	17.37	7,020	N	35
07225000	Pajarito Creek at Newkirk, NM	55.0	1954–94	1962	8.09	3,550	7/16/81	8.01	3,500	N	30
07225300	Bluewater Creek near Tucumcari, NM	15.2	1971–78, 1980–94	1981	12.71	2,350	8/11/81	12.71	2,350	N	--
07226200	Bueyeros Creek at Bueyeros, NM	34.0	1957–59, 1961–62, 1964–65, 1972, 1981, 1984, 1988–94	1972	12.77	5,800	7/17/72	12.77	5,800	N	10–15
07226300	Carrizo Creek near Roy, NM	68.0	1955–79, 1981–94	1981	7.11	1,800	8/11/81	7.11	1,800	N	100
07227100	Revuelto Creek near Logan, NM	786	1960–93	1960	14.30	26,700	7/20/72	12.72	21,200	N	25
07227295	Sandy Arroyo tributary near Clayton, NM	1.25	1952–79, 1982–94	1956	7.33	388	5/14/77	--	300	N	25
08080600	Running Water Draw near Clovis, NM	109	1953–79, 1981–84, 1986–94	1972 1988	-- 10.54	8,000 7,660	7/24/72 5/30/88	-- 10.54	8,000 7,660	N N	20 20
08253000	Casias Creek near Costilla, NM	16.6	1937–93	1971	2.07	181	7/20/71 6/08/79 6/25/83	2.07 1.93 1.74	181 153 123	Y Y Y	50 -- --
08253500	Santistevan Creek near Costilla, NM	2.15	1938–93	1941	1.73	18	7/01/79	1.48	17	N	20
08254000	Costilla Creek below Costilla Dam, NM	54.6	1970–74, 1979–93	1979	3.04	301	6/19/79	3.04	301	Y	--

Table 32. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Mexico—Continued

Station number (fig. 53)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08261000	Costilla Creek near Garcia, CO	200	1949–93	1991 1983	4.69 4.91	514 500	6/01/83	4.91	500	Y	--
08262500	Costilla Creek near Jaroso, CO	290	1912, 1948–61, 1975	1975	9.15	2,460	6/18/75	9.15	2,460	Y	--
08266000	Cabresto Creek near Questa, NM	36.7	1944–95	1983	4.82	204	6/02/83 5/24/84	4.82 4.50	204 171	Y Y	-- --
08266820	Red River below fish hatchery near Questa, NM	185	1979–95	1979	5.30	755	6/08/79	5.30	755	Y	--
08267500	Rio Hondo near Valdez, NM	36.2	1935–95	1941 1979	2.73 4.53	541 402	6/09/79	4.53	402	N	20
08268500	Arroyo Hondo at Arroyo Hondo, NM	65.6	1935–85	1948	3.75	1,060	6/09/79	4.85	518	N	20
08268700	Rio Grande near Arroyo Hondo, NM	8,760	1963–95	1987	8.52	7,550	6/14/85 5/19/87	8.08 8.52	6,940 7,550	Y Y	-- --
08269000	Rio Pueblo de Taos near Taos, NM	66.6	1911–13, 1915–16, 1940–95	1979	3.42	1,050	5/26/79	3.42	1,050	N	50
08271000	Rio Lucero near Arroyo Seco, NM	16.6	1911–15, 1934–95	1979 1991	2.33 2.45	310 266	6/08/79	2.33	310	N	45
08275000	Rio Fernando de Taos near Taos, NM	71.7	1914, 1963–80	1973 1979	2.38 2.39	219 190	5/13/73	2.38	219	N	20
08275300	Rio Pueblo de Taos near Ranchito, NM	199	1957–80	1979	4.82	1,290	5/26/79	4.82	1,290	Y	--
08275500	Rio Grande del Rancho near Talpa, NM	83.0	1953–95	1991	4.16	644	5/21/73	3.87	497	N	25
08275600	Rio Chiquito near Talpa, NM	37.0	1957–80	1979	2.81	309	6/08/79	2.81	309	N	20
08276300	Rio Pueblo de Taos below Los Cordovas, NM	380	1957–95	1957 1991	5.81 8.93	2,380 1,660	8/12/73	5.37	1,680	Y	--
08279000	Embudo Creek at Dixon, NM	305	1927, 1934, 1939–95	1977	7.10	4,200	8/29/77 6/09/79 7/24/89	7.10 5.40 5.94	4,200 2,690 2,910	N N N	100–200 25 35
08281100	Rio Grande above San Juan Pueblo, NM	10,550	1963–87	1979	6.94	8,220	6/09/79	6.94	8,220	Y	--
08284000	Rito de Tierra Amarilla at Tierra Amar, NM	49.7	1957–79, 1983	1975	5.28	1,000	5/09/75	5.28	1,000	N	40
08284100	Rio Chama near La Puente, NM	480	1956–93	1979 1985	6.35 6.49	11,200 10,700	5/28/79 5/09/85	6.35 6.49	11,200 10,700	N N	25 25
08284200	Willow Creek above Heron Reservoir near Los Ojos, NM	112	1963–94	1985	6.65	1,610	3/12/85	6.65	1,610	Y	--
08284520	Willow Creek below Heron Dam, NM	193	1974–95	1983 1992	-- --	2,780 2,280	12/18/82	--	2,780	Y	--
08285500	Rio Chama below El Vado Dam, NM	877	1914–16, 1920–22, 1924, 1936–95	1920 1985	-- 7.08	9,000 6,610	5/20/73 5/07/85	6.82 7.08	5,980 6,610	Y Y	-- --
08286500	Rio Chama above Abiquiu Reservoir, NM	1,600	1962–95	1985 1973	7.67 8.70	6,680 6,550	5/20/73 5/08/85	8.70 7.67	6,550 6,680	Y Y	-- --
08286650	Canjilon Creek above Abiquiu Reservoir, NM	144	1965–73, 1977, 1979–85, 1987–94	1970 1980	8.10 9.10	2,450 2,370	7/23/70	8.10	2,450	N	25–50

Table 32. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Mexico—Continued

Station number (fig. 53)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08287000	Rio Chama below Abiquiu Dam, NM	2,147	1962–93	1965 1985	-- 5.52	2,990 2,680	5/14/85	5.52	2,680	Y	--
08291000	Santa Cruz River near Cundiyo, NM	86.0	1931–93	1931	--	2,420	7/13/76 7/16/84	5.50 4.85	1,570 1,260	N N	35 20
08293700	Arroyo Seco tributary near Pojoaque, NM	0.72	1971–78, 1980–91, 1993–95	1974	10.62	508	7/28/74	10.62	508	N	35
08294210	Rio Nambe below Nambe Falls Dam near Nambe, NM	34.1	1979–95	1979	1.96	312	6/09/79	1.96	312	Y	--
08295200	Rio En Medio near Santa Fe, NM	0.63	1964–79, 1981–83, 1985	1983	1.86	20	8/08/83	1.86	20	N	10–25
08313350	Rito de los Frijoles in Bandelier National Monument, NM	17.5	1965, 1968–69, 1977–91	1978	6.34	3,030	7/21/78	6.34	3,030	N	--
08313400	Bland Canyon near Cochiti, NM	7.57	1962–76, 1978–95	1985	3.54	243	8/10/85	3.54	243	N	100
08316000	Santa Fe River near Santa Fe, NM	18.2	1913–95	1921 1979	-- 4.14	1,500 307	6/09/79	4.14	307	Y	8
08317200	Santa Fe River above Cochiti Lake, NM	231	1970–95	1971	9.58	11,400	7/26/71	9.58	11,400	Y	--
08317400	Rio Grande below Cochiti Dam, NM	14,900	1971–91, 1995	1971 1984	-- 7.05	10,300 10,200	7/26/71	--	10,300	Y	--
08317600	San Cristobal Arroyo near Galisteo, NM	116	1955–90, 1993	1961	13.34	9,500	7/27/71	10.34	5,500	N	15
08317720	Canada de la Cueva near Galisto, NM	1.79	1970–85, 1987–95	1982	4.78	919	9/18/82	4.78	919	N	40
08317800	Canada de las Minas tributary near Santa Fe, NM	0.56	1952, 1954–78, 1980–82	1971 1981	12.55 14.16	652 222	7/19/71	12.55	652	N	30
08317950	Galisteo Creek below Galisteo Dam, NM	597	1971–91, 1995	1971 1981	7.00 7.11	2,000 1,590	7/27/71	7.00	2,000	Y	--
08321500	Jemez River below East Fork near Jemez Springs, NM	173	1959–76, 1979, 1982–90	1975 1973	4.60 5.06	1,700 1,430	4/25/75	4.60	1,700	N	20
08321900	Rio de las Vacas near Senorita, NM	26.8	1957–94	1958	5.05	530	7/19/79	4.75	510	N	10
08329835	North floodway channel at Albuquerque, NM	40.0	1983–95	1988	12.10	7,250	7/09/88	12.10	7,250	N	--
08329840	Hahn Arroyo in Albuquerque, NM	4.30	1979–91, 1995	1980	2.54	1,080	8/14/80	2.54	1,080	N	--
08329860	Grant Line Arroyo at Villa del Oso, NM	0.08	1977–91, 1995	1982	2.14	35	8/01/82	2.14	35	N	--
08329880	Academy Acres drain in Albuquerque, NM	0.13	1976–95	1976	0.68	116	7/31/76	0.68	116	N	--
08329890	La Cueva Arroyo tributary near Albuquerque, NM	0.09	1978–88	1981	4.91	77	6/29/81	4.91	77	N	--
08329900	North floodway channel near Alameda, NM	87.9	1968–95	1980	10.40	11,000	8/14/80	10.40	11,000	N	--
08329936	Taylor Ranch drain at Albuquerque, NM	0.13	1979–80, 1982–91, 1995	1980	3.26	43	9/08/80	3.26	43	N	--

Table 32. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Mexico—Continued

Station number (fig. 53)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08330400	Juan Toro Canyon near Miera, NM	1.57	1959–85, 1987–92, 1995	1971	1.33	44	7/20/71	1.33	44	N	--
08330600	Tijeras Arroyo near Albuquerque, NM	128	1952–68, 1972–95	1988	9.60	2,930	7/09/88	9.60	2,930	N	50–60
08330800	Tijeras Arroyo below south diversion inlet near Albuquerque, NM	--	1974–87	1976 1987	-- 3.70	1,450 1,140	8/19/76	--	1,450	N	--
08331700	Abo Arroyo tributary near Scholle, NM	0.23	1954–85	1965	18.15	301	9/23/71	17.94	290	N	25
08332700	San Pablo Creek near Cuba, NM	12.8	1971–82	1971	9.07	2,360	7/20/71	9.07	2,360	N	--
08334000	Rio Puerco above Arroyo Chico near Guadalupe, NM	420	1952–93	1967	13.53	6,940	8/28/88	11.07	5,260	N	20
08340500	Arroyo Chico near Guadalupe, NM	1,390	1944–86	1972	17.50	15,200	9/12/72	17.50	15,200	N	50
08348500	Encinal Creek near Casa Blanca, NM	6.19	1959, 1961–75, 1977–94	1967	11.50	4,330	7/16/81	4.70	1,160	N	20
08353500	La Jencia Creek near Magdalena, NM	195	1957–94	1962	10.85	4,830	9/02/72	10.18	4,700	N	15
08358550	Milligan Gulch near San Marcial, NM	413	1968–78	1972	9.22	14,000	9/11/72	9.22	14,000	N	--
08358600	Chupadera Wash tributary at Bingham, NM	1.29	1961–94	1980	4.75	620	9/10/80	4.75	620	N	50
08359400	Lumber Canyon tributary near Monticello, NM	0.90	1952–75	1972	6.31	778	9/02/72	6.31	778	N	30
08361000	Rio Grande below Elephant Butte Dam, NM	29,450	1915–87, 1989–95	1942 1973	-- 7.50	8,220 2,330	6/03/87	--	4,620	Y	--
08361650	Percha Creek near Kingston, NM	21.5	1953–93	1972	15.80	3,740	9/03/72	15.80	3,740	N	200–300
08361700	Percha Creek near Hillsboro, NM	35.4	1957–78, 1980–82, 1984–93	1972	11.70	12,200	9/03/72	11.70	12,200	N	100–200
08361800	Percha Creek at Caballo Dam near Arrey, NM	119	1953–76	1972	10.20	15,400	9/03/72	10.20	15,400	N	60–80
08362500	Rio Grande below Caballo Dam, NM	30,700	1938–95	1942	--	7,650	7/11/87	--	4,650	Y	--
08363100	Rio Grande tributary near Radium Springs, NM	0.40	1955–75, 1977–92	1959	8.20	332	7/08/74	7.57	288	N	20
08377900	Rio Mora near Terrero, NM	53.2	1964–95	1991 1979	4.08 4.15	937 820	6/08/79	4.15	820	N	40
08378500	Pecos River near Pecos, NM	189	1920–22, 1924, 1926, 1928–95	1929	6.20	4,500	6/08/79	4.73	2,200	N	25
08379550	Canon Blanco near Leyba, NM	11.2	1971–77, 1979–83	1976	6.90	1,440	7/20/76	6.90	1,440	N	15
08382500	Gallinas River near Colonias, NM	610	1937, 1952–93	1937	27.20	26,700	7/11/82 7/06/88	19.67 17.79	13,700 11,300	Y Y	20 15
08382600	Pecos River above Canon del Uta near Colonias, NM	2,330	1976–93	1982	10.36	12,400	6/20/82	10.36	12,400	N	--

Table 32. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Mexico—Continued

Station number (fig. 53)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08382760	Los Esteros Creek tributary above Santa Rosa Lake, NM	13.7	1974, 1976–90	1977	7.80	7,400	8/29/77	7.80	7,400	N	--
08382830	Pecos River below Santa Rosa Dam, NM	2,430	1981–93	1982	6.81	16,400	6/24/82	6.81	16,400	Y	--
08382900	Pecos River tributary near Pintada, NM	16.0	1961, 1963–84, 1987–95	1971	4.80	6,600	7/19/71 8/11/81	4.80 3.13	6,600 1,950	N N	-- --
08383000	Pecos River at Santa Rosa, NM	2,650	1903–04, 1910, 1928, 1931–92	1937	25.70	55,200	8/29/77	10.60	15,790	N	<5
08383210	Pintada Arroyo tributary near Encino, NM	1.00	1959–64, 1967–78, 1980–84	1975	2.56	145	9/12/75	2.56	145	N	20
08383300	Pintada Arroyo near Santa Rosa, NM	896	1959–86	1984	9.43	4,300	8/10/84	9.43	4,300	N	25
08383370	Pecos River tributary near Puerto de Luna, NM	0.37	1961–95	1987	15.89	2,000	8/20/70 8/23/87	15.39 15.89	1,450 2,000	N N	-- --
08383500	Pecos River near Puerto de Luna, NM	3,970	1938–95	1942	17.00	48,600	9/02/86	11.23	27,100	Y	20
08385530	Alamosa Creek tributary near Jordan, NM	9.71	1962–65, 1967–84, 1986–94	1972	6.86	2,850	7/11/72	6.86	2,850	N	200
08385670	Aragon Creek tributary near Encinoso, NM	6.07	1961–77, 1979–80, 1982–91, 1993–94	1961	5.10	1,610	9/30/82	5.05	1,550	N	25
08385900	Salt Creek tributary near Roswell, NM	0.04	1952–84, 1988–90, 1992–94	1977	3.75	73	8/11/77 6/27/78	3.75 3.08	73 66	N N	-- --
08387000	Rio Ruidoso at Hollywood, NM	120	1954–95	1984	9.68	2,120	12/19/78 8/11/84	8.63 9.68	1,570 2,120	N N	35 60
08387600	Eagle Creek below South Fork near Alto, NM	8.14	1970–80, 1988–93	1979	3.79	206	12/19/78	3.79	206	N	--
08387800	Eagle Creek near Alto, NM	15.7	1970–80	1979	3.76	431	12/19/78	3.76	431	Y	--
08389000	Rio Bonito near Fort Stanton, NM	85.0	1955–94	1979	7.20	4,100	5/17/79	7.20	4,100	N	50
08389060	Rio Bonito tributary near Fort Stanton, NM	0.72	1955–77, 1979–84, 1989, 1991–95	1982	6.40	512	9/30/82	6.40	512	N	--
08390050	Rio Hondo tributary at Tinnie, NM	0.23	1971–84, 1988–95	1972	10.80	420	9/07/72	10.80	420	N	15
08390150	Gallo Canyon near Picacho, NM	1.32	1962–84, 1986–95	1973	9.19	2,400	9/10/73	9.19	2,400	N	--
08390500	Rio Hondo at Diamond A Ranch near Roswell, NM	947	1940–95	1965 1941	26.40 28.78	54,800 27,000	6/26/86	26.39	54,000	N	90
08394300	Twin Buttes Canyon tributary near Roswell, NM	5.01	1969–84, 1986–94	1986	7.75	3,600	6/25/86	7.75	3,600	N	--
08397390	Curtis Canyon near Mayhill, NM	10.3	1981–83, 1986–89, 1991–95	1987 1992	0.58 1.62	23 --	8/23/87	0.58	23	N	--
08400000	Fourmile Draw near Lakewood, NM	265	1952–88, 1990–95	1966	19.90	29,300	6/25/86	17.18	16,800	N	25

Table 32. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Mexico—Continued

Station number (fig. 53)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08405050	Last Chance Canyon tributary near Carlsbad Cavern, NM	0.20	1959–89, 1991–95	1966	7.77	683	9/29/83	7.00	600	N	25
08405100	Mosley Canyon near White City, NM	14.6	1959–89, 1991–95	1965	13.70	16,400	6/24/86	10.19	6,300	N	15–20
08405150	Dark Canyon at Carlsbad, NM	451	1973–95	1980 1986	12.10 12.53	27,000 26,900	6/24/86	12.53	26,900	N	--
08405200	Pecos River below Dark Canyon at Carlsbad, NM	18,550	1970–95	1986	17.35	35,400	6/24/86	17.35	35,400	Y	--
08406500	Pecos River near Malaga, NM	19,190	1919, 1921–30, 1932–95	1966	42.10	120,000	6/24/86	31.41	49,100	Y	--
08407500	Pecos River at Red Bluff, NM	19,540	1938–95	1966	33.32	111,000	6/25/86	26.76	43,800	Y	--
08408500	Delaware River near Red Bluff, NM	689	1938–93	1956	27.00	81,400	10/21/69	17.84	35,700	N	25
08437620	Monument Draw tributary near Monument, NM	6.23	1969–82	1972	7.87	1,280	6/10/72	7.87	1,280	N	--
08477000	Mimbres River near Mimbres, NM	152	1931–32, 1934, 1936, 1938–43, 1945–76	1973	7.49	3,370	10/20/72 9/15/76	7.49 7.20	3,370 2,900	Y Y	100 75
08477110	Mimbres River at Mimbres, NM	184	1979–95	1985	8.05	6,360	12/28/84	8.05	6,360	Y	--
08477590	Pinos Altos Creek at Silver City, NM	4.63	1958–95	1972	4.09	3,700	9/03/72	4.09	3,700	N	--
08478000	Cameron Creek at Central, NM	18.8	1954–82, 1984, 1987–95	1959	7.30	2,200	11/28/81	6.46	2,150	N	--
08478500	Mimbres River at Deming, NM	1,370	1954–76, 1978–79, 1984–95	1979 1988	5.91 10.15	2,350 1,870	9/29/75 12/19/78	5.21 5.91	1,990 2,350	N N	-- --
08478600	Mimbres Basin tributary near Florida, NM	0.55	1959–95	1991	4.74	480	1/30/78	4.27	410	N	20
08480170	Nogal Creek tributary near Nogal, NM	1.94	1968–94	1977	8.45	655	8/10/77	8.45	655	N	--
08481500	Tularosa Creek near Bent, NM	120	1948–93	1965	5.02	4,280	8/02/88	4.68	3,980	N	15
08488100	Juan Tomas Canyon near Edgewood, NM	20.0	1971, 1975, 1981–84, 1989–91, 1994	1989	2.48	150	8/01/89	2.48	150	N	--
08488170	Chavez Draw tributary near Clines Corners, NM	2.73	1968–83	1981	6.11	315	6/30/81	6.11	315	N	15–20
08488500	Canon de Torreon at Torreon, NM	18.2	1954–82, 1984–95	1967	4.23	4,310	10/02/83	5.45	4,230	N	45–50
08488600	Arroyo del Cuervo near Torreon, NM	11.8	1969–75, 1977–82, 1984–94	1984	5.34	1,320	10/02/83	5.34	1,320	N	20
08489000	Big Draw near Mountainair, NM	3.90	1953–71, 1973–74, 1978–83, 1985–95	1954	8.68	1,710	8/10/80	5.48	550	N	15
08492500	Fleming Draw near Pinon, NM	16.6	1959–84, 1986–89, 1991–95	1969	8.75	5,800	8/10/84	8.54	5,500	N	25

Table 32. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Mexico—Continued

Station number (fig. 53)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08500000	Swingle Canyon near Datil, NM	6.35	1977, 1979–89, 1991–95	1977	5.73	900	7/16/77	5.73	900	N	--
09346200	Rio Amargo at Dulce, NM	168	1956–61, 1963–95	1968	10.57	2,860	7/20/77	10.16	2,600	N	30
09350700	Ruben Canyon near Gobernador, NM	5.06	1971–95	1988	5.89	380	8/17/88	5.89	380	N	--
09350800	Vaqueros Canyon near Gobernador, NM	60.5	1956–95	1965	10.37	2,520	8/17/88	9.10	1,900	N	35
09355700	Gobernador Canyon near Gobernador, NM	19.8	1956–85, 1987–95	1963	9.30	3,450	10/--/72	--	1,250	N	10
09356520	Burro Canyon near Lindrith, NM	9.11	1970–82, 1985–88, 1992–93	1981	10.87	725	6/29/81	10.87	725	N	40
09357200	Gallegos Canyon tributary near Nageezi, NM	0.20	1952–86	1964	8.00	580	8/20/76	7.63	555	N	40
09357230	West Draw near Farmington, NM	0.32	1975–88, 1990–95	1976	4.61	74	7/26/76	4.61	74	N	--
09364500	Animas River at Farmington, NM	1,360	1912–22, 1924–89, 1991–95	1927 1912	-- 16.50	25,000 --	9/07/70 10/20/72	-- --	10,940 10,500	Y Y	9 8
09367400	La Plata River tributary near Farmington, NM	1.03	1970–95	1973	4.25	1,130	3/--/73	4.25	1,130	N	60
09367530	Locke Arroyo near Kirtland, NM	2.96	1951–83, 1985–86	1957	9.10	812	5/05/78	1.16	675	N	30
09367561	Shumway Arroyo near Waterflow, NM	73.8	1975–90	1978	18.94	6,420	5/20/78	18.94	6,420	N	--
09367680	Chaco Wash at Chaco Canyon National Monument, NM	578	1976–91, 1994–95	1988	8.55	1,920	9/02/88	8.55	1,920	N	--
09367900	Black Springs Wash near Mexican Springs, NM	7.05	1938, 1940, 1942, 1954–82, 1984–88, 1990–95	1955 1981	2.76 4.89	2,200 1,790	9/12/75	2.52	2,050	N	20
09367930	Hunter Wash at Bisti Trading Post, NM	45.6	1975–82, 1987–94	1976 1989	6.22 6.24	1,570 1,310	8/19/76	6.22	1,570	N	--
09368000	San Juan River at Shiprock, NM	12,900	1928–95	1929 1957	-- 10.45	80,000 30,900	5/28/79	8.54	14,300	Y	--
09386900	Rio Nutria near Ramah, NM	71.4	1970–95	1995	9.34	1,840	4/14/73	--	782	N	--
09386950	Zuni River above Black Rock Reservoir, NM	848	1970–95	1974 1984	6.61 6.75	5,200 2,580	8/04/74	6.61	5,200	Y	--
09387050	Galestena Canyon tributary near Black Rock, NM	19.0	1957–95	1970	6.40	660	9/05/70	6.40	660	N	45
09395400	Milk Ranch Canyon near Ft. Wingate, NM	14.0	1949, 1953–88, 1990–91, 1993–95	1949	4.20	1,360	3/12/85	1.61	500	N	20
09395500	Puerco River at Gallup, NM	558	1940–45, 1956–75, 1978–82, 1984–91, 1993–94	1972	15.30	12,000	7/17/72	15.30	12,000	N	40

Table 32. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New Mexico—Continued

Station number (fig. 53)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09430300	Copperas Canyon near Pinos Altos, NM	3.95	1963–93	1980	4.82	650	8/13/80	4.82	650	N	--
09430500	Gila River near Gila, NM	1,864	1928–95	1985	13.00	35,200	2/18/78	12.50	32,400	N	65
				1941	17.19	25,400	12/28/84	13.00	35,200	N	75
09430900	Duck Creek at Cliff, NM	228	1957–94	1993	11.76	7,400	7/30/71	11.03	6,900	N	15
09431500	Gila River near Redrock, NM	2,829	1906, 1911, 1929–55, 1963–95	1979	29.80	48,800	12/19/78	29.80	48,800	N	80
				1941	31.00	40,000	12/28/84	25.20	39,100	N	45
09432000	Gila River below Blue Creek near Virden, NM	3,203	1927–95	1979	29.00	58,700	12/19/78	29.00	58,700	N	--
							12/28/84	23.20	37,000	N	--
09438200	Animas Creek near Cloverdale, NM	157	1959–91, 1993–94	1975	7.78	3,400	10/13/74	7.78	3,400	N	80–85
							8/15/79	7.02	2,500	N	30
09442630	Mail Hollow near Luna, NM	4.20	1970–94	1984	4.35	264	10/02/83	4.35	264	N	150–250
09442660	Trout Creek at Luna, NM	31.9	1954–94	1984	4.93	2,790	10/19/72	4.47	2,250	N	40
							10/02/83	4.93	2,790	N	--
09442680	San Francisco River near Reserve, NM	350	1959–95	1984	11.71	9,830	9/30/83	9.63	7,870	N	40
							10/01/83	11.71	9,830	N	60
09442692	Tularosa River above Aragon, NM	94.0	1967–95	1984	3.90	660	10/02/83	3.90	660	N	15
09442740	Tularosa River near Reserve, NM	426	1956–87	1984	9.80	3,020	10/02/83	9.80	3,020	N	70–80
09443000	San Francisco River near Alma, NM	1,546	1964–86	1984	21.44	56,600	10/02/83	21.44	56,600	N	50
09444000	San Francisco River near Glenwood, NM	1,653	1928–95	1984	20.80	37,100	10/20/72	16.61	24,000	N	60–70
							12/18/78	15.60	20,500	N	45
							10/02/83	20.80	37,100	N	150–250
09455800	Steins Creek at Steins, NM	1.26	1959–89, 1991–93	1965	4.80	317	8/26/72	4.71	310	N	20

[1] Regulated during flood: N, no; Y, yes.

New York

Hydroclimatology

New York is located in the northeastern United States and has a continental climate. New York's moisture is supplied primarily by airmasses from the Gulf of Mexico and the Atlantic Ocean. An important secondary source is the lake-effect moisture from the Great Lakes.

New York's precipitation patterns vary across the State due to differences in topography and proximity to Lakes Ontario and Erie. The minimum mean annual precipitation occurs in the Lake Champlain Valley of west-central New York and is about 30 in. The maximum mean annual precipitation, about 60 in., occurs in the mountainous and plateau regions of eastern and north-central New York. Mean annual precipitation for the rest of the State ranges from 34 to 50 in. (Paulson and others, 1991).

Significant flooding in New York is caused by either substantial rains combined with snowmelt or ice jams in the winter and spring. Summer thunderstorms can cause flash flooding. The worst floods in New York history are those associated with hurricane remnants.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the factors associated with the magnitude of maximum discharges for streams in New York include drainage area; basin storage, which is the percentage of the drainage area that is lakes, ponds, or swamps; mean annual precipitation; main-channel slope; basin forest cover, expressed as a percentage of the total drainage area; average main-channel elevation, computed as the average of the elevations at points located 10 and 85 percent of the channel length upstream from the gage; and basin shape index, which is computed as the ratio of the square of the main-channel stream length to the drainage area. These factors are applicable only to unregulated, rural streams in New York (Jennings and others, 1994).

Significant Floods

Sixteen percent of the streamflow-gaging stations in the State recorded significant discharges during the flood of June 1972. The western and central areas of New York were most severely affected by this flood. The flood was caused by torrential rains associated with the remnants of Hurricane Agnes. Flooding was intensified because the remnants of the hurricane collided with a low-pressure system that had been stationary for more than 24 hours over the northeastern United States. The resulting storm produced as much as 16 in. of rain in western and central New York.

Between December 29, 1984, and January 2, 1985, as much as 6.9 in. of rain, combined with unseasonably warm temperatures and rapidly melting snow, caused extensive flooding throughout northern New York State. Maximum discharges at 13 streamflow-gaging stations in the Black and Salmon River Basins had recurrence intervals greater than or equal to 50 years.

During April 4–5, 1987, intense rains fell in the southeastern part of the State. Severe flooding occurred along Schoharie Creek, eventually causing failure of a State throughway bridge, which lead to 10 deaths. Damages were estimated at $65 million (Paulson and others, 1991).

The location of streamflow-gaging stations in New York that had significant floods for 1970–89 is shown in figure 54 by station number. The specific data for each significant flood are listed in table 33. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.

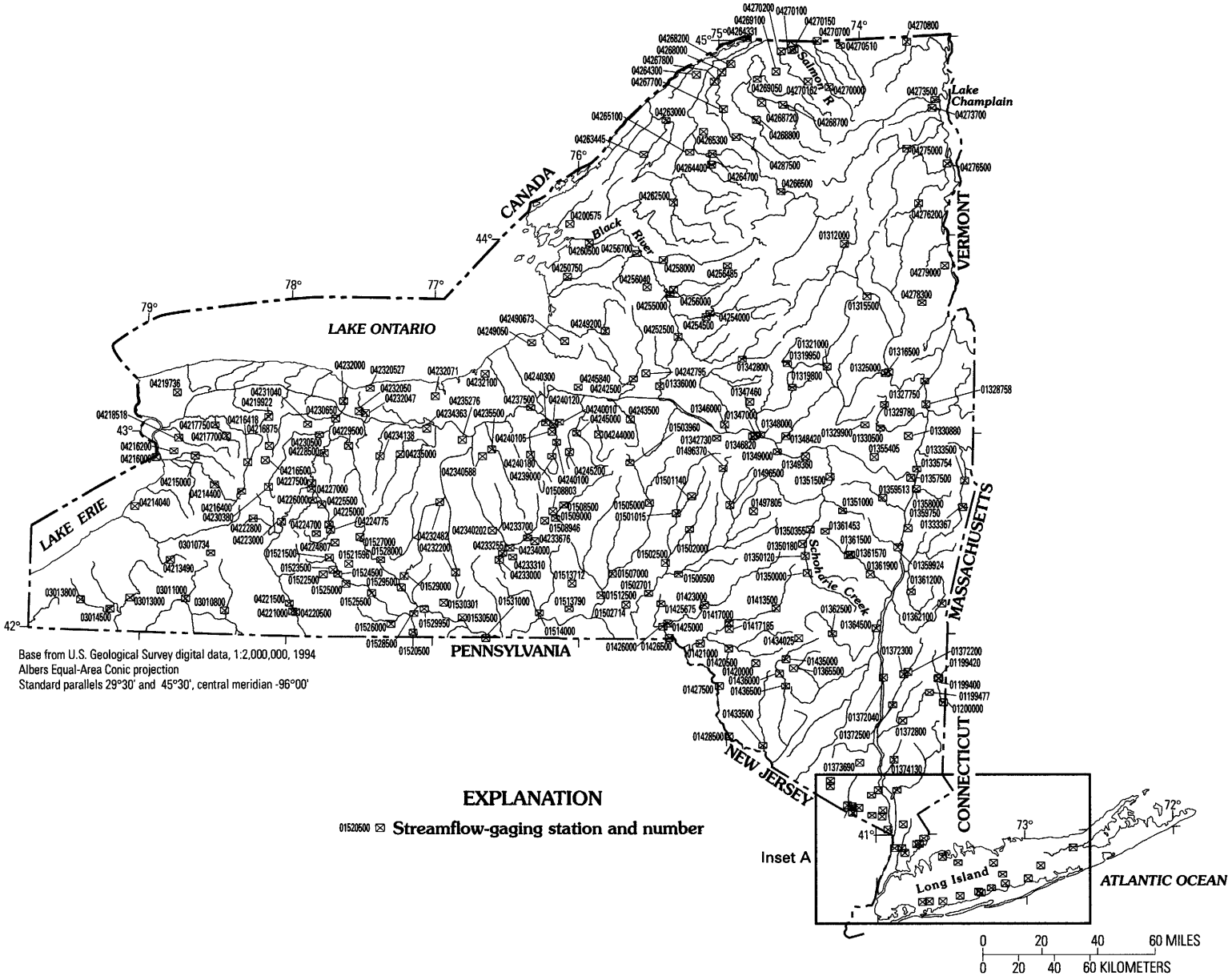
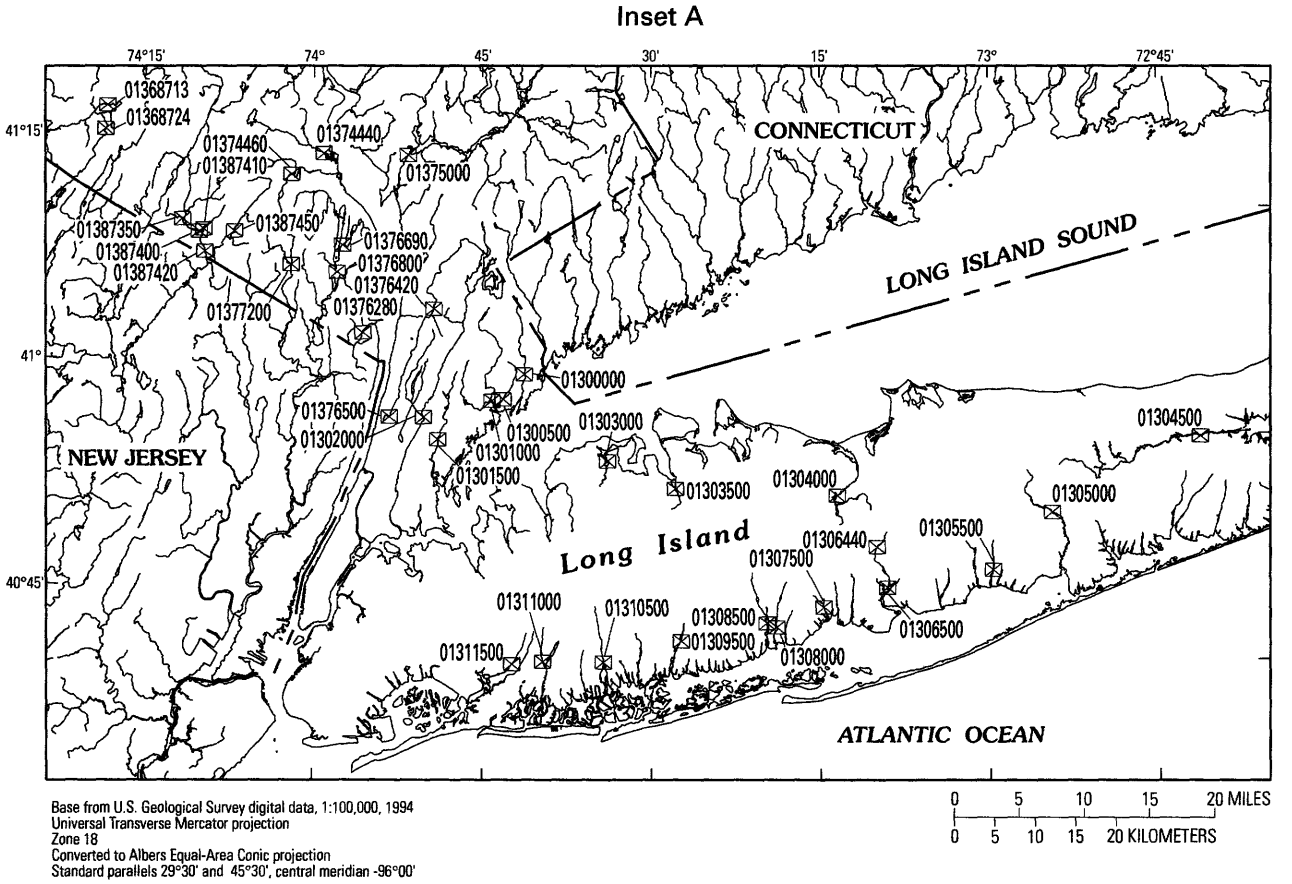


Figure 54. Location of streamflow-gaging stations with significant floods during 1970–89 for New York.



EXPLANATION

01311500 ⊠ **Streamflow-gaging station and number**

Figure 54. Location of streamflow-gaging stations with significant floods during 1970–89 for New York—Continued.

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
Station number (fig. 54)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01199400	Webatuck Creek near South Amenia, NY	81.0	1962–76, 1984	1984	10.50	3,400	5/29/84	10.50	3,400	N	25–50
01199420	Tenmile River near Wassaic, NY	120	1960–74, 1976, 1984	1984	10.72	5,500	5/29/84	10.72	5,500	N	25–50
01199477	Stony Brook near Dover Plains, NY	1.93	1976–93	1987	6.40	532	4/04/87	6.40	532	N	25–50
01200000	Tenmile River near Gaylordsville, CT	203	1930–88, 1992–93	1955	14.90	17,400	5/31/84	11.38	10,400	N	25
01300000	Blind Brook at Rye, NY	9.20	1944–89	1972	12.44	2,320	6/19/72	12.44	2,320	Y	50
							9/26/75	12.32	2,280	Y	50
01300500	Beaver Swamp Brook at Mamaroneck, NY	4.71	1944–89	1979	4.28	288	11/09/77	3.91	258	Y	40
							1/21/79	4.28	288	Y	50–100
01301000	Mamaroneck River at Mamaroneck, NY	23.40	1938, 1944–89	1975	10.15	3,700	6/19/72	9.71	3,550	Y	30
				1938	11.50	--	9/26/75	10.15	3,700	Y	40
01301500	Hutchinson River at Pelham, NY	5.76	1944–89	1971	5.18	526	8/28/71	5.18	526	Y	50
				1979	5.39	478	1/21/79	5.39	478	Y	30
01302000	Bronx River at Bronxville, NY	26.5	1944–89	1972	9.63	2,500	6/19/72	9.63	2,500	Y	50–100
							9/26/75	8.92	2,190	Y	30
01303000	Mill Neck Creek at Mill Neck, NY	11.5	1937–93	1960	1.60	137	1/21/79	1.58	134	N	45
01303500	Cold Spring Brook at Cold Spring Harbor, NY	7.30	1951–93	1979	1.99	181	8/12/78	1.80	147	Y	40
							1/21/79	1.99	181	Y	50–100
01304000	Nissequogue River near Smithtown, NY	27.0	1944–93	1979	3.22	952	1/22/79	3.22	952	N	>100
01304500	Peconic River at Riverhead, NY	75.0	1942–93	1978	1.20	225	1/30/78	1.20	225	Y	>100
							2/03/79	1.14	201	Y	80
							6/12/82	1.01	154	Y	25
01305000	Carmans River at Yaphank NY	71.0	1943–93	1989	2.09	143	8/11/89	2.09	143	N	60
01305500	Swan River at East Patchogue, NY	8.80	1947–93	1990	2.71	77	8/12/78	2.15	51	Y	10
							6/05/82	2.18	52	Y	10
01306440	Connetquot Brook at Central Islip, NY	12.0	1979–93	1979	1.56	40	8/04/79	1.56	40	N	--
01306500	Connetquot River near Oakdale, NY	24.0	1944–93	1956	--	263	8/12/78	--	144	Y	--
							1/21/79	--	151	Y	--
01307500	Penataquit Creek at Bay Shore, NY	5.00	1946–76	1973	2.01	71	10/07/72	2.01	71	N	40
				1956	2.31	64					
01308000	Sampawams Creek at Babylon, NY	22.7	1945–93	1991	3.08	212	5/16/89	2.67	165	N	20
				1971	3.28	91					
01308500	Carlls River at Babylon, NY	35.4	1945–93	1990	2.39	300	1/21/79	2.26	243	Y	20
							5/16/89	2.25	241	Y	20
01309500	Massapequa Creek at Massapequa, NY	38.0	1937–93	1980	2.40	510	7/29/80	2.40	510	N	45
01310500	East Meadow Brook at Freeport, NY	31.0	1937–93	1980	3.57	848	1/21/79	3.42	789	N	20
				1960	4.38	835	7/29/80	3.57	848	N	25
01311000	Pines Brook at Malverne, NY	10.0	1937–93	1984	5.11	660	1/18/78	4.53	386	N	10
							6/30/84	5.11	660	N	35
01311500	Valley Stream at Valley Stream, NY	4.50	1954–93	1984	5.78	294	1/21/79	5.62	290	N	40
							6/30/84	5.78	294	N	40
01312000	Hudson River near Newcomb, NY	192	1926–93	1949	11.40	7,440	12/30/84	9.58	5,780	N	15

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York—Continued

Station number (fig. 54)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01315500	Hudson River at North Creek, NY	792	1908–93	1949	12.14	28,900	4/28/79	11.30	25,000	Y	40
01318500	Hudson River at Hadley, NY	1,664	1913, 1922–93	1913 1949	-- 21.21	49,000 42,700	4/02/76	17.49	33,400	Y	20
01319800	West Branch Sacandaga River at Arietta, NY	28.9	1963–85	1979	12.76	1,940	3/25/79	12.76	1,940	N	10–25
01319950	Sand Lake outlet near Piseco, NY	7.16	1962–83, 1985	1980 1962	2.72 3.02	475 297	4/09/80	2.72	475	N	10–25
01321000	Sacandaga River near Hope, NY	491	1912–93	1913	11.00	32,000	4/01/76	9.45	23,400	N	20
01325000	Sacandaga River at Stewarts Bridge near Hadley, NY	1,055	1908–93	1913	12.36	35,500	5/04/83	9.68	13,300	Y	40
01327750	Hudson River at Fort Edward, NY	2,817	1900, 1913, 1977–93	1913 1983	-- 28.34	89,100 35,200	5/03/83	28.34	35,200	Y	10–25
01328758	Pecks Creek at Fort Miller, NY	2.38	1968–79	1979	16.98	230	3/05/79	16.98	230	N	10–25
01329780	Sessions Brook at Porters Corners, NY	1.04	1968–86	1977	15.30	80	3/14/77	15.30	80	N	25–50
01329900	Glowegee Creek tributary at Mosherville, NY	1.42	1968–86	1977	13.15	139	3/14/77	13.15	139	N	10–25
01330500	Kayaderosseras Creek near West Milton, NY	90.0	1927–93	1936 1977	10.78 11.20	4,710 4,250	3/14/77	11.20	4,250	N	70
01330880	Saratoga Lake tributary near Bemis Heights, NY	2.98	1968, 1970–71, 1973, 1975–93	1986	19.94	448	8/07/86	19.94	448	N	50–100
01333367	Little Hoosic River at Cherryplain, NY	2.22	1976–78, 1980–86	1983	3.18	167	4/19/83	3.18	167	N	10–25
01333500	Little Hoosic River at Petersburg, NY	56.1	1949, 1952–93	1949	9.40	7,470	6/30/73	9.20	5,000	N	20
01335754	Hudson River above Lock 1 near Waterford, NY	4,611	1977, 1982–93	1977 1984	-- 36.38	71,800 62,400	3/15/77	--	71,800	Y	25
01336000	Mohawk River below Delta Dam near Rome, NY	152	1928–93	1946	11.18	8,560	6/22/72	9.87	6,360	Y	30
01342730	Steele Creek at Ilion, NY	26.2	1965, 1967–69, 1971–83, 1985	1981	5.30	1,810	2/20/81	5.30	1,810	N	10–25
01342800	West Canada Creek at Nobleboro, NY	193	1946, 1958–76, 1985, 1987–93	1985	13.93	20,000	12/29/84	13.93	20,000	N	>100
01346000	West Canada Creek at Kast Bridge, NY	560	1913, 1921–93	1913 1946	-- 8.08	23,300 20,500	3/21/80	7.55	17,400	Y	30
01346820	Mohawk River tributary at Indian Castle, NY	1.36	1974–86	1980	5.05	210	3/22/80	5.05	210	N	>50
01347000	Mohawk River near Little Falls, NY	1,342	1901, 1928–93	1977	19.17	33,100	3/14/77 3/21/80	19.17 17.93	33,100 29,000	Y Y	>100 40
01347460	Spruce Lake tributary near Salisbury Center, NY	0.54	1975–86	1978 1982	3.94 4.53	72 64	10/17/77	3.94	72	N	<10
01348000	East Canada Creek at East Creek, NY	289	1946–93	1946	9.00	24,000	12/29/84	7.68	13,600	N	15

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York—Continued

Station number (fig. 54)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01348420	North Creek near Ephratah, NY	6.52	1975–93	1982	8.95	540	6/29/82	8.95	540	N	25–50
01349000	Otsquago Creek at Fort Plain, NY	61.0	1950–89	1982	11.24	10,400	7/03/74 10/28/81	9.67 11.24	9,640 10,400	N N	20 20
01349360	Van Wie Creek tributary near Randall, NY	1.00	1974–76, 1978–86	1980	8.88	219	3/21/80	8.88	219	N	25–50
01350000	Schoharie Creek at Prattsville, NY	237	1904, 1908–24, 1926–28, 1930–93	1956	19.14	51,600	4/04/87	18.37	47,600	N	30
01350120	Platter Kill at Gilboa, NY	10.9	1976–93	1987	5.24	1,210	4/04/87	5.24	1,210	N	10–25
01350180	Schoharie Creek at North Blenheim, NY	358	1971–93	1987	16.70	64,200	4/04/87	16.70	64,200	Y	40
01350355	Schoharie Creek at Breakabeen, NY	444	1976–93	1987	19.50	72,200	4/05/87	19.50	72,200	Y	25–50
01351000	Fox Creek at West Berne, NY	67.2	1925–32, 1963–74, 1987	1974	8.74	6,400	12/21/73	8.74	6,400	N	25–50
01351500	Schoharie Creek at Burtonsville, NY	886	1940–93	1956	12.39	76,500	3/22/80 4/05/87	10.15 11.23	54,700 64,900	Y Y	25 45
01355405	Indian Kill near Glenville Center, NY	3.11	1968–71, 1974–86	1986	19.57	250	7/29/86	19.57	250	N	25–50
01357500	Mohawk River at Cohoes, NY	3,450	1918–93	1964	23.15	143,000	3/14/77	21.76	112,000	Y	35
01358000	Hudson River at Green island, NY	8,090	1936, 1946–93	1936	29.48	215,000	3/14/77	26.53	175,000	Y	60
01359513	Hunger Kill at Guilderland, NY	8.16	1968–77	1976	6.39	135	10/19/75	6.39	135	N	<10
01359750	Moordener Kill at Castleton-on-Hudson, NY	32.6	1958–93	1986	4.25	1,520	3/15/86	4.25	1,520	N	30
01359924	Hannacrois Creek near New Baltimore, NY	61.6	1968–77	1973	5.43	1,780	7/01/73	5.43	1,780	Y	10–25
01361200	Claverack Creek at Claverack, NY	60.6	1961–80, 1984, 1993	1973	12.38	5,590	6/30/73	12.38	5,590	N	25–50
01361453	Catskill Creek tributary at Franklinton, NY	3.61	1968–87	1987	8.00	1,100	4/04/87	8.00	1,100	N	>50
01361500	Catskill Creek at Oak Hill, NY	98.0	1911–77, 1980, 1987–93	1987	16.60	15,400	3/21/80 4/04/87	14.10 16.60	12,500 15,400	N N	35 80
01361570	Tenmile Creek at Oak Hill, NY	35.3	1960, 1969–78, 1980, 1987	1980	9.50	3,800	3/21/80	9.50	3,800	N	>50
01361900	Shingle Kill at Cairo, NY	13.9	1953, 1955–56, 1960, 1967–74, 1976–87	1980	10.80	3,600	3/21/80	10.80	3,600	N	30
01362100	Roeliff Jansen Kill near Hillsdale, NY	27.5	1958–93	1973	9.78	3,280	6/30/73 12/21/73	9.78 7.37	3,280 1,980	N N	>100 20
01362500	Esopus Creek at Coldbrook, NY	192	1932–93	1980	21.94	65,300	3/21/80	21.94	65,300	Y	40
01364500	Esopus Creek at Mount Marion, NY	419	1910, 1915, 1971–93	1910	25.10	28,000	4/05/87	24.78	22,500	Y	40

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York—Continued

Station number (fig. 54)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01365500	Chestnut Creek at Grahamsville, NY	20.8	1939–87	1956	5.02	4,640	7/20/75	4.30	4,310	N	30
01368713	Wawayanda Creek at Durland, NY	5.09	1971–80	1980	16.75	96	3/22/80	16.75	96	Y	10–25
01368724	Long House Creek at Bellvale, NY	11.8	1971–80	1980	18.50	--	3/22/80	18.50	--	N	--
01372040	Crum Elbow Creek at Hyde Park, NY	17.3	1960–76	1974	5.60	740	12/21/73	5.60	740	N	25–50
01372200	Wappinger Creek near Clinton Corners, NY	92.4	1956–82, 1984	1973	16.13	8,510	6/30/73	16.13	8,510	N	70
01372300	Little Wappinger Creek at Salt Point, NY	32.9	1956–75, 1984	1975	7.65	1,590	7/21/75	7.65	1,590	N	30
01372500	Wappinger Creek near Wappingers Falls, NY	181	1929–93	1955	19.60	18,600	6/30/73	14.12	10,400	N	25
01372800	Fishkill Creek at Hopewell Junction, NY	57.3	1964–75, 1984, 1987–93	1974 1987	9.19 9.62	2,770 2,710	12/21/73	9.19	2,770	N	20
01373690	Woodbury Creek near Highland Mills, NY	11.2	1966–68, 1971–72, 1977–84	1984	6.30	1,940	4/05/84	6.30	1,940	N	10–25
01374130	Canopus Creek at Oscawana Corners, NY	8.30	1975–86	1984	5.26	416	4/06/84	5.26	416	N	10–25
01374440	Cedar Pond Brook at Stony Point, NY	17.3	1960–68, 1975–79	1978 1968	7.37 8.84	2,600 2,080	11/08/77	7.37	2,600	N	10–25
01374460	South Branch Minisceongo Creek at Letchworth Village, NY	5.86	1960–76, 1978	1978 1971	-- 4.01	400 264	11/08/77	--	400	N	25–50
01375000	Croton River at New Croton Dam near Croton-on-Hudson, NY	378	1934–93	1956	18.44	45,400	9/27/75 4/05/84	11.94 10.68	17,600 13,600	Y Y	45 25
01376280	Sparkill Creek at Sparkill, NY	10.7	1960–63, 1965–68, 1975–79	1978	6.74	1,040	11/08/77	6.74	1,040	Y	25–50
01376420	Saw Mill River at Elmsford, NY	15.4	1979–93	1984	11.57	950	4/05/84	11.57	950	N	10–25
01376500	Saw Mill River at Yonkers, NY	25.6	1945–73, 1975–90, 1993	1984	7.84	1,450	7/07/84	7.84	1,450	Y	50–100
01376690	East Branch Hackensack River near Congers, NY	6.90	1960, 1968–69, 1971–80	1978	10.61	820	11/08/77	10.61	820	N	10–25
01376800	Hackensack River at West Nyack, NY	30.7	1960–93	1973 1984	9.38 10.52	1,550 1,440	2/03/73 5/30/84	9.38 10.52	1,550 1,440	Y Y	30 20
01377200	Pascack Brook tributary at Spring Valley, NY	4.19	1960–80	1978	6.60	640	11/08/77	6.60	640	N	25–50
01387350	Nakoma Brook at Sloatsburg, NY	5.40	1960–78	1978 1968	8.56 10.13	550 525	11/08/77	8.56	550	N	10–25
01387400	Ramapo River at Ramapo, NY	86.9	1980–93	1984	13.82	10,700	4/05/84	13.82	10,700	Y	>100
01387410	Torne Brook at Ramapo, NY	2.60	1960–93	1978	11.02	1,520	8/28/71 11/08/77	9.40 11.02	1,280 1,520	N N	30 40
01387420	Ramapo River at Suffern, NY	93.0	1980–93	1984	15.38	12,300	4/05/84	15.38	12,300	Y	>100
01387450	Mahwah River near Suffern, NY	12.3	1959–93	1978	9.91	1,840	11/08/77	9.91	1,840	Y	40

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York—Continued

Station number (fig. 54)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01413500	East Branch Delaware River at Margaretville, NY	163	1937–93	1951	13.84	20,600	4/04/87	12.88	16,100	N	20
01417000	East Branch Delaware River at Downsville, NY	372	1904, 1942–93	1951 1904	14.52 16.00	23,900 --	5/30/84	8.91	9,820	Y	20
01417185	Campbell Brook tributary near Downsville, NY	0.41	1975–86	1980	4.36	57	11/26/79	4.36	57	N	10–25
01420000	Little Beaver Kill near Livingston Manor, NY	20.1	1925–81	1928	8.70	3,420	1/27/76	7.76	3,230	N	20
01420500	Beaver Kill at Cooks Falls, NY	241	1914–93	1951 1933	16.02 17.80	31,600 19,000	3/14/77	15.20	28,400	N	25
01421000	East Branch Delaware River at Fishs Eddy, NY	784	1904, 1913–93	1904	23.60	70,000	3/14/77	13.91	34,500	Y	20
01423000	West Branch Delaware River at Walton, NY	332	1951–93	1986	14.84	19,500	2/11/81 3/15/86	14.34 14.84	17,900 19,500	N N	10 20
01425000	West Branch Delaware River at Stilesville, NY	456	1952–93	1986	13.07	17,800	3/14/77 3/16/86	12.19 13.07	13,500 17,800	Y Y	20 40
01425675	Oquaga Creek near North Sanford, NY	4.69	1970–81	1981 1979	2.96 3.03	480 393	2/11/81	2.96	480	N	25–50
01426000	Oquaga Creek at Deposit, NY	67.6	1941–73	1970 1948	8.98 9.21	7,170 4,400	7/04/70	8.98	7,170	N	50–100
01426500	West Branch Delaware River at Hale Eddy, NY	595	1904, 1913–93	1904	20.30	46,000	3/06/79 3/15/86	12.21 13.63	14,800 18,700	Y Y	20 40
01427500	Callicoon Creek at Callicoon, NY	110	1940–82, 1987–93	1947	9.68	16,000	6/29/73 1/09/78	7.36 8.39	8,140 11,000	N N	10 35
01428500	Delaware River above Lackawaxen River near Barryville, NY	2,020	1941–93	1955	26.40	130,000	6/29/73	20.06	83,900	Y	20
01433500	Mongaup River near Mongaup, NY	200	1940–93	1955	15.22	16,100	4/16/83	9.47	9,710	Y	20
01434025	Biscuit Brook above Pigeon Brook at Frost Valley, NY	3.72	1984–93	1987	4.37	815	4/04/87	4.37	815	N	25–50
01435000	Neversink River near Claryville, NY	66.6	1951–93	1951 1987	9.00 13.26	23,400 19,300	4/04/87	13.26	19,300	N	50
01436000	Neversink River at Neversink, NY	92.6	1942–93	1951	11.23	22,300	6/23/72 6/29/73	8.20 7.41	6,130 4,940	Y Y	30 20
01436500	Neversink River at Woodbourne, NY	113	1938–73, 1978–93	1951	11.19	22,000	6/23/72 6/30/73	8.58 8.09	6,220 5,480	Y Y	30 20
01496370	Mink Creek at Richfield Springs, NY	10.4	1969–86	1986 1984	5.34 5.45	498 182	3/19/86	5.34	498	N	10–25
01496500	Oaks Creek at Index, NY	102	1930–32, 1937–93	1978	7.62	3,320	10/17/77	7.62	3,320	Y	90
01497805	Little Elk Creek near Westford, NY	3.73	1978–93	1978	18.54	202	10/17/77	18.54	202	N	10–25
01500500	Susquehanna River at Unadilla, NY	982	1935–36, 1938–93	1936	16.60	31,300	3/14/77 10/18/77	14.64 14.13	23,500 21,900	Y Y	20 15
01501015	Mill Brook at New Berlin, NY	4.64	1975–86	1977 1978 1979	1.65 1.81 3.19	450 450 340	3/30/77 10/17/77	1.65 1.81	450 450	N N	10–25 10–25
01501140	Wharton Creek tributary near Edmeston, NY	2.02	1976–86	1985	4.68	290	9/27/85	4.68	290	N	10–25

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York—Continued

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			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01502000	Butternut Creek at Morris, NY	59.7	1938–93	1978	9.44	5,980	3/13/77	8.58	4,420	N	25
							10/17/77	9.44	5,980	N	>100
							3/05/79	8.53	4,330	N	25
01502500	Unadilla River at Rockdale, NY	520	1930–33, 1935, 1937–93	1943	12.98	17,400	3/14/77	12.64	16,200	N	25
							3/26/79	12.62	16,300	N	25
01502701	Susquehanna River at Afton, NY	1,716	1972, 1977, 1979–90	1979	17.90	42,000	3/07/79	17.90	42,000	N	15
01502714	Ouaquaga Creek near Belden, NY	3.37	1975–86	1986	5.17	496	8/02/86	5.17	496	N	10–25
01503960	Electric Light Stream near Morrisville, NY	7.21	1976–86	1977	10.96	400	10/09/76	10.96	400	N	10–25
01505000	Chenango River at Sherburne, NY	263	1914, 1936, 1938–42, 1944–72, 1974–93	1936	--	12,500	3/14/77	9.91	10,100	N	15
				1914	11.20	--	3/06/79	9.94	10,400	N	20
01507000	Chenango River at Greene, NY	593	1937–93	1943	18.33	18,900	3/06/79	17.41	17,900	N	40
01508500	Albright Creek at East Homer, NY	6.81	1939–76	1975	5.02	2,480	6/23/72	4.40	1,400	N	30
							9/26/75	5.02	2,480	N	>100
01508803	West Branch Tioughnioga River at Homer, NY	71.5	1967–68, 1973–92	1982	8.74	2,710	10/28/81	8.74	2,710	N	25–50
01508946	Otter Creek tributary at State Highway 222 near Cortland, NY	2.85	1976–86	1982	15.45	690	10/28/81	15.45	690	N	>50
01509000	Tioughnioga River at Cortland, NY	292	1939–93	1964	12.49	13,000	3/14/77	12.12	11,800	N	20
				1950	13.82	10,000	3/06/79	12.42	12,800	N	25
01512500	Chenango River near Chenango Forks, NY	1,483	1913–93	1935	20.30	96,000	3/06/79	13.58	39,400	Y	15
01513712	Nanticoke Creek tributary at Nanticoke, NY	1.70	1975–86	1976	8.02	1,780	7/11/76	8.02	1,780	N	>50
01513790	Nanticoke Creek at Union Center, NY	90.7	1956, 1963–64, 1968, 1970–77	1972	15.33	13,500	6/23/72	15.33	13,500	N	10–25
01514000	Owego Creek near Owego, NY	185	1930–93	1935	11.50	23,500	9/26/75	10.94	14,200	N	25
01520500	Tioga River at Lindley, NY	771	1930–93	1972	26.27	128,000	6/23/72	26.27	128,000	N	>50
							9/26/75	23.37	80,600	N	>50
							3/05/79	14.05	16,000	Y	25–50
01521500	Canisteo River at Arkport, NY.	30.6	1935, 1937–93	1935	--	4,820	3/15/78	4.00	1,450	Y	45
				1991	4.22	1,580					
01521596	Big Creek near Howard, NY	6.32	1977–93	1987	16.04	580	9/13/87	16.04	580	N	10–25
01522500	Karr Valley Creek at Almond, NY	27.4	1935, 1937–68, 1971–73	1972	12.20	10,900	6/23/72	12.20	10,900	N	>100
01523500	Canacadea Creek near Hornell, NY	57.9	1927–28, 1935, 1939–93	1935	16.61	21,000	6/23/72	6.14	5,880	Y	>100
							11/03/81	5.34	4,350	Y	40
01524500	Canisteo River below Canacadea Creek at Hornell, NY	158	1943–88, 1990–93	1972	13.45	9,560	6/23/72	13.45	9,560	Y	60
01525000	Bennett Creek at Canisteo, NY	95.3	1939–47, 1972	1972	12.82	19,500	6/22/72	12.82	19,500	N	>100

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York—Continued

Station number (fig. 54)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01525500	Canisteo River at West Cameron, NY	340	1931, 1935–72, 1974–93	1972	23.48	43,000	6/23/72	23.48	43,000	Y	>100
							9/26/75	17.55	16,400	Y	10
01526000	Tuscarora Creek near South Addison, NY	114	1937–72	1972	10.40	18,700	6/23/72	10.40	18,700	N	50
01526500	Tioga River near Erwins, NY	1,377	1919–93	1972	26.74	190,000	6/23/72	26.74	190,000	N	>50
							9/26/75	23.56	95,000	N	>50
							3/05/79	13.77	30,200	Y	<10
01527000	Cohocton River at Cohocton, NY	52.2	1951–93	1972	9.82	2,260	6/23/72	9.82	2,260	N	>100
01528000	Fivemile Creek near Kanona, NY	66.8	1937–93	1972	6.95	5,110	6/23/72	6.95	5,110	N	>100
							9/26/75	6.72	4,390	N	100
01529000	Mud Creek near Savona, NY	76.6	1919, 1937–82	1972	8.66	6,100	6/23/72	8.66	6,100	Y	>100
01529500	Cohocton River near Campbell, NY	470	1919–93	1935	11.60	41,100	6/23/72	11.16	32,000	Y	>100
							9/26/75	10.33	22,700	Y	35
01529950	Chemung River at Corning, NY	2,006	1972, 1975–93	1972	40.71	228,000	3/05/79	24.96	46,000	Y	10–25
							6/23/72	40.71	228,000	N	>50
01530301	Cuthrie Run near Big Flats, NY	5.39	1976, 1979–93	1976	18.52	800	6/19/76	18.52	800	N	25–50
01530500	Newtown Creek at Elmira, NY	77.50	1938–93	1972	19.28	4,000	6/23/72	19.28	4,000	N	40
							9/26/75	17.25	3,950	N	35
01531000	Chemung River at Chemung, NY	2,506	1904–93	1972	31.62	189,000	6/23/72	31.62	189,000	N	>50
							9/27/75	24.10	125,000	N	>50
							3/06/79	18.24	61,500	Y	10–25
03010734	Ischua Creek tributary near Machias, NY	5.12	1978–81, 1983–93	1979	10.59	570	9/14/79	10.59	570	N	10–25
03010800	Olean Creek near Olean, NY	198	1958–93	1967	16.06	18,200	12/06/72	13.50	8,900	N	20
03011000	Great Valley Creek near Salamanca, NY	137	1951–68, 1972, 1977–92	1967 1989	17.88 18.16	28,600 9,910	6/23/72	--	10,100	N	15
03013000	Conewango Creek at Waterboro, NY	290	1939–93	1947 1981	11.35 12.13	8,600 7,790	2/22/81	12.13	7,790	N	35
03013800	Ball Creek at Stow, NY	9.06	1974–93	1979	21.88	2,000	9/14/79	21.88	2,000	N	25–50
03014500	Chadakoin River at Falconer, NY	194	1935–93	1979	4.93	2,250	3/05/76	4.67	2,070	Y	30
							9/14/79	4.93	2,250	Y	60
04213490	South Branch Cattaraugus Creek near Otto, NY	25.1	1963–93	1979	11.18	4,350	9/14/79	11.18	4,350	N	50–100
							8/01/86	8.32	3,420	N	20
04214040	Delaware Creek near Angola, NY	8.32	1963–86	1985 1979	5.17 5.91	672 600	2/24/85	5.17	672	N	10–25
04214400	Buffalo Creek near Wales Hollow, NY	76.9	1963–74, 1979	1979	11.70	9,400	9/14/79	11.70	9,400	N	20
04215000	Cayuga Creek near Lancaster, NY	96.4	1937, 1939–68, 1971–93	1937 1978	-- 11.74	18,000 4,600	9/25/77	10.08	9,410	N	20
							9/14/79	10.48	9,440	N	20
04216000	Niagara River at Buffalo, NY	263,700	1956, 1961–93	1985 1956	-- --	347,000 299,000	12/02/85	--	347,000	Y	>100
04216200	Scajaquada Creek at Buffalo, NY	15.4	1958–93	1987	15.17	2,820	6/22/87	15.17	2,820	N	50
04216400	Tonawanda Creek near Johnsonburg, NY	23.7	1962–86	1972	11.05	1,850	6/23/72	11.05	1,850	N	50–100
04216418	Tonawanda Creek at Attica, NY	76.9	1972, 1978–93	1972	12.00	6,000	6/23/72	12.00	6,000	N	>50

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York—Continued

Station number (fig. 54)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04216500	Little Tonawanda Creek at Linden, NY	22.1	1913–16, 1918–19, 1921–68, 1970–72, 1978–93	1989	16.99	2,900	6/23/89	16.99	2,900	N	70
04216875	Little Tonawanda Creek tributary near Batavia, NY	1.02	1976–86	1977	15.65	156	9/25/77	15.65	156	N	10–25
04217700	Murder Creek at Pembroke, NY	43.6	1962–86	1963 1985	9.38 9.55	1,870 1,870	2/24/85	9.55	1,870	N	20
04217750	Murder Creek near Akron, NY	58.8	1984–93	1985	7.16	3,000	2/25/85	7.16	3,000	N	>50
04218518	Ellicott Creek below Williamsville, NY	81.6	1973–93	1985	11.19	3,640	2/25/85	11.19	3,640	N	20
04219738	Eighteenmile Creek tributary near Lockport, NY	2.53	1977–86	1981 1985	14.19 14.32	365 319	2/19/81	14.19	365	N	10–25
04219922	Oak Orchard Creek at Barrville Road near Elba, NY	6.48	1976–86	1978	9.83	205	3/22/78	9.83	205	N	<10
04220500	Dyke Creek at Wellsville, NY	72.1	1956–60, 1964–65, 1967, 1969, 1972	1972 1960	-- 16.10	12,000 5,230	6/23/72	--	12,000	N	>50
04221000	Genesee River at Wellsville, NY	288	1956–58, 1972–93	1972	20.70	38,500	6/23/72	20.70	38,500	N	>100
04221500	Genesee River at Scio, NY	308	1917–72	1972	14.12	41,000	6/23/72	14.12	41,000	N	>100
04222600	Wiscoy Creek at Bliss, NY	22.0	1962–86	1972	4.06	1,850	6/23/72	4.06	1,850	N	30
04223000	Genesee River at Portageville, NY	984	1909–93	1972	37.85	90,000	6/23/72	35.25	90,000	N	>100
04224700	Sugar Creek near Ossian, NY	10.0	1964–86	1984	7.06	1,460	6/18/84	7.06	1,460	N	25–50
04224775	Canaseraga Creek above Dansville, NY	88.9	1975–93	1989	5.70	4,050	6/20/89	5.70	4,050	N	<10
04224807	Stony Brook tributary at South Dansville, NY	3.15	1977–82, 1984–88, 1993	1981	15.89	790	8/03/81	15.89	790	N	10–25
04225000	Canaseraga Creek near Dansville, NY	152	1911–12, 1916–68, 1971–76	1972	14.85	9,600	6/23/72	14.85	9,600	N	35
04225500	Canaseraga Creek at Groveland, NY	180	1917, 1919, 1956–64, 1975–77	1977 1919	15.59 18.05	4,750 4,380	9/20/77	15.59	4,750	N	--
04226000	Keshequa Creek at Craig Colony at Sonyea, NY	68.3	1916, 1918–32, 1975–77	1977	6.69	6,280	9/25/77	6.69	6,280	N	10–25
04227000	Canaseraga Creek at Shakers Crossing, NY	335	1916–22, 1959–70, 1972, 1975–93	1972 1916	-- 28.92	11,200 --	6/23/72 3/04/76	-- 13.33	11,200 5,270	N N	>100 <10
04227500	Genesee River near Mount Morris, NY	1,424	1890, 1893–94, 1904–06, 1909–14, 1916–93	1916 1904	25.44 28.62	55,100 12,000	6/24/72	24.50	17,800	Y	>100

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York—Continued

Station number (fig. 54)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04228500	Genesee River at Avon, NY	1,673	1956–93	1972	40.67	16,500	6/25/72	40.67	16,500	Y	>100
04229500	Honeoye Creek at Honeoye Falls, NY	196	1946–70, 1972–93	1972 1950	6.30 6.42	6,600 4,630	6/23/72	6.30	6,600	Y	>100
04230380	Oatka Creek at Warsaw, NY	39.1	1964–93	1972	9.75	4,010	6/23/72 4/05/84	9.75 7.84	4,010 2,790	N N	50–100 20
04230500	Oatka Creek at Garbutt, NY	200	1946–93	1960	8.64	7,050	3/05/76	8.18	6,090	N	35
04230650	Genesee River at Ballantyne Bridge near Mortimer, NY	2,210	1974–92	1974 1976	15.92 19.33	-- --	3/05/76	19.33	--	Y	--
04231040	Hotel Creek at Griffin Road near Churchville, NY	4.57	1976–86	1979	12.78	88	3/05/79	12.78	88	N	10–25
04232000	Genesee River at Rochester, NY	2,467	1785, 1836–37, 1854, 1857, 1865, 1867, 1873, 1875, 1879, 1889, 1896, 1902, 1913, 1916, 1920–93	1854 1940	-- 17.08	54,000 33,500	6/25/72 4/25/84	15.89 15.55	29,600 28,200	Y Y	50–100 50
04232047	Irondequoit Creek at Linden Avenue, East Rochester, NY	101	1974–88	1975	15.64	1,480	10/29/74	15.64	1,480	N	<10
04232050	Allen Creek near Rochester, NY	30.1	1960–93	1974	7.42	3,280	5/17/74	7.42	3,280	N	>100
042320527	Mill Creek tributary near Webster, NY	1.95	1971–72, 1976–86	1986	13.77	211	9/29/86	13.77	211	N	10–25
04232071	Second Creek tributary at Alton, NY	1.07	1970, 1973, 1976–86	1986	14.28	57	9/19/86	14.28	57	N	10–25
04232100	Sterling Creek at Sterling, NY	44.4	1958–93	1980	5.99	1,760	3/06/79 3/22/80	5.56 5.99	1,520 1,760	N N	30 50–100
04232200	Catharine Creek at Montour Falls, NY	41.1	1975–77, 1987–93	1975	6.40	1,680	9/26/75	6.40	1,680	N	<10
04232482	Keuka Lake outlet at Dresden, NY	207	1966–93	1972	8.37	4,000	6/22/72	8.37	4,000	Y	50
04233000	Cayuga inlet near Ithaca, NY	35.2	1937–93	1972	8.10	4,800	6/23/72	8.10	4,800	N	60
04233255	Cayuga inlet at Ithaca, NY	86.7	1971–72, 1975–88, 1992–93	1972	14.60	11,800	6/23/72	14.60	11,800	N	25–50
04233310	Sixmile Creek near Ithaca, NY	42.0	1967–69, 1971–73, 1976–86	1982	10.90	7,600	10/28/81	10.90	7,600	N	10–25
04233676	Virgil Creek at Mill Street at Dryden, NY	20.7	1966–70, 1972, 1975–86	1982	8.38	4,670	10/28/81	8.38	4,670	N	>100
04233700	Virgil Creek at Freeville, NY	40.3	1974–86	1982	23.89	7,000	10/28/81	23.89	7,000	N	>100
04234000	Fall Creek near Ithaca, NY	126	1926–93	1935	9.52	15,500	9/26/75 10/28/81	5.87 8.35	5,690 11,900	N N	10 >100
042340202	Cayuga Lake tributary number 8 near Jacksonville, NY	1.36	1977–86	1984	7.30	144	2/15/84	7.30	144	N	<10

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York—Continued

Station number (fig. 54)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
042340588	Yawger Creek tributary near Auburn, NY	1.76	1976–86	1979	13.92	88	11/27/79	13.92	88	N	10–25
04234138	Schaeffer Creek near Canandaigua, NY	7.84	1977–88, 1992	1979 1992	-- 12.82	520 330	3/05/79	--	520	N	25–50
04234363	Marbletown Creek tributary near Newark, NY	0.58	1976–86	1976	5.33	31	2/17/76	5.33	31	N	10–25
04235000	Canandaigua outlet at Chapin, NY	195	1940–93	1972 1993	5.62 6.61	1,710 1,300	6/24/72 4/30/83	5.62 6.22	1,710 1,150	Y Y	>100 10
04235276	Black Brook at Tyre, NY	19.0	1966–73, 1975–93	1978 1971	5.02 6.68	786 --	12/14/77	5.02	786	N	30
04235500	Owasco outlet near Auburn, NY	206	1914–93	1972	6.28	3,250	6/23/72	6.28	3,250	Y	>100
04237500	Seneca River at Baldwinsville, NY	3,138	1950–93	1993 1960	-- 9.21	18,100 17,200	6/28/72	--	17,200	Y	20
04239000	Onondaga Creek at Dorwin Avenue, Syracuse, NY	88.5	1952–93	1974	6.48	3,260	6/23/72 7/03/74	6.12 6.48	3,200 3,260	Y Y	50 50
04240010	Onondaga Creek at Spencer Street, Syracuse, NY	110	1971–93	1974	8.73	4,050	7/03/74	8.73	4,050	Y	30
04240100	Harbor Brook at Syracuse, NY	10.0	1960–93	1974	8.34	726	7/03/74 9/26/75	8.34 7.47	726 472	Y Y	>100 20
04240105	Harbor Brook at Hiawatha Boulevard, Syracuse, NY	11.3	1971–93	1974	7.91	824	7/03/74	7.91	824	Y	20
04240120	Ley Creek at Park Street, Syracuse, NY	29.9	1973–88, 1990–93	1975	6.17	1,310	9/26/75	6.17	1,310	N	25–50
04240180	Ninemile Creek near Marietta, NY	45.1	1965–93	1972	8.65	1,030	6/23/72	8.65	1,030	Y	>100
04240300	Ninemile Creek at Lakeland, NY	115	1971–73, 1975–93	1972	--	2,110	6/23/72	--	2,110	Y	40
04242500	East Branch Fish Creek at Taberg, NY	188	1924–93	1985	13.81	21,600	6/22/72 12/29/84	11.71 13.81	14,500 21,600	N N	40 >100
04242795	Canada Creek tributary near Lee Center, NY	1.34	1977–86	1977 1986	6.95 8.29	165 158	10/09/76	6.95	165	N	10–25
04243500	Oneida Creek at Oneida, NY	113	1950–88, 1990–93	1977	15.01	9,110	6/22/72 10/09/76	14.61 15.01	8,230 9,110	N N	20 40
04244000	Chittenango Creek near Chittenango, NY	66.3	1950–68, 1972, 1978	1972	9.13	5,200	6/22/72	9.13	5,200	Y	>50
04245000	Limestone Creek at Fayetteville, NY	85.5	1940–88, 1992–93	1982	10.14	7,490	10/28/81	10.14	7,490	Y	45
04245200	Butternut Creek near Jamesville, NY	32.2	1959–93	1974 1982	7.84 8.46	2,820 1,880	7/03/74 10/28/81	7.84 8.46	2,820 1,880	N N	50–100 20
04245840	Scriba Creek near Constantia, NY	38.4	1966–69, 1971–88, 1992–93	1975 1972	7.33 7.42	1,310 1,200	9/26/75	7.33	1,310	N	40
04249050	Catfish Creek at New Haven, NY	31.7	1962–66, 1968–88, 1992–93	1973	7.85	1,350	3/18/73	7.85	1,350	N	50–100
042490673	North Branch Grindstone Creek near Altmar, NY	11.2	1976–93	1977	15.03	482	3/13/77	15.03	482	N	10–25
04249200	North Branch Salmon River at Redfield, NY	82.5	1962–64, 1985, 1987–93	1985	19.15	13,600	12/29/84	19.15	13,600	N	>100

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York—Continued

Station number (fig. 54)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04250750	Sandy Creek near Adams, NY	128	1958–93	1985	11.05	7,690	2/25/85	11.05	7,690	N	20
04252500	Black River near Boonville, NY	304	1911–93	1982 1985 1913	11.31 11.41 12.50	12,800 12,800 12,400	5/03/72 4/18/82 12/30/84	10.65 11.31 11.41	11,700 12,800 12,800	Y Y Y	40 70 70
04254000	Middle Branch Moose River near McKeever, NY	151	1926–68, 1985	1985	7.60	3,200	12/29/84	7.60	3,200	Y	>100
04254500	Moose River at McKeever, NY	363	1869, 1902–70, 1982, 1985, 1987–93	1947	17.45	18,700	12/29/84	16.00	15,800	Y	80
04255000	Otter Creek near Glenfield, NY	64.5	1925–33, 1953, 1985	1985 1928	-- 7.10	3,820 2,130	12/29/84	--	3,820	N	--
04256000	Independence River at Donnattsburg, NY	88.7	1943–93	1985	13.34	9,420	4/18/82 12/30/84	9.73 13.34	5,530 9,420	N N	50 >100
04256040	Tributary to Mill Creek tributary near Lowville, NY	1.66	1976–86, 1993	1979	13.41	312	3/05/79	13.41	312	N	25–50
04256485	Woods Lake outlet near Big Moose, NY	0.80	1978–81, 1984–89, 1991–92	1985 1992	-- 3.04	90 18	12/29/84	--	90	N	25–50
04258000	Beaver River at Croghan, NY	291	1931–93	1969	6.98	5,100	12/30/84	6.83	4,840	Y	70
04258700	Deer River at Deer River, NY	94.8	1957–75, 1977–93	1985	10.63	17,200	12/29/84	10.63	17,200	N	100
04260500	Black River at Watertown, NY	1,864	1869, 1897–1913, 1917–93	1993	14.20	42,600	3/16/77 12/31/84	12.84 13.01	35,600 36,500	Y Y	30 35
04260575	Horse Creek tributary near Dexter, NY	4.59	1976–86	1977	14.43	700	3/13/77	14.43	700	N	10–25
04262500	West Branch Oswegatchie River near Harrisville, NY	244	1917–93	1993 1930	9.52 9.60	7,090 6,920	3/15/77	9.31	7,080	N	50
04263000	Oswegatchie River near Heuvelton, NY	965	1917–93	1960	10.36	19,600	3/17/77	9.19	15,800	Y	30
04263445	Birch Creek at Pierces Corners, NY	1.56	1976–86	1978	4.90	85	4/03/78	4.90	85	N	10–25
04264300	Brandy Brook near Waddington, NY	27.0	1959–63, 1966–86	1977	8.75	941	3/13/77	8.75	941	N	20
04264331	St. Lawrence River at Cornwall, Ontario, near Massena, NY	298,800	1918–93	1993 1918	-- --	378,000 269,000	7/11/73 6/22/76 1/03/87	-- -- --	351,000 352,000 361,000	Y Y Y	35 35 50
04264400	Middle Branch Grass River near Clare, NY	63.0	1959–60, 1963, 1965–68, 1971–73, 1975–76, 1985	1975 1960	7.79 8.90	3,170 1,300	4/20/75	7.79	3,170	N	25–50
04264700	North Branch Grass River near Clare, NY	46.3	1959–69, 1985	1985	7.76	1,420	12/29/84	7.76	1,420	N	25–50
04265100	Elm Creek near Hermon, NY	32.6	1959–93	1974	9.07	1,270	4/06/74 3/13/77	9.07 8.77	1,270 1,150	N N	40 20
04265300	Little River near Canton, NY	42.4	1959–76, 1985	1974	8.32	3,300	4/05/74	8.32	3,300	N	25–50

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York—Continued

Station number (fig. 54)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04266500	Raquette River at Piercefield, NY	721	1900, 1909–93	1993 1972	12.04 12.25	8,630 8,360	5/14/71 5/08/72	11.92 12.25	7,810 8,360	Y Y	20 45
04267500	Raquette River at South Colton, NY	937	1953–93	1971	9.80	9,720	5/11/71	9.80	9,720	Y	50
04267700	Parkhurst Brook near Potsdam, NY	16.8	1959–77	1974	7.55	1,200	4/05/74	7.55	1,200	N	>50
04267800	Trout Brook at Allen Corners, NY	54.2	1959–86	1974	12.40	3,350	4/05/74	12.40	3,350	N	50–100
04268000	Raquette River at Raymondville, NY	1,125	1944–93	1974	8.40	13,000	4/05/74 2/26/85	8.40 7.85	13,000 11,300	Y Y	50 20
04268200	Plum Brook near Grantville, NY	43.9	1959–68, 1971–93	1963	6.94	1,920	3/14/77	6.72	1,420	N	20
04268700	St. Regis River at St. Regis Falls, NY	234	1959–68, 1985	1985	7.00	4,800	12/29/84	7.00	4,800	Y	>50
04268720	Hopkinton Brook at Hopkinton, NY	20.0	1962, 1964–69, 1971–86	1985 1978	3.98 4.67	804 --	12/29/84	3.98	804	N	10–25
04268800	West Branch St. Regis River near Parishville, NY	171	1959–93	1985	7.37	5,960	12/29/84	7.37	5,960	N	50–100
04269050	Allen Brook near Brasher Falls, NY	16.0	1962–86	1981	5.27	1,270	12/09/80	5.27	1,270	N	20
04269100	Lawrence Brook near Moira, NY	25.7	1959–62, 1964, 1969–73, 1975–86	1986	6.73	1,940	8/08/86	6.73	1,940	N	>50
04270000	Salmon River at Chasm Falls, NY	132	1926–82, 1985, 1987–93	1985	5.63	3,700	12/29/84	5.63	3,700	Y	>100
04270100	West Branch Deer Creek at Fort Covington Center, NY	32.4	1962–74, 1976–86	1974	8.23	2,050	4/05/74	8.23	2,050	N	>50
04270150	East Branch Deer Creek at Fort Covington Center, NY	23.9	1962, 1966–74, 1976–86	1977	7.45	1,740	3/14/77	7.45	1,740	N	25–50
04270162	East Branch Little Salmon River near Skerry, NY	7.11	1978–93	1978 1992	6.80 14.45	240 --	6/20/78	6.80	240	N	25–50
04270200	Little Salmon River at Bombay, NY	92.2	1959–93	1974	12.90	3,250	4/04/74 3/20/86	12.90 12.58	3,250 3,170	N N	30 20
04270510	Chateaugay River below Chateaugay, NY	151	1966–93	1974 1966	7.33 10.99	5,200 --	4/04/74	7.33	5,200	Y	30
04270700	Trout River at Trout River, NY	107	1960–93	1974	9.10	6,490	4/05/74 12/29/84	9.10 8.24	6,490 5,280	N N	30 20
04270800	English River near Mooers Forks, NY	40.8	1960–69, 1971–79	1974	6.97	2,000	3/15/74	6.97	2,000	N	25–50
04273500	Saranac River at Plattsburgh, NY	608	1928, 1944–93	1928	12.80	11,500	4/18/82 12/30/84	9.72 10.08	9,600 10,100	Y Y	15 15
04273700	Salmon River at South Plattsburgh, NY	61.9	1960–86, 1990–93	1992 1960	5.66 7.31	2,220 1,010	12/14/83	5.79	1,890	N	10
04275000	East Branch Au Sable River at Au Sable Forks, NY	198	1925–93	1938	12.91	20,100	11/27/79	11.13	15,200	Y	30
04276200	Bouquet River at New Russia, NY	37.6	1949–80	1980	16.76	6,400	11/26/79	16.76	6,400	N	>100

Table 33. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in New York—Continued

Station number (fig. 54)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04276500	Bouquet River at Willsboro, NY	275	1924–68, 1985, 1987–93	1925	10.85	11,800	4/01/87	9.60	9,300	N	15
04278300	Northwest Bay Brook near Bolton Landing, NY	22.0	1966–93	1981	6.35	1,770	2/11/81	6.35	1,770	N	20
04279000	La Chute at Ticonderoga, NY	234	1943–75, 1977–79	1977 1943	-- --	1,370 1,100	3/17/77	--	1,370	Y	>100

[1] Regulated during flood: N, no; Y, yes.

North Carolina

Hydroclimatology

North Carolina is located in the southeastern United States and is bordered on the east by the Atlantic Ocean. North Carolina has a humid, subtropical, temperate climate. The State typically experiences short, mild winters. The principal moisture sources are the Gulf of Mexico and the Atlantic Ocean. These moisture sources are supplemented by land-recycled moisture. Land-recycled moisture originates from evaporation from local and upwind land and water surfaces.

Late winter and summer are typically rainy seasons in North Carolina. Mean annual precipitation ranges from about 45 in. in the central part of the State to 56 in. along the coastal regions to about 90 in. in the mountainous, extreme southwest corner of the State (Paulson and others, 1991).

Convective thunderstorms during the summer and hurricanes and tropical storms, typically occurring from August to October, are responsible for significant floods in North Carolina. Stalled frontal systems also can generate excessive rainfall during the winter months.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in North Carolina is affected by drainage area, length of the main watercourse, bed slope of the main watercourse, and ratio of area of basin covered by impervious surfaces to total basin area (Jennings and others, 1994).

Significant Floods

The most significant flood in North Carolina between 1970 and 1989 occurred November 6–7, 1977, when 14 percent of the streamflow-gaging stations in the State recorded significant discharges. The northwestern part of the Blue Ridge Mountains was most affected by the flood. The flood was the result of a 3-day storm that produced 8 to 14 in. of rain in the mountainous areas in the southwestern part of the State (Paulson and others, 1991).

The location of streamflow-gaging stations in North Carolina that had significant floods for 1970–89 is shown in figure 55 by station number. The specific data for each significant flood are listed in table 34. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.

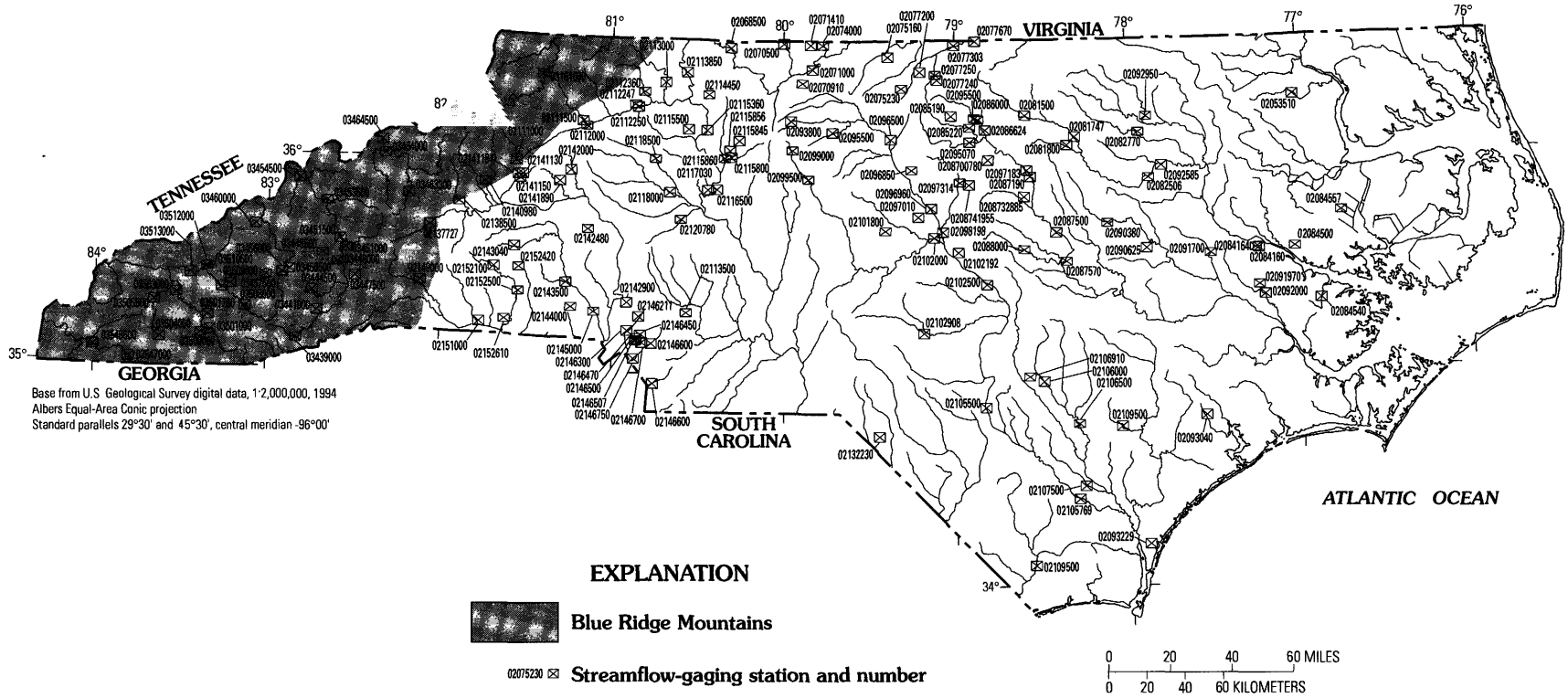


Figure 55. Location of streamflow-gaging stations with significant floods during 1970–89 for North Carolina.

Table 34. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in North Carolina

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
Station number (fig. 55)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02053510	Ahoskie Creek tributary at Poortown, NC	2.60	1964–73	1972	9.41	286	6/17/72	9.41	286	N	10
02068500	Dan River near Francisco, NC	129	1916, 1925–26, 1928–87, 1992–96	1985	19.50	21,200	9/02/79 8/17/85	18.11 19.50	18,900 21,200	Y Y	75 100
02070500	Mayo River near Price, NC	261	1930–71, 1985, 1994–96	1985	15.49	38,000	8/17/85	15.49	38,000	N	100
02070810	Jacobs Creek near Wentworth, NC	16.2	1954–66, 1969–73	1972	30.20	4,500	6/21/72	30.20	4,500	N	50
02071000	Dan River near Wentworth, NC	1,053	1908, 1937, 1940–96	1972 1908	31.60 34.90	54,200 --	6/22/72 9/23/79	31.60 28.12	54,200 39,400	N N	>100 50
02071410	Matrimony Creek near Leaksville, NC	12.0	1958–67, 1969–73	1972	18.59	2,800	6/21/72	18.59	2,800	N	10–25
02074000	Smith River at Eden, NC	538	1940–96	1940	19.28	45,600	6/21/72 9/08/87	16.24 16.17	24,800 24,700	Y Y	25 25
02075160	Moon Creek near Yanceyville, NC	29.9	1954–74, 1989	1972 1955	13.81 20.70	4,010 3,050	6/21/72	13.81	4,010	N	25–50
02075230	South Country Line Creek near Hightowers, NC	7.13	1954–76	1975 1955	21.42 22.12	3,600 2,360	7/15/75	21.42	3,600	N	75–100
02077200	Hyco Creek near Leasburg, NC	45.9	1965–92, 1994–96	1996	40.47	9,140	7/14/75	39.84	6,720	N	20
02077240	Double Creek near Roseville, NC	7.47	1965–75, 1978–82	1975	7.41	3,390	7/13/75	7.41	3,390	N	>25
02077250	South Hyco Creek near Roseville, NC	56.5	1967–80	1975	30.04	8,030	7/13/75	30.04	8,030	Y	>15
02077303	Hyco River below Abay Dam near McGehees Mill, NC	202	1974–96	1975	24.40	11,300	7/14/75	24.40	11,300	Y	10
02077670	Mayo Creek near Bethel Hill, NC	53.5	1978–96	1978	10.83	3,950	3/01/87 4/26/78	7.38 10.83	928 3,950	Y Y	5 25–50
02081500	Tar River near Tar River, NC	167	1940–96	1996	24.06	19,900	4/27/78	18.87	14,200	N	25
02081747	Tar River at U.S. Highway 401 at Louisburg, NC	427	1964–96	1996	25.34	21,100	4/28/78	24.36	13,100	N	10–25
02081800	Cedar Creek near Louisburg, NC	47.8	1935, 1954–75	1973 1935	8.32 14.00	3,560 --	6/29/73	8.32	3,560	N	25–50
02082506	Tar River below Tar River Reservoir near Rocky Mount, NC	777	1973–96	1996	22.99	13,700	4/30/78	21.62	11,500	Y	10
02082585	Tar River at North Carolina Highway 97 at Rocky Mount, NC	925	1977–96	1996	25.88	15,100	5/01/78	23.66	12,300	Y	5–10
02082770	Swift Creek at Hilliardston, NC	166	1964–96	1979	14.27	6,030	6/05/79 5/31/84	14.27 14.03	6,030 5,390	N N	30–40 25
02082950	Little Fishing Creek near White Oak, NC	177	1960–96	1973	24.80	18,000	10/07/72 5/31/84	24.80 21.27	18,000 8,420	N N	>100 30–40
02084160	Chicod Creek at State Road 1760 near Simpson, NC	45.0	1976–87, 1992–96	1984 1978	12.48 12.50	2,660 2,510	9/14/84	12.48	2,660	N	5–10

Table 34. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in North Carolina—Continued

Station number (fig. 55)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02084164	Juniper Branch at State Road 1766 near Simpson, NC	7.50	1976–86	1978	16.83	996	5/05/78	16.83	996	N	--
02084500	Herring Run near Washington, NC	9.59	1946, 1951–80	1964 1946	14.85 17.00	620 --	10/01/71	14.80	586	N	15
02084540	Durham Creek at Edward, NC	26.0	1966–92	1972	13.24	2,070	10/01/71	13.24	2,070	N	25–50
02084557	Van Swamp near Hoke, NC	23.0	1978–96	1978 1995	4.45 5.78	409 235	11/06/77	4.45	409	N	25–50
02085070	Eno River near Durham, NC	141	1964–96	1996	23.58	14,700	4/26/78	19.65	9,620	N	5–10
02085190	North Fork Little River tributary near Rougemont, NC	1.02	1954–76	1970	24.9	800	7/10/70	24.90	800	N	50–100
02085220	Little River near Orange Factory, NC	80.4	1962–96	1996	--	22,000	10/25/71	12.56	9,070	N	10–15
02085500	Flat River at Bahama, NC	149	1926–96	1938 1996	11.14 17.26	20,000 33,800	7/14/75	12.31	17,400	N	25
02086000	Dial Creek near Bahama, NC	4.76	1926–71, 1990–91	1970 1940	5.84 7.60	1,580 --	7/11/70	5.84	1,580	N	50
02086624	Knap of Reeds Creek near Butner, NC	43.0	1983–95	1989	8.79	8,600	7/16/89	8.79	8,600	N	25–50
0208700780	Little Lick Creek above State Road 1814 near Oak Grove, NC	10.1	1983–95	1995	9.33	1,830	8/20/86	9.26	1,720	N	10–20
02087183	Neuse River near Falls, NC	772	1945, 1971–96	1945 1975	-- 25.21	23,300 13,600	3/06/87 6/17/75	18.21 25.21	6,850 13,600	Y N	10 10–25
02087190	Neuse River near Neuse, NC	792	1908, 1912–75	1973 1945	20.75 26.00	10,600 --	6/29/73	20.75	10,600	N	5–10
0208732885	Marsh Creek near New Hope, NC	6.80	1984–96	1996	13.33	3,900	5/29/84	10.54	1,320	N	5
02087500	Neuse River near Clayton, NC	1,150	1919, 1928–96	1945	22.12	22,900	3/01/87 3/20/75	12.74 18.34	8,790 16,400	Y N	2–5 10
02087570	Neuse River at Smithfield, NC	1,206	1908, 1912–90	1908	27.10	19,900	3/02/87 4/29/78	20.58 23.11	11,700 16,200	Y N	5–10 25
02088000	Middle Creek near Clayton, NC	83.5	1940–96	1996	14.88	11,900	2/03/73	13.42	8,510	N	75–100
02090380	Contentnea Creek near Lucama, NC	161	1965–96	1965	16.28	5,860	4/17/87	15.61	4,680	Y	10–25
02090625	Turner Swamp near Eureka, NC	2.10	1969–87	1974	5.78	652	8/05/74	5.78	652	N	20–30
02091700	Little Contentnea Creek near Farmville, NC	93.3	1957–87	1965	19.65	5,170	8/13/82	17.84	3,530	N	25
02091970	Creeping Swamp near Vanceboro, NC	27.0	1972–85	1972	24.53	1,810	10/01/71	24.53	1,810	N	10–25
02092000	Swift Creek near Vanceboro, NC	182	1909, 1928, 1951–89	1955 1972	13.67 16.97	6,060 4,010	9/16/84	16.30	4,090	N	10
02093040	Southwest Creek tributary near Jacksonville, NC	1.00	1954–55, 1957–73	1972	22.60	296	10/23/71	22.60	296	N	10
02093229	Hewletts Creek at State Road 1102 near Wilmington, NC	1.98	1977–90	1982 1984	5.77 5.74	847 838	7/24/82	5.77	847	N	--
02093800	Reedy Fork near Oak Ridge, NC	20.6	1956–96	1960 1972	10.94 12.29	3,950 2,990	6/21/72	12.29	2,990	N	25

Table 34. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in North Carolina—Continued

Station number (fig. 55)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02095500	North Buffalo Creek near Greensboro, NC	37.1	1929–90	1979	20.12	9,140	5/04/78	16.92	6,890	N	25
							9/22/79	20.12	9,140	N	50
02096500	Haw River at Haw River, NC	606	1929–96	1996	32.83	51,400	9/22/79	28.44	28,700	N	20–25
02096850	Cane Creek near Teer, NC	33.7	1960–73	1973	17.46	4,030	2/02/73	17.46	4,030	N	10–25
02096960	Haw River near Bynum, NC	1,275	1908, 1928–96	1908	32.10	98,000	3/01/87	17.40	46,800	N	10–15
02097010	Robeson Creek near Pittsboro, NC	1.13	1954–76	1975	25.88	780	7/16/75	25.88	780	N	25–50
02097314	New Hope Creek near Blands, NC	75.9	1983–96	1996	14.05	12,700	4/19/87	11.53	4,980	N	5–10
0209741955	Northeast Creek at State Road 1100 near Genlee, NC	21.1	1983–96	1983	10.79	3,050	3/19/83	10.79	3,050	N	10–25
				1996	13.92	5,140					
02098198	Haw River below B. Everett Jordan Dam near Moncure, NC	1,689	1980–92	1989	14.91	16,800	3/10/89	14.91	16,800	Y	2–5
02099000	East Fork Deep River near High Point, NC	14.8	1929–94	1947	10.87	6,300	9/22/79	10.32	5,030	N	30–35
02099500	Deep River near Randleman, NC	125	1929–31, 1934–96	1947	32.20	20,000	5/05/78	25.06	9,410	N	10
02101800	Tick Creek near Mount Vernon Springs, NC	15.5	1959–81, 1994–96	1996	13.41	4,010	7/13/75	9.43	3,120	N	10–20
02102000	Deep River at Moncure, NC	1,434	1931–96	1945	17.20	80,300	2/26/79	10.96	34,100	N	10
02102192	Buckhorn Creek near Corinth, NC	76.3	1973–96	1973	20.02	6,920	2/02/73	20.02	6,920	N	--
							8/20/86	11.65	2,110	Y	10
02102500	Cape Fear River at Lillington, NC	3,464	1924–96	1945	33.19	150,000	3/01/87	15.59	36,500	Y	5
							3/02/73	19.27	53,800	N	5
02102908	Flat Creek near Inverness, NC	7.63	1969–96	1973	7.30	394	4/01/73	7.30	394	N	25
02105500	Cape Fear River at Lock 3 near Tarheel, NC	4,852	1938–96	1952	29.92	70,600	3/02/87	24.45	40,000	Y	25
				1945	43.44	--	2/04/73	--	46,800	N	5
02105769	Cape Fear River at Lock 1 near Kelly, NC	5,255	1970–96	1979	24.92	57,700	3/03/79	24.92	57,700	N	10
							3/06/87	23.61	44,500	Y	10–25
02106000	Little Coharie Creek near Roseboro, NC	92.8	1924, 1951–91	1965	9.97	3,400	9/15/84	10.34	2,930	N	25–30
				1924	11.60	--					
02106500	Black River near Tomahawk, NC	676	1928, 1945, 1948, 1952–96	1984	22.08	17,500	9/17/84	22.08	17,500	N	50–100
				1928	47.00	14,500					
02106910	Big Swamp near Roseboro, NC	32.3	1953–55, 1957–73	1973	23.07	4,100	4/02/73	23.07	4,100	N	25–75
02107500	Colly Creek near Kelly, NC	103	1908, 1928, 1945, 1951–71	1971	6.68	1,100	8/18/71	6.68	1,100	N	25–50
				1908	11.10	--					
02108500	Rockfish Creek near Wallace, NC	69.3	1955–81	1978	13.17	5,540	11/07/77	13.17	5,540	N	25–50
				1971	12.98	4,940					
02109500	Waccamaw River at Freeland, NC	680	1940–94	1955	--	10,200	3/23/83	16.47	9,670	N	25
				1996	17.02	12,400					
02111000	Yadkin River at Patterson, NC	28.8	1940–43, 1945–96	1940	12.70	16,200	8/07/73	12.80	12,100	N	75–100
				1973	12.80	12,100					
02111500	Reddies River at North Wilkesboro, NC	89.2	1940–78, 1980–96	1940	22.02	27,000	10/17/75	14.07	9,100	N	15–20

Table 34. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in North Carolina—Continued

Station number (fig. 55)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02112000	Yadkin River at Wilkesboro, NC	504	1904–09, 1916, 1921–96	1940	37.60	160,000	4/10/83	16.22	12,800	Y	2–5
02112247	Elkin River at Elkin, NC	35.5	1971–80	1971	15.03	6,900	9/20/71	15.03	6,900	N	10–25
02112250	Yadkin River at Elkin, NC	869	1916, 1940, 1965–96	1994 1940	22.80 37.50	29,100 --	4/10/83	24.88	28,700	Y	15–20
02112360	Mitchell River near State Road, NC	78.8	1940, 1965–96	1940	18.00	9,000	9/22/79	16.42	7,470	N	15–20
02113000	Fisher River near Copeland, NC	128	1922–35, 1937–96	1979	19.61	34,200	9/22/79	19.61	34,200	N	>100
02113500	Yadkin River at Siloam, NC	1,226	1977–87	1979	26.72	40,600	9/22/79	26.72	40,600	Y	10
02113850	Ararat River at Ararat, NC	231	1947, 1965–96	1979	24.46	35,000	9/22/79	24.46	35,000	N	>100
02114450	Little Yadkin River at Dalton, NC	42.8	1961–96	1979	20.29	9,400	3/30/75 9/22/79	19.60 20.29	8,880 9,400	N N	20–25 25
02115360	Yadkin River at Enon, NC	1,694	1940, 1965–96	1972 1940	27.83 35.80	73,300 --	6/21/72	27.83	73,300	Y	15–20
02115500	Forbush Creek near Yadkinville, NC	22.1	1941–71	1970	12.37	2,840	8/10/70	12.37	2,840	N	35–40
02115845	Peters Creek at Winston Salem, NC	5.18	1965–77	1970	22.37	2,520	6/14/70	22.37	2,520	N	10–25
02115856	Salem Creek near Atwood, NC	65.6	1972–82	1972	16.20	3,580	6/21/72	16.20	3,580	N	5–10
02115860	Muddy Creek near Muddy Creek, NC	186	1965–79, 1988–91	1972	21.26	14,500	6/22/72	21.26	14,500	N	25–50
02115900	South Fork Muddy Creek near Clemmons, NC	42.9	1965–79, 1988–91	1970	16.30	2,980	8/10/70	16.30	2,980	N	10–25
02116500	Yadkin River at Yadkin College, NC	2,280	1916, 1929–96	1916	36.30	94,300	6/22/72	32.81	75,200	Y	25–50
02117030	Humpy Creek near Fork, NC	1.05	1969–83	1975 1979	6.65 6.71	365 260	5/30/75	6.65	365	N	10–25
02118000	South Yadkin River near Mocksville, NC	306	1930, 1939–96	1965 1930	18.23 22.60	11,800 --	9/23/79 3/02/87	18.59 18.88	11,300 11,800	N N	25 35–40
02118500	Hunting Creek near Harmony, NC	155	1952–96	1979	25.05	14,800	6/21/72 9/22/79	24.30 25.05	12,700 14,800	N N	35–40 75–100
02120780	Second Creek near Barber NC	118	1980–96	1995	17.28	8,560	4/16/87	16.92	5,820	N	10–25
02132230	Bridge Creek tributary at Johns, NC	6.23	1953, 1955, 1958–73	1973 1953	20.41 20.60	370 230	2/02/73	20.41	370	N	20–25
02137727	Catawba River near Pleasant Gardens, NC	127	1981–96	1994	15.22	13,700	2/02/83	13.60	11,000	N	10
02138500	Linville River near Nebo, NC	66.7	1916, 1923–96	1940	11.40	39,500	6/20/72 11/06/77	8.29 9.64	17,500 17,000	N N	20–25 20
02140980	Carroll Creek near Collettsville, NC	2.38	1955–71	1970	23.18	1,280	8/10/70	23.18	1,280	N	>50
02141130	Zacks Fork Creek near Lenoir, NC	9.14	1967–76	1973	24.14	1,100	8/07/73	24.14	1,100	N	10–25
02141150	Lower Creek at Mulberry Street at Lenoir, NC	31.8	1967–78	1978	12.72	5,480	11/07/77	12.72	5,480	N	25–50
02141184	Blair Fork at Lenoir, NC	6.91	1967–76	1973	23.62	1,620	8/07/73	23.62	1,620	N	10–25
02141890	Duck Creek near Taylorsville, NC	18.4	1954–71	1970	18.63	3,760	8/10/70	18.63	3,760	N	>50

Table 34. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in North Carolina—Continued

Station number (fig. 55)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02142000	Lower Little River near All Healing Springs, NC	28.2	1954–95	1970	15.68	4,850	8/10/70	15.68	4,850	N	25
							9/22/79	14.53	4,660	N	20–25
02142480	Hagan Creek near Catawba, NC	7.80	1954–66, 1970–71	1970	26.04	2,780	8/10/70	26.04	2,780	N	25–50
02142900	Long Creek near Paw Creek, NC	16.4	1966–96	1982	11.70	4,300	6/18/82	11.70	4,300	N	50–100
02143040	Jacob Fork at Ramsey, NC	25.7	1962–96	1976	19.74	7,220	10/17/75	19.74	7,220	N	50–100
							11/06/77	17.80	5,760	N	25
02143500	Indian Creek near Laboratory, NC	69.2	1916, 1930, 1940, 1952–96	1930 1970	-- 10.61	9,920 8,450	8/10/70	10.61	8,450	N	50
02144000	Long Creek near Bessemer City, NC	31.8	1954–96	1972	9.10	6,500	10/16/71	9.10	6,500	N	50–100
02145000	South Fork Catawba River at Lowell, NC	630	1940, 1943–71, 1984–96	1940	21.33	34,000	8/11/70	17.38	24,800	N	35–40
02146211	Irwin Creek at Statesville Road at Charlotte, NC	5.90	1982–83, 1985–94	1982	7.58	1,430	6/18/82	7.58	1,430	N	>25
02146300	Irwin Creek near Charlotte, NC	30.7	1963–96	1975	18.04	8,880	5/30/75	18.04	8,880	N	75–100
							10/09/76	16.38	6,740	N	20–25
02146450	Briar Creek at Sharon Road, Charlotte, NC	18.5	1963–72	1971	11.79	2,220	5/13/71	11.79	2,220	N	--
02146470	Little Hope Creek at Seneca Place, Charlotte, NC	2.72	1967–72, 1983–86, 1988–90, 1995–96	1985	8.47	1,680	6/07/85	8.47	1,680	N	25
02146500	Site 55, Little Sugar Creek near Charlotte, NC	41	1924–45, 1947–77	1973	18.20	8,440	6/15/73	18.20	8,440	N	50
							9/23/75	17.30	7,800	N	25–35
02146507	Little Sugar Creek at Archdale Drive at Charlotte, NC	42.6	1978–96	1995	13.14	11,100	6/07/85	12.61	8,100	N	5–10
02146600	McAlpine Creek at Sardis Road near Charlotte, NC	39.6	1963–96	1995	17.79	9,040	3/24/79	16.70	6,690	N	20–25
							6/10/82	16.18	5,940	N	15
02146700	McMullen Creek at Sharon View Road near Charlotte, NC	6.95	1963–96	1995	11.03	3,470	6/10/82	10.89	3,150	N	30
02146750	McAlpine Creek below McMullen Creek near Pineville, NC	92.4	1975–96	1995	19.40	12,500	12/06/83	12.95	7,340	N	5
02146900	Twelve Mile Creek near Waxhaw, NC	76.5	1949, 1961–96	1995 1949	21.94 23.60	9,970 --	4/01/73	19.92	7,700	N	25–30
02149000	Cove Creek near Lake Lure,	79.0	1916, 1952–96	1957 1916	18.53 23.00	7,050 --	11/06/77	17.76	6,050	N	10–15
02151000	Second Broad River at Cliffside, NC	220	1926–96	1940	17.93	15,000	8/10/70	15.10	12,500	N	25
02152100	First Broad River near Casar, NC	60.5	1960–96	1995	15.58	7,790	8/10/70	15.22	6,580	N	10–15
							10/17/75	16.70	7,760	N	20–25
02152420	Big Knob Creek near Fallston, NC	16.4	1953, 1955–71	1970	15.21	3,400	8/10/70	15.21	3,400	N	25–50
02152500	First Broad River near Lawndale, NC	200	1916, 1940–80	1940 1916	37.80 37.80	32,500 --	8/10/70	27.73	23,500	N	100
02152610	Sugar Branch near Boiling Springs, NC	1.42	1954–87	1972 1958	6.58 8.82	1,110 902	10/16/71	6.58	1,110	N	25–50
03161000	South Fork New River near Jefferson, NC	205	1916, 1925–26, 1929–41, 1943–96	1940	22.50	52,800	11/07/77	14.83	26,300	N	50–60

Table 34. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in North Carolina—Continued

Station number (fig. 55)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03439000	French Broad River at Rosman, NC	67.9	1908–09, 1916, 1928, 1936–89, 1991–96	1965	14.95	13,500	5/28/73	13.09	9,140	N	15–20
03441000	Davidson River near Brevard, NC	40.4	1876, 1916, 1919, 1921–90, 1994–96	1928 1876	11.80 11.90	8,400 --	5/28/73	10.74	6,550	N	20–25
03444500	South Fork Mills River at The Pink Beds, NC	9.99	1927–49, 1966–73	1973	8.69	3,170	5/27/73	8.69	3,170	N	50–100
03447500	Cane Creek at Fletcher, NC	63.1	1876, 1893, 1901–02, 1910, 1916, 1923, 1928, 1940, 1943–58, 1961, 1965, 1973	1973 1916	11.47 14.80	26,000 23,000	5/28/73	11.47	26,000	N	>100
03448000	French Broad River at Bent Creek, NC	676	1916, 1928, 1935–86	1965 1916	15.80 27.30	30,600 --	5/28/73	13.84	24,700	N	25–50
03448500	Hominy Creek at Candler, NC	79.8	1940, 1943–78	1978	24.17	24,000	11/06/77	24.17	24,000	N	>100
03451000	Swannanoa River at Biltmore, NC	130	1791, 1796, 1810, 1845, 1850, 1852, 1875–76, 1899, 1901–02, 1916, 1921–26, 1928, 1935–96	1791	26.00	40,000	11/02/79 11/06/77	10.44 15.12	4,560 9,650	N N	2–5 20–25
03451500	French Broad River at Asheville, NC	945	1896–1996	1916	23.10	110,000	11/06/77	12.33	34,000	N	25
03453500	French Broad River at Marshall, NC	1,332	1916, 1928, 1940, 1943–96	1916	22.00	115,000	11/06/77	13.64	54,000	N	50
03454500	French Broad River at Hot Springs, NC	1,567	1796, 1810, 1845, 1850, 1852, 1867, 1876, 1892–93, 1899, 1901–02, 1906, 1910, 1916, 1928, 1935–49, 1978	1916	22.00	110,000	11/06/77	17.50	83,000	N	50–75
03456000	West Fork Pigeon River below Lake Logan near Waynesville, NC	55.3	1955–78, 1980–96	1976	10.52	11,100	5/15/76	10.52	11,100	Y	25–50
03456500	East Fork Pigeon River near Canton, NC	51.5	1955–96	1973	11.19	12,000	5/28/73 2/02/83	11.19 10.27	12,000 10,300	N N	25 15–20
03457500	Allen Creek near Hazelwood, NC	14.4	1950–73	1973	4.88	2,120	5/28/73	4.88	2,120	N	>50
03460000	Cataloochee Creek near Cataloochee, NC	49.2	1935–52, 1963–96	1963	8.08	5,080	3/16/73	7.87	4,760	N	30–35
03463300	South Toe River near Celo, NC	43.3	1958–96	1978	17.41	32,900	6/20/72 11/06/77	9.87 17.41	13,900 32,900	N N	10–15 100–200

Table 34. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in North Carolina—Continued

Station number (fig. 55)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03464000	Cane River near Sioux, NC	157	1893, 1901, 1934–73, 1978	1978	22.30	58,000	11/06/77	22.30	58,000	N	>200
03464500	Nolichucky River at Poplar, NC	608	1926–55, 1978	1978	21.20	87,000	11/06/77	21.20	87,000	N	100–200
03500000	Little Tennessee River near Prentiss, NC	140	1899, 1945–96	1965	17.30	12,200	3/04/79	14.54	9,110	N	35–40
03501000	Cullasaja River at Cullasaja, NC	86.5	1908–09, 1922–71, 1973, 1976	1965	21.45	16,900	5/15/76	19.02	11,300	N	50–100
03501760	Coon Creek near Franklin, NC	1.60	1957–73	1973	7.16	460	5/28/73	7.16	460	N	10–25
03503000	Little Tennessee River at Needmore, NC	436	1899, 1940, 1945–82, 1984–96	1965	13.06	22,100	3/05/79	10.93	17,600	N	15–20
03504000	Nantahala River near Rainbow Springs, NC	51.9	1940–96	1949	9.70	6,300	5/15/76	8.53	5,200	N	40–50
03505500	Nantahala River at Nantahala, NC	144	1943–78, 1980–82	1975	8.32	7,740	3/30/75	8.32	7,740	Y	25–50
03508000	Tuckasegee River at Tuckasegee, NC	143	1840, 1876, 1928, 1935–76	1940	21.10	40,800	5/15/76	13.70	12,800	Y	10–15
03509000	Scott Creek above Sylva, NC	51.0	1940, 1942–75, 1993–95	1995 1973	6.77 8.78	4,440 2,800	5/28/73	8.78	2,800	N	20–25
03510500	Tuckasegee River at Dillsboro, NC	347	1928–82	1940	21.96	52,600	5/15/76	14.29	20,900	Y	15–20
03512000	Oconaluftee River at Birdtown, NC	184	1946, 1949–96	1970	12.46	15,900	12/30/69 3/16/73	12.46 12.29	15,900 15,600	N N	30 30
03513000	Tuckasegee River at Bryson City, NC	655	1840, 1867, 1876, 1898–1982, 1984–95	1940 1840	15.96 20.00	61,600 --	3/16/73 4/05/77	13.45 13.60	30,200 30,800	Y Y	10–15 10–15
03547000	Hiwassee River below Chatuge Dam near Hayesville, NC	190	1943–74	1973	10.14	4,320	5/28/73	10.14	4,320	Y	>200
03548500	Hiwassee River above Murphy, NC	406	1897–1917, 1919–82, 1984–96	1899 1973	-- 13.88	23,100 18,600	5/28/73	13.88	18,600	Y	30–90

[1]Regulated during flood: N, no; Y, yes.

North Dakota

Hydroclimatology

North Dakota is near the geographic center of North America; therefore, the State's climate is continental. The main airmasses affecting the State's weather originate in the Gulf of Mexico, over the Pacific Ocean, and over Canada. Moisture is carried into the State primarily from the Gulf of Mexico. Before arriving in North Dakota, Pacific airmasses travel over the Rocky Mountains to the west of the State. As a result, the Pacific airmasses do not contribute much moisture to the State. The airmasses that originate over Canada are most prevalent during the winter and are the reason for the extreme cold temperatures occasionally experienced. North Dakota receives less snow in the winter than its neighboring States due to the dryness of these Canadian airmasses. Also, the pattern of the moisture-laden air from the Gulf travels just south and east of the State. During the spring, the Canadian airmasses retreat to the north. This retreat allows for the Gulf airmasses to travel northward, resulting in precipitation (Paulson and others, 1991).

Generally, June is the wettest month of the year. Mean annual precipitation is 13 in. in the northwest and 21 in. in the southeast (Paulson and others, 1991). Significant floods in the State are usually a result of rapid snowmelt. Summer thunderstorms can produce intense localized downpours that lead to flash floods.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in North Dakota depends on contributing-drainage area and main-channel slope (Jennings and others, 1994).

Significant Floods

The flood of April 1979 is considered to be a noteworthy flood in North Dakota's history. About one-third of the streamflow-gaging stations in the State recorded significant discharges in 1979. The flood occurred on the Red River of the North and its tributaries. The Goose River at Hillsboro (station 05066500, fig. 56) recorded a maximum discharge that exceeded the 50-year recurrence interval. Several factors contributed to the severity of this flood—excessive snowfall in the late winter continuing on into the spring, lower than normal temperatures in the winter resulting in a delayed thaw, and a rapid increase in temperatures causing the rapid melting of the snowpack in mid-April.

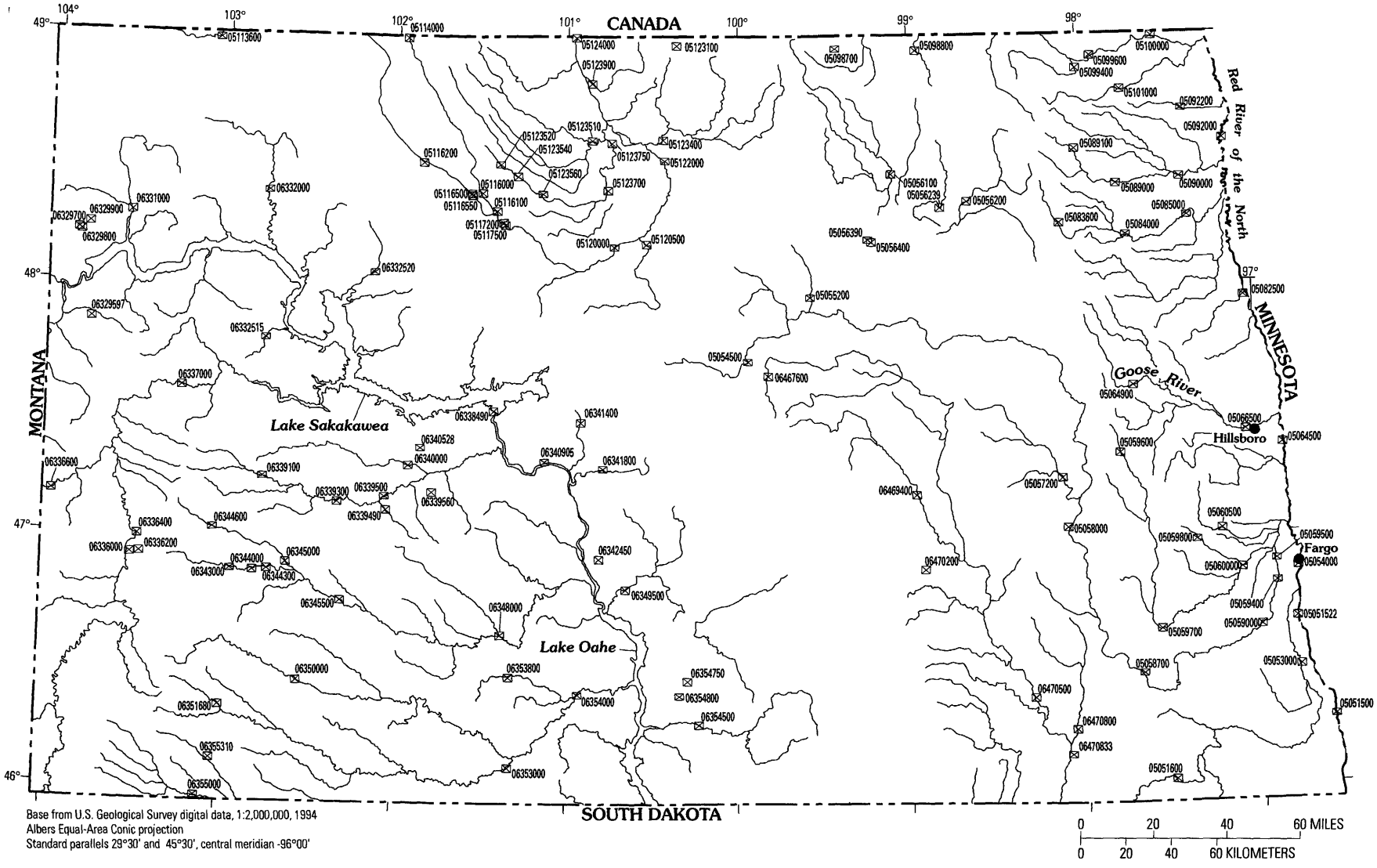
During the flood of June and July 1975, 9 percent of the streamflow-gaging stations recorded significant discharges. Flooding occurred in the downstream reaches of the Red River of the North and its tributaries between Fargo and Hillsboro. The flood was unusual for North Dakota because it was a result of a summer rainstorm instead of a combination of snowmelt and rainfall.

The location of streamflow-gaging stations in North Dakota that had significant floods for 1970–89 is shown in figure 56 by station number. The specific data for each significant flood are listed in table 35. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.



Base from U.S. Geological Survey digital data, 1:2,000,000, 1994
Albers Equal-Area Conic projection
Standard parallels 29°30' and 45°30', central meridian -96°00'

0 20 40 60 MILES
0 20 40 60 KILOMETERS

EXPLANATION

05055200 ⊠ **Streamflow-gaging station and number**

Figure 56. Location of streamflow-gaging stations with significant floods during 1970–89 for North Dakota.

Table 35. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in North Dakota

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 56)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05051500	Red River of the North at Wahpeton, ND	4,010	1897, 1942–94	1897 1989	17.00 17.95	10,500 8,370	4/05/89	17.95	8,370	Y	10–25
05051522	Red River of the North at Hickson, ND	4,300	1976–94	1989	35.81	12,900	4/07/89	35.81	12,900	Y	50
05051600	Wild Rice River near Rutland, ND	546	1960–94	1969	8.77	1,270	3/31/89	8.47	700	N	10–25
05053000	Wild Rice River near Abercrombie, ND	2,080	1897, 1933–94	1969 1897	24.58 27.50	9,540 --	4/07/89	23.27	7,150	Y	10–25
05054000	Red River of the North at Fargo, ND	6,800	1882, 1897, 1902–94	1969 1897	37.34 40.10	25,300 25,000	4/02/78 4/09/89	34.41 35.39	17,500 18,900	Y Y	25 25–50
05054500	Sheyenne River above Harvey, ND	424	1956–94	1979 1971	9.45 10.30	1,000 --	4/20/79 7/24/87	9.45 9.08	1,000 434	N N	25–100 10
05055200	Big Coulee near Maddock, ND	140	1957–67, 1969–73	1971	12.00	810	4/08/71	12.00	810	N	10–25
05056100	Mauvais Coulee near Cando, ND	387	1954, 1956–94	1979	11.18	2,660	4/25/79	11.18	2,660	N	5–25
05056200	Edmore Coulee near Edmore, ND	382	1956–94	1993	87.76	1,180	4/25/79 4/08/87	87.10 86.30	1,110 1,060	N N	5–10 5–10
05056239	Starkweather Coulee near Webster, ND	310	1980–94	1987 1989	8.50 10.05	570 --	4/11/87	8.50	570	N	10–25
05056390	Little Coulee near Brinsmade, ND	350	1976–94	1979 1993	10.43 10.78	425 193	5/01/79	10.43	425	N	10–50
05056400	Big Coulee near Churchs Ferry, ND	1,620	1950–94	1979	7.59	1,420	6/10/74 5/06/79	7.06 7.59	1,230 1,420	Y Y	10–50 10–50
05057200	Baldhill Creek near Dazey, ND	691	1950, 1956–94	1979	17.78	9,000	4/19/79	17.78	9,000	N	>100
05058000	Sheyenne River below Baldhill Dam, ND	7,470	1948, 1950–94	1979	36.26	4,740	4/24/79	36.26	4,740	Y	10–50
05058700	Sheyenne River at Lisbon, ND	8,190	1950, 1957–94	1975	19.04	5,270	7/01/75 5/02/79	19.04 17.58	5,270 4,880	Y Y	10–25 10–25
05059000	Sheyenne River near Kindred, ND	8,800	1947, 1950–94	1969 1947	21.03 22.10	4,690 3,600	7/06/75 5/07/79	21.66 20.75	4,640 4,160	Y Y	10–50 10–25
05059400	Sheyenne River near Horace, ND	8,850	1980–92	1987	22.06	2,960	3/28/87	22.06	2,960	Y	10–25
05059500	Sheyenne River at West Fargo, ND	8,870	1903–06, 1919, 1930–94	1979 1975	22.12 22.25	3,480 --	4/21/79	22.12	3,480	Y	10–25
05059600	Maple River near Hope, ND	20.2	1965–94	1979 1993	5.86 7.53	900 585	4/18/79 4/01/82	5.86 5.56	900 850	N N	10–50 10–50
05059700	Maple River near Enderlin, ND	843	1956–94	1975	15.41	7,610	6/30/75	15.41	7,610	N	25–50
05059800	Swan Creek near Absaraka, ND	32.9	1955–73	1970 1966	5.00 6.14	670 --	4/--/70	5.00	670	N	10–100
05060000	Maple River near Mapleton, ND	1,450	1944–76	1975 1952	15.03 18.90	11,600 3,850	7/02/75	15.03	11,600	N	25–200
05060500	Rush River at Amenia, ND	116	1947–94	1979 1966	10.37 12.15	3,490 --	4/19/79	10.37	3,490	N	25–100
05064500	Red River of the North at Halstad, MN	21,800	1936–37, 1942–94	1979	39.00	42,000	7/10/75 4/22/79	38.55 39.00	39,900 42,000	Y Y	25–50 25–100
05064900	Beaver Creek near Finley, ND	160	1965–94	1979 1966	8.35 9.70	1,900 --	4/19/79	8.35	1,900	N	10–25

Table 35. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in North Dakota—Continued

Station number (fig. 56)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05066500	Goose River at Hillsboro, ND	1,203	1931–94	1979	16.76	14,800	4/21/79	16.76	14,800	N	50–200
05082500	Red River of the North at Grand Forks, ND	30,100	1882–1994	1897	50.20	85,000	4/11/78	45.73	54,200	Y	25
							4/23/79	48.63	82,000	Y	50–100
05083600	Middle Branch Forest River near Whitman, ND	47.7	1961–90	1974	7.11	984	5/19/74	7.11	984	Y	10–50
				1987	7.96	--	4/22/79	7.17	737	Y	10–50
05084000	Forest River near Fordville, ND	456	1940–94	1950	14.48	16,400	4/20/79	9.98	5,200	Y	10
							5/20/74	9.86	5,050	Y	10
05085000	Forest River at Minto, ND	740	1944–94	1950	11.80	16,600	4/20/79	8.93	6,730	Y	10–25
05089000	South Branch Park River below Homme Dam, ND	226	1950–94	1950	37.52	13,000	4/20/79	31.49	5,380	Y	10–25
05089100	Middle Branch Park River near Union, ND	15.3	1966–86	1979	6.16	960	4/20/79	6.16	960	N	10–50
				1967	7.22	687					
05090000	Park River at Grafton, ND	695	1932–94	1950	20.13	12,600	4/22/79	19.56	8,740	Y	10–50
05092000	Red River of the North at Drayton, ND	34,800	1897, 1936–37, 1941–94	1979	43.66	92,900	4/28/79	43.66	92,900	Y	50–100
05092200	Pembina County Drain 20 near Glasston, ND	40.7	1972–86	1979	9.30	940	4/20/79	9.30	940	N	25–200
				1979	14.64	--					
05098700	Hidden Island Coulee near Hansboro, ND	38.0	1962–94	1979	10.50	1,200	4/21/74	8.61	1,060	N	10–50
							4/23/79	10.50	1,200	N	10–100
05098800	Cypress Creek near Sarles, ND	71.0	1962–88	1979	10.35	2,000	4/12/79	10.35	2,000	N	10–50
							4/10/71	8.56	1,920	N	10–50
05099400	Little South Pembina River near Walhalla, ND	182	1956–82	1970	13.95	6,600	4/25/70	13.95	6,600	N	10–50
							4/09/71	13.26	4,480	N	10
05099600	Pembina River at Walhalla, ND	3,350	1940–90	1950	19.20	20,400	4/26/70	15.08	10,200	N	10–25
							4/11/71	14.56	10,200	N	10–25
							4/27/74	15.19	13,800	N	25–50
05100000	Pembina River at Neche, ND	3,410	1904–08, 1910–15, 1919–94	1950	21.58	10,700	4/28/74	22.92	10,300	N	25–50
				1979	23.64	9,500	4/20/79	23.64	9,500	N	25–50
05101000	Tongue River at Akra, ND	160	1939–46, 1948–94	1950	48.70	11,800	4/22/79	16.75	900	Y	10–25
05113600	Long Creek near Noonan, ND	1,790	1960–94	1976	17.61	6,310	3/31/76	17.61	6,310	N	10–50
05114000	Souris River near Sherwood, ND	8,940	1927, 1930–94	1976	25.15	14,800	4/10/76	25.15	14,800	Y	50–100
							4/30/79	23.95	8,550	Y	25–50
05116000	Souris River near Foxholm, ND	9,470	1937–94	1976	17.17	8,600	4/17/76	17.17	8,600	Y	50–100
							5/09/79	15.67	5,330	Y	25–50
05116100	Souris River tributary near Burlington, ND	0.13	1959–73	1972	8.50	30	7/--/72	8.50	30	N	5–10
05116200	Des Lacs River tributary near Donnybrook, ND	3.82	1956–73	1972	7.70	210	5/21/72	7.70	210	N	10–50
05116500	Des Lacs River at Foxholm, ND	939	1939, 1946–94	1979	21.23	4,260	4/30/70	20.71	3,660	Y	25–50
							4/19/79	21.23	4,260	Y	50–100
05116550	Fuller Coulee at Foxholm, ND	12.8	1955–73	1970	6.01	280	4/29/70	6.01	280	N	10–50
							6/--/72	3.81	280	N	10–50
05117200	Souris River tributary number 2 near Burlington, ND	2.04	1960–73	1971	9.90	300	7/06/71	9.90	300	N	10–100
05117500	Souris River above Minot, ND	10,600	1881, 1904, 1906–94	1904	23.00	12,000	4/17/76	21.30	9,350	Y	50–100
				1881	26.00	--	5/09/79	19.53	5,960	Y	25–50
05120000	Souris River near Verendrye, ND	11,300	1937–94	1976	17.84	9,900	4/19/76	17.84	9,900	Y	>100
							5/11/79	--	6,000	Y	25–50

Table 35. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in North Dakota—Continued

Station number (fig. 56)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05120500	Wintering River near Karlsruhe, ND	705	1937–94	1949	12.00	3,000	4/22/79	10.62	1,400	Y	25–50
05122000	Souris River near Bantry, ND	12,300	1937–94	1976	14.59	9,330	5/25/75	13.90	5,750	Y	25–50
							4/23/76	14.59	9,330	Y	50–100
							5/17/79	13.62	5,900	Y	25–50
05123100	Oak Creek at Lake Metigoshe outlet near Bottineau, ND	59.0	1954–76	1975	9.70	148	5/03/75	9.70	148	Y	5–25
05123400	Willow Creek near Willow City, ND	1,160	1957–94	1969	16.76	5,900	4/17/74	15.90	2,900	N	10–25
							4/04/76	15.94	2,950	N	10–25
							4/23/79	16.10	3,170	N	10–25
05123510	Deep River near Upham, ND	975	1951, 1958–80, 1985–94	1969	18.18	6,760	4/03/76	17.58	5,000	N	10–25
05123520	Egg Creek near Glenburn, ND	20.9	1955–73	1972	6.53	300	5/--/72	6.53	300	N	10–50
05123540	Egg Creek near Ruthville, ND	108	1955–73	1971	5.64	1,400	9/04/71	5.64	1,400	N	25–200
05123560	Egg Creek tributary near Deering, ND	4.25	1955–73	1970	4.72	26	5/01/70	4.72	26	N	10–50
				1969	4.75	14					
05123700	Cut Bank Creek at North Lake outlet near Granville, ND	534	1957–80	1976	4.60	780	3/29/76	4.60	780	N	--
05123750	Cut Bank Creek at Upham, ND	722	1975–80, 1986–91	1976	7.24	820	4/01/76	7.24	820	N	10–50
05123900	Boundary Creek near Landa, ND	230	1958–81, 1985–94	1969	12.70	3,580	4/14/75	12.43	2,600	Y	5–10
				1976	12.90	2,300	4/01/76	12.90	2,300	Y	5–10
05124000	Souris River near Westhope, ND	16,900	1930–94	1976	19.16	12,600	5/07/75	16.66	6,700	Y	10–25
							4/26/76	19.16	12,600	Y	50
06329597	Charbonneau Creek near Charbonneau, ND	149	1967–81	1979	8.32	6,300	4/17/79	8.32	6,300	N	5–50
				1976	11.02	5,000					
06329700	Painted Woods Creek tributary near Williston, ND	0.35	1955–73	1972	7.11	110	--/--/72	7.11	110	N	10–100
				1960	8.76	29					
06329800	Painted Woods Creek near Williston, ND	17.4	1955–73	1971	6.59	1,200	6/04/71	6.59	1,200	N	25–100
				1960	6.70	250					
06329900	Painted Woods Creek tributary 2, North Williston, ND	8.30	1955–73	1972	7.96	276	3/15/72	7.96	276	N	10–50
06331000	Little Muddy River below Cow Creek near Williston, ND	875	1955–94	1979	12.77	9,180	4/18/79	12.77	9,180	Y	25–100
				1960	13.57	6,910					
06332000	White Earth River at White Earth, ND	780	1955–81	1979	20.12	5,200	4/18/79	20.12	5,200	Y	25–200
06332515	Bear Den Creek near Mandaree, ND	74	1967–94	1972	9.02	2,840	3/13/72	9.02	2,840	N	10–100
				1969	10.03	1,100					
06332520	Shell Creek near Parshall, ND	465	1966–81	1979	8.17	2,400	4/18/79	8.17	2,400	N	10–50
06336000	Little Missouri River at Medora, ND	6,190	1904–12, 1914–16, 1924, 1929–34, 1946–76	1947	20.50	65,000	3/11/72	18.00	40,000	N	25–50
06336200	Sheep Creek tributary 2 near Medora, ND	0.42	1958–73	1971	7.87	210	6/09/71	7.87	210	N	5–25

Table 35. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in North Dakota—Continued

Station number (fig. 56)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06336400	Jules Creek near Medora, ND	3.80	1955–73	1971	9.69	629	6/09/71	9.69	629	N	10–50
06336600	Beaver Creek near Trotters, ND	616	1978–94	1978 1978	18.61 19.27	2,720 --	3/29/78	18.61	2,720	N	10–50
06337000	Little Missouri River near Watford City, ND	8,310	1935–94	1947	24.00	110,000	3/13/72	14.68	52,800	N	25–100
06338490	Missouri River at Garrison Dam, ND	181,400	1970–94	1975	--	65,200	7/25/75	--	65,200	Y	100–500
06339100	Knife River at Manning, ND	205	1968–94	1970	16.20	2,940	6/15/70 3/14/72	16.20 15.90	2,940 2,580	N N	5–10 5–10
06339300	Knife River at Marshall, ND	722	1971–81	1972	19.37	9,080	3/14/72	19.37	9,080	N	10–50
06339490	Elm Creek near Golden Valley, ND	82.0	1968–94	1970	23.55	10,000	5/08/70	23.55	10,000	N	50–500
06339500	Knife River near Golden Valley, ND	1,230	1943–94	1970 1943	25.84 26.70	11,200 --	5/09/70 3/14/72	25.84 26.59	11,200 10,200	N N	25 10–25
06339560	Brush Creek near Beulah, ND	23.9	1975–90	1982 1978	8.40 9.26	940 200	3/29/82	8.40	940	N	10–100
06340000	Spring Creek at Zap, ND	549	1924, 1946–94	1952 1972	20.03 20.70	6,130 6,030	3/15/72	20.70	6,030	Y	25–50
06340528	West Branch Antelope Creek number 4 near Zap, ND	8.50	1977–86	1979	9.66	650	4/17/79	9.66	650	N	10–50
06340905	Coal Lake Coulee near Hensler, ND	7.00	1978–88	1980	8.61	926	8/20/80	8.61	926	N	5–50
06341400	Turtle Creek near Turtle Lake, ND	310	1957–76	1975 1967	5.43 6.20	610 --	6/29/75	5.43	610	N	25–100
06341800	Painted Woods Creek near Wilton, ND	427	1958–81, 1983–94	1979	9.64	4,050	4/19/79	9.64	4,050	N	50–200
06342450	Burnt Creek near Bismarck, ND	108	1968–94	1979	16.93	10,000	4/18/79	16.93	10,000	N	50–200
06343000	Heart River near South Heart, ND	311	1947–72, 1978–94	1970	22.77	8,080	5/09/70 3/--/72	22.77 21.65	8,080 5,200	N N	25–100 10–25
06344000	Heart River below Dickinson Dam near Dickinson, ND	404	1952–72	1970	15.85	6,970	5/09/70	15.85	6,970	Y	5–25
06344300	Heart River at Dickinson, ND	--	1984–94	1986 1986	10.56 10.93	3,500	3/03/86 4/02/87	10.56 10.15	3,500 3,070	Y Y	10–50 10–50
06344600	Green River near New Hradec, ND	152	1964–94	1970 1978	16.88 17.60	4,120 --	5/09/70 3/13/72	16.88 16.63	4,120 3,180	N N	25–50 10–25
06345000	Green River near Gladstone, ND	356	1943, 1946–76	1972 1943	16.55 20.00	5,330 --	3/14/72	16.55	5,330	N	10–25
06345500	Heart River near Richardton, ND	1,240	1905–21, 1938, 1943–94	1950 1912	28.05 41.96	23,400 --	3/15/72 4/12/82	24.91 25.38	12,300 14,200	Y Y	10–25 25–50
06348000	Heart River near Lark, ND	2,750	1947–94	1950	20.70	29,200	5/09/70	18.97	19,500	Y	25
06349500	Apple Creek near Menoken, ND	1,680	1946–94	1950 1979	17.07 17.46	6,750 5,980	4/19/79	17.46	5,980	N	25–100
06350000	Cannonball River at Regent, ND	580	1950–94	1950	26.10	20,300	4/12/82 3/27/78	21.82 20.55	11,000 10,000	N N	10–25 10–25
06351680	White Butte Fork Cedar Creek near Scranton, ND	42.9	1965–94	1970 1978	7.20 9.20	645 520	5/08/70 3/29/71	7.20 7.09	645 607	N N	5–10 5–10

Table 35. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in North Dakota—Continued

Station number (fig. 56)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06353000	Cedar Creek near Raleigh, ND	1,750	1939, 1962–94	1978	13.70	13,400	3/28/78	13.70	13,400	N	50–200
							3/22/87	12.03	8,700	N	25–50
06353800	Louse Creek tributary number 2 near Lark, ND	7.70	1956–73	1969	4.48	500	5/--/72	2.99	350	N	10–25
06354000	Cannonball River at Breien, ND	4,100	1935–94	1950	22.30	94,800	3/31/78	16.38	22,600	N	10–25
							3/22/87	19.36	23,000	N	10–25
06354500	Beaver Creek at Linton, ND	717	1943, 1950–89	1952	17.50	9,800	3/23/87	18.22	7,770	N	10–50
				1987	18.22	7,770					
06354750	Sand Creek tributary near Hazelton, ND	2.96	1960–73	1970	6.80	115	4/28/70	6.80	115	N	10–50
06354800	Sand Creek near Temvik, ND	23.3	1955–73	1970	5.15	4,500	4/28/70	5.15	4,500	N	25–100
				1959	5.65	30					
06355000	North Fork Grand River at Haley, ND	509	1909, 1912–15, 1917, 1946–94	1952	17.03	14,100	3/27/78	13.77	2,500	Y	10–25
				1950	17.10	11,300					
06355310	Buffalo Creek tributary near Gascoyne, ND	15.7	1975–87	1975	8.41	100	5/9/75	8.41	100	Y	5–10
							4/03/87	7.78	99	Y	5–10
06467600	James River near Manfred, ND	253	1950, 1955–94	1993	9.40	2,700	4/18/79	9.20	2,000	N	50
06469400	Pipestem Creek near Pingree, ND	700	1974–94	1979	11.60	2,520	4/20/79	11.60	2,520	N	10–25
							4/19/75	11.47	2,400	N	10–25
06470200	Beaver Creek tributary near Eldridge, ND	0.19	1955–73	1973	5.88	49	--/--/73	5.88	49	N	10–25
				1969	6.67	--					
06470500	James River at Lamoure, ND	4,390	1950–94	1969	16.17	6,800	4/18/79	14.09	3,830	Y	10–25
06470800	Bear Creek near Oakes, ND	365	1977–94	1979	11.47	1,170	4/15/79	11.47	1,170	N	10–50
06470833	Pilot Drain at Oakes, ND	5.10	1972–82	1979	2.36	11	4/18/79	2.36	11	N	10–50

[1]Regulated during flood: N, no; Y, yes.

Ohio

Hydroclimatology

Ohio is located in the central United States and is bordered on the north by Lake Erie. Ohio's climate is controlled by four major airmasses. These are tropical maritime airmasses, which originate over the Gulf of Mexico and the western Atlantic Ocean; polar continental airmasses, which form over northern Canada; polar maritime airmasses, which develop over the northern Pacific Ocean; and tropical continental airmasses, which originate over the southwestern United States.

Most of the moisture that reaches Ohio comes from the tropical maritime airmasses. A small amount of moisture comes from the Pacific Ocean and from evaporation from the Great Lakes. Lake-effect snowfall in northeast Ohio diminishes rapidly southward from Lake Erie. Most precipitation results from frontal systems and cyclonic storms that pull in moisture from the Gulf of Mexico. In the winter, snow can accumulate and upon melting cause widespread flooding. In the summer, intense thunderstorms associated with frontal systems can cause excessive rainfall and flash floods.

Mean annual precipitation in Ohio is dependent on the geographic location. Mean annual precipitation in the southern areas is 40 to 44 in. and in the northwestern areas, 30 to 34 in. Central Ohio receives an average of 37 in. annually (Paulson and others, 1991).

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the dependent variables affecting the magnitude of maximum discharges for streams in Ohio are drainage area, main-channel slope, and percentage of the basin occupied by lakes, ponds, and swamps. These variables are applicable to rural, unregulated streams having less than 30 percent of the drainage basin strip mined. For urban areas, maximum discharges depend on drainage area, mean annual precipitation, and a basin-development factor, which is an index of the prevalence of urban drainage improvements (Jennings and others, 1994).

Significant Floods

Ohio was affected by a few local floods but no widespread flooding during 1970–89. On August 24, 1975, the Cleveland area was hit by an intense thunderstorm. Resultant flash flooding on Big Creek ranged from the 25- to 100-year recurrence interval. Four deaths occurred, and damages totalled $5 million. During June 13 through 15, 1981, locally intense thunderstorm rains fell on saturated ground and caused flooding on the Blanchard River. Damages were estimated at $35 million (Paulson and others, 1991).

The location of streamflow-gaging stations in Ohio that had significant floods for 1970–89 is shown in figure 57 by station number. The specific data for each significant flood are listed in table 36. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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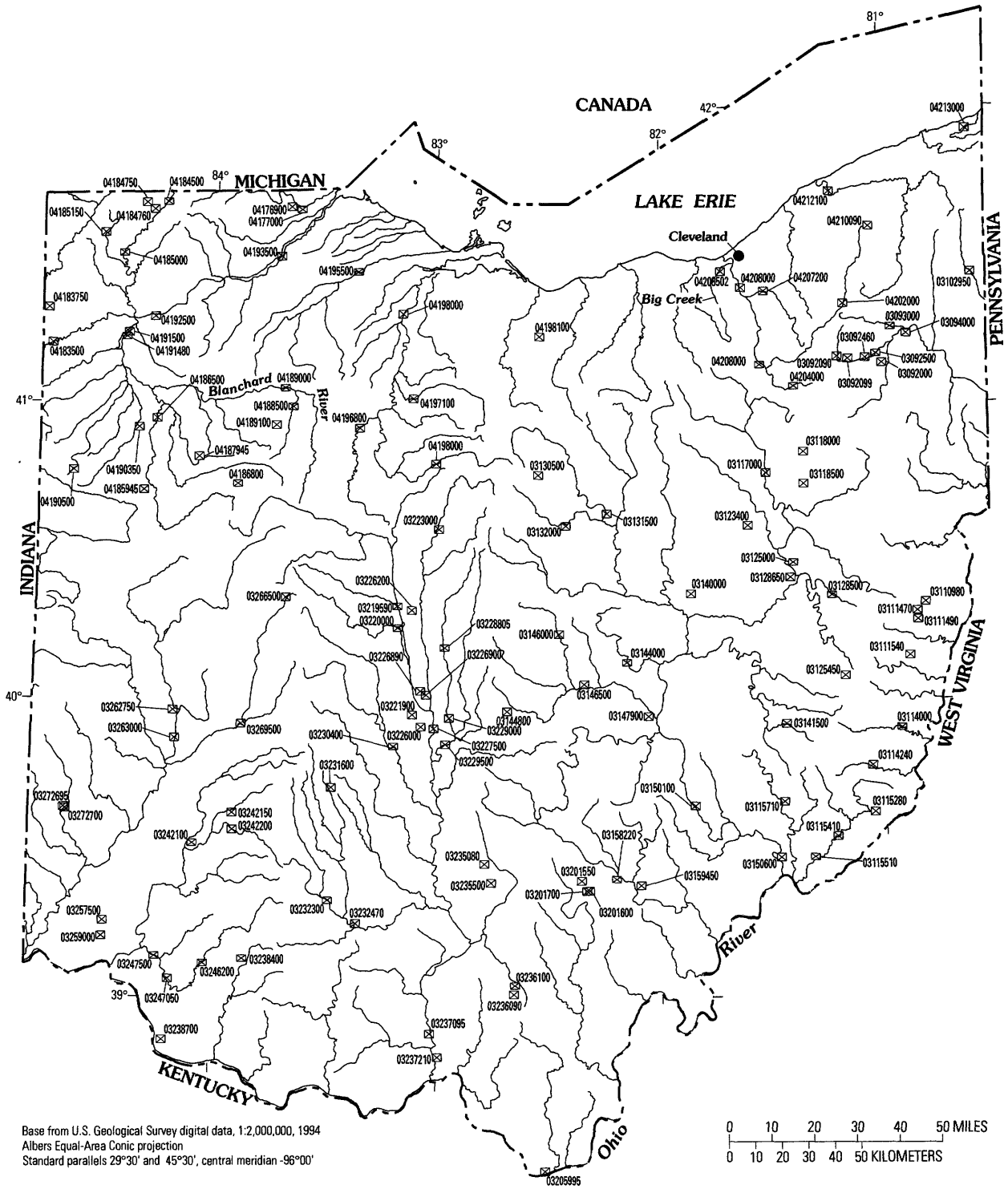

EXPLANATION

03236090 ⊠ **Streamflow-gaging station and number**

Figure 57. Location of streamflow-gaging stations with significant floods during 1970–89 for Ohio.

Table 36. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Ohio

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig. 57)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03092000	Kale Creek near Pricetown, OH	21.9	1942–93	1959	8.52	3,890	7/11/76	8.34	3,680	N	50–100
03092090	West Branch Mahoning River near Ravenna, OH	21.8	1966–93	1979	9.34	2,810	9/14/79	9.34	2,810	N	50–100
03092099	Hinkley Creek at Charlestown, OH	7.85	1970–82	1979 1976	13.50 13.59	2,120 1,950	9/14/79	13.50	2,120	N	--
03092460	West Branch Mahoning River at Wayland, OH	81.7	1969–91	1971	10.93	1,380	2/25/71	10.93	1,380	Y	--
03092500	West Branch Mahoning River near Newton Falls, OH	96.3	1927–81	1959	13.60	8,340	7/12/76	9.11	2,130	Y	<2
03093000	Eagle Creek at Phalanx Station, OH	97.6	1927–34, 1938–93	1979	13.71	8,150	9/15/79	13.71	8,150	N	>100
03094000	Mahoning River at Leavittsburg, OH	575	1913, 1937, 1942–93	1959 1913	19.37 24.00	20,300 --	9/15/79	15.91	9,300	Y	--
03102950	Pymatuning Creek at Kinsman, OH	96.7	1966–93	1986	12.40	2,740	11/06/85	12.40	2,740	N	10–25
03110980	Consol Run at Bloomingdale, OH	0.04	1978–87	1980	103.99	17	5/13/80	103.99	17	N	5–10
03111470	Little Piney Fork at Parlett, OH	1.57	1978–87	1987	97.62	222	8/22/87	97.62	222	N	10–25
03111490	Piney Fork tributary near Piney Fork, OH	0.44	1978–87	1978	99.60	73	7/14/78	99.60	73	N	10–25
03111540	Sloan Run tributary near Harrisville, OH	0.34	1978–87	1978	103.22	180	8/08/78	103.22	180	N	5–10
03114000	Captina Creek at Armstrongs Mills, OH	134	1927–35, 1959–93	1980	17.48	21,900	8/11/80 1/26/85	17.48 14.84	21,900 14,600	N N	>100 10–25
03114240	Wood Run near Woodsfield, OH	0.53	1978–87	1981 1980	101.21 101.59	240 155	6/13/81	101.21	240	N	10–25
03115280	Trail Run near Antioch, OH	5.45	1978–87	1981	97.82	2,020	6/13/81	97.82	2,020	N	50–100
03115410	Graham Run near Bloomfield, OH	0.13	1978–87	1979	100.37	79	8/18/79	100.37	79	N	10–25
03115510	Moss Run near Wingett, OH	1.52	1978–87	1980	93.25	760	7/23/80	93.25	760	N	25–50
03115710	Buffalo Run tributary near Dexter City, OH	0.19	1978–87	1984	97.46	69	5/29/84	97.46	69	N	5–10
03117000	Tuscarawas River at Massillon, OH	518	1939–93	1969	16.43	10,700	9/15/79	15.34	9,070	N	25–50
03118000	Middle Branch Nimishillen Creek at Canton, OH	43.1	1942–93	1959	6.50	2,470	9/15/79	6.36	1,240	N	5–10
03118500	Nimishillen Creek at North Industry, OH	175	1922–93	1959	11.29	8,600	9/14/79	10.31	7,050	N	25–50
03123400	Dundee Creek at Dundee, OH	0.74	1966–86	1980	30.20	340	8/18/80	30.20	340	N	10–25
03125000	Home Creek near New Philadelphia, OH	1.64	1937–79	1969	5.77	378	7/11/76	5.43	333	N	10–25
03125450	Robinson Run near Hendrysburg, OH	1.97	1978–87	1978	101.24	147	6/28/78	101.24	147	N	<5
03128500	Little Stillwater Creek below Tappan Dam at Tappan, OH	71.1	1939–91	1939 1945	10.00 10.12	1,050 804	8/18/80	7.42	964	Y	--

Table 36. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Ohio—Continued

Station number (fig. 57)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03128650	Mud Run tributary at Wainwright, OH	0.55	1978–87	1981	102.59	38	6/09/81	102.59	38	N	5
03130500	Touby Run at Mansfield, OH	5.44	1947–78, 1987	1987	4.45	1,030	7/02/87	4.45	1,030	N	10–25
03131500	Black Fork at Loudonville, OH	349	1913, 1932–91	1969 1913	14.11 20.50	8,460 --	7/03/87	12.39	5,910	Y	--
03132000	Clear Fork at Butler, OH	136	1946–75, 1987	1987	10.87	21,300	7/02/87	10.87	21,300	Y	>100
03140000	Mill Creek near Coshocton, OH	27.2	1937–93	1969 1979	13.92 15.38	8,720 6,590	9/14/79	15.38	6,590	N	25–50
03141500	Seneca Fork below Senecaville Dam near Senecaville, OH	118	1939–91	1991 1949	9.27 10.35	935 718	2/07/85	9.38	932	Y	--
03144000	Wakatomika Creek near Frazeysburg, OH	140	1937–93	1979	14.07	16,800	9/14/79 8/11/80	14.07 12.77	16,800 12,600	N N	50–100 25–50
03144800	Etna Creek at Etna, OH	1.10	1966–82, 1990	1979	18.56	365	9/14/79	18.56	365	N	50–100
03146000	North Fork Licking River at Utica, OH	116	1940–48, 1956, 1959, 1970–82	1979 1959	15.20 15.80	10,200 --	9/14/79	15.20	10,200	N	100
03146500	Licking River near Newark, OH	537	1940–93	1959	20.30	45,000	9/15/79	17.21	25,700	N	10–25
03147900	Timber Run near Zanesville, OH	10.1	1947–77	1976	15.86	2,430	6/17/73 7/12/76	15.39 15.86	2,190 2,430	N N	25–50 25–50
03150100	Bell Creek at McConnelsville, OH	1.07	1947–48, 1950–75	1974 1953	7.35 7.84	1,360 1,190	6/21/74	7.35	1,360	N	--
03150600	Tupper Creek at Devola, OH	0.99	1966–80	1980	15.39	470	8/20/80	15.39	470	N	50–100
03158220	Glen Run near Doanville, OH	1.09	1977–87	1981	98.02	250	6/06/81	98.02	250	N	10–25
03159450	Mill Creek near Chauncey, OH	1.48	1978–87	1981 1980	96.22 97.26	265 200	5/12/81	96.22	265	N	5–10
03201550	Starr Run near New Plymouth, OH	0.30	1978–87	1983	99.10	125	5/03/83	99.10	125	N	10–25
03201600	Sandy Run above Big Four Hollow Creek near Lake Hope, OH	0.98	1971–81	1974 1981	5.01 20.83	990 175	6/22/74	5.01	990	N	>100
03201700	Big Four Hollow Creek near Lake Hope, OH	1.01	1971–83	1974 1981	4.72 23.77	1,200 201	6/22/74	4.72	1,200	N	>100
03205995	Sandusky Creek near Burlington, OH	0.73	1978–87	1979	100.27	242	8/18/79	100.27	242	N	10–25
03219590	Bokes Creek near Warrensburg, OH	83.2	1982–93	1987	13.54	4,420	7/03/87	13.54	4,420	N	--
03220000	Mill Creek near Bellepoint, OH	178	1913, 1943–93	1959 1913	13.85 18.00	20,300 --	2/24/75	10.48	8,660	N	10–25
03221900	Dry Run at Columbus, OH	1.91	1965–82	1973 1971	23.86 24.26	803 760	6/19/73	23.86	803	N	--
03223000	Olentangy River at Claridon, OH	157	1947–93	1959	16.77	14,900	6/03/87	16.39	13,700	N	>100
03226200	Delaware Run near Delaware, OH	5.84	1947–78	1959	13.01	1,050	5/24/78	12.96	870	N	10–25
03226890	Turkey Run at Upper Arlington, OH	0.90	1972–84	1973	20.93	617	6/19/73	20.93	617	N	--

Table 36. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Ohio—Continued

Station number (fig. 57)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03226900	Fishinger Road Creek at Upper Arlington, OH	0.45	1964–80	1973	22.47	465	6/19/73	22.47	465	N	--
03227500	Scioto River at Columbus, OH	1,629	1913, 1921–93	1913 1959	-- 27.22	138,000 68,200	2/24/75	24.88	44,600	Y	--
03228000	Scioto Big Run at Briggsdale, OH	11.0	1947–79	1973	13.70	3,670	6/20/73 9/14/79	13.70 13.60	3,670 3,650	N N	50–100 50–100
03228805	Alum Creek at Africa, OH	122	1963–93	1963	14.20	6,460	6/20/73	13.51	5,630	Y	<5
03229000	Alum Creek at Columbus, OH	189	1924–36, 1938–93	1959	19.59	26,400	6/20/73	12.71	8,620	Y	5–10
03229500	Big Walnut Creek at Rees, OH	544	1913, 1922–36, 1939–93	1959	22.03	59,800	9/15/79	17.75	21,700	Y	10–25
03230400	Big Darby Creek at Darbydale, OH	449	1964–77	1975	17.44	19,800	2/23/75	17.44	19,800	N	10–25
03231600	East Fork Paint Creek near Sedalia, OH	3.82	1947–81	1979	14.87	710	3/26/78 9/14/79	14.55 14.87	540 710	N N	10–25 50–100
03232300	Rattlesnake Creek at Centerfield, OH	209	1972–81	1979	13.57	7,550	9/14/79	13.57	7,550	N	5–10
03232470	Paint Creek near Bainbridge, OH	570	1963–91	1964 1968	27.30 66.78	45,000 32,800	11/29/73	55.14	8,720	Y	--
03235080	Bull Creek near Adelphi, OH	3.13	1977–87	1983	79.48	1,560	7/17/83	79.48	1,560	N	50–100
03235500	Tar Hollow Creek at Tar Hollow State Park, OH	1.35	1947–78	1968	5.66	957	6/22/74	4.63	526	N	25–50
03236090	South Branch Little Salt Creek near Jackson, OH	1.28	1975, 1978–87	1980	98.78	555	6/27/80	98.78	555	N	--
03236100	South Branch Little Salt Creek at Jackson, OH	3.76	1947–77	1968	15.82	1,400	7/17/76	15.75	1,270	N	50–100
03237095	Devers Run at Lucasville, OH	1.22	1978–87	1982	95.64	330	5/30/82	95.64	330	N	10–25
03237210	Rose Run near Portsmouth, OH	1.04	1966–81	1976	17.15	187	9/27/76	17.15	187	N	5–10
03238400	Harwood Creek near Fayetteville, OH	0.88	1966–77	1970	22.38	385	4/02/70	22.38	385	N	10–25
03238700	Ray Run near Moscow, OH	0.86	1966–81	1979	29.20	1,430	8/01/79	29.20	1,430	N	--
03242100	Wayne Creek at Waynesville, OH	1.01	1966–81	1974	28.56	880	6/21/74	28.56	880	N	--
03242150	Caesar Creek near Xenia, OH	71.4	1969–83	1975 1980	13.47 13.56	5,170 4,550	2/24/75	13.47	5,170	N	10–25
03242200	Anderson Fork near New Burlington, OH	77.8	1969–83	1975	12.76	5,510	2/24/75	12.76	5,510	N	25–50
03246200	East Fork Little Miami River near Marathon, OH	195	1969–83	1980	19.54	12,800	7/10/80	19.54	12,800	N	--
03247050	East Fork Little Miami River near Batavia, OH	352	1964, 1966–93	1964 1974	21.46 21.80	32,000 31,000	8/30/74	21.80	31,000	Y	--
03247500	East Fork Little Miami River at Perintown, OH	476	1913, 1916–20, 1925–93	1964	23.84	42,400	9/14/79	21.00	29,000	Y	5–10
03257500	West Fork Mill Creek at Woodlawn, OH	32.2	1953–83	1956 1978	6.82 9.11	2,000 1,390	8/12/77	5.96	1,550	Y	--

Table 36. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Ohio—Continued

Station number (fig. 57)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03259000	Mill Creek at Carthage, OH	115	1947–93	1979	21.82	9,030	9/14/79	21.82	9,030	Y	--
03262750	Millers Ditch at Tipp City, OH	0.83	1966–82	1981	18.02	625	6/05/81	18.02	625	N	>100
03263000	Great Miami River at Taylorsville, OH	1,149	1913–17, 1922–93	1913 1959	25.40 75.44	127,000 31,400	10/05/86	20.81	78,000	Y	--
03266500	Mad River at Zanesfield, OH	7.31	1947–79	1972	9.54	2,100	4/13/72	9.54	2,100	N	50–100
03269500	Mad River near Springfield, OH	490	1904–05, 1913–93	1913	16.90	55,400	6/29/80	11.88	12,200	Y	<5
03272695	Trippetts Branch at Camden, OH	0.33	1978–87	1983 1980	18.80 100.56	247 140	4/30/83	18.80	247	N	10–25
03272700	Sevenmile Creek at Camden, OH	69.0	1971–93	1989	18.67	20,200	5/26/89	18.67	20,200	N	>100
04176900	Hill Ditch near Richards, OH	3.52	1947–81	1972 1981	13.78 14.89	340 331	9/17/72 9/03/81	13.78 14.89	340 331	N N	10–25 10–25
04177000	Ottawa River at Toledo, OH	150	1943, 1945–48, 1950, 1959, 1977–93	1982	14.54	3,950	3/14/82	14.54	3,950	N	--
04183500	Maumee River at Antwerp, OH	2,129	1912–82	1913 1982	-- 21.70	40,000 26,100	3/17/82	21.70	26,100	N	25–50
04183750	Racetrack Run at Hicksville, OH	0.34	1978–87	1981	101.36	173	6/14/81	101.36	173	N	50–100
04184500	Bean Creek at Powers, OH	206	1941–82	1982	22.70	4,900	3/--/82	22.70	4,900	N	25–50
04184750	Spring Creek at Fayette, OH	2.58	1978–87	1982	98.63	395	3/13/82	98.63	395	N	25–50
04184760	Bean Creek tributary near Fayette, OH	0.56	1978–87	1985 1980	15.57 102.12	91 63	3/28/85	15.57	91	N	10–25
04185000	Tiffin River at Stryker, OH	410	1913, 1922–28, 1937, 1941–93	1982	18.36	7,800	3/15/82	18.36	7,800	N	25–50
04185150	Beaver Creek tributary near Montpelier, OH	0.40	1978–87	1980 1982	99.41 99.60	150 90	6/08/80	99.41	150	N	>100
04185945	Auglaize River tributary near Spencerville, OH	0.51	1978–87	1986	101.20	180	6/27/86	101.20	180	N	25–50
04186500	Auglaize River near Fort Jennings, OH	332	1922–36, 1941–88, 1990–93	1992 1959	19.76 20.30	12,800 12,000	6/03/80	18.45	10,400	N	25–50
04186800	King Run near Harrod, OH	0.53	1966–86	1982 1974	22.68 23.46	167 55	5/27/82	22.68	167	N	25–50
04187945	Rattlesnake Creek near Cairo, OH	1.45	1978–87	1981 1979	24.59 96.05	280 169	6/14/81	24.59	280	N	50–100
04188500	Eagle Creek near Findlay, OH	55.0	1947–57, 1959, 1981	1981 1957	-- 13.45	6,500 2,850	6/14/81	--	6,500	N	>100
04189000	Blanchard River near Findlay, OH	346	1913, 1924–36, 1941–93	1913	18.50	22,000	6/14/81	17.43	13,000	N	50–100
04189100	Tiderishi Creek near Jenera, OH	4.65	1947–77	1959	15.15	480	2/17/76	14.51	400	N	10–25
04190350	Little Auglaize River tributary at Ottoville, OH	1.04	1978–87	1981	100.76	109	6/14/81	100.76	109	N	10–25

Table 36. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Ohio—Continued

Station number (fig. 57)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04190500	Roller Creek at Ohio City, OH	5.14	1947–77	1959	9.58	890	2/16/76	9.10	620	N	>100
04191480	Beetree Run near Junction, OH	1.66	1977–87	1985	101.99	165	3/30/85	101.99	165	N	10–25
04191500	Auglaize River near Defiance, OH	2,318	1913, 1915–93	1913	38.80	120,000	3/15/82	27.39	52,300	N	10–25
04192500	Maumee River near Defiance, OH	5,545	1925–36, 1939–75, 1979–93	1982	15.87	104,000	3/15/82 2/25/85	15.87 14.19	104,000 93,500	N N	>100 >100
04193500	Maumee River at Waterville, OH	6,330	1900–01, 1913, 1922–36, 1939–93	1913	19.90	180,000	3/14/82 2/26/85	14.96 15.21	121,000 100,000	N N	50–100 25–50
04195500	Portage River at Woodville, OH	428	1913, 1929–35, 1940–93	1913	17.00	17,000	3/14/82	13.97	10,900	N	10–25
04196000	Sandusky River near Bucyrus, OH	88.8	1926–35, 1939–51, 1959, 1964–81, 1987	1959	11.90	13,500	7/02/87	11.60	11,500	N	>100
04196800	Tymochtee Creek at Crawford, OH	229	1961–93	1991 1963	9.77 11.21	6,700 5,400	3/17/78	9.94	6,390	N	25–50
04197100	Honey Creek at Melmore, OH	149	1961–93	1981	11.00	4,440	6/13/81	11.00	4,440	N	10–25
04198000	Sandusky River near Fremont, OH	1,251	1924–36, 1939–93	1978 1959	13.57 15.20	36,500 28,000	3/16/78 2/04/84	13.57 12.63	36,500 32,700	N N	>100 50–100
04198100	Norwalk Creek near Norwalk, OH	4.92	1947–82	1969	17.19	1,880	7/04/77	16.67	1,380	N	50–100
04202000	Cuyahoga River at Hiram Rapids, OH	151	1928–35, 1945–93	1959 1929	8.11 8.23	3,670 2,260	2/18/76	7.67	3,320	Y	10–25
04204000	Little Cuyahoga River at Mogadore, OH	17.3	1946–78	1976	5.34	276	7/11/76 12/14/77	5.34 4.72	276 198	Y Y	-- --
04206000	Cuyahoga River at Old Portage, OH	404	1922–36, 1939–93	1959 1979	11.54 13.29	6,500 6,230	7/11/76 9/14/79	12.28 13.29	5,460 6,230	Y Y	-- --
04207200	Tinkers Creek at Bedford, OH	83.9	1963–93	1969	10.10	7,220	5/26/89	9.77	6,680	N	>100
04208000	Cuyahoga River at Independence, OH	707	1922–23, 1928–36, 1940–93	1959	22.41	24,800	9/15/79 5/26/89	22.06 20.02	19,700 14,300	N N	50–100 10–25
04208502	Big Creek at Cleveland, OH	35.3	1973–86	1975	16.20	9,100	8/24/75	16.20	9,100	N	25–100
04210090	Montville Ditch at Montville, OH	0.29	1966–77	1977	12.82	95	7/20/77	12.82	95	N	--
04212100	Grand River near Painesville, OH	685	1975–93	1986 1980	13.07 13.16	18,700 16,900	6/11/86	13.07	18,700	N	--
04213000	Conneaut Creek at Conneaut, OH	175	1923–36, 1950–93	1959 1934	11.70 12.94	17,000 3,900	11/06/85	10.85	13,600	N	25–50

[1] Regulated during flood: N, no; Y, yes.

Oklahoma

Hydroclimatology

Oklahoma is located in the south-central United States east of the Rocky Mountains. The State's position relative to the Rocky Mountains has a substantial effect on its climate. The airmasses that bring moisture to the State originate in the Gulf of Mexico and, with certain airflow conditions, in the Pacific Ocean off the coast of Mexico. The airmasses that come into the State from the west are usually stripped of moisture by the Rocky Mountains, and as a result, mean annual precipitation increases from west to east across the State. Mean annual precipitation ranges from 16 in. in the extreme western part of the Oklahoma Panhandle to 56 in. in the southeast corner of the State (Paulson and others, 1991).

Oklahoma's latitudinal position also plays a significant role in the State's variable weather. During the winter, Oklahoma lies in the southern range of the polar jetstream and the northern range of the subtropical jetstream. Under the effects of the subtropical jetstream, daytime high temperatures can be in the 70-°F range. Under the effects of the polar jetstream, nighttime temperatures can dip below 0 °F. During the summer, the potential for severe thunderstorms, which include tornados and large hail, is great. Thunderstorms are created in warm, humid airmasses or along dry lines or cold fronts and can produce excessive rainfall and floods. Wintertime storms can produce excessive regional rainfall amounts. Remnants of hurricanes and tropical storms can produce excessive rainfall from late summer through the fall months.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, factors affecting the magnitude of maximum discharges for streams in Oklahoma are drainage area, mean annual precipitation, and main-channel slope. The factors that are significant in urban areas also include the percentage of impervious area and percentage of area served by storm sewers (Tortorelli, 1997).

Significant Floods

The flood of October 11–13, 1973, known as the "Enid flood," was caused by a locally intense thunderstorm that was centered over Enid. This storm produced the greatest urban rainfall on record in Oklahoma. Rainfall accumulations were 15 to 20 in. within a 100-mi^2 area; 12 in. fell in 3 hours. The discharges recorded on the Salt Fork of the Arkansas River at Tonkawa (station 07151000, fig. 58), Arkansas River at Ralston (station 07152500, fig. 58), and Turkey Creek near Drummond (station 07159000, fig. 58) were the largest of record. Damages totalled $78 million (Bingham and others, 1974; Tortorelli and others, 1991).

The flood of May 26–27, 1984, known as the "Memorial Day flood," resulted from a series of violent thunderstorms centered over Tulsa. The recorded 1-hour rainfall of 6.6 in. was exceeded only by that recorded in the "Enid flood"; some areas received more than 14 in. in 8 hours—an estimated 89,000 acre-ft of rain fell within Tulsa. Almost all of the urban streams had maximum discharges that exceeded the 100-year flood-insurance study discharges; one site had an estimated 2.5 times the published maximum. The flooding was localized but caused $180 million in damages and destroyed or damaged 5,500 homes and 7,000 vehicles (Bergman and Tortorelli, 1988; Tortorelli and others, 1991).

The flood of August 27–28, 1977, in West Cache and Blue Beaver Creeks in southwestern Oklahoma was the result of a severe thunderstorm; runoff was 2,210 (ft^3/s)/mi^2 in the upstream reach of Blue Beaver Creek. Rainfall data indicated 24-hour totals of 12 in. immediately south of Cache and 4 to 8 in. in the surrounding areas; an area-weighted average rainfall of 7.7 in. fell during a 6-hour storm period within a 200-mi^2 area, illustrating the large quantity of water that can result from an Oklahoma thunderstorm. Damages were $1 million (Tortorelli and others, 1991).

Thunderstorms caused by the remnants of Hurricane Norma produced severe flooding in south-central Oklahoma during October 13–16, 1981. Record discharges were recorded on the Blue River near Blue (station 07332500, fig. 58), the Clear Boggy River, and several smaller creeks. About 10 percent of the streamflow-gaging stations in the State recorded significant discharges. Damages were $23.8 million (Buckner and Kurklin, 1984; Tortorelli and others, 1991).

Floods of October 17–23, 1983, affected several streams in central and southwestern Oklahoma. The remnants of Hurricane Tico supplied moisture on October 16–21, 1983, that contributed to record discharges on Deep Red Run near Randlett (station 07311500, fig. 58), Washita River at Anadarko (station 07326500, fig. 58) and at Alex

(station 07328100, fig. 58), East Cache Creek near Walters (station 07311000, fig. 58), and Walnut Creek at Purcell (station 07229300, fig. 58); serious flooding was evident in the lower Washita River Basin. A total of 17 in. of rain fell on the Rush Springs area, with 24-hour totals greater than 8.5 in. Damages exceeded $12 million (Hauth, 1985; Tortorelli and others, 1991).

About 20 percent of the streamflow-gaging stations in Oklahoma recorded significant discharges during the flood of October 1986. Rainfall ranging from 10 in. in the southwest to 20 in. in the north fell across the State. The rainfall was caused by the remnants of Hurricane Paine. Record maximum discharges were recorded on the Cimarron River at Perkins (station 07161000, fig. 58), Baron Fork at Eldon (station 07197000, fig. 58), and Elk Creek near Hobart (station 07304500, fig. 58) (Hauth and others, 1989; Tortorelli and others, 1991).

Thunderstorms on May 27–28, 1987, climaxed 11 days of intense rains in central and southwestern Oklahoma, with 10 to 15 in. of rain falling on some areas. Floods during May 29–30 caused several substantial maximum flows, especially in south-central Oklahoma, with record maximum discharges at the Pauls Valley (station 07328500, fig. 58) and Dickson (station 07331000, fig. 58) gages. A record of more than 200 floodwater-retarding structures built by the Natural Resources Conservation Service had emergency spillway discharge. There was severe damage to the cities of Chickasha, Lindsay, and Pauls Valley (Hauth and others, 1989; Tortorelli and others, 1991).

The location of streamflow-gaging stations in Oklahoma that had significant floods for 1970–89 is shown in figure 58 by station. The specific data for each significant flood are listed in table 37. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

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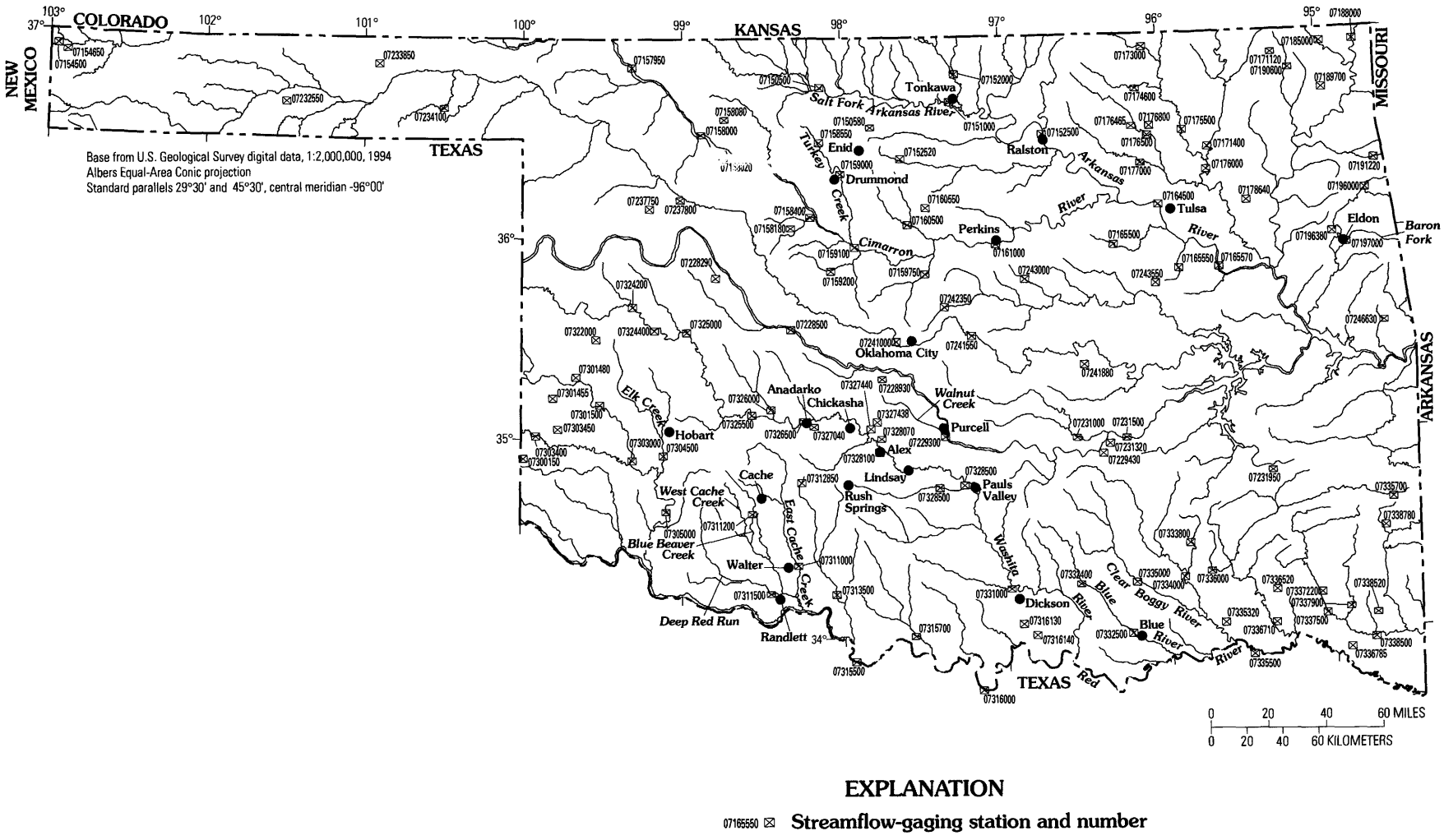

Figure 58. Location of streamflow-gaging stations with significant floods during 1970–89 for Oklahoma.

Table 37. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oklahoma

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
Station number (fig. 58)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07150500	Salt Fork Arkansas River near Jet, OK	3,202	1938–93	1938	13.80	25,900	4/02/73	11.31	10,600	Y	25
07150580	Sand Creek tributary near Kremlin, OK	7.21	1964–75	1974	11.20	12,000	10/11/73	11.20	12,000	N	>100
07151000	Salt Fork Arkansas River at Tonkawa, OK	4,528	1904, 1923, 1935–89, 1991–95	1974	28.98	97,300	10/11/73 10/03/86	28.98 27.61	97,300 74,700	Y Y	>100 >100
07152000	Chikaskia River near Blackwell, OK	1,859	1923, 1936–95	1923	37.00	100,000	10/03/86	34.28	59,400	N	15
07152500	Arkansas River at Ralston, OK	54,465	1923–95	1974 1923	22.98 23.00	211,000 200,000	10/13/73 10/04/86	22.98 22.20	211,000 174,000	N Y	25 50
07152520	Black Bear Creek tributary near Garber, OK	0.97	1964–75	1974	9.60	1,310	8/14/74	9.60	1,310	N	25–50
07154500	Cimarron River near Kenton, OK	1,106	1951–95	1966 1977	17.32 21.62	43,400 37,900	5/25/77	21.62	37,900	N	40–50
07154650	Tesesquite Creek near Kenton, OK	25.4	1964–85	1971 1975	19.81 20.42	7,250 7,240	8/06/71	19.81	7,250	N	15
07157950	Cimarron River near Buffalo, OK	12,004	1960–94	1973 1987	5.57 9.04	26,400 12,100	9/26/73 7/25/79	5.57 5.40	26,400 22,900	N N	50 25–50
07158000	Cimarron River near Waynoka, OK	13,334	1914, 1935, 1938–95	1957	15.10	94,500	5/10/79 9/02/74	11.70 10.08	48,200 52,400	N N	10 10–15
07158020	Cimarron River tributary near Lone Wolf, OK	4.26	1964–75	1975	5.32	921	11/02/74	5.32	921	N	10
07158080	Sand Creek tributary near Waynoka, OK	1.61	1964–75	1970	6.32	587	8/21/70	6.32	587	N	10–25
07158180	Salt Creek tributary near Okeene, OK	8.23	1964–75	1974	8.24	4,500	9/20/74	8.24	4,500	N	10–25
07158400	Salt Creek near Okeene, OK	196	1962–67, 1974–79	1974	16.90	12,700	9/19/74	16.90	12,700	N	25–50
07158550	Turkey Creek tributary near Goltry, OK	5.08	1964–82	1976	12.60	5,050	5/26/76	12.60	5,050	N	50–100
07159000	Turkey Creek near Drummond, OK	248	1932, 1948–74	1974	25.90	36,300	10/11/73	25.90	36,300	N	50–100
07159100	Cimarron River near Dover, OK	15,713	1974–95	1987	26.10	123,000	5/27/82 10/03/86	22.87 26.10	68,900 123,000	N N	10–15 50
07159200	Kingfisher Creek near Kingfisher, OK	157	1967–81	1977	28.93	20,700	5/27/77	28.93	20,700	N	10–25
07159750	Cottonwood Creek near Seward, OK	320	1973–82, 1990–95	1993	32.74	46,100	11/02/74	23.99	29,900	Y	10–25
07160500	Skeleton Creek near Lovell, OK	410	1932, 1949–93	1957 1987	34.58 36.78	75,200 55,400	10/03/86	36.78	55,400	N	50
07160550	West Beaver Creek near Orlando, OK	13.9	1964–85	1982 1980	11.60 12.02	4,400 3,410	5/07/82	11.60	4,400	N	10–25
07161000	Cimarron River at Perkins, OK	17,852	1912, 1927–38, 1940–91	1987	26.75	162,000	10/04/86 5/19/82	26.75 22.03	162,000 106,000	N N	75–100 15–20
07164500	Arkansas River at Tulsa, OK	74,615	1905–95	1987	25.21	307,000	10/05/86	25.21	307,000	Y	>100
07165500	Polecat Creek below Heyburn Reservoir near Heyburn, OK	123	1940, 1943–79	1940 1975	-- 14.80	26,000 2,080	11/04/74	14.80	2,080	Y	10
07165550	Snake Creek near Bixby, OK	50.0	1962–76	1974	21.55	9,280	6/09/74	21.55	9,280	N	10–25

Table 37. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oklahoma—Continued

Station number (fig. 58)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07165570	Arkansas River near Haskell, OK	75,473	1973–95	1987	22.82	259,000	10/05/86	22.82	259,000	Y	50–100
07171120	Clear Creek tributary near Hollow, OK	2.19	1967–75, 1980–81, 1983–84	1974 1984	7.22 7.63	1,040 758	3/08/74	7.22	1,040	N	50
07171400	Verdigris River near Oologah, OK	4,339	1943, 1961–92	1987 1943	38.23 65.20	53,700 --	5/16/73 10/14/86	38.05 38.23	30,000 53,700	Y Y	20–25 >100
07173000	Caney River near Hulah, OK	733	1926, 1938–93	1987 1944	26.80 44.28	58,000 51,000	10/03/86	26.80	58,000	Y	>100
07174600	Sand Creek at Okesa, OK	139	1960–93	1993 1974	24.29 28.60	20,200 19,500	3/10/74	28.60	19,500	N	20–25
07175500	Caney River near Ramona, OK	1,955	1931, 1935–38, 1943, 1945–95	1987 1943	31.16 39.80	85,600 --	9/29/86 10/05/86	29.14 31.16	43,000 85,600	Y Y	100 >100
07176000	Verdigris River near Claremore, OK	6,534	1935–95	1943	55.05	182,000	10/12/86	44.99	78,400	Y	>100
07176465	Birch Creek below Birch Lake near Barnsdall, OK	66.0	1978–92	1987	13.37	2,070	10/07/86	13.37	2,070	Y	--
07176500	Bird Creek at Avant, OK	364	1943, 1946–95	1960 1974	31.40 32.03	32,400 32,300	3/11/74 6/10/85	32.03 30.70	32,300 27,900	N Y	40–50 10–25
07176800	Candy Creek near Wolco, OK	30.6	1970–81	1974	18.16	9,520	3/10/74	18.16	9,520	N	10
07177000	Hominy Creek near Skiatook, OK	340	1943–80	1960	38.82	35,600	11/04/74	37.03	24,800	N	40–50
07178640	Bull Creek near Inola, OK	11.10	1965–75	1973	13.25	1,570	6/03/73	13.25	1,570	N	5–10
07185000	Neosho River near Commerce, OK	5,876	1904, 1927, 1935, 1938, 1940–95	1951 1987 1994	-- 26.23 25.67	267,000 103,000 106,000	10/06/86	26.23	103,000	Y	75–100
07188000	Spring River near Quapaw, OK	2,510	1935, 1940–95	1993	46.60	230,000	2/24/85	33.59	105,000	N	15–20
07189700	Horse Creek at Afton, OK	21.9	1966–85	1976	13.58	2,690	7/03/76	13.58	2,690	N	25
07190600	Big Cabin Creek near Pyramid Corners, OK	71.1	1964–76, 1979–80	1974	21.58	18,800	3/08/74	21.58	18,800	N	25–50
07191220	Spavinaw Creek near Sycamore, OK	133	1960–95	1975	22.07	39,800	7/27/75	22.07	39,800	N	>100
07196000	Flint Creek near Kansas, OK	110	1956–76, 1979–90, 1993–95	1974	19.42	43,600	6/08/74	19.42	43,600	N	>100
07196380	Steely Hollow near Tahlequah, OK	3.59	1965–75	1974	12.40	5,000	6/08/74	12.40	5,000	N	10–25
07197000	Baron Fork at Eldon, OK	307	1945, 1948–95	1990	25.91	57,600	10/01/86	25.78	55,500	N	50–75
07228290	Rough Creek near Thomas, OK	10.4	1964–85	1981	18.07	6,270	5/23/81	18.07	6,270	N	20–25
07228500	Canadian River at Bridgeport, OK	25,276	1914–15, 1945–64, 1970–95	1948 1914	14.60 19.40	150,000 --	5/17/82	17.55	86,100	Y	>100
07228930	Worley Creek near Tuttle, OK	11.2	1965–72, 1979–85	1984	16.68	3,000	10/20/83	16.68	3,000	N	10–25
07229300	Walnut Creek at Purcell, OK	202	1966–93	1984	21.40	67,700	10/20/83	21.40	67,700	N	>100
07229430	Arbeca Creek near Allen, OK	2.26	1964–74	1971	13.86	2,600	10/08/70	13.86	2,600	N	25

Table 37. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oklahoma—Continued

Station number (fig. 58)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07231000	Little River near Sasakwa, OK	865	1939, 1943–95	1950	33.48	44,600	5/01/85	31.73	18,500	Y	50–100
07231320	Leader Creek tributary near Atwood, OK	0.72	1964–85	1971	16.10	1,470	10/08/70	16.10	1,470	N	25–30
07231500	Canadian River at Calvin, OK	27,952	1906, 1935–95	1950 1990	17.35 18.97	174,000 146,000	5/29/87	15.88	154,000	Y	30–40
07231950	Pine Creek near Higgins, OK	9.99	1964–85	1977	20.18	18,000	3/27/77	20.18	18,000	N	30–40
07232550	South Fork tributary near Guymon, OK	0.26	1964–85	1982	7.94	81	4/30/82	7.94	81	N	--
07233850	Sharp Creek tributary near Turpin, OK	1.00	1964–75	1973	13.76	120	3/23/73	13.76	120	N	10–25
07234100	Clear Creek near Elmwood, OK	170	1966–93	1989	14.17	20,700	5/17/89	14.17	20,700	N	25–30
07237750	Cottonwood Creek near Vici, OK	11.8	1964–84	1975	9.90	2,050	5/13/75	9.90	2,050	N	15–25
07237800	Bent Creek near Seiling, OK	139	1967–87	1974	20.04	9,120	8/27/74	20.04	9,120	N	25–35
07241000	North Canadian River below Lake Overholser near Oklahoma City, OK	13,222	1921, 1923–24, 1953–68, 1970–72, 1974–87, 1989–95	1924	40.90	135,000	5/28/87	29.85	18,700	Y	10–25
07241550	North Canadian River near Harrah, OK	13,501	1969–95	1987 1993	19.60 21.90	27,200 25,500	5/29/87	19.60	27,200	Y	50–75
07241880	Sand Creek near Cromwell, OK	9.48	1964–85	1984	15.66	3,720	10/20/83	15.66	3,720	N	25–30
07242350	Deep Fork near Arcadia, OK	105	1970–93	1975 1989	27.90 57.78	14,300 1,470	11/02/74	27.90	14,300	Y	10–15
07243000	Dry Creek near Kendrick, OK	69.0	1956–94	1975 1982	19.20 23.99	18,000 16,900	11/02/74 5/12/82	19.20 23.99	18,000 16,900	N N	50 40–50
07243550	Adams Creek near Beggs, OK	5.90	1965–84	1974	13.69	3,390	6/08/74	13.69	3,390	N	30–40
07246630	Big Black Fox Creek near Long, OK	5.32	1964–84	1971	10.30	1,760	10/26/70	10.30	1,760	N	10
07300150	Bear Creek near Vinson, OK	7.24	1964–85	1977	14.18	4,160	5/19/77	14.18	4,160	N	25
07301455	Turkey Creek near Erick, OK	19.8	1964–72, 1974, 1978–85	1974	7.88	3,040	--/--/74	7.88	3,040	N	10–15
07301480	Short Creek near Sayre, OK	9.12	1964–75, 1977–80, 1982–85	1977	19.63	2,450	5/19/77	19.63	2,450	N	30–40
07301500	North Fork Red River near Carter, OK	2,337	1945–95	1959 1977	13.42 14.98	53,400 35,800	5/17/77	14.98	35,800	N	30–35
07303000	North Fork Red River below Altus Dam near Lugert, OK	2,515	1928, 1930–32, 1951–62, 1964–67, 1969–73, 1975–92	1951 1977	12.70 16.37	16,100 12,900	5/21/77	16.37	12,900	Y	--
07303400	Elm Fork of North Fork Red River near Carl, OK	416	1960–79, 1995	1995	18.80	62,300	5/17/77	12.60	22,100	N	10

Table 37. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oklahoma—Continued

Station number (fig. 58)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07303450	Deer Creek near Plainview, OK	27.8	1964–75	1973	12.38	2,680	6/02/73	12.38	2,680	N	10–25
07304500	Elk Creek near Hobart, OK	549	1905–06, 1949–93	1987 1993	31.53 31.65	28,000 23,600	10/20/83 10/3/86	30.94 31.53	18,600 28,000	Y Y	25 50–100
07305000	North Fork Red River near Headrick, OK	4,244	1905–07, 1935, 1938–95	1935	19.80	60,000	5/28/77 10/04/86	17.26 19.07	35,000 59,000	Y Y	45–50 >100
07311000	East Cache Creek near Walters, OK	675	1906, 1939–63, 1970–95	1984	30.66	50,900	10/21/83	30.66	50,900	Y	50–75
07311200	Blue Beaver Creek near Cache, OK	24.6	1965–95	1977	18.02	13,600	8/28/77	18.02	13,600	Y	50
07311500	Deep Red Run near Randlett, OK	617	1950–80, 1983–95	1984 1987	28.89 29.58	72,300 52,900	10/20/83 5/29/87	28.89 29.58	72,300 52,900	N N	>100 75–100
07312850	Nine Mile Beaver Creek near Elgin, OK	6.29	1964–85	1984 1978	11.82 11.85	3,950 3,740	10/20/83	11.82	3,950	N	10–25
07313500	Beaver Creek near Waurika, OK	563	1951, 1953–93	1951	27.70	65,300	6/09/87	23.04	2,710	Y	--
07315500	Red River near Terral, OK	28,723	1935, 1938–80, 1982–83, 1987–91, 1994–95	1987 1995	32.65 30.56	225,000 236,000	5/30/87	32.65	225,000	Y	>100
07315700	Mud Creek near Courtney, OK	572	1957, 1961–95	1990 1987	32.41 33.14	49,600 38,800	5/29/87	33.14	38,800	N	10–25
07316000	Red River near Gainesville, TX	30,782	1936–95	1987 1995	40.08 36.63	265,000 169,000	10/24/83 5/31/87	37.14 40.08	151,000 265,000	Y Y	10–25 >100
07316130	Wilson Creek tributary near McMillan, OK	2.97	1965–75	1975	8.18	1,380	5/23/75	8.18	1,380	N	10
07316140	Brier Creek near Powell, OK	12.0	1965–85	1982	20.20	14,100	10/14/81	20.20	14,100	N	40–50
07322000	Sandstone Creek subwatershed 9 near Elk City, OK	3.50	1952–57, 1959–64, 1966, 1968–73	1971 1973	-- --	2,420 2,110	6/08/71 5/22/73	-- --	2,420 2,110	N N	10–25 10
07324200	Washita River near Hammon, OK	1,387	1970–87, 1990–95	1982	23.44	6,000	5/17/82	23.44	6,000	Y	25–50
07324400	Washita River near Foss, OK	1,551	1957–59, 1961–87, 1990–95	1957 1959	20.40 23.40	14,000 --	3/30/73	18.57	2,000	Y	--
07325000	Washita River near Clinton, OK	1,977	1934–95	1934 1951	33.90 31.09	90,000 66,800	10/03/86	25.93	10,600	Y	>100
07325500	Washita River at Carnegie, OK	3,129	1913, 1921, 1923–24, 1934–36, 1938–95	1949 1995	26.21 31.50	50,000 40,200	10/20/83	26.70	40,600	Y	75–100
07326000	Cobb Creek near Fort Cobb, OK	313	1937, 1940–65, 1967–95	1937	19.30	51,000	6/23/87	16.72	1,280	Y	--
07326500	Washita River at Anadarko, OK	3,656	1903–08, 1936–37, 1964–91, 1993–95	1984 1995	25.20 25.37	44,700 52,800	10/21/83	25.20	44,700	Y	75–100
07327040	Delaware Creek near Anadarko, OK	40.1	1962–77	1977 1962	10.17 11.79	1,201 131	5/31/77	10.17	1,201	N	--

Table 37. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oklahoma—Continued

Station number (fig. 58)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07327438	Subwatershed 5R near Tabler, OK	0.04	1967–78	1973 1978	-- 1.69	63 30	--/--/73	--	63	N	10–25
07327440	East Bitter Creek near Tabler, OK	35.2	1964–77	1973	12.57	4,620	5/24/73	12.57	4,620	N	10–25
07328070	Winter Creek near Alex, OK	33.0	1963–87	1978	17.35	6,080	5/27/78	17.35	6,080	Y	10–25
07328100	Washita River at Alex, OK	4,787	1921, 1927, 1940–52, 1955, 1957, 1965–86, 1989–95	1927 1984 1995	-- 23.78 17.28	53,600 23,400 25,000	10/21/83	23.78	23,400	Y	75–100
07328500	Washita River near Pauls Valley, OK	5,330	1938–95	1987 1950	28.72 29.88	43,600 30,000	5/29/87	28.72	43,600	Y	>100
07329500	Rush Creek near Maysville, OK	206	1954–76, 1978–80, 1983–85	1957	23.62	38,500	5/21/79	19.21	17,600	Y	10–25
07331000	Washita River near Dickson, OK	7,202	1908, 1927, 1929–95	1990 1987	44.26 45.24	118,000 105,000	5/30/87	45.24	105,000	Y	>100
07332400	Blue River at Milburn, OK	203	1966–87	1971	27.87	35,100	10/08/70	27.87	35,100	N	25
07332500	Blue River near Blue, OK	476	1937–95	1982	44.20	65,200	10/14/81	44.20	65,200	N	>100
07333800	McGee Creek near Stringtown, OK	86.6	1956–75	1974	17.68	11,100	11/24/73	17.68	11,100	N	10–25
07334000	Muddy Boggy Creek near Farris, OK	1,087	1938–95	1945 1990	46.94 48.73	61,900 49,800	10/16/81	44.56	45,000	Y	10–25
07335000	Clear Boggy Creek near Caney, OK	720	1938, 1942–89	1938	26.91	54,600	10/14/81	26.60	53,500	Y	>100
07335320	Bokchito Creek near Soper, OK	16.6	1965–75	1975	9.24	5,840	10/30/74	9.24	5,840	N	5–10
07335500	Red River at Arthur City, TX	44,531	1891–95, 1897–98, 1901–95	1908	43.20	400,000	5/14/82	26.65	142,000	Y	30–35
07335700	Kiamichi River near Big Cedar, OK	40.1	1966–95	1990	19.60	24,400	2/10/71	17.08	21,500	N	25
07336000	Tenmile Creek near Miller, OK	68.0	1956–81, 1983–84	1977	22.91	10,600	3/28/77	22.91	10,600	N	>100
07336520	Frazier Creek near Oleta, OK	19.4	1964–85	1985	18.33	7,400	11/01/85	18.33	7,400	N	10–25
07336710	Rock Creek near Sawyer, OK	3.39	1964–74	1972	7.16	1,560	12/09/71	7.16	1,560	N	10–25
07336785	Bokchito Creek near Garvin, OK	2.96	1965–76	1972 1973	7.30 9.44	1,270 1,220	12/09/71	7.30	1,270	N	10–25
07337220	Big Branch near Ringold, OK	1.99	1964–74	1973	14.42	1,540	10/31/72	14.42	1,540	N	10–25
07337500	Little River near Wright City, OK	645	1930–31, 1945–89	1961 1950	45.60 45.77	78,200 75,400	12/10/71	35.68	11,200	Y	50
07337900	Glover River near Glover, OK	315	1961–95	1972	29.72	98,600	12/10/71	29.72	98,600	N	50–75
07338500	Little River below Lukfata Creek near Idabel, OK	1,226	1930–95	1972 1938	39.39 39.70	103,000 86,000	12/10/71	39.39	103,000	Y	50–75
07338520	Yanubbee Creek near Broken Bow, OK	9.10	1964–85	1984	15.77	4,700	5/03/84	15.77	4,700	N	10–25
07338780	Mountain Fork tributary near Smithville, OK	0.85	1965–84	1982	10.78	1,030	5/13/82	10.78	1,030	N	50–100

[1]Regulated during flood: N, no; Y, yes.

Oregon

Hydroclimatology

Oregon is located in the Pacific Northwest and is bordered on the west by the Pacific Ocean. The Coast Range and the Cascade Range run north-south through the State and divide Oregon into two climatic zones. The western one-third of Oregon has a maritime climate, and the eastern two-thirds has a continental climate.

The Pacific Ocean is the moisture source for the State. Most precipitation in the State, as much as 144 in., is received along the Coast Range (Paulson and others, 1991). Mean annual precipitation then decreases eastward from the Cascades as a result of the rain-shadow effect of the mountains. The majority of Oregon's precipitation falls during the winter, and the summers are usually dry. Strong winter storms originating from the Gulf of Alaska can bring excessive snow and rain to Oregon. Floods occur when rain falls on melting snowpack. Eastern Oregon's significant floods typically are caused by winter rainstorms, spring snowmelt runoff, or summer convective storms.

Oregon's two hydrologic regions are divided by the Cascade Range into western Oregon and eastern Oregon. On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the variables affecting the magnitude of maximum discharges for streams in western Oregon are drainage area; percentage of basin area in lakes or ponds; precipitation, defined as the annual maximum 24-hour rainfall with a recurrence interval of 2 years; and forest cover, which is the percentage of the drainage area covered by forest. For streams in eastern Oregon, the dependent variables are drainage area; forest cover; main-channel length; a temperature index, which is the mean minimum January temperature; and mean annual precipitation. For streams in Oregon's urban areas, dependent variables are drainage area, a land-use index, length of street gutters, and storage, which is the area where water can be stored during storms as a percentage of the total drainage area (Jennings and others, 1994).

Significant Floods

Fourteen percent of the streamflow-gaging stations in the State recorded signficant discharges during the flood of January 1972. The flood's extent was limited to the drainage area on the west side of the Cascade Range. The maximum discharge of record was set on the Wilson River near Tillamook (station 14301500, fig. 59).

Significant flooding occurred during February 1982. Fifteen percent of the streamflow-gaging stations in the State recorded significant discharges, with the majority of floods occurring in the southwestern part of the State.

The location of streamflow-gaging stations in Oregon that had significant floods for 1970–89 is shown in figure 59 by station number. The specific data for each significant flood are listed in table 38. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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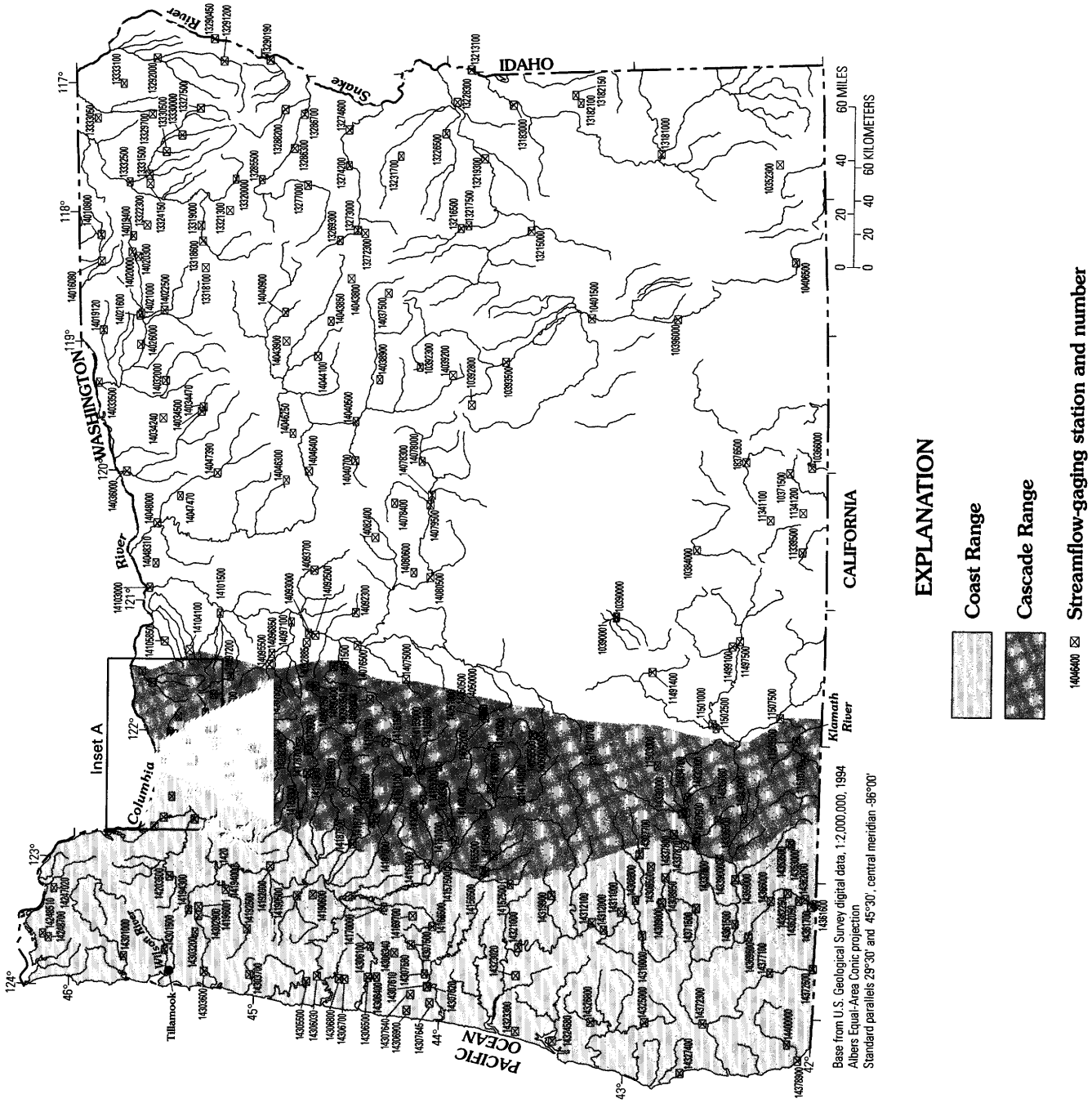

Figure 59. Location of streamflow-gaging stations with significant floods during 1970–89 for Oregon.

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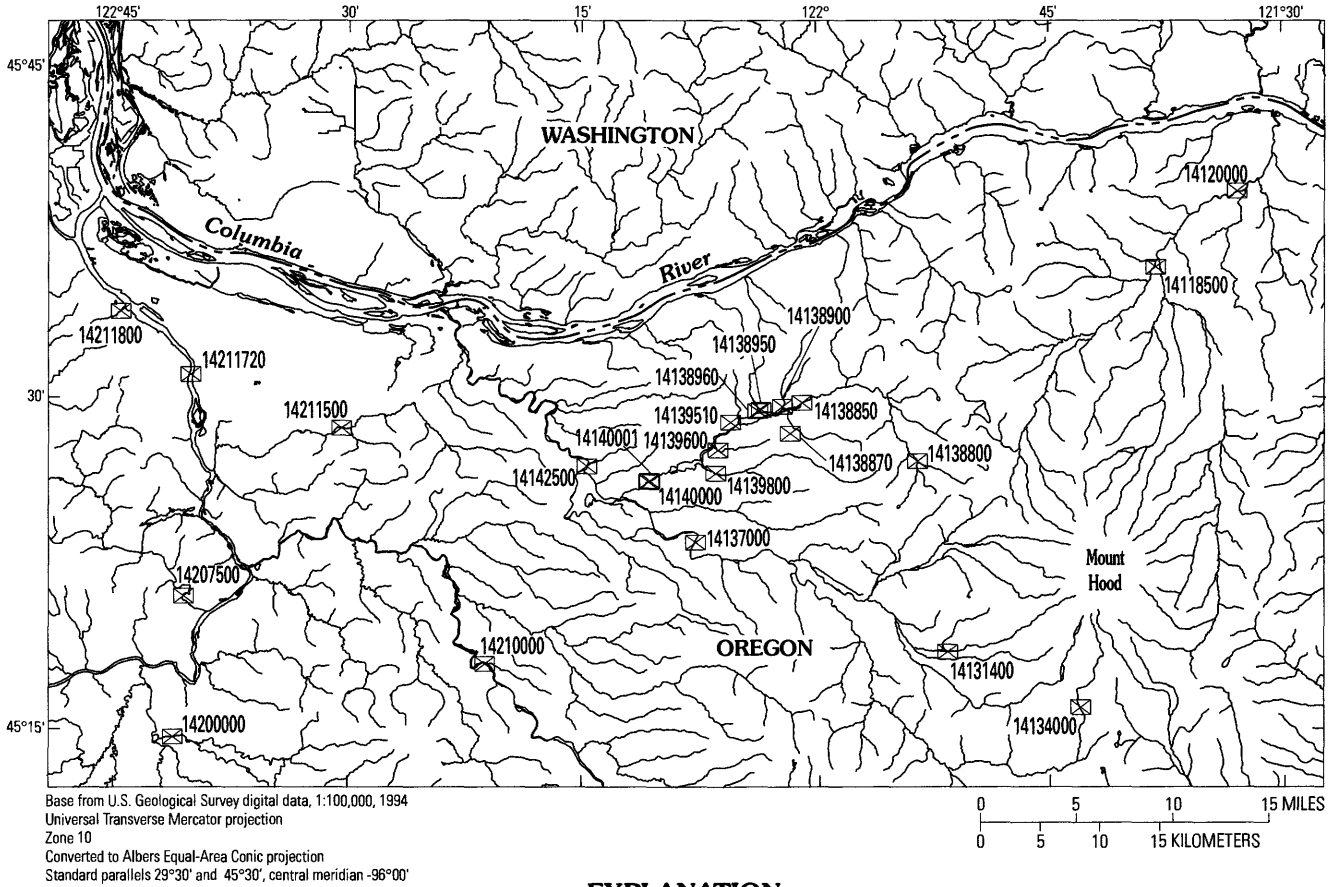

EXPLANATION

14210000 ⊠ **Streamflow-gaging station and number**

Figure 59. Location of streamflow-gaging stations with significant floods during 1970–89 for Oregon—Continued.

Table 38. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oregon

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 59)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10352300	Jackson Creek tributary near McDermitt, NV	6.60	1969–77, 1979–81	1979	10.94	28	9/01/79	10.94	28	N	25
10366000	Twentymile Creek near Adel, OR	194	1911–16, 1918–19, 1921–22, 1941–91	1986	16.49	10,400	2/18/86	16.49	10,400	N	<100
10371500	Deep Creek above Adel, OR	249	1923, 1930–91	1965	10.64	9,420	4/19/80	6.80	5,120	N	<25
10378500	Honey Creek near Plush, OR	170	1910–15, 1921–22, 1930–91	1965	13.40	11,000	2/19/81	8.19	2,390	N	10
10384000	Chewaucan River near Paisley, OR	275	1912–21, 1925–91	1965	8.35	6,490	5/27/71 2/21/82	5.37 5.08	3,000 2,660	N N	25 <25
10390000	Silver Creek near Silver Lake, OR	180	1905–06, 1909–23, 1925–78	1965	10.30	1,650	3/30/74	--	792	Y	--
10390001	Silver Creek plus Silver Lake Irrigation Canal near Silver Lake, OR	--	1982–91	1982 1987	-- 2.17	651 71	4/11/82	--	651	Y	--
10392300	Silvies River near Seneca, OR	18.4	1967–81	1975	13.62	152	5/15/75	13.62	152	N	10
10392800	Crowsfoot Creek near Burns, OR	8.50	1966–79	1975	9.87	88	5/15/75	9.87	88	N	10
10393500	Silvies River near Burns, OR	934	1904, 1906, 1909–91	1952 1904	15.20 17.12	4,960 4,730	4/17/84	14.16	4,300	N	<50
10396000	Donner Und Blitzen River near Frenchglen, OR	200	1911–16, 1918–21, 1930, 1938–92	1978	7.15	4,270	4/26/78 2/18/86 3/09/89	7.15 6.28 6.58	4,270 3,060 3,450	N N N	100 <25 25
10401500	Donner Und Blitzen River near Voltage, OR	760	1938–46, 1972–77	1972 1939	5.30 6.70	653 416	3/05/72	5.30	653	N	10
10406500	Trout Creek near Denio, NV	88.0	1911, 1922–23, 1925–91	1933	5.26	470	4/11/82 5/29/83 5/13/84	-- 4.42 4.35	450 330 385	N N N	50 <25 25
11339500	Drews Creek near Lakeview, OR	212	1909–19, 1921–22, 1925–81	1910	11.13	3,000	1/27/70	5.17	1,380	Y	--
11341100	Salt Creek near Lakeview, OR	5.62	1964–81	1972	16.56	118	1/21/72	16.56	118	N	<25
11341200	Crane Creek near Lakeview, OR	11.4	1966–81	1970 1975	15.26 15.48	190 177	1/23/70	15.26	190	N	10
11491400	Williamson River below Sheep Creek near Lenz, OR	205	1980–91	1983 1982	-- 3.18	210 202	5/29/83	--	210	N	10
11497500	Sprague River near Beatty, OR	513	1914–15, 1917–18, 1920–23, 1954–91	1965	12.19	6,980	1/24/70	10.01	3,810	N	>10
11499100	Sycan River below Snake Creek near Beatty, OR	568	1980–91	1982	12.22	5,550	2/21/82	12.22	5,550	N	--
11501000	Sprague River near Chiloquin, OR	1,580	1921–94	1965	10.37	14,900	1/27/70 2/24/82	7.49 8.20	6,880 8,680	N N	>10 >25

Table 38. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oregon—Continued

Station number (fig. 59)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
11502500	Williamson River below Sprague River near Chiloquin, OR	3,000	1917–94	1965	10.56	16,100	1/27/70	7.53	8,010	N	>10
							2/24/82	8.45	10,200	N	>25
11503000	Annie Spring near Crater Lake, OR	--	1962, 1977–94	1984	1.56	18	7/06/84	1.56	18	Y	--
11507500	Link River at Klamath Falls, OR	3,810	1904–80, 1984–94	1904	--	9,400	3/18/72	--	8,590	Y	--
				1952	4.19	6,870	4/05/74	--	7,460	Y	--
							3/20/84	--	7,280	Y	--
11509500	Klamath River at Keno, OR	3,920	1905–13, 1930–94	1986	12.82	10,300	3/05/72	12.73	10,100	Y	--
				1907	14.40	5,220	4/02/74	12.29	9,300	Y	--
							2/24/82	12.74	10,200	Y	--
							2/28/86	12.82	10,300	Y	--
11510700	Klamath River below John Boyle Powerplant near Keno, OR	4,080	1959–94	1972	9.33	11,000	3/05/72	9.33	11,000	Y	--
							2/23/82	9.21	10,600	Y	--
13181000	Owyhee River near Rome, OR	8,000	1950–94	1993	20.11	55,700	2/19/86	19.09	41,400	Y	--
13182100	Dago Gulch near Rockville, OR	3.09	1970–81	1979	12.95	46	9/11/79	12.95	46	N	5
13182150	Long Gulch near Rockville, OR	1.38	1970–79	1979	10.32	18	9/01/79	10.32	18	N	10
13183000	Owyhee River below Owyhee Dam, OR	11,160	1929–94	1952	15.70	22,900	4/17/84	14.73	19,800	Y	--
							2/25/86	15.12	20,900	Y	--
13213100	Snake River at Nyssa, OR	58,700	1975–86, 1989–94	1984	13.34	57,900	4/19/84	13.34	57,900	Y	--
13215000	Malheur River below Warmsprings Reservoir near Riverside, OR	1,100	1909–10, 1915–17, 1919–92	1910	10.70	7,200	2/23/82	9.03	2,730	Y	--
							3/15/83	8.91	2,630	Y	--
							3/22/84	9.70	3,150	Y	--
13216500	North Fork Malheur River above Beulah Reservoir near Beulah, OR	355	1914, 1937–38, 1940–82, 1984–93	1965	8.30	3,970	2/21/82	7.67	2,470	N	25
13217500	North Fork Malheur at Beulah, OR	440	1927–92	1942	8.40	7,000	2/22/82	8.25	3,740	Y	--
13219300	Malheur River tributary near Harper, OR	0.10	1969–79	1970	14.71	238	7/10/70	14.71	238	N	<10
13226500	Bully Creek at Warmsprings near Vale, OR	539	1904–06, 1910–17, 1922–23, 1957–62, 1964–85	1965	8.68	12,800	4/27/78	7.22	8,350	N	10
				1904	12.10	5,730					
13228300	Lytle Creek near Vale, OR	6.46	1969–81	1981	15.41	497	4/19/81	15.41	497	N	>100
13231700	Canyon Creek tributary near Brogan, OR	1.24	1967–77	1975	16.01	150	7/12/75	16.01	150	N	>10
13269300	North Fork Burnt River near Whitney, OR	110	1965–80	1971	4.31	1,190	4/06/71	4.31	1,190	N	10
13272300	Job Creek tributary near Unity, OR	0.48	1967–79	1975	16.60	96	4/15/75	16.60	96	N	100
13273000	Burnt River near Hereford, OR	309	1929–90, 1992	1943	4.06	2,220	4/08/71	9.07	1,280	Y	--
				1971	9.07	1,280					
13274200	Burnt River near Bridgeport, OR	650	1957–80	1971	6.40	1,600	4/09/71	6.40	1,600	Y	--
13274600	Burnt River tributary at Durkee, OR	1.80	1968–79	1971	9.18	98	1/17/71	9.18	98	N	>10

Table 38. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oregon—Continued

Station number (fig. 59)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
13277000	Powder River at Baker City, OR	351	1979–90, 1992	1979	5.36	1,040	2/13/79	5.36	1,040	Y	--
13285500	Powder River below Thief Valley Reservoir near North Powder, OR	910	1979–90, 1992	1982	10.05	2,520	7/02/82	10.05	2,520	Y	--
13286300	Waterspout Creek near Baker, OR	0.96	1969–79, 1981	1970	20.30	208	7/10/70	20.30	208	N	<10
13286700	Powder River near Richland, OR	1,310	1958–90, 1992	1982	7.50	4,090	2/21/82	7.50	4,090	Y	--
13288200	Eagle Creek above Skall Creek near New Bridge, OR	156	1958–92	1975	5.06	5,310	6/16/74 7/12/75	4.30 5.06	4,100 5,310	N N	50 >100
13290190	Pine Creek near Oxbow, OR	230	1967–94	1968	9.82	7,110	5/29/71	7.25	2,940	Y	--
13290450	Snake River at Hells Canyon Dam, ID-OR Stateline	73,300	1966–94	1982	84.05	87,800	2/23/82	84.05	87,800	Y	--
13291200	Mahogany Creek near Homestead, OR	4.00	1965–75	1971 1974	12.44 14.90	134 --	5/07/71	12.44	134	N	<25
13292000	Imnaha River at Imnaha, OR	622	1929–93	1974	7.86	10,100	1/17/74 4/27/78	7.86 7.61	10,100 6,830	N N	>100 <50
13318100	McIntyre Creek near Starkey, OR	1.80	1966–79	1979	15.55	34	5/07/79	15.55	34	N	25
13318800	Grande Ronde River at Hilgard, OR	555	1967–81	1972	7.18	4,740	3/13/72	7.18	4,740	N	25
13319000	Grande Ronde River at La Grande, OR	678	1904–09, 1911–15, 1918–23, 1926–88	1965	11.44	14,100	2/23/86	10.51	7,830	N	25
13320000	Catherine Creek near Union, OR	105	1912, 1915, 1918–19, 1926–93	1948 1918	4.57 5.50	1,740 960	5/30/84	4.15	1,410	N	50
13321300	Ladd Canyon near Hot Lake, OR	15.5	1953, 1958–72	1972	20.62	182	3/12/72	20.62	182	N	>10
13322300	Dry Creek near Bingham Springs, OR	1.37	1965–66, 1968–79	1975	30.83	60	1/25/75	30.83	60	N	25
13324150	Rysdam Canyon tributary near Minam, OR	0.99	1967–79	1974	25.57	62	1/13/74	25.57	62	N	25
13327500	Wallowa River at Joseph, OR	50.9	1904–13, 1915, 1927–90	1969 1970	5.15 7.45	1,550 745	7/11/75	5.28	1,090	Y	--
13329700	Trout Creek tributary near Chico, OR	0.26	1967–81	1976	10.38	21	4/08/76	10.38	21	N	25
13330000	Lostine River near Lostine, OR	70.9	1913, 1926–91	1974	8.59	2,550	6/16/74	8.59	2,550	N	50
13330500	Bear Creek near Wallowa, OR	68.0	1915, 1924–85	1974 1927	3.58 4.55	1,730 1,480	6/15/74	3.58	1,730	N	>25
13331500	Minam River at Minam, OR	240	1913, 1966–93	1974 1913	6.89 7.30	6,260 4,500	6/16/74	6.89	6,260	N	50
13332500	Grande Ronde River at Rondowa, OR	2,555	1927–30, 1932–91	1965	10.93	24,700	2/23/86	10.41	22,000	N	100
13333050	Buford Creek near Flora, OR	0.47	1967–81	1978 1971	9.72 9.90	36 27	4/28/78	9.72	36	N	25
13333100	Doe Creek near Imnaha, OR	5.49	1965–79	1972 1976	-- 8.01	158 115	3/12/72	--	158	N	50

Table 38. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oregon—Continued

Station number (fig. 59)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
14010800	North Fork Walla Walla River near Milton Freewater, OR	34.4	1970–91	1986	7.02	1,240	2/23/86	7.02	1,240	N	25
14016080	Dry Creek tributary near Milton Freewater, OR	1.22	1967–81	1971	34.83	348	5/26/71	34.83	348	N	<50
14019120	North Fork Cold Springs Canyon tributary near Holdman, OR	2.86	1967–81	1978 1969	-- 24.05	820 132	8/22/78	--	820	N	--
14019400	Elbow Creek near Bingham Springs, OR	0.68	1965–66, 1968–79	1975	13.31	105	1/25/75	13.31	105	N	25
14020000	Umatilla River above Meacham Creek near Gibbon, OR	131	1933–93	1975 1965	9.18 9.50	5,930 4,910	1/25/75 2/23/86	9.18 8.10	5,930 4,560	N N	<100 25
14020300	Meacham Creek at Gibbon, OR	176	1976–93	1982 1986	6.60 7.56	5,750 5,750	2/23/86	7.56	5,750	N	>10
14021000	Umatilla River at Pendleton, OR	637	1904–05, 1935–89	1986 1975	10.16 11.58	16,200 14,300	2/23/86	10.16	16,200	N	>25
14021600	Nelson Creek at Pendleton, OR	2.56	1958–79	1978	20.40	290	8/22/78	20.40	290	N	10
14022500	McKay Creek near Pilot Rock, OR	180	1927–89	1965 1931	8.40 10.40	7,400 6,000	2/23/86	8.27	5,280	N	<50
14026000	Umatilla River at Yoakum, OR	1,280	1905–91	1906	15.00	20,000	1/25/75	11.52	16,400	Y	--
14032000	Butter Creek near Pine City, OR	291	1929–31, 1933–88	1965	10.37	2,740	1/03/84	8.21	1,780	N	>25
14033500	Umatilla River near Umatilla, OR	2,290	1904–93	1965 1906	10.75 11.00	19,800 19,600	1/26/75	7.98	14,600	N	25
14034240	Little Juniper Canyon near Pine City, OR	4.87	1969–79	1974	15.46	121	1/14/74	15.46	121	N	--
14034470	Willow Creek above Willow Creek Lake near Heppner, OR	67.6	1983–93	1983 1993	6.93 7.64	445 295	3/04/83	6.93	445	N	<100
14034500	Willow Creek at Heppner, OR	96.8	1903, 1949, 1952–90, 1992–93	1903 1957	-- 6.15	36,000 812	5/06/83	3.75	317	Y	--
14036000	Willow Creek near Arlington, OR	850	1906, 1961–79	1974 1979	11.18 13.50	16,900 10,300	1/14/74	11.18	16,900	N	<25
14037500	Strawberry Creek above Slide Creek near Prairie City, OR	7.00	1931–91	1983 1956	2.45 3.23	354 170	6/14/74 5/31/83 5/31/86	2.20 2.45 1.94	274 354 205	N N N	<100 >100 25
14038900	Fields Creek near Mount Vernon, OR	17.5	1967–79	1970	12.38	240	1/22/70	12.38	240	N	50
14039200	Venator Creek near Silvies, OR	11.9	1967–79	1974	12.46	108	5/10/74	12.46	108	N	25
14040500	John Day River at Picture Gorge near Dayville, OR	1,680	1927–29, 1931–91	1965	14.97	8,170	2/21/82 3/13/83	13.28 13.14	7,330 7,170	N N	<25 <25
14040700	Whisky Creek near Mitchell, OR	2.22	1969–79	1974	14.23	143	1/17/74	14.23	143	N	<25
14040900	Bruin Creek near Dale, OR	4.63	1969–81	1976 1979	12.45 12.66	57 56	4/09/76	12.45	57	N	10
14043800	Bridge Creek near Prairie City, OR	6.93	1964–79	1975	9.68	98	5/15/75	9.68	98	N	25
14043850	Cottonwood Creek near Galena, OR	3.89	1965–79	1978	12.63	98	4/01/78	12.63	98	N	25

Table 38. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oregon—Continued

Station number (fig. 59)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
14043900	Granite Creek near Dale, OR	1.90	1965, 1970–79	1979	15.02	66	4/07/79	15.02	66	N	<25
14044100	Paul Creek near Long Creek, OR	3.50	1969–79	1970	9.92	56	1/23/70	9.92	56	N	<10
14046250	Ives Canyon near Spray, OR	2.73	1968–79	1978	14.32	86	6/30/78	14.32	86	N	10
14046300	Big Service Creek near Service Creek, OR	5.56	1969–79	1972	7.50	11	3/16/72	7.50	11	N	25
14046400	Donnely Creek tributary near Service Creek, OR	1.85	1964–81	1978	11.56	42	7/02/78	11.56	42	N	10
14047390	Rock Creek above Whyte Park near Condon, OR	297	1976–89	1983	9.17	3,360	5/05/83	9.17	3,360	N	>10
14047470	Juniper Canyon tributary near Mikkalo, OR	1.94	1972–81	1978	21.12	1,540	6/30/78	21.12	1,540	N	<25
14048000	John Day River at McDonald Ferry, OR	7,580	1894, 1905–08, 1910–93	1965	13.59	42,800	1/25/70 2/24/86	11.17 12.75	28,400 29,200	N N	<25 25
14048310	Spanish Hollow tributary at Wasco, OR	6.13	1968–79	1972	18.24	376	1/21/72	18.24	376	N	--
14050000	Deschutes River below Snow Creek near La Pine, OR	132	1938–91	1974	3.17	480	8/16/72 8/19/74	3.09 3.17	468 480	N N	25 25
14050500	Cultus River above Cultus Creek near La Pine, OR	16.5	1923–25, 1938–91	1956 1975	1.04 1.17	178 152	6/01/75	1.17	152	N	25
14051000	Cultus Creek above Crane Prairie Reservoir near La Pine, OR	33.2	1924, 1938–91	1965	4.15	336	6/07/75	3.49	224	N	25
14052000	Deer Creek above Crane Prairie Reservoir near La Pine, OR	21.5	1924, 1938–91	1965 1990	1.95 3.17	200 88	12/14/77	2.93	123	N	25
14055500	Odell Creek near Crescent, OR	39.0	1933–76	1965 1971	1.44 1.59	1,100 455	1/19/71	1.59	455	N	10
14060000	Crescent Creek at Crescent Lake near Crescent, OR	60.7	1912, 1914–15, 1927–91	1929 1967	2.73 3.29	313 308	7/19/79	3.20	310	Y	--
14075000	Squaw Creek near Sisters, OR	45.2	1908–09, 1911–14, 1916–18, 1920, 1926–93	1981 1965	6.10 6.59	2,000 1,980	12/13/77 12/25/80	4.92 6.10	1,400 2,000	N N	25 <100
14076500	Deschutes River near Culver, OR	2,705	1953–93	1965	10.00	6,680	2/14/77	6.94	3,100	Y	--
14078000	Beaver Creek near Paulina, OR	450	1943–75	1965	14.20	12,800	1/18/71	9.18	5,430	N	<25
14078300	Cemetery Creek near Paulina, OR	5.10	1969–81	1979	15.90	96	2/06/79	15.90	96	N	--
14078400	Lookout Creek near Post, OR	7.53	1966–79	1972	8.80	85	1/20/72	8.80	85	N	10
14079500	Crooked River at Post, OR	2,160	1909–10, 1940–60, 1969–72	1971	9.61	11,500	1/18/71	9.61	11,500	N	25
14080500	Crooked River near Prineville, OR	2,700	1909–14, 1941–91	1952 1910	8.20 10.00	8,410 8,000	3/16/84 3/08/86	7.78 7.77	3,310 3,300	Y Y	-- --
14080600	Dry Creek near Prineville, OR	14.5	1969–77, 1979	1971	18.58	513	1/17/71	18.58	513	N	25

Table 38. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oregon—Continued

Station number (fig. 59)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
14082400	Wildcat Creek near Prineville, OR	3.66	1969–81	1972	11.90	44	3/02/72	11.90	44	N	5
14088000	Lake Creek near Sisters, OR	22.2	1915–18, 1921–23, 1925–64, 1966–91	1978	4.78	446	12/15/77 12/22/82	4.78 4.39	446 356	N N	50 25
14090350	Jefferson Creek near Camp Sherman, OR	27.8	1984–93	1986	3.21	428	2/23/86	3.21	428	N	<50
14090400	Whitewater River near Camp Sherman, OR	22.8	1983–93	1988	3.24	613	12/10/87	3.24	613	N	<50
14091500	Metolius River near Grandview, OR	316	1913, 1922–93	1965	6.81	7,530	2/20/82	5.25	5,360	N	25
14092300	Willow Creek tributary near Culver, OR	7.47	1965–79	1979	17.00	285	2/07/79	17.00	285	N	50
14092500	Deschutes River near Madras, OR	7,820	1924–93	1983	7.70	22,500	2/21/82 7/16/83	6.13 7.70	15,100 22,500	Y Y	-- --
14092750	Shitike Creek at Peters Pasture near Warm Springs, OR	22.9	1983–93	1986	3.65	1,170	2/23/86	3.65	892	N	5
14092885	Shitike Creek below Wolford Canyon near Warm Springs, OR	75.8	1975–93	1986 1978	6.40 7.35	1,980 1,350	2/23/86	6.40	1,980	N	>10
14093000	Shitike Creek at Warm Springs, OR	105	1912–16, 1924–28, 1973–74	1974 1927	-- 3.30	2,300 1,100	1/15/74	--	2,300	N	<50
14093700	Woods Hollow at Ashwood, OR	1.42	1960–79	1979	9.11	140	2/07/79	9.11	140	N	<100
14095500	Warm Springs River near Simnasho, OR	107	1984–93	1986	5.70	1,700	2/23/86	5.70	1,700	N	10
14096850	Beaver Creek below Quartz Creek near Simnasho, OR	145	1984–93	1986	7.96	4,340	2/23/86	7.96	3,460	N	10
14097100	Warm Springs River near Kahneeta Hot Springs, OR	526	1973–93	1986	10.54	9,240	2/23/86	10.54	9,240	N	<25
14097200	White River near Government Camp, OR	40.7	1970–81	1978	6.63	3,650	12/13/77	6.63	3,650	N	10
14101500	White River below Tygh Valley, OR	417	1918–90	1923	12.90	13,300	12/13/77	10.00	8,190	N	<25
14103000	Deschutes River at Moody near Biggs, OR	10,500	1898–99, 1907–93	1965	11.80	75,500	2/23/86	8.87	39,800	Y	--
14104100	Ramsey Creek near Dufur, OR	3.87	1965–67, 1969–81	1974 1965	-- 13.86	380 124	1/14/74	--	380	N	<100
14105850	South Fork Mill Creek near The Dalles, OR	28.0	1960–75	1974	6.36	1,250	1/15/74	6.36	1,250	Y	--
14118500	West Fork Hood River near Dee, OR	95.6	1914–15, 1933–91	1972 1978	14.73 14.89	20,000 14,300	1/20/72 12/13/77	14.73 14.89	20,000 14,300	N N	>100 25
14120000	Hood River at Tucker Bridge near Hood River, OR	279	1898–99, 1914, 1916–17, 1965–93	1965	20.60	33,200	12/13/77	15.59	22,300	N	<25
14131400	Zigzag River near Rhododendron, OR	14.8	1981–93	1981	6.00	863	12/25/80	6.00	863	N	<100
14134000	Salmon River near Government Camp, OR	8.00	1911–12, 1927–91	1965	4.75	1,300	12/02/77 12/25/80	4.55 3.85	1,150 772	N N	100 25

Table 38. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oregon—Continued

Station number (fig. 59)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
14137000	Sandy River near Marmot, OR	262	1912–93	1965	17.05	61,400	1/20/72	16.88	36,200	N	25
				1923	17.50	29,200	12/02/77	16.68	34,500	N	<25
							2/23/86	17.10	37,800	N	>25
14138800	Blazed Alder Creek near Rhododendron, OR	8.17	1964–93	1965	8.25	2,610	12/02/77	6.71	1,830	N	10
14138850	Bull Run River near Multnomah Falls, OR	47.9	1967–93	1972	13.22	8,610	1/20/72	13.22	8,610	N	<25
14138870	Fir Creek near Brightwood, OR	5.46	1976–93	1978	5.64	1,290	12/02/77	5.64	1,290	N	>10
14138900	North Fork Bull Run near Multnomah Falls, OR	8.32	1966–93	1972	9.89	9,700	1/20/72	9.89	9,700	N	--
14138950	Deer Creek near Bull Run, OR	1.62	1979–91	1982	4.73	640	1/23/82	4.73	640	N	50
14138960	Cougar Creek near Bull Run, OR	3.06	1979–91	1982	4.79	645	1/23/82	4.79	645	N	25
14139510	Fivemile Creek near Bull Run, OR	0.79	1979–86, 1988–91	1986	3.03	92	2/23/86	3.03	92	N	<25
14139600	Camp Creek near Bull Run, OR	3.27	1979–86, 1988–91	1982	4.12	561	2/20/82	4.12	561	N	25
14139800	South Fork Bull Run River near Bull Run, OR	15.4	1975–93	1989	8.85	3,480	1/09/89	8.85	3,480	N	50
14140000	Bull Run River near Bull Run, OR	107	1908–78	1965	13.80	25,100	1/21/72	15.90	20,200	Y	--
				1972	15.90	20,200					
14140001	Bull Run River near Bull Run plus diversion from Bull Run to Portland, OR	--	1982–93	1986	--	15,800	2/23/86	--	15,800	Y	--
				1984	11.08	7,250					
14142500	Sandy River below Bull Run River near Bull Run, OR	436	1911–14, 1930–66, 1985–93	1965	22.30	84,400	2/23/86	20.89	61,600	Y	--
14144800	Middle Fork Willamette River near Oakridge, OR	258	1959–93	1965	16.96	39,800	12/06/81	13.71	26,000	N	25
14146500	Salmon Creek near Oakridge, OR	117	1913–19, 1934–85, 1987–93	1965	9.15	11,600	1/18/71	8.84	9,020	N	25
				1957	11.18	10,400					
14147000	Waldo Lake outlet near Oakridge, OR	30.5	1937–53, 1970–82	1971	--	150	1/20/71	--	150	N	<25
				1943	2.98	144	3/06/72	2.77	149	N	<25
14148000	Middle Fork Willamette River below North Fork near Oakridge, OR	924	1890, 1912, 1924–93	1946	18.80	81,800	1/18/71	9.82	36,700	Y	--
14150300	Fall Creek near Lowell, OR	118	1964–93	1990	12.28	12,400	1/21/72	11.84	12,100	N	10
14151000	Fall Creek below Winberry Creek near Fall Creek, OR	186	1936–93	1957	18.80	24,700	1/27/72	8.12	4,640	Y	--
14152500	Coast Fork Willamette River at London, OR	72.1	1936–87	1965	13.37	12,500	12/06/81	11.70	8,490	N	<25
14154500	Row River above Pitcher Creek near Dorena, OR	211	1936–94	1965	18.19	33,100	1/08/76	14.20	21,000	N	10
							12/06/81	15.22	24,000	N	25
14155500	Row River near Cottage Grove, OR	270	1939–94	1946	18.20	21,400	1/19/71	11.64	9,900	Y	--
14156500	Mosby Creek at mouth near Cottage Grove, OR	95.3	1947–81	1965	13.37	14,100	1/15/74	10.31	8,620	N	10
14157500	Coast Fork Willamette River near Goshen, OR	642	1906–12, 1951–94	1910	19.50	58,500	12/06/81	16.85	31,000	Y	--

Table 38. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oregon—Continued

Station number (fig. 59)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
14158790	Smith River above Smith River Reservoir near Belknap Springs, OR	16.2	1961–93	1965	11.90	5,160	12/10/87	8.76	2,010	N	10
14159000	McKenzie River at Mc Kenzie Bridge, OR	348	1911–14, 1916, 1919–93	1965	10.36	19,100	2/23/86	6.73	12,600	Y	--
14159200	South Fork McKenzie River above Cougar Lake near Rainbow, OR	160	1958–87	1965	20.06	18,400	1/18/71	14.37	10,100	N	10
14159500	South Fork McKenzie River near Rainbow, OR	208	1946, 1948–93	1946	9.30	24,500	1/22/71 2/26/86	5.37 5.35	6,520 6,220	Y Y	-- --
14161100	Blue River below Tidbits Creek near Blue River, OR	45.8	1964–93	1965	15.32	12,400	1/21/72	10.77	9,920	N	25
14161500	Lookout Creek near Blue River, OR	24.1	1950–55, 1964–93	1965	8.88	6,660	1/21/72	7.79	4,180	N	25
14162500	McKenzie River near Vida, OR	930	1925–93	1946	17.70	64,400	1/21/72	9.58	28,800	Y	--
14165000	Mohawk River near Springfield, OR	177	1936–52, 1956, 1964–93	1965 1956	22.60 22.90	13,000 9,200	1/21/72	21.26	11,800	N	25
14166500	Long Tom River near Noti, OR	89.3	1936–93	1956	20.17	6,990	1/15/74	19.64	6,440	N	25
14169700	Bear Creek near Cheshire, OR	5.19	1957–77	1974	23.16	530	1/15/74	23.16	530	N	25
14170000	Long Tom River at Monroe, OR	391	1921–93	1943	17.14	19,300	1/15/74	10.42	10,500	Y	--
14178700	East Humbug Creek near Detroit, OR	7.32	1979–93	1981	4.42	1,310	12/25/80	4.42	1,310	N	25
14179000	Breitenbush River above French Creek near Detroit, OR	108	1933–87	1965	14.55	16,900	11/25/77	12.83	13,200	N	25
14181500	North Santiam River at Niagara, OR	453	1909–10, 1912–20, 1922, 1939–93	1910 1946	16.40 18.20	63,200 41,200	12/17/77	9.84	18,300	Y	--
14183000	North Santiam River at Mehama, OR	655	1906–07, 1911–14, 1922–93	1946 1922	15.37 17.50	76,600 62,900	1/21/72	11.91	43,300	Y	--
14185000	South Santiam River below Cascadia, OR	174	1936–93	1965	19.68	27,600	1/21/72	17.69	24,500	N	25
14185700	Middle Santiam River near Upper Soda, OR	74.6	1981–93	1986	11.05	18,400	2/23/86	11.05	18,400	N	100
14185900	Quartzville Creek near Cascadia, OR	99.2	1964–93	1965 1972	12.46 16.38	36,500 22,400	1/20/72	16.38	22,400	N	<25
14187000	Wiley Creek near Foster, OR	51.8	1948–73, 1989–93	1972	9.28	9,640	1/21/72	9.28	9,640	N	<50
14187100	Wiley Creek at Foster, OR	62.3	1974–88	1974	9.28	6,320	1/15/74	9.28	6,320	N	50
14187500	South Santiam River at Waterloo, OR	640	1906–07, 1924–93	1965	24.50	95,200	1/21/72	11.12	22,500	Y	--
14190500	Luckiamute River near Suver, OR	240	1906–11, 1941–92	1965	34.52	32,900	1/21/72	33.44	31,300	N	50
14190600	Soap Creek tributary near Suver, OR	0.57	1953–77	1972	4.62	86	3/02/72	4.62	86	N	25
14192000	Mill Creek at Salem, OR	110	1940–78	1974	9.85	2,230	1/16/74	9.85	2,230	Y	--

Table 38. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oregon—Continued

Station number (fig. 59)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
14192500	South Yamhill River near Willamina, OR	133	1935–93	1965	17.07	19,600	1/11/72	15.48	16,800	N	25
14194000	South Yamhill River near Whiteson, OR	502	1941–91	1965	47.20	47,200	1/21/72	44.76	37,600	N	25
							1/16/74	45.36	37,000	N	25
14194300	North Yamhill River near Fairdale, OR	9.03	1959–66, 1968–91	1965	6.88	2,330	1/20/72	6.95	1,820	N	<50
				1972	6.95	1,820					
14196001	Haskins Creek below reservoir plus diversion to McMinnville, OR	--	1982–93	1982	--	345	12/05/81	--	345	Y	--
14198500	Molalla River above Pine Creek near Wilhoit, OR	97.0	1936–93	1965	16.30	24,300	1/15/74	13.22	15,500	N	25
14200000	Molalla River near Canby, OR	323	1929–59, 1964–78	1965	--	43,600	1/21/72	15.45	36,200	N	50
				1972	15.45	36,200					
14201500	Butte Creek at Monitor, OR	58.7	1941–52, 1967–85	1972	15.26	7,310	1/21/72	15.26	7,310	N	<50
							1/15/74	14.07	6,180	N	<25
14203500	Tualatin River near Dilley, OR	125	1940–93	1965	19.34	17,100	12/14/77	18.63	6,550	Y	--
14207500	Tualatin River at West Linn, OR	706	1929–93	1934	17.72	29,300	12/17/77	14.16	16,200	Y	--
14207920	Poop Creek near Big Bottom, OR	1.74	1966–67, 1969–83	1974	12.51	28	1/15/74	12.51	28	N	25
14208200	Collawash River tributary near Breitenbush Hot Springs, OR	0.39	1966–67, 1969–74, 1976–77	1972	33.90	95	1/02/72	33.90	95	N	25
14208700	Oak Grove Fork near Government Camp, OR	54.4	1957–93	1965	3.93	2,110	1/16/74	3.72	1,030	Y	--
14209000	Oak Grove Fork above powerplant intake, OR	126	1910–11, 1913–17, 1921–93	1923	5.45	5,000	1/16/74	5.30	3,370	Y	--
				1947	5.91	4,220					
14209500	Clackamas River above Three Lynx Creek, OR	479	1910–13, 1922–93	1965	21.70	68,200	1/15/74	15.64	36,200	Y	--
14210000	Clackamas River at Estacada, OR	671	1909–93	1965	18.36	86,900	1/21/72	15.52	64,200	Y	--
				1931	24.50	60,800					
14211500	Johnson Creek at Sycamore, OR	26.5	1941–93	1965	14.68	2,620	12/13/77	13.89	2,250	N	10
14211720	Willamette River at Portland, OR	11,100	1973–93	1974	23.84	283,000	1/18/74	23.84	283,000	Y	--
14211800	Saltzman Creek at Portland, OR	1.46	1952–78	1978	3.45	315	12/13/77	3.45	315	N	<50
				1952	37.86	76					
14247020	Fall Creek near Clatskanie, OR	2.07	1972–76, 1978–84	1978	12.02	135	12/13/77	12.02	135	N	10
				1982	12.40	--					
14248510	Little Creek near Knappa, OR	1.53	1972–76, 1978–84	1978	14.35	220	12/13/77	14.35	220	N	<25
14248700	Bear Creek near Svensen, OR	3.33	1966–75	1972	3.42	342	1/11/72	3.42	342	N	50
14301000	Nehalem River near Foss, OR	667	1940–93	1990	25.07	53,400	1/20/72	23.11	46,900	N	<50
14301500	Wilson River near Tillamook, OR	161	1915, 1932–93	1972	16.91	36,000	1/20/72	16.91	36,000	N	100
				1965	20.26	32,100	12/13/77	16.83	32,000	N	<50
14302900	Nestucca River near Fairdale, OR	6.18	1961–93	1965	10.43	876	2/04/75	6.97	751	Y	--
14303200	Tucca Creek near Blaine, OR	3.09	1984–93	1988	3.66	266	12/09/87	3.66	266	N	10

Table 38. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oregon—Continued

Station number (fig. 59)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
14303600	Nestucca River near Beaver, OR	180	1965–91	1972	22.00	29,400	1/11/72	22.00	29,400	N	50
14303700	Alder Brook near Rose Lodge, OR	1.09	1954–83	1972	14.22	218	1/21/72	14.22	218	N	<50
14305500	Siletz River at Siletz, OR	202	1906–12, 1925–93	1910 1965	24.60 27.32	34,600 32,200	1/11/72	25.76	31,800	N	<25
14306030	Yaquina River near Chitwood, OR	71.0	1973–91	1974	14.43	6,150	11/16/73	14.43	6,150	N	100
14306100	North Fork Alsea River at Alsea, OR	63.0	1958–89	1965	14.57	14,100	1/20/72	12.18	9,200	N	<25
14306340	East Fork Lobster Creek near Alsea, OR	5.70	1984–93	1985	3.81	652	11/02/84	3.81	652	N	<25
14306400	Five Rivers near Fisher, OR	114	1959–63, 1968–90	1972	21.08	17,200	1/21/72	21.08	17,200	N	<25
14306500	Alsea River near Tidewater, OR	334	1940–93	1965	27.44	41,800	1/21/72 1/16/74	25.71 24.55	37,000 34,100	N N	<50 25
14306700	Needle Branch near Salado, OR	0.27	1959–73	1972	3.75	64	1/11/72	3.75	64	N	>25
14306800	Flynn Creek near Salado, OR	0.78	1959–73	1972	4.73	139	1/21/72	4.73	139	N	>25
14306900	Big Creek near Roosevelt Beach, OR	11.9	1973–91	1976	6.90	2,150	11/30/75	6.90	2,150	N	25
14307500	Lake Creek at Triangle Lake, OR	52.5	1932–56, 1969–75	1974 1949	8.04 8.33	4,640 4,180	1/21/72 1/15/74	7.67 8.04	4,190 4,640	N N	10 <25
14307580	Lake Creek near Deadwood, OR	174	1968–89	1981	15.86	20,400	12/25/80	15.86	20,400	N	25
14307610	Siuslaw River tributary near Rainrock, OR	0.42	1957–77	1972	7.98	62	1/21/72	7.98	62	N	50
14307620	Siuslaw River near Mapleton, OR	588	1968–93	1972	28.45	49,400	1/21/72	28.45	49,400	N	<25
14307640	Sam Creek near Minerva, OR	2.58	1965–77	1972	16.30	800	1/21/72	16.30	800	N	50
14307645	North Fork Siuslaw River near Minerva, OR	41.2	1968–85	1981	24.36	5,400	12/25/80	24.36	5,400	N	50
14307700	Jackson Creek near Tiller, OR	152	1956–86	1965	18.00	21,100	1/15/74	14.69	14,700	N	25
14308500	Elk Creek near Drew, OR	54.4	1955–82, 1987–94	1965 1974	10.61 10.80	8,880 8,470	1/15/74	10.80	8,470	N	<25
14308600	South Umpqua River at Days Creek, OR	641	1975–90	1982	22.39	42,300	12/06/81	22.39	42,300	N	<25
14308950	Beaver Creek near Drew, OR	1.61	1965–77	1974	11.77	210	1/14/74	11.77	210	N	<50
14309000	Cow Creek near Azalea, OR	78.0	1928–31, 1933–94	1974	16.40	10,600	1/15/74 12/06/81	16.40 14.94	10,600 8,370	N N	100 25
14310000	Cow Creek near Riddle, OR	456	1951, 1955–94	1951	28.50	41,100	1/15/74	28.17	38,400	N	<25
14311000	North Myrtle Creek near Myrtle Creek, OR	54.2	1956–86	1982 1971	10.08 11.05	3,700 2,990	12/06/81 2/18/83	10.08 9.99	3,700 3,630	N N	25 25
14312000	South Umpqua River near Brockway, OR	1,670	1906–12, 1924–27, 1942–94	1965	34.28	125,000	1/16/74	32.64	105,000	N	25
14312100	Parrott Creek at Roseburg, OR	2.42	1952–78, 1980–84	1983	15.78	317	2/17/83	15.78	317	N	<25

Table 38. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oregon—Continued

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			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
14312700	Thielsen Creek near Diamond Lake, OR	12.2	1966–77	1974	11.64	71	5/06/74	11.64	71	N	25
14319900	Calapooya Creek at Nonpareil, OR	88.6	1976–88	1982	11.16	7,640	12/06/81	11.16	7,640	N	10
14321000	Umpqua River near Elkton, OR	3,683	1906, 1908–94	1965	51.95	265,000	1/16/74	44.20	202,000	N	25
14323020	Buck Creek tributary near Scottsburg, OR	0.05	1971–81	1972	11.08	47	3/02/72	11.08	47	N	>25
14323300	Eel Creek at Lakeside, OR	11.0	1958–76	1974	4.14	316	1/17/74	4.14	316	N	50
14324580	Pony Creek at Coos Bay, OR	3.88	1975–81, 1988–94	1988 1993	5.09 39.67	124 70	1/15/88	5.09	124	Y	--
14325000	South Fork Coquille River at Powers, OR	169	1917–26, 1929–94	1965	26.51	48,900	12/06/81	20.28	33,200	N	<50
14326800	North Fork Coquille River near Fairview, OR	73.9	1964–81	1972	18.03	7,760	3/02/72	18.03	7,760	N	<10
14327400	Dry Run Creek near Port Orford, OR	0.86	1954–58, 1960–81	1971 1958	-- 18.14	213 158	1/18/71	--	213	N	<25
14330000	Rogue River below Prospect, OR	379	1914–30, 1969–94	1971	7.62	10,900	1/18/71 1/13/80	7.62 6.93	10,900 9,220	Y Y	-- --
14332000	South Fork Rogue River near Prospect, OR	83.8	1925–31, 1950–78, 1988–94	1965 1956	-- 8.30	7,010 3,180	3/02/72	--	3,370	N	<25
14334700	South Fork Rogue River south of Prospect, OR	246	1969–92	1972	12.71	9,880	3/03/72	12.71	9,880	Y	-- --
14335080	Fireline Creek near Butte Falls, OR	4.77	1966–77	1972	13.89	261	3/02/72	13.89	261	N	25
14335500	South Fork Big Butte Creek near Butte Falls, OR	138	1911, 1919–22, 1925–91	1965	7.65	12,600	1/18/71 1/22/72	4.34 5.37	2,520 4,430	N N	10 <50
14337500	Big Butte Creek near McLeod, OR	245	1946, 1948–57, 1968–94	1956 1972	12.75 13.21	8,950 8,170	2/19/81	10.16	4,800	N	<5
14337600	Rogue River near McLeod, OR	938	1965–94	1965	20.35	74,300	12/15/77	8.38	15,200	Y	--
14337800	Elk Creek near Cascade Gorge, OR	78.8	1974–94	1974	8.90	6,780	1/15/74	8.90	6,780	N	25
14337870	West Branch Elk Creek near Trail, OR	14.2	1974–76, 1978–94	1974	5.30	1,410	1/15/74	5.30	1,410	N	100
14339000	Rogue River at Dodge Brook near Eagle Point, OR	1,215	1939–94	1965 1956	12.78 12.90	87,600 75,000	12/15/77	10.16	27,800	Y	-- --
14343000	North Fork Little Butte Creek near Lakecreek, OR	43.8	1912, 1925–26, 1929–85	1965 1984	3.70 5.15	1,750 950	1/22/72	4.91	887	Y	--
14353000	West Fork Ashland Creek near Ashland, OR	10.5	1925–32, 1954–60, 1963, 1974–82	1974 1963	9.50 15.51	4,780 330	1/15/74	9.50	4,780	N	>100
14353500	East Fork Ashland Creek near Ashland, OR	8.14	1925–32, 1954–60, 1963, 1974–82	1974	10.20	5,630	1/15/74	10.20	5,630	N	>100
14359000	Rogue River at Raygold near Central Point, OR	2,053	1906–94	1965 1927	23.43 24.80	131,000 110,000	12/19/81	15.46	57,700	Y	--

Table 38. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Oregon—Continued

Station number (fig. 59)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
14361500	Rogue River at Grants Pass, OR	2,459	1939–94	1965	34.15	152,000	12/20/81	22.89	78,700	Y	--
14361600	Elliott Creek near Copper, OR	51.8	1978–87	1982	7.13	3,980	12/19/81	7.13	3,980	N	25
14361700	Carberry Creek near Copper, OR	68.9	1978–87	1983 1982	8.02 8.10	4,680 4,470	2/18/83	8.02	4,680	N	10
14362000	Applegate River near Copper, OR	225	1939–94	1974 1965	25.38 26.00	29,800 29,000	1/15/74 12/21/81	25.38 8.51	29,800 4,730	N Y	50 --
14362050	Kinney Creek near McKee Bridge, OR	2.83	1965–81	1974 1965	-- 12.33	385 177	1/15/74	--	385	N	50
14362250	Star Gulch near Ruch, OR	16.0	1984–94	1984	3.11	153	12/14/83	3.11	153	N	<5
14366000	Applegate River near Applegate, OR	483	1939–94	1974	20.41	37,200	1/15/74 12/19/81	20.41 9.95	37,200 10,700	N Y	<50 --
14369500	Applegate River near Wilderville, OR	698	1939–56, 1979–94	1956	20.30	66,500	2/18/83	12.81	21,800	Y	--
14371500	Grave Creek at Pease Bridge near Placer, OR	22.1	1941–45, 1947–89	1965	11.20	6,240	1/15/74	10.37	5,420	N	25
14372300	Rogue River near Agness, OR	3,939	1961–94	1965	68.03	290,000	2/18/83	33.94	190,000	Y	--
14372500	East Fork Illinois River near Takilma, OR	42.3	1929–32, 1941–42, 1944–91	1965	13.00	15,700	1/16/71	10.87	7,870	N	10
14377100	Illinois River near Kerby, OR	380	1962–94	1965	45.28	92,200	1/17/71	33.68	46,300	N	10
14378900	Ransom Creek near Brookings, OR	0.74	1953–56, 1958–77	1972	28.92	378	3/02/72	28.92	378	N	50
14400000	Chetco River near Brookings, OR	271	1970–78, 1980–94	1971	27.45	65,800	1/16/71	27.45	65,800	N	10

[1] Regulated during flood: N, no; Y, yes.

Pennsylvania

Hydroclimatology

Pennsylvania is located in the mid-Atlantic region of the United States. This State has three physiographic regions that include the Appalachian Plateaus, which are located in the northwest half of the State, the Appalachian Mountains, which run on a roughly south-central-to-northeast trend, and the Piedmont, which is located in the southeast corner of the State. The climate of Pennsylvania is affected by these three physiographic regions. The Gulf of Mexico and the Atlantic Ocean are the primary sources of moisture for all these regions. Pacific Ocean moisture sometimes reaches the State in the winter.

The Appalachian Plateaus have a more continental climate than the rest of the State. This part of the State also is affected by lake-effect moisture from Lake Erie, which causes an increase in precipitation.

The Appalachian Mountains are a topographic high where airmasses from the west are forced upslope, and precipitation is enhanced. The moisture from the Atlantic Ocean also has the same effect when Atlantic airmasses move west; therefore, the eastern slopes of the Appalachians receive a fair amount of precipitation, usually in the form of snow.

The Piedmont is the part of the State closest to the Atlantic Ocean, and this proximity greatly affects the climate. The area has a coastal climate, which is characterized by moderate temperatures and greater annual precipitation relative to the rest of the State. Mean annual precipitation ranges from 38 in. in the west to 48 in. along the coastal plain (Paulson and others, 1991).

Floods can occur during any season of the year. Significant floods often are associated with rain falling on a melting snowpack. Spring and summer thunderstorms can cause flash flooding. Remnants of hurricanes and tropical storms have caused widespread flooding.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the factors affecting the magnitude of maximum discharges for streams in Pennsylvania are drainage area; main-channel slope; basin storage, which is the percentage of drainage area shown to be in lakes, ponds, and swamps; and a precipitation index, which is mean annual precipitation minus the estimated annual potential evapotranspiration (Jennings and others, 1994).

Significant Floods

During June 20–25, 1972, Pennsylvania experienced a severe statewide flood from the remnants of Hurricane Agnes. The flood was the worst on record for several parts of the State, and it is considered the most destructive natural disaster in Pennsylvania in terms of property damage and area affected. Flooding on the Susquehanna and Schuylkill Rivers was the most severe on record. Forty-four percent of the streamflow-gaging stations in the State recorded significant discharges. In Pennsylvania, there were 48 deaths, and damages were $2.1 billion (Paulson and others, 1991).

Tropical Storm Eloise caused the second most severe flood during 1970–89. The flood occurred in September 1975, and it affected river basins in central Pennsylvania. Ten percent of the streamflow-gaging stations in the State recorded significant discharges.

Eight percent of the gaging stations recorded significant discharges during the flood of July 1977. Maximum discharges were the largest of record on many streams, and flood maximum discharges having recurrence intervals greater than 100 years were recorded at several stations, primarily in the Conemaugh River Basin. The flood was the largest in the Conemaugh River Basin since the May 1889 flood. The flood was a result of a series of thunderstorms that moved through the area producing 8 to 12 in. of rain in 6 to 8 hours. Significant flash flooding occurred. Seven earth- and rock-filled dams failed completely, and four were partially destroyed. Seventy-eight lives were lost, and damages exceeded $300 million (Paulson and others, 1991).

The location of streamflow-gaging stations in Pennsylvania that had significant floods for 1970–89 is shown in figure 60 by station number. The specific data for each significant flood are listed in table 39. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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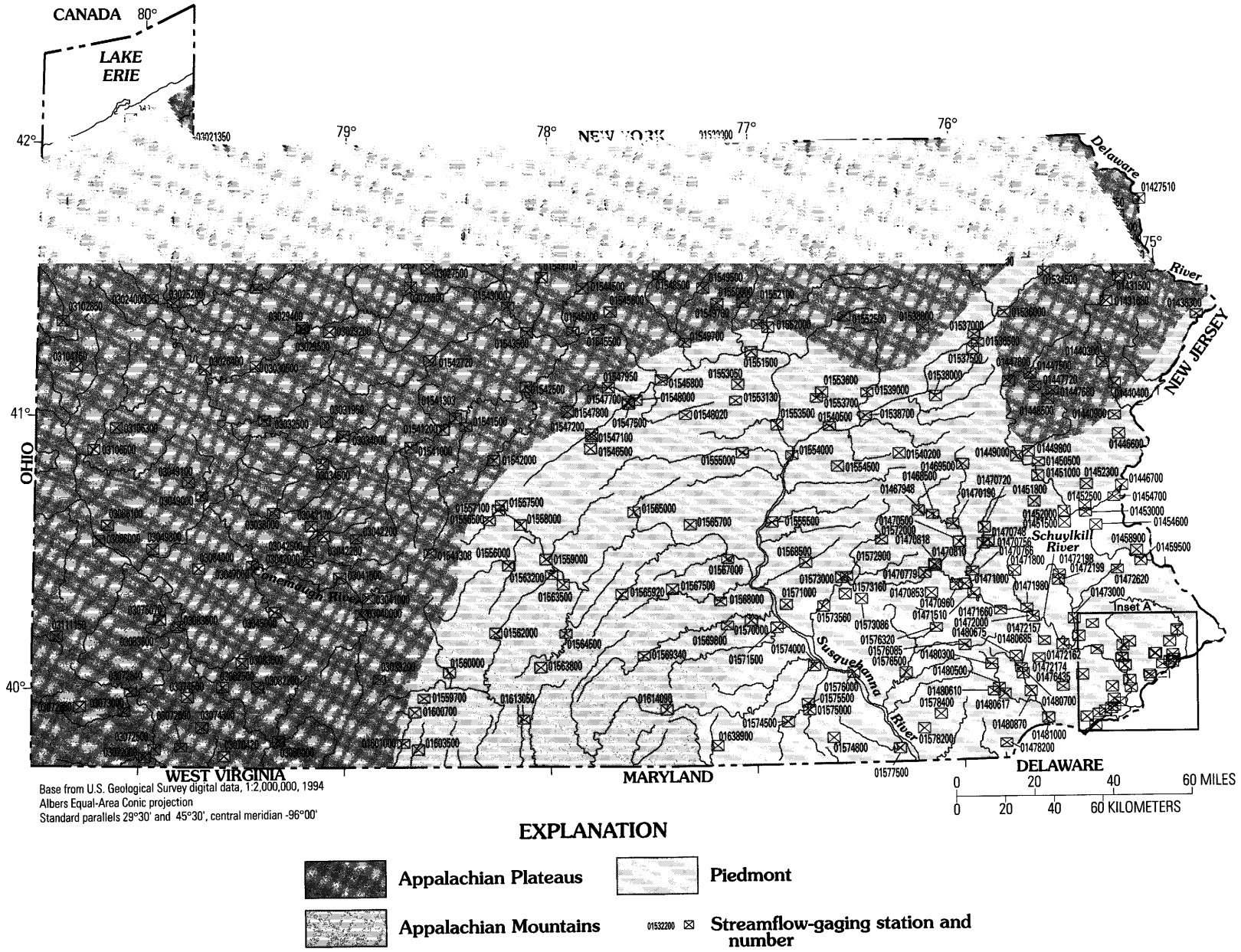
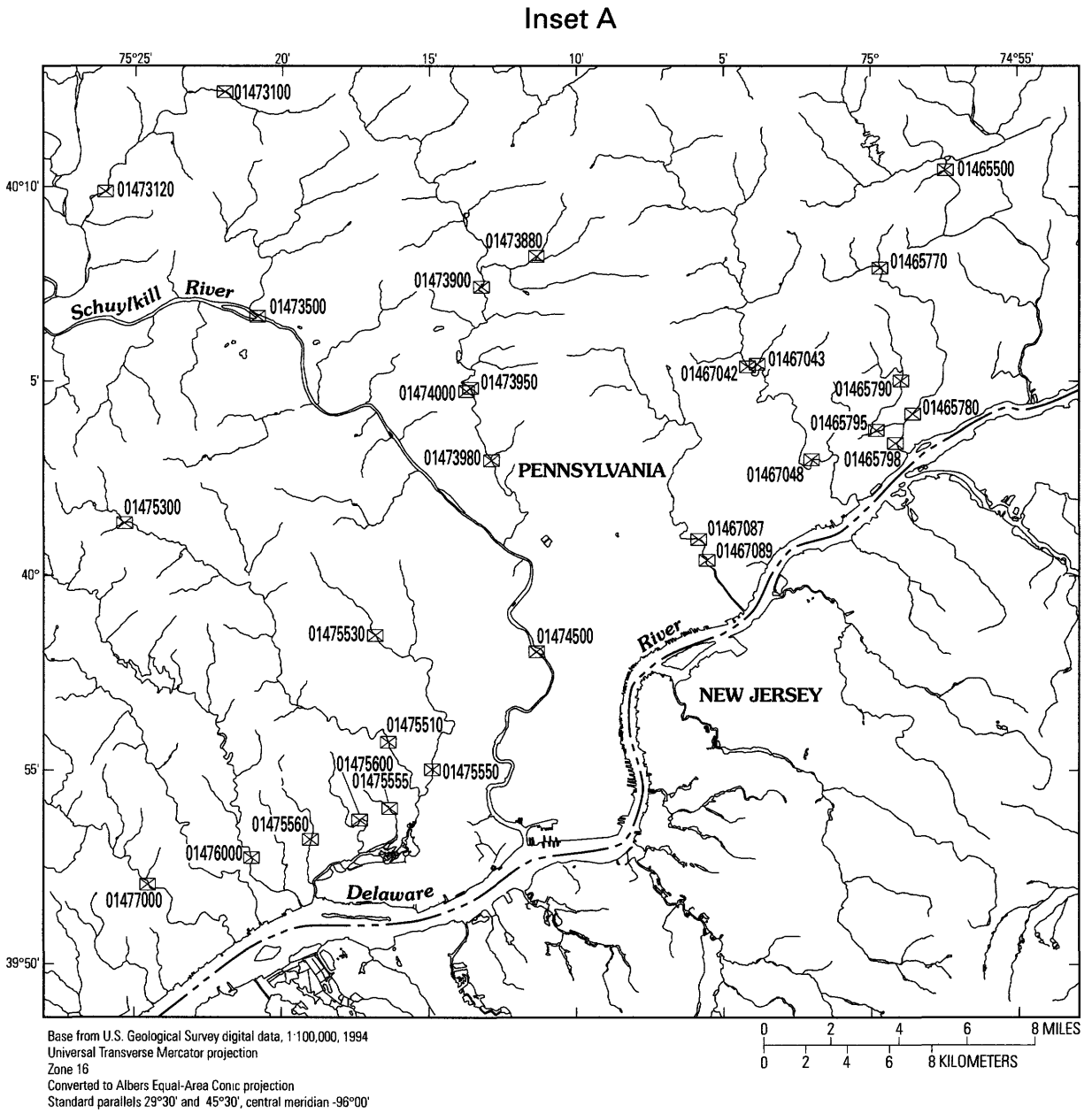


Figure 60. Location of streamflow-gaging stations with significant floods during 1970–89 for Pennsylvania.



EXPLANATION

01473880 ⊠ **Streamflow-gaging station and number**

Figure 60. Location of streamflow-gaging stations with significant floods during 1970–89 for Pennsylvania—Continued.

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 60)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01427510	Delaware River at Callicoon, NY	1,820	1976–93	1986	13.42	68,000	3/15/86	13.42	68,000	Y	--
01427650	North Branch Calkins Creek near Damascus, PA	7.02	1962–81	1978	8.83	1,260	3/28/78	8.83	1,260	N	10–25
01428750	West Branch Lackawaxen River near Aldenville, PA,	40.6	1975–93	1986	7.40	3,440	3/15/86	7.40	3,440	N	<10
01429000	West Branch Lackawaxen River at Prompton, PA	59.7	1942, 1945–93	1955 1942	9.24 16.70	5,860 --	6/29/73 3/14/77	5.90 7.00	2,660 3,610	Y Y	<10 <10
01429300	Dyberry Creek above reservoir near Honesdale, PA	45.8	1975–93	1985	11.75	5,140	9/27/85	11.75	5,140	N	50
01429500	Dyberry Creek near Honesdale, PA	64.6	1944–93	1952	14.60	15,500	9/27/85 3/16/86	6.89 6.71	2,220 2,110	Y Y	<10 <10
01430000	Lackawaxen River near Honesdale, PA	164	1942, 1949–69, 1974–82, 1984–93	1942	24.50	34,000	3/15/86	8.13	6,750	Y	<10
01431500	Lackawaxen River at Hawley, PA	290	1909–17, 1936, 1938–93	1955	20.60	51,900	6/29/73 5/29/84	13.00 12.01	16,400 13,500	Y Y	20 <10
01431680	Mill Brook near Paupack, PA	4.84	1960–80	1973	6.64	553	8/16/73	6.64	553	N	50–100
01438300	Vandermark Creek at Milford, PA	5.36	1962–82, 1984–93	1981 1975	2.99 3.65	512 372	9/25/75 5/12/81	3.65 2.99	372 512	N N	10–25 50–100
01440300	Mill Creek at Mountainhome, PA	5.84	1961–94	1969	12.65	1,650	4/05/84	11.38	1,330	N	25–50
01440400	Brodhead Creek near Analomink, PA	65.9	1958–94	1969	11.82	12,900	1/09/78	9.91	8,270	N	20
01440900	McMichaels Creek near Stroudsburg, PA	63.9	1975–77, 1979–86	1984	8.68	3,760	4/05/84	8.68	3,760	N	<10
01446600	Martins Creek near East Bangor, PA	10.4	1961–86	1970	3.89	1,620	4/02/70	3.89	1,620	N	25
01446700	Delaware River at Easton, PA	4,636	1968–77	1974 1973	-- 25.25	100,000 96,800	12/22/73	--	100,000	Y	--
01447500	Lehigh River at Stoddartsville, PA	91.7	1942, 1944–94	1955	16.37	31,900	9/27/85	10.60	8,380	N	15
01447680	Tunkhannock Creek near Long Pond, PA	18.0	1966–94	1984 1966	4.76 6.48	679 114	4/06/84	4.76	679	Y	25–50
01447720	Tobyhanna Creek near Blakeslee, PA	118	1962–94	1985	12.33	9,190	9/27/85	12.33	9,190	Y	10–25
01447800	Lehigh River below Frances E. Walter Reservoir near White Haven, PA	290	1958–94	1958	9.85	13,800	3/31/78	8.70	9,140	Y	<10
01448500	Dilldown Creek near Long Pond, PA	2.39	1949–94	1969	4.00	630	4/04/87	3.63	428	N	25
01449000	Lehigh River at Lehighton, PA	591	1983–94	1985	18.22	25,500	9/27/85	18.22	25,500	Y	10–25
01449800	Pohopoco Creek below Beltzville Dam near Parryville, PA	96.4	1968–94	1973	5.59	1,740	5/08/73	5.59	1,740	Y	10–25

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania—Continued

Station number (fig. 60)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01450500	Aquashicola Creek at Palmerton, PA	76.7	1940–94	1945	13.63	11,700	9/09/87	12.57	9,540	Y	55
01451000	Lehigh River at Walnutport, PA	889	1942, 1947–94	1955 1942	17.68 20.60	77,800 --	6/23/72 4/16/83	11.65 11.28	39,000 37,400	Y Y	<10 <10
01451500	Little Lehigh Creek near Allentown, PA	80.8	1935, 1946–94	1972	11.80	11,800	6/22/72 1/25/79	11.80 10.76	11,800 9,890	N N	55 40
01451800	Jordan Creek near Schnecksville, PA	53.0	1967–94	1972	12.32	7,100	6/22/72	12.32	7,100	N	25–50
01452000	Jordan Creek at Allentown, PA	75.8	1945–94	1972	11.61	16,200	6/23/72 9/09/87	11.61 10.91	16,200 14,300	N N	>100 75
01452300	East Branch Monocacy Creek near Bath, PA	5.35	1963–80	1979	6.56	916	1/24/79	6.56	916	N	10–25
01452500	Monocacy Creek at Bethlehem, PA	44.5	1945, 1949–94	1945	9.74	5,200	1/25/79	8.19	3,490	N	65
01453000	Lehigh River at Bethlehem, PA	1,279	1902–05, 1910–93	1942	25.90	92,000	6/23/72 1/25/79	20.02 17.12	57,900 51,700	Y Y	15 10
01454600	Polk Valley Run at Hellertown, PA	2.14	1963, 1965–80	1975	4.73	445	7/14/75	4.73	445	N	10–25
01454700	Lehigh River at Glendon, PA	1,359	1967–94	1972	24.86	60,600	6/23/72	24.86	60,600	Y	25–50
01458900	Tinicum Creek near Ottsville, PA	14.7	1962–80	1970	7.61	5,470	4/02/70	7.61	5,470	N	10–25
01459500	Tohickon Creek near Pipersville, PA	97.4	1936–94	1984	11.32	16,200	7/07/84	11.32	16,200	Y	40
01465500	Neshaminy Creek near Langhorne, PA	210	1933, 1935–47, 1949–94	1955	22.84	49,300	6/30/73	18.99	33,000	N	55
01465770	Poquessing Creek at Trevose Road, Philadelphia, PA	5.08	1965–81	1971	9.10	2,100	8/28/71	9.10	2,100	N	50–100
01465780	Poquessing Creek above Byberry Creek at Philadelphia, PA	13.2	1965–80	1971	10.98	4,120	8/28/71	10.98	4,120	N	50
01465790	Byberry Creek at Chalfont Road, Philadelphia, PA	5.34	1966–78	1971	12.47	1,930	8/28/71	12.47	1,930	N	25–50
01465795	Byberry Creek at Grant Avenue, Philadelphia, PA	7.13	1964–78	1971	9.98	2,540	8/28/71	9.98	2,540	N	10–25
01465798	Poquessing Creek at Grant Avenue at Philadelphia, PA	21.4	1966–94	1982	15.35	9,400	7/28/82	15.35	9,400	N	50–100
01467042	Pennypack Creek at Pine Road, Philadelphia, PA	37.9	1965–81	1971	11.08	5,160	8/28/71	11.08	5,160	N	10–25
01467043	Stream 'A' at Philadelphia, PA	1.20	1965–80	1975	18.03	663	7/13/75	18.03	663	N	10–25
01467048	Pennypack Creek at Lower Rhawn Street Building, Philadelphia, PA	49.8	1966–94	1982	13.15	9,770	7/28/82	13.15	9,770	N	50–100
01467087	Frankford Creek at Castor Avenue, Philadelphia, PA	30.4	1982–94	1985	11.82	10,300	7/31/85	11.82	10,300	N	10
01467089	Frankford Creek at Torresdale Aveune, Philadelphia, PA	33.8	1966–81	1971	14.64	10,200	8/28/71	14.64	10,200	N	10–25
01467948	West Branch Schuylkill River near Cressona, PA	52.5	1975–84, 1987–93	1975	6.74	2,940	9/26/75	6.74	2,940	N	10–25

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania—Continued

Station number (fig. 60)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01468500	Schuylkill River at Landingville, PA	133	1942, 1948–52, 1955, 1964–65, 1972, 1974–93	1972	17.36	14,000	6/22/72	17.36	14,000	N	100
01469500	Little Schuylkill River at Tamaqua, PA	42.9	1920–94	1955	11.10	7,790	6/22/72	7.64	3,800	Y	20
01470190	Little Schuylkill River at Port Clinton, PA	132	1978–93	1979	9.86	16,400	1/24/79	9.86	16,400	N	50
01470500	Schuylkill River at Berne, PA	355	1942, 1948–93	1972	19.00	42,800	6/22/72	19.00	42,800	Y	>100
01470720	Maiden Creek tributary at Lenhartsville, PA	7.46	1962–63, 1965–80	1972 1965	6.46 6.70	1,530 1,030	6/22/72	6.46	1,530	N	10–25
01470748	Sacony Creek near Virginville, PA	54.1	1975–85	1979	11.02	4,200	1/24/79	11.02	4,200	N	25
01470756	Maiden Creek at Virginville, PA	159	1973–93	1979	12.67	17,000	1/24/79	12.67	17,000	N	50–100
01470766	Schuylkill River at Temple, PA	641	1978–84, 1986–93	1983	20.36	29,700	4/16/83	20.36	29,700	N	10–25
01470779	Tulpehocken Creek near Bernville, PA	66.5	1975–93	1979	10.16	5,500	1/24/79	10.16	5,500	N	10–25
01470810	Northkill Creek at Bernville, PA	18.8	1975–91	1976	10.39	2,480	1/26/76	10.39	2,480	N	10–25
01470818	Little Northkill Creek near Bernville, PA	21.2	1975–91	1976	9.88	2,130	1/26/76	9.88	2,130	N	10–25
01470853	Furnace Creek at Robesonia, PA	4.18	1983–93	1989 1984	4.16 4.70	478 227	5/06/89	4.16	478	N	<10
01470960	Tulpehocken Creek at Blue Marsh damsite near Reading, PA	175	1965–93	1972	18.70	16,100	6/22/72 4/18/83	18.70 7.56	16,100 4,000	N Y	25 <10
01471000	Tulpehocken Creek near Reading, PA	211	1951–93	1972	15.65	17,000	6/23/72 1/24/79	15.65 7.14	17,000 5,570	N Y	100 <10
01471510	Schuylkill River at Reading, PA	880	1757, 1787, 1822, 1839, 1841, 1850, 1862, 1870, 1874, 1878–79, 1881, 1885, 1890–91, 1893–94, 1902–30, 1939, 1978–93	1850 1983	-- 17.50	80,000 33,100	4/16/83	17.50	33,100	Y	<10
01471660	Schuylkill River at Birdsboro, PA	976	1984–93	1987	156.79	26,000	9/09/87	156.79	26,000	N	<10
01471800	Pine Creek near Manatawny, PA	15.6	1961–80	1972	9.25	812	6/22/72	9.25	812	N	10–25
01471980	Manatawny Creek near Pottstown, PA	85.5	1975–94	1987	11.46	7,550	9/09/87	11.46	7,550	N	25–50
01472000	Schuylkill River at Pottstown, PA	1,147	1902, 1928–93	1972	29.97	95,900	6/23/72 1/25/79	29.97 18.21	95,900 43,000	N Y	>100 15
01472157	French Creek near Phoenixville, PA	59.1	1969–94	1972	13.66	11,200	6/22/72	13.66	11,200	N	25–50

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania—Continued

Station number (fig. 60)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01472162	Schuylkill River at Phoenixville, PA	1,280	1971–80, 1982–93	1972	100.58	79,100	6/23/72	100.58	79,100	N	50–100
01472174	Pickering Creek near Chester Springs, PA	5.98	1967–83	1972	5.21	2,410	6/22/72	5.21	2,410	N	10–25
01472198	Perkiomen Creek at East Greenville, PA	38.0	1982–94	1984	7.07	24,900	6/25/84	7.07	24,900	N	10–25
01472199	West Branch Perkiomen Creek at Hillegass, PA	23.0	1982–94	1984 1989	5.52 9.55	2,690 1,190	12/28/83	5.52	2,690	N	10–25
01472620	East Branch Perkiomen Creek near Dublin, PA	4.05	1984–94	1984	8.41	2,270	7/07/84	8.41	2,270	N	10–25
01473000	Perkiomen Creek at Graterford, PA	279	1915–94	1935	18.26	39,900	6/22/72 7/07/84	17.08 15.06	35,800 27,400	Y Y	20 <10
01473100	Zacharias Creek near Skippack, PA	7.27	1960–80	1971	10.80	10,000	9/13/71	10.80	10,000	N	50–100
01473120	Skippack Creek near Collegeville, PA	53.7	1966–94	1971	22.50	40,400	9/13/71	22.50	40,400	N	>100
01473500	Schuylkill River at Norristown, PA	1,760	1928–33, 1984–93	1984	62.94	42,700	12/14/83	62.94	42,700	N	<10
01473880	Pine Run tributary at Fort Washington, PA	2.01	1962–79	1973 1975	-- 9.45	630 460	6/29/73	--	630	N	25–50
01473900	Wissahickon Creek at Fort Washington, PA	40.8	1962–79	1973	13.87	4,630	6/29/73	13.87	4,630	N	10–25
01473950	Wissahickon Creek at Bells Mill Road, Philadelphia, PA	53.6	1966–81	1973	11.31	6,240	6/29/73	11.31	6,240	N	10–25
01473980	Wissahickon Creek at Livezey Lane, Philadelphia, PA	59.2	1966–79	1971	6.27	5,390	9/13/71	6.27	5,390	N	10–25
01474000	Wissahickon Creek at mouth, Philadelphia, PA	64.0	1966–93	1973	7.92	6,870	6/29/73	7.92	6,870	N	50–10(
01474500	Schuylkill River at Philadelphia, PA	1,893	1870, 1902, 1932–93	1870	17.00	135,000	6/23/72	14.65	103,000	Y	45
01475300	Darby Creek at Waterloo Mills near Devon, PA	5.15	1972–94	1979	6.71	1,800	9/06/79	6.71	1,800	N	25–50
01475510	Darby Creek near Darby, PA	37.4	1964–90	1974	10.23	5,920	8/23/74	10.23	5,920	N	10–25
01475530	Cobbs Creek at U.S. Highway 1 at Philadelphia, PA	4.78	1965–81	1974	10.48	3,480	8/23/74	10.48	3,480	N	25–50
01475550	Cobbs Creek at Darby, PA	22.0	1964–90	1973 1974	10.98 12.85	4,490 4,050	6/29/73	10.98	4,490	N	10–25
01475555	Hermesprota Creek at Darby, PA	1.01	1975–78, 1980–86	1985 1981	4.34 7.26	345 --	9/27/85	4.34	345	N	--
01475560	Stony Creek at Prospect Park, PA	2.29	1975–86	1981 1977	11.93 12.87	540 --	8/08/81	11.93	540	N	--
01475600	Muckinipattis Creek at Glenolden, PA	3.50	1975–86	1981	7.96	1,380	8/08/81	7.96	1,380	N	--
01476000	Crum Creek at Woodlyn, PA	33.3	1932–37, 1975–86	1981	8.02	2,290	8/08/81	8.02	2,290	N	10–25
01476435	Ridley Creek at Dutton Mill near West Chester, PA	9.71	1975–86	1978	6.37	855	1/26/78	6.37	855	N	<10
01477000	Chester Creek near Chester, PA	61.1	1932–94	1971	24.59	21,000	9/13/71	24.59	21,000	N	>100

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania—Continued

Station number (fig. 60)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01478200	Middle Branch White Clay Creek near Landenberg, PA	12.7	1960–85, 1987–91, 1993	1972 1993	12.29 12.80	3,860 --	6/22/72 9/06/79	12.29 10.59	3,860 2,630	N N	25–50 10–25
01480300	West Branch Brandywine Creek near Honey Brook, PA	18.7	1960–94	1972	11.41	8,140	6/22/72 7/01/84	11.41 11.40	8,140 8,140	N N	25–50 25–50
01480500	West Branch Brandywine Creek at Coatesville, PA	45.8	1942, 1944–51, 1970–94	1942	12.30	8,600	6/22/72 6/29/73	9.92 10.08	7,770 8,100	Y Y	25–50 25–50
01480610	Sucker Run near Coatesville, PA	2.57	1964–85, 1987–93	1979	8.49	1,500	7/21/79	8.49	1,500	N	25–50
01480617	West Branch Brandywine Creek at Modena, PA	55.0	1970–93	1973	12.47	9,600	6/29/73	12.47	9,600	Y	25–50
01480675	Marsh Creek near Glenmoore, PA	8.57	1967–94	1972	4.68	946	6/22/72	4.68	946	N	25–50
01480685	Marsh Creek near Downingtown, PA	20.3	1973–93	1982	3.89	692	6/18/82	3.89	692	Y	--
01480700	East Branch Brandywine Creek near Downingtown, PA	60.6	1966–94	1972	12.06	8,070	1/25/79 6/22/72	8.95 12.06	4,750 8,070	Y Y	<10 10–25
01480870	East Branch Brandywine Creek below Downingtown, PA	89.9	1972–94	1972	12.40	8,160	7/07/84 6/22/72	12.01 12.40	5,980 8,160	Y Y	10–25 25–50
01481000	Brandywine Creek at Chadds Ford, PA	287	1912–53, 1955, 1963–93	1972	16.56	23,800	6/22/72 1/25/79	16.56 14.35	23,800 16,400	N Y	100 25
01515000	Susquehanna River near Waverly, NY	4,773	1936–93	1936	21.40	128,000	6/23/72	21.24	121,000	N	--
01516500	Corey Creek near Mainesburg, PA	12.2	1955–94	1972	10.44	5,580	6/23/72	10.44	5,580	N	75–100
01516800	Manns Creek near Mansfield, PA	3.01	1960–66, 1968–77	1972 1975	7.10 7.41	715 342	6/22/72	7.10	715	N	25–50
01517000	Elk Run near Mainesburg, PA	10.2	1955–78	1972 1956	6.00 6.77	3,940 1,240	6/22/72	6.00	3,940	N	>100
01518000	Tioga River at Tioga, PA	282	1889, 1939–94	1972	19.70	59,000	6/22/72 11/04/77	19.70 8.84	59,000 14,300	N Y	90 <10
01518500	Crooked Creek at Tioga, PA	122	1954–74	1972	18.29	21,000	6/23/72	18.29	21,000	N	>100
01520000	Cowanesque River near Lawrenceville, PA	298	1952–94	1975	18.13	43,700	9/26/75 3/06/79	18.13 11.78	43,700 5,850	N Y	55 <10
01531250	North Branch Sugar Creek tributary near Columbia Cross Roads, PA	8.83	1963–72, 1975–81	1972 1977	6.24 6.68	2,410 935	6/22/72	6.24	2,410	N	25
01531500	Susquehanna River at Towanda, PA	7,797	1865, 1893–1906, 1908–94	1972	33.43	320,000	6/24/72 9/27/75	33.43 27.47	320,000 221,000	N N	>100 40
01532000	Towanda Creek near Monroeton, PA	215	1914–94	1972	16.90	74,000	6/22/72 9/26/75	16.90 15.70	74,000 50,000	N N	>100 60
01532200	South Branch Towanda Creek at New Albany, PA	13.3	1963–64, 1966–85, 1987–94	1972	9.86	2,850	6/22/72 9/26/75	9.86 8.44	2,850 1,960	N N	50–100 25–50
01532850	Middle Branch Wyalusing Creek tributary near Birchardville, PA	5.67	1960–79	1978	6.93	1,200	1/09/78	6.93	1,200	N	10–25

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania—Continued

Station number (fig. 60)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01533250	Tuscarora Creek near Silvara, PA	11.8	1963–93	1972	13.07	1,610	6/22/72	13.07	1,610	N	25–50
01533400	Susquehanna River at Meshoppen, PA	8,720	1977–93	1979	35.06	207,000	3/06/79	35.06	207,000	N	10–25
01533950	South Branch Tunkhannock Creek near Montdale, PA	12.6	1961–78	1977	6.40	2,050	10/09/76	6.40	2,050	N	25–50
01534000	Tunkhannock Creek near Tunkhannock, PA	383	1914–93	1947 1986	13.96 15.77	32,200 30,300	3/15/86	15.77	30,300	N	30
01534500	Lackawanna River at Archbald, PA	108	1940–93	1942	10.58	9,510	9/27/85 3/15/86	7.84 8.22	5,030 5,390	Y Y	<10 <10
01536000	Lackawanna River at Old Forge, PA	332	1939–93	1955	20.05	31,000	9/27/85 3/15/86	16.49 11.80	24,000 12,800	Y Y	75 <10
01536500	Susquehanna River at Wilkes-Barre, PA	9,960	1787, 1807, 1809, 1833, 1865, 1891–1993	1972	40.91	345,000	6/24/72 9/27/75	40.91 35.06	345,000 228,000	N N	>100 20
01537000	Toby Creek at Luzerne, PA	32.4	1942–93	1972	6.07	3,390	6/22/72 4/16/83	6.07 5.54	3,390 2,810	Y Y	-- --
01537500	Solomon Creek at Wilkes-Barre, PA	15.7	1938, 1940–90	1955 1938	9.83 11.40	2,450 --	3/15/86	6.98	1,440	N	15
01538000	Wapwallopen Creek near Wapwallopen, PA	43.8	1920–93	1972	11.04	5,410	6/22/72 2/11/81	11.04 10.88	5,410 2,920	N N	>100 20
01538700	Susquehanna River at Bloomsburg, PA	10,560	1850, 1865, 1902, 1913, 1936, 1940, 1943, 1946, 1948, 1960, 1964, 1972, 1975, 1979, 1983–84	1972	31.20	350,000	6/25/72	31.20	350,000	N	50–100
01538800	Huntington Creek near Pikes Creek, PA	4.94	1960–80	1977	11.84	1,280	10/09/76	11.84	1,280	N	10–25
01539000	Fishing Creek near Bloomsburg, PA	274	1936, 1939–93	1972	15.18	30,900	6/22/72 9/26/75 10/09/76	15.18 14.89 12.55	30,900 29,400 19,700	N N N	40 35 15
01540200	Trexler Run near Ringtown, PA	1.77	1959–79	1972	5.15	487	6/22/72	5.15	487	N	50–75
01540500	Susquehanna River at Danville, PA	11,220	1865, 1900–93	1972	32.16	363,000	6/25/72 9/28/75 4/07/84	32.16 27.52 24.14	363,000 257,000 194,000	N N Y	>100 35 20
01541000	West Branch Susquehanna River at Bower, PA	315	1889, 1914–94	1936	19.74	31,500	6/23/72 7/20/77	18.64 16.23	27,500 19,200	N N	>100 45
01541200	West Branch Susquehanna River at Curwensville, PA	367	1956–94	1964	14.19	15,700	6/25/72	11.40	8,590	Y	<10
01541303	West Branch Susquehanna River at Hyde, PA	474	1964, 1979–94	1964	18.10	19,400	2/13/84	10.82	7,360	Y	10–25
01541308	Bradley Run near Ashville, PA	6.77	1968–79	1977	3.93	728	8/07/77	3.93	728	N	10–25
01541500	Clearfield Creek at Dimeling, PA	371	1914–94	1936	18.49	30,600	6/23/72	17.56	22,400	Y	>100
01542000	Moshannon Creek at Osceola Mills, PA	68.8	1936, 1941–80, 1982–93	1972 1936	14.25 17.70	5,120 --	6/23/72	14.25	5,120	N	>100

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania—Continued

Station number (fig. 60)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01542500	West Branch Susquehanna River at Karthaus, PA	1,462	1936, 1940–94	1936	24.50	135,000	6/23/72	18.57	84,300	Y	>100
01542720	Wilson Run at Penfield, PA	8.34	1962–85, 1987–94	1964 1972	4.39 5.20	592 403	2/20/81	3.67	411	N	10–25
01542810	Waldy Run near Emporium, PA	5.24	1964–94	1967	6.32	828	6/22/72	5.86	469	N	10–25
01543000	Driftwood Branch Sinnemahoning Creek, Sterling Run, PA	272	1914–94	1942	14.70	47,800	6/22/72	12.20	32,000	N	50
01543500	Sinnemahoning Creek at Sinnemahoning, PA	685	1936, 1939–94	1936	21.94	61,200	6/23/72	21.78	60,800	N	60
01543700	First Fork Sinnemahoning Creek at Wharton, PA	182	1984–94	1984	12.16	9,810	2/14/84	12.16	9,810	N	10
01544450	Germania Branch at Germania, PA	2.40	1964–66, 1969, 1971–72, 1975–79	1972	4.55	210	6/23/72	4.55	210	N	25–50
01544500	Kettle Creek at Cross Fork, PA	136	1936, 1941–94	1936	14.00	20,000	6/23/72 9/26/75	11.76 11.39	14,300 13,400	N N	65 50
01545000	Kettle Creek near Westport, PA	233	1955–94	1956	10.48	7,970	4/13/70	10.17	7,540	Y	10–25
01545500	West Branch Susquehanna River at Renovo, PA	2,975	1889, 1894, 1896–1903, 1906–88, 1990–94	1936	29.39	236,000	6/23/72	26.56	181,000	Y	>100
01545600	Young Womans Creek near Renovo, PA	46.2	1965–94	1972	7.98	5,370	6/23/72	7.98	5,370	N	50–75
01545800	West Branch Susquehanna River at Lock Haven, PA	3,337	1975–94	1975	22.92	91,500	9/26/75	22.92	91,500	N	25
01546500	Spring Creek near Axemann, PA	87.2	1936, 1941–94	1936	8.60	8,400	6/23/72 1/24/79	7.47 5.46	5,410 1,990	N N	90 10
01547100	Spring Creek at Milesburg, PA	142	1967–94	1972	13.20	8,170	6/23/72	13.20	8,170	N	90
01547200	Bald Eagle Creek below Spring Creek at Milesburg, PA	265	1957–94	1972	11.67	21,300	6/23/72 2/14/84	11.67 9.82	21,300 15,000	N N	90 25
01547500	Bald Eagle Creek at Blanchard, PA	339	1955–94	1964	11.59	10,100	6/28/72	9.37	4,890	Y	<10
01547700	Marsh Creek at Blanchard, PA	44.1	1956–94	1984	7.85	6,900	6/23/72 6/18/84	6.98 7.85	4,870 6,900	N N	15 70
01547800	South Fork Beech Creek near Snow Shoe, PA	12.2	1959–81	1972 1964	5.36 6.58	1,170 967	6/23/72	5.36	1,170	N	50
01547950	Beech Creek at Monument, PA	152	1968–94	1972	15.22	9,740	6/23/72	15.22	9,740	N	50–75
01548000	Bald Eagle Creek at Beech Creek Station, PA	559	1911–57, 1959–84	1936	14.42	25,600	6/23/72	12.29	19,400	Y	20
01548020	Bull Run near Loganton, PA	1.99	1963–81	1972	8.94	348	6/22/72	8.94	348	N	50–100
01548500	Pine Creek at Cedar Run, PA	604	1919–94	1972	16.00	66,000	6/23/72 9/26/75	16.00 13.41	66,000 44,300	N N	>100 75
01549500	Blockhouse Creek near English Center, PA	37.7	1936, 1941–94	1972	9.34	6,260	6/23/72	9.34	6,260	N	45
01549700	Pine Creek below Little Pine Creek near Waterville, PA	944	1958–94	1972	22.76	104,000	6/23/72 9/26/75	22.76 15.00	104,000 53,300	Y Y	>100 20

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania—Continued

Station number (fig. 60)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01549780	Larrys Creek at Cogan House, PA	6.80	1960–78	1972	5.29	1,130	6/22/72	5.29	1,130	N	50–100
01550000	Lycoming Creek near Trout Run, PA	173	1914–94	1972	20.19	25,900	6/22/72	20.19	25,900	N	70
							9/26/75	17.04	18,400	N	20
							2/14/84	15.85	17,900	N	15
01551500	West Branch Susquehanna River at Williamsport, PA	5,682	1889, 1895–1994	1972	34.75	279,000	6/23/72	34.75	279,000	Y	>100
01552000	Loyalsock Creek at Loyalsockville, PA	443	1926–94	1972	14.74	88,700	6/23/72	14.74	88,700	N	90
							9/26/75	13.92	76,000	N	45
							8/29/88	12.41	52,000	N	15
01552100	Mill Creek near Warrensville, PA	11.9	1961–78	1972	6.14	2,240	6/22/72	6.14	2,240	N	50–100
01552500	Muncy Creek near Sonestown, PA	23.8	1936, 1941–94	1972	8.94	8,260	6/22/72	8.94	8,260	N	70
				1936	9.30	--	9/26/75	8.12	6,140	N	55
01553050	White Deer Hole Creek near Elimsport, PA	18.2	1961–64, 1966–85, 1987–94	1972	11.83	4,200	6/22/72	11.83	4,200	N	>100
							5/14/78	5.55	1,580	N	<10
01553130	Sand Spring Run near White Deer, PA	4.93	1968–81	1972	5.68	1,000	6/22/72	5.68	1,000	N	25
01553500	West Branch Susquehanna River at Lewisburg, PA	6,847	1865, 1889, 1894, 1902, 1909, 1936, 1940–93	1972	34.23	300,000	6/24/72	34.23	300,000	Y	>100
							9/27/75	27.62	242,000	Y	40
01553600	East Branch Chillisquaque Creek near Washingtonville, PA	9.48	1960–78	1972	11.11	4,390	6/22/72	11.11	4,390	N	25–50
01553700	Chillisquaque Creek at Washingtonville, PA	51.3	1980–94	1983	10.82	3,510	6/28/83	10.82	3,510	N	10
01554000	Susquehanna River at Sunbury, PA	18,300	1865, 1889, 1894, 1919–93	1972	35.80	620,000	6/24/72	35.80	620,000	Y	>100
01554500	Shamokin Creek near Shamokin, PA	54.2	1940–93	1972	8.72	4,070	6/22/72	8.72	4,070	N	>100
01555000	Penns Creek at Penns Creek, PA	301	1930–93	1972	14.85	34,600	6/23/72	14.85	34,600	N	>100
01555500	East Mahantango Creek near Dalmatia, PA	162	1930–93	1972	26.62	69,900	6/22/72	26.62	69,900	N	>100
							9/26/75	16.25	20,800	N	45
							10/09/76	13.34	15,700	N	20
01556000	Frankstown Branch Juniata River at Williamsburg, PA	291	1889, 1917–94	1889	19.10	35,500	6/23/72	18.39	16,400	N	40
01556500	Little Juniata River at Tipton, PA	93.7	1936, 1946–81	1972	9.24	6,140	6/23/72	9.24	6,140	N	10–25
				1936	12.00	--					
01557100	Schell Run at Tyrone, PA	1.68	1958–81	1978	2.97	252	5/15/78	2.97	252	N	10–25
				1967	3.13	186					
01557500	Bald Eagle Creek at Tyrone, PA	44.1	1936, 1940–94	1951	4.80	5,140	6/22/72	6.66	5,050	N	80
				1936	15.00	--					
01558000	Little Juniata River at Spruce Creek, PA	220	1936, 1939–94	1936	19.10	39,800	6/23/72	16.98	28,600	N	>100
01559000	Juniata River at Huntingdon, PA	816	1896–98, 1900–22, 1924–29, 1931–38, 1942–92, 1994	1936	21.87	81,000	6/23/72	20.03	57,000	N	95

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania—Continued

Station number (fig. 60)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01559700	Buffalo Run tributary near Manns Choice, PA	5.28	1962–78	1977	5.12	1,120	7/20/77	5.12	1,120	N	25
01560000	Dunning Creek at Belden, PA	172	1936, 1940–94	1977 1936	14.15 17.81	19,400 16,900	7/20/77 6/21/83	14.15 13.03	19,400 13,500	N N	>100 70
01562000	Raystown Branch Juniata River at Saxton, PA	756	1889, 1912–92, 1994	1936	24.54	80,500	6/22/72 2/26/79	17.74 18.35	40,200 42,900	N N	50 75
01563200	Rays Branch Juniata River below Rays Dam near Huntingdon, PA	960	1970–92, 1994	1970	18.54	24,100	4/03/70	18.54	24,100	Y	50
01563500	Juniata River at Mapleton Depot, PA	2,030	1936, 1938–92, 1994	1936	38.20	165,000	6/23/72	33.07	125,000	Y	>100
01563800	Elders Branch near Hustontown, PA	3.46	1960–78	1972	8.60	540	6/22/72	8.60	540	N	50
01564500	Aughwick Creek near Three Springs, PA	205	1889, 1939–92, 1994	1972 1889	19.20 19.30	23,700 --	6/22/72	19.20	23,700	N	60
01565000	Kishacoquillas Creek at Reedsville, PA	164	1936, 1940–70, 1972, 1984–85, 1989–93	1972	16.17	16,400	6/23/72	16.17	16,400	N	>100
01565700	Little Lost Creek near Oakland Mills, PA	6.52	1960–81	1977	8.83	1,700	10/09/76	8.83	1,700	N	75–100
01565920	Lick Run near East Waterford, PA	8.38	1962–81	1972	9.85	1,870	7/16/72	9.85	1,870	N	25–50
01567000	Juniata River at Newport, PA	3,354	1889, 1899–1993	1889	35.90	209,000	6/23/72	33.97	187,000	Y	>100
01567500	Bixler Run near Loysville, PA	15.0	1954–93	1989	12.90	16,000	6/20/89	12.90	16,000	N	>100
01568000	Sherman Creek at Shermans Dale, PA	200	1927, 1930–93	1927	20.34	44,000	6/23/72	18.09	27,500	N	90
01568500	Clark Creek near Carsonville, PA	22.5	1938–93	1972	10.98	4,800	6/22/72 9/26/75 10/09/76	10.98 8.09 6.15	4,800 2,500 1,340	Y Y Y	>100 35 <10
01569340	Newburg Run at Newburg, PA	5.29	1964–93	1969	8.60	5,000	6/22/72	7.40	1,180	N	10–25
01569800	Letort Spring Run near Carlisle, PA	21.6	1976–93	1979	6.53	1,400	1/24/79	6.53	1,400	N	25–50
01570000	Conodoguinet Creek near Hogestown, PA	470	1912–17, 1930–58, 1968–93	1972	17.01	33,700	6/23/72 9/26/75 2/15/84	17.01 12.56 12.50	33,700 16,200 16,800	N N N	>100 20 25
01571000	Paxton Creek near Penbrook, PA	11.2	1940–50, 1974–88, 1990–93	1975	13.25	4,600	9/26/75 9/12/87	13.25 9.94	4,600 3,630	N N	25–50 10–25
01571500	Yellow Breeches Creek near Camp Hill, PA	216	1910–19, 1953, 1955–93	1975	18.77	19,300	6/22/72 9/26/75 10/09/76	18.33 18.77 11.66	15,900 19,300 6,360	N N N	>100 >100 15
01572000	Lower Little Swatara Creek at Pine Grove, PA	34.3	1920–32, 1972, 1975, 1982–84	1972	12.59	5,300	6/22/72	12.59	5,300	N	50–75
01572900	Reeds Creek near Ono, PA	8.63	1962–81	1972	14.74	4,000	6/23/72	14.74	4,000	N	25–50
01573000	Swatara Creek at Harper Tavern, PA	337	1889, 1919–93	1889	25.60	88,000	6/23/72 9/27/75	23.72 17.24	66,700 24,700	N N	>100 30

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania—Continued

Station number (fig. 60)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01573086	Beck Creek near Cleona, PA	7.87	1964–81	1972	11.53	5,150	6/22/72	11.53	5,150	N	25–50
01573160	Quittapahilla Creek near Bellegrove, PA	74.2	1975–93	1979	13.40	4,800	11/24/79	13.40	4,800	Y	50–75
01573560	Swatara Creek near Hershey, PA	483	1975–93	1975	15.36	29,400	9/27/75	15.36	29,400	N	50
01574000	West Conewago Creek near Manchester, PA	510	1929–93	1975	32.11	96,200	9/26/75	32.11	96,200	Y	>100
01574500	Codorus Creek at Spring Grove, PA	75.5	1930–64, 1966–93	1972	15.57	19,400	6/22/72	15.57	19,400	Y	>100
01574800	East Branch Codorus Creek tributary near Winterstown, PA	5.17	1960–75	1975	12.95	3,930	5/22/75	12.95	3,930	N	50–100
01575000	South Branch Codorus Creek near York, PA	117	1928–93	1972	22.62	26,700	6/22/72 9/26/75	22.62 18.75	26,700 19,900	Y Y	>100 >100
01575500	Codorus Creek near York, PA	222	1933, 1940–93	1933 1972	24.00 26.36	32,000 30,000	6/22/72 9/26/75 1/26/78	26.36 20.11 13.99	30,000 20,600 9,210	Y Y Y	>100 >100 20
01576000	Susquehanna River at Marietta, PA	25,990	1889, 1932–93	1972	64.54	1,080,000	6/23/72	64.54	1,080,000	Y	>100
01576085	Little Conestoga Creek near Churchtown, PA	5.82	1982–93	1987	8.83	1,520	9/08/87	8.83	1,520	N	<10
01576320	Stony Run at Reamstown, PA	3.55	1964–68, 1970–93	1982	7.80	1,240	6/16/82	7.80	1,240	N	10–25
01576500	Conestoga River at Lancaster, PA	324	1929–93	1972	27.90	50,300	6/23/72 1/25/78	27.90 18.14	50,300 25,300	N N	>100 40
01577500	Muddy Creek at Castle Fin, PA	133	1929–38, 1968–72	1972 1933	20.50 21.11	18,000 16,600	6/22/72	20.50	18,000	N	25–50
01578200	Conowingo Creek near Buck, PA	8.71	1963–89, 1991–93	1973	11.30	3,780	6/29/73	11.30	3,780	N	>100
01578400	Bowery Run near Quarryville, PA	5.98	1963–81	1978	10.20	6,740	1/26/78	10.20	6,740	N	50–100
01600700	Little Wills Creek at Bard, PA	10.2	1961–81	1977	11.00	3,000	7/20/77	11.00	3,000	N	50–100
01601000	Wills Creek below Hyndman, PA	146	1952–86	1984	13.76	17,100	6/21/84	13.76	17,100	N	10–25
01603500	Evitts Creek near Centerville, PA	30.2	1933–82	1936	7.13	5,240	6/22/72	5.06	2,750	N	20
01613050	Tonoloway Creek near Needmore, PA	10.7	1963–93	1972	9.17	1,300	6/22/72 5/23/88	9.17 8.19	1,300 969	N N	25–50 10–25
01614090	Conococheague Creek near Fayetteville, PA	5.05	1961–81	1972	3.45	392	9/26/75	3.45	392	N	10–25
01638900	White Run near Gettysburg, PA	12.4	1961–80	1977	14.48	4,900	10/09/76	14.48	4,900	N	25
03007800	Allegheny River at Port Allegany, PA	248	1975–94	1989	13.59	9,060	6/21/89	13.59	9,060	N	10–25
03008000	Newell Creek near Port Allegany, PA	7.79	1960–78	1977 1960	6.42 6.93	3,060 740	9/14/77	6.42	3,060	N	25–50
03009680	Potato Creek at Smethport, PA	160	1975–94	1989	12.74	7,420	6/21/89	12.74	7,420	N	>100
03010500	Allegheny River at Eldred, PA	550	1916–94	1972	29.05	65,400	6/23/72	29.05	65,400	N	>100

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania—Continued

Station number (fig. 60)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03010655	Oswayo Creek at Shinglehouse, PA	98.7	1975–94	1989 1986	11.45 11.82	3,580 2,270	6/21/89	11.45	3,580	N	10
03011800	Kinzua Creek near Guffey, PA	46.4	1966–94	1972	8.99	5,220	6/22/72	8.99	5,220	N	25–50
03012550	Allegheny River at Kinzua Dam, PA	2,180	1973–83, 1985–91	1973	14.23	24,400	12/04/72	14.23	24,400	Y	--
03015080	Ackley Run near Russell, PA	9.64	1962–81	1979 1974	4.37 5.71	1,050 1,000	9/15/79	4.37	1,050	N	25
03015390	Hare Creek near Corry, PA	12.3	1964–65, 1967–85	1977	6.92	2,240	9/19/77	6.92	2,240	N	100
03017500	Tionesta Creek at Lynch, PA	233	1938–79	1959	11.25	15,000	6/23/72	10.42	12,400	N	20
03020000	Tionesta Creek at Tionesta Dam, PA	479	1941–91	1964 1963	-- 8.95	13,500 9,550	4/03/80	8.93	10,400	Y	--
03020440	West Branch Caldwell Creek near Grand Valley, PA	4.37	1964–81	1977 1964	9.27 9.99	591 500	7/13/77	9.27	591	N	25–50
03021350	French Creek near Wattsburg, PA	92.0	1975–94	1979	11.95	6,350	9/14/79	11.95	6,350	N	10–25
03021410	West Branch French Creek near Lowville, PA	52.3	1975–94	1989	11.21	10,300	10/18/88	11.21	10,300	N	>100
03021520	French Creek near Union City, PA	221	1972–91	1981	8.64	4,430	2/21/81	8.64	4,430	Y	--
03022540	Woodcock Creek at Blooming Valley, PA	31.1	1975–94	1976 1977	11.48 12.27	2,980 2,750	2/17/76	11.48	2,980	N	25–50
03022554	Woodcock Creek at Woodcock Creek Dam, PA	45.6	1978–91, 1993	1986 1993	5.41 8.30	1,040 807	6/17/86	5.41	1,040	Y	--
03024000	French Creek at Utica, PA	1,028	1913, 1933–94	1913	15.70	35,600	2/21/81	11.64	18,400	Y	<10
03025200	Patchel Run near Franklin, PA	5.69	1961–78	1972	6.28	1,650	7/02/72	6.28	1,650	N	>100
03026400	Richey Run at Emlenton, PA	5.88	1963–81	1976	5.32	790	2/16/76	5.32	790	N	50–100
03026500	Sevenmile Run near Rasselas, PA	7.84	1952–94	1987	5.30	2,300	9/13/87 6/20/89	5.30 5.15	2,300 1,750	N N	55 25
03027500	East Branch Clarion River at East Branch Clarion River Dam, PA	73.2	1946, 1949–91	1946	8.30	4,000	6/24/72	6.03	1,810	Y	<10
03028000	West Branch Clarion River at Wilcox, PA	63.0	1954–94	1967 1989	10.01 10.11	5,490 5,450	6/20/89	10.11	5,450	N	25
03028500	Clarion River at Johnsonburg, PA	204	1942, 1946–94	1946 1942	9.20 16.70	11,700 --	6/22/72 6/20/89	9.94 9.86	11,600 11,400	Y Y	50 45
03029200	Clear Creek near Sigel, PA	8.67	1960–81	1981	8.99	1,980	6/09/81	8.99	1,980	N	>100
03029400	Toms Run at Cooksburg, PA	12.6	1960–78	1973 1978	4.53 4.83	658 441	12/06/72	4.53	658	N	10–25
03029500	Clarion River at Cooksburg, PA	807	1936, 1939–94	1936	19.00	56,000	6/23/72 3/06/79	18.84 17.62	53,300 46,400	Y Y	>100 >100
03030500	Clarion River near Piney, PA	951	1936, 1948–94	1972	28.24	74,500	6/23/72	28.24	74,500	Y	>100
03031950	Big Run near Sprankle Mills, PA	7.38	1964–81	1977 1966	6.22 6.23	960 822	7/19/77	6.22	960	N	10–25

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania—Continued

Station number (fig. 60)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03032500	Redbank Creek at St. Charles, PA	528	1910–96	1996 1972	-- 17.75	66,300 32,800	6/23/72	17.75	32,800	N	30
03034000	Mahoning Creek at Punxsutawney, PA	158	1936, 1939–94	1972 1977	15.94 16.22	17,300 17,000	6/23/72 7/20/77	15.94 16.22	17,300 17,000	N N	>100 >100
03034500	Little Mahoning Creek at McCormick, PA	87.4	1940–94	1972	13.20	6,200	6/23/72 7/20/77	13.20 12.77	6,200 5,770	N N	45 25
03038000	Crooked Creek at Idaho, PA	191	1936–94	1936	18.60	19,400	6/23/72	15.93	13,200	Y	45
03039200	Clear Run near Buckstown, PA (site 808)	3.68	1961–78	1977 1961	5.03 5.30	366 250	7/20/77	5.03	366	N	25–50
03040000	Stonycreek River at Ferndale, PA	451	1914–36, 1939–94	1936 1977	-- 23.21	59,000 48,000	7/20/77	23.21	48,000	Y	100
03041000	Little Conemaugh River at East Conemaugh, PA	183	1936, 1940–94	1977	18.85	40,000	6/23/72 7/20/77	10.48 18.85	16,600 40,000	Y Y	-- --
03041500	Conemaugh River at Seward, PA	715	1936, 1939–88, 1990–94	1977	27.06	115,000	7/20/77	27.06	115,000	Y	--
03042000	Blacklick Creek at Josephine, PA	192	1952–94	1977	19.89	45,800	6/23/72 7/20/77	13.99 19.89	20,800 45,800	N N	30 >100
03042170	Stoney Run at Indiana, PA	4.39	1964–77	1974 1977	8.87 11.00	505 --	9/14/74	8.87	505	N	10–25
03042200	Little Yellow Creek near Strongstown, PA	7.36	1961–78, 1987	1977	9.31	4,250	7/20/77	9.31	4,250	N	>100
03042280	Yellow Creek near Homer City, PA	57.4	1968–94	1977	12.60	15,000	7/20/77	12.60	15,000	Y	--
03042500	Two Lick Creek at Graceton, PA	171	1952–94	1977	18.65	32,000	7/20/77	18.65	32,000	Y	--
03045000	Loyalhanna Creek at Kingston, PA	172	1940–77, 1984–94	1955	15.80	29,700	6/23/72	13.76	21,500	Y	70
03047000	Loyalhanna Creek at Loyalhanna Dam, PA	292	1940–91	1941	10.30	11,700	6/19/70 6/30/72	8.29 8.05	6,780 6,080	Y Y	-- --
03049000	Buffalo Creek near Freeport, PA	137	1941–94	1955	13.60	14,000	6/23/72	11.21	9,980	N	35
03049100	Little Buffalo Creek at Cabot, PA	4.66	1959–81	1972	7.49	404	6/23/72	7.49	404	N	50
03049800	Little Pine Creek near Etna, PA	5.78	1963–90, 1992–94	1986	10.28	7,190	6/30/74 5/30/86	6.06 10.28	2,040 7,190	N N	10–25 >100
03070420	Stony Fork tributary near Gibbon Glade, PA	0.93	1978–89	1978	3.61	126	7/16/78	3.61	126	N	10–25
03072000	Dunkard Creek at Shannopin, PA	229	1941–94	1980	14.27	17,600	8/18/80	14.27	17,600	N	80
03072500	Monongahela River at Greensboro, PA	4,407	1888, 1936, 1939–94	1986 1888	28.93 36.00	220,000 --	11/05/85	--	220,000	Y	--
03072590	Georges Creek at Smithfield, PA	16.3	1964–78	1972	10.01	1,640	6/23/72	10.01	1,640	N	25–50
03072840	Tenmile Creek near Clarksville, PA	133	1969–79	1975 1979	9.32 9.46	20,200 9,150	9/24/75	9.32	20,200	N	25–50
03072880	Browns Creek near Nineveh, PA	17.5	1963–85	1974	12.10	3,500	6/30/74	12.10	3,500	N	25–50
03073000	South Fork Tenmile Creek at Jefferson, PA	180	1932–94	1986	18.63	14,200	11/27/85	18.63	14,200	N	>100
03074300	Lick Run at Hopwood, PA	3.80	1959–78	1972 1971	4.30 4.87	690 371	6/23/72	4.30	690	N	50–100

Table 39. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Pennsylvania—Continued

Station number (fig. 60)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03074500	Redstone Creek at Waltersburg, PA	73.7	1943–94	1972	14.83	8,660	6/23/72	14.83	8,660	N	>100
							11/27/85	11.32	5,460	N	30
03075070	Monongahela River at Elizabeth, PA	5,340	1978–94	1986	23.60	178,000	11/06/85	23.60	178,000	Y	--
				1994	23.63	112,000					
03080000	Laurel Hill Creek at Ursina, PA	121	1914–94	1955	10.63	10,900	9/14/71	9.83	9,930	N	50
03082200	Poplar Run near Normalville, PA	9.27	1961–78	1971	8.37	1,890	9/14/71	8.37	1,890	N	50–100
03082500	Youghiogheny River at Connellsville, PA	1,326	1860, 1888, 1891–99, 1901–94	1955	21.96	103,000	9/14/71	18.64	65,300	Y	25
03083000	Green Lick Run at Green Lick Reservoir, PA	3.07	1929–79	1943	5.10	1,400	9/14/71	--	1,180	N	55
				1944	5.42	590					
03083500	Youghiogheny River at Sutersville, PA	1,715	1921–94	1955	32.50	108,000	6/23/72	28.00	83,000	Y	<10
03083600	Gillespie Run near Sutersville, PA	4.04	1959–64, 1966–81	1975	9.40	1,520	6/05/75	9.40	1,520	N	>100
03084000	Abers Creek near Murrysville, PA	4.39	1949–93	1950	--	1,600	8/26/76	7.21	1,230	N	35
				1985	11.65	500					
03086000	Ohio River at Sewickley, PA	19,500	1934–94	1936	34.75	574,000	6/24/72	24.42	370,000	Y	20
03086100	Big Sewickley Creek near Ambridge, PA	15.6	1963–78	1975	10.00	2,540	7/08/75	10.00	2,540	N	50–100
				1963	16.67	990					
03102850	Shenango River near Transfer, PA	337	1966–94	1986	10.47	5,390	11/05/85	10.47	5,390	Y	--
03104760	Harthegig Run near Greenfield, PA	2.26	1969–80	1980	3.51	398	8/08/80	3.51	398	N	10–25
03106300	Muddy Creek near Portersville, PA	51.2	1963–93	1964	8.18	1,640	6/16/89	6.35	820	Y	<10
03106500	Slippery Rock Creek at Wurtemburg, PA	398	1912–32, 1934–94	1937	--	19,000	6/24/72	8.09	9,090	Y	<10
				1959	10.45	14,000					
03111150	Brush Run near Buffalo, PA	10.3	1961–78, 1983–85	1978	8.72	1,700	5/19/78	8.72	1,700	N	25–50
04213200	Mill Creek at Erie, PA	9.16	1964, 1969–85	1970	13.27	1,730	7/15/70	13.27	1,730	N	25

[1] Regulated during flood: N, no; Y, yes.

Puerto Rico

Hydroclimatology

Puerto Rico is a small, mountainous island located approximately 1,000 mi southeast of the southern tip of Florida in the north-central Caribbean Sea. Puerto Rico's tropical maritime climate is affected primarily by the east-to-west flowing trade winds. The island's topography also plays a large part in the local climate. The mountainous regions of the island typically receive more rainfall than the semiarid coastal areas. Mean annual rainfall ranges from 160 in. in the northeastern mountains to 30 in. in the southwestern coastal area (Paulson and others, 1991). Rainfall in Puerto Rico is cyclic for both daily and seasonal rains. The island receives the most rain in the summer and in the afternoon. Frequent flooding occurs on the island, and most floods are a result of hurricanes and tropical storms.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Puerto Rico is affected by drainage area and mean annual precipitation (Jennings and others, 1994). Narrow and shallow streams, which originate in the mountains of Puerto Rico, are particularly prone to flooding.

Significant Floods

Southern Puerto Rico was affected by intense flooding during October 6–7, 1985. The flood was a result of a nearly stationary tropical storm that caused intense rains. A 24-hour rainfall record was set in Cerro Maravilla, which received 24.6 in. Maximum-of-record discharges were recorded on the Río Inabón and the Río Portugués. Many rivers produced discharges that exceeded the 100-year recurrence interval. There were 170 deaths and $125 million in damages (Paulson and others, 1991).

On September 16, 1975, Hurricane Eloise produced 24-hour rainfall totals as high as 23 in. in some areas. Discharges on several streams peaked at or near the 100-year recurrence interval. About 10,000 residents had to evacuate their homes as a result of the flooding and landslides. Thirty-four deaths were recorded, and damages were $125 million (Paulson and others, 1991).

The location of streamflow-gaging stations in Puerto Rico that had significant floods for 1970–89 is shown in figure 61 by station number. The specific data for each significant flood are listed in table 40. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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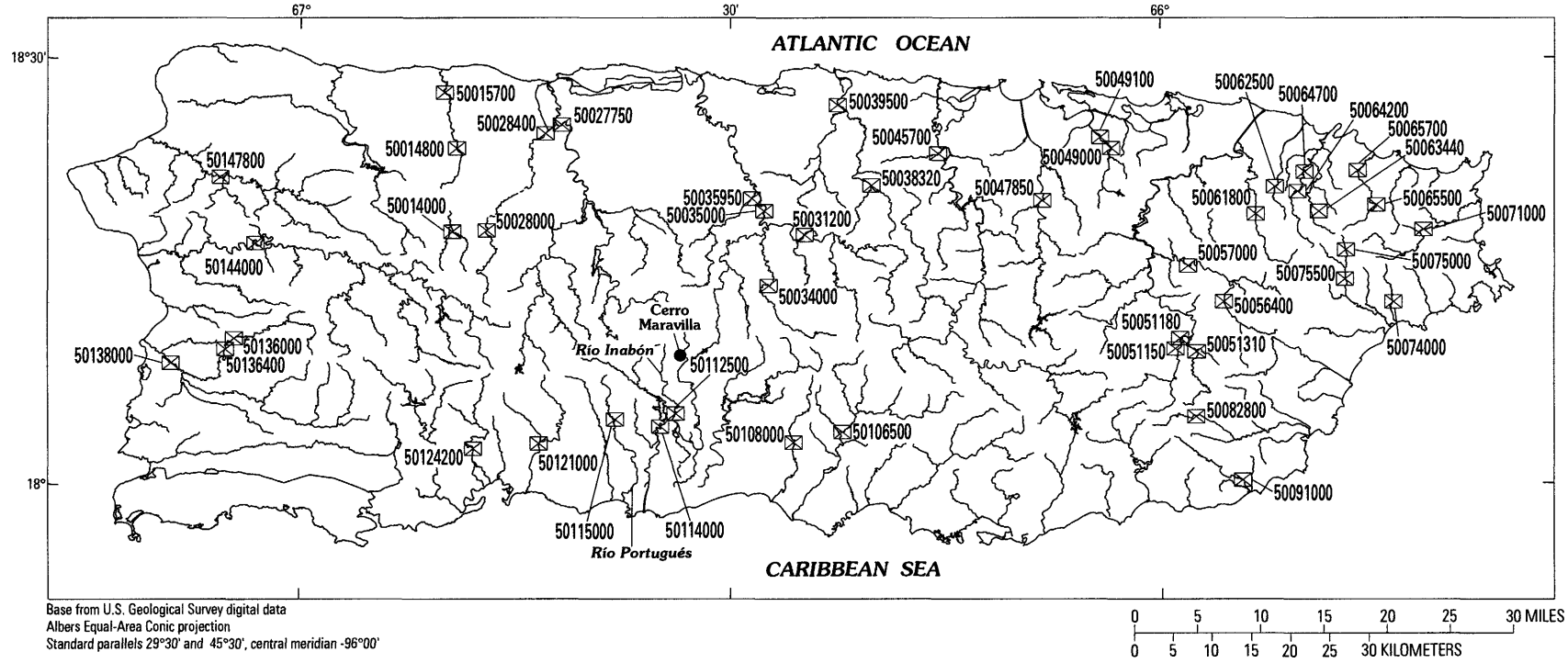

EXPLANATION

50115000 ⊠ **Streamflow-gaging station and number**

Figure 61. Location of streamflow-gaging stations with significant floods during 1970–89 for Puerto Rico.

Table 40. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Puerto Rico

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
Station number (fig. 61)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
50014000	Río Criminales near Lares, PR	4.68	1970–82	1972	13.31	5,970	9/28/72	13.31	5,970	N	10–25
50014800	Río Camuy near Bayaney, PR	--	1984–95	1986	17.66	6,450	10/07/85	17.66	6,450	N	25–50
50015700	Río Camuy near Hatillo, PR	--	1984–95	1986	24.75	10,500	10/07/85	24.75	10,500	N	10–25
50027750	Río Grande de Arecibo above Arecibo, PR	200	1982–95	1985	18.22	45,800	5/18/85	18.22	45,800	N	10–25
50028000	Río Tanama near Utuado, PR	18.4	1960–95	1985	17.45	12,200	5/18/85	17.45	12,200	N	50–100
50028400	Río Tanama at Charco Hondo, PR	57.6	1969–71, 1983–95	1985	17.95	15,000	5/18/85	17.95	15,000	N	25–50
50031200	Río Grande de Manati near Morovis, PR	55.2	1965–95	1985 1971	17.89 20.30	48,000 35,000	5/18/85	17.89	48,000	Y	20–30
50034000	Río Bauta near Orocovis, PR	16.7	1970–82, 1989–95	1971	21.90	17,800	10/09/70	21.90	17,800	N	25–50
50035000	Río Grande de Manati at Ciales, PR	128	1899, 1928, 1932, 1949–53, 1956, 1958–95	1971 1899	24.00 50.00	125,000 --	10/09/70	24.00	125,000	N	50–100
50035950	Río Cialitos at Highway 649 at Ciales, PR	17.0	1970–82	1970	14.00	9,450	5/08/70	14.00	9,450	N	10–25
50038320	Río Cibuco below Corozal, PR	15.1	1970–95	1980	19.80	13,600	11/07/79	19.80	13,600	N	10–25
50039500	Río Cibuco at Vega Baja, PR	99.1	1959–95	1987 1982	19.10 18.84	34,000 30,300	2/13/81 4/12/87	18.84 19.10	30,300 34,000	N N	20 20–30
50045700	Río Lajas at Toa Alta, PR	8.65	1966–75	1973	17.80	14,000	4/20/73	17.80	14,000	N	25–50
50047850	Río de Bayamon near Bayamon, PR	41.8	1965–71, 1989–95	1971	20.20	28,000	10/09/70	20.20	28,000	Y	25–50
50049000	Río Piedras at Río Piedras, PR	12.5	1973–82, 1988–93	1988 1979	16.86 20.20	9,570 8,870	8/24/88	16.86	9,570	N	10–25
50049100	Río Piedras at Hato Rey, PR	15.2	1970, 1972–74, 1976–82, 1988–95	1976	20.56	8,660	12/11/75	20.56	8,660	N	5–10
50051150	Quebrada Blanca at Jagual, PR	3.25	1985–95	1985	14.58	7,400	5/17/85	14.58	7,400	N	10–25
50051180	Quebrada Salvatierra near San Lorenzo, PR	3.74	1984–95	1985	17.20	9,320	5/17/85	17.20	9,320	N	10–25
50051310	Río Cayaguas at Cerro Gordo, PR	10.2	1978–95	1979	9.44	13,200	8/31/79	9.44	13,200	N	10–25
50056400	Río Valenciano near Juncos, PR	16.4	1960, 1971–95	1988	25.63	40,000	12/08/87	25.63	40,000	N	30–50
50057000	Río Gurabo at Gurabo, PR	60.2	1960–95	1960	27.70	74,600	10/09/70	26.64	64,100	N	15
50061800	Río Canóvanas near Campo Rico, PR	9.84	1968–95	1982	13.10	15,000	9/13/82	13.10	15,000	N	20–30
50062500	Río Herrera near Colonia Dolores, PR	2.75	1968–82	1979	14.91	3,920	8/31/79	14.91	3,920	N	10–25
50063440	Quebrada Sonadora near El Verde, PR	1.01	1983–95	1988	9.42	2,230	12/07/87	9.42	2,230	N	10–25
50064200	Río Grande near El Verde, PR	7.31	1968–75, 1977–82, 1991–95	1975	15.50	17,400	9/16/75	15.50	17,400	N	10–25
50064700	Quebrada Boneta at Río Grande, PR	0.77	1965, 1969–73, 1976–82	1965	24.01	2,270	12/14/81	20.53	1,650	N	5–10

Table 40. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Puerto Rico—Continued

Station number (fig. 61)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
50065500	Río Mameyes near Sabana, PR	6.88	1969–73, 1983–95	1989	13.19	20,500	9/18/89	13.19	20,500	N	10–25
50065700	Río Mameyes at Highway 191 at Mameyes, PR	11.8	1967–73, 1975–85	1975 1978	14.79 18.00	26,200 26,000	10/24/74	14.79	26,200	N	10–25
50071000	Río Fajardo near Fajardo, PR	14.9	1960, 1962–95	1989	20.00	23,500	9/18/89	20.00	23,500	N	20–30
50074000	Río Santiago at Naguabo, PR	4.99	1966, 1968–82	1970	18.00	14,000	8/27/70	18.00	14,000	N	10–25
50075000	Río Icacos near Naguabo, PR	1.26	1946, 1948–52, 1954–55, 1957–62, 1980–95	1983	8.96	2,860	4/21/83 9/18/89	8.96 8.52	2,860 2,480	N N	30–50 20
50075500	Río Blanco at Florida, PR	11.0	1962, 1966–69, 1971–82	1975	83.65	31,000	9/16/75	83.65	31,000	N	25–50
50082800	Río Guayanés near Colonia Laura, PR	4.69	1969–82	1975	13.40	6,960	10/23/74	13.40	6,960	N	10–25
50091000	Río Maunabo at Maunabo, PR	12.4	1965, 1967, 1969–73, 1975–82	1975	19.26	11,040	9/16/75	19.26	11,040	N	10–25
50106500	Río Coamo near Coamo, PR	46.0	1960, 1965–75, 1978–80, 1982, 1984–86	1986	--	54,000	10/07/85	--	54,000	N	>50
50108000	Río Descalabrado near Los Llanos, PR	12.9	1966–69, 1971–72, 1975, 1977–78, 1982, 1984–95	1986	24.37	30,000	10/07/85	24.37	30,000	N	>50
50112500	Río Inabón at Real Abajo, PR	9.7	1964–95	1986	25.30	19,000	10/09/70 10/07/85	20.60 25.30	5,720 19,000	N N	15 50–100
50114000	Río Cerrillos near Ponce, PR	17.8	1964–73, 1975–86, 1991–95	1986	20.83	24,000	10/07/85	20.83	24,000	N	30–50
50115000	Río Portugués near Ponce, PR	8.82	1965–95	1986	20.20	21,000	9/16/75 10/07/85	10.10 20.20	13,100 21,000	N N	30–50 50–100
50121000	Río Tallaboa at Peñuelas, PR	24.2	1959–68, 1970–72, 1975–82	1975	11.10	23,500	9/16/75	11.10	23,500	N	10–25
50124200	Río Guayanilla near Guayanilla, PR	18.9	1981–95	1982	20.40	14,700	9/12/82	20.40	14,700	N	25–50
50136000	Río Rosario at Rosario, PR	16.4	1975–86	1975	19.60	28,700	9/16/75	19.60	28,700	N	>50
50136400	Río Rosario near Hormigueros, PR	18.3	1986–95	1988	13.64	7,480	8/24/88	13.64	7,480	N	10–25
50138000	Río Guanajibo near Hormigueros, PR	120	1975–95	1975	28.50	128,000	9/16/75	28.50	128,000	N	25–50
50144000	Río Grande de Añasco near San Sebastian, PR	94.3	1963–95	1975	33.90	140,000	9/16/75 5/18/85	33.90 26.77	140,000 77,200	N N	>100 30–50
50147800	Río Culebrinas at Highway 404 near Moca, PR	71.2	1969–95	1975	36.60	69,000	9/16/75	36.60	69,000	N	>100

[1]Regulated during flood: N, no; Y, yes.

Rhode Island

Hydroclimatology

Rhode Island is located in the northeastern United States and is bordered on the south by the Atlantic Ocean. The State's climate is considered continental, but the climate is modified by Rhode Island's proximity to the ocean. The three major airmasses that affect the State originate from the Gulf of Mexico, the Atlantic Ocean, and Canada. The tropical maritime airmasses from the Gulf of Mexico carry warm, moist air to the region. Cool, moist air from the Atlantic Ocean adds to the State's wintertime precipitation. The polar continental airmasses from Canada are typically cold and dry.

Precipitation is usually associated with frontal activity when warm, moist air from the south collides with cold, dry air from the north. Mean annual precipitation is about 40 in. near the coast and as much as 50 in. in the northwestern hills (Paulson and others, 1991).

Flooding in the spring generally is caused by excessive rainfall combined with warm, humid winds that melt the snowpack. Summer flooding is caused by locally severe thunderstorms. Widespread flooding is also caused by hurricanes and coastal storms known as "northeasters." On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Rhode Island is affected by drainage area, mean basin elevation, and forest cover (Jennings and others, 1994).

Significant Floods

Seventy-three percent of streamflow-gaging stations in the State recorded maximum discharges during the flood of June 5–6, 1982. The flood was caused by 8 in. of rain that fell from an intense thunderstorm. The flood was statewide, but the Pawcatuck and Pawtuxet River Basins were affected the most. The flood occurred early in the growing season, and as a result, row crops suffered substantial damages. A thunderstorm resulting in 5 in. of rain caused the flood of January 1979. The flooding was centered in the Blackstone and Pawtuxet River Basins.

The location of streamflow-gaging stations in Rhode Island that had significant floods for 1970–89 is shown in figure 62 by station number. The specific data for each significant flood are listed in table 41. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

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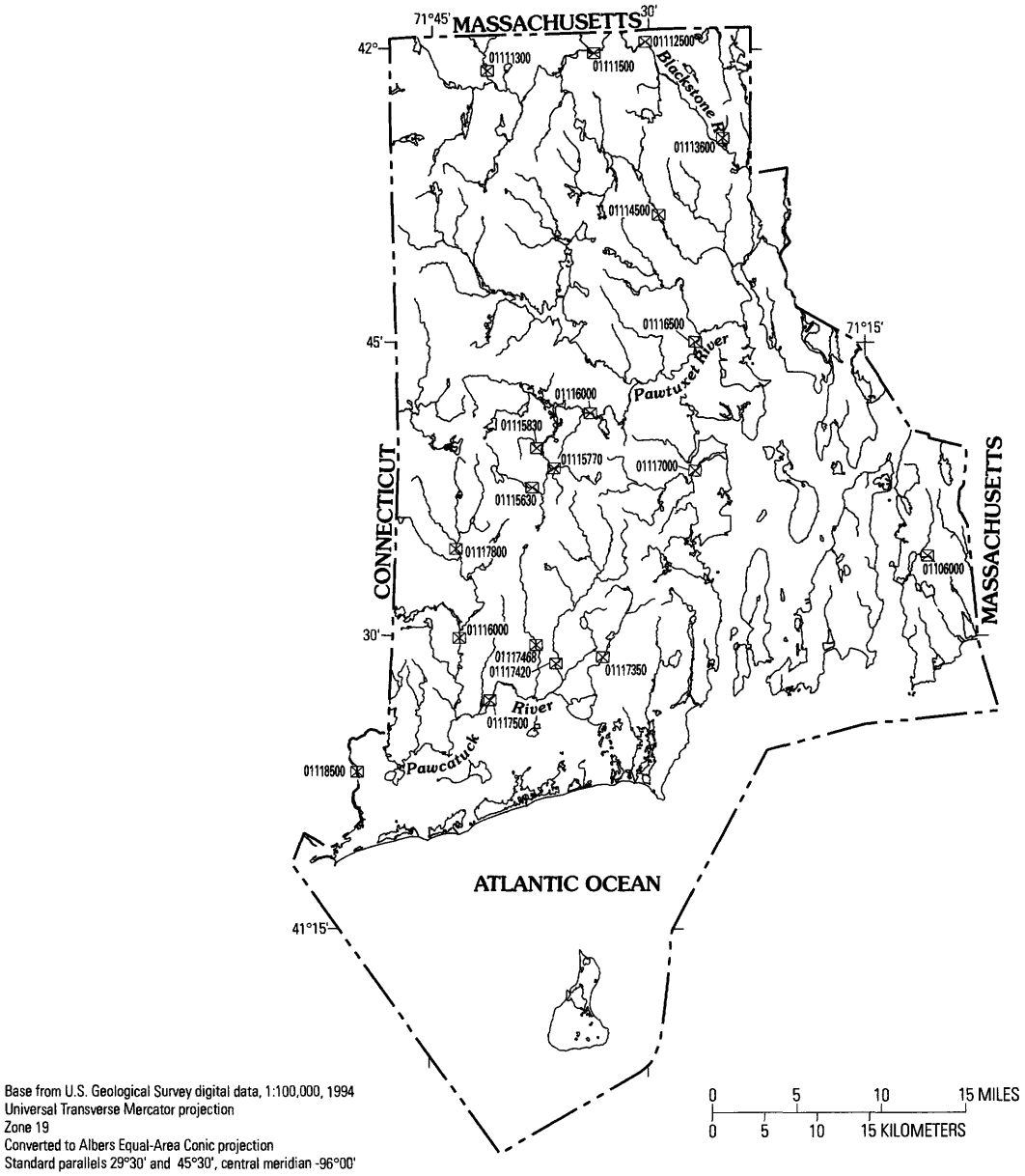

Base from U.S. Geological Survey digital data, 1:100,000, 1994
Universal Transverse Mercator projection
Zone 19
Converted to Albers Equal-Area Conic projection
Standard parallels 29°30' and 45°30', central meridian -96°00'

EXPLANATION

01117350 ⊠ **Streamflow-gaging station and number**

Figure 62. Location of streamflow-gaging stations with significant floods during 1970–89 for Rhode Island.

Table 41. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Rhode Island

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 62)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01106000	Adamsville Brook at Adamsville, RI	8.01	1941–78, 1987	1970 1968	7.65 7.70	316 221	12/27/69	7.65	316	N	25–50
01111300	Nipmuc River near Harrisville, RI	16.0	1965–91, 1994	1979	8.53	1,840	1/25/79	8.53	1,840	N	25–50
01111500	Branch River at Forestdale, RI	91.2	1936, 1940–94	1936 1968	-- 11.90	5,800 4,980	1/25/79 6/06/82	11.80 11.12	5,470 4,770	Y Y	50–100 10–25
01112500	Blackstone River at Woonsocket, RI	416	1929–94	1955	21.80	32,900	1/25/79	15.09	15,900	Y	25–50
01113600	Blackstone River tributary number 2 at Berkeley, RI	1.04	1966–78	1978	7.05	65	1/26/78	7.05	65	N	10–25
01114500	Woonasquatucket River at Centerdale, RI	38.3	1936, 1942–94	1968	7.75	1,440	4/24/83 4/05/87	7.05 6.95	1,380 1,300	Y Y	25–50 10–25
01115630	Nooseneck River at Nooseneck, RI	8.23	1964–81	1979	7.41	587	8/04/79	7.41	587	N	10–25
01115770	Carr River near Nooseneck, RI	6.73	1964–79	1979	6.76	408	8/04/79	6.76	408	Y	10–25
01115830	Bear Brook near Coventry, RI	3.98	1966–78	1977 1978	10.00 10.63	154 150	3/23/77	10.00	154	N	10–25
01116000	South Branch Pawtuxet River at Washington, RI	63.8	1936, 1941–94	1982	5.30	1,980	6/06/82	5.30	1,980	Y	50–100
01116500	Pawtuxet River at Cranston, RI	200	1940–94	1982	14.50	5,440	1/26/79 6/07/82 4/25/83	13.26 14.50 13.11	4,000 5,440 4,470	Y Y Y	10–25 50–100 25–50
01117000	Hunt River near East Greenwich, RI	23.0	1938, 1941–94	1982 1938	3.73 8.50	1,020 --	6/06/82 1/26/78 4/11/83	3.73 3.59 3.68	1,020 899 968	N Y Y	50–100 10–25 25–50
01117350	Chipuxet River at West Kingston, RI	9.99	1974–94	1982 1978	-- 7.54	250 208	6/06/82	--	250	Y	10–25
01117420	Usquepaug River near Usquepaug, RI	36.1	1976–94	1982	9.23	1,060	6/06/82	9.23	1,060	Y	10–25
01117468	Beaver River near Usquepaug, RI	8.87	1975, 1977–94	1982	3.83	370	6/06/82	3.83	370	N	10–25
01117500	Pawcatuck River at Wood River Junction, RI	100	1941–94	1982	8.75	1,860	3/24/80 6/07/82 1/28/78 4/12/83	6.43 8.75 6.40 6.74	1,270 1,860 1,260 1,390	N N Y Y	10–25 50–100 5–10 10–25
01117800	Wood River near Arcadia, RI	35.2	1964–93	1982	8.97	1,010	6/06/82	8.97	1,010	N	25–50
01118000	Wood River at Hope Valley, RI	72.4	1936, 1942–94	1982	10.26	2,390	3/22/80 6/06/82	8.67 10.26	1,770 2,390	N N	25–50 50–100
01118500	Pawcatuck River at Westerly, RI	295	1928, 1936, 1938, 1941–94	1982 1938	12.86 15.00	7,070 --	6/06/82 4/25/83	12.86 9.78	7,070 4,340	Y Y	50–100 10–25

[1]Regulated during flood: N, no; Y, yes.

South Carolina

Hydroclimatology

South Carolina is located in the southeastern United States and is bordered on the east by the Atlantic Ocean. South Carolina has a mild, temperate climate. The climate is governed by moist airmasses from the Atlantic Ocean and the Gulf of Mexico. These airmasses are moisture laden; therefore, precipitation is plentiful in the State. Mean annual precipitation for the State is about 48 in. (Paulson and others, 1991). The summers in South Carolina are usually hot and humid due to the dominance of the semipermanent Bermuda high-pressure system. In the winter, cool, dry air from Canada can move into the State.

Widespread flooding can be caused by slow-moving, low-pressure and frontal systems. Localized flash flooding caused by intense precipitation from airmass-type thunderstorms occur in the summer months. Hurricanes and tropical storms can move directly from the Atlantic Ocean (from the southeast) or from the Gulf of Mexico (from the southwest) during summer and fall. On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in South Carolina depends primarily on drainage area (Jennings and others, 1994).

Significant Floods

Sixteen percent of the streamflow-gaging stations in the State recorded significant discharges during flooding on September 14, 1973. Excessive rainfall in northwestern South Carolina resulted in rainfall totals ranging from 6 to 9 in. (Paulson and others, 1991). Flash flooding occurred in many areas.

Hurricane Hugo hit South Carolina on September 21, 1989. A storm surge of as much as 20 ft in the Atlantic Ocean associated with the hurricane caused major coastal flooding. Damage from Hugo stretched from Charleston to southern North Carolina.

The location of streamflow-gaging stations in South Carolina that had significant floods for 1970–89 is shown in figure 63 by station number. The specific data for each significant flood are listed in table 42. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

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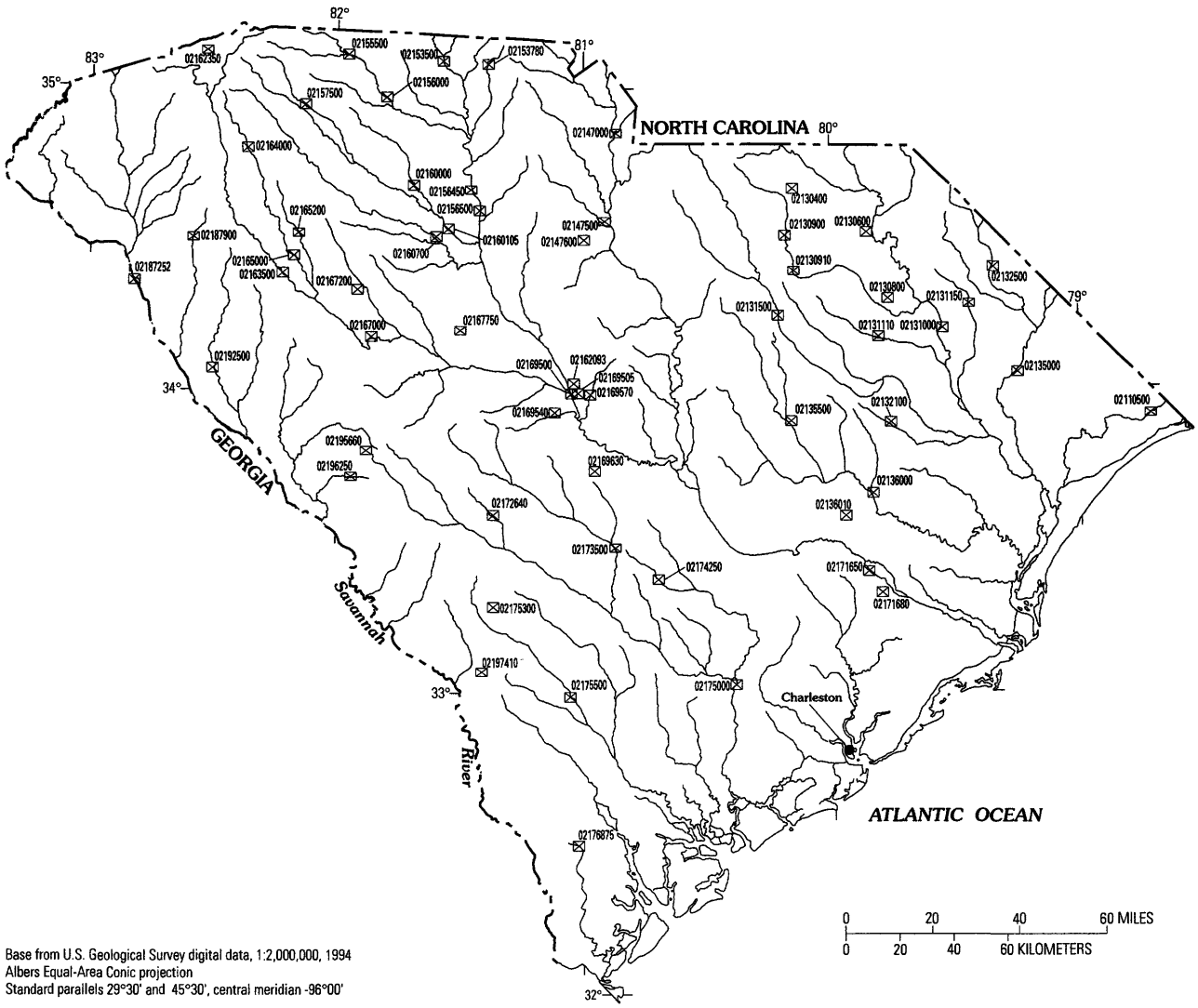

EXPLANATION

02174250 ⊠ **Streamflow-gaging station and number**

Figure 63. Location of streamflow-gaging stations with significant floods during 1970–89 for South Carolina.

Table 42. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in South Carolina

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig. 63)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02110500	Waccamaw River near Longs, SC	1,110	1951–95	1981	14.87	16,200	8/23/81	14.87	16,200	N	70
							3/26/83	14.40	12,200	N	20
02130400	Little Bear near Chesterfield, SC	4.10	1976–95	1979	6.36	257	2/24/79	6.36	257	N	10–25
				1981	8.12	--					
02130600	Cedar Creek at Society Hill, SC	58.2	1971–81	1973	8.73	750	6/23/73	8.73	750	N	10–25
02130800	Backswamp near Darlington, SC	6.22	1976–95	1986	8.82	281	3/20/86	8.82	281	N	5–10
02130900	Black Creek near McBee, SC	108	1960–95	1991	13.07	4,500	7/16/75	11.29	1,770	N	40
02130910	Black Creek near Hartsville, SC	173	1961–95	1991	12.35	4,450	8/18/71	10.08	2,010	N	20–30
02131000	Pee Dee River at Peedee, SC	8,830	1939–95	1945	33.30	220,000	3/02/79	29.03	102,600	Y	--
							3/07/87	29.06	96,500	Y	--
02131110	Jeffries Creek above Florence, SC	46.6	1968, 1970–95	1995	10.72	3,220	3/03/71	9.02	2,230	N	20–30
02131150	Catfish Canal at Sellers, SC	27.4	1967–92	1971	9.15	890	3/04/71	9.15	890	N	20–30
02131500	Lynches River near Bishopville, SC	675	1943–77, 1979–93	1945	22.35	29,400	2/25/79	18.26	15,600	N	25
							--/--/83	18.36	16,000	N	30
02132100	Two Mile Branch near Lake City, SC	19	1976–95	1980	7.31	1,200	3/13/80	7.31	1,200	N	50
				1991	7.65	618					
				1995	10.19	2,400					
02132500	Little Pee Dee River near Dillon, SC	524	1940–95	1945	14.64	9,810	2/19/73	12.54	5,960	N	20
							4/10/83	12.38	6,130	N	20
02135000	Little Pee Dee River at Galivants Ferry, SC	2,790	1928, 1942–95	1965	13.01	27,600	3/08/71	12.29	25,000	N	25
				1928	16.00	--					
02135500	Black River near Gable, SC	401	1952–66, 1971, 1973–92	1971	6.82	12,500	3/05/71	6.82	12,500	N	>100
				1973	6.92	7,980	6/13/73	6.92	7,980	N	25
02136000	Black River at Kingstree, SC	1,252	1893–1995	1973	19.77	58,000	3/07/71	15.22	23,600	N	20
							6/14/73	19.77	58,000	N	80
02136010	Chaney Swamp near Greeleyville, SC	17	1976–80, 1982–95	1980	7.06	397	3/13/80	7.06	397	N	5–10
				1992	7.16	--					
02147000	Catawba River near Catawba, SC	3,530	1904–05, 1907–49, 1968–81, 1983–91	1977	23.81	73,600	3/24/89	14.36	33,900	Y	--
				1916	40.40	--	10/09/76	23.81	73,600	Y	--
02147500	Rocky Creek at Great Falls, SC	194	1952–81, 1987–95	1967	18.82	31,300	4/01/73	12.92	16,600	N	40
02147600	Scabber Branch near Great Falls, SC	4.55	1977–79, 1981–87, 1989–95	1978	10.07	2,670	10/26/77	10.07	2,670	N	>100
02153500	Broad River near Gaffney, SC	1,490	1939–78, 1980–90	1940	19.78	119,000	10/10/76	17.24	84,900	N	40
02153780	Clarks Fork Creek near Smyrna, SC	24.1	1981–95	1995	13.77	2,100	8/17/85	13.22	1,890	N	5–10
02155500	Pacolet River near Fingerville, SC	212	1903, 1930–95	1940	22.43	22,800	10/09/76	14.89	12,900	Y	--
				1903	46.00	--					
02156000	Pacolet River near Clifton, SC	320	1940–78	1977	21.70	27,700	10/09/76	21.70	27,700	Y	--
02156450	Neals Creek near Carlisle, SC	12.3	1981–95	1984	8.97	1,090	1/10/84	8.97	1,090	N	10–25
				1987	11.02	579					

Table 42. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in South Carolina—Continued

Station number (fig. 63)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02156500	Broad River near Carlisle, SC	2,790	1939–95	1977	31.51	123,000	10/10/76	31.51	123,000	N	30
02157500	Middle Tyger River at Lyman, SC	68.3	1939–67, 1971–78, 1980, 1982, 1984–85, 1987, 1991, 1994–95	1940	16.16	4,800	11/06/77	13.48	3,990	N	20
02160000	Fairforest Creek near Union, SC	183	1940–95	1977	9.43	11,700	10/09/76	9.43	11,700	N	>100
02160105	Tyger River near Delta, SC	759	1974–95	1977	26.31	30,300	10/11/76	26.31	30,300	N	50–100
02160700	Enoree River at Whitmire, SC	444	1974–95	1995	37.32	31,200	10/10/76	32.58	19,700	N	50–100
02162093	Smith Branch at North Main Street at Columbia, SC	5.67	1977–95	1995	11.69	2,120	7/04/89	11.51	2,080	N	10–25
02162350	Middle Saluda River near Cleveland, SC	21.0	1981–95	1986	11.21	5,190	6/11/86	11.21	5,190	N	>100
02163500	Saluda River near Ware Shoals, SC	581	1939–95	1995	22.95	20,900	9/14/73	22.85	20,700	N	40
02164000	Reedy River near Greenville, SC	48.6	1942–75, 1977, 1987–95	1995	11.88	5,400	9/18/75 10/09/76	11.39 10.90	4,740 4,450	N N	30 20
02165000	Reedy River near Ware Shoals, SC	236	1940–59, 1961–95	1973	15.40	11,000	9/14/73	15.40	11,000	Y	30
02165200	South Rabon Creek near Gray Court, SC	29.5	1967–81, 1991–95	1973	9.86	4,100	9/14/73	9.86	4,100	N	50–100
02167000	Saluda River at Chappells, SC	1,360	1888, 1906–84, 1986–95	1930 1908	31.50 34.70	63,700 --	10/09/76	26.47	35,200	Y	--
02167200	Watkins Creek near Cross Hill, SC	0.62	1977–89, 1993	1983 1989	6.67 10.49	154 --	3/06/83	6.67	154	N	5–10
02167750	Camping Creek tributary near Prosperity, SC	0.52	1974–87, 1989–95	1995 1991	6.64 7.22	135 --	3/13/75	6.60	103	N	5–10
02169500	Congaree River at Columbia, SC	7,850	1852, 1892–1995	1908	39.80	364,000	10/11/76	29.74	155,000	Y	--
02169505	Rocky Branch at Pickens Street at Columbia, SC	2.41	1985–95	1986	8.05	1,300	8/12/86	8.05	1,300	N	10–25
02169540	Savanna Branch near Cayce, SC	7.15	1968–76, 1978–89, 1994–95	1973 1983	-- 5.02	440 --	6/22/73	--	440	N	50–100
02169570	Gills Creek at Columbia, SC	59.6	1967–95	1979 1986	8.66 9.33	2,880 2,410	2/24/79	8.66	2,880	N	25–50
02169630	Big Beaver Creek near St. Matthews, SC	10.0	1967–93	1971	6.66	1,360	7/29/71	6.66	1,360	N	>100
02171650	Santee River below St. Stephens, SC	14,900	1971–81	1975	29.67	98,900	3/21/75	29.67	98,900	Y	--
02171680	Wedboo Creek near Jamestown, SC	17.4	1967–77, 1979–92	1971 1975	5.96 8.82	928 348	8/26/71	5.96	928	N	10–25
02172640	Dean Swamp Creek near Salley, SC	31.2	1981–90, 1992–95	1984 1993	4.65 4.95	172 139	5/29/84	4.65	172	N	25–50
02173500	North Fork Edisto River at Orangeburg, SC	683	1928, 1939–95	1928	14.70	10,000	3/05/71	11.64	5,850	N	20

Table 42. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in South Carolina—Continued

Station number (fig. 63)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02174250	Cow Castle Creek near Bowman, SC	23.4	1971–80	1979	7.37	2,340	9/04/79	7.37	2,340	N	50–100
02175000	Edisto River near Givhans, SC	2,730	1904, 1919, 1924–25, 1928, 1939–95	1925	17.50	24,900	6/14/73	15.84	24,500	N	40
02175300	Turkey Creek near Barnwell, SC	22.8	1977–85, 1987, 1989, 1991–93	1981 1991	6.14 6.73	400 --	10/01/80	6.14	400	N	--
02175500	Salkehatchie River near Miley, SC	341	1951–95	1993	5.79	4,360	3/13/80	5.44	3,300	N	25
02176875	Great Swamp near Ridgeland, SC	48.8	1979–81, 1984, 1987–95	1980 1984	6.18 6.60	1,360 --	3/13/80	6.18	1,360	N	10–25
02187252	Hartwell Tailrace at State Highway 29 near Hartwell, SC	2,090	1985–95	1985 1994	12.63 17.18	38,300 --	1/21/85	12.63	38,300	Y	--
02187900	Broadway Creek near Anderson, SC	26.4	1977–79, 1981–82, 1984–95	1995	15.81	2,700	3/30/77	11.80	1,700	N	5–10
02192500	Little River near Mt. Carmel, SC	217	1940–79, 1981–82, 1984–85, 1987–95	1940	29.60	20,800	4/01/73	23.60	10,600	N	20
02195660	Log Creek near Edgefield, SC	1.18	1977–79, 1981–82, 1984–91, 1993–95	1977 1991	6.27 7.21	325 --	3/20/77	6.27	325	N	--
02196250	Horn Creek near Colliers, SC	13.9	1981–95	1986	15.29	3,680	10/02/85	15.29	3,680	N	>100
02197410	Miller Creek tributary near Baldoc, SC	7.51	1977–95	1980	6.25	750	3/13/80	6.25	750	N	90–100

[1]Regulated during flood: N, no; Y, yes.

South Dakota

Hydroclimatology

South Dakota is located in the north-central United States. The climate is continental and is characterized by warm to hot summers and cold winters. Most of the State's topography consists of rolling plains. However, the Black Hills in western South Dakota are topographically high enough to cause an orographic effect, resulting in an increase in mean annual precipitation in the areas surrounding the Black Hills.

South Dakota's principal source of moisture is the Gulf of Mexico and, to a lesser extent, the Pacific Ocean. Continental airmasses from Canada and the southwestern United States help to make most of South Dakota semiarid. Precipitation varies from east to west across the State. The extreme southeast receives more moisture from the Gulf of Mexico, and its climate is considered subhumid. The extreme southeast receives an average of about 24 in. of precipitation annually. The west receives an average of about 16 in. of precipitation per year, except for the higher elevations of the Black Hills which receive an average of about 24 in. of precipitation per year (Paulson and others, 1991).

Floods in South Dakota generally are caused by snowmelt in the spring, sometimes combined with rainfall. During the summer months, South Dakota can experience severe thunderstorms that have the potential to produce flooding. Floods produced by thunderstorms generally are more localized than those caused by snowmelt.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in South Dakota is divided into eastern and western regions. The magnitude of maximum discharges in the eastern region is dependent on drainage area and precipitation intensity. In the western region, the magnitude of maximum discharges depends mostly on drainage area; however, in part of the Black Hills, the magnitude of maximum discharges also depends on channel slope (Sando, 1998).

Significant Floods

On June 9, 1972, Rapid City was hit with an almost stationary group of thunderstorms that caused the most devastating local flood in South Dakota's history. Fifteen inches of rain fell in 6 hours in areas northwest of Rapid City. The maximum discharge (50,000 ft^3/s) on Rapid Creek at Rapid City (station 06414000, fig. 64) was almost 7.5 times greater than the discharge having a 100-year recurrence interval. There were 237 deaths; many of whom were trapped in mobile homes or campers. There was $160 million in damages (Paulson and others, 1991).

An unusually wet winter and spring in 1984 resulted in severe flooding in southeastern South Dakota. During the winter, Sioux Falls received 75 in. of snow, which was the third largest snowfall on record. When the warm temperatures of spring arrived, the excessive snowmelt began to cause flooding. An unusually wet March and April added to the snowmelt and caused near-record flooding on the lower James, Vermillion, and Big Sioux Rivers. The flood season was topped off by the wettest June on record in southeastern South Dakota. Successive weather systems during June produced intense rains throughout central and eastern South Dakota. These rains fell on saturated soils and resulted in widespread flooding. The maximum discharge (29,400 ft^3/s on June 23) on the James River near Scotland (station 06478500, fig. 64) was almost twice the previously recorded maximum and is estimated to be slightly greater than the discharge having a 100-year recurrence interval (Paulson and others, 1991).

The location of streamflow-gaging stations in South Dakota that had significant floods for 1970–89 is shown in figure 64 by station number. The specific data for each significant flood are listed in table 43. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

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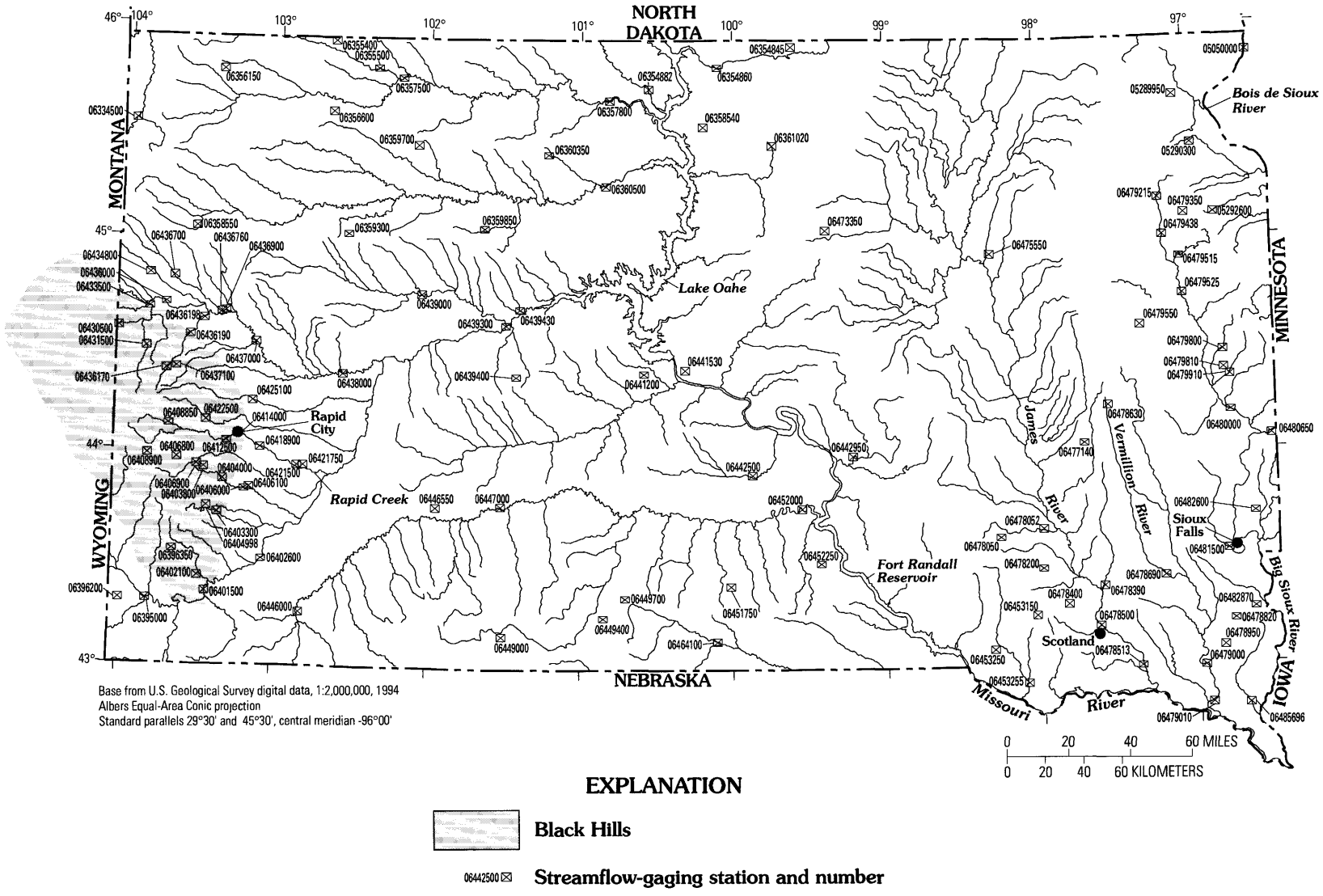

Figure 64. Location of streamflow-gaging stations with significant floods during 1970–89 for South Dakota.

Table 43. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in South Dakota

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 64)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05050000	Bois De Sioux River near White Rock, SD	1,160	1942–94	1969	15.07	3,770	5/07/86	12.12	1,820	Y	10–25
05289950	Little Minnesota River tributary at Sisseton, SD	4.21	1970–79	1979	10.90	393	6/20/79	10.90	393	N	10–25
05290300	North Fork Whetstone River tributary near Wilmot, SD	0.96	1970–79	1979 1973	4.55 7.71	53	6/20/79	4.55	53	N	10–25
05292600	North Fork Yellow Bank River tributary near Stockholm, SD	8.15	1970–79	1971	10.44	510	6/29/71	10.44	510	N	10–25
06334500	Little Missouri River at Camp Crook, SD	1,970	1956–94	1978	16.90	9,420	5/07/75 3/24/78	15.98 16.90	8,460 9,420	Y Y	10–25 25–50
06354845	Spring Creek tributary near Greenway, SD	0.99	1970–79	1971	7.86	188	6/17/71	7.86	188	N	5–10
06354860	Spring Creek near Herreid, SD	440	1963–86, 1989–94	1987	13.38	4,540	3/22/87	13.38	4,540	N	25–50
06354882	Oak Creek near Wakpala, SD	356	1985–94	1986 1987	17.73 18.35	3,780 --	3/04/86	17.73	3,780	N	10–25
06355400	North Fork Grand River tributary near Lodgepole, SD	3.07	1970–79	1979	11.05	847	8/27/79	11.05	847	N	25–50
06355500	North Fork Grand River near White Butte, SD	1,190	1967–94	1950	20.00	30,900	3/28/78	11.63	6,710	Y	25–50
06356150	North Jack Creek near Ludlow, SD	1.69	1970–79	1978	6.68	145	6/25/78	6.68	145	N	50–100
06356600	South Fork Grand River tributary near Bison, SD	1.00	1970–79	1978	7.76	183	6/29/78	7.76	183	N	10–25
06357500	Grand River at Shadehill, SD	3,120	1951–88 1991–92	1950 1978	-- 8.63	58,000 --	4/01/78	8.63	4,190	Y	25–50
06357800	Grand River at Little Eagle, SD	5,370	1959–94	1987 1972	19.16 21.01	31,000 --	3/23/78 3/23/87	18.41 19.16	19,000 31,000	Y Y	10–25 100–500
06358540	Blue Blanket Creek tributary near Glenham, SD	0.62	1970–79	1978	4.26	21	6/26/78	4.26	21	N	25–50
06358550	Battle Creek tributary near Castle Rock, SD	1.57	1969–79	1975	13.70	580	5/09/75	13.70	580	N	10–25
06359300	Deep Creek tributary near Maurine, SD	1.26	1970–79	1971 1978	8.13 9.05	188 --	5/30/71	8.13	188	N	25–50
06359700	Thunder Butte Creek tributary near Meadow, SD	3.00	1970–79	1970	8.00	145	5/07/70	8.00	145	N	10–25
06359850	Elm Creek tributary near Dupree, SD	5.00	1970–79	1975 1978	6.89 7.56	494 --	4/28/75	6.89	494	N	10–25
06360350	Little Moreau River tributary near Firesteel, SD	2.75	1970–79	1978 1975	4.89 5.45	78 --	4/--/78	4.89	78	N	5–10
06360500	Moreau River near Whitehorse, SD	4,880	1955–94	1982	26.00	27,700	3/24/78 5/24/82	25.31 26.00	25,600 27,700	N N	10–25 25–50
06361020	Swan Lake tributary near Bowdle, SD	27.1	1970–79	1978	5.12	91	5/12/78	5.12	91	N	10–25
06395000	Cheyenne River at Edgemont, SD	7,143	1905, 1915–20, 1929–32, 1943–94	1978 1922	13.65 14.00	28,000 --	5/25/71 5/20/78	10.57 13.65	13,800 28,000	Y Y	5–10 25–50

Table 43. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in South Dakota—Continued

Station number (fig. 64)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06396200	Fiddle Creek near Edgemont, SD	0.64	1956–80	1980	7.89	275	6/15/80	7.89	275	N	50–100
06396350	Red Canyon Creek tributary near Pringle, SD	0.20	1970–79	1971 1974	4.01 4.02	30 --	5/03/71	4.01	30	N	10–25
06401500	Cheyenne River below Angostura Dam, SD	9,100	1950–94	1978	15.97	30,300	5/20/78	15.97	30,300	Y	--
06402100	Fall River tributary at Hot Springs, SD	3.81	1970–79	1977	4.60	53	7/04/77	4.60	53	N	5–10
06402600	Cheyenne River near Buffalo Gap, SD	9,810	1969–80	1978	13.15	25,000	5/21/78	13.15	25,000	Y	--
06403300	French Creek above Fairburn, SD	105	1982–94	1987	2.73	329	3/07/87	2.73	329	Y	10–25
06403800	Battle Creek tributary near Keystone, SD	0.63	1956–80	1972	18.80	1,330	6/09/72	18.80	1,330	N	>500
06404000	Battle Creek near Keystone, SD	66.0	1946–47, 1962–94	1972	14.50	26,200	6/09/72 6/15/76	14.50 6.55	26,200 1,260	N N	100–500 5–10
06404998	Grace Coolidge Creek near Game Lodge near Custer, SD	25.2	1946–47, 1967–94	1989	10.84	1,030	9/07/89	10.84	1,030	N	10–25
06406000	Battle Creek at Hermosa, SD	178	1950–94	1972	17.72	21,400	6/10/72	17.72	21,400	N	100–500
06406100	Battle Creek tributary near Hermosa, SD	3.49	1970–79	1972	4.44	100	6/10/72	4.44	100	N	25–50
06406800	Newton Fork near Hill City, SD	8.17	1969–79	1977	4.27	58	7/27/77	4.27	58	N	5–10
06406900	Palmer Creek near Hill City, SD	13.3	1956–80	1972	17.06	4,370	6/09/72	17.06	4,370	N	100–500
06408850	Silver Creek near Rochford, SD	6.23	1969–79	1978	4.24	14	5/18/78	4.24	14	N	5–10
06408900	Heeley Creek near Hill City, SD	4.88	1969–79	1975	5.88	20	4/08/75	5.88	20	N	10–25
06412500	Rapid Creek above Canyon Lake near Rapid City, SD	371	1957–94	1972	17.77	31,200	6/09/72	17.77	31,200	Y	>500
06414000	Rapid Creek at Rapid City, SD	410	1957–94	1972	19.66	50,000	6/09/72	19.66	50,000	Y	>500
06418900	Rapid Creek below sewage treatment plant near Rapid City, SD	452	1982–94	1982	9.12	1,680	7/25/82	9.12	1,680	Y	--
06421500	Rapid Creek near Farmingdale, SD	602	1957–58, 1960–94	1972	11.85	7,320	6/10/72	11.85	7,320	Y	100–500
06421750	Rapid Creek tributary near Farmingdale, SD	1.50	1970–79	1970 1975	3.87 5.99	35 --	4/25/70	3.87	35	N	10–25
06422500	Boxelder Creek near Nemo, SD	96.0	1946–47, 1966–94	1972	20.40	30,100	6/09/72 6/15/76	20.40 6.19	30,100 1,460	N N	100–500 10–25
06425100	Elk Creek near Rapid City, SD	190	1979–94	1982 1986	10.79 11.80	1,560 --	5/20/82	10.79	1,560	Y	5–10
06430500	Redwater Creek at WY-SD State line	471	1929–31, 1936–37, 1955–94	1973	12.19	2,440	8/22/73	12.19	2,440	Y	25–50
06431500	Spearfish Creek at Spearfish, SD	168	1947–94	1965 1976	10.53 10.54	4,240 --	6/15/76	10.54	3,870	Y	50–100
06433500	Hay Creek at Belle Fourche, SD	121	1954–94	1972	9.15	930	6/19/72 5/20/82	9.15 8.93	930 926	Y Y	50–100 50–100

Table 43. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in South Dakota—Continued

Station number (fig. 64)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06434800	Owl Creek tributary near Belle Fourche, SD	3.06	1970–79	1976	4.73	267	6/15/76	4.73	267	N	25–50
06436000	Belle Fourche River near Fruitdale, SD	4,540	1952–94	1982	14.32	12,700	6/15/76	13.18	12,200	Y	10–25
							5/20/82	14.32	12,700	Y	10–25
06436170	Whitewood Creek at Deadwood, SD	40.6	1982–94	1982	7.54	2,660	5/15/82	7.54	2,660	N	10–25
06436190	Whitewood Creek near Whitewood, SD	77.4	1982–94	1982	4.52	3,050	5/20/82	4.52	3,050	Y	10–25
06436198	Whitewood Creek above Vale, SD	102	1983–94	1986	4.32	3,680	9/24/86	4.32	3,680	Y	10–25
				1993	5.06	--					
06436700	Indian Creek near Arpan, SD	315	1962–81	1976	18.00	16,700	6/15/76	18.00	16,700	N	50–100
06436760	Horse Creek above Vale, SD	464	1981–94	1982	24.80	17,700	5/21/82	24.80	17,700	Y	--
06436800	Horse Creek near Vale, SD	530	1962–80	1976	14.61	11,600	6/16/76	14.61	11,600	Y	50–100
06437000	Belle Fourche River near Sturgis, SD	5,870	1946–94	1982	19.10	36,400	6/15/76	16.04	19,100	Y	25–50
							5/21/82	19.10	36,400	Y	100–500
06437100	Boulder Creek near Deadwood, SD	1.32	1956–80	1976	11.45	323	6/14/76	11.45	323	N	10–25
06438000	Belle Fourche River near Elm Springs, SD	7,210	1952–94	1964	15.90	45,100	5/21/82	18.22	40,300	Y	25–50
				1927	21.80	--					
06439000	Cherry Creek near Plainview, SD	1,190	1946–94	1952	22.63	17,500	3/22/78	19.60	9,210	N	10–25
06439300	Cheyenne River at Cherry Creek, SD	23,900	1961–94	1982	15.77	55,900	5/22/82	15.77	55,900	Y	25–50
06439400	Plum Creek tributary near Milesville, SD	0.50	1970–79	1974	12.13	265	5/19/74	12.13	265	N	25–50
06439430	Cottonwood Creek near Cherry Creek, SD	120	1983–94	1987	12.58	3,640	3/30/87	12.58	3,640	N	10–25
06441200	Powell Creek tributary near Fort Pierre, SD	0.40	1970–79	1970	8.07	211	8/10/70	8.07	211	N	10–25
06441530	Hilgers Gulch tributary near Pierre, SD	1.33	1968–79	1971	7.41	244	6/09/71	7.41	244	N	5–10
06442500	Medicine Creek at Kennebec, SD	464	1955–94	1991	19.11	16,100	5/09/86	17.26	11,400	N	10–25
06442950	Crow Creek near Gann Valley, SD	670	1972–84	1978	14.60	3,900	3/22/78	14.60	3,900	N	25–50
06446000	White River near Oglala, SD	2,200	1944–94	1947	23.50	5,200	6/10/86	20.78	2,860	N	10–25
				1967	23.61	--					
06446550	White River tributary near Interior, SD	0.32	1956–80	1980	8.83	575	7/12/80	8.83	575	N	10–25
06447000	White River near Kadoka, SD	5,000	1942–94	1942	--	32,000	5/20/82	16.18	21,300	N	10–25
				1982	16.18	--					
06449000	Lake Creek below refuge near Tuthill, SD	120	1938–40,	1987	5.57	594	4/07/86	4.86	234	Y	10–25
			1963–94	1988	6.46	--	3/25/87	5.57	594	Y	100–500
06449400	Rosebud Creek at Rosebud, SD	60.0	1975–76, 1978–94	1976	10.34	643	7/27/76	10.34	643	Y	10–25
06449700	Little Oak Creek near Mission, SD	2.58	1956–80	1977	11.87	970	5/09/77	11.87	970	N	25–50
06451750	Cottonwood Creek tributary near Winner, SD	4.00	1971–80	1977	4.93	184	5/06/77	4.93	184	N	5–10
06452000	White River near Oacoma, SD	10,200	1929–94	1952	--	51,900	5/09/86	14.64	34,600	N	25–50
				1994	24.70	--					

Table 43. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in South Dakota—Continued

Station number (fig. 64)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06452250	Fivemile Creek tributary near Iona, SD	2.35	1970–79	1972 1973	3.43 3.60	70 --	5/11/72	3.43	70	N	5–10
06453150	Choteau Creek tributary near Tripp, SD	0.54	1970–79	1972	7.14	177	5/22/72	7.14	177	N	10–25
06453250	Choteau Creek near Wagner, SD	15.6	1970–79	1978	6.23	174	5/28/78	6.23	174	N	10–25
06453255	Choteau Creek near Avon, SD	602	1983–94	1984	13.93	7,280	6/12/84	13.93	7,280	N	10–25
06464100	Keya Paha River near Keyapaha, SD	466	1982–94	1983 1982	7.95 9.45	820 --	5/03/83	7.95	820	N	5–10
06473350	South Fork Snake Creek tributary near Seneca, SD	4.54	1971–80	1972 1978	7.39 9.90	50 --	3/17/72	7.39	50	N	10–25
06475550	Dry Run tributary near Frankfort, SD	4.19	1967–79	1978	8.79	138	5/28/78	8.79	138	N	10–25
06477140	Rock Creek tributary near Roswell, SD	5.67	1970–79	1977	7.15	180	3/12/77	7.15	180	N	10–25
06478050	Enemy Creek tributary near Mount Vernon, SD	3.38	1969–79	1972	5.88	115	5/27/72	5.88	115	N	10–25
06478052	Enemy Creek near Mitchell, SD	163	1976–87, 1989–94	1984	15.15	4,280	6/22/84	15.15	4,280	N	10–25
06478200	Coffee Creek tributary near Parkston, SD	0.81	1968–79	1978	4.92	81	6/25/78	4.92	81	N	10–25
06478390	Wolf Creek near Clayton, SD	396	1976–94	1984	18.01	6,520	6/21/84	18.01	6,520	N	10–25
06478400	Lonetree Creek tributary near Kaylor, SD	3.65	1970–79	1975 1979	4.89 5.34	104 --	8/22/75	4.89	104	N	25–50
06478500	James River near Scotland, SD	20,653	1929–94	1984	20.45	29,400	6/23/84	20.45	29,400	N	100–500
06478513	James River near Yankton, SD	20,942	1982–94	1984	24.34	26,400	6/23/84	24.34	26,400	N	--
06478630	West Fork Vermillion River near De Smet, SD	5.34	1970–79	1978	6.08	50	3/--/78	6.08	50	N	10–25
06478690	West Fork Vermillion River near Parker, SD	377	1962–94	1993	13.14	6,300	6/16/84	12.57	4,800	N	10–25
06478820	Saddlerock Creek tributary near Beresford, SD	2.22	1956–80	1978	5.05	120	7/22/78	5.05	120	N	10–25
06478950	Ash Creek near Beresford, SD	5.00	1969–79	1971	10.45	1,050	6/06/71	10.45	1,050	N	10–25
06479000	Vermillion River near Wakonda, SD	2,170	1958–94	1984	17.62	17,000	6/23/84	17.62	17,000	Y	25–50
06479010	Vermillion River near Vermillion, SD	2,302	1984–94	1984	31.77	21,400	6/23/84	31.77	21,400	Y	--
06479215	Big Sioux River near Florence, SD	638	1984–94	1986 1993	9.08 9.18	1,810 --	3/29/86	9.08	1,810	N	10–25
06479350	Soo Creek tributary near South Shore, SD	1.56	1970–79	1978	8.82	280	7/06/78	8.82	280	N	10–25
06479438	Big Sioux River near Watertown, SD	1,007	1973–94	1986 1991	11.08 11.13	4,970 --	3/30/86	11.08	4,970	N	10–25
06479515	Willow Creek near Watertown, SD	110	1972–86	1984 1972	7.50 9.86	4,040 --	6/15/84	7.50	4,040	N	10–25
06479525	Big Sioux River near Castlewood, SD	1,997	1977–94	1986	11.73	2,250	3/30/86	11.73	2,250	Y	10–25

Table 43. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in South Dakota—Continued

Station number (fig. 64)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06479550	Dolph Creek tributary near Lake Norden, SD	5.91	1970–79	1972 1973	4.46 4.90	64	7/21/72	4.46	64	N	25–50
06479800	North Deer Creek near Estelline, SD	48.3	1956–80	1970	8.79	5,000	6/16/70	8.79	5,000	N	25–50
06479810	North Deer Creek tributary near Brookings, SD	0.33	1969–79	1977	9.70	170	6/15/77	9.70	170	N	10–25
06479910	Sixmile Creek near Brookings, SD	54.0	1971–80	1978 1980	9.45 9.84	936 --	3/28/78	9.45	936	N	10–25
06480000	Big Sioux River near Brookings, SD	3,898	1954–94	1969	14.77	33,900	6/22/84	13.70	13,700	N	10–25
06480650	Flandreau Creek above Flandreau, SD	100	1982–94	1984 1993	11.02 11.28	2,650 --	6/20/84	11.02	2,650	N	10–25
06481500	Skunk Creek at Sioux Falls, SD	622	1949–94	1957 1984	-- 15.54	29,400 --	6/21/84	15.54	11,000	N	10–25
06482600	West Pipestone Creek tributary near Garretson, SD	2.16	1969–79	1970	12.52	792	5/28/70	12.52	792	N	10–25
06482870	Little Beaver Creek tributary near Canton, SD	0.31	1956–73	1971	5.54	104	7/10/71	5.54	104	N	50–100
06485696	Brule Creek near Elk Point, SD	204	1983–94	1983	22.39	6,290	6/28/83	22.39	6,290	N	25–50

[1]Regulated during flood: N, no; Y, yes.

Tennessee

Hydroclimatology

Tennessee is located in the southeastern part of the United States. Tennessee's climate is governed by tropical maritime airmasses from the Gulf of Mexico or the Atlantic Ocean, and dry, polar continental airmasses from Canada. These airmasses interact with each other to produce a moderate climate, which is characterized by cool winters and warm summers. The topography of Tennessee ranges from the lowlands of the Mississippi River Valley in the west to the Appalachian Mountains in the east.

Most of the State's moisture is delivered by airmasses from the Gulf of Mexico and the Atlantic Ocean. The majority of the State's precipitation occurs in the winter and early spring when airmasses from the north collide with airmasses from the south and form frontal systems across the State. Tennessee receives a statewide average of about 50 in. of precipitation annually (Paulson and others, 1991). The orographic effects of the Appalachian Mountains result in slightly more precipitation in the mountainous regions in the eastern part of the State.

Floods in Tennessee are associated with frontal systems that generally move through the State in the winter and early spring. Floods also can occur when summer thunderstorms or the remnants of hurricanes and tropical storms hit the State. Tennessee's tendency to flood has led to the development of extensive public works projects to decrease the effects of flooding.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the primary factor affecting the magnitude of maximum discharges for streams in Tennessee's rural areas is drainage area. For the Memphis area, flow magnitudes depend on drainage area and a channel-condition factor, which is based on whether the channel is paved or not. For other urban areas, flow magnitudes depend on drainage area, percentage of the contributing-drainage area occupied by impervious area, and 2-year, 24-hour rainfall (Jennings and others, 1994).

Significant Floods

One of the most devastating floods in Tennessee's history occurred in March 1973. Twenty-nine percent of the State's streamflow-gaging stations recorded significant discharges. Of these 29 percent, 11 percent recorded discharges greater than the 50-year recurrence interval. The flooding was severe in the Cumberland, Hatchie, and Tennessee River Basins. The largest discharge of record was recorded for the Hatchie River at Bolivar (station 07029500, fig. 65). Damages were $37 million (Paulson and others, 1991).

Fourteen percent of the streamflow-gaging stations in the State recorded significant discharges during the floods of March 1975. Flooding was centered in the Cumberland River Basin. The floods were caused by a storm in which nearly 7 in. of rain fell over the entire Cumberland River Basin.

The location of streamflow-gaging stations in Tennessee that had significant floods for 1970–89 is shown in figure 65 by station number. The specific data for each significant flood are listed in table 44. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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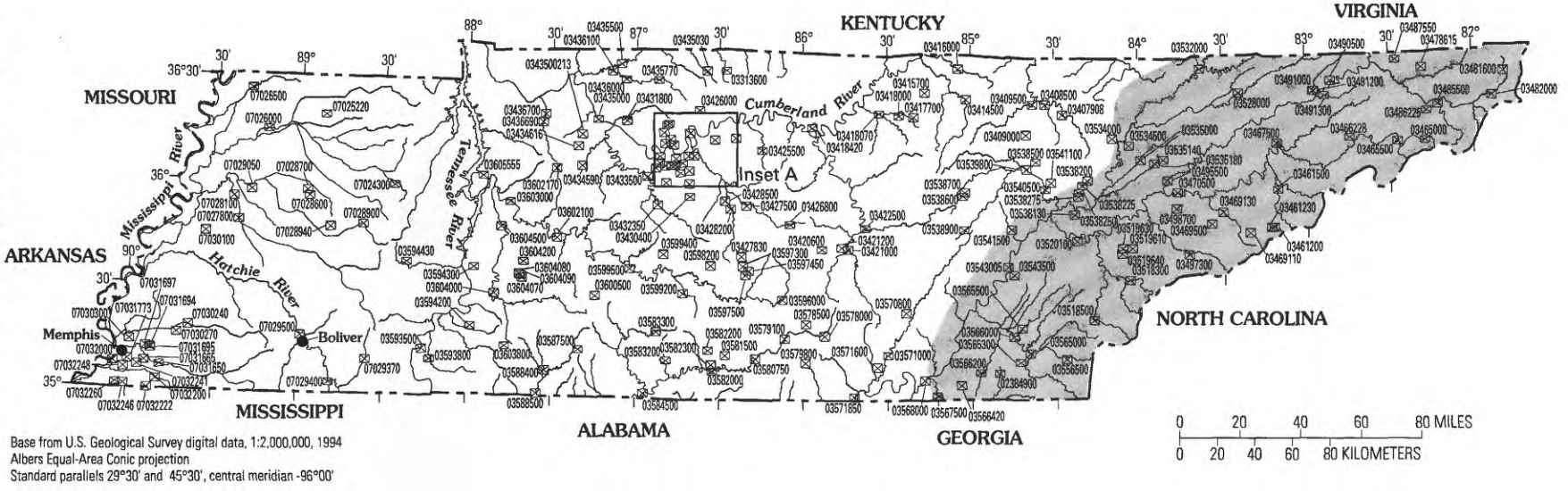
Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.



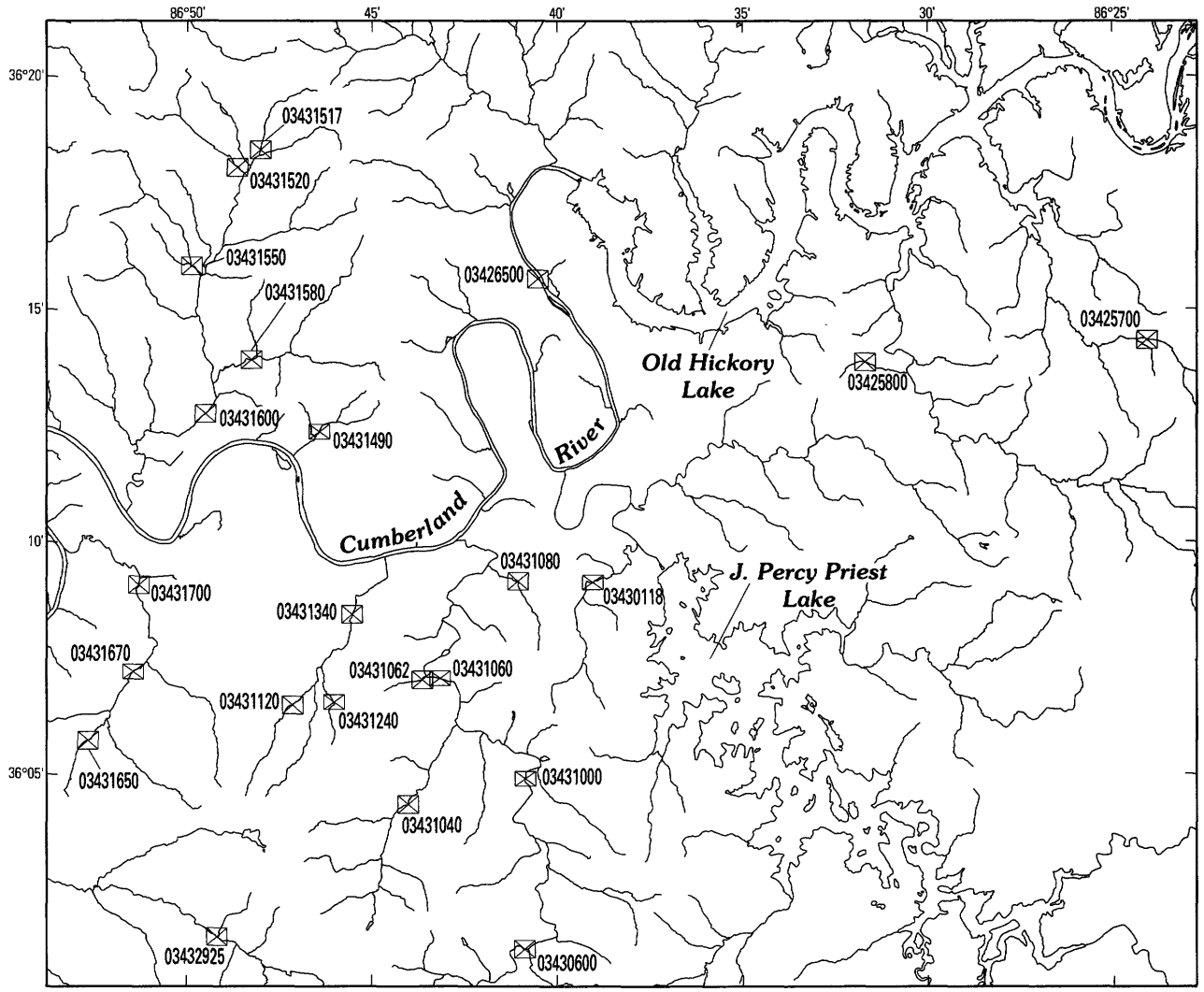
EXPLANATION

Appalachian Mountains

03583300 ⊠ Streamflow-gaging station and number

Figure 65. Location of streamflow-gaging stations with significant floods during 1970–89 for Tennessee.

Inset A



Base from U.S. Geological Survey digital data, 1:100,000, 1994
Universal Transverse Mercator projection
Zone 16
Converted to Albers Equal-Area Conic projection
Standard parallels 29°30' and 45°30', central meridian -96°00'

EXPLANATION

03431000 ⊠ **Streamflow-gaging station and number**

Figure 65. Location of streamflow-gaging stations with significant floods during 1970–89 for Tennessee—Continued.

Table 44. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Tennessee

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 65)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02384900	Coahulla Creek near Cleveland, TN	4.35	1955–85	1973	8.32	2,620	3/16/73	8.32	2,620	N	45–50
03313600	West Fork Drakes Creek tributary near Fountain Head, TN	0.95	1967–85	1984	11.22	742	5/06/84	11.22	742	N	25–50
03407908	New River at Cordell, TN	198	1978–87	1980	24.58	20,900	3/21/80	24.58	20,900	N	--
03408500	New River at New River, TN	382	1903, 1909–91	1929	41.20	74,700	5/27/73 4/05/77	37.91 32.25	63,700 47,100	N N	50–100 10–25
03409000	White Oak Creek at Sunbright, TN	13.5	1929, 1933, 1955–82, 1985–94	1973 1929	17.24 17.45	5,560 4,900	5/27/73	17.24	5,560	N	90–100
03409500	Clear Fork near Robbins, TN	272	1929, 1931–71, 1973, 1975–91	1973 1929	18.92 22.10	35,700 --	3/16/73	18.92	35,700	N	25–50
03414500	East Fork Obey River near Jamestown, TN	202	1929, 1943–94	1973 1929	30.46 30.70	44,800 --	5/27/73 5/07/84	30.46 26.89	44,800 33,500	N N	50–100 10–25
03415700	Big Eagle Creek near Livingston, TN	7.98	1955–78	1975 1962	6.05 6.23	1,740 1,170	3/12/75	6.05	1,740	N	25–50
03416000	Wolf River near Byrdstown, TN	106	1944–94	1982	17.14	23,500	9/02/82	17.14	23,500	N	>500
03417700	Mathews Branch tributary near Livingston, TN	0.49	1955–85	1979	7.87	480	5/27/73 9/28/79	7.06 7.87	405 480	N N	10–25 25–50
03418000	Roaring River near Hilham, TN	78.7	1933–75	1963	12.98	9,770	3/13/75	12.83	9,580	N	25–50
03418070	Roaring River above Gainesboro, TN	210	1975–94	1975	21.83	22,400	3/12/75	21.83	22,400	N	--
03418420	Cumberland River below Cordell Hull Dam, TN	8,095	1981–94	1984 1981	-- --	85,200 43,300	5/08/84	--	85,200	Y	--
03420600	Owen Branch near Centertown, TN	4.60	1955–89	1989 1955	-- 7.00	7,500 2,860	6/22/89	--	7,500	N	>500
03421000	Collins River near McMinnville, TN	640	1926–94	1929	39.10	75,300	3/16/73	36.30	64,100	N	40–50
03421200	Charles Creek near McMinnville, TN	31.1	1955–94	1989	17.03	24,800	6/22/89	17.03	24,800	N	>500
03422500	Caney Fork near Rock Island, TN	1,678	1912–94	1929 1984	13.20 34.36	210,000 --	5/28/73 4/04/77	32.89 32.90	131,000 129,900	Y Y	-- --
03425500	Spring Creek near Lebanon, TN	35.3	1955–89	1979	12.45	13,500	9/13/79 8/16/82	12.45 10.88	13,500 9,700	N N	50–100 10–25
03425700	Spencer Creek near Lebanon, TN	3.32	1955–92	1986	9.06	2,880	9/04/86	9.06	2,880	N	25–50
03425800	Cedar Creek tributary at Green Hill, TN	0.86	1955–57, 1959–83	1979	7.10	529	2/08/78	7.10	529	N	25–50
03426000	Drakes Creek above Hendersonville, TN	19.2	1955–85	1975	12.00	6,500	11/27/73 3/29/75	10.61 12.00	5,150 6,500	N N	10–25 50
03426500	Cumberland River below Old Hickory, TN	11,735	1927, 1932–42, 1948–86	1927	57.40	200,000	1/29/74 3/13/75	47.40 --	123,000 159,000	Y Y	-- --
03426800	East Fork Stones River at Woodbury, TN	39.1	1963–87, 1989–94	1973	16.75	13,200	3/15/73	16.75	13,200	N	45–50
03427500	East Fork Stones River near Lascassas, TN	262	1952–58, 1963–94	1975	39.48	41,200	3/13/75 9/04/86	39.48 37.97	41,200 34,900	N N	100–500 45–50

Table 44. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Tennessee—Continued

Station number (fig. 65)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03427830	Short Creek tributary near Christiana, TN	0.17	1966–75	1973	7.60	140	5/27/73	7.60	140	N	10–15
03428200	West Fork Stones River at Murfreesboro, TN	177	1973–81, 1986–94	1975	23.80	31,000	3/13/75	23.80	31,000	N	--
03428500	West Fork Stones River near Smyrna, TN	237	1966–94	1975	19.18	63,800	3/13/75	19.18	63,800	N	--
03430118	McCrory Creek at Ironwood Drive at Donelson, TN	7.31	1977–94	1984	9.87	2,850	5/06/84	9.87	2,850	N	--
03430400	Mill Creek at Nolensville, TN	12.0	1965–94	1979 1984	9.45 9.82	11,400 11,400	5/04/79 5/07/84	9.45 9.82	11,400 11,400	N N	25–50 25–50
03430600	Mill Creek at Hobson Pike near Antioch, TN	43.0	1965–75	1970	13.40	8,400	6/21/70	13.40	8,400	N	10–25
03431000	Mill Creek near Antioch, TN	64.0	1954–94	1979	23.78	30,100	5/04/79	23.78	30,100	N	100–500
03431040	Sevenmile Creek at Blackman Road near Nashville, TN	12.2	1965–94	1970 1979	5.30 9.58	1,330 --	6/21/70	5.30	1,330	N	--
03431060	Mill Creek at Thompson Lane near Woodbine, TN	93.4	1965–94	1979	20.63	26,200	5/04/79 2/14/89	20.63 16.88	26,200 16,000	N N	-- --
03431062	Mill Creek tributary at Glenrose Avenue at Woodbine, TN	1.17	1977–94	1984	9.12	833	5/06/84	9.12	833	N	--
03431080	Sims Branch at Elm Hill Pike near Donelson, TN	3.92	1965–75	1973	12.02	2,060	7/01/73	12.02	2,060	N	10–25
03431120	West Fork Browns Creek at Gen Bates Drive at Nashville, TN	3.30	1965–94	1975	7.00	2,110	3/29/75 9/13/79	7.00 6.63	2,110 1,820	N N	10–25 5–10
03431240	East Fork Browns Creek at Baird-Ward P Co, Nashville, TN	1.58	1965–94	1993	5.37	690	6/13/73	5.10	610	N	25–50
03431340	Browns Creek at Factory Street at Nashville, TN	13.2	1965–84, 1986–94	1979	10.89	7,800	9/13/79	10.89	7,800	N	50–100
03431490	Pages Branch at Avondale, TN	2.01	1977, 1979–94	1986 1979	5.96 6.20	2,650 --	6/09/86	5.96	2,650	N	--
03431517	Cummings Branch at Lickton, TN	2.40	1976–90	1979	5.21	881	9/13/79	5.21	881	N	--
03431520	Claylick Creek at Lickton, TN	4.13	1965–85	1974	8.19	2,700	5/22/74	8.19	2,700	N	10–25
03431550	Earthman Fork at Whites Creek, TN	6.29	1965–94	1993	9.43	2,510	9/15/81	9.34	2,450	N	10–25
03431580	Ewing Creek at Knight Road near Bordeaux, TN	13.3	1965–82	1975	10.85	7,220	2/23/75	10.85	7,220	N	25–50
03431600	Whites Creek at Tucker Road near Bordeaux, TN	51.6	1965–75	1975	17.06	12,200	2/23/75	17.06	12,200	N	25–50
03431650	Vaughns Gap Branch at Percy Warner Belle Meade, TN	2.66	1965–75	1975	6.97	1,280	3/29/75	6.97	1,280	N	25–30
03431670	Richland Creek at Fransworth Drive at Belle Meade, TN	12.4	1965–75	1975	8.83	3,400	3/29/75	8.83	3,400	N	50–100
03431700	Richland Creek at Charlotte Avenue at Nashville, TN	24.3	1965–90, 1994	1979	15.13	9,470	9/13/79	15.13	9,470	N	25–50
03431800	Sycamore Creek near Ashland City, TN	97.2	1962–87, 1989–94	1989	13.50	18,500	5/19/83 2/21/89	13.24 13.50	17,000 18,500	N N	25–50 25–50

Table 44. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Tennessee—Continued

Station number (fig. 65)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03432350	Harpeth River at Franklin, TN	191	1975–94	1975	33.65	20,200	3/13/75	33.65	20,200	N	--
03432925	Little Harpeth River at Granny White Pike at Brentwood, TN	22.0	1978–94	1979	17.55	9,260	5/04/79	17.55	9,260	N	--
03433500	Harpeth River at Bellevue, TN	408	1921–29, 1932–91, 1993–94	1948	24.34	40,000	3/13/75 5/04/79	24.27 21.87	39,600 27,400	N N	100–500 20–25
03434590	Jones Creek near Burns, TN	13.3	1984–94	1984	9.87	3,750	5/06/84	9.87	3,750	N	--
03434616	Hall Branch near Charlotte, TN	0.50	1984–88, 1990–94	1984	15.71	385	5/06/84	15.71	385	N	--
03435000	Cumberland River below Cheatham Dam, TN	14,163	1927, 1937, 1955–91	1927	51.70	205,000	3/15/75	--	204,000	Y	--
0343500213	Bartons Creek tributary near Stayton, TN	0.51	1984–94	1984 1991	10.56 13.49	195 --	5/07/84	10.56	195	N	--
03435030	Red River near Portland, TN	15.1	1967–86	1981	14.07	10,400	6/10/81	14.07	10,400	N	50
03435500	Red River near Adams, TN	706	1921–69, 1975	1975	40.58	60,000	3/12/75	40.58	60,000	N	500
03435770	Sulphur Fork Red River above Springfield, TN	65.6	1976–94	1989	14.29	11,200	2/21/89	14.29	11,200	N	--
03436000	Sulphur Fork Red River near Adams, TN	186	1934, 1937, 1939–91	1975	30.86	35,400	3/12/75 12/09/78 5/19/83	30.86 23.67 22.55	35,400 16,100 14,500	N N N	>500 20–25 10–15
03436100	Red River at Port Royal, TN	935	1937, 1962–94	1975	48.26	60,300	3/13/75	48.26	60,300	N	50–100
03436690	Yellow Creek at Ellis Mills, TN	103	1981–94	1984	18.47	14,400	5/06/84	18.47	14,400	N	--
03436700	Yellow Creek near Shiloh, TN	124	1958–80, 1982–94	1984	17.75	16,200	5/06/84 6/13/89	17.75 17.61	16,200 15,800	N N	25–50 25–50
03461200	Cosby Creek above Cosby, TN	10.1	1959–87	1973 1979	4.11 16.36	1,720 1,300	3/16/73	4.11	1,720	N	25–30
03461230	Caney Creek near Cosby, TN	1.62	1967–94	1973	6.05	240	3/16/73	6.05	240	N	--
03461500	Pigeon River at Newport, TN	666	1867, 1876, 1886, 1893, 1901–05, 1908–30, 1932–40, 1943, 1946–82	1902	21.40	50,000	3/17/73 4/05/77	20.05 18.17	48,700 40,900	Y Y	40–50 20–25
03465000	North Indian Creek near Unicoi, TN	15.9	1945–57, 1959–84	1978	5.31	980	11/06/77 5/07/84	5.31 5.30	980 977	N N	20–25 20–25
03465500	Nolichucky River at Embreeville, TN	805	1901, 1921–94	1901	24.00	120,000	11/06/77	21.52	110,000	N	>100
03466228	Sinking Creek at Afton, TN	13.7	1978–94	1979	7.79	1,510	7/21/79	7.79	1,510	N	--
03467500	Nolichucky River near Morristown, TN	1,679	1901, 1921–57, 1959–82	1901	26.00	85,000	11/06/77	24.90	80,000	N	50–100
03469110	Ramsey Creek near Pitman Center, TN	2.07	1967–85	1973	6.06	424	3/16/73	6.06	424	N	25
03469130	Little Pigeon River near Sevierville, TN	110	1954–82	1973	17.69	16,200	3/16/73	17.69	16,200	N	20–25

Table 44. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Tennessee—Continued

Station number (fig. 65)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03469500	West Prong Little Pigeon River near Pigeon Forge, TN	76.2	1947–49, 1954–82	1973	13.16	11,000	7/19/71 3/16/73	12.38 13.16	9,700 11,000	N N	20–25 25–30
03470500	French Broad River near Knoxville, TN	5,101	1867, 1946–87	1867	855	160,000	5/08/84	834.60	75,600	Y	--
03478615	Evans Creek near Blountville, TN	2.50	1984–94	1989 1984	12.31 12.38	90 --	9/12/89	12.31	90	N	--
03481600	Corn Creek at Mountain City, TN	5.34	1959–89	1978	5.06	1,120	10/02/77 5/07/84	5.06 4.08	1,120 376	N N	-- --
03482000	Roan Creek near Neva, TN	102	1943–55, 1959–85	1978	10.80	11,000	10/02/77 5/07/84	10.80 9.19	11,000 7,850	N N	50–100 25–50
03485500	Doe River at Elizabethton, TN	137	1901, 1912–16, 1921–31, 1933–82	1901	10.50	25,000	11/06/77	9.34	14,700	N	50–100
03486225	Powder Branch near Johnson City, TN	4.88	1973–84	1973	13.90	563	4/25/73	13.90	563	N	20–50
03487550	Reedy Creek at Orebank, TN	36.3	1927, 1964–87, 1989–94	1927 1978	11.40 11.61	11,000 4,940	10/02/77	11.61	4,940	N	50–100
03490500	Holston River at Surgoinsville, TN	2,874	1941–88	1944	17.48	59,600	5/08/84	16.90	56,900	Y	--
03491000	Big Creek near Rogersville, TN	47.3	1942–49, 1955–94	1963 1994	9.40 12.14	5,760 4,200	4/05/77	9.25	5,600	N	25
03491200	Big Creek tributary near Rogersville, TN	2.00	1955–85	1977	8.25	1,180	4/27/70 7/25/77	7.78 8.25	810 1,180	N N	20–30 50–100
03491300	Beech Creek at Kepler, TN	47.0	1966–87	1975	13.38	3,480	3/30/75	13.38	3,480	N	--
03495500	Holston River near Knoxville, TN	3,747	1867, 1901, 1931–76, 1979–93	1935 1867	20.20 41.00	62,900 --	1/11/74	10.45	30,400	Y	<2
03497300	Little River above Townsend, TN	106	1964–94	1994	15.75	27,100	3/16/73	12.30	16,000	N	20–25
03498700	Nails Creek near Knoxville, TN	0.36	1955–85	1982	6.45	240	3/21/74 7/31/82	5.82 6.45	201 240	N N	25–30 50
03518300	Little Tennessee River below Chilhowee Dam, TN	1,987	1959–79	1973	17.31	41,500	5/28/73	17.31	41,500	Y	--
03518500	Tellico River at Tellico Plains, TN	118	1840, 1921, 1926–82	1840	15.00	21,500	3/16/73	14.18	19,900	N	50–55
03519610	Baker Creek tributary near Binfield, TN	2.10	1967–77, 1979–94	1973 1981	7.07 8.29	685 --	3/16/73	7.07	685	N	20–25
03519630	Griffitts Branch near Greenback, TN	1.46	1966–75	1974	9.84	930	5/30/74	9.84	930	N	>100
03519640	Baker Creek near Greenback, TN	16.0	1966–91, 1993–94	1974	9.70	2,900	5/30/74	9.70	2,900	N	20–25
03520100	Sweetwater Creek near Loudon, TN	62.2	1954–82	1973	13.33	4,500	3/16/73	13.33	4,500	N	50–60
03528000	Clinch River above Tazewell, TN	1,474	1862, 1920–94	1977	29.32	98,100	3/17/73 4/05/77	21.02 29.32	51,200 98,100	N N	20–25 >500
03532000	Powell River near Arthur, TN	685	1826, 1867, 1905–82	1977	38.96	59,500	4/06/77	38.96	59,500	N	>500
03534000	Coal Creek at Lake City, TN	24.5	1929, 1933, 1955–94	1929 1977	-- 10.57	8,400 7,950	4/05/77	10.57	7,950	N	25–50
03534500	Buffalo Creek at Norris, TN	9.92	1948–50, 1955–82	1964	10.07	1,460	4/05/77	10.07	1,460	N	25–30

Table 44. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Tennessee—Continued

Station number (fig. 65)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03535000	Bullrun Creek near Halls Crossroads, TN	68.5	1958–87	1977	13.28	18,300	3/16/73	11.78	12,500	N	20–25
							4/04/77	13.28	18,300	N	50–100
03535140	South Fork Beaver Creek at Harbison, TN	1.23	1967–78	1972	5.26	514	4/12/72	5.26	514	N	5–10
03535180	Willow Fork near Halls Crossroads, TN	3.23	1967–94	1973	8.08	878	3/16/73	8.08	878	N	25–50
03538130	Caney Creek near Kingston, TN	5.55	1962–85	1973	7.81	1,930	12/10/72	7.81	1,930	N	25
03538200	Poplar Creek near Oliver Springs, TN	55.9	1928, 1954–85	1928	--	14,000	4/05/77	21.47	10,500	N	45–50
				1977	21.47	10,500					
03538225	Poplar Creek near Oak Ridge, TN	82.5	1961–89	1977	27.93	11,400	4/05/77	27.93	11,400	N	25–50
03538250	East Fork Poplar Creek near Oak Ridge, TN	19.5	1961–88	1974	16.00	4,100	11/28/73	16.00	4,100	N	45–50
03538275	Bear Creek near Oak Ridge, TN	7.15	1961–78	1973	6.97	705	2/10/72	6.97	705	N	5–10
				1974	8.15	--					
03538500	Emory River near Wartburg, TN	83.2	1929, 1935–82	1929	32.00	30,000	5/27/73	25.53	19,900	N	25–50
03538600	Obed River at Crossville, TN	12.0	1955–85, 1993–94	1973	10.07	1,470	4/27/70	8.96	985	N	5–10
				1977	10.58	--	5/27/73	10.07	1,470	N	25–50
03538700	Little Obed River near Crossville, TN	4.71	1955–67, 1970	1970	9.04	1,850	4/28/70	9.04	1,850	N	--
03538900	Self Creek near Big Lick, TN	3.80	1968–85	1973	11.52	1,760	5/27/73	11.52	1,760	N	50–100
03539800	Obed River near Lancing, TN	518	1929, 1958–68, 1973–87	1973	29.51	105,000	5/27/73	29.51	105,000	N	>500
				1929	33.90	--					
03540500	Emory River at Oakdale, TN	764	1928–94	1929	--	195,000	5/28/73	38.68	170,000	N	>100
				1991	38.71	170,000					
03541100	Bitter Creek near Camp Austin, TN	5.53	1967–85	1974	8.76	3,710	11/26/73	8.76	3,710	N	10
03541500	Whites Creek near Glen Alice, TN	108	1929, 1935–78	1929	27.10	66,000	5/27/73	26.60	62,500	N	100–500
03543005	Tennessee River at Watts Bar Dam (tailwater), TN	17,310	1936, 1975–86	1984	--	208,000	5/08/84	--	208,000	Y	--
				1936	--	202,000					
03543500	Sewee Creek near Decatur, TN	117	1935–94	1946	23.97	23,900	3/16/73	20.12	13,300	N	10–25
03556500	Hiwassee River near McFarland, TN	1,136	1943–81	1973	15.34	47,100	5/28/73	15.34	47,100	Y	--
03565000	Hiwassee River above Charleston, TN	2,001	1954–75	1973	--	48,000	5/29/73	--	48,000	Y	--
				1962	24.63	34,200					
03565300	South Chestuee Creek near Benton, TN	31.8	1958–87	1973	12.11	12,000	3/16/73	12.11	12,000	N	100–500
							3/20/80	9.38	4,740	N	5–10
03565500	Oostanaula Creek near Sanford, TN	57.0	1955–89	1973	13.43	8,000	3/16/73	13.43	8,000	N	50–100
							5/08/84	12.81	7,090	N	45–50
03566000	Hiwassee River at Charleston, TN	2,298	1886, 1899–1903, 1920–39, 1963–76, 1980–81, 1987–94	1886	--	70,000	3/17/73	29.39	57,000	Y	--
				1994	29.42	--					
03566200	Brymer Creek near McDonald, TN	9.68	1955–85	1973	9.32	4,300	3/16/73	9.32	4,300	N	100–500
							9/23/75	7.89	2,400	N	25–50
03566420	Wolftever Creek near Ooltewah, TN	18.8	1965–94	1973	9.75	7,300	3/16/73	9.75	7,300	N	>100

Table 44. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Tennessee—Continued

Station number (fig. 65)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03567500	South Chickamauga Creek near Chickamauga, TN	428	1929–78, 1981–94	1973 1990	21.70 28.72	30,000 27,300	3/17/73	21.70	30,000	N	50–100
03568000	Tennessee River at Chattanooga, TN	21,400	1826, 1847, 1867, 1874–1994	1867	57.90	459,000	3/18/73 5/09/84	38.98 --	267,000 239,000	Y Y	5–10 2–5
03570800	Little Brush Creek near Dunlap, TN	15.4	1958–85	1973	10.30	3,420	3/16/73	10.30	3,420	N	25
03571000	Sequatchie River near Whitwell, TN	402	1867, 1921–94	1991 1867	18.02 19.00	35,400 --	3/16/73	17.65	32,500	N	100
03571600	Brown Spring Banch near Sequatchie, TN	0.67	1955–78	1973 1963	8.01 8.56	234 165	3/16/73	8.01	234	N	50
03571850	Tennessee River at South Pittsburg, TN	22,640	1917, 1930–87	1917 1973	-- 34.33	320,000 315,000	3/18/73 5/09/84	34.33 --	315,000 267,000	Y Y	-- --
03578000	Elk River near Pelham, TN	65.6	1952–87	1973	14.08	15,800	3/16/73 4/04/77	14.08 14.05	15,800 15,600	N N	-- --
03578500	Bradley Creek near Prairie Plains, TN	41.3	1952–83	1973	14.46	5,660	3/17/73 4/04/77	14.46 14.20	5,660 5,430	N N	10–25 10–25
03579100	Elk River near Estill Springs, TN	275	1921–57, 1960–81	1973	20.33	38,100	3/16/73	20.33	38,100	Y	--
03579800	Miller Creek near Cowan, TN	4.30	1955–78	1977 1968	7.17 8.17	2,540 --	4/04/77	7.17	2,540	N	10–15
03580750	Elk River below Tims Ford Dam, TN	534	1966–76	1973	60.25	18,600	3/18/73	60.25	18,600	Y	--
03581500	West Fork Mulberry Creek at Mulberry, TN	41.2	1954–85	1967	15.25	14,200	5/27/73	15.08	13,700	N	20–25
03582000	Elk River above Fayetteville, TN	827	1842, 1929, 1935–81	1973	28.63	41,600	3/16/73	28.63	41,600	Y	25–30
03582200	Norris Creek tributary near Belleville, TN	0.03	1955–78	1977 1967	5.86 6.24	100 --	4/04/77	5.86	100	N	20–25
03582300	Norris Creek near Fayetteville, TN	42.6	1954–83	1973	12.57	16,000	3/16/73	12.57	16,000	N	25–50
03583200	Chicken Creek at McBurg, TN	7.66	1955–89	1986	7.51	5,050	5/08/78 5/28/86	7.28 7.51	4,680 5,050	N N	5–10 10–15
03583300	Richland Creek near Cornersville, TN	47.5	1962–94	1989	16.58	11,400	7/11/89	16.58	11,400	N	10–15
03584500	Elk River near Prospect, TN	1,784	1902, 1905–07, 1919–89	1902 1973	-- 40.12	130,000 117,000	3/17/73	40.12	117,000	Y	>100
03587500	Shoal Creek above Little Shoal Creek at Lawrenceburg, TN	27.0	1902, 1933, 1955–82	1902 1973	-- 17.50	11,200 10,900	3/15/73	17.50	10,900	N	25–50
03588400	Chisholm Creek at Westpoint, TN	43.0	1963–87	1973	14.74	17,900	3/15/73	14.74	17,900	N	50–100
03588500	Shoal Creek at Iron City, TN	348	1926–94	1955 1973	-- 25.10	132,000 61,900	3/15/73	25.10	61,900	N	25–50
03593500	Tennessee River at Savannah, TN	33,140	1897, 1927, 1931–91, 1993–94	1973 1957	-- 92.42	585,000 403,000	3/17/73	--	585,000	Y	--
03593800	Horse Creek near Savannah, TN	104	1940–75	1973	19.90	37,000	3/15/73	19.90	37,000	N	90–100
03594200	Eagle Creek near Clifton Junction, TN	19.0	1955–83	1975	7.55	5,600	3/12/75	7.55	5,600	N	10–25
03594300	Cypress Creek tributary near Pope, TN	0.75	1955–83	1975	5.85	382	3/12/75	5.85	382	N	--

Table 44. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Tennessee—Continued

Station number (fig. 65)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03594430	Harmon Creek near Lexington, TN	6.87	1953–70	1970 1965	7.20 7.52	1,000 946	4/01/70	7.20	1,000	N	10–25
03596000	Duck River below Manchester, TN	107	1929, 1935–87	1929	23.20	50,000	5/27/73	20.95	38,000	N	50–100
03597300	Wartrace Creek above Bell Buckle, TN	4.99	1966–94	1973	12.64	3,220	3/15/73	12.64	3,220	N	10–25
03597450	Kelly Creek tributary near Bell Buckle, TN	0.73	1967–82	1982 1976	3.93 4.40	667 --	1/03/82	3.93	667	N	25–50
03597500	Wartrace Creek at Bell Buckle, TN	16.3	1954–83	1955	11.25	8,240	10/17/75	10.41	6,190	N	5–10
03598200	Weakly Creek near Rover, TN	9.46	1955–83	1973	6.24	5,380	3/15/73	6.24	5,380	N	100–500
03599200	East Rock Creek at Farmington, TN	43.1	1902, 1954–89	1967 1902	15.50 22.00	13,700 --	10/17/75	14.97	12,300	N	10–25
03599400	Little Flat Creek tributary near Rally Hill, TN	0.63	1955–75	1974	7.34	530	4/03/74	7.34	530	N	25–50
03599500	Duck River at Columbia, TN	1,208	1874, 1887, 1902, 1905–08, 1921–86, 1988–94	1973 1948	49.31 51.75	61,500 61,100	3/17/73 3/14/75	49.31 48.31	61,500 58,400	Y Y	50–100 50–100
03600500	Big Bigby Creek at Sandy Hook, TN	17.5	1954–87, 1989	1973	11.55	7,700	3/15/73	11.55	7,700	N	25–50
03602100	Moss Spring Hollow at Centerville, TN	3.68	1955–83	1979 1967	-- 6.70	1,930 1,660	5/04/79	--	1,930	N	--
03602170	West Piney River at Highway 70 near Dickson, TN	2.16	1984–94	1984	28.17	1,230	5/06/84	28.17	1,230	N	--
03603000	Duck River above Hurricane Mills, TN	2,557	1926–94	1948	30.7	122,000	3/18/73 3/14/75	27.02 28.80	83,200 102,000	N N	10–25 50–100
03603800	Chalk Creek near Waynesboro, TN	4.88	1960–74	1973	7.59	2,690	3/17/73	7.59	2,690	N	--
03604000	Buffalo River near Flat Woods, TN	447	1921–94	1991	32.19	96,300	3/13/75	29.26	60,200	N	50–60
03604070	Coon Creek tributary near Hohenwald, TN	0.51	1967–94	1984	6.58	301	5/08/84	6.58	301	N	25
03604080	Hugh Hollow Branch near Hohenwald, TN	1.52	1967–69, 1971–94	1984	5.55	1,400	5/08/84	5.55	1,400	N	10–25
03604090	Coon Creek above Chop Hollow near Hohenwald, TN	6.02	1967–94	1973	6.80	3,150	12/09/72	6.80	3,150	N	25
03604200	Cane Creek at Farmers Exchange, TN	45.1	1955–78	1973	11.38	14,000	12/10/72	11.38	14,000	N	--
03604500	Buffalo River near Lobelville, TN	707	1928–89	1948	23.76	100,000	3/14/75	20.07	50,200	N	25–50
03605555	Trace Creek above Denver, TN	31.9	1964–94	1984	13.61	11,700	4/19/73 5/06/84	12.43 13.61	9,170 11,700	N N	25 50–100
07024300	Beaver Creek at Huntingdon, TN	55.5	1954–87, 1989–94	1970 1982	13.96 15.20	8,350 7,290	9/09/70 9/13/82	13.96 15.20	8,350 7,290	N N	50 25
07025220	Cane Creek near Martin, TN	6.79	1955–83	1975	14.55	7,960	7/20/75	14.55	7,960	N	--
07026000	Obion River at Obion, TN	1,852	1930–58, 1967–90	1937 1984	25.40 35.14	99,500 44,300	2/17/89	--	47,800	N	10–25
07026500	Reelfoot Creek near Samburg, TN	110	1951–72	1970	17.21	16,600	6/13/70	17.21	16,600	N	25–50

Table 44. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Tennessee—Continued

Station number (fig. 65)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07027800	South Fork Forked Deer River near Gates, TN	932	1954–77	1975	21.19	35,300	3/16/75	21.19	35,300	N	25–50
07028100	South Fork Forked Deer River near Halls, TN	1,019	1939–40, 1943–44, 1946–77	1975	15.21	34,300	3/16/75	15.21	34,300	N	--
07028600	Cain Creek tributary near Trenton, TN	0.95	1955–57, 1959–85	1982	12.80	1,330	9/13/82	12.80	1,330	N	100–500
07028700	Cain Creek near Trenton, TN	14.4	1954–85	1982	15.00	15,600	4/02/79 9/13/82	13.07 15.00	5,200 15,600	N N	10–25 100–500
07028900	Middle Fork Forked Deer River near Spring Creek, TN	88.2	1954–57, 1959–78	1973	12.37	16,200	1/21/73	12.37	16,200	N	45–50
07028940	Turkey Creek near Medina, TN	7.87	1968–82	1978 1982	16.42 18.43	3,900 --	12/04/77	16.42	3,900	N	5–10
07029050	Nash Creek near Tigrett, TN	7.23	1955–78	1970	11.23	2,030	9/05/70	11.23	2,030	N	45–50
07029370	Cypress Creek at Selmer, TN	44.1	1954–73, 1975	1975	16.36	6,550	3/12/75	16.36	6,550	N	50–100
07029400	Hatchie River at Pocahontas, TN	837	1942–73, 1975–77	1948 1973	-- 34.07	47,600 45,200	3/17/73	34.07	45,200	N	25–50
07029500	Hatchie River at Bolivar, TN	1,480	1930–87, 1989–94	1973	21.66	61,600	3/18/73	21.66	61,600	N	25–50
07030100	Cane Creek at Ripley, TN	33.9	1958–70, 1986–87, 1989–94	1989	23.16	6,360	7/01/89	23.16	6,360	N	>100
07030240	Loosahatchie River near Arlington, TN	262	1970–94	1988	25.27	27,400	2/25/87	25.27	27,400	N	--
07030270	Clear Creek near Arlington, TN	60.5	1954–56, 1959–84	1975 1979	16.83 19.29	5,070 4,620	3/13/75	16.83	5,070	N	50–100
07030300	Loosahatchie River tributary at St. Elmo Avenue at Memphis, TN	0.82	1975–85	1982 1979	10.13 11.10	1,860 1,730	7/08/82	10.13	1,860	N	--
07031650	Wolf River at Germantown, TN	699	1970–86, 1991–94	1975	27.98	33,400	3/14/75	27.98	33,400	N	--
07031665	White Station Creek at Rich Road at Memphis, TN	2.45	1976–85	1979	12.18	4,220	5/03/79	12.18	4,220	N	--
07031694	Harrington Creek tributary at Elmore Park Road at Bartlett, TN	0.33	1975–83, 1985–86	1980	18.84	293	7/22/80	18.84	293	N	--
07031695	Harrington Creek tributary at Hawthorne Road at Bartlett, TN	0.21	1975–85	1980 1975	12.64 14.05	392 180	7/22/80	12.64	392	N	--
07031697	Harrington Creek tributary at Stage Road at Bartlett, TN	0.91	1975–86	1980	12.73	830	7/22/80	12.73	830	N	--
07031773	Lick Creek at Jefferson Avenue at Memphis, TN	1.00	1976–85	1978	11.60	1,020	8/10/78	11.60	1,020	N	--
07032000	Mississippi River at Memphis, TN	--	1872–1994	1937 1913	-- 46.55	1,980,000 --	4/07/75	40.32	1,780,000	Y	--
07032200	Nonconnah Creek near Germantown, TN	68.2	1970–84, 1986–94	1989 1975	24.23 27.11	13,100 9,680	7/02/89	24.23	13,100	N	--
07032222	Johns Creek tributary at Holmes Road near Memphis, TN	5.83	1976–85	1984 1979	8.87 12.99	2,090 1,970	5/02/84	8.87	2,090	N	--

Table 44. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Tennessee—Continued

Station number (fig. 65)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07032241	Black Bayou at Southern Avenue at Memphis, TN	0.59	1975–84	1977	9.05	714	9/24/77	9.05	714	N	--
07032246	Days Creek at Shelby Drive at Memphis, TN	2.63	1975–84	1982	10.05	1,480	4/16/82	10.05	1,480	N	--
07032248	Cane Creek at East Person Avenue at Memphis, TN	4.98	1976–85	1982	14.39	3,830	4/17/82	14.39	3,830	N	--
07032260	Cypress Creek at Neely Road at Memphis, TN	3.18	1976–85	1984 1976	11.55 12.16	1,440 1,380	11/23/83	11.55	1,440	N	--

[1]Regulated during flood: N, no; Y, yes.

Texas

Hydroclimatology

Texas is located in the south-central part of the United States and is bordered on the southeast by the Gulf of Mexico. The large area that Texas encompasses along with its proximity to the Gulf of Mexico create a very diverse climate for the State. The majority of airmasses that bring moisture to Texas originate over the Gulf of Mexico. Pacific moisture can affect the State's climate, but it is usually a secondary source.

Precipitation varies from east to west across the State. The southeastern part of Texas averages about 56 in. of annual precipitation. El Paso, on the west border, averages less than 8 in. of annual precipitation. More than one-half the State receives less than an average of 30 in. of precipitation per year (Paulson and others, 1991).

Floods in Texas typically are associated with thunderstorms during the summer and hurricanes and tropical storms in the late summer through early fall. Thunderstorms typically produce localized flooding. Hurricanes can cause tidal surges and severe coastal flooding.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in rural Texas depends on drainage area, channel slope, and a basin-shape factor (ratio of the square of the stream length to the contributing-drainage area, which represents the ratio of the longest stream length to the mean width of the basin). Maximum discharges in the Houston urban area depend on drainage area; degree of urban development, defined as the percentage of total contributing area within 200 ft of streets, roads, and parking lots and industrial sites that are drained by open ditches or storm sewers; and bankfull channel conveyance. Maximum discharges for streams in Austin depend on contributing-drainage area and total percentage of the drainage area that is impervious. Maximum discharges for streams in Dallas-Fort Worth depend on drainage area and an urbanization index (Jennings and others, 1994).

Significant Floods

On July 31, 1978, Tropical Storm Amelia made landfall in southern Texas. The storm moved northward during the next 3 days, reaching as far north as north-central Texas where the storm stalled and produced as much as 29 in. of rain in a 24-hour period. Record-setting floods occurred on the Medina, Guadalupe, and Clear Fork Brazos Rivers and their tributaries. Thirty-three people lost their lives, and damages were estimated at $110 million (Paulson and others, 1991).

Seven percent of the streamflow-gaging stations in the State recorded significant discharges during flooding on May 24, 1981. Intense rainfall was centered on the Shoal Creek Basin near Austin where flash flooding was especially intense. There were 13 deaths and $40 million in damages (Paulson and others, 1991).

The location of streamflow-gaging stations in Texas that had significant floods for 1970–89 is shown in figure 66 by station number. The specific data for each significant flood are listed in table 45. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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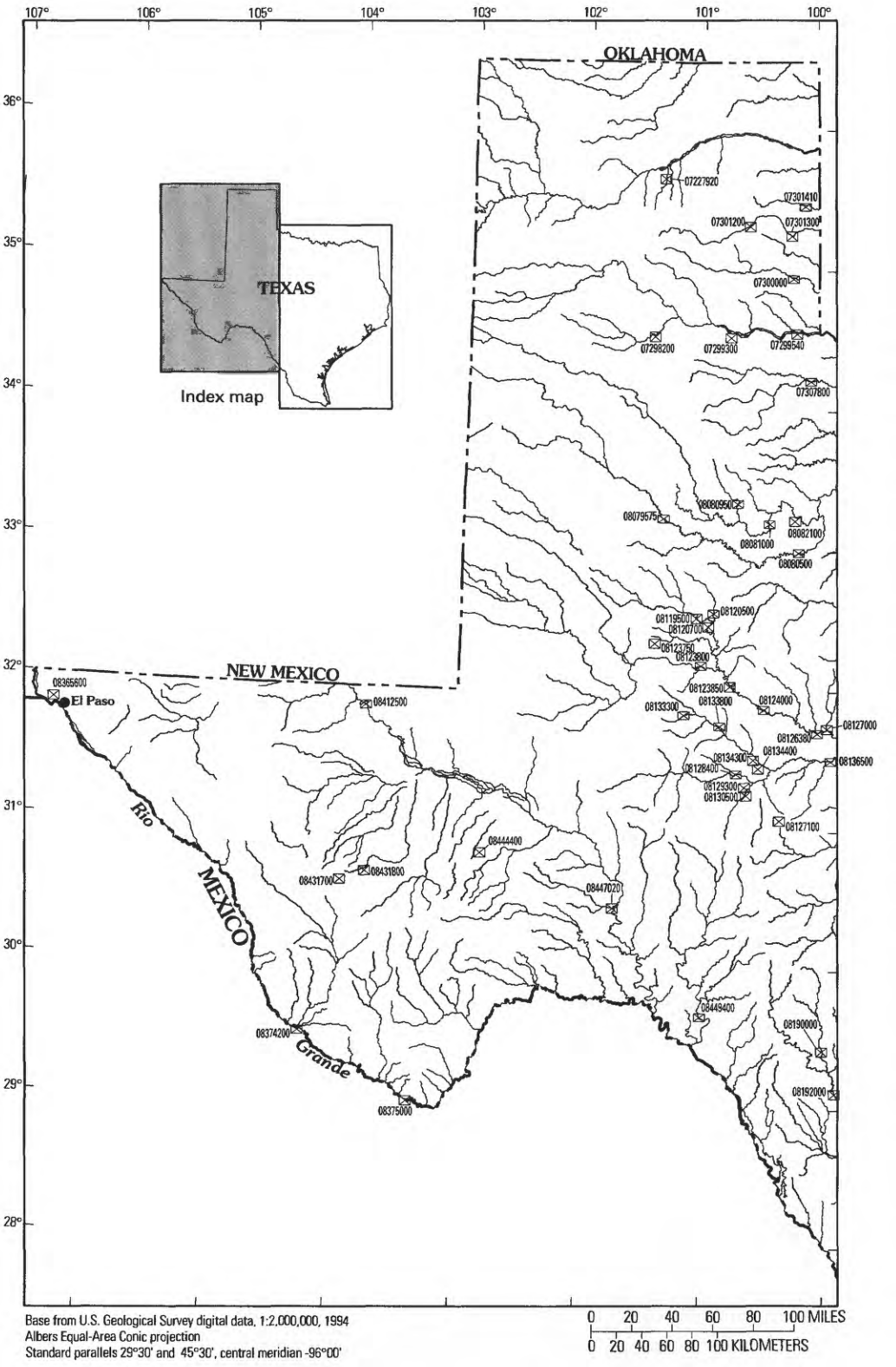
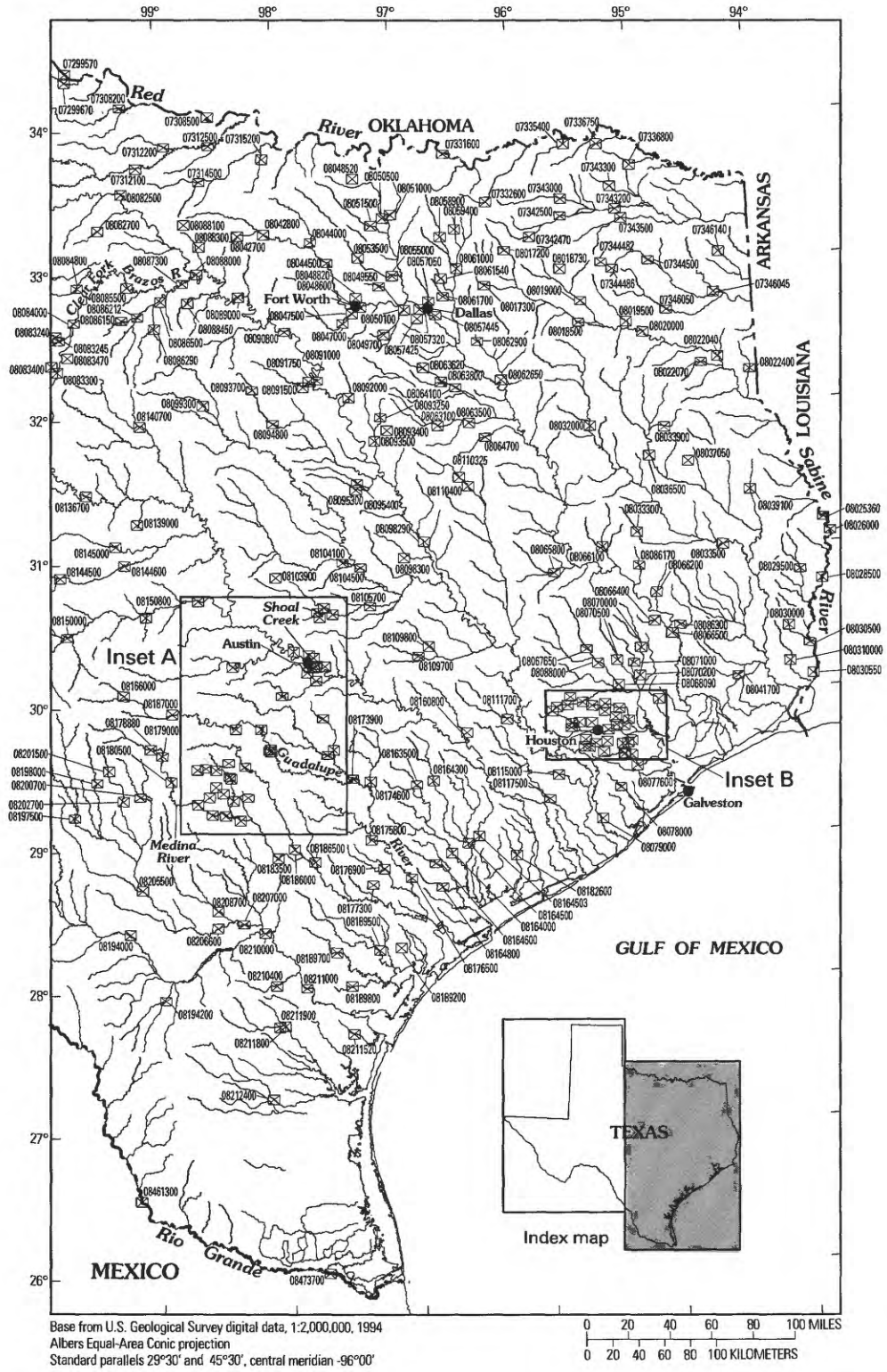
Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.



EXPLANATION

08431800 ⊠ **Streamflow-gaging station and number**

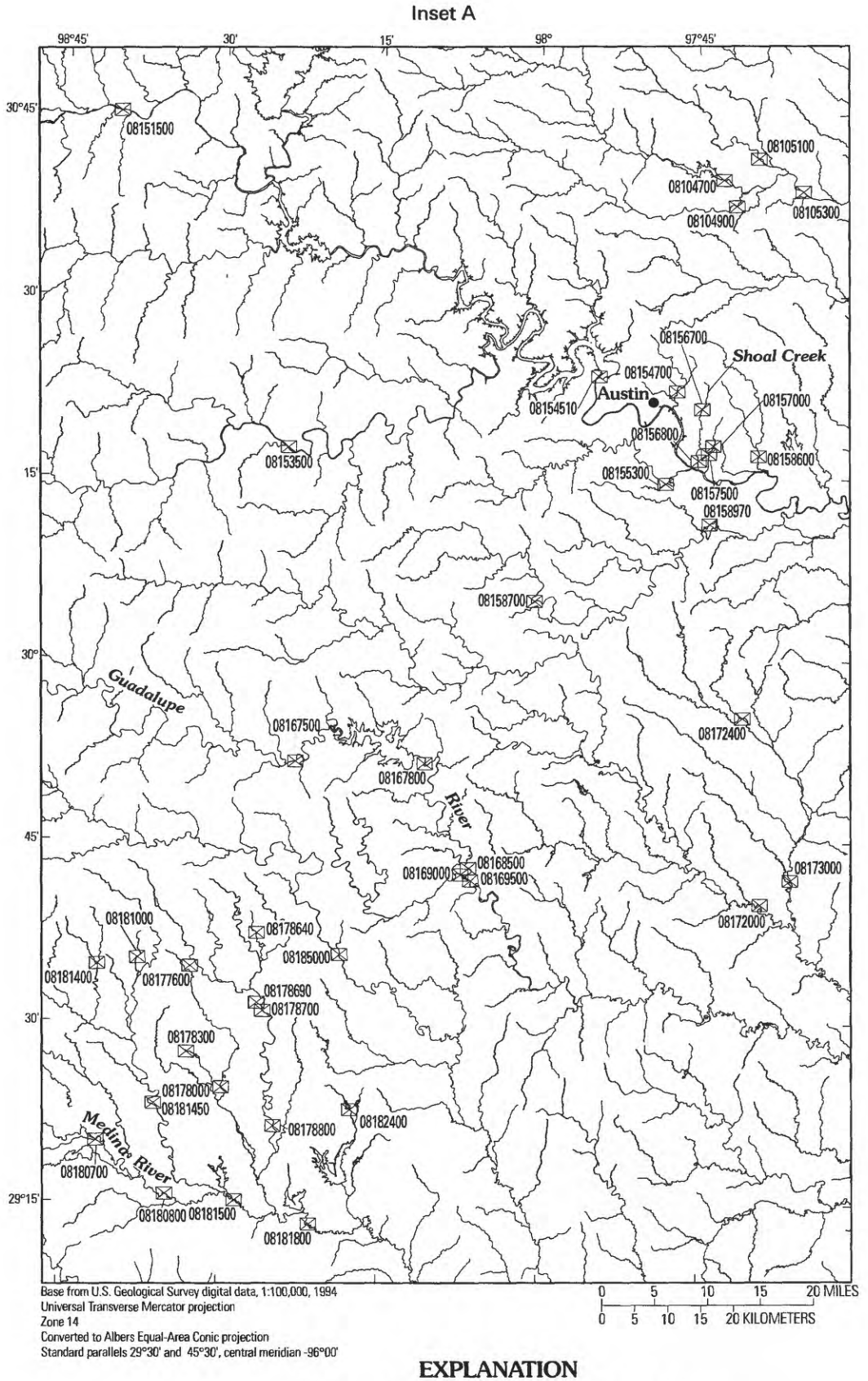
Figure 66. Location of streamflow-gaging stations with significant floods during 1970–89 for Texas.



EXPLANATION

08164800 ⊠ **Streamflow-gaging station and number**

Figure 66. Location of streamflow-gaging stations with significant floods during 1970–89 for Texas—Continued.

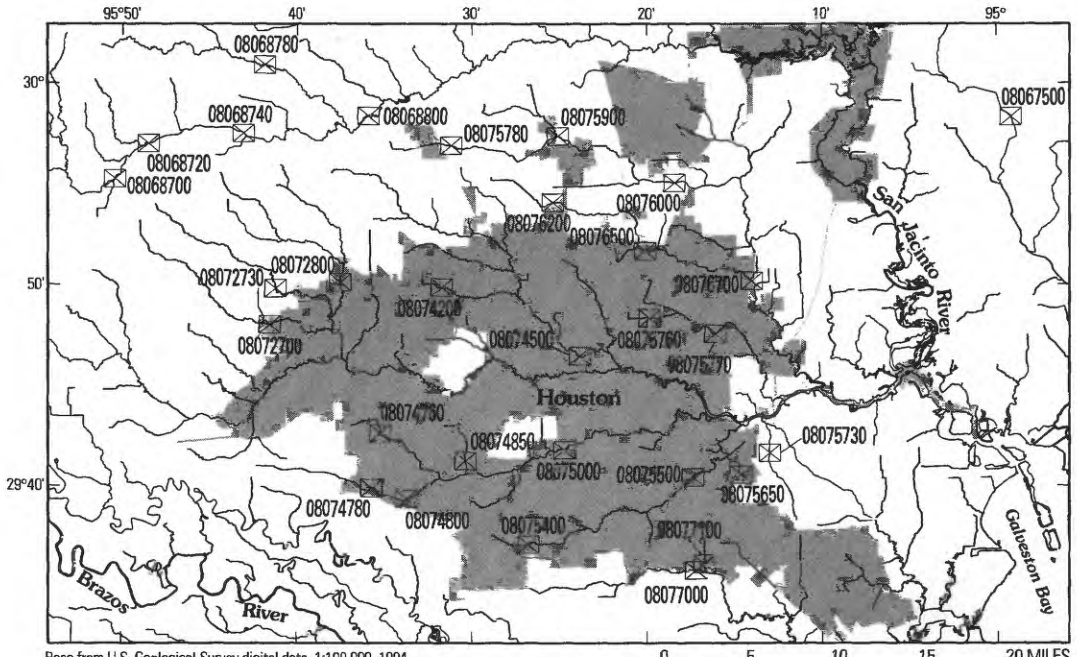


EXPLANATION

08181800 ⊠ **Streamflow-gaging station and number**

Figure 66. Location of streamflow-gaging stations with significant floods during 1970–89 for Texas—Continued.

Inset B



EXPLANATION

08075000 ⊠ **Streamflow-gaging station and number**

Figure 66. Location of streamflow-gaging stations with significant floods during 1970–89 for Texas—Continued.

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07227920	Dixon Creek near Borger, TX	134	1975–89	1977	8.99	3,640	5/26/77	8.99	3,640	N	5
				1989	9.75	2,580					
07298200	Tule Creek near Silverton, TX	1,150	1965–86	1977	14.50	12,800	5/20/77	14.50	12,800	Y	--
07299300	Little Red River near Turkey, TX	139	1968–81	1979	12.57	3,880	3/18/79	12.57	3,880	N	10
				1968	13.48	3,570					
07299540	Prairie Dog Town Fork Red River near Childress, TX	7,725	1965–94	1978	13.47	86,400	5/28/78	13.47	86,400	Y	40
				1977	13.94	85,700					
07299570	Red River near Quanah, TX	8,321	1960–82	1978	15.78	73,500	5/28/78	15.78	73,500	N	30
				1960	16.00	64,000					
07299670	Groesbeck Creek at State Highway 6 near Quanah, TX	303	1962–94	1984	24.78	18,000	9/19/74	23.56	13,900	N	25
							10/20/83	24.78	18,000	N	40
07300000	Salt Fork Red River near Wellington, TX	1,222	1953–94	1957	19.00	146,000	4/20/77	13.80	62,100	N	10
07301200	McClellan Creek near McLean, TX	759	1968–80, 1987–93	1975	14.55	26,600	5/29/75	14.55	26,600	Y	--
07301300	North Fork Red River near Shamrock, TX	1,082	1964–94	1975	7.47	20,400	5/29/75	7.47	20,400	Y	75
07301410	Sweetwater Creek near Kelton, TX	287	1962–92, 1994	1977	15.73	2,890	4/18/70	14.95	2,110	N	25
							5/20/77	15.73	2,890	N	50
07307800	Pease River near Childress, TX	2,754	1960–62, 1968–94	1960	13.59	19,000	10/20/83	14.83	17,800	N	40
				1984	14.83	17,800					
07308200	Pease River near Vernon, TX	3,488	1960–89, 1993–94	1984	20.15	40,500	10/21/83	20.15	40,500	N	30
07308500	Red River near Burkburnett, TX	20,570	1960–94	1984	16.90	166,000	10/21/83	16.90	166,000	Y	>100
07312100	Wichita River near Mabelle, TX	2,086	1960–94	1976	10.47	4,290	4/03/74	9.85	3,800	Y	--
							3/24/76	10.47	4,290	Y	--
07312200	Beaver Creek near Electra, TX	652	1961–94	1961	33.57	11,700	5/29/87	34.94	11,600	Y	75
				1987	34.94	11,600					
07312500	Wichita River at Wichita Falls, TX	3,140	1900–01, 1915, 1936, 1938–94	1915	--	50,000	6/01/87	23.41	9,730	Y	--
				1942	24.00	17,800					
07314500	Little Wichita River near Archer City, TX	481	1932–56, 1967–94	1989	27.03	20,100	5/16/89	27.03	20,100	Y	50
07315200	East Fork Little Wichita River near Henrietta, TX	178	1964–94	1982	31.70	32,500	10/13/81	31.70	32,500	N	75
							5/16/89	29.05	16,960	N	25
07331600	Red River at Denison Dam near Denison, TX	39,720	1962–86	1986	21.26	60,400	10/21/85	21.26	60,400	Y	--
07332600	Bois D Arc Creek near Randolph, TX	72.0	1963–85	1982	26.55	19,200	5/13/82	26.55	19,200	N	>100
07335400	Sanders Creek near Chicota, TX	175	1968–86	1982	22.41	1,110	5/27/82	22.41	1,110	Y	--
				1972	22.87	983					
07336750	Little Pine Creek near Kanawha, TX	75.4	1969–80	1972	21.26	30,200	12/10/71	21.26	30,200	N	>100
07336800	Pecan Bayou near Clarksville, TX	100	1957, 1962–77	1972	15.92	21,300	12/10/71	15.92	21,300	N	50
				1957	17.00	--					
07342470	South Sulphur River near Commerce, TX	189	1980–91	1982	28.66	27,100	5/13/82	28.66	27,100	N	>100
07342500	South Sulphur River near Cooper, TX	527	1943–94	1982	27.21	47,200	12/10/71	26.15	42,500	N	50
							5/13/82	27.21	47,200	N	75

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas—Continued

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
07343000	North Sulphur River near Cooper, TX	276	1950–94	1972	36.16	90,600	10/19/71	36.16	90,600	N	>100
							5/13/82	34.76	74,800	N	50
07343200	Sulphur River near Talco, TX	1,365	1957–94	1972	29.40	77,000	12/11/71	29.40	77,000	N	100
							5/14/82	27.58	58,600	N	20
07343300	Cuthand Creek near Bogata, TX	69.0	1964–74	1972	21.58	20,400	12/10/71	21.58	20,400	N	>100
07343500	White Oak Creek near Talco, TX	494	1950–94	1972	21.20	48,000	12/11/71	21.20	48,000	N	50
07344482	Big Cypress Creek near Winnsboro, TX	27.2	1975–92	1989	12.91	6,290	11/26/88	12.91	6,290	Y	--
07344486	Brushy Creek at Scroggins, TX	23.4	1979–94	1983	14.39	7,520	12/02/82	14.39	7,520	N	40
07344500	Big Cypress Creek near Pittsburg, TX	366	1943–94	1945	27.32	58,500	3/17/87	23.65	30,400	Y	25
07346045	Black Cypress Bayou at Jefferson, TX	365	1969–94	1988	19.34	11,600	12/28/87	19.34	11,600	N	25
07346050	Little Cypress Creek near Ore City, TX	383	1963–94	1966	20.20	23,500	4/17/73	16.08	14,500	N	20
07346140	Frazier Creek near Linden, TX	48.0	1965–91	1989	12.80	6,750	3/28/89	12.80	6,750	N	--
08017200	Cowleech Fork Sabine River at Greenville, TX	77.7	1959–94	1982	18.47	15,300	5/13/82	18.47	15,300	N	100
							7/15/89	18.43	15,000	N	100
08017300	South Fork Sabine River near Quinlan, TX	78.7	1959–94	1981	18.24	23,000	6/16/81	18.24	23,000	N	20
				1986	18.77	21,200	4/05/86	18.77	21,200	N	15
08018500	Sabine River near Mineola, TX	1,357	1938–59, 1968–94	1945	24.00	76,000	12/11/71	21.53	37,700	Y	5
				1943	24.37	64,100					
08018730	Burke Creek near Yantis, TX	33.1	1980–89	1989	12.19	5,730	6/08/89	12.19	5,730	N	30
				1985	21.21	4,170					
08019000	Lake Fork Creek near Quitman, TX	585	1925–26, 1940–94	1945	29.85	75,600	12/10/71	25.10	43,800	Y	25
08019500	Big Sandy Creek near Big Sandy, TX	231	1939–94	1945	24.10	24,000	12/05/82	17.66	5,700	Y	5
							5/19/89	18.30	6,680	Y	10
08020000	Sabine River near Gladewater, TX	2,791	1914–15, 1932–94	1945	44.16	138,000	5/22/89	37.88	52,300	Y	5
08022040	Sabine River near Beckville, TX	3,589	1979–94	1989	37.87	41,300	3/30/89	37.87	41,300	Y	--
08022070	Martin Creek near Tatum, TX	148	1975–92, 1994	1989	19.52	16,900	3/29/89	19.52	16,900	Y	--
08022400	Socagee Creek near Carthage, TX	82.6	1962–73	1973	11.66	6,540	7/08/73	11.66	6,540	N	25
08025360	Sabine River at Toledo Bend Reservoir near Burkeville, TX	7,178	1972–91, 1993	1989	--	114,000	5/19/89	--	114,000	Y	--
				1985	6.00	14,600					
08026000	Sabine River near Burkeville, TX	7,482	1956–94	1989	47.45	116,000	1/29/74	34.20	80,600	Y	80
							5/20/89	47.45	116,000	Y	>100
08028500	Sabine River near Bon Wier, TX	8,229	1924–94	1953	25.70	115,000	12/29/82	26.86	83,800	Y	25
				1989	37.90	98,200	7/04/89	37.90	98,200	Y	50
08029500	Big Cow Creek near Newton, TX	128	1952–94	1953	19.45	20,200	2/12/84	19.12	17,800	N	60
08030000	Cypress Creek near Buna, TX	69.2	1952–83	1963	13.28	7,100	10/27/70	13.19	6,800	N	35

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas—Continued

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08030500	Sabine River near Ruliff, TX	7,329	1908–13, 1917, 1919–94	1953 1989	19.98 29.15	121,000 109,000	7/06/89	29.15	109,000	Y	50
08030550	Sabine River at Orange, TX	9,650	1913–55, 1957–74	1974	23.53	78,600	1/29/74	23.53	78,600	N	--
08031000	Cow Bayou near Mauriceville, TX	83.3	1953–86	1963 1971	18.15 18.16	4,600 4,420	10/28/70	18.16	4,420	N	25
08032000	Neches River near Neches, TX	1,145	1939–94	1945	22.07	45,500	5/20/89	19.12	23,400	Y	10
08033300	Piney Creek near Groveton, TX	79.0	1962–89	1979	15.70	6,480	4/20/79	15.70	6,480	N	20
08033500	Neches River near Rockland, TX	3,636	1884, 1904–11, 1914–94	1884	34.90	62,000	7/02/89	33.20	42,000	Y	20
08033900	East Fork Angelina River near Cushing, TX	158	1964–89	1988	14.24	19,800	8/11/88	14.24	19,800	N	25
08036500	Angelina River near Alto, TX	1,276	1959–94	1989	23.20	42,500	3/31/89	23.20	42,500	Y	--
08037050	Bayou Lanana at Nacogdoches, TX	31.3	1965–86, 1989–93	1979	22.18	13,500	6/02/79	22.18	13,500	N	70
08039100	Ayish Bayou near San Augustine, TX	89.0	1958–94	1978	18.02	18,200	9/14/78	18.02	18,200	N	40
08041700	Pine Island Bayou near Sour Lake, TX	336	1968–94	1979	34.29	25,000	4/22/79	34.29	25,000	N	100
08042700	North Creek near Jacksboro, TX	21.6	1956–80	1957	24.45	6,990	5/12/72	16.29	2,640	Y	5
08042800	West Fork Trinity River near Jacksboro, TX	683	1915, 1941, 1955–94	1957	32.10	35,100	10/13/81 5/17/89	30.15 31.52	27,000 33,300	Y Y	40 50
08044000	Big Sandy Creek near Bridgeport, TX	333	1937–94	1941	15.69	53,000	10/13/81	14.78	45,000	Y	50
08044500	West Fork Trinity River near Boyd, TX	1,725	1948–94	1982	25.87	60,400	10/14/81	25.87	60,400	Y	--
08047000	Clear Fork Trinity River near Benbrook, TX	431	1948–94	1949	28.72	82,900	6/15/89	13.22	5,440	Y	--
08047500	Clear Fork Trinity River at Fort Worth, TX	518	1922, 1924–94	1949	28.20	107,000	10/13/81	16.14	18,400	Y	5
08048520	Sycamore Creek at Interstate Highway 35W, Fort Worth, TX	17.7	1969–78	1977	41.30	7,160	3/27/77	41.30	7,160	N	--
08048600	Dry Branch at Fain Street at Fort Worth, TX	2.15	1969–78	1975 1978	5.86 40.69	447 141	7/25/75	5.86	447	N	--
08048820	Little Fossil Creek at Interstate Highway 820, Fort Worth, TX	5.64	1969–79	1975 1977	15.69 616.11	1,260 1,110	7/25/75	15.69	1,260	N	--
08049550	Big Bear Creek near Grapevine, TX	29.6	1967–79	1977	14.55	2,750	3/27/77	14.55	2,750	N	15
08049700	Walnut Creek near Mansfield, TX	62.8	1961–94	1989	33.77	22,800	5/17/89	33.77	22,800	N	100
08050100	Mountain Creek at Grand Prairie, TX	298	1961–94	1976 1992	24.21 25.12	38,100 17,900	4/19/76	24.21	38,100	Y	--
08050500	Elm Fork Trinity River near Sanger, TX	381	1949–84	1982	33.50	150,000	10/31/74 10/13/81	29.10 33.50	50,000 150,000	Y Y	-- --
08051000	Isle Du Bois Creek near Pilot Point, TX	266	1949–85	1975 1982	29.43 29.84	40,000 39,900	10/31/74 10/16/81	29.43 29.84	40,000 39,900	N N	35 35

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas—Continued

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08051500	Clear Creek near Sanger, TX	295	1949–94	1982	35.70	104,000	10/13/81	35.70	104,000	Y	>100
08053500	Denton Creek near Justin, TX	400	1950–94	1982 1957	16.68 17.64	34,700 29,800	10/13/81	16.68	34,700	Y	25
08055000	Denton Creek near Grapevine, TX	705	1948–91	1948	30.28	13,900	11/01/81	27.93	9,700	Y	--
08057050	Cedar Creek at Bonnie View Road, Dallas, TX	9.42	1965–78	1974 1978	55.00 97.43	8,410 1,800	9/20/74	55.00	8,410	N	--
08057320	Ash Creek at Higland Road, Dallas, TX	6.92	1963–78	1972 1966	25.47 31.38	6,200 5,180	10/19/71	25.47	6,200	N	--
08057425	Woody Branch at U.S. Highway 77, Dallas, TX	10.3	1965–78	1976 1969	78.91 81.50	9,350 7,160	4/19/76	78.91	9,350	N	--
08057445	Prairie Creek at U.S. Highway 175, Dallas, TX	9.03	1976–80, 1985–91, 1993–94	1989	29.21	5,660	5/17/89	29.21	5,660	N	--
08058900	East Fork Trinity River at McKinney, TX	164	1976–94	1980	22.17	61,800	5/13/80	22.17	61,800	Y	--
08059400	Sister Grove Creek near Blue Ridge, TX	83.1	1976–94	1982 1989	22.50 27.24	13,300 2,970	5/13/82	22.50	13,300	Y	--
08061000	East Fork Trinity River near Lavon, TX	773	1954–89	1957 1989	17.34 19.55	39,000 16,100	6/14/89	19.55	16,100	Y	--
08061540	Rowlett Creek near Sachse, TX	120	1969–93	1989	29.62	31,900	5/17/89	29.62	31,900	N	20
08061700	Duck Creek near Garland, TX	31.6	1958–92	1990	21.06	16,900	5/17/89	20.84	16,000	N	--
08062650	Cedar Creek Reservoir spillway outflow near Trinidad, TX	1,007	1966–82	1973	300.75	110,000	6/04/73	300.75	110,000	Y	--
08062900	Kings Creek near Kaufman, TX	233	1963–87	1976	26.19	56,200	4/19/76	26.19	56,200	Y	75
08063100	Richland Creek near Dawson, TX	333	1961–93	1961	22.50	25,500	11/24/74 5/17/89	19.85 21.50	3,850 3,740	Y Y	-- --
08063500	Richland Creek near Richland, TX	734	1939–89	1948	24.16	58,900	5/18/89	22.66	33,600	Y	5
08063620	Kings Branch near Reagor Springs, TX	0.62	1965–74	1970	18.92	620	4/25/70	18.92	620	N	15
08063800	Waxahachie Creek near Bardwell, TX	178	1964–94	1965 1981	17.55 18.13	2,960 1,960	6/25/81	18.13	1,960	Y	--
08064100	Chambers Creek near Rice, TX	807	1984–94	1986 1992	31.12 32.57	43,400 34,900	6/06/86	31.12	43,400	Y	--
08064700	Tehuacana Creek near Streetman, TX	142	1968–93	1989	30.20	85,700	5/17/89	30.20	85,700	N	60
08065800	Bedias Creek near Madisonville, TX	321	1968–94	1974	25.07	33,800	9/14/74	25.07	33,800	N	15
08066100	White Rock Creek near Trinity, TX	222	1966–85	1979	33.87	20,800	4/21/79	33.87	20,800	N	20
08066170	Kickapoo Creek near Onalaska, TX	57.0	1966–94	1981	30.37	24,500	6/07/81	30.37	24,500	N	50
08066200	Long King Creek at Livingston, TX	141	1963–94	1989	27.27	27,600	11/05/73 5/18/89	27.06 27.27	26,500 27,600	N N	25 25
08066300	Menard Creek near Rye, TX	152	1966–94	1986	30.78	13,200	6/27/86	30.78	13,200	N	30

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas—Continued

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08066400	Big Creek near Shepherd, TX	38.8	1966–89	1973	25.69	22,000	6/13/73	25.69	22,000	N	>100
08066500	Trinity River at Romayor, TX	17,186	1924–94	1942 1990	35.80 41.58	111,000 105,000	6/15/73	31.20	99,000	Y	25
08067500	Cedar Bayou near Crosby, TX	64.9	1972–94	1981 1992	23.92 25.50	4,760 4,300	6/05/81	23.92	4,760	N	20
08067650	West Fork San Jacinto River below Lake Conearoe near Conearoe, TX	451	1974–91, 1993	1983	35.50	8,780	5/22/83	35.50	8,780	Y	--
08068000	West Fork San Jacinto River near Conearoe, TX	828	1914, 1922, 1924–27, 1929, 1940–92	1941	30.85	110,000	4/18/79	24.71	38,500	Y	5
08068090	West Fork San Jacinto River above Lake Houston near Porter, TX	962	1985–94	1989	29.76	30,000	5/18/89	29.76	30,000	Y	--
08068700	Cypress Creek at Sharp Road near Hockley, TX	80.7	1979–80, 1982–87, 1989–94	1979	67.75	--	9/21/79	67.75	--	N	--
08068720	Cypress Creek at Katy-Hockley Road near Hockley, TX	110	1976–94	1979	61.05	2,370	1/20/79	61.05	2,370	N	20
08068740	Cypress Creek at House-Hahl Road near Cypress, TX	131	1975–94	1979	46.33	2,590	9/22/79	46.33	2,590	N	20
08068780	Little Cypress Creek near Cypress, TX	41.0	1983–94	1988	80.49	3,400	11/25/87	80.49	3,400	N	15
08068800	Cypress Creek at Grant Road near Cypress, TX	214	1983–94	1988	43.35	3,550	11/26/87	43.35	3,550	N	5
08070000	East Fork San Jacinto River near Cleveland, TX	325	1935, 1940–94	1941	24.10	59,000	6/14/73	23.92	43,600	N	40
08070200	East Fork San Jacinto River near New Caney, TX	388	1985–94	1989	24.67	16,100	5/19/89	24.67	16,100	N	25
08070500	Caney Creek near Splendora, TX	105	1944–94	1973	26.30	35,000	6/14/73	26.30	35,000	N	>100
08071000	Peach Creek at Splendora, TX	117	1941, 1944–77	1950	22.73	28,500	6/14/73	22.57	25,800	N	90
08072700	South Mayde Creek near Addicks, TX	32.3	1974–76, 1978–84, 1986–94	1981	108.76	4,080	8/31/81	108.76	4,080	N	40
08072730	Bear Creek near Barker, TX	21.5	1980–94	1981 1980	-- 14.12	2,060 443	8/31/81	--	2,060	N	100
08072800	Langham Creek near Addicks, TX	48.9	1974–84, 1986–94	1981	102.25	3,360	8/31/81	102.25	3,360	N	20
08074200	Brickhouse Gully at Clarblank Road at Houston, TX	2.56	1965–83	1973 1972	93.69 94.28	412 399	6/13/73	93.69	412	N	5
08074500	Whiteoak Bayou at Houston, TX	86.3	1929, 1936–94	1992 1936	50.43 51.50	25,100 14,750	3/20/72 6/26/89	43.50 44.48	17,300 18,300	N N	20 20
08074760	Brays Bayou at Alief Road, Alief, TX	12.9	1977–84, 1986–94	1983 1992	19.23 21.16	5,090 --	9/19/83	19.23	5,090	N	--
08074780	Keegans Bayou at Keegan Road near Houston, TX	8.63	1965–71, 1975–85, 1987–93	1983 1966	81.93 83.53	2,760 206	9/19/83	81.93	2,760	N	>100
08074800	Keegans Bayou at Roark Road near Houston, TX	12.7	1965–94	1992	75.91	4,880	9/19/83	75.00	4,250	N	>100

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas—Continued

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08074850	Bintliff Ditch at Bissonnet Road at Houston, TX	4.29	1968–82	1981	63.69	1,350	5/03/81	63.69	1,350	N	20
08075000	Brays Bayou at Houston, TX	94.9	1929, 1936–94	1976	52.13	29,000	6/15/76	52.13	29,000	N	40
							4/19/79	50.36	25,500	N	20
							9/19/83	52.13	29,000	N	40
08075400	Sims Bayou at Hiram Clarke Street, Houston, TX	20.2	1965–94	1992	53.08	6,290	8/01/89	54.32	5,190	N	30
				1976	57.12	4,500					
08075500	Sims Bayou at Houston, TX	63	1953–94	1983	33.23	11,400	6/16/76	33.14	11,200	N	25
							8/18/83	33.23	11,400	N	25
08075650	Berry Bayou at Forest Oaks Street, Houston, TX	10.7	1964–82, 1993–94	1979	22.42	5,120	7/26/79	22.42	5,120	N	30
				1981	22.73	4,950					
08075730	Vince Bayou at Pasadena, TX	8.26	1972–94	1981	18.30	4,720	5/03/81	18.30	4,720	N	>100
08075760	Hunting Bayou at Falls Street at Houston, TX	2.75	1965–84	1973	46.70	778	6/13/77	46.70	778	N	10
				1979	47.35	640					
08075770	Hunting Bayou at Interstate Highway 610, Houston, TX	16.1	1964–94	1989	39.91	3,470	8/18/83	39.16	3,440	N	10
							6/26/89	39.91	3,470	N	10
08075780	Greens Bayou at Cutten Road near Houston, TX	8.65	1965–94	1985	--	2,110	0/25/84	--	2,110	N	>100
				1989	116.54	1,920	5/18/89	116.54	1,920	N	>100
08075900	Greens Bayou near U.S. Highway 75 near Houston, TX	36.6	1966–93	1989	90.20	13,000	6/26/89	90.20	13,000	N	>100
				1969	91.09	2,600					
08076000	Greens Bayou near Houston, TX	68.7	1953–94	1989	66.04	16,500	10/25/84	66.00	12,500	N	>100
							6/27/89	66.04	16,500	N	>100
08076200	Halls Bayou at Deertrail Street at Houston, TX	8.69	1965–83	1983	85.66	1,200	8/18/83	85.66	1,200	N	50
				1972	85.83	1,180					
08076500	Halls Bayou at Houston, TX	28.7	1953–94	1989	62.86	5,000	6/27/89	62.86	5,000	N	>100
08076700	Greens Bayou at Ley Road, Houston, TX	182	1972–91, 1993–94	1989	39.40	32,500	6/27/89	39.40	32,500	N	>100
08077000	Clear Creek near Pearland, TX	38.8	1946–59, 1963–94	1957	16.80	2,170	7/26/79	18.57	1,950	Y	--
				1979	18.57	1,950					
08077100	Clear Creek tributary at Hall Road, Houston, TX	1.31	1965–78	1970	--	450	5/21/70	--	450	N	--
				1971	42.87	291					
08077600	Clear Creek near Friendswood, TX	122	1972–73, 1975–85, 1987–92, 1994	1979	19.10	9,000	7/27/79	19.10	9,000	N	--
				1989	20.85	--					
08078000	Chocolate Bayou near Alvin, TX	87.7	1947–94	1979	23.88	21,500	7/26/79	23.88	21,500	Y	>100
				1989	30.98	5,650	8/03/89	30.98	5,650	Y	10
08079000	Oyster Creek near Angleton, TX	171	1945–80	1957	31.25	10,600	9/21/79	29.48	4,580	Y	--
08079575	North Fork Double Mountain Fork Brazos River near Post, TX	438	1984–93	1987	9.10	4,500	10/02/86	9.10	4,500	N	5
08080500	Double Mountain Fork Brazos River near Aspermont, TX	8,796	1925–34, 1939–94	1955	29.50	91,400	8/14/72	28.76	69,600	N	40
08080950	Duck Creek near Girard, TX	431	1965–89	1974	15.22	5,000	6/04/74	15.22	5,000	Y	--
				1987	15.77	4,640					
08081000	Salt Fork Brazos River near Peacock, TX	4,619	1950–51, 1965–86	1972	13.75	19,000	8/13/72	13.75	19,000	Y	--
08082100	Stinking Creek near Aspermont, TX	88.8	1966–83	1982	12.82	3,260	5/05/82	12.82	3,260	N	25
08082500	Brazos River at Seymour, TX	15,538	1924–94	1927	15.16	95,400	8/16/72	18.35	42,700	Y	--
				1955	21.00	71,200					

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas—Continued

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08082700	Millers Creek near Munday, TX	104	1962, 1964–94	1978 1962	17.53 18.00	34,600 1,800	8/04/78 6/25/82	17.53 16.03	34,600 8,630	N N	100 20
08083240	Clear Fork Brazos River at Hawley, TX	1,416	1968–89	1980 1981	14.41 20.85	8,540 8,140	9/30/80	14.41	8,540	Y	25
08083245	Mulberry Creek near Hawley, TX	205	1969–89	1980	16.00	2,750	5/28/80	16.00	2,750	N	20
08083300	Elm Creek near Abilene, TX	133	1964–79	1974	18.68	4,570	9/18/74	18.68	4,570	Y	--
08083400	Little Elm Creek near Abilene, TX	39.1	1964–79	1974	11.52	2,180	9/18/74	11.52	2,180	N	15
08083470	Cedar Creek at Abilene, TX	119	1971–84	1982	16.80	18,500	10/13/81	16.80	18,500	Y	>100
08084000	Clear Fork Brazos River at Nugent, TX	2,199	1924–94	1932	27.05	47,000	10/07/86	19.25	10,400	Y	--
08084800	California Creek near Stamford, TX	478	1963–94	1978	31.00	40,000	8/04/78 9/29/80	31.00 28.88	40,000 7,870	N N	>100 15
08085500	Clear Fork Brazos River at Fort Griffin, TX	3,988	1924–94	1978	38.88	149,000	8/04/78 10/01/80	38.88 33.10	149,000 24,900	Y Y	>100 10
08086150	North Fork Hubbard Creek near Albany, TX	39.3	1963–90	1978	23.30	103,000	8/04/78	23.30	103,000	N	>100
08086212	Hubbard Creek below Albany, TX	613	1967–94	1978	41.41	330,000	8/04/78	41.41	330,000	N	>100
08086290	Big Sandy Creek above Breckenridge, TX	280	1977–94	1982	28.60	80,000	10/13/81	28.60	80,000	Y	>100
08086500	Hubbard Creek near Breckenridge, TX	1,089	1955–86	1957	34.00	34,500	10/14/81	32.06	16,200	Y	--
08087300	Clear Fork Brazos River at Eliasville, TX	5,697	1916–20, 1924–25, 1928–51, 1962–82	1978	37.04	68,000	8/05/78	37.04	68,000	Y	>100
08088000	Brazos River near South Bend, TX	22,673	1939–94	1941 1978	27.35 41.20	87,400 78,100	8/06/78	41.20	78,100	Y	25
08088100	Salt Creek at Olney, TX	11.8	1958–77	1972	12.25	4,520	5/12/72	12.25	4,520	N	40
08088300	Briar Creek near Graham, TX	24.2	1959–89	1986 1982	13.52 13.54	4,230 3,690	5/22/82 9/18/86	13.54 13.52	3,690 4,230	N N	20 25
08088450	Big Cedar Creek near Ivan, TX	97.0	1965–89	1982	32.50	34,700	10/13/81	32.50	34,700	N	40
08089000	Brazos River near Palo Pinto, TX	23,811	1924–94	1930 1957	-- 28.87	95,600 85,400	8/08/78 10/13/81	22.93 26.53	54,500 69,300	Y Y	-- --
08090800	Brazos River near Dennis, TX	25,237	1969–94	1982	31.88	96,600	10/14/81	31.88	96,600	Y	--
08091000	Brazos River near Glen Rose, TX	25,818	1924–94	1935 1990	23.68 35.76	97,600 79,800	10/15/81	35.19	86,400	Y	--
08091500	Paluxy River at Glen Rose, TX	410	1908, 1919, 1922, 1948–94	1908	27.20	59,000	5/03/79	22.91	38,800	Y	--
08091750	Squaw Creek near Glen Rose, TX	70.3	1974–94	1975	11.90	9,030	6/13/89	11.85	8,940	Y	100
08092000	Nolan River at Blum, TX	282	1925, 1948–94	1989	33.44	79,600	5/17/89	33.44	79,600	Y	>100
08093250	Hackberry Creek at Hillsboro, TX	57.9	1981–92	1981	18.95	12,100	6/16/81	18.95	12,100	N	10
08093400	Cobb Creek near Abbott, TX	12.4	1967–79	1976 1968	9.56 10.50	2,840 2,720	6/24/76	9.56	2,840	N	--
08093500	Aquilla Creek near Aquilla, TX	308	1936, 1939–94	1936	33.00	74,200	6/16/81	31.35	53,300	Y	100

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas—Continued

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08093700	North Bosque River at Stephenville, TX	95.9	1952, 1955, 1959–79	1955	23.50	49,000	4/23/73	18.40	7,100	Y	--
08094800	North Bosque River at Hico, TX	359	1952, 1962–94	1952	27.60	87,800	4/30/77	22.27	19,900	Y	--
08095300	Middle Bosque River near McGregor, TX	182	1960–78, 1980–94	1975	24.62	33,300	10/31/74	24.62	33,300	N	20
08095400	Hog Creek near Crawford, TX	78.2	1960–93	1960	14.31	15,400	6/16/81	10.05	8,010	Y	5
08098290	Brazos River near Highbank, TX	30,436	1966–94	1986 1992	23.90 30.78	78,700 72,200	2/04/86	23.90	78,700	Y	--
08098300	Little Pond Creek near Burlington, TX	23.0	1963–82	1975	16.90	8,570	5/24/75	16.90	8,570	N	30
08099300	Sabana River near De Leon, TX	264	1961–94	1990	23.65	19,500	6/14/89	22.75	15,400	Y	100
08103900	South Fork Rocky Creek near Briggs, TX	33.3	1963–94	1976	22.70	31,200	6/19/76	22.70	31,200	N	>100
08104100	Lampasas River near Belton, TX	1,321	1957, 1963–89	1957	44.40	83,500	7/01/87	19.23	6,240	Y	--
08104500	Little River near Little River, TX	5,228	1924–28, 1963–94	1965 1928	42.85 43.30	79,600 28,400	10/31/74	39.94	36,500	Y	--
08104700	North Fork San Gabriel River near Georgetown, TX	248	1969–94	1974	26.20	35,000	9/17/74	26.20	35,000	N	25
08104900	South Fork San Gabriel River at Georgetown, TX	133	1968–94	1981	24.60	33,400	9/03/81	24.60	33,400	N	25
08105100	Berry Creek near Georgetown, TX	83.1	1968–94	1975 1986	19.33 20.11	15,500 12,700	10/31/74	19.33	15,500	N	25
08105300	San Gabriel River near Weir, TX	563	1980–90	1986	23.23	44,500	2/03/86	23.23	44,500	Y	--
08105700	San Gabriel River at Laneport, TX	738	1965–94	1975	30.80	31,200	10/31/74	30.80	31,200	N	20
08109700	Middle Yegua Creek near Dime Box, TX	236	1963–94	1992	15.39	12,500	5/24/75	15.16	11,400	N	25
08109800	East Yegua Creek near Dime Box, TX	244	1963–94	1975	13.91	14,000	5/24/75	13.91	14,000	N	40
08110325	Navasota River above Groesbeck, TX	239	1980–94	1986	14.35	23,600	2/03/86	14.35	23,600	Y	--
08110400	Navasota River near Groesbeck, TX	311	1966–78	1975	25.55	27,000	11/01/74	25.55	27,000	Y	--
08111700	Mill Creek near Bellville, TX	376	1964–93	1973	17.95	44,400	6/13/73 11/01/81	17.95 17.24	44,400 36,600	N N	40 20
08115000	Big Creek near Needville, TX	42.8	1947–50, 1952–94	1960 1986	23.81 24.37	10,400 6,490	9/20/79	23.13	7,140	N	25
08117500	San Bernard River near Boling, TX	727	1955–94	1960	42.41	21,200	6/16/73 11/14/85	41.87 41.52	20,400 20,600	Y Y	20 20
08119500	Colorado River near Ira, TX	3,483	1948–52, 1959–89	1948 1980	21.35 22.84	20,500 7,630	5/15/80	22.84	7,630	Y	--
08120500	Deep Creek near Dunn, TX	198	1939, 1953–86	1939 1972	-- 31.28	36,400 20,700	8/14/72	31.28	20,700	N	50
08120700	Colorado River near Cuthbert, TX	3,912	1966–94	1972 1980	25.99 27.18	11,500 11,300	8/14/72	25.99	11,500	Y	--
08123750	Coahoma Draw tributary near Big Spring, TX	2.38	1965–74	1972	6.20	1,110	9/02/72	6.20	1,110	N	10
08123800	Beals Creek near Westbrook, TX	9,802	1959–94	1961 1980	21.65 21.94	8,780 7,690	9/28/80	21.94	7,690	Y	--

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas—Continued

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08123850	Colorado River above Silver, TX	14,910	1968–94	1980	22.73	18,900	9/09/80	22.73	18,900	Y	--
08124000	Colorado River at Robert Lee, TX	15,307	1924–27, 1939–56, 1969–94	1926	25.50	32,500	9/09/80	20.63	24,500	Y	--
08126380	Colorado River near Ballinger, TX	16,372	1980–94	1982 1990	26.77 27.50	13,000 12,200	10/13/81	26.77	13,000	Y	--
08127000	Elm Creek at Ballinger, TX	450	1933–93	1958	14.20	50,000	10/13/81	11.80	38,300	Y	40
08127100	Dry Creek near Christoval, TX	0.79	1965–74	1971	7.26	1,050	5/29/71	7.26	1,050	N	15
08128400	Middle Concho River above Tankersley, TX	2,579	1961–94	1974	24.98	15,500	9/21/74 6/03/86	24.98 21.68	15,500 10,800	N N	40 15
08129300	Spring Creek above Tankersley, TX	425	1962–94	1971	16.57	30,400	8/12/71 5/11/75	16.57 12.54	30,400 14,100	Y Y	40 20
08130500	Dove Creek at Knickerbocker, TX	229	1962–94	1971	20.66	17,500	8/12/71 5/11/75	20.66 19.70	17,500 15,900	N N	15 15
08133300	Quarry Creek near Sterling City, TX	3.25	1965–74	1973	9.29	2,120	3/10/73	9.29	2,120	N	75
08133800	Broome Creek near Broome, TX	0.29	1965–74	1974	5.10	280	9/19/74	5.10	280	N	10
08134300	Nolke Station Creek near San Angelo, TX	0.59	1965–74	1971	7.80	300	8/10/71	7.80	300	N	10
08134400	Gravel Pit Creek near San Angelo, TX	0.19	1965–74	1971	3.49	62	8/01/71	3.49	62	N	25
08136500	Concho River at Paint Rock, TX	6,574	1882, 1906, 1916–94	1936	43.40	301,000	9/09/80	28.25	46,600	Y	5
08136700	Colorado River near Stacy, TX	24,192	1936, 1969–94	1936	64.59	356,000	9/10/80	28.00	45,000	Y	--
08139000	Deep Creek subwatershed number 3 near Placid, TX	3.42	1954–77	1971	--	3,060	7/26/71	--	3,060	N	30
08140700	Pecan Bayou near Cross Cut, TX	532	1969–78	1978	24.90	16,200	8/04/78	24.90	16,200	Y	--
08144500	San Saba River at Menard, TX	1,135	1916–93	1938 1980	-- 21.00	130,000 90,500	9/08/80	21.00	90,500	N	30
08144600	San Saba River near Brady, TX	1,633	1980–92	1980	25.50	66,000	9/08/80	25.50	66,000	N	15
08145000	Brady Creek at Brady, TX	588	1931, 1938, 1940–85	1938	29.10	86,000	7/26/71	19.80	24,700	Y	--
08150000	Llano River near Junction, TX	1,855	1916–92	1935	43.30	319,000	9/08/80	32.23	139,000	N	20
08150800	Beaver Creek near Mason, TX	215	1964–92, 1994	1978	24.00	66,900	8/03/78	24.00	66,900	N	75
08151500	Llano River at Llano, TX	4,197	1935, 1940–92, 1994	1935	41.50	380,000	9/08/80	31.11	210,000	Y	25
08153500	Pedernales River near Johnson City, TX	901	1940–92, 1994	1952	42.50	441,000	8/03/78	24.90	127,000	Y	20
08154510	Colorado River below Mansfield Dam, Austin, TX	38,755	1975–90	1977	--	25,300	4/17/77	--	25,300	Y	--
08154700	Bull Creek at Loop 360 near Austin, TX	22.3	1979–92, 1994	1982	11.96	13,700	5/13/82	11.96	13,700	N	15
08155300	Barton Creek at Loop 360, Austin, TX	116	1980–92, 1994	1981	15.03	18,100	5/25/81	15.03	18,100	N	15

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas—Continued

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08156700	Shoal Creek at Northwest Park at Austin, TX	6.52	1975–84	1981	18.00	14,600	5/24/81	18.00	14,600	N	100
08156800	Shoal Creek at West 12th Street, Austin, TX	12.3	1975–92, 1994	1981	23.22	16,000	5/24/81	23.22	16,000	N	100
08157000	Waller Creek at 38th Street, Austin, TX	2.31	1957–80	1961	7.77	1,970	5/21/79	7.62	1,830	Y	20
08157500	Waller Creek at 23rd Street, Austin, TX	4.13	1951, 1956–80	1974	9.00	4,020	10/11/73	9.00	4,020	Y	30
08158600	Walnut Creek at Webberville Road, Austin, TX	51.3	1966–92, 1994	1981	27.24	14,300	5/25/81	27.24	14,300	N	15
08158700	Onion Creek near Driftwood, TX	124	1980–92, 1994	1985	16.38	8,990	6/06/85	16.38	8,990	N	5
08158970	Williamson Creek at Jimmy Clay Road, Austin, TX	27.6	1975–86	1981	17.25	14,100	6/11/81	17.25	14,100	N	25
08160800	Redgate Creek near Columbus, TX	17.3	1962–92, 1994	1979	27.19	5,360	10/23/70 5/22/79	14.60 27.19	4,200 5,360	N N	10 20
08162600	Tres Palacios River near Midfield, TX	145	1971–92, 1994	1984	32.43	17,000	10/17/83	32.43	17,000	N	100
08163500	Lavaca River at Hallettsville, TX	108	1936, 1940–92, 1994	1981	41.10	99,500	8/31/81 6/04/87	41.10 27.11	99,500 35,900	N N	>100 20
08164000	Lavaca River near Edna, TX	817	1936, 1939–92, 1994	1936	33.80	83,400	6/14/73	30.99	59,900	N	60
08164300	Navidad River near Hallettsville, TX	332	1962–92, 1994	1974	36.05	53,500	9/13/74 9/01/81	36.05 33.67	53,500 36,700	N N	50 20
08164500	Navidad River near Ganado, TX	826	1936, 1939–80	1936	39.80	94,000	6/15/73	39.80	88,000	Y	100
08164503	West Mustang Creek near Ganado, TX	178	1980–92, 1994	1980	24.49	13,400	1/21/80	24.49	13,400	N	50
08164600	Garcitas Creek near Inez, TX	91.7	1971–94	1981 1991	15.37 28.74	19,700 19,100	6/12/81	15.37	19,700	N	50
08164800	Placedo Creek near Placedo, TX	68.3	1971–92, 1994	1982	30.80	18,300	10/31/81	30.80	18,300	N	20
08166000	Johnson Creek near Ingram, TX	114	1932, 1942–53, 1955–60, 1962–92	1932	35.00	138,000	8/03/78	21.40	73,900	N	40
08167000	Guadalupe River at Comfort, TX	839	1900, 1915, 1919, 1922, 1925–32, 1935–36, 1939–92, 1994	1978	40.90	240,000	8/02/78	40.90	240,000	N	>100
08167500	Guadalupe River near Spring Branch, TX	1,315	1923–92, 1994	1978	45.25	160,000	8/03/78	45.25	160,000	N	100
08167800	Guadalupe River at Sattler, TX	1,436	1960–92, 1994	1961	12.20	20,800	8/05/78	8.31	5,850	Y	--
08168500	Guadalupe River above Comal River at New Braunfels, TX	1,518	1928–92, 1994	1935	32.95	101,000	5/12/72	31.65	92,600	Y	40

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas—Continued

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08169000	Comal River at New Braunfels, TX	130	1928, 1930, 1933–34, 1937–40, 1943, 1945–47, 1949–92, 1994	1972	36.55	60,800	5/11/72	36.55	60,800	Y	--
							5/23/75	16.54	9,540	Y	--
08169500	Guadalupe River at New Braunfels, TX	1,652	1915–27, 1974–83, 1985–92, 1994	1921	28.60	56,600	7/27/79	14.45	12,200	Y	2
08172000	San Marcos River at Luling, TX	838	1940–92, 1994	1952	34.95	57,000	5/12/72	34.11	44,100	Y	15
							6/14/81	34.82	54,800	Y	20
08172400	Plum Creek at Lockhart, TX	112	1959–92, 1994	1986	20.89	27,700	6/13/81	19.26	18,000	Y	--
							11/24/85	20.89	27,700	Y	--
08173000	Plum Creek near Luling, TX	309	1930–92	1936	30.70	78,500	5/24/75	26.51	36,300	Y	20
							11/24/85	25.47	29,300	Y	15
08173900	Guadalupe River at Gonzales, TX	3,488	1977–83, 1985–92, 1994	1987 1992	34.70 35.01	52,000 --	6/05/87	34.70	52,000	Y	--
08174600	Peach Creek below Dilworth, TX	460	1960–79	1977	33.11	76,800	4/20/77	33.11	76,800	N	>100
08175800	Guadalupe River at Cuero, TX	4,934	1964–92	1981	41.83	132,000	9/01/81	41.83	132,000	Y	--
08176500	Guadalupe River at Victoria, TX	5,198	1929, 1935–92, 1994	1936	31.22	179,000	9/02/81	31.10	105,000	Y	50
							6/07/87	30.45	83,400	Y	30
08176900	Coleto Creek at Arnold Road near Schroeder, TX	357	1980–92, 1994	1981 1992	17.78 22.86	32,500 22,600	8/31/81	17.78	32,500	N	10
08177300	Perdido Creek at Farm Road 622 near Fannin, TX	28	1979–92, 1994	1981 1992	13.80 15.05	15,600 15,200	5/29/81	13.80	15,600	N	10
08177600	Olmos Creek tributary at Farm Market Road 1535 at Shavano Park, TX	0.33	1969–81	1978	6.71	339	9/13/78	6.71	339	Y	--
08178000	San Antonio River at San Antonio, TX	41.0	1915–17, 1919–21, 1923–29, 1940–92, 1994	1921 1990	-- 15.27	15,300 5,380	5/26/70	11.52	5,970	Y	--
							9/27/73	14.78	6,090	Y	--
08178300	Alazan Creek at St. Cloud Street at San Antonio, TX	3.26	1969–79	1975	16.08	4,380	5/08/75	16.08	4,380	Y	--
08178640	West Elm Creek at San Antonio, TX	2.45	1976–88	1985	6.92	889	6/06/85	6.92	889	Y	--
08178690	Salado Creek tributary at Bitters Riad at San Antonio, TX	0.26	1969–81	1978 1979	8.34 10.07	279 190	9/13/78	8.34	279	Y	--
08178700	Salado Creek (upper station) at San Antonio, TX	137	1961–92, 1994	1972	15.22	24,900	5/12/72	15.22	2,4900	Y	--
08178800	Salado Creek (lower station) at San Antonio, TX	189	1961–92, 1994	1973	28.83	13,100	9/27/73	28.83	13,100	Y	--
							9/13/78	28.21	12,000	Y	--
08178880	Medina River at Bandera, TX	427	1983–92, 1994	1987	24.90	55,800	6/03/87	24.90	55,800	N	15
08179000	Medina River near Pipe Creek, TX	474	1923–32, 1934–35, 1953–82	1978	49.60	281,000	7/15/73	37.30	72,900	N	30
							8/02/78	49.60	281,000	N	>100
08180500	Medina River near Riomedina, TX	650	1926, 1953–73	1973	23.20	28,600	7/15/73	23.20	28,600	Y	--

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas—Continued

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08180700	Medina River near Macdona, TX	885	1982–92, 1994	1987	20.58	36,800	5/30/87	20.58	36,800	Y	--
08180800	Medina River near Somerset, TX	967	1971–92, 1994	1973	29.39	30,500	7/17/73	29.39	30,500	Y	--
08181000	Leon Creek tributary at Farm Market Road 1604 at San Antonio, TX	5.57	1969–80	1973	10.91	1,790	7/16/73	10.91	1,790	N	10
08181400	Helotes Creek at Helotes, TX	15.0	1969–92, 1994	1973	10.80	7,680	7/16/73	10.80	7,680	N	15
08181450	Leon Creek tributary at Kelly Air Force Base, TX	1.19	1969–79	1970	4.44	555	5/14/70	4.44	555	N	--
08181500	Medina River at San Antonio, TX	1,317	1940–92, 1994	1973	43.59	31,900	7/17/73 6/05/87	43.59 37.37	31,900 28,600	Y Y	-- --
08181800	San Antonio River near Elmendorf, TX	1,743	1963–92, 1994	1973 1986	47.60 53.06	40,000 35,900	9/27/73 6/05/86	47.60 53.06	40,000 35,900	Y Y	-- --
08182400	Calaveras Creek subwatershed number 6 near Elmendorf, TX	7.01	1957–77	1975 1957	-- --	4,770 3,750	6/08/75	--	4,770	N	15
08183500	San Antonio River near Falls City, TX	2,113	1914, 1926–92, 1994	1946	33.80	47,400	9/29/73	27.26	24,400	Y	--
08185000	Cibolo Creek at Selma, TX	274	1946–92, 1994	1973	26.20	65,000	5/12/72 7/16/73	24.34 26.20	54,000 65,000	N N	30 50
08186000	Cibolo Creek near Falls City, TX	827	1914, 1931–92, 1994	1914 1973	35.00 35.44	35,000 33,300	9/28/73	35.44	33,300	Y	30
08186500	Ecleto Creek near Runge, TX	239	1903, 1952, 1962–89	1981	34.10	74,000	8/31/81	34.10	74,000	N	>100
08189200	Copano Creek near Refugio, TX	87.8	1971–92, 1994	1971	21.00	6,300	9/12/71	21.00	6,300	N	25
08189500	Mission River at Refugio, TX	690	1914, 1938, 1940–92, 1994	1971	38.25	79,000	9/12/71	38.25	79,000	N	>100
08189700	Arkansas River near Skidmore, TX	247	1954, 1964–92, 1994	1967	42.22	82,800	9/12/71	41.15	65,900	N	70
08189800	Chiltipin Creek at Sinton, TX	128	1971–91	1985	29.45	23,800	4/11/85	29.45	23,800	N	30
08190000	Nueces River at Laguna, TX	737	1913, 1923–92	1955	32.70	307,000	10/13/73	26.00	150,000	Y	25
08192000	Nueces River below Uvalde, TX	1,861	1928–92, 1994	1935	49.40	616,000	10/13/73	21.67	144,000	Y	20
08194000	Nueces River at Cotulla, TX	5,171	1924–92, 1994	1935	32.40	82,600	7/01/71	25.75	33,400	Y	25
08194200	San Casimiro Creek near Freer, TX	469	1954, 1962–92, 1994	1972	26.87	82,000	10/17/71 11/20/85	26.87 21.75	82,000 7,500	N Y	45 5
08197500	Frio River below Dry Frio River near Uvalde, TX	631	1952–92, 1994	1987	25.05	99,600	5/29/87	25.05	99,600	Y	25
08198000	Sabinal River near Sabinal, TX	206	1943–92, 1994	1958	24.60	55,200	7/15/73	24.00	36,500	N	25
08200700	Hondo Creek at King Waterhole near Hondo, TX	149	1961–92	1987	17.19	51,800	7/15/73 5/29/87	16.40 17.19	46,900 51,800	N N	45 50
08201500	Seco Creek at Miller Ranch near Utopia, TX	43.1	1958, 1962–92, 1994	1958	16.40	52,600	7/15/73	14.40	38,500	N	40

Table 45. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Texas—Continued

Station number (fig. 66)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
08202700	Seco Creek at Rowe Ranch near D Hanis, TX	168	1934, 1961–92	1934	28.20	35,800	5/29/87	28.20	35,800	N	25
08205500	Frio River near Derby, TX	3,429	1916–92, 1994	1932	29.45	230,000	8/15/71 5/31/87	22.96 17.29	82,500 33,800	Y Y	80 15
08206600	Frio River at Tilden, TX	4,493	1980–92, 1994	1987	29.18	20,900	6/09/87	29.18	20,900	N	25
08206700	San Miguel Creek near Tilden, TX	783	1964–92, 1994	1980	27.31	20,600	4/15/77 5/16/80	27.00 27.31	15,400 20,600	Y Y	15 30
08207000	Frio River at Calliham, TX	5,491	1922, 1925–26, 1929, 1932–81	1932	39.20	80,200	8/18/71	36.18	42,800	Y	50
08210000	Nueces River near Three Rivers, TX	15,427	1915–79, 1981–92, 1994	1967	49.21	141,000	10/21/71	41.89	41,700	Y	10
08210400	Lagarto Creek near George West, TX	155	1971–89	1972	25.10	33,500	10/17/71	25.10	33,500	N	75
08211000	Nueces River near Mathis, TX	16,660	1919, 1931–32, 1935, 1940–92, 1994	1967	47.70	138,000	9/12/71 10/17/71	39.19 40.48	64,900 72,700	Y Y	-- --
08211520	Oso Creek at Corpus Christi, TX	90.3	1973–92, 1994	1980	29.37	12,100	8/10/80	29.37	12,100	N	>100
08211800	San Diego Creek at Alice, TX	319	1964–89	1972	17.70	19,200	10/17/71	17.70	19,200	Y	--
08211900	San Fernando Creek at Alice, TX	507	1962, 1965–87	1971	16.51	26,800	9/12/71	16.51	26,800	Y	--
08212400	Los Olmos Creek near Falfurrias, TX	480	1967–83	1971 1980	12.66 14.70	5,300 1,370	9/13/71	12.66	5,300	N	20
08365600	Mckelligon Canyon at El Paso, TX	2.30	1958–77	1977	5.66	3,060	7/14/77	5.66	3,060	Y	--
08374200	Rio Grande below Rio Conchos near Presidio, TX	66,203	1955–83	1978 1958	15.41 21.26	61,200 53,900	9/30/78	15.41	61,200	Y	--
08375000	Rio Grande at Johnson Ranch, TX	67,760	1933, 1936–83	1933 1978	24.60 28.40	97,000 71,900	9/30/78	28.40	71,900	Y	--
08412500	Pecos River near Orla, TX	21,210	1938–91	1941 1978	-- 24.64	23,700 19,000	9/26/78	24.64	19,000	Y	--
08431700	Limpia Creek above Fort Davis, TX	52.4	1966–85	1984	9.00	8,610	6/19/84	9.00	8,610	N	25
08431800	Limpia Creek below Fort Davis, TX	227	1962–77	1974 1964	7.70 7.85	5,520 3,700	9/21/74	7.70	5,520	N	25
08444400	Three Mile Mesa Creek near Fort Stockton, TX	1.04	1965–74	1973	4.60	350	7/19/73	4.60	350	N	100
08447020	Independence Creek near Sheffield, TX	763	1974–84	1974	16.74	78,100	9/20/74	16.74	78,100	N	80
08449400	Devils River at Pafford Crossing near Comstock, TX	3,961	1961–76	1974	19.82	250,000	9/18/74	19.82	250,000	N	15
08461300	Rio Grande below Falcon Dam, TX	159,270	1953–83	1971	--	76,400	9/18/71	--	76,400	Y	--
08473700	Rio Grande near San Benito, TX	176,304	1954–83	1967	61.05	25,000	7/04/73	59.59	17,100	Y	--

[1]Regulated during flood: N, no; Y, yes.

Utah

Hydroclimatology

Utah is located in the Western Interior of the United States. Several mountain ranges and the Great Salt Lake Desert create Utah's diverse topography. Utah's climate is affected by this diverse topography. The Great Salt Lake Desert in the northwestern part of the State receives on average about 5 in. of precipitation per year, whereas the highest mountains average as much as 60 in. annually (Paulson and others, 1991).

The principal source of moisture is the Pacific Ocean. Airmasses come from both the North Pacific Ocean and the subtropical Pacific Ocean. Utah is also affected by moisture originating in the Gulf of Mexico during the summer months.

Frontal systems usually develop in the winter and early spring across Utah. Low-pressure systems along the frontal boundary producing rain and snow generally track from west to east. Flooding is usually caused by rapid melting of deep snowpack. Monsoon thunderstorms typically occur during the summer from moisture transported from either the tropical Pacific Ocean or the Gulf of Mexico. Locally intense thunderstorms and associated excessive rainfall can cause flash floods.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Utah is affected by drainage area and mean basin elevation (Jennings and others, 1994).

Significant Floods

The largest and most widespread flood in Utah's recent history was the combination of floods that occurred in the spring and early summer of 1983. More than three-fourths of State was affected. The flood was caused by rapid melting of a record snowpack. Discharges for several streams exceeded the 100-year recurrence intervals. On June 23, a dam on the Sevier River near Delta failed, and 16,000 acre-ft of water were released down the river, increasing the otherwise high flood levels. Damages from the 1983 floods totalled $621 million (Paulson and others, 1991).

The floods that occurred between April and June 1984 were second in magnitude of damage only to the floods of 1983. The flooding was a result of the melting of an above-average snowpack and above-average rainfall that continued through the spring. Maximum discharges at some streamflow-gaging stations on the White, Bear, Jordan, and Beaver Rivers exceeded discharges recorded during the 1983 flood.

Eighteen percent of the streamflow-gaging stations in the State recorded significant discharges during the flood of June 1986. The flood was again a result of large runoff produced by the rapid melting of greater-than-normal mountain snowpack. As a result of the riverine flooding in 1983, 1984, and 1986, the level of the Great Salt Lake increased to a 140-year record elevation of 4,211.60 ft. Shoreline flooding caused $268 million in damages (Paulson and others, 1991).

The location of streamflow-gaging stations in Utah that had significant floods for 1970–89 is shown in figure 67 by station number. The specific data for each significant flood are listed in table 46. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.

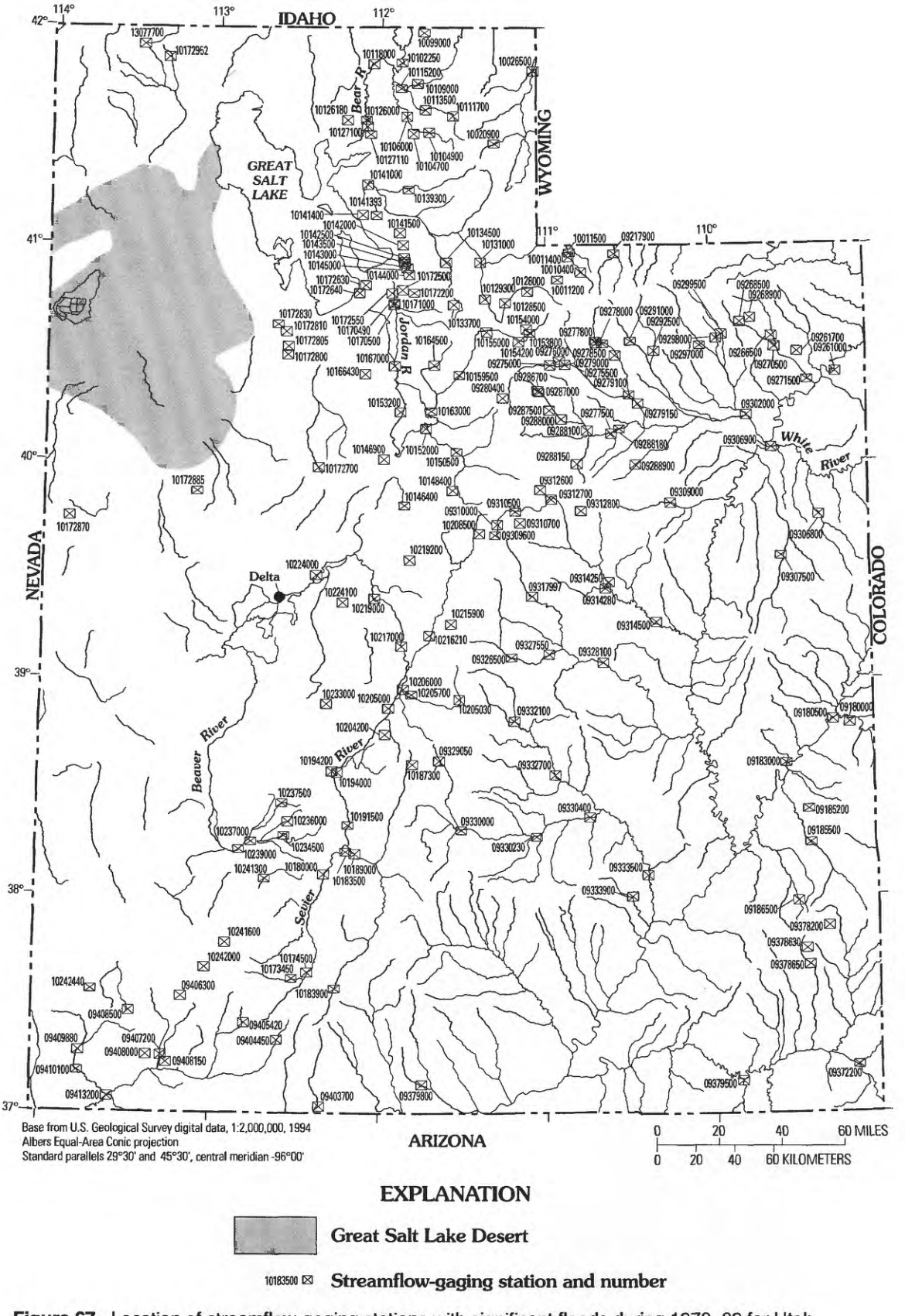


Figure 67. Location of streamflow-gaging stations with significant floods during 1970–89 for Utah.

Table 46. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Utah

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 67)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09180000	Dolores River near Cisco, UT	4,580	1951–94	1958	9.84	17,400	5/10/83	14.57	15,500	Y	20
				1983	14.57	15,500					
09180500	Colorado River near Cisco, UT	24,100	1884, 1914–17, 1923–94	1884	--	125,000	5/27/84	20.70	70,300	Y	15–20
				1914	21.52	66,100					
09183000	Courthouse Wash near Moab, UT	162	1950–55, 1957, 1966–89	1957	9.38	12,300	9/06/81	8.04	9,500	N	15–20
09185200	Kane Springs Canyon near Moab, UT	17.8	1959, 1961–74	1970	14.05	1,290	9/06/70	14.05	1,290	N	10–25
09185500	Hatch Wash near La Sal, UT	378	1950–71	1970	5.96	4,650	8/20/70	5.96	4,650	N	40–50
				1959	6.43	3,210					
09186500	Indian Creek above Cottonwood Creek near Monticello, UT	31.2	1950–71, 1988–91	1971	12.45	2,330	8/28/71	12.45	2,330	Y	60–70
09217900	Blacks Fork near Robertson, WY	130	1938–39, 1967–86, 1993	1983	3.92	2,480	6/19/83	3.92	2,480	N	10–15
				1968	4.91	2,160					
09261000	Green River near Jensen, UT	29,660	1904, 1906, 1947–94	1984	14.66	40,000	5/18/84	14.66	40,000	Y	50
09261700	Big Brush Creek above Red Fleet Reservoir near Vernal, UT	77.2	1980–94	1983	2.40	375	6/02/83	2.40	375	Y	20–25
				1980	3.06	314					
09266500	Ashley Creek near Vernal, UT	101	1912, 1914–94	1965	4.42	3,500	6/15/75	4.30	2,590	N	40
				1929	9.05	1,560	5/26/86	4.93	2,730	N	50
09268500	North Fork of Dry Fork near Dry Fork, UT	8.62	1946–89	1983	3.68	249	6/19/83	3.68	249	N	>100
09268900	Brownie Canyon above Sinks near Dry Fork, UT	8.24	1961–89	1983	3.52	425	6/18/83	3.52	425	N	25
09270500	Dry Fork at mouth near Dry Fork, UT	115	1955–89	1983	6.98	1,920	6/21/83	6.98	1,920	N	50–75
							6/01/86	5.52	1,420	N	20
09271500	Ashley Creek near Jensen, UT	383	1947–83	1983	7.14	3,660	6/20/83	7.14	3,660	Y	40–45
				1965	7.16	2,500					
09275000	West Fork Duchesne River below Dry Hollow near Hanna, UT	43.8	1950–68, 1975–81	1975	4.65	740	6/14/75	4.65	740	N	5–10
09275500	West Fork Duchesne River near Hanna, UT	61.6	1923, 1946–94	1967	3.60	758	6/14/75	3.67	752	N	25
				1952	4.40	652					
09276000	Wolf Creek above Rhoades Canyon near Hanna, UT	10.6	1946–84	1983	2.85	181	6/18/83	2.85	181	N	>100
							5/31/84	2.70	119	N	25–40
09277500	Duchesne River near Tabiona, UT	356	1919–94	1963	7.97	5,260	6/06/86	5.63	2,650	Y	75
				1922	14.40	2,350					
09277800	Rock Creek above South Fork near Hanna, UT	98.9	1966–84, 1989–94	1971	4.95	2,760	6/17/71	4.95	2,760	N	35–40
				1983	5.16	2,540					
09278000	South Fork Rock Creek near Hanna, UT	15.7	1954–78, 1980–92	1986	3.15	216	6/16/75	2.43	189	N	10–20
							6/06/86	3.15	216	N	25
09278500	Rock Creek near Hanna, UT	122	1950–69, 1975–88	1986	8.31	2,710	6/18/83	7.98	2,570	N	20–30
				1953	8.60	2,540	6/03/86	8.31	2,710	N	40–45
09279000	Rock Creek near Mountain Home, UT	147	1938–94	1971	5.98	2,920	6/18/71	5.98	2,920	N	60
				1938	11.19	1,790	6/19/83	5.79	2,530	N	20
							6/04/86	6.26	2,770	N	40
09279100	Rock Creek near Talmage, UT	238	1964–94	1986	4.57	2,470	6/06/86	4.57	2,470	N	10

Table 46. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Utah—Continued

Station number (fig. 67)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09279150	Duchesne River above Knight Diversion Dam near Duchesne, UT	623	1970–94	1986	7.52	4,970	6/06/86	7.52	4,970	Y	10
09280400	Hobble Creek at Daniels Summit near Wallsburg, UT	2.89	1964–84	1975 1983	2.89 3.11	145 83	6/07/75	2.89	145	N	40–50
09286700	Currant Creek below Currant Creek Dam near Fruitland, UT	48	1984–94	1984	5.58	558	5/14/84	5.58	558	Y	25–50
09287000	Currant Creek below Red Ledge Hollow near Fruitland, UT	50.1	1946–68, 1975–83	1975	5.58	946	5/21/75	5.58	946	Y	60–70
09287500	Water Hollow near Fruitland, UT	13.8	1946–84	1954	3.24	133	7/24/77	3.00	109	Y	10–25
09288000	Currant Creek near Fruitland, UT	140	1935–94	1952 1941	2.72 5.85	1,260 1,040	5/27/83	3.77	906	Y	30
09288100	Red Creek below Currant Creek near Fruitland, UT	297	1964–81	1975 1967	4.50 4.74	1,460 1,340	7/16/75	4.50	1,460	Y	10–25
09288150	West Fork Avintaquin Creek near Fruitland, UT	56.1	1965–86	1971	5.40	1,830	8/22/71	5.40	1,830	N	30–40
09288180	Strawberry River near Duchesne, UT	917	1968–94	1983	8.29	2,090	5/31/83	8.29	2,090	Y	55–60
09288900	Sowers Creek near Duchesne, UT	40.6	1965–86	1983	7.45	451	8/12/83	7.45	451	N	15–25
09291000	Lake Fork River below Moon Lake near Mountain Home, UT	112	1922–27, 1930–32, 1942–94	1949 1944	4.83 5.46	2,180 2,070	6/22/83	5.20	2,140	Y	20
09292500	Yellowstone River near Altonah, UT	132	1945–94	1990	4.93	2,360	6/19/83 6/05/86	4.24 4.34	2,240 2,130	N N	60 50
09297000	Uinta River near Neola, UT	163	1925–27, 1930–83	1965	7.00	5,000	6/16/75	5.75	3,350	N	30
09298000	Farm Creek near Whiterocks, UT	14.9	1950–81	1968	3.95	350	5/18/73	3.74	274	N	15–20
09299500	Whiterocks River near Whiterocks, UT	113	1902–03, 1909, 1918–25, 1927, 1930–74, 1976–94	1983 1920	5.28 7.04	4,640 1,490	6/22/83	5.28	4,640	N	>100
09302000	Duchesne River near Randlett, UT	4,247	1943–94	1983 1986	8.33 10.22	11,500 9,670	6/20/83 6/05/86	-- 10.22	11,500 9,670	Y Y	35–40 20
09306800	Bitter Creek near Bonanza, UT	324	1971–89	1982	13.82	1,790	9/05/82	13.82	1,790	N	10–25
09306900	White River at mouth near Ouray, UT	5,120	1975–86	1984	10.23	5,660	6/10/84	10.23	5,660	N	10–25
09307500	Willow Creek above diversions near Ouray, UT	297	1951–55, 1958–70, 1975–83	1977	9.55	2,240	7/19/77	9.55	2,240	N	>100
09309000	Minnie Maud Creek at Nutter Ranch near Myton, UT	231	1947–55, 1960–73	1973 1955	7.67 8.80	1,380 1,370	6/--/73	7.67	1,380	N	25–30
09309600	Fairview Tunnel near Fairview, UT	0.01	1968–88	1984	1.55	52	6/06/84	1.55	52	Y	>100
09310000	Gooseberry Creek near Scofield, UT	16.8	1931–32, 1941–94	1984 1993	-- 3.51	419 376	5/22/84	--	419	Y	25
09310500	Fish Creek above reservoir near Scofield, UT	60.1	1932–33, 1939–94	1984	6.20	1,450	5/20/73 5/30/83 5/21/84	4.87 5.91 6.20	1,160 1,310 1,450	N N N	20–25 45–50 90–95

Table 46. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Utah—Continued

Station number (fig. 67)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09310700	Mud Creek at Scofield, UT	29.1	1979–86, 1991–94	1984 1993	3.30 3.33	389 140	5/21/84	3.30	389	N	10–25
09312600	White River below Tabbyune Creek near Soldier Summit, UT	75.6	1968–94	1983	5.82	962	5/27/83	5.82	962	N	25–50
09312700	Beaver Creek near Soldier Summit, UT	26.1	1961–89	1983 1984	2.63 2.81	204 163	5/27/83	2.63	204	N	35–40
09312800	Willow Creek near Castle Gate, UT	62.8	1963–89	1973	6.47	836	8/06/73	6.47	836	N	25–35
09314250	Price River below Miller Creek near Wellington, UT	956	1974–86	1975 1984	9.97 10.06	2,880 2,340	9/11/75	9.97	2,880	Y	15–20
09314280	Desert Seep Wash near Wellington, UT	191	1972–86	1977	10.00	2,060	7/24/77	10.00	2,060	N	50–100
09314500	Price River at Woodside, UT	1,540	1909–10, 1946–92	1991 1909	13.49 18.20	11,200 8,150	9/11/80	11.16	9,720	Y	35
09317997	Huntington Creek near Huntington, UT	178	1974–75, 1980–81, 1984, 1987–94	1984 1975	4.96 5.08	1,680 910	6/11/80	4.43	1,020	Y	10–25
09326500	Ferron Creek (upper station) near Ferron, UT	138	1912–23, 1948–94	1952 1920	9.71 10.00	4,180 2,100	7/13/73	8.80	3,040	N	40
09327550	Ferron Creek below Paradise Ranch near Clawson, UT	221	1976–86	1985 1984	6.99 7.16	2,670 2,440	7/22/85	6.99	2,670	Y	5–10
09328100	San Rafael River at San Rafael Bridge Campground near Castle Dale, UT	1,284	1976–86	1979	11.08	4,630	9/10/79	11.08	4,630	N	5–10
09329050	Seven Mile Creek near Fish Lake, UT	24.0	1965–94	1984	4.03	369	6/01/84	4.03	369	N	40–50
09330000	Fremont River near Bicknell, UT	751	1938–43, 1945–58, 1977–94	1942	5.80	1,200	4/17/87	3.59	1,040	Y	30
09330230	Fremont River near Cainville, UT	1,208	1967–94	1984	10.20	8,800	7/24/84	10.20	8,800	N	75–80
09330400	Fremont River near Hanksville, UT	1,900	1959–73	1973	18.48	15,300	10/19/72	18.48	15,300	N	50
09332100	Muddy Creek below Interstate Highway 70 near Emery, UT	418	1951–55, 1957–68, 1974–86	1981	11.25	9,400	9/05/81 7/16/86	11.25 8.72	9,400 3,140	N N	>100 5–10
09332700	Muddy Creek at Delta Mine near Hanksville, UT	841	1976–86	1980	9.60	6,840	9/10/80	9.60	6,840	Y	10–25
09333500	Dirty Devil River above Poison Spring Wash near Hanksville, UT	4,159	1948–93	1958	28.10	35,000	9/10/80	16.20	25,700	Y	30–35
09333900	Butler Canyon near Hite, UT	14.7	1959–74	1972	16.58	1,950	6/24/72	16.58	1,950	N	50–100
09372200	McElmo Creek near Bluff, UT	720	1959–68, 1970, 1981–82	1970 1963	-- 10.88	13,100 1,140	9/06/70	--	13,100	N	50–100
09378200	Montezuma Creek at golf course at Monticello, UT	17.6	1980–92	1983 1980	5.77 7.31	537 259	4/24/83	5.77	537	N	25–50
09378630	Recapture Creek near Blanding, UT	3.77	1966–94	1973 1992	2.14 3.80	142 17	10/20/72	2.14	142	N	25–50
09378650	Recapture Creek below Johnson Creek near Blanding, UT	50.2	1976–93	1981	5.67	695	3/14/81	5.67	695	N	10–25

Table 46. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Utah—Continued

Station number (fig. 67)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09379500	San Juan River near Bluff, UT	23,000	1915–17, 1927–94	1927	32.00	70,000	9/06/70	26.62	52,000	Y	45
09379800	Coyote Creek near Kanab, UT	89.0	1959–72	1972 1968	17.97 18.82	4,590 3,800	6/22/72	17.97	4,590	N	10–25
09403700	Johnson Wash near Kanab, UT	237	1959–74	1970	21.20	2,750	8/18/70	21.20	2,750	N	25–50
09404450	East Fork Virgin River near Glendale, UT	74.2	1967–94	1976	4.14	640	7/27/76	4.14	640	N	10–25
09405420	North Fork Virgin River below Bulloch Canyon near Glendale, UT	29.6	1974–84	1974	7.44	1,740	9/09/74	7.44	1,740	N	10–25
09406300	Kanarra Creek at Kanarraville, UT	9.85	1960–82	1970 1968	2.25 4.78	1,000 800	8/17/70	2.25	1,000	N	20–25
09407200	Ash Creek below West Field Ditch at Toquerville, UT	201	1973–82	1978	6.53	1,850	3/05/78	6.53	1,850	Y	10–25
09408000	Leeds Creek near Leeds, UT	15.5	1964–94	1988	9.41	4,420	8/03/88	9.41	4,420	N	50–60
09408150	Virgin River near Hurricane, UT	1,499	1967–89, 1991–94	1989 1992	-- 18.05	66,000 3,900	1/01/89	--	66,000	Y	--
09408500	Santa Clara-Pinto Diversion near Pinto, UT	0.01	1954–62, 1970–73, 1975–94	1983 1993	2.58 5.59	229 88	5/24/83 5/11/84	2.58 2.30	229 146	Y Y	30–35 10
09409880	Santa Clara River at Gunlock, UT	271	1970–94	1980	5.74	2,810	2/14/80	5.74	2,810	Y	20–25
09410100	Santa Clara River below Winsor Dam near Santa Clara, UT	378	1973–94	1983 1993	6.07 16.71	1,770 1,510	3/03/83	6.07	1,770	Y	10–15
09413200	Virgin River near Bloomington, UT	3,831	1978–94	1989	25.70	60,000	1/01/89	25.70	60,000	N	--
10010400	East Fork Bear River near Evanston, WY	34.6	1974–86	1983	4.33	857	6/18/83	4.33	857	N	25–50
10011200	West Fork Bear River at Whitney Dam near Oakley, UT	6.79	1964–86	1986	3.27	191	6/07/86	3.27	191	Y	100
10011400	West Fork Bear River below Deer Creek near Evanston, WY	52.2	1974–86	1984	4.20	1,020	5/15/84	4.20	1,020	Y	10–25
10011500	Bear River near Utah-Wyoming State line	172	1943–94	1986 1990	4.05 7.05	3,230 2,810	6/06/86	4.05	3,230	N	45
10020900	Woodruff Creek below reservoir near Woodruff, UT	50.0	1974–86	1983	4.09	783	5/29/83	4.09	783	Y	10–25
10026500	Bear River near Randolph, UT	1,616	1944–92	1983 1991	8.58 15.93	3,630 1,350	6/04/83 5/26/84	8.58 8.30	3,630 3,050	Y Y	30 15
10099000	High Creek near Richmond, UT	16.2	1944–52, 1971–72, 1979–89	1986	3.58	702	6/01/86	3.58	702	N	50–100
10102250	Bear River near Smithfield, UT	5,193	1964–78, 1990–94	1971	14.46	5,850	6/13/71	14.46	5,850	Y	75
10104700	Little Bear River below Davenport Creek near Avon, UT	61.6	1961–92	1986	5.58	1,540	4/11/82 2/19/86	4.43 5.58	1,180 1,540	N N	20 50
10104900	East Fork Little Bear River above reservoir near Avon, UT	56.7	1964–86	1984	3.98	1,110	5/12/84	3.98	1,110	N	50
10106000	Little Bear River near Paradise, UT	198	1937–86	1986 1982	8.06 8.58	2,250 1,780	2/19/86	8.06	2,250	Y	60

Table 46. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Utah—Continued

Station number (fig. 67)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10109000	Logan River above State dam near Logan, UT	214	1896–94	1907 1984	-- 6.58	2,480 1,980	5/31/84	6.58	1,980	N	25
10111700	Blacksmith Fork below Mill Creek near Hyrum, UT	78.0	1966–69, 1986–92	1986	7.11	346	3/08/86	7.11	346	N	25–50
10113500	Blacksmith Fork above Utah Power and Light Dam near Hyrum, UT	263	1914–17, 1919–94	1984	7.12	1,650	5/04/82 5/14/84	6.61 7.12	1,460 1,650	N N	30 50
10115200	Logan River below Blacksmith Fork near Logan, UT	531	1964–80	1971 1975	4.84 5.11	1,980 1,400	5/16/71	4.84	1,980	Y	25–50
10118000	Bear River near Collinston, UT	6,267	1890–1981, 1983–87, 1990–94	1986	8.68	12,700	5/18/84 2/20/86	-- 8.68	11,200 12,700	Y Y	50 100
10126000	Bear River near Corinne, UT	7,029	1950–57, 1964–94	1984	17.50	14,770	5/19/84 2/20/86	17.50 --	14,770 12,000	Y Y	100 45–50
10126180	Sulphur Creek near Corinne, UT	15.4	1972–86	1986 1976	3.39 3.57	326 195	2/19/86	3.39	326	N	25–50
10127100	Black Slough near Brigham City, UT	31.1	1972–86	1986	4.22	331	2/20/86	4.22	331	N	10–25
10127110	Bear River Basin outflow across State Highway 83 near Corinne, UT	0.01	1977–86	1984 1977	-- --	14,600 3,480	5/19/84	--	14,600	N	10–25
10128000	Smith and Morehouse Creek near Oakley, UT	33.8	1977–87	1986 1978	5.52 6.19	885 556	6/04/86	5.52	885	N	10–25
10128500	Weber River near Oakley, UT	162	1905–94	1921 1990	9.00 9.39	4,170 2,660	6/06/86	9.09	3,540	N	50
10129300	Weber River near Peoa, UT	296	1957–77	1965 1971	4.73 4.80	2,160 2,160	6/18/71	4.80	2,160	Y	5–10
10131000	Chalk Creek at Coalville, UT	250	1905, 1927–94	1993	6.89	1,790	6/01/83	5.26	1,570	N	60
10133700	Threemile Creek near Park City, UT	2.68	1964–74, 1983–84	1983	1.15	24	6/01/83	1.15	24	N	25–50
10134500	East Canyon Creek near Morgan, UT	144	1932–94	1952	3.49	872	6/01/83	2.95	726	Y	>100
10139300	Wheeler Creek near Huntsville, UT	11.1	1959–94	1986	5.76	600	5/21/81 2/--/86	3.95 5.76	533 600	N N	20–25 30–40
10141000	Weber River near Plain City UT	2,081	1905–94	1952 1993	19.01 23.13	10,100 3,230	6/02/83	18.51	7,250	Y	15
10141393	Storm drain at 1700 North 475 West, Sunset, UT	--	1948–73, 1975–83	1952 1948	-- --	93 23	7/28/82	--	93	N	10–15
10141400	Howard Slough at Hooper, UT	20.6	1972–84	1979 1984	3.97 4.07	294 263	2/15/79	3.97	294	N	10–25
10141500	Holmes Creek near Kaysville, UT	2.49	1950–66, 1983	1983 1952	-- 1.13	100 36	6/01/83	--	100	N	>100
10142000	Farmington Creek above diversion near Farmington, UT	10.0	1950–83	1983 1975	-- 2.16	590 366	6/06/75 6/01/83	2.16 --	366 590	N N	25 >100
10142500	Ricks Creek above diversion near Centerville, UT	2.35	1950–66, 1983	1983 1958	-- 1.32	270 34	6/01/83	--	270	N	>100
10143000	Parrish Creek above diversions near Centerville, UT	2.08	1950–68, 1983	1983 1957	-- 2.05	40 21	6/01/83	--	40	N	50–100
10143500	Centerville Creek above diversion near Centerville, UT	3.15	1950, 1952–80, 1983	1983 1974	-- 2.25	170 32	5/20/75 6/01/83	-- --	35 170	N N	25 >100

Table 46. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Utah—Continued

Station number (fig. 67)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10144000	Stone Creek above diversion near Bountiful, UT	4.48	1950–66, 1983	1983 1950	-- 1.38	3,300 64	6/01/83	--	3,300	N	>100
10145000	Mill Creek at Mueller Park near Bountiful, UT	8.79	1950–68, 1983	1983 1964	-- 1.75	190 101	6/01/83	--	190	N	100
10146400	Currant Creek near Mona, UT	225	1979–94	1984 1983	6.30 6.77	595 454	5/14/84	6.30	595	N	10–25
10146900	Utah Lake tributary near Elberta, UT	4.71	1961–70, 1972–73	1970	14.38	2,210	9/05/70	14.38	2,210	N	>100
10148400	Nebo Creek near Thistle, UT	36.7	1964–73	1973	4.49	478	5/10/73	4.49	478	N	25–50
10150500	Spanish Fork at Castilla, UT	652	1890, 1903–17, 1919–25, 1933, 1935–94	1984	11.53	5,000	5/30/83 5/15/84	10.67 11.53	2,980 5,000	Y Y	75 >100
10152000	Spanish Fork near Lake Shore, UT	675	1904–07, 1909–25, 1938–73, 1976–87	1984 1982	11.39 12.02	3,320 1,380	5/29/83 5/15/84	-- 11.39	3,010 3,320	Y Y	>100 >100
10153200	Big Cove Wash near Lehi, UT	0.44	1961–73	1972	10.05	8	6/03/72	10.05	8	N	5–10
10153800	North Fork Provo River near Kamas, UT	24.40	1964–94	1986 1975	2.98 3.00	728 705	7/04/75 6/05/86	3.00 2.98	705 728	N N	30 40
10154000	Shingle Creek near Kamas, UT	8.40	1964–73	1971 1964	3.28 3.33	238 171	6/17/71	3.28	238	N	25
10154200	Provo River near Woodland, UT	162	1964–94	1986	7.40	6,040	5/28/79 6/07/86	5.32 7.40	2,950 6,040	Y Y	5–10 >100
10155000	Provo River near Hailstone, UT	233	1950–94	1986	9.91	6,100	6/07/86	9.91	6,100	Y	>100
10159500	Provo River below Deer Creek Dam, UT	547	1953–94	1983	9.11	2,260	6/03/83	9.11	2,260	Y	15
10163000	Provo River at Provo, UT	673	1903–05, 1934, 1937–94	1952 1983	6.37 7.67	2,520 2,420	6/03/83 5/25/84	7.67 6.94	2,420 2,050	Y Y	50 20
10164500	American Fork above upper power plant near American Fork, UT	51.1	1927–94	1983 1953	-- 9.20	1,000 --	5/31/83	--	1,000	N	>100
10166430	West Canyon Creek near Cedar Fort, UT	26.8	1965–75, 1987–94	1971	7.50	1,660	8/28/71	7.50	1,660	N	>100
10167000	Jordan River at Narrows near Lehi, UT	3,010	1914–84	1984 1933	-- 9.50	3,030 770	6/23/83 6/20/84	-- --	2,150 3,030	Y Y	>100 >100
10170490	Combined flow Jordan River and Surplus Canal at Salt Lake City, UT	3,438	1943–82	1982 1943	-- --	2,480 881	9/27/82	--	2,480	Y	>100
10170500	Surplus Canal at Salt Lake City, UT	0.01	1943–94	1984 1993	8.91 16.01	4,410 3,230	6/01/84 5/09/86	8.91 7.13	4,410 3,880	Y Y	70–75 40–45
10171000	Jordan River at 1700 South at Salt Lake City, UT	3,438	1943–94	1986 1952	4.41 5.75	449 367	8/20/86	4.41	449	Y	50
10172200	Red Butte Creek at Fort Douglas near Salt Lake City, UT	7.25	1964–94	1983 1984	-- 3.81	105 101	5/28/83 5/17/84	-- 3.81	105 101	N N	40–45 35–40
10172500	City Creek near Salt Lake City, UT	19.2	1899–1908, 1911–68, 1975, 1980–81, 1983	1983 1975	-- 2.99	322 128	6/09/75 6/01/83	2.99 --	128 322	N N	15 >100
10172550	Jordan River at 5th North at Salt Lake City, UT	3,562	1977–86	1983 1978	5.24 5.79	932 792	6/01/83	5.24	932	Y	5–10

Table 46. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Utah—Continued

Station number (fig. 67)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10172630	Goggin Drain near Magna, UT	0.01	1964–68, 1972–84	1983 1975	-- 8.65	1,560 586	6/13/83	--	1,560	N	10–25
10172640	Lee Creek near Magna, UT	--	1972–82	1982	5.65	122	9/30/82	5.65	122	N	25
10172700	Vernon Creek near Vernon, UT	25.0	1959–81, 1983–94	1972	5.70	825	8/27/72	5.70	825	N	75–100
10172800	South Willow Creek near Grantsville, UT	4.19	1961–92, 1994	1964 1963	2.27 10.30	92 11	6/01/84	--	84	N	15–20
10172805	North Willow Creek near Grantsville, UT	5.38	1980–92	1984 1991	-- 3.33	145 29	5/16/84	--	145	N	25–50
10172810	Mack Canyon near Grantsville, UT	2.84	1961–70, 1973–74	1973	10.20	2	9/23/73	10.20	2	N	2–5
10172830	North Fork Muskrat Canyon near Timpie, UT	1.78	1961–70, 1973	1970	9.11	1	6/11/70	9.11	1	N	2–5
10172870	Trout Creek near Callao, UT	8.19	1959–94	1983	2.84	177	6/02/83 5/25/84	2.84 2.65	177 133	N N	30–40 15–20
10172885	Great Salt Lake Desert tributary number 2 near Dugway, UT	5.48	1961–70, 1973–74	1973	13.13	1,720	7/14/73	13.13	1,720	N	>100
10172952	Dunn Creek near Park Valley, UT	8.72	1977–94	1983 1980	-- 2.67	150 86	5/28/83	--	150	N	25–50
10173450	Mammoth Creek above West Hatch Ditch near Hatch, UT	105	1965–94	1983	5.13	838	6/06/79 6/19/83	4.81 5.13	652 838	N N	10 50
10174500	Sevier River at Hatch, UT	340	1912–13, 1915–23, 1925–26, 1928, 1939–94	1922	5.25	1,490	12/25/71 6/02/83	5.11 4.36	1,260 1,380	N N	20 25
10180000	Sevier River near Circleville, UT	986	1915–18, 1920–22, 1924–26, 1950–94	1972 1922	7.06 9.80	1,980 1,960	12/26/71 6/02/83	7.06 7.06	1,980 1,980	Y Y	35–40 35–40
10183500	Sevier River near Kingston, UT	1,131	1916–26, 1928, 1930–31, 1933–94	1938	5.20	3,000	12/26/71 6/03/83	4.15 4.82	1,940 1,590	Y Y	40 15–20
10183900	East Fork Sevier River near Rubys Inn, UT	71.6	1962–94	1980 1967	3.70 3.79	448 274	5/23/80 5/31/83	3.70 --	448 372	N N	30–40 20–25
10187300	Otter Creek near Koosharem, UT	23.5	1965–82	1973	2.61	117	5/18/73	2.61	117	N	10–25
10189000	East Fork Sevier River near Kingston, UT	1,207	1913–94	1941 1929	5.05 7.35	2,030 2,000	7/05/70	5.83	1,650	Y	50
10191500	Sevier River below Piute Dam near Marysvale, UT	2,441	1912–75, 1977–94	1922 1993	4.45 12.81	2,600 844	6/04/83 5/04/85	3.62 2.98	2,480 1,580	Y Y	>100 25
10194000	Sevier River above Clear Creek near Sevier, UT	2,707	1914–16, 1939–55, 1961–94	1983 1941	4.82 4.83	2,500 2,270	6/07/73 6/03/83	4.05 4.82	1,660 2,500	Y Y	25–30 100
10194200	Clear Creek above diversion near Sevier, UT	164	1958–94	1988 1973	2.40 4.41	906 769	4/29/73 8/26/88	4.41 2.40	769 906	N N	20 40
10204200	Mill Creek near Glenwood, UT	18.9	1964–74	1944	4.06	1,020	8/28/71	1.72	57	N	10–25
10205000	Sevier River near Sigurd, UT	3,375	1915–94	1922 1993	6.10 7.33	2,400 692	6/14/83 5/27/84	6.33 4.89	2,380 1,320	Y Y	>100 30
10205030	Salina Creek near Emery, UT	51.8	1964–94	1989	5.85	740	5/27/83 7/27/89	5.44 5.85	621 740	N N	15–25 30–40

Table 46. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Utah—Continued

Station number (fig. 67)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10205700	Salina Creek above diversions near Salina, UT	280	1959–74	1970	14.35	2,300	8/26/70	14.35	2,300	N	50–100
10206000	Salina Creek at Salina, UT	292	1914–15, 1918–19, 1943–55, 1960–94	1984	8.32	2,650	8/26/70 6/07/84	7.17 8.32	1,800 2,650	Y Y	35–40 >100
10208500	Oak Creek near Fairview, UT	11.8	1965–89	1983 1984	5.99 10.16	1,190 401	5/30/83	5.99	1,190	N	>100
10215900	Manti Creek below Dugway Creek near Manti, UT	26.4	1965–74, 1979–94	1973 1991	2.93 5.39	682 658	6/09/73	2.93	682	N	50
10216210	San Pitch River near Sterling, UT	672	1965–80	1974 1965	-- 2.36	512 137	3/12/74	--	512	Y	10–25
10217000	Sevier River below San Pitch River near Gunnison, UT	4,921	1918–26, 1928–94	1984 1993	-- 7.65	5,400 1,810	6/--/83 5/29/84 5/--/85	-- -- --	5,000 5,400 2,100	Y Y Y	>100 >100 20
10219000	Sevier River near Juab, UT	5,165	1912–94	1983	10.90	5,190	6/25/83 5/31/84 5/12/85	10.90 10.36 5.98	5,190 4,610 2,100	Y Y Y	>100 >100 25
10219200	Chicken Creek near Levan, UT	27.9	1963–94	1981 1993	5.70 21.68	390 32	9/08/81 6/01/83	5.70 --	390 380	N N	15–20 15–20
10224000	Sevier River near Lynndyl, UT	5,966	1914–19, 1943–94	1983 1984	-- 12.21	5,020 4,810	6/--/83 5/30/84	-- 12.21	5,020 4,810	Y Y	>100 >100
10224100	Oak Creek above Little Creek near Oak City, UT	5.58	1965–84, 1986–94	1973	2.21	120	4/29/73	2.21	120	N	25
10233000	Meadow Creek near Meadow, UT	11.6	1914, 1966–75	1973	2.51	198	5/11/73	2.51	198	N	25
10234500	Beaver River near Beaver, UT	91.0	1914–94	1936 1937	7.27 7.95	1,080 749	6/30/79 6/19/83 5/24/84	4.03 3.70 3.83	841 940 1,060	N N N	15 20–25 25–30
10236000	North Fork No Creek near Beaver, UT	14.1	1959–76	1973 1961	3.07 11.17	198 101	5/20/73	3.07	198	N	25–50
10237000	Beaver River at Adamsville, UT	303	1914–94	1983 1980	-- 7.04	1,700 728	5/27/79 6/19/83 5/24/84	-- -- --	1,000 1,700 1,380	Y Y Y	20 90 45
10237500	Indian Creek near Beaver, UT	18.5	1948–49, 1966–76	1973	2.36	311	5/14/73	2.36	311	N	50
10239000	Beaver River at Rocky Ford Dam near Minersville, UT	535	1914–75, 1977–94	1983	4.74	1,220	6/12/83 5/25/84	4.74 3.97	1,220 882	Y Y	100 50
10241300	Fremont Wash near Paragonah, UT	120	1959–74	1971	12.85	282	8/22/71	12.85	282	N	10
10241600	Summit Creek near Summit, UT	24.0	1965–87	1971 1969	4.25 5.20	858 795	8/06/71	4.25	858	N	25–30
10242000	Coal Creek near Cedar City, UT	80.9	1916–19, 1935–94	1969	11.67	4,620	7/12/75 7/19/85	7.50 8.30	4,440 3,840	N N	30–40 25
10242440	Cottonwood Creek near Enterprise, UT	6.00	1961–65, 1969–74	1971	20.70	1,470	-/--/71	20.70	1,470	N	25–50
13077700	George Creek near Yost, UT	7.84	1959–89	1953 1968	6.23 6.33	1,650 1,640	5/30/83 5/14/84	1.78 1.45	295 170	N N	>100 20

[1]Regulated during flood: N, no; Y, yes.

Vermont

Hydroclimatology

Vermont is located in the northeastern United States. Polar continental airmasses, which originate over Canada and Arctic areas, bring cold, dry air into the State. Tropical maritime airmasses from the Gulf of Mexico bring warm, moist air, and cool, damp air is delivered to Vermont from polar maritime airmasses that originate over the northern Atlantic Ocean.

Vermont's primary sources of moisture are the Atlantic Ocean and the Gulf of Mexico. Mean annual precipitation varies widely across the State. The Connecticut River Valley and the Lake Champlain Valley typically average 32 to 36 in. annually. The higher elevations receive larger amounts of precipitation, averaging 50 to 75 in. annually. The rest of the State averages 36 to 40 in/yr (Paulson and others, 1991).

Widespread flooding in Vermont typically is caused by steady rainfall from frontal systems, tropical cyclones, or "northeasters." Floods also can occur in the spring when rain falls in conjunction with warm temperatures, which cause the snowpack to melt. Occasionally intense rains from remnants of hurricanes or tropical storms have caused flooding. Ice jams also can cause high river stages.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, factors affecting the magnitude of maximum discharges for streams in Vermont are drainage area, percentage of drainage area occupied by lakes and ponds, annual maximum 24-hour rainfall for the 2-year recurrence interval, and average seasonal snowfall (Jennings and others, 1994).

Significant Floods

Forty-one percent of the streamflow-gaging stations in the State recorded significant discharges during the flood of June 1973. The flood was a result of two frontal systems combining to produce excessive rainfall. The flooding was made worse by saturated soil due to greater-than-average precipitation during the previous months. The flood was widespread and affected the entire State except the northwest and southwest corners.

Hurricane Belle caused statewide floods when it hit Vermont on August 9, 1976. Twelve percent of the streamflow-gaging stations in the State recorded significant discharges.

The location of streamflow-gaging stations in Vermont that had significant floods for 1970–89 is shown in figure 68 by station number. The specific data for each significant flood are listed in table 47. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

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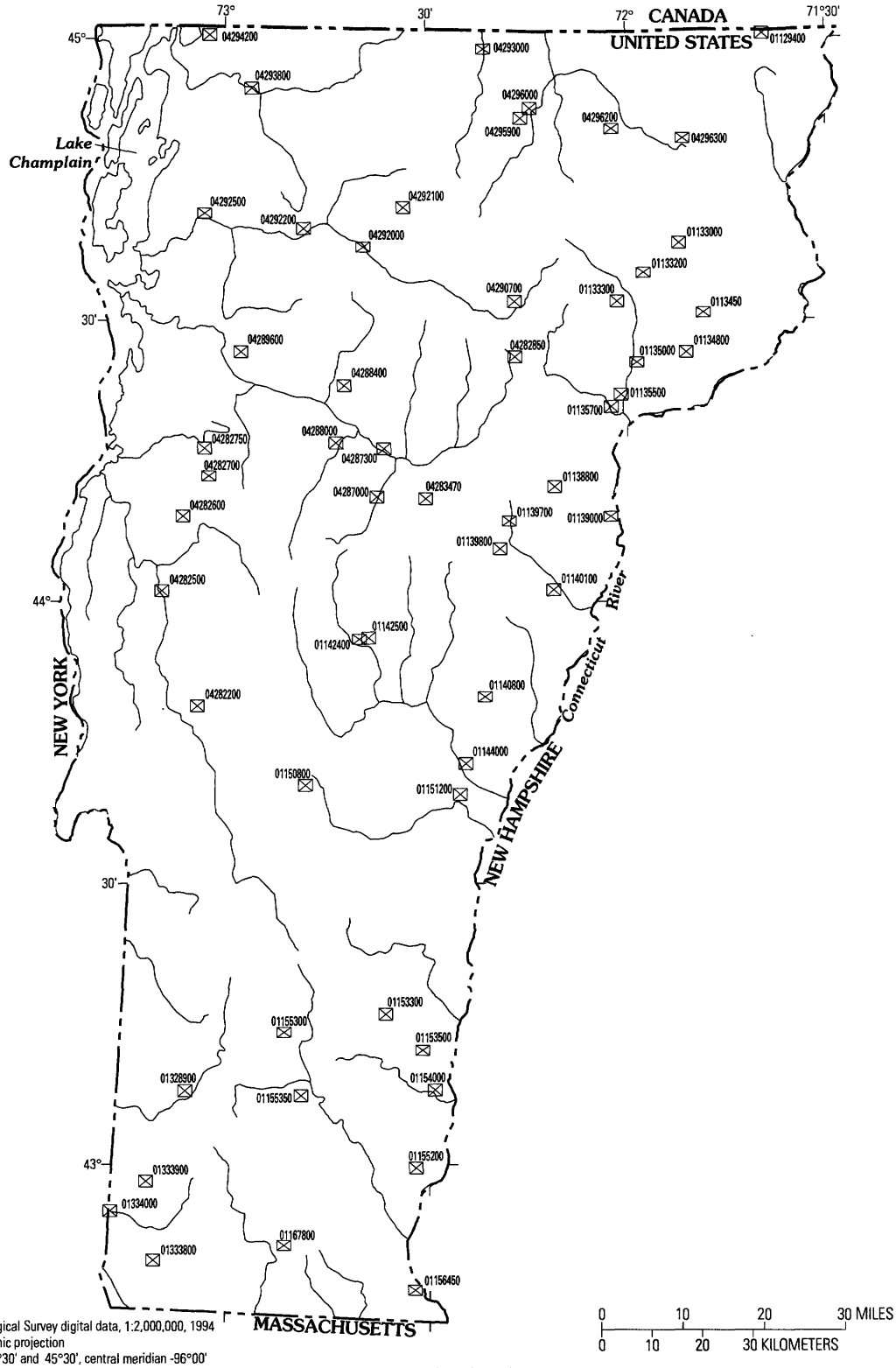

Figure 68. Location of streamflow-gaging stations with significant floods during 1970–89 for Vermont.

Table 47. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Vermont

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
Station number (fig. 68)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01129400	Black Brook at Averill, VT	0.58	1964–78	1974	12.52	54	12/21/73	12.52	54	N	10–25
01133000	East Branch Passumpsic River near East Haven, VT	53.8	1928, 1940–45, 1949–79	1973 1928	9.45 12.60	4,450 --	6/30/73	9.45	4,450	N	100–200
01133200	Quimby Brook near Lyndonville, VT	2.32	1964–74	1972	13.51	200	5/04/72	13.51	200	N	10–25
01133300	Cold Hill Brook near Lyndon, VT	1.52	1964–78	1973	14.43	195	6/30/73	14.43	195	N	25–50
01134500	Moose River at Victory, VT	75.2	1947–96	1995 1973	11.72 12.04	4,540 4,940	7/01/73	12.04	4,940	N	50–100
01134800	Kirby Brook at Concord, VT	8.05	1964–74	1973	6.35	1,600	6/30/73	6.35	1,600	N	25–50
01135000	Moose River at St. Johnsbury, VT	128	1929–83	1972 1936	4.23 5.71	5,820 4,780	5/05/72	4.23	5,820	N	25–50
01135500	Passumpsic River at Passumpsic, VT	436	1928–96	1973 1928	23.49 31.50	18,200 --	7/01/73 3/29/89	23.49 17.78	18,200 12,700	Y Y	100–200 10–25
01135700	Joes Brook tributary near East Barnet, VT	0.76	1964–74	1973	13.55	98	6/30/73	13.55	98	N	25–50
01138800	Keenan Brook at Groton, VT	4.26	1964–74	1973	17.00	275	6/30/73	17.00	275	N	10–25
01139000	Wells River at Wells River, VT	98.4	1941–96	1973	9.82	5,970	6/30/73 6/07/84	9.82 8.68	5,970 4,630	Y Y	200–500 50–100
01139700	Waits River tributary near West Topsham, VT	1.09	1964–74	1974	10.91	94	12/21/73	10.91	94	N	5–10
01139800	East Orange Branch at East Orange, VT	8.95	1959–96	1990	5.90	800	6/30/73	5.55	672	N	25
01140100	South Branch Waits River tributary near Bradford Center, VT	0.27	1964–74	1967	10.97	9	4/14/74	10.93	9	N	10–25
01140800	West Branch Ompompanoosuc River tributary at South Strafford, VT	1.33	1964–77	1973	13.30	168	6/30/73	13.30	168	N	25–50
01142400	Third Branch White River tributary at Randolph, VT	0.77	1964–74	1973	11.73	84	6/30/73	11.73	84	N	25–50
01142500	Ayers Brook at Randolph, VT	30.5	1928, 1940–96	1973 1928	9.12 16.00	2,600 --	6/30/73	9.12	2,600	N	200
01144000	White River at West Hartford, VT	690	1916–96	1928	29.30	120,000	6/30/73	19.13	42,300	N	10–25
01150800	Kent Brook near Sherburne, VT	3.31	1964–74	1973	12.81	600	6/30/73	12.81	600	N	10–25
01151200	Ottauquechee River tributary near Quechee, VT	0.82	1964–74	1973	13.35	93	6/30/73	13.35	93	N	25–50
01153300	Middle Branch Williams River tributary at Chester, VT	3.16	1964–78	1976 1973	-- 20.64	367 260	8/10/76	--	367	N	25–50
01153500	Williams River at Brockways Mills, VT	103	1938, 1941–84	1976 1938	15.85 22.70	11,800 --	8/10/76	15.85	11,800	N	50–100
01154000	Saxtons River at Saxtons River, VT	72.2	1938, 1941–82	1976 1938	14.06 17.90	8,460 --	6/30/73 8/10/76	13.26 14.06	7,510 8,460	N N	25–50 50–100

Table 47. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Vermont—Continued

Station number (fig. 68)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01155200	Sackets Brook near Putney, VT	10.0	1964–74	1973	8.13	903	6/30/73	8.13	903	N	10–25
01155300	Flood Brook near Londonderry, VT	9.25	1964–74	1973	7.15	1,800	6/30/73	7.15	1,800	N	25–50
01155350	West River tributary near Jamaica, VT	0.90	1964–78	1973	15.14	320	6/30/73	15.14	320	N	50–100
01156450	Connecticut River tributary near Vernon, VT	1.12	1964–74	1970	10.91	128	4/25/70	10.91	128	N	25–50
01167800	Beaver Brook at Wilmington, VT	6.38	1963–77	1976	8.76	1,170	8/10/76	8.76	1170	N	10–25
01328900	Tanner Brook near Sunderland, VT	2.60	1964–74	1970	11.84	84	2/05/70	11.84	84	N	10–25
01333800	South Stream near Bennington, VT	7.70	1963–74	1973	11.74	166	6/30/73	11.74	166	N	25–50
01333900	Paran Creek near South Shaftsbury, VT	2.38	1964–78	1973	11.52	193	6/30/73	11.52	193	N	10–25
01334000	Walloomsac River near North Bennington, VT	111	1932–96	1938	12.04	8,450	6/30/73	11.28	7,540	N	25
04282200	Neshobe River at Brandon, VT	20.10	1968–78	1976	8.93	800	8/11/76	8.93	800	N	5–10
04282500	Otter Creek at Middlebury, VT	628	1904–06, 1911–19, 1928–96	1928	13.30	13,600	4/09/87	8.15	7,320	Y	10–25
04282600	Little Otter Creek tributary near Bristol, VT	1.48	1964–78	1973	13.16	64	6/30/73	13.16	64	N	10–25
04282700	Lewis Creek tributary at Starksboro, VT	5.31	1963–74	1974	5.25	1,350	12/21/73	5.25	1,350	N	10–25
04282750	Lewis Creek tributary number 2 near Rockville, VT	1.07	1964–78	1974	13.86	95	12/21/73	13.86	95	N	25–50
04282850	Winooski River tributary number 2 near Cabot, VT	1.10	1964–74	1973	12.49	52	6/30/73	12.49	52	N	10–25
04283470	Stevens Branch tributary at South Barre, VT	0.39	1964–74	1973	15.50	62	6/30/73	15.50	62	N	25
04287000	Dog River at Northfield Falls, VT	76.1	1935–96	1973 1987	11.57 29.84	10,600 7,720	6/30/73 8/05/89	11.57 10.16	10,600 8,220	N N	50–100 10–25
04287300	Sunny Brook near Montpelier, VT	2.31	1964–74	1973	7.40	342	6/13/73	7.40	342	N	10–25
04288000	Mad River near Moretown, VT	139	1928–96	1928	19.40	23,000	8/10/76 4/18/82 3/31/87	13.47 12.14 11.97	13,400 11,100 10,800	N N N	50 10–25 10–25
04288400	Bryant Brook at Waterbury Center, VT	2.64	1964–78	1973	13.94	302	6/30/73	13.94	302	N	25–50
04289600	Winooski River tributary near Richmond, VT	0.71	1964–74	1972	14.59	102	6/15/72	14.59	102	N	50–100
04290700	Bailey Brook at East Hardwick, VT	2.52	1964–78	1973	15.92	285	6/30/73	15.92	285	N	50
04292000	Lamoille River at Johnson, VT	310	1912–13, 1929–96	1995	19.88	19,000	7/01/73 6/07/84	17.33 16.50	14,400 13,000	N N	50 25
04292100	Stony Brook near Eden, VT	4.21	1964–74	1973	3.64	890	6/30/73	3.64	890	N	25–50
04292200	Lamoille River tributary at Jeffersonville, VT	0.58	1964–74	1972 1968	11.88 12.18	48 45	7/21/72	11.88	48	N	10

Table 47. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Vermont—Continued

Station number (fig. 68)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1996				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04292500	Lamoille River at East Georgia, VT	686	1930–96	1982 1959	12.38 18.81	23,700 10,000	4/18/82	12.38	23,700	N	50
04293000	Missisquoi River near North Troy, VT	131	1932–96	1982	13.21	8,290	4/18/82	13.21	8,290	N	50–100
04293800	Missisquoi River tributary at Sheldon Junction, VT	1.69	1963–78	1973	13.63	108	6/30/73	13.63	108	N	10–25
04294200	Saxe Brook near Highgate Springs, VT	2.79	1963–74	1974	14.28	117	4/03/74	14.28	117	N	10–25
04295900	Ware Brook near Coventry, VT	2.87	1963–74	1973	15.29	171	6/30/73	15.29	171	N	10–25
04296000	Black River at Coventry, VT	122	1952–96	1976	7.91	3,740	6/30/73 4/02/76	7.85 7.91	3,650 3,740	N N	25–50 25–50
04296200	Brownington Branch near Evansville, VT	2.15	1964–74	1974	7.91	170	12/21/73	7.91	170	N	5–10
04296300	Pherrins River tributary near Island Pond, VT	1.05	1964–77	1969	12.53	140	5/04/72	12.45	137	N	25–50

[1]Regulated during flood: N, no; Y, yes.

Virginia

Hydroclimatology

Virginia is located on the East Coast of the United States and is bordered on the east by the Atlantic Ocean. The Appalachian and Blue Ridge Mountains are located in western Virginia. Virginia receives its moisture primarily from the Gulf of Mexico and the Atlantic Ocean. Cold, dry airmasses can move in from Canada producing frontal systems. Virginia usually receives moisture in the form of rain or snow from frontal systems and coastal cyclones. Airmass-type thunderstorms, as well as those associated with frontal systems, are possible in the spring and summer. Tropical storms also can produce excessive rainfall in the summer and fall. Mean annual precipitation ranges from about 34 in. in the northern part of the State to about 55 in. in the southwest (Paulson and others, 1991).

Widespread flooding occurs in Virginia when tropical cyclones or their remnants drive tropical moisture upslope against the east side of the Blue Ridge Mountains. Localized flooding can result from nearly stationary thunderstorms that develop over the mountains during the summer.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, factors affecting the magnitude of maximum discharges for streams in Virginia are drainage area, channel slope, and regional location within the State (Jennings and others, 1994).

Significant Floods

Virginia experienced its largest flood in terms of areal extent and magnitude of maximum discharges on many streams during June 1972. The flood was caused by excessive rainfall that was a result of Hurricane Agnes. Many streamflow-gaging stations recorded maximum discharges of record. The Rappahannock, James, and Roanoke River Basins were the most affected by the flood. The James River near Richmond (station 02037500, fig. 69) had the highest flow recorded since 1771. Twenty-eight percent of the streamflow-gaging stations in the State recorded significant discharges. Thirteen deaths and damages of $325 million were attributed to the flood (Paulson and others, 1991).

Flooding was severe in southwestern Virginia during the spring and fall of 1977. Thirteen percent of the streamflow-gaging stations recorded significant discharges. Record maximum discharges were recorded at many gaging stations. Damages were estimated at $243 million (Paulson and others, 1991).

During the flood of November 1985, 23 percent of the streamflow-gaging stations recorded significant discharges. The flood was caused by a complex weather system that was affected by remnants of Hurricane Juan and moisture from the Gulf of Mexico. Maximum discharge for the Roanoke River at Roanoke (station 02055000, fig. 69) was 25 percent greater than the previous maximum discharge that occurred during the flood of 1972. There were 22 deaths and $753 million in damages (Paulson and others, 1991).

The location of streamflow-gaging stations in Virginia that had significant floods for 1970–89 is shown in figure 69 by station number. The specific data for each significant flood are listed in table 48. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

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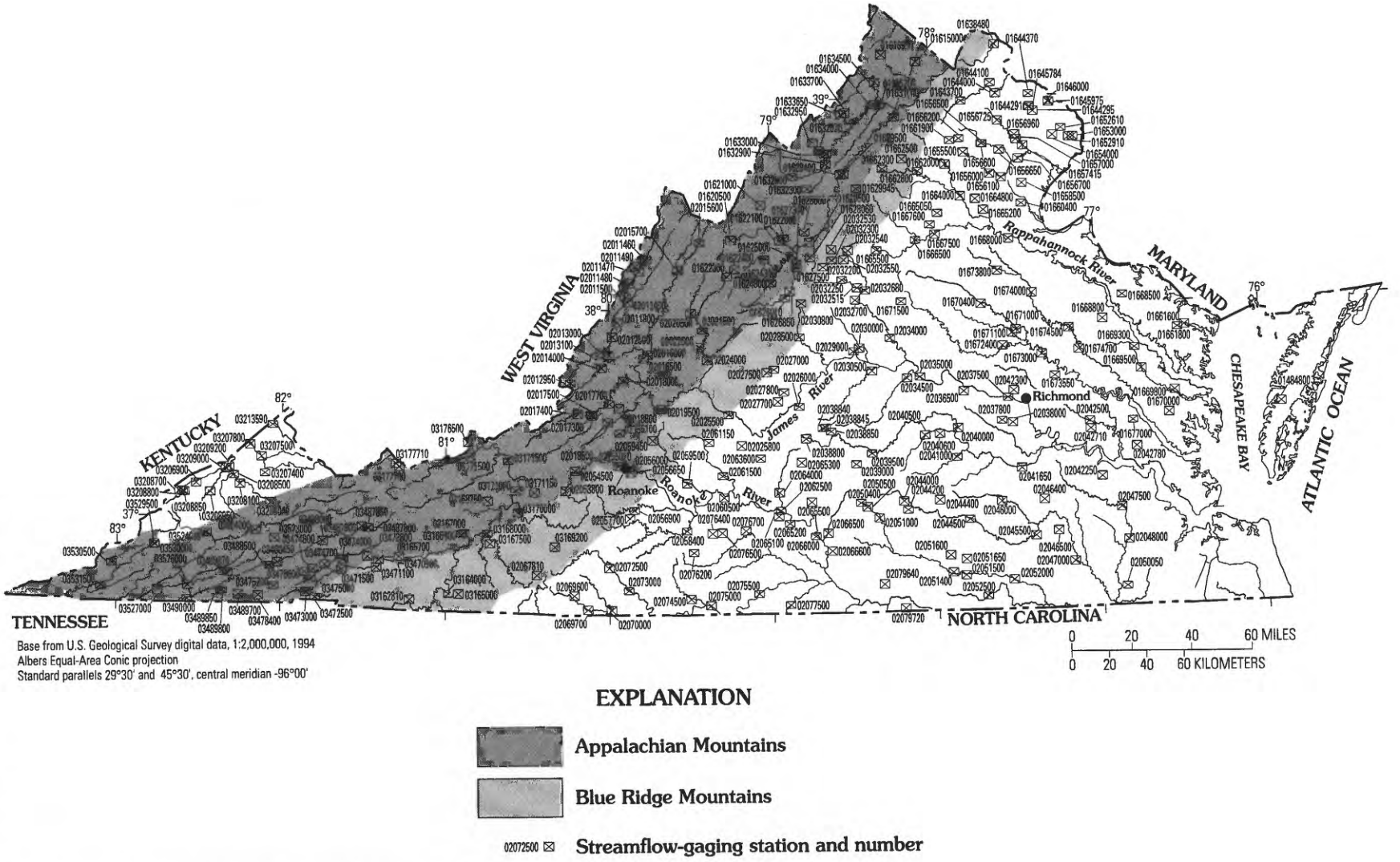

Figure 69. Location of streamflow-gaging stations with significant floods during 1970–89 for Virginia.

Table 48. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Virginia

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 69)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01484800	Guy Creek near Nassawadox, VA	1.72	1965–94	1990	6.84	171	7/31/79	5.28	78	N	10–25
01613900	Hogue Creek near Hayfield, VA	15.0	1961–94	1972	8.85	2,760	6/22/72 8/06/78	8.85 8.55	2,760 2,680	N N	25–50 25–50
01615000	Opequon Creek near Berryville, VA	57.4	1943–94	1988 1943	13.49 18.40	12,600 --	11/13/70 6/22/72	12.82 12.59	10,600 9,870	N N	50–100 50–100
						--	5/18/88	13.49	12,600	N	>100
01620500	North River near Stokesville, VA	17.2	1947–94	1949 1986	10.90 19.80	9,530 7,600	11/05/85	19.80	7,600	N	>100
01621000	Dry River at Rawley Springs, VA	72.6	1943, 1947–75, 1986	1986	12.30	20,000	11/04/85	12.30	20,000	N	>100
01622000	North River near Burketown, VA	379	1924, 1927–72, 1976–94	1986 1949	35.85	65,000	11/05/85	35.85	65,000	N	100–200
01622100	North River tributary at Mount Crawford, VA	1.55	1966–75	1973	5.72	146	10/05/72	5.72	146	N	5–10
01622300	Buffalo Branch tributary number 1 near Augusta Springs, VA	0.55	1967–76	1973	4.50	91	10/05/72	4.50	91	N	5–10
01622400	Buffalo Branch tributary number 2 near Christians, VA	0.49	1967–94	1986	6.96	240	11/04/85	6.96	240	N	50–100
01624300	Middle River near Verona, VA	178	1968–86	1986	24.29	45,000	11/05/85	24.29	45,000	N	>100
01624800	Christians Creek near Fisherville, VA	70.1	1968–90, 1992–94	1986	13.58	4,520	11/04/85	13.58	4,520	N	5–10
01625000	Middle River near Grottoes, VA	375	1924, 1928–94	1986	33.09	38,500	11/05/85	33.09	38,500	N	100–200
01626000	South River near Waynesboro, VA	127	1943, 1953–94	1986	15.30	17,500	11/04/85	15.30	17,500	N	25–50
01626850	South River near Dooms, VA	149	1975–94	1986	14.03	19,100	11/04/85	14.03	19,100	N	25–50
01627300	South River tributary near Harriston, VA	2.41	1966–75	1975	6.10	319	3/19/75	6.10	319	N	--
01627500	South River at Harriston, VA	212	1870, 1878, 1924, 1926–51, 1969–94	1986 1870	15.47 18.80	28,100 --	6/21/72 11/04/85	15.25 15.47	21,300 28,100	N N	25–50 50–100
01628060	White Oak Run near Grottoes, VA	1.94	1980–94	1986	6.17	515	11/04/85	6.17	515	N	--
01628500	South Fork Shenandoah River near Lynnwood, VA	1,084	1931–94	1986	29.46	95,100	11/05/85	29.46	95,100	N	50–100
01628600	Cub Run tributary at Montevideo, VA	0.42	1966–75	1973	5.23	95	10/05/72	5.23	95	N	--
01629400	South Fork Shenandoah River tributary near Luray, VA	0.54	1966–75	1973	8.10	164	10/05/72	8.10	164	N	--
01629500	South Fork Shenandoah River near Luray, VA	1,377	1897, 1924, 1926–30, 1936, 1939–51, 1979–94	1986	26.72	110,000	11/05/85	26.72	110,000	N	50–60

Table 48. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Virginia—Continued

Station number (fig. 69)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01629945	Chub Run near Stanley, VA	3.16	1959–94	1978	6.26	752	10/05/72	5.98	705	N	10–25
				1986	9.66	--	11/07/77	6.26	752	N	10–25
01631000	South Fork Shenandoah River at Front Royal, VA	1,642	1900–05, 1931–94	1943	34.80	130,000	11/06/85	32.43	120,000	N	50–100
01632000	North Fork Shenandoah River at Cootes Store, VA	210	1878, 1889, 1924, 1926–94	1943	25.30	50,000	10/05/72	19.50	26,400	N	25–50
							11/04/85	25.13	49,200	N	>200
01632300	Long Meadow near Broadway, VA	8.15	1950–55, 1958–65, 1967–77	1973	5.43	1,410	10/05/72	5.43	1,410	N	50–100
01632900	Smith Creek near New Market, VA	93.2	1960–94	1973	16.38	10,600	6/22/72	13.22	6,280	N	10–25
							10/06/72	16.38	10,600	N	25–50
01632950	Crooked Run tributary near Conicville, VA	0.31	1966–75	1974	5.15	44	6/02/74	5.15	44	N	5–10
01632970	Crooked Run near Mount Jackson, VA	6.49	1972–94	1978	8.90	2,600	8/07/78	8.90	2,600	N	>100
01633000	North Fork Shenandoah River at Mount Jackson, VA	506	1943–94	1943	20.20	80,000	10/06/72	18.10	40,500	N	50–100
							11/05/85	17.79	50,800	N	>100
01633650	Pughs Run near Woodstock, VA	3.66	1971–94	1972	9.30	543	6/22/72	9.30	543	N	10–25
01633700	Pughs Run tributary near Columbia Furnace, VA	0.56	1966–75	1973	6.70	180	7/26/73	6.70	180	N	--
01634000	North Fork Shenandoah River near Strasburg, VA	768	1926–94	1943	31.20	100,000	11/05/85	27.37	62,600	N	50–100
01634500	Cedar Creek near Winchester, VA	103	1936, 1938–94	1943	27.00	22,000	6/22/72	23.19	20,300	N	50–100
01635200	North Fork Shenandoah River tributary near Waterlick, VA	0.48	1966–76	1972	4.86	63	6/21/72	4.86	63	N	--
01638480	Catoctin Creek at Taylorstown, VA	89.6	1971–94	1972	23.83	23,800	6/22/72	23.83	23,800	N	>100
01643700	Goose Creek near Middleburg, VA	123	1966–67, 1970–94	1972	27.46	19,200	6/22/72	27.46	19,200	N	>100
01644000	Goose Creek near Leesburg, VA	332	1889, 1910–12, 1930–61, 1963–94	1972	30.59	78,100	6/22/72	30.59	78,100	N	>200
							10/09/76	25.74	48,700	N	50–100
01644100	South Fork Sycolin Creek near Leesburg, VA	2.05	1966–77	1972	12.33	1,130	6/21/72	12.33	1,130	N	50–100
01644291	Stave Run near Reston, VA	0.08	1972–81	1978	3.43	281	8/13/78	3.43	281	N	50–100
01644295	Smilax Branch at Reston, VA	0.32	1968–78	1978	6.37	301	8/13/78	6.37	301	N	10–25
01644370	Sugarland Run near Dranesville, VA	13.4	1961–72	1972	8.69	8,800	6/21/72	8.69	8,800	N	--
01645784	Snakeden Branch at Reston, VA	0.79	1972–78, 1985–94	1972	6.40	760	6/21/72	6.40	760	N	10–25
01645975	Rocky Run near Great Falls, VA	3.22	1961–69, 1971–72	1972	5.90	1,360	6/21/72	5.90	1,360	N	--
01646000	Difficult Run near Great Falls, VA	57.9	1935–94	1972	21.40	32,200	6/22/72	21.40	32,200	N	>100
							9/26/75	13.82	7,770	N	25–50
							5/06/89	13.31	6,810	N	10–25
01652610	Holmes Run near Annandale, VA	7.10	1960–70, 1972	1972	9.20	4,600	6/21/72	9.20	4,600	N	50–100
01652910	Backlick Run at Alexandria, VA	13.4	1960–70	1970	9.20	4,980	7/09/70	9.20	4,980	N	5–10

Table 48. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Virginia—Continued

Station number (fig. 69)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01653000	Cameron Run at Alexandria, VA	33.7	1953, 1956–94	1972	18.14	19,900	9/26/75	16.73	14,900	N	50–100
							6/22/72	18.14	19,900	N	>100
01654000	Accotink Creek near Annandale, VA	23.5	1947–89, 1991–94	1972	15.96	12,000	6/22/72	15.96	12,000	N	50–100
							5/06/89	14.40	8,820	N	25–50
01655500	Cedar Run near Warrenton, VA	12.3	1943, 1951–94	1972	12.87	7,840	6/21/72	12.87	7,840	N	100–200
				1943	13.00	--	10/09/76	10.93	4,770	N	25–50
01656000	Cedar Run near Catlett, VA	93.4	1943, 1951–94	1972	27.66	38,600	6/22/72	27.66	38,600	N	>500
01656100	Cedar Run near Aden, VA	155	1973–87	1980	15.29	14,900	10/01/79	15.29	14,900	N	10–25
01656200	Broad Run near Warrenton, VA	2.94	1950–78, 1983–94	1972	7.86	276	6/21/72	7.86	276	N	100–200
01656500	Broad Run at Buckland, VA	50.5	1951–79, 1981–86	1972	13.92	16,800	6/21/72	13.92	16,800	N	>100
01656600	Broad Run tributary at Buckland, VA	0.79	1966–75	1972	16.20	575	6/21/72	16.20	575	N	25–50
01656650	Broad Run near Bristow, VA	89.6	1975–86	1977	16.11	7,800	10/09/76	16.11	7,800	N	5–10
01656700	Occoquan River near Manassas, VA	343	1969–81	1972	40.31	57,600	6/22/72	40.31	57,600	N	>100
01656725	Bull Run near Catharpin, VA	25.8	1970–86	1972	18.92	39,400	6/22/72	18.92	39,400	N	>100
01656960	Cub Run near Bull Run, VA	49.9	1973–86	1980	16.43	10,600	10/01/79	16.43	10,600	N	10–50
01657000	Bull Run near Manassas, VA	148	1951–81	1972	37.80	76,100	6/22/72	37.80	76,100	N	>100
							10/01/79	20.22	14,900	N	5–10
01657415	Bull Run near Clifton, VA	185	1972–84	1972	35.20	80,000	6/--/72	35.20	80,000	N	>100
01658500	South Fork Quantico Creek near Independent Hill, VA	7.64	1952–94	1989	11.62	4,160	6/21/72	11.35	3,940	N	50–100
							5/06/89	11.62	4,160	N	50–100
01660400	Aquia Creek near Garrisonville, VA	34.9	1972–94	1972	16.32	11,600	6/22/72	16.32	11,600	N	100
01661600	Great Wicomico River near Horse Head, VA	6.98	1969–73, 1977–94	1979	8.88	1,950	6/03/79	8.88	1,950	N	>100
01661800	Bush Mill Stream near Heathsville, VA	6.82	1964–94	1979	8.52	714	7/30/79	8.52	714	N	25–50
01661900	Carter Run near Marshall, VA	19.5	1977–94	1977	10.40	7,100	10/09/76	10.40	7,100	N	>100
01662000	Rappahannock River near Warrenton, VA	195	1943–94	1943	23.50	32,000	6/22/72	20.87	21,900	N	50–100
							10/09/76	22.00	18,000	N	25–50
01662300	Thornton River tributary near Thornton Gap, VA	1.38	1967–76	1972	9.90	140	6/21/72	9.90	140	N	5–10
01662500	Rush River at Washington, VA	14.7	1954–77	1977	6.42	2,880	10/09/76	6.42	2,880	N	25–50
				1955	8.14	2,500					
01662800	Battle Run near Laurel Mills, VA	27.6	1959–94	1977	13.90	9,120	10/09/76	13.90	9,120	N	50–100
							11/04/85	12.46	5,060	N	10–25
01664000	Rappahannock River at Remington, VA	620	1943–94	1943	30.00	90,000	6/22/72	24.82	52,900	N	50–100
01664800	Harpers Run near Morrisville, VA	2.28	1966–75	1972	12.53	1,900	6/21/72	12.53	1,900	N	>50
01665050	Pony Mountain Branch near Culpeper, VA	0.30	1958–78, 1980–94	1970	4.02	196	8/16/70	4.02	196	N	10–25
				1989	5.78	--	10/09/76	3.98	194	N	10–25
01665200	Rock Run tributary near Goldvein, VA	1.00	1966–75	1972	7.37	536	6/21/72	7.37	536	N	--
01665500	Rapidan River near Ruckersville, VA	114	1943–81, 1983–94	1943	20.80	30,700	10/05/72	19.41	25,800	N	50–100
01666500	Robinson River near Locust Dale, VA	179	1943–94	1943	23.90	44,000	6/22/72	20.92	24,500	N	25–50

Table 48. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Virginia—Continued

Station number (fig. 69)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01667500	Rapidan River near Culpeper, VA	472	1931–94	1943	30.30	58,100	6/22/72	29.53	55,600	N	50–100
01667600	Cedar Run tributary near Culpeper, VA	0.58	1966–75	1972	6.63	125	6/21/72	6.63	125	N	2–10
01668000	Rappahannock River near Fredericksburg, VA	1,596	1908–94	1943	25.90	140,000	6/22/72	22.56	107,000	N	50–100
01668500	Cat Point Creek near Montross, VA	45.6	1935, 1944–94	1969 1992	10.45 10.86	6,820 5,240	6/22/72	9.33	4,200	N	25–50
01668800	Hoskins Creek near Tappahannock, VA	15.5	1965–94	1969	10.23	1,380	2/25/79	5.35	425	N	10–25
01669300	Yorkers Swamp near Center Cross, VA	1.37	1966–75	1972	5.65	142	6/22/72	5.65	142	N	--
01669500	Dragon Swamp near Church View, VA	84.9	1935, 1944–81	1979 1935	10.66 17.00	4,910 --	9/06/79	10.66	4,910	N	50–100
01669800	My Ladys Swamp near Saluda, VA	4.81	1970–94	1985 1977	8.38 10.80	592 --	1/02/85	8.38	592	N	50–100
01670000	Beaverdam Swamp near Ark, VA	6.63	1950–88	1960	5.88	570	9/01/75	4.64	525	N	10–25
01670400	North Anna River near Partlow, VA	344	1972, 1979–94	1972	36.32	22,000	6/22/72	36.32	22,000	Y	--
01671000	North Anna River near Doswell, VA	441	1927–80, 1982–86	1969 1937	32.60 33.58	24,800 18,300	6/22/72 2/27/79	31.58 23.93	23,300 13,900	N Y	50–100 --
01671100	Little River near Doswell, VA	107	1962–94	1969	11.09	12,000	6/22/72	9.88	8,300	N	25–50
01671500	Bunch Creek near Boswells Tavern, VA	4.37	1949–79	1969	10.64	2,750	6/21/72	10.44	2,580	N	>100
01672400	South Anna River tributary number 6 near Ashland, VA	0.33	1966–76	1972	9.93	414	6/21/72	9.93	414	N	--
01673000	Pamunkey River near Hanover, VA	1,081	1928, 1942–92, 1994	1969 1928	31.12 32.60	40,300 --	6/23/72	29.22	29,900	N	50–100
01673550	Totopotomoy Creek near Studley, VA	26.2	1978–94	1985 1979	8.22 8.77	802 640	8/19/85	8.22	802	N	10–25
01673800	Po River near Spotsylvania, VA	77.4	1963–94	1972	19.03	10,900	6/22/72	19.03	10,900	N	>100
01674000	Mattaponi River near Bowling Green, VA	257	1928, 1943–94	1928	19.50	15,000	6/23/72	18.95	13,400	N	25–50
01674500	Mattaponi River near Beulahville, VA	601	1889, 1928, 1942–87, 1990–94	1972 1969	23.97 24.04	16,900 12,300	6/25/72	23.97	16,900	N	50–100
01674700	Aylett Creek at Aylett, VA	6.17	1969–94	1975 1979	4.91 5.28	720 440	9/26/75	4.91	720	N	10–25
01677000	Ware Creek near Toano, VA	6.29	1980–91	1985	2.60	260	9/27/85	2.60	260	N	>50
02011400	Jackson River near Bacova, VA	158	1972, 1974–94	1986	22.25	30,000	11/04/85	22.25	30,000	N	>100
02011460	Back Creek near Sunrise, VA	60.1	1975–94	1986	10.01	17,500	11/04/85	10.01	17,500	N	>100
02011470	Back Creek at Sunrise, VA	76.1	1985–94	1986	11.37	5,100	11/05/85	11.37	5,100	Y	--
02011480	Back Creek on Route 600 near Mountain Grove, VA	88.4	1974–84	1974	9.90	7,420	12/26/73	9.90	7,420	N	10–25
02011490	Little Back Creek near Sunrise, VA	4.91	1985–94	1986	4.06	580	11/04/85	4.06	580	N	--
02011500	Back Creek near Mountain Grove, VA	134	1913, 1951–94	1986 1913	11.24 17.00	14,200 --	12/26/73 11/04/85	10.42 11.24	11,600 14,200	N Y	10–25 25–50

Table 48. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Virginia—Continued

Station number (fig. 69)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02011800	Jackson River below Gathright Dam near Hot Springs, VA	345	1974–94	1974	18.77	29,000	11/07/85	15.29	10,400	Y	--
02012500	Jackson River at Falling Spring, VA	411	1913, 1925–84, 1986–94	1913	20.00	50,000	12/26/73 11/07/85	14.45 12.62	23,600 15,600	N Y	10–25 --
02012950	Sweet Springs Creek tributary at Sweet Chalybeate, VA	0.66	1966–75, 1977–91	1974	10.50	375	7/05/74	10.50	375	N	10–25
02013000	Dunlap Creek near Covington, VA	164	1913, 1929–94	1972 1913	15.65 18.00	27,400 --	6/21/72 11/04/85	15.65 13.42	27,400 17,400	N N	>200 50–100
02013100	Jackson River below Dunlap Creek at Covington, VA	614	1972, 1974–94	1972	24.36	34,000	11/04/85	23.31 24.36	31,300 34,000	Y Y	-- --
02014000	Potts Creek near Covington, VA	153	1878, 1913, 1929–56, 1966–81, 1983–94	1986	13.46	15,400	6/21/72 5/28/73 11/04/85	12.33 11.01 13.46	12,400 9,320 15,400	N N N	50–100 10–25 100–200
02015600	Cowpasture River near Head Waters, VA	11.3	1949–94	1949	6.50	5,650	11/04/85	6.45	5,380	N	100–200
02015700	Bullpasture River at Williamsville, VA	110	1961–94	1986	14.39	22,900	4/05/77 11/04/85	9.25 14.39	9,430 22,900	N N	10–25 >100
02016000	Cowpasture River near Clifton Forge, VA	461	1913, 1926–94	1913	20.80	45,000	11/05/85	19.15	40,900	N	100–200
02016500	James River at Lick Run, VA	1,373	1878, 1913, 1924–94	1878	33.00	120,000	6/21/72 11/05/85	27.01 30.22	66,200 87,500	N Y	10–25 --
02017300	Craig Creek at New Castle, VA	112	1967–94	1986	19.55	24,400	11/04/85	19.55	24,400	N	>100
02017400	Johns Creek tributary near New Castle, VA	1.57	1967–76	1972	8.48	354	6/21/72	8.48	354	N	5–10
02017500	Johns Creek at New Castle, VA	104	1927–94	1935 1972	10.80 12.48	8,000 7,960	6/21/72 11/04/85	12.48 11.96	7,960 7,010	N N	25–50 10–25
02017700	Craig Creek tributary near New Castle, VA	2.05	1968–94	1986	13.45	1,100	11/04/85	13.45	1,100	N	25–50
02018000	Craig Creek at Parr, VA	329	1926–94	1986	24.76	58,500	6/21/72 11/04/85	19.29 24.76	20,200 58,500	N N	25–50 >200
02018500	Catawba Creek near Catawba, VA	34.3	1940, 1944–94	1986	19.19	21,200	6/21/72 5/28/73 11/04/85	10.35 8.04 19.19	7,740 4,460 21,200	N N N	25–50 10–25 >200
02018800	North Fork near Fincastle, VA	4.17	1969–79, 1981–94	1987	10.76	3,870	4/16/87	10.76	3,870	N	50–100
02019500	James River at Buchanan, VA	2,075	1878, 1886, 1889, 1893–94	1986	38.84	179,000	6/22/72 11/05/85	30.49 38.84	111,000 179,000	N N	50–100 >200
02020500	Calfpasture River above Mill Creek at Goshen, VA	144	1939–94	1986	20.23	56,300	10/06/72 11/04/85	12.78 20.23	20,900 56,300	N N	25–50 >200
02021500	Maury River at Rockbridge Baths, VA	329	1929–94	1986	19.19	87,700	11/05/85	19.19	87,700	N	>500
02022500	Kerrs Creek near Lexington, VA	35	1927–94	1950	13.80	23,000	11/04/85	11.37	9,450	N	25–50
02024000	Maury River near Buena Vista, VA	646	1936, 1939–94	1969	31.23	105,000	11/05/85	26.30	72,100	N	>100
02025500	James River at Holcombs Rock, VA	3,259	1900–17, 1927, 1929–94	1986	42.15	207,000	6/22/72 11/05/85	32.38 42.15	126,000 207,000	N N	50–100 >200
02025800	Burton Creek tributary at Lynchburg, VA	2.36	1966–75	1972	7.88	790	6/21/72	7.88	790	N	--

Table 48. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Virginia—Continued

Station number (fig. 69)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02026000	James River at Bent Creek, VA	3,683	1870, 1878, 1886, 1889, 1925–94	1986	30.76	226,000	6/21/72 11/05/85	27.13 30.76	176,000 226,000	N N	100–200 >200
02027000	Tye River near Lovingston, VA	92.8	1939–94	1969	29.00	80,000	6/21/72 11/04/85	14.34 14.46	12,200 12,700	N N	10–25 10–25
02027500	Piney River at Piney River, VA	47.6	1949–94	1969	13.80	38,000	11/04/85	12.63	25,200	N	>100
02027700	Buffalo River tributary near Amherst, VA	0.46	1966–78, 1980–94	1985 1972	2.96 7.18	720 187	8/18/85	2.96	720	N	>100
02027800	Buffalo River near Tye River, VA	147	1961–94	1969	27.95	45,000	6/21/72	25.22	36,600	N	>100
02028500	Rockfish River near Greenfield, VA	94.6	1943–94	1969	31.20	70,000	6/21/72	18.11	17,500	N	25–50
02029000	James River at Scottsville, VA	4,584	1871, 1878, 1913, 1925–94	1972	34.02	301,000	6/22/72 11/06/85	34.02 31.77	301,000 243,000	N N	>200 100–200
02030000	Hardware River below Briery Run near Scottsville, VA	116	1939–94	1969	31.00	52,000	6/21/72	25.50	21,600	N	25–50
02030500	Slate River near Arvonia, VA	226	1927–94	1972	25.10	42,200	6/22/72	25.10	42,200	N	>200
02030800	Stockton Creek near Afton, VA	2.80	1967–94	1972 1993	9.68 9.73	678 425	6/21/72	9.68	678	N	10–25
02032200	Doyles Run near Whitehall, VA	6.70	1967–81, 1983–93	1979	13.73	2,560	9/22/79	13.73	2,560	N	--
02032250	Moormans River near Free Union, VA	74.6	1972, 1979–94	1979	21.55	16,500	9/06/79	21.55	16,500	N	10–25
02032300	Muddy Run near Stanardsville, VA	3.36	1967–93	1988 1978	6.06 8.33	1,400 --	10/--/88	6.06	1,400	N	--
02032515	South Fork Rivanna River near Charlottesville, VA	260	1979–94	1979	23.50	15,200	9/06/79	23.50	15,200	Y	--
02032530	Parker Branch near Stanardsville, VA	3.24	1967–76	1973	9.94	2,000	10/05/72	9.94	2,000	N	50–100
02032540	Haneytown Creek near Stanardsville, VA	4.45	1967–93	1975	13.85	1,220	3/19/75	13.85	1,220	N	10–25
02032550	Lynch River at Nortonsville, VA	13.6	1967–94	1972	16.50	18,000	10/05/72	16.45	18,000	N	10–25
02032680	North Fork Rivanna River near Proffit, VA	176	1971–94	1972	30.40	31,800	6/21/72	30.40	31,800	N	50–100
02032700	Schenks Branch at Charlottesville, VA	1.34	1950–53, 1955–94	1987	12.54	1,670	9/22/79 9/08/87	9.76 12.54	1,250 1,670	N N	25–75 >100
02034000	Rivanna River at Palmyra, VA	664	1934–94	1969	39.85	86,000	6/22/72	37.34	73,400	N	25–50
02034500	Willis River at Lakeside Village, VA	262	1927–96	1972	29.80	24,000	6/22/72 11/06/85	29.80 22.97	24,000 9,470	N N	100–200 10–25
02035000	James River at Cartersville, VA	6,257	1870, 1878, 1899–1994	1972	37.87	362,000	6/22/72 11/06/85	37.87 32.60	362,000 225,000	N N	>200 50–100
02036500	Fine Creek at Fine Creek Mills, VA	22.10	1945–94	1973	9.02	4,180	10/06/72 11/04/85	9.02 7.65	4,180 3,000	N N	25–50 10–25
02037500	James River near Richmond, VA	6,758	1935–94	1972	28.62	313,000	6/23/72 11/07/85	28.62 24.77	313,000 218,000	N N	100–200 25–50
02037800	Falling Creek near Midlothian, VA	18.10	1951–77, 1979–93	1979	11.71	5,170	9/30/79	11.71	5,170	N	>100

Table 48. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Virginia—Continued

Station number (fig. 69)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02038000	Falling Creek near Chesterfield, VA	32.8	1955–78, 1980–94	1980	15.32	5,930	10/01/79	15.32	5,930	N	>100
02038800	Appomattox River near Appomattox, VA	5.79	1955–76	1972	8.68	3,870	6/21/72	8.68	3,870	N	>100
02038840	Holiday Creek near Toga, VA	1.68	1972–83, 1985–90, 1992–94	1972	6.72	2,820	6/21/72	6.72	2,820	N	>100
02038845	North Holiday Creek near Toga, VA	1.31	1972–94	1972	6.79	1,570	6/21/72	6.79	1,570	N	>100
02038850	Holiday Creek near Andersonville, VA	8.53	1967–94	1972	14.64	9,640	6/21/72	14.64	9,640	N	>100
02039000	Buffalo Creek near Hampden Sydney, VA	69.7	1940, 1947–94	1972 1940	12.38 15.00	9,160 --	6/21/72	12.38	9,160	N	50–100
02039500	Appomattox River at Farmville, VA	303	1926–94	1972	29.70	33,100	6/22/72	29.70	33,100	N	>200
02040000	Appomattox River at Mattoax, VA	726	1901–05, 1926–94	1940	35.30	35,000	6/25/72 10/07/72 2/26/79	34.08 31.10 30.84	31,100 22,400 21,600	N N N	50–100 25–50 25–50
02040500	Flat Creek near Amelia, VA	73.0	1947, 1954–70, 1972–88, 1990–94	1972	14.12	7,690	10/24/71 4/16/87	14.12 12.38	7,690 5,260	N N	>100 50–100
02040600	Nibbs Creek tributary near Amelia, VA	0.35	1966–75	1973	9.79	1,030	10/05/72	9.79	1,030	N	>50
02041000	Deep Creek near Mannboro, VA	158	1940, 1947–94	1973	24.04	15,000	10/06/72 9/06/79	24.04 16.27	15,000 12,100	N N	25–50 10–25
02041650	Appomattox River at Matoaca, VA	1,344	1970–94	1973	18.39	40,800	10/07/72	18.39	40,800	N	>100
02042250	Bailey Branch tributary at Spring Grove, VA	0.71	1967–94	1975	6.52	282	7/14/75	6.52	282	N	25–50
02042300	Horsepen Branch at Richmond, VA	1.27	1965–94	1985	7.50	2,700	8/18/85	7.50	2,700	N	50–100
02042500	Chickahominy River near Providence Forge, VA	252	1942–94	1955	11.67	7,710	12/27/79	10.99	5,490	N	25–50
02042710	Collins Run tributary near Providence Forge, VA	0.28	1966–75	1971	4.34	46	9/30/71	4.34	46	N	--
02042780	West Branch Long Hill Swamp near Lightfoot, VA	2.47	1970–76, 1978–94	1975 1990	5.20 6.18	320 115	9/01/75	5.20	320	N	25–50
02044000	Nottoway River near Burkeville, VA	38.7	1940, 1947–94	1972 1940	22.33 27.40	13,400 --	10/23/71 9/22/79	22.33 20.88	13,400 7,940	N N	>100 50–100
02044200	Falls Creek tributary near Victoria, VA	0.34	1968–94	1972	9.15	343	6/21/72	9.15	343	N	25–50
02044400	Hurricane Branch at Blackstone, VA	1.61	1967–76	1973	13.34	1,350	10/05/72	13.34	1,350	N	--
02044500	Nottoway River near Rawlings, VA	309	1940, 1951–94	1973	23.25	29,900	10/24/71 10/06/72	21.36 23.25	23,900 29,900	N N	50–100 50–100
02045500	Nottoway River near Stony Creek, VA	579	1930–94	1940	23.66	25,200	10/07/72 11/06/85	21.69 20.22	20,800 14,800	N N	25–50 10–25
02046000	Stony Creek near Dinwiddie, VA	112	1940, 1947–94	1973	20.84	11,400	10/06/72 10/01/79	20.84 18.70	11,400 9,250	N N	50–100 25–50
02046400	Jones Hole Swamp tributary near Carson, VA	3.02	1967–76	1975	4.66	112	9/26/75	4.66	112	N	5–10
02046500	Anderson Branch at Sussex, VA	5.35	1949–56, 1966–83	1982	6.64	298	7/17/82	6.64	298	N	10–25

Table 48. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Virginia—Continued

Station number (fig. 69)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02047000	Nottoway River near Sebrell, VA	1,421	1940, 1942–94	1940	29.70	48,000	7/19/75	24.43	26,000	N	25–50
02047500	Blackwater River near Dendron, VA	294	1940, 1942–88, 1990–94	1940	13.10	10,000	9/28/85	9.11	5,850	N	10–25
02048000	Blackwater River at Zuni, VA	456	1940, 1943–88	1940	23.20	16,000	3/21/75	15.70	7,000	N	10–25
02050050	Blackwater River tributary near Holland, VA	2.76	1967–94	1973	7.65	408	8/03/73	7.65	408	N	10–25
02050400	North Meherrin River near Briery, VA	1.19	1966–75	1972	7.85	472	10/23/71	7.85	472	N	10–25
02050500	North Meherrin River near Keysville, VA	9.20	1940, 1949–61, 1966–73	1972 1940	8.03 10.30	1,720 --	6/21/72	8.03	1,720	N	10–25
02051000	North Meherrin River near Lunenburg, VA	55.6	1940, 1947–75, 1977–80, 1982–94	1972 1940	28.30 48.00	14,400 --	10/23/71 9/22/79	28.30 26.94	14,400 11,800	N N	>100 >100
02051400	Saddletree Creek near Lawrenceville, VA	0.87	1958–76	1973	7.96	610	10/05/72	7.96	610	N	25–50
02051500	Meherrin River near Lawrenceville, VA	552	1889, 1908, 1928–94	1940	42.00	38,000	10/07/72	32.99	20,000	N	25–50
02051600	Great Creek near Cochran, VA	30.7	1958–94	1973	16.65	7,100	6/22/72 10/06/72	15.34 16.65	5,470 7,100	N N	10–25 25–50
02051650	Rocky Run near Dolphin, VA	1.41	1966–75	1973	9.65	315	10/05/72	9.65	315	N	5–10
02052000	Meherrin River at Emporia, VA	747	1908, 1912, 1928, 1940, 1951–94	1940	31.50	40,000	10/08/72	27.38	21,100	N	10–25
02052500	Fountains Creek near Brink, VA	65.2	1940, 1954–94	1973	24.14	16,000	10/06/72 7/14/75	24.14 18.90	16,000 4,920	N N	>100 10–25
02053800	South Fork Roanoke River near Shawsville, VA	110	1961–94	1972	11.12	14,200	6/21/72 9/21/79	11.12 9.27	14,200 8,380	N N	50–100 10–25
02054500	Roanoke River at Lafayette, VA	257	1940, 1944–94	1972	15.60	24,500	6/21/72 11/04/85	15.60 13.34	24,500 17,100	N N	100–200 25–50
02055000	Roanoke River at Roanoke, VA	395	1878, 1899–1994	1986	23.35	32,300	6/21/72 4/27/78 11/04/85	19.61 18.95 23.35	25,300 24,100 32,300	N N N	50–100 25–50 100–200
02055100	Tinker Creek near Daleville, VA	11.7	1957–94	1986	13.36	10,400	6/21/72 11/04/85	9.82 13.36	4,000 10,400	N N	10–25 >100
02056000	Roanoke River at Niagara, VA	512	1927–94	1986	25.30	52,300	6/21/72 4/27/78 11/04/85	18.98 19.12 25.30	28,800 29,300 52,300	N N N	25–50 25–50 >200
02056650	Back Creek near Dundee, VA	56.8	1971–72, 1975–94	1986	25.10	20,000	11/04/85	25.10	20,000	N	50–100
02056900	Blackwater River near Rocky Mount, VA	115	1977–94	1986	21.92	20,800	11/05/85	21.92	20,800	N	>100
02057700	Powder Mill Creek at Rocky Mount, VA	0.64	1967–94	1989 1990	16.78 17.84	305 --	5/05/89	16.78	305	N	50–100
02058400	Pigg River near Sandy Level, VA	350	1964–94	1987	31.12	65,600	4/27/78 9/08/87	25.56 31.12	25,400 65,600	N N	10–25 >100
02059450	South Fork Goose Creek at Montvale, VA	7.56	1967–76	1972	8.10	2,060	6/21/72	8.10	2,060	N	--
02059500	Goose Creek near Huddleston, VA	188	1924, 1926–27, 1930–94	1987	37.49	53,200	9/08/87 5/06/89	37.49 25.34	53,200 19,500	N N	>200 10–25

Table 48. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Virginia—Continued

Station number (fig. 69)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02060500	Roanoke River at Altavista, VA	1,789	1931–94	1940	40.08	105,000	4/27/78	27.68	40,100	Y	--
							9/08/87	34.45	62,100	Y	--
02061150	Chestnut Branch near Forest, VA	1.65	1960–76	1973	12.55	2,300	6/24/73	12.55	2,300	N	>100
02061500	Big Otter River near Evington, VA	320	1937–94	1987	24.96	41,900	9/08/87	24.96	41,900	N	50–100
02062500	Roanoke (Staunton) River at Brookneal, VA	2,415	1878, 1924–76, 1978–94	1940	46.00	130,000	6/22/72	34.27	58,400	Y	--
							9/09/87	39.80	85,800	Y	--
02063600	Button Creek near Rustburg, VA	0.59	1966–75	1975	7.33	253	3/19/75	7.33	253	N	--
02064000	Falling River near Naruna, VA	173	1930–34, 1940, 1942–94	1972	29.21	32,600	6/22/72	29.21	32,600	N	100–200
							9/08/87	28.53	29,800	N	100–200
02065100	Snake Creek near Brookneal, VA	1.68	1967–77, 1980–94	1987	15.90	1,500	9/08/87	15.90	1,500	N	>100
02065200	Roanoke (Staunton) River at Clarkton, VA	2,691	1940, 1964–75	1972	35.56	85,500	6/22/72	35.56	85,500	Y	--
02065300	Right Hand Fork near Appomattox, VA	2.08	1967–95	1987	16.80	962	9/08/87	16.80	962	N	25–50
02065500	Cub Creek at Phenix, VA	98.0	1940, 1947–94	1987	19.31	10,600	6/22/72	20.37	7,380	N	25–50
				1972	20.37	7,380	9/08/87	19.31	10,600	N	50–100
02066000	Roanoke (Staunton) River at Randolph, VA	2,977	1878, 1901–13, 1915–94	1940	41.60	150,000	6/23/72	30.96	72,500	Y	--
							9/10/87	33.18	76,300	Y	
02066500	Roanoke Creek at Saxe, VA	135	1940, 1947–59, 1961–72	1972	15.83	7,110	10/24/71	15.83	7,110	N	25–50
				1940	25.70	--					
02066600	Sandy Creek near Wylliesburg, VA	8.84	1966–75	1973	11.25	1,500	10/05/72	11.25	1,500	N	--
				1972	15.32	--					
02067810	Maple Swamp Branch near Meadows of Dan, VA	0.49	1970–79	1979	6.60	181	9/21/79	6.60	181	N	10–25
02069600	Anglin Branch near Stuart, VA	3.10	1967–76	1975	5.90	570	3/30/75	5.90	570	N	--
02069700	South Mayo River near Nettleridge, VA	84.6	1963–94	1979	22.00	20,600	9/22/79	22.00	20,600	N	50–100
							8/18/85	20.89	18,100	N	50–100
02070000	North Mayo River near Spencer, VA	108	1929–94	1948	15.80	17,200	8/18/85	14.22	14,100	N	25–50
02072500	Smith River at Bassett, VA	259	1938–90, 1992–94	1938	22.90	38,200	9/07/87	15.20	17,700	Y	--
02073000	Smith River at Martinsville, VA	380	1930–94	1938	21.50	39,000	9/08/87	20.08	34,600	Y	--
02074500	Sandy River near Danville, VA	112	1930–94	1940	17.38	23,000	3/30/75	10.90	12,700	N	10–25
							4/16/87	10.97	12,800	N	10–25
02075000	Dan River at Danville, VA	2,050	1935–94	1940	20.96	75,000	6/22/72	21.34	59,200	Y	--
				1972	21.34	59,200	4/16/87	20.81	55,400	Y	--
02075500	Dan River at Paces, VA	2,550	1940, 1951–75, 1977–94	1972	33.15	64,800	6/23/72	33.15	64,800	N	50–100
							4/17/87	30.91	54,200	N	25–50
02076200	Bearskin Creek near Chatham, VA	4.06	1967–78, 1980–84, 1986–94	1986	16.00	2,300	11/04/85	16.00	2,300	N	25–50
02076400	Whitethorn Creek tributary at Gretna, VA	1.93	1966–75	1972	7.00	510	6/21/72	7.00	510	N	50–100
02076500	Georges Creek near Gretna, VA	9.24	1950–94	1979	8.50	1,480	9/22/79	8.50	1,480	N	10–25

Table 48. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Virginia—Continued

Station number (fig. 69)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
02076700	Blacks Creek near Mount Airy, VA	3.44	1966–78, 1980–84, 1986–94	1987	19.50	2,200	9/08/87	19.50	2,200	N	50–100
02077500	Hyco River near Denniston, VA	289	1928, 1930–34, 1945 1951–94	1975 1928	24.27 26.40	10,800 --	7/15/75 4/27/78 2/26/79	24.27 22.82 22.97	10,800 9,340 9,490	N N N	25–50 10–25 10–25
02079640	Allen Creek near Boydton, VA	53.4	1962–94	1972	21.80	5,620	10/23/71	21.80	5,620	N	10–25
02079720	Smith Creek tributary near South Hill, VA	0.39	1966–75	1974	5.96	178	9/06/74	5.96	178	N	--
03162810	Saddle Creek tributary near Independence, VA	0.39	1966–75	1973	5.78	84	5/28/73	5.78	84	N	--
03164000	New River near Galax, VA	1,131	1930–94	1940	25.70	141,000	11/06/77 9/22/89	18.59 12.80	91,000 54,100	N N	>200 25–50
03165000	Chestnut Creek at Galax, VA	39.4	1940, 1945–94	1940	17.40	11,000	10/17/75	12.93	6,880	N	25–50
03165700	Cripple Creek at Cedar Springs, VA	11.3	1967–93	1978	20.37	1,860	11/06/77	20.37	1,860	N	--
03166800	Glade Creek at Grahams Forge, VA	7.15	1976–94	1989	6.75	3,210	9/16/89	6.75	3,210	N	50–100
03167000	Reed Creek at Grahams Forge, VA	247	1909–16, 1927–94	1916	11.40	17,500	4/05/77	10.01	14,000	N	50–100
03167500	Big Reed Island Creek near Allisonia, VA	278	1909–15, 1939–94	1992	14.06	17,900	9/22/89	12.52	14,400	N	10–25
03168000	New River at Allisonia, VA	2,202	1930–94	1940	23.42	185,000	11/07/77 9/22/89	16.59 15.68	109,000 98,900	N N	50–100 50–100
03168750	Thorne Springs Branch near Dublin, VA	4.77	1957–94	1973	8.01	2,200	5/28/73 2/01/74	8.01 3.65	2,200 720	N N	>100 25–50
03169200	Dodd Creek tributary near Floyd, VA	0.96	1967–76	1976	5.87	290	6/16/76	5.87	290	N	--
03170000	Little River at Graysontown, VA	300	1929–94	1972 1940	13.40 16.44	22,800 17,700	6/21/72 11/05/85	13.40 11.67	22,800 18,200	N N	50–100 10–25
03171000	New River at Radford, VA	2,748	1878, 1896–1994	1940	35.96	218,000	11/07/77 9/23/89	24.10 21.73	108,000 92,600	Y Y	-- --
03171150	Crab Creek tributary near Christiansburg, VA	1.23	1957–76	1976	2.12	207	6/16/76	2.12	207	N	5–10
03171500	New River at Eggleston, VA	2,941	1878, 1915–82	1940	41.16	219,000	11/07/77	25.59	99,000	Y	--
03175500	Wolf Creek near Narrows, VA	223	1909–16, 1938–94	1957	13.80	12,900	4/05/77	12.01	11,500	N	25–50
03176500	New River at Glen Lyn, VA	3,768	1878, 1915–94	1878	33.10	240,000	6/22/72 11/07/77	17.36 18.12	105,000 110,000	Y Y	-- --
03177700	Bluestone River at Bluefield, VA	39.8	1966–80	1980	8.40	1,260	7/10/80	8.40	1,260	N	10–25
03177710	Bluestone River at Falls Mills, VA	44.2	1981–94	1984	8.37	1,050	5/07/84	8.37	1,050	N	--
03207400	Big Prater Creek at Vansant, VA	19.8	1951–77	1977	13.49	8,000	4/04/77	13.49	8,000	N	>100
03207500	Levisa Fork near Grundy, VA	235	1929, 1942–74, 1977, 1984, 1986–94	1977	28.87	52,000	4/04/77	28.87	52,000	N	>200
03207800	Levisa Fork at Big Rock, VA	297	1957, 1968–94	1977	27.38	56,000	4/04/77	27.38	56,000	N	>100

Table 48. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Virginia—Continued

Station number (fig. 69)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03208040	Russell Fork at Council, VA	10.2	1983–94	1984	5.98	1,540	5/07/84	5.98	1,540	N	--
03208100	Russell Fork near Birchleaf, VA	87.4	1982–94	1984	21.30	22,600	5/07/84	21.30	22,600	N	--
03208500	Russell Fork at Haysi, VA	286	1927–94	1977	28.24	59,000	4/05/77 5/07/84	28.24 22.08	59,000 37,000	N N	>200 25–50
03208700	North Fork Pound River at Pound, VA	18.5	1957, 1962–94	1963 1957	61.58 63.90	4,480 --	9/14/82	55.79	1,230	Y	--
03208800	Pound River above Indian Creek at Pound, VA	36.7	1942, 1957, 1963, 1966–92, 1994	1975 1957	19.44 25.70	3,460 --	5/18/75	19.44	3,460	Y	--
03208850	Pound River below Bold Camp Creek at Pound, VA	61.2	1957, 1963, 1966–94	1975 1957	25.64 30.80	6,290 --	5/18/75	25.64	6,290	Y	--
03208900	Pound River near Georges Fork, VA	82.5	1957, 1963–94	1975 1957	14.91 16.20	10,900 --	5/18/75	14.91	10,900	Y	--
03208950	Cranes Nest River near Clintwood, VA	66.5	1957, 1964–92, 1994	1977	26.09	18,000	4/04/77	26.09	18,000	N	>100
03209000	Pound River below Flannagan Dam near Haysi, VA	221	1920, 1927–94	1929 1957	16.50 18.65	30,000 27,300	4/08/77	8.20	4,540	Y	--
03209200	Russell Fork at Bartlick, VA	526	1957, 1963–94	1977 1957	27.55 30.00	50,000 --	4/04/77	27.55	50,000	Y	--
03213590	Knox Creek at Kelsa, VA	84.3	1981–94	1984	20.20	13,000	5/07/84	20.20	13,000	N	--
03470900	Slemp Creek tributary near Sugar Grove, VA	0.36	1966–75	1967	5.00	35	10/--/71	5.00	35	N	--
03471100	Dickey Creek at Sugar Grove, VA	7.28	1967–77	1972	17.05	475	6/21/72	17.05	475	N	2–5
03471500	South Fork Holston River at Riverside near Chilhowie, VA	76.1	1908–09, 1921–31, 1942–94	1978	10.20	9,600	4/05/77 11/06/77	8.89 10.20	5,240 9,600	N N	25–50 >200
03472500	Beaverdam Creek at Damascus, VA	56.0	1901, 1940, 1948–94	1978	8.45	6,000	4/05/77 10/02/77	6.04 8.45	4,660 6,000	N N	10–25 25–50
03473000	South Fork Holston River near Damascus, VA	301	1867, 1932–94	1867	20.00	26,500	4/05/77 10/02/77	17.11 15.82	22,000 17,900	N N	50–100 25–50
03473800	Staley Creek near Marion, VA	8.33	1951–77	1977	4.52	515	4/04/77	4.52	515	N	25–50
03474000	Middle Fork Holston River at Seven Mile Ford, VA	132	1942–94	1978 1957	10.33 10.75	14,500 7,680	4/05/77 11/06/77 5/07/84	8.54 10.33 7.07	10,900 14,500 8,030	N N N	50–100 >100 10–25
03474700	Hutton Creek near Chilhowie, VA	8.32	1967–91, 1993–94	1979	13.92	1,740	6/23/79	13.92	1,740	N	75–150
03474800	Hall Creek near Glade Spring, VA	7.90	1967–91, 1994	1989	11.51	1,310	9/22/89	11.51	1,310	N	10–25
03475000	Middle Fork Holston River near Meadowview, VA	211	1932–53, 1957, 1973, 1975, 1977–94	1978	13.41	12,500	4/05/77 11/07/77	12.57 13.41	11,000 12,500	N N	50–100 100–200
03475600	Cedar Creek near Meadowview, VA	3.38	1967–94	1971	7.54	92	7/10/71	7.54	92	N	25–50
03475700	Spring Creek near Abingdon, VA	2.99	1971–94	1972	6.05	402	9/30/72	6.05	402	N	25–50
03478400	Beaver Creek at Bristol, VA	27.7	1936, 1940, 1953, 1957–94	1978 1936	9.94 12.00	1,600 --	10/02/77	9.94	1,600	Y	--

Table 48. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Virginia—Continued

Station number (fig. 69)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03487800	Lick Creek near Chatham Hill, VA	25.5	1966–94	1978	8.09	2,660	11/07/77	8.09	2,660	N	25–50
03487850	Possum Jaw Creek near Chatham Hill, VA	4.36	1967–78	1978	10.94	779	11/06/77	10.94	779	N	10–25
03487900	Sprouts Creek near Chatham Hill, VA	7.64	1967–77	1977	6.80	630	4/04/77	6.80	630	N	10–25
03488000	North Fork Holston River near Saltville, VA	222	1862, 1907–08, 1921–94	1862	15.00	22,000	4/05/77 11/06/77	12.98 13.57	14,900 15,900	N N	25–50 25–50
03488450	Brumley Creek at Brumley Gap, VA	21.1	1980–94	1984	6.60	1,500	5/07/84	6.60	1,500	N	--
03488500	North Fork Holston River at Holston, VA	402	1952–77	1977	18.60	27,000	4/05/77	18.60	27,000	N	50–100
03489700	Fleenor Branch near Bristol, VA	0.59	1966–75	1973	5.56	89	7/14/73	5.56	89	N	--
03489800	Cove Creek near Shelleys, VA	17.3	1951–94	1963	8.40	2,500	10/02/77	7.28	1,670	N	25–50
03489850	Cove Creek near Hilton, VA	17.6	1967–78	1978	6.16	1,740	10/02/77	6.16	1,740	N	10–25
03489870	Big Moccasin Creek at Collinwood near Hansonville, VA	41.9	1966–94	1975	6.85	3,660	3/30/75	6.85	3,660	N	10–25
03490000	North Fork Holston River near Gate City, VA	672	1862, 1932–94	1862	22.50	54,000	4/05/77	19.79	41,000	N	50–100
03523000	Big Cedar Creek near Lebanon, VA	51.5	1953–77, 1991–94	1977	5.83	4,000	4/05/77	5.83	4,000	N	50–100
03524000	Clinch River at Cleveland, VA	528	1862, 1902, 1907, 1918, 1921–94	1977	26.40	34,500	4/05/77	26.40	34,500	N	100–200
03524500	Guest River at Coeburn, VA	87.3	1950–94	1977	20.95	18,000	4/05/77	20.95	18,000	N	>100
03526000	Copper Creek near Gate City, VA	106	1948–91, 1993–94	1977	13.57	7,660	3/30/75 4/05/77	13.17 13.57	7,040 7,660	N N	25–50 25–50
03527000	Clinch River at Speers Ferry, VA	1,126	1862, 1902, 1921–94	1977	36.69	89,000	3/17/73 4/05/77	28.19 36.69	42,600 89,000	N N	10–25 >500
03529500	Powell River at Big Stone Gap, VA	112	1945–77, 1979–94	1977	16.50	24,000	4/05/77	16.50	24,000	N	>100
03530000	South Fork Powell River at Big Stone Gap, VA	40.0	1945–47, 1951–75, 1977	1977	12.43	8,000	4/05/77	12.43	8,000	N	>100
03530500	North Fork Powell River at Pennington Gap, VA	71.4	1945–77, 1979–94	1977	16.14	17,000	4/05/77	16.14	17,000	N	>100
03531500	Powell River near Jonesville, VA	319	1918, 1932–94	1977	44.32	57,000	4/05/77	44.32	57,000	N	>200

[1]Regulated during flood: N, no; Y, yes.

Washington

Hydroclimatology

Washington is located in the Pacific Northwest and is bordered on the west by the Pacific Ocean. Washington has two north-south-trending mountain ranges—the Cascade Range and the Olympic Mountains. Washington's climate is relatively mild when compared to other areas at similar latitudes, which is a result of its proximity to the Pacific Ocean. In the winter, the ocean is warmer than the land surface, and during the summer, the ocean is cooler than the land surface. As a result, the Pacific Ocean moderates temperatures in the State.

Washington receives its moisture from the Pacific Ocean as prevailing winds from the southwest and west provide the majority of Washington's annual precipitation. The fall and winter are the wettest seasons in the State. Winter storms typically originate in the Gulf of Alaska. Significant flooding can occur when airmasses bring in warm, moist air from the tropical areas of the Pacific Ocean. The mountains have a considerable effect on the rain distribution across the State. As the airmasses rise in response to the topography, the moisture condenses and falls on the west side of the mountains. The area east of the mountains is in a rain shadow. As a result, western Washington receives an average of 70 in/yr, but eastern Washington averages only 20 in. annually (Paulson and others, 1991).

Flooding in western Washington usually is caused by excessive rainfall on low-elevation snow, rapid melting of the winter snowpack, or by intense local thunderstorms. In eastern Washington, floods are most common during the spring melting of the mountain snowpack.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in Washington generally depends on drainage area, mean annual precipitation, and forest cover, which is in percentage of drainage area. For small watersheds in eastern Washington, the variables to which maximum discharges of streams are most closely related include drainage area, a longitude index, and forest cover (Jennings and others, 1994).

Significant Floods

Washington had severe flooding in January 1974. The flood was caused by warm rainfall that melted a near-record snowpack. Runoff was increased in eastern Washington by rain falling on areas of impermeable frozen ground. Fourteen percent of the streamflow-gaging stations in the State recorded significant discharges. The maximum discharge of record was recorded on the Colville River at Kettle Falls (station 12409000, fig. 70).

Floods on the Toutle and Cowlitz Rivers were caused by mudflows from the eruption of Mount St. Helens on May 18, 1980. Sediment raised the streambed of the Cowlitz River an average of 10 ft from its confluence with the Toutle River to where it joins the Columbia River (Paulson and others, 1991).

The location of streamflow-gaging stations in Washington that had significant floods for 1970–89 is shown in figure 70 by station number. The specific data for each significant flood are listed in table 49. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.

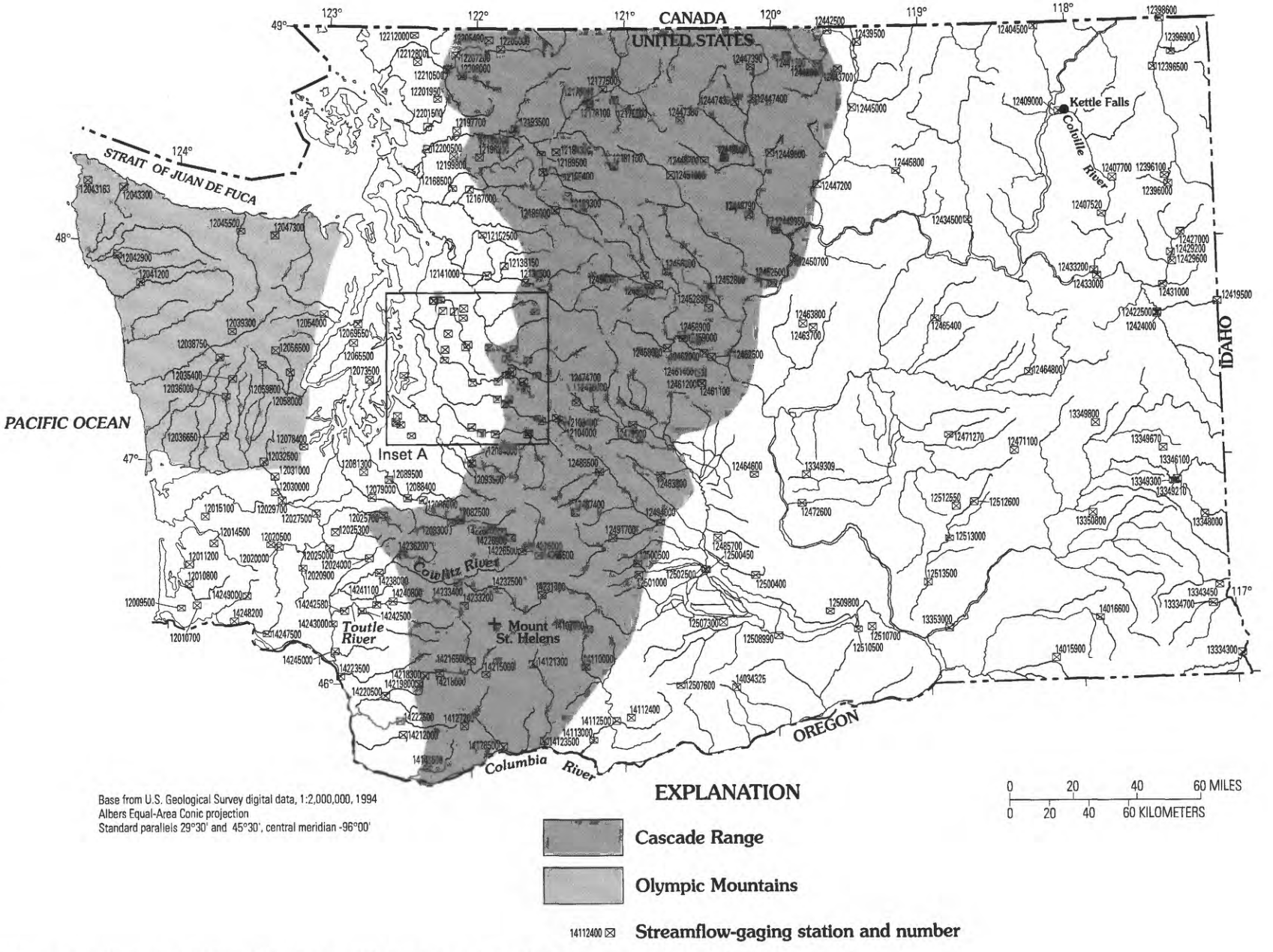
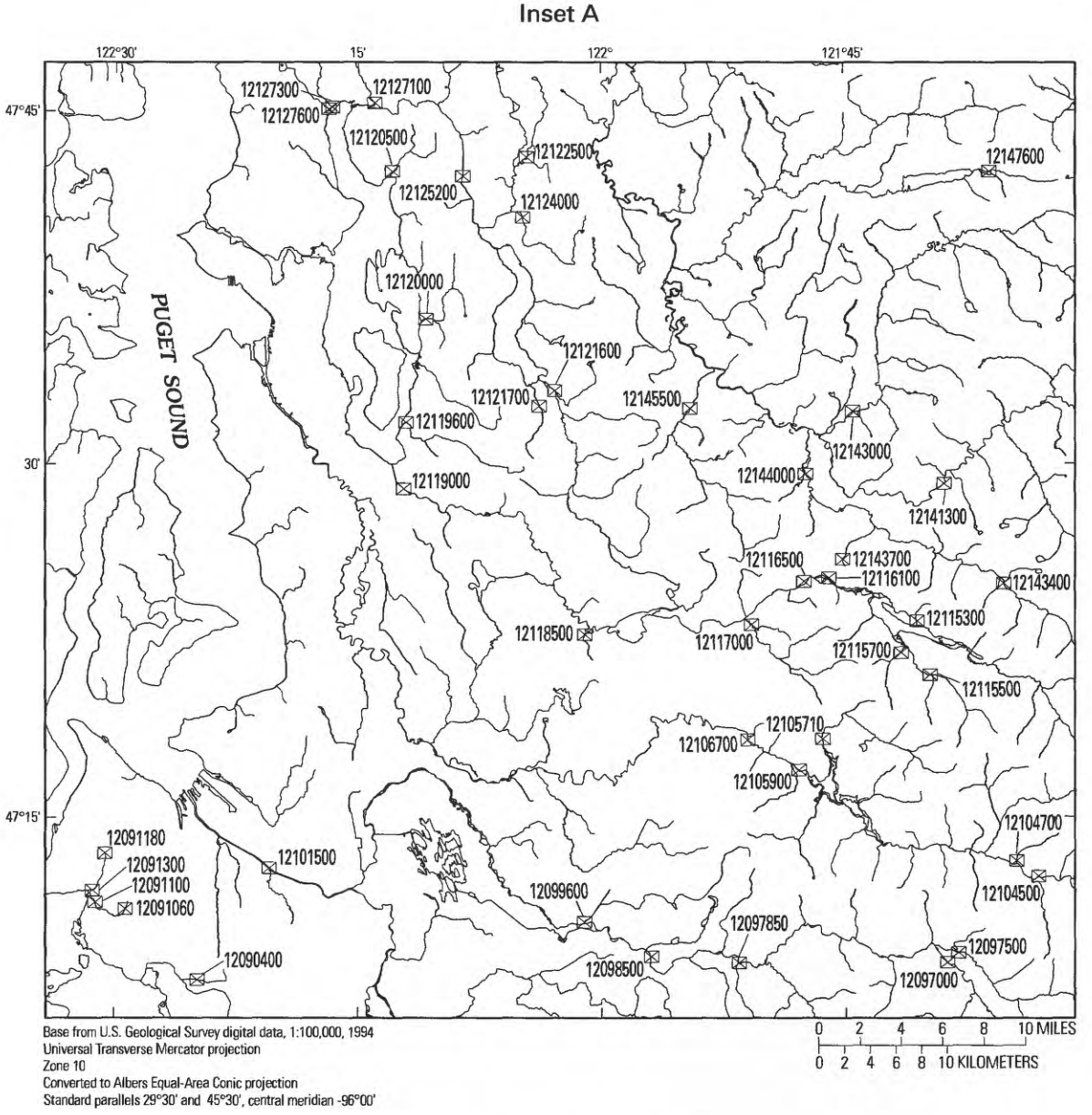


Figure 70. *Location of streamflow-gaging stations with significant floods during 1970–89 for Washington.*



EXPLANATION

12097850 ⊠ **Streamflow-gaging station and number**

Figure 70. Location of streamflow-gaging stations with significant floods occurred during 1970–89 for Washington—Continued.

Table 49. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Washington

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig. 70)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12009500	Bear Branch near Naselle, WA	11.7	1964–79	1971 1965	7.46 7.50	2,450 1,150	1/25/71	7.46	2,450	N	25
12010700	South Fork Naselle River near Naselle, WA	17.9	1965–79	1978	10.13	4,310	12/02/77	10.13	4,310	N	10–25
12010800	South Nemah River near Naselle, WA	1.99	1962–77	1976	8.76	344	12/01/75	8.76	344	N	10–25
12011200	Williams Creek near South Bend, WA	9.43	1965–79	1976	6.34	1,660	12/01/75	6.34	1,660	N	10–25
12014500	South Fork Willapa River near Raymond, WA	27.8	1954–76, 1978–79	1978	9.02	3,400	12/02/77	9.02	3,400	N	25
12015100	Clearwater Creek near Raymond, WA	3.98	1965–79	1978	4.13	625	12/02/77	4.13	625	N	25
12020000	Chehalis River near Doty, WA	113	1940–93	1990	19.96	27,500	1/20/72	18.36	22,800	N	25
12020500	Elk Creek near Doty, WA	46.7	1945–50, 1952–72, 1974–79	1978	12.82	4,600	12/02/77	12.82	4,600	N	75–100
12020900	South Fork Chehalis River near Boistfort, WA	44.9	1966–80	1976	14.73	6,200	2/04/75	14.73	6,200	N	10–25
12024000	South Fork Newaukum River near Onalaska, WA	42.4	1945–48, 1958–76, 1978–79	1978	9.66	4,310	12/02/77	9.66	4,310	N	40–50
12025000	Newaukum River near Chehalis, WA	155	1929–31, 1943–81, 1983–93	1987 1954	12.76 13.62	10,700 7,880	12/02/77 11/24/86	12.49 12.76	10,300 10,700	N N	20 25
12025300	Salzer Creek near Centralia, WA	12.6	1969–79	1972	7.95	320	11/20/72	7.95	320	N	5–10
12025700	Skookumchuck River near Vail, WA	40.0	1968–93	1972	10.93	6,900	11/20/72	10.93	6,900	N	20–25
12027500	Chehalis River near Grand Mound, WA	895	1929–93	1990	19.34	68,700	1/21/72 11/25/86	18.21 18.41	49,200 51,600	N N	15–20 20–25
12029700	Chehalis River near Oakville, WA	1,155	1947–76	1972 1971	-- 76.52	53,400 46,500	--/--/72 --/--/76	-- --	53,400 47,000	N N	50 20–25
12030000	Rock Creek at Cedarville, WA	24.8	1945–74	1972	14.30	1,640	1/20/72	14.30	1,640	N	30
12031000	Chehalis River at Porter, WA	1,294	1947–85, 1987–93	1990	24.52	60,400	1/27/71 1/22/72	23.50 23.88	49,600 55,600	N N	15–20 25
12032500	Cloquallum River at Elma, WA	64.9	1945–79	1960 1978	10.60 11.10	5,080 4,890	12/02/77	11.10	4,890	N	15
12035400	Wynoochee River near Grisdale, WA	41.3	1966–93	1967	18.00	11,800	11/16/83	7.74	10,400	Y	--
12036000	Wynoochee River above Save Creek near Aberdeen, WA	74.1	1926–93	1957	16.95	23,600	12/14/79	13.30	14,000	Y	--
12036650	Anderson Creek near Montesano, WA	2.72	1973–85	1982	8.53	452	12/13/82	8.53	452	N	10–20
12038750	Gibson Creek near Quinault, WA	1.16	1965–75	1970	11.55	495	11/14/70	11.55	495	N	25–30
12039300	North Fork Quinault River near Amanda Park, WA	74.1	1965–86	1983	15.00	30,000	12/03/82	15.00	30,000	N	15–20
12041200	Hoh River at U.S. Highway 101 near Forks, WA	253	1961–93	1991	19.61	54,500	12/17/79	19.08	51,600	N	10

Table 49. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Washington—Continued

Station number (fig. 70)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12042900	Grader Creek near Forks, WA	1.67	1950–88	1973	23.68	597	12/26/72	23.68	597	N	40–50
12043163	Sooes River below Miller Creek near Ozette,WA	32.0	1976–86	1982	15.08	5,610	1/23/82	15.08	5,610	N	5–10
12043300	Hoko River near Sekiu, WA	51.2	1963–78	1973	14.17	14,100	12/25/72	14.17	14,100	N	20–25
12045500	Elwha River at McDonald Branch near Port Angeles, WA	269	1898–1902, 1920–93	1898 1950	14.50 24.20	41,600 30,000	12/26/80	23.26	27,700	Y	--
12047300	Morse Creek near Port Angeles, WA	46.6	1967–79	1976	7.19	3,160	12/04/75	7.19	3,160	N	10–15
12054000	Duckabush River near Brinnon, WA	66.5	1939–93	1950	10.06	8,960	10/25/79 10/22/82	9.55 9.26	7,820 7,450	N N	15–20 10–25
12056500	North Fork Skokomish River below Staircase Rapids near Hoodsport, WA	57.2	1925–93	1935	14.40	27,000	1/18/86	11.00	16,500	N	25
12058000	Deer Meadow Creek near Hoodsport, WA	1.83	1953–79	1961 1956	2.85 2.98	445 355	12/03/75	2.39	272	N	15
12059800	South Fork Skokomish River near Hoodsport, WA	26.0	1964–70, 1972–79	1976	7.42	5,340	12/03/75	7.42	5,340	N	5–10
12065500	Gold Creek near Bremerton, WA	1.51	1946–70, 1972–79	1972	4.17	242	1/20/72	4.17	242	N	20–25
12069550	Big Beef Creek near Seabeck, WA	13.8	1970–81	1971 1974	4.92 5.74	757 742	12/07/70	4.92	757	N	10
12073500	Huge Creek near Wauna, WA	6.47	1948–69, 1978–93	1991	5.13	547	1/18/86	4.62	409	N	20–25
12078400	Kennedy Creek near Kamilche, WA	17.4	1961–74, 1976–79, 1992–93	1978 1966	4.50 5.58	1,380 545	12/11/77	4.50	1,380	N	15–20
12079000	Deschutes River near Rainier, WA	89.8	1950–79, 1981–82, 1988–93	1990	17.01	9,600	1/15/74	15.68	7,780	N	25–30
12081300	Eaton Creek near Yelm, WA	2.28	1960–88	1987 1975	5.93 6.06	58 25	11/24/86	5.93	58	N	35–45
12082500	Nisqually River near National, WA	133	1943–93	1978	11.96	17,100	1/15/74 12/02/77	11.25 11.96	15,000 17,100	N N	20–25 75
12083000	Mineral Creek near Mineral, WA	75.2	1943–93	1990	13.56	13,800	1/20/72	10.87	9,740	N	15–20
12086500	Nisqually River at La Grande, WA	292	1907–08, 1910–11, 1920–31, 1945–93	1976	11.90	27,100	12/04/75 2/26/80	11.90 10.75	27,100 21,500	Y Y	-- --
12088400	Nisqually River above Powell Creek near McKenna, WA	431	1942–63, 1970–79	1976	11.97	30,700	1/16/74 12/04/75	11.14 11.97	23,200 30,700	Y Y	-- --
12089500	Nisqually River at McKenna, WA	517	1948–68, 1978–93	1965	13.00	25,700	2/26/80	12.39	21,100	Y	--
12090400	North Fork Clover Creek near Parkland, WA	6.25	1960–75	1972 1960	-- 14.78	190 153	2/28/72	--	190	N	25
12091060	Flett Creek at Mount View Memorial Park, WA	5.91	1968–79	1972 1969	3.53 3.54	103 32	3/05/72	3.53	103	Y	--
12091100	Flett Creek at Tacoma, WA	8.01	1960–93	1972 1981	2.97 2.98	132 87	3/05/72 11/24/86	2.97 2.93	132 88	Y Y	-- --
12091180	Leach Creek at holding pond at Fircrest, WA	4.59	1968–90	1987	12.35	139	11/18/86	12.18	132	Y	--

Table 49. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Washington—Continued

Station number (fig. 70)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12091300	Leach Creek near Steilacoom, WA	6.56	1958–93	1986 1975	5.21 8.03	376 94	1/18/86	5.21	376	Y	--
12091700	Judd Creek near Burton, WA	4.41	1969–79	1972	10.47	200	3/06/72	10.47	200	N	50–100
12093900	Carbon River at Fairfax, WA	76.2	1966–78	1978	6.43	10,000	12/01/77	6.43	10,000	N	10–20
12094000	Carbon River near Fairfax, WA	78.9	1930–78, 1991–93	1991 1992	10.20 11.35	13,000 3,520	12/01/77	--	10,000	N	20
12097000	White River at Greenwater, WA	216	1930–76, 1978	1934 1978	9.38 9.79	18,100 17,800	12/02/77	9.79	17,800	N	50–60
12097500	Greenwater River at Greenwater, WA	73.5	1912, 1930–78	1978	9.80	10,500	12/02/77	9.80	10,500	N	>100
12097850	White River below Clearwater River near Buckley, WA	375	1975–76, 1983–93	1976	55.16	22,800	12/02/75	55.16	22,800	N	10–20
12098500	White River near Buckley, WA	401	1929–34, 1939–93	1934 1993	-- 804.23	28,000 4,120	12/02/77 11/24/86	-- --	14,800 15,200	Y Y	-- --
12099600	Boise Creek at Buckley, WA	15.4	1978–93	1984	5.18	972	11/25/84	5.18	972	N	10–20
12101500	Puyallup River at Puyallup, WA	948	1915–93	1934 1918	21.40 34.15	57,000 40,500	11/24/86	27.74	43,800	Y	--
12103400	Green River below Intake Creek near Lester, WA	34.8	1967–77	1976	6.00	4,690	12/01/75	6.00	4,690	N	35–45
12104000	Friday Creek near Lester, WA	4.67	1946–77	1976 1960	5.50 6.04	1,660 1,370	12/01/75	5.50	1,660	N	>100
12104500	Green River near Lester, WA	96.2	1946–90, 1993	1960	16.00	22,000	1/24/84	8.21	16,600	N	25–30
12104700	Green Canyon Creek near Lester, WA	3.23	1961–70, 1972–74	1972	3.21	324	2/15/72	3.21	324	N	10–20
12105710	North Fork Green River near Lemolo, WA	16.7	1957–87	1965 1976	7.28 8.29	2,400 2,010	12/02/75	8.29	2,010	N	10
12105900	Green River below Howard A. Hanson Dam, WA	221	1961–93	1961	14.40	12,200	1/05/84	14.22	11,100	Y	--
12106700	Green River at Purification Point near Palmer, WA	231	1964–93	1981 1984	12.05 12.48	12,500 11,100	12/03/77 2/12/81	11.85 12.05	11,700 12,500	Y Y	-- --
12115300	Green Point Creek near Cedar Falls, WA	0.89	1957–88	1969	15.98	125	1/17/75	15.63	120	N	15
12115500	Rex River near Cedar Falls, WA	13.4	1946, 1948–93	1960	8.20	4,200	12/02/77	8.12	4,030	N	25–30
12115700	Boulder Creek near Cedar Falls, WA	4.64	1984–93	1987 1993	4.16 5.38	1,800 547	11/23/86	4.16	1,800	N	10–25
12116100	Canyon Creek near Cedar Falls, WA	0.19	1946–93	1976	2.22	131	12/07/75	2.22	131	N	50
12116500	Cedar River at Cedar Falls, WA	84.2	1915–93	1991	14.00	12,300	12/03/75	11.68	6,860	Y	--
12117000	Taylor Creek near Selleck, WA	17.2	1957–93	1965	5.78	2,730	11/23/86	5.57	2,530	N	25
12118500	Rock Creek near Maple Valley, WA	12.6	1946–76	1972 1951	4.06 4.26	221 165	3/06/72	4.06	221	N	30–40
12119000	Cedar River at Renton, WA	184	1907, 1946–50, 1952–93	1991	17.13	10,600	2/04/75	14.14	8,800	Y	--
12119600	May Creek at mouth near Renton, WA	12.7	1946–50, 1956–58, 1965–71, 1973–79	1976	4.20	510	12/03/75	4.20	510	N	40–50

Table 49. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Washington—Continued

Station number (fig. 70)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12120000	Mercer Creek near Bellevue, WA	12.0	1956–93	1986 1972	6.50 8.68	832 402	10/06/81 11/18/86	5.58 6.50	670 832	Y Y	-- --
12120500	Juanita Creek near Kirkland, WA	6.69	1964–90	1986	10.15	740	1/18/86	10.15	740	Y	--
12121600	Issaquah Creek near mouth near Issaquah, WA	56.6	1964–93	1990	13.50	3,200	11/24/86	13.20	3,100	N	15–20
12121700	Tibbetts Creek near Issaquah, WA	3.90	1964–68, 1972–77	1976	8.64	359	12/02/75	8.64	359	N	10–25
12122500	Bear Creek near Redmond, WA	13.9	1946–49, 1980–81, 1985–91	1986	4.54	420	1/18/86	4.54	420	N	25
12124000	Evans Creek (above mouth) near Redmond, WA	13.0	1956–77	1976	3.96	222	12/05/75	3.96	222	N	30–40
12125200	Sammamish River near Woodinville, WA	157	1966–93	1972	25.83	2,390	3/06/72	25.83	2,390	N	15–25
12127100	Swamp Creek at Kenmore, WA	23.1	1964–90	1986	7.73	1,090	1/18/86	7.73	1,090	N	>100
12127300	Lyon Creek at Lake Forest Park, WA	3.67	1964–75	1972	3.91	154	3/05/72	3.91	154	N	10–25
12127600	McAleer Creek at Lake Forest Park, WA	7.80	1964–74	1972	3.94	214	3/05/72	3.94	214	N	10
12134500	Skykomish River near Gold Bar, WA	535	1929–93	1991	22.49	102,000	12/26/80	21.34	90,100	N	25
12138150	Sultan River below Chaplain Creek near Sultan, WA	92.6	1975–84	1976	13.19	24,600	12/02/75	13.19	24,600	Y	--
12141000	Woods Creek near Monroe, WA	56.4	1947–78	1971 1950	7.02 7.18	2,350 1,710	1/30/71	7.02	2,350	N	15–25
12141300	Middle Fork Snoqualmie River near Tanner, WA	154	1961–93	1978 1991	14.93 14.97	30,200 30,100	12/02/77	14.93	30,200	N	15–25
12143000	North Fork Snoqualmie River near North Bend, WA	95.7	1909–12, 1914–20, 1922–26, 1930–38, 1961–78	1910	15.50	15,800	12/03/75	11.00	15,500	N	10–20
12143400	South Fork Snoqualmie River above Alice Creek near Garcia, WA	41.6	1961–93	1987 1991	8.33 18.26	8,450 8,000	11/23/86	8.33	8,450	N	15–25
12143700	Boxley Creek near Cedar Falls, WA	1.57	1946–93	1978 1991	2.88 3.47	189 181	12/19/77	2.88	189	N	20–25
12144000	South Fork Snoqualmie River at North Bend, WA	81.7	1909, 1911–12, 1914–26, 1930–38, 1946–50, 1961–78, 1985–93	1978 1991	12.58 19.09	12,400 10,900	12/03/75 12/02/77	12.15 12.58	11,600 12,400	N N	25 35–40
12145500	Raging River near Fall City, WA	30.6	1946–51, 1953–93	1991 1951	6.56 6.76	6,220 3,430	11/23/86	6.27	5,330	N	50
12147600	South Fork Tolt River near Index, WA	5.34	1960–63, 1968–93	1982 1963	5.16 7.00	2,190 1,880	1/23/82 11/23/86	5.16 6.46	2,190 2,140	N N	25 20–25
12152500	Pilchuck River near Granite Falls, WA	54.5	1944–80	1946	10.40	10,500	1/15/76	9.59	8,510	N	20
12167000	North Fork Stillaguamish River near Arlington, WA	262	1929–93	1991	15.20	36,700	1/24/82 12/03/82	13.30 13.89	32,800 36,300	N N	10 25

Table 49. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Washington—Continued

Station number (fig. 70)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12168500	Pilchuck Creek near Bryant, WA	52.0	1930–31, 1951, 1953–79	1978	8.55	7,440	1/30/71	8.20	6,900	N	20–25
							12/02/77	8.55	7,440	N	35–45
12175500	Thunder Creek near Newhalem, WA	105	1920–93	1922	--	15,400	12/26/80	14.50	14,500	N	60–70
				1981	14.50	14,500					
12177500	Stetattle Creek near Newhalem, WA	22.0	1934–83	1981	8.06	9,540	12/17/79	7.04	7,600	N	35
				1935	10.40	5,640	12/26/80	8.06	9,540	N	65–75
12178000	Skagit River at Newhalem, WA	1,175	1815, 1856, 1898, 1909–14, 1921–93	1815	--	115,000	12/06/75	90.88	30,900	Y	--
				1922	94.80	60,000					
12178100	Newhalem Creek near Newhalem, WA	27.9	1961–93	1981	8.18	8,430	12/26/80	8.18	8,430	N	75–100
12181100	South Fork Cascade River at South Cascade Glacier near Marblemount, WA	2.36	1961–83	1981	3.80	235	12/26/80	3.80	235	N	5
				1963	4.79	120					
12184300	Iron Creek near Rockport, WA	1.70	1965–75	1972	16.60	288	7/12/72	16.60	288	N	10
12186000	Sauk River above Whitechuck River near Darrington, WA	152	1918–22, 1929–93	1981	16.03	40,100	12/26/80	16.03	40,100	N	>100
12188300	Straight Creek near Darrington, WA	4.32	1965–75	1972	24.88	494	2/28/72	24.88	494	N	25
12189400	Sauk River tributary near Darrington, WA	1.30	1951–70, 1978–88	1957	79.30	184	12/03/82	79.20	184	N	10–15
				1951	79.40	160					
12189500	Sauk River near Sauk, WA	714	1912, 1929–93	1981	18.24	98,600	12/26/80	18.24	98,600	N	75–100
12193500	Baker River at Concrete, WA	297	1911–14, 1944–93	1963	186.60	36,600	12/18/79	185.08	31,200	Y	--
12194000	Skagit River near Concrete, WA	2,737	1815, 1856, 1898, 1910, 1918, 1922, 1925–93	1815	69.30	500,000	12/26/80	40.19	148,700	Y	--
12196200	Day Creek below Day Lake near Lyman, WA	6.56	1964–79	1976	6.06	977	12/03/75	6.06	977	N	35–40
12197700	Wiseman Creek near Lyman, WA	3.00	1974–83	1983	--	>2,000	1/10/83	--	>2,000	N	--
				1980	4.52	970					
12199800	East Fork Nookachamps Creek near Big Lake, WA	3.56	1962–72, 1974–78	1978	5.22	676	12/02/77	5.22	676	N	15–25
12200500	Skagit River near Mount Vernon, WA	3,093	1907, 1941–93	1907	37.00	180,000	12/04/75	35.66	130,000	Y	--
				1991	37.37	152,000					
12201500	Samish River near Burlington, WA	87.8	1944–83	1983	13.88	8,440	1/10/83	13.88	8,440	N	50–60
12201950	Anderson Creek near Bellingham, WA	4.13	1968–77	1976	5.36	303	12/02/75	5.36	303	Y	--
12205000	North Fork Nooksack River below Cascade Creek near Glacier, WA	105	1938–93	1990	9.56	11,200	1/04/84	9.15	9,700	N	20
				1950	10.50	10,300					
12205490	Kidney Creek near Glacier, WA	2.66	1966–75	1971	16.31	249	1/30/71	16.31	249	N	--
12207200	North Fork Nooksack River near Deming, WA	282	1965–75	1971	10.25	16,000	1/30/71	10.25	16,000	N	25
12208000	Middle Fork Nooksack River near Deming, WA	73.3	1965–77	1976	10.80	13,100	12/03/75	10.80	13,100	N	25

Table 49. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Washington—Continued

Station number (fig. 70)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12210500	Nooksack River at Deming, WA	584	1908, 1910, 1932, 1935–48, 1950–93	1932 1908	16.80 20.00	49,300 --	12/03/75	15.89	40,300	N	15–20
12212000	Fishtrap Creek at Lynden, WA	22.3	1949–74	1951 1974	6.59 6.71	550 550	1/24/74	6.71	550	N	15–20
12212800	Tenmile Creek tributary #2 near Bellingham, WA	0.24	1956–87	1983	10.14	67	1/26/71 1/10/83	8.70 10.14	52 67	N N	15–20 50
12396000	Calispell Creek near Dalkena, WA	68.3	1951–77, 1979–93	1974	14.38	3,190	1/15/74	14.38	3,190	N	>100
12396100	Winchester Creek near Cusick, WA	16.8	1954–88	1974	15.02	250	1/16/74	15.02	250	N	>100
12396500	Pend Oreille River below Box Canyon, WA	24,900	1948, 1953–93	1948	38.00	167,000	6/13/72 6/26/74	34.54 34.31	136,000 133,000	Y Y	-- --
12396900	Sullivan Creek above Outlet Creek near Metaline Falls, WA	70.2	1958–74	1974	15.05	2,290	6/15/74	15.05	2,290	N	100
12398600	Pend Oreille River at international boundary	25,200	1963–93	1972	44.28	135,000	6/14/72 6/25/74	44.28 44.19	135,000 135,000	Y Y	-- --
12404500	Kettle River near Laurier, WA	3,800	1894, 1930–93	1948 1894	17.25 22.00	35,000 --	5/14/71	15.54	29,700	N	20
12407520	Deer Creek near Valley, WA	36.0	1960–79	1974	7.74	454	1/16/74	7.74	454	N	35–50
12407700	Chewelah Creek at Chewelah, WA	94.1	1957–74	1974	5.16	392	1/17/74	5.16	392	N	25
12409000	Colville River at Kettle Falls, WA	1,007	1923–93	1974 1956	9.84 10.17	3,440 3,230	1/21/74	9.84	3,440	N	75–100
12419500	Spokane River above Liberty Bridge near Otis Orchard, WA	3,880	1934, 1951–83	1934	22.24	50,100	1/20/74	21.33	45,000	Y	--
12422500	Spokane River at Spokane, WA	4,290	1891–1993	1894 1934	-- 29.75	49,000 47,800	1/20/74	28.94	45,600	Y	--
12424000	Hangman Creek at Spokane, WA	689	1948–93	1963	13.35	20,600	1/15/74	12.89	17,700	N	30–40
12427000	Little Spokane River at Elk, WA	115	1949–79	1974 1979	2.27 4.49	205 130	1/16/74	2.27	205	N	>100
12429200	Bear Creek near Milan, WA	10.5	1963–75	1974	15.16	98	1/16/74	15.16	98	N	25
12429600	Deer Creek near Chattaroy, WA	31.9	1962–75	1970	14.10	391	2/17/70	14.10	391	N	>100
12431000	Little Spokane River at Dartford, WA	665	1929–32, 1947–93	1970	7.29	3,170	2/17/70 1/16/74	7.29 7.03	3,170 2,860	N N	50–75 30–40
12433000	Spokane River at Long Lake, WA	6,020	1939–43, 1946–93	1974 1948	78.40 78.66	49,700 49,400	1/19/74	78.40	49,700	Y	--
12433200	Chamokane Creek below falls near Long Lake, WA	179	1971–79, 1988–93	1975	5.06	2,200	4/25/75	5.06	2,200	N	35–45
12434500	Sanpoil River near Keller, WA	880	1953–59, 1972–79	1974	10.42	4,790	1/17/74	10.42	4,790	N	25–50
12439500	Okanogan River at Oroville, WA	3,195	1943–93	1972 1948	-- 15.80	3,730 3,430	6/14/72	--	3,730	Y	--
12441700	Middle Fork Toats Coulee Creek near Loomis, WA	17.1	1965–70, 1972–75	1972 1967	14.15 18.91	528 434	6/02/72	14.15	528	N	10–15
12442000	Toats Coulee Creek near Loomis, WA	130	1920–26, 1948, 1957–79	1948 1972	-- 6.01	6,010 1,280	6/02/72	6.01	1,280	N	10

Table 49. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Washington—Continued

Station number (fig. 70)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12442500	Similkameen River near Nighthawk, WA	3,550	1911–93	1972	17.97	45,800	6/01/72	17.97	45,800	Y	--
							6/17/74	15.52	31,500	Y	--
12443700	Spectacle Lake tributary near Loomis, WA	4.59	1961–76	1973	7.23	109	2/27/73	7.23	109	N	--
				1974	7.54	8					
12445000	Okanogan River near Tonasket, WA	7,260	1929–93	1972	22.54	44,700	6/02/72	22.54	44,700	Y	--
							6/18/74	18.79	30,500	Y	--
12445800	Omak Creek tributary near Disautel, WA	4.12	1955–75	1974	18.27	14	3/12/74	18.27	14	N	10–25
				1955	19.96	--					
12447200	Okanogan River at Malott, WA	8,080	1958–93	1972	22.16	45,600	6/03/72	22.16	45,600	Y	--
							6/19/74	18.06	31,100	Y	--
12447380	Pine Creek near Mazama, WA	4.63	1966–88	1974	21.52	386	6/17/74	21.52	386	N	25–35
				1972	21.56	368					
12447390	Andrews Creek near Mazama, WA	22.1	1969–93	1972	4.00	1,120	6/10/72	4.00	1,120	N	100
12447400	Doe Creek near Winthrop, WA	3.80	1957–75	1972	8.30	89	6/10/72	8.30	89	N	50
12447430	Ortell Creek near Winthrop, WA	4.05	1965–75	1972	14.56	103	5/29/72	14.56	103	N	10
12448700	Williams Creek near Twisp, WA	3.15	1965–75	1972	8.55	97	5/29/72	8.55	97	N	25
12448900	Little Bridge Creek near Twisp, WA	16.6	1965–75	1972	8.01	232	5/07/72	8.01	232	N	10
12449600	Beaver Creek below South Fork near Twisp, WA	62.0	1960–79	1972	7.05	535	5/29/72	7.05	535	N	25
12449790	Rainy Creek near Methow, WA	8.51	1965–75	1972	9.80	168	6/02/72	9.80	168	N	30–45
12449950	Methow River near Pateros, WA	1,772	1948, 1959–93	1948	--	46,700	5/31/72	12.25	28,800	N	50
				1972	12.25	28,800					
12450700	Columbia River below Wells Dam, WA	86,100	1968–93	1972	--	402,000	6/15/72	--	402,000	Y	--
				1971	726.44	340,000					
12451000	Stehekin River at Stehekin, WA	321	1911–15, 1927–93	1948	29.00	18,900	6/16/74	28.21	16,600	N	25
							12/26/80	28.47	17,300	N	30–35
12452500	Chelan River at Chelan, WA	924	1904–93	1968	--	18,400	6/22/74	--	14,300	Y	--
				1904	--	8,280	6/03/82	--	18,400	Y	--
12452800	Entiat River near Ardenvoir, WA	203	1958–93	1972	8.98	6,430	6/10/72	8.98	6,430	N	75–100
							6/17/74	8.36	5,540	N	30–45
12452880	Tillicum Creek near Ardenvoir, WA	7.15	1965–75	1974	15.91	69	6/16/74	15.91	69	N	10
				1972	16.17	64					
12454000	White River near Plain, WA	150	1955–83	1981	17.55	19,100	12/26/80	17.55	19,100	N	>100
12455000	Wenatchee River below Wenatchee Lake, WA	273	1932–79	1948	79.65	13,700	2/04/75	79.30	13,000	N	75–100
12456300	Brush Creek near Telma, WA	3.34	1965–75	1972	18.62	205	5/30/72	18.62	205	N	15–25
				1973	21.19	45					
12458000	Icicle Creek above Snow Creek near Leavenworth, WA	193	1912–14, 1937–79	1948	13.93	11,600	12/04/75	13.30	9,250	N	20
12458900	Posey Canyon near Leavenworth, WA	1.36	1954–73	1972	8.83	11	3/18/72	8.83	11	N	10–20
12459000	Wenatchee River at Peshastin, WA	1,000	1929–93	1991	17.58	40,000	12/27/80	14.09	27,000	N	15–20
12461100	East Branch Mission Creek near Cashmere, WA	15.4	1955–74	1974	7.50	114	1/16/74	7.50	114	N	40–50
				1956	8.40	50					

Table 49. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Washington—Continued

Station number (fig. 70)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12461200	East Branch Mission Creek tributary near Cashmere, WA	2.49	1955–88	1974	15.19	35	5/08/72	14.11	30	N	25
							1/16/74	15.19	35	N	40–45
12461400	Mission Creek above Sand Creek near Cashmere, WA	39.8	1959–79	1974	6.90	2,090	1/16/74	6.90	2,090	N	>100
12462000	Mission Creek at Cashmere, WA	81.2	1948, 1954–73	1972	14.38	560	3/13/72	14.38	560	N	40–50
12462500	Wenatchee River at Monitor, WA	1,301	1963–93	1991	29.80	45,900	12/27/80	27.23	29,600	N	10–15
12463700	McCarteney Creek tributary near Farmer, WA	0.40	1960, 1962–76	1976	12.17	114	8/06/76	12.17	114	N	25–40
12463800	Pine Canyon tributary near Farmer, WA	1.10	1960, 1962–76	1973	11.73	30	1/19/73	11.73	30	N	--
12464600	Schnebly Coulee tributary near Vantage, WA	0.82	1955–74	1974	12.07	160	1/15/74	12.07	160	N	50–75
				1969	12.34	28					
12464800	Coal Creek at Mohler, WA	64.7	1964–79	1976	3.30	705	2/16/76	3.30	705	N	5
12465400	Wilson Creek below Corbett Draw near Almira, WA	327	1969–79, 1992–93	1973	7.68	3,220	1/16/73	7.68	3,220	N	10–20
12471100	Paha Coulee tributary near Ritzville, WA	8.52	1962–76	1971	11.58	264	1/16/71	11.58	264	N	10–20
12471270	Farrier Coulee near Schrag, WA	42.0	1963–76, 1978–79	1971	10.36	1,450	1/16/71	10.36	1,450	N	--
12472600	Crab Creek near Beverly, WA	4,840	1960–93	1980	6.46	936	3/03/80	6.46	936	Y	--
							2/13/85	4.59	403	Y	--
12474700	Mosquito Creek near Easton, WA	1.07	1968–77	1974	19.43	166	1/15/74	19.43	166	N	10–25
12476000	Kachess River near Easton, WA	63.60	1904–78	1972	8.57	3,060	4/10/72	8.57	3,060	Y	--
12479500	Yakima River at Cle Elum, WA	495	1907–78, 1988–90	1907	12.50	25,600	12/02/77	7.76	17,600	Y	--
12483300	South Fork Manastash Creek tributary near Ellensburg, WA	2.12	1955–74	1974	10.62	102	1/15/74	10.62	102	N	30–45
12485700	Selah Creek tributary near Yakima, WA	0.68	1955–74	1971	12.41	101	1/16/71	12.41	101	N	--
12487400	Deep Creek near Goose Prairie, WA	12.7	1966–75	1974	22.64	811	1/16/74	22.64	811	N	10–25
12488500	American River near Nile, WA	78.9	1909, 1940–93	1981	77.99	4,230	1/16/74	77.10	3,240	N	30–35
							12/04/75	77.37	3,340	N	35–40
							12/26/80	77.99	4,230	N	>100
12491700	Hause Creek near Rimrock, WA	3.91	1955–88	1978	9.93	133	12/02/77	9.93	133	N	75–100
							2/20/82	9.45	120	N	50–75
12494000	Naches River below Tieton River near Naches, WA	941	1909–12, 1916–79	1934	14.33	32,200	12/02/77	20.07	18,000	Y	--
				1978	20.07	18,000					
12500400	Firewater Canyon near Moxee City, WA	7.30	1963–77	1971	15.65	550	1/16/71	15.65	550	N	--
12500450	Yakima River above Ahtanum Creek at Union Gap, WA	3,479	1967–93	1978	49.55	35,300	12/03/77	49.55	35,300	Y	--
				1991	50.38	31,500					
12500500	North Fork Ahtanum Creek near Tampico, WA	68.9	1908, 1910–21, 1932–79	1974	5.45	1,580	1/15/74	5.45	1,580	N	>100
							12/02/77	4.57	1,080	N	75

Table 49. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Washington—Continued

Station number (fig. 70)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
12501000	South Fork Ahtanum Creek at Conrad Ranch near Tampico, WA	24.8	1915–24, 1931–78	1974	5.39	1,230	1/15/74	5.39	1,230	N	>100
12502500	Ahtanum Creek at Union Gap, WA	173	1908, 1910, 1912–14, 1952, 1960–93	1974	10.36	3,100	1/16/74	10.36	3,100	N	>100
12507300	Toppenish Creek tributary near Toppenish, WA	1.24	1955–74	1974	19.57	34	1/15/74	19.57	34	N	--
12507600	Shinando Creek tributary near Goldendale, WA	0.38	1955–74	1974	23.28	33	1/15/74	23.28	33	N	30–40
12508990	Yakima River at Mabton, WA	5,359	1971–93	1974 1981	15.30 22.69	37,200 28,700	1/17/74	15.30	37,200	Y	--
12509800	Snipes Creek tributary near Benton City, WA	5.18	1965, 1967–77	1974	16.10	322	1/15/74	16.10	322	N	--
12510500	Yakima River at Kiona, WA	5,615	1878, 1897–1914, 1934–93	1934	21.57	67,000	1/18/74	18.65	39,700	Y	--
12510700	Yakima River tributary near Kiona, WA	3.35	1955–74	1974	15.66	5	1/15/74	15.66	5	N	--
12512550	Providence Coulee near Cunningham, WA	52.1	1978–91	1979 1989	5.40 15.10	711 638	2/09/79	5.40	711	N	10
12512600	Hatton Coulee tributary number 2 near Cunningham, WA	2.44	1961–76	1970 1969	9.26 9.80	86 50	1/23/70	9.26	86	N	10
12513000	Esquatzel Coulee at Connell, WA	234	1953–93	1956 1989	12.68 18.27	5,560 1,970	2/09/79	12.76	2,360	N	15–20
12513500	Esquatzel Coulee at Eltopia, WA	551	1953–79	1956	18.23	3,740	1/23/70	13.86	1,160	Y	--
13334300	Snake River near Anatone, WA	92,960	1959–93	1974	24.45	195,000	6/18/74 5/31/84	24.45 23.39	195,000 183,000	Y Y	-- --
13334700	Asotin Creek below Kearney Gulch near Asotin, WA	170	1960–82, 1990–93	1974 1965	-- 7.95	3,700 2,720	1/15/74	--	3,700	N	50–75
13343450	Dry Creek at mouth near Clarkston, WA	6.83	1963–77	1976	15.88	8,150	8/03/76	15.88	8,150	N	>100
13346100	Palouse River at Colfax, WA	497	1956–79	1974	13.36	12,600	1/16/74	13.36	12,600	N	75
13348000	South Fork Palouse River at Pullman, WA	132	1934–42, 1948, 1959–81	1948	9.50	5,000	1/21/72	9.46	4,570	N	50
13349210	Palouse River below South Fork at Colfax, WA	796	1963–93	1974	18.73	16,800	1/21/72 1/16/74	17.98 18.73	14,700 16,800	N N	15–20 25
13349300	Palouse River tributary at Colfax, WA	2.10	1955–88	1963	22.12	183	5/30/80	22.00	182	N	40
13349309	Palouse River tributary at Winona, WA	2.94	1967–77	1974	16.31	77	1/15/74	16.31	77	N	--
13349670	Pleasant Valley Creek tributary near Thornton, WA	0.77	1967–77	1975	10.02	63	3/01/75	10.02	63	N	--
13349800	Imbler Creek tributary near Lamont, WA	1.33	1967–77	1970	14.38	198	8/02/70	14.38	198	N	50
13350800	Willow Creek tributary near LaCrosse, WA	0.95	1967–77	1976	8.39	44	2/16/76	8.39	44	N	--
13353000	Snake River below Ice Harbor Dam, WA	108,500	1910–16, 1963–90	1974 1965	-- 54.07	312,000 265,600	6/19/74	--	312,000	Y	--

Table 49. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Washington—Continued

Station number (fig. 70)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
14015900	Spring Creek tributary near Walla Walla, WA	1.94	1955–74	1972	13.79	228	12/05/71	13.79	228	N	15–25
14016600	Hatley Creek near Dayton, WA	4.12	1955–74	1971 1963	16.52 16.58	253 244	1/19/71	16.52	253	N	10
14034325	Alder Creek near Bickleton, WA	8.35	1963–77	1974	13.68	992	1/16/74	13.68	992	N	15–25
14107000	Klickitat River above West Fork near Glenwood, WA	151	1945–78, 1992–93	1978	4.96	4,800	12/02/77	4.96	4,800	N	75
14110000	Klickitat River near Glenwood, WA	360	1910–56, 1958–79	1934 1978	6.91 8.04	9,870 9,300	1/15/74 12/02/77	7.34 8.04	7,600 9,300	N N	45 >100
14112400	Mill Creek near Blockhouse, WA	26.9	1965–78	1974	5.44	430	1/15/74	5.44	430	N	50–100
14112500	Little Klickitat River near Wahkiacus, WA	280	1945–49, 1951–81	1974	17.58	17,500	1/15/74	17.58	17,500	N	50–75
14113000	Klickitat River near Pitt, WA	1,297	1910–12, 1929–93	1974	17.12	47,400	1/15/74 12/20/82	17.12 14.03	47,400 27,400	N N	100 25
14121300	White Salmon River below Cascades Creek near Trout Lake, WA	32.4	1958–78	1978	4.62	1,510	12/02/77	4.62	1,510	N	35–50
14123500	White Salmon River near Underwood, WA	386	1916–30, 1936–93	1974	12.85	15,300	1/15/74 12/14/77 12/26/80 2/20/82	12.85 10.21 9.75 11.31	15,300 9,980 10,300 12,400	N N N N	75 15 15 25–30
14127200	Layout Creek near Carson, WA	1.80	1966–75	1974 1968	12.78 13.34	575 508	1/15/74	12.78	575	N	10
14128500	Wind River near Carson, WA	225	1935–79	1974	21.91	45,700	1/15/74 12/13/77	21.91 19.33	45,700 31,600	N N	>100 25
14143500	Washougal River near Washougal, WA	108	1945–81	1978	19.60	40,400	1/20/72 12/02/77	16.21 19.60	27,700 40,400	N N	30–45 >100
14212000	Salmon Creek near Battle Ground, WA	18.3	1944–79, 1989	1978	4.86	2,600	12/02/77	4.86	2,600	N	>100
14215000	Rush Creek above falls near Cougar, WA	26.0	1929–31, 1956–62, 1964–74	1973	6.70	2,750	12/21/72	6.70	2,750	N	>100
14216500	Muddy River below Clear Creek near Cougar, WA	131	1928–34, 1955–73, 1984–93	1934 1990	-- 26.75	17,500 13,700	12/09/87	26.20	14,700	N	20
14218000	Lewis River near Cougar, WA	481	1918, 1925–45, 1947–69, 1971–72, 1974, 1976, 1978	1967	16.75	75,400	12/04/75	14.85	50,500	N	75–100
14218300	Dog Creek at Cougar, WA	2.31	1956, 1958–74	1972	17.40	724	12/20/72	17.40	724	N	50–75
14219800	Speelyai Creek near Cougar, WA	12.6	1960–93	1963 1972	5.59 7.25	3,600 3,100	12/02/77	6.73	3,170	N	15
14220500	Lewis River at Ariel, WA	731	1924–93	1934	35.00	129,000	12/02/77	24.38	71,900	Y	--
14222500	East Fork Lewis River near Heisson, WA	125	1930–93	1978 1991	12.95 19.06	19,300 8,490	1/20/72 12/02/77	12.92 12.95	19,200 19,300	N N	40–45 40–45
14223500	Kalama River below Italian Creek near Kalama, WA	198	1947–79	1972	15.80	17,900	1/20/72 12/02/77	15.80 15.23	17,900 16,900	N N	25 5

Table 49. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Washington—Continued

Station number (fig. 70)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1993				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
14225500	Lake Creek near Packwood, WA	19.2	1912–17, 1919–24, 1931–42, 1950–54, 1960–80	1978	7.15	1,690	12/02/77	7.15	1,690	Y	--
14226000	Lake Creek at mouth near Packwood, WA	26.5	1908–15, 1963–77	1976	5.61	1,470	12/04/75	5.61	1,470	Y	--
14226500	Cowlitz River at Packwood, WA	287	1912–20, 1930–93	1934 1978	13.00 13.73	36,600 36,200	12/02/77	13.73	36,200	Y	40
14226800	Skate Creek tributary near Packwood, WA	1.22	1959–77	1976	17.03	147	12/03/75	17.03	147	N	25
14226900	Skate Creek tributary number 2 near Packwood, WA	1.82	1959–75, 1978–88	1974	17.10	542	1/15/74	17.10	542	N	>100
14231700	Chambers Creek near Packwood, WA	5.25	1966–75	1974	9.39	455	1/15/74	9.39	455	N	40–50
14232500	Cispus River near Randle, WA	321	1911–12, 1930–41, 1943–93	1974 1934	12.58 12.70	21,700 20,000	1/15/74 12/02/77	12.58 12.15	21,700 21,200	N N	35 30
14233200	Quartz Creek near Kosmos, WA	1.48	1965–75	1974	15.92	169	1/15/74	15.92	169	N	15–25
14233400	Cowlitz River near Randle, WA	1,030	1949–93	1978	26.54	89,300	12/03/77	26.54	89,300	N	50–75
14236200	Tilton River above Bear Canyon Creek near Cinebar, WA	141	1957–93	1978	17.00	22,500	12/02/77 1/24/82	17.00 15.19	22,500 18,400	N N	20 <10
14238000	Cowlitz River below Mayfield Dam, WA	1,400	1912, 1935–93	1947 1976	24.75 25.26	67,000 64,700	12/04/75	25.26	64,700	Y	--
14240800	Green River above Beaver Creek near Kid Valley, WA	129	1981–93	1986	12.43	14,500	2/23/86	12.43	14,500	N	25
14241100	North Fork Toutle River at Kid Valley, WA	284	1980–93	1982 1980	30.47 45.50	34,000 --	3/19/82	30.47	34,000	N	--
14242500	Toutle River near Silver Lake, WA	474	1910–12, 1920–23, 1930–79	1978 1934	22.56 22.70	43,200 34,300	1/20/72 12/02/77	20.90 22.56	38,000 43,200	N N	20 40
14242580	Toutle River at Tower Road near Silver Lake, WA	496	1982–93	1982 1983	24.25 28.03	38,200 38,000	2/20/82	24.25	38,200	N	20
14243000	Cowlitz River at Castle Rock, WA	2,238	1927–93	1934	31.60	139,000	5/18/80	29.30	97,000	Y	--
14245000	Coweman River near Kelso, WA	119	1950–84	1978	14.67	9,940	12/02/77	14.67	9,940	N	30
14247500	Elochoman River near Cathlamet, WA	65.8	1941–79	1978	13.60	8,900	12/02/77	13.60	8,900	N	35
14248200	Jim Crow Creek near Grays River, WA	5.48	1965–79	1971	6.55	1,020	1/25/71	6.55	1,020	N	10–25
14249000	Grays River above South Fork near Grays River, WA	39.9	1956–79	1972	11.29	9,280	1/20/72	11.29	9,280	N	20

[1]Regulated during flood: N, no; Y, yes.

West Virginia

Hydroclimatology

West Virginia is located in the east-central United States, and its eastern border lies along the Appalachian Mountains. West Virginia's climate is affected primarily by three airmasses—a cold, dry, polar continental airmass, originating over Canada; a tropical, continental airmass, which brings hot, dry air from the Southwest and Mexico; and a tropical, maritime airmass, which carries warm, moist air from the Gulf of Mexico into the State. The topography of the State also plays an important part in West Virginia's climate characteristics. The Appalachian Mountains trend roughly southwest to northeast and result in greater precipitation at higher elevations. There are areas with less rainfall as a result of rain-shadow effects.

West Virginia's moisture originates from the Gulf of Mexico and the Atlantic Ocean. Annual precipitation in West Virginia averages 42 in. statewide. The amount of precipitation depends on location in the State. Areas in the mountains average as much as 100 in/yr, whereas areas in the rain shadow receive an average of about 32 in. annually (Paulson and others, 1991).

Floods in West Virginia are caused by three storm types. In the summer, intense thunderstorms can produce excessive local rainfall. In the fall, remnants of hurricanes or tropical storms can cause widespread flooding. In the winter, storms moving along stalled frontal systems can produce excessive rainfall and flooding. On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the magnitude of maximum discharges for streams in West Virginia depends primarily on drainage area (Jennings and others, 1994).

Significant Floods

On February 26, 1972, a flash flood caused by a dam failure killed 125 people along Buffalo Creek in southwestern West Virginia. Damages were estimated at $100 million (Paulson and others, 1991).

The flood of April 4–5, 1977, in the southern part of West Virginia, was the result of a tropical, maritime airmass that produced widespread rainfall and intense convective thunderstorms. At the time, it was the most destructive flood in the State's history. Rainfall estimates for the 4-day storm exceeded 15 in. along the West Virginia–Virginia border. Damages totalled $60 million (Paulson and others, 1991).

The flood of November 1985 was the most devastating flood in the history of the State. The flood was a result of the remnants of Hurricane Juan combining with an upper level low-pressure system to create a devastating 2-day storm. The storm produced as much as 20 in. of rain in areas between the Ohio River and the Potomac River drainages. Maximum discharges of record were recorded in the Cheat, Elk, Greenbrier, Tygart Valley, Little Kanawha, and South Branch Potomac River Basins. Forty-six percent of the streamflow-gaging stations in the State recorded significant discharges. The flood left more than 500 bridges washed out, major highways eroded, and thousands of acres of prime farmland destroyed. There were 47 deaths and $500 million in damages from this flood (Paulson and others, 1991).

The location of streamflow-gaging stations in West Virginia that had significant floods for 1970–89 is shown in figure 71 by station number. The specific data for each significant flood are listed in table 50. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., 1991, compilers, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.

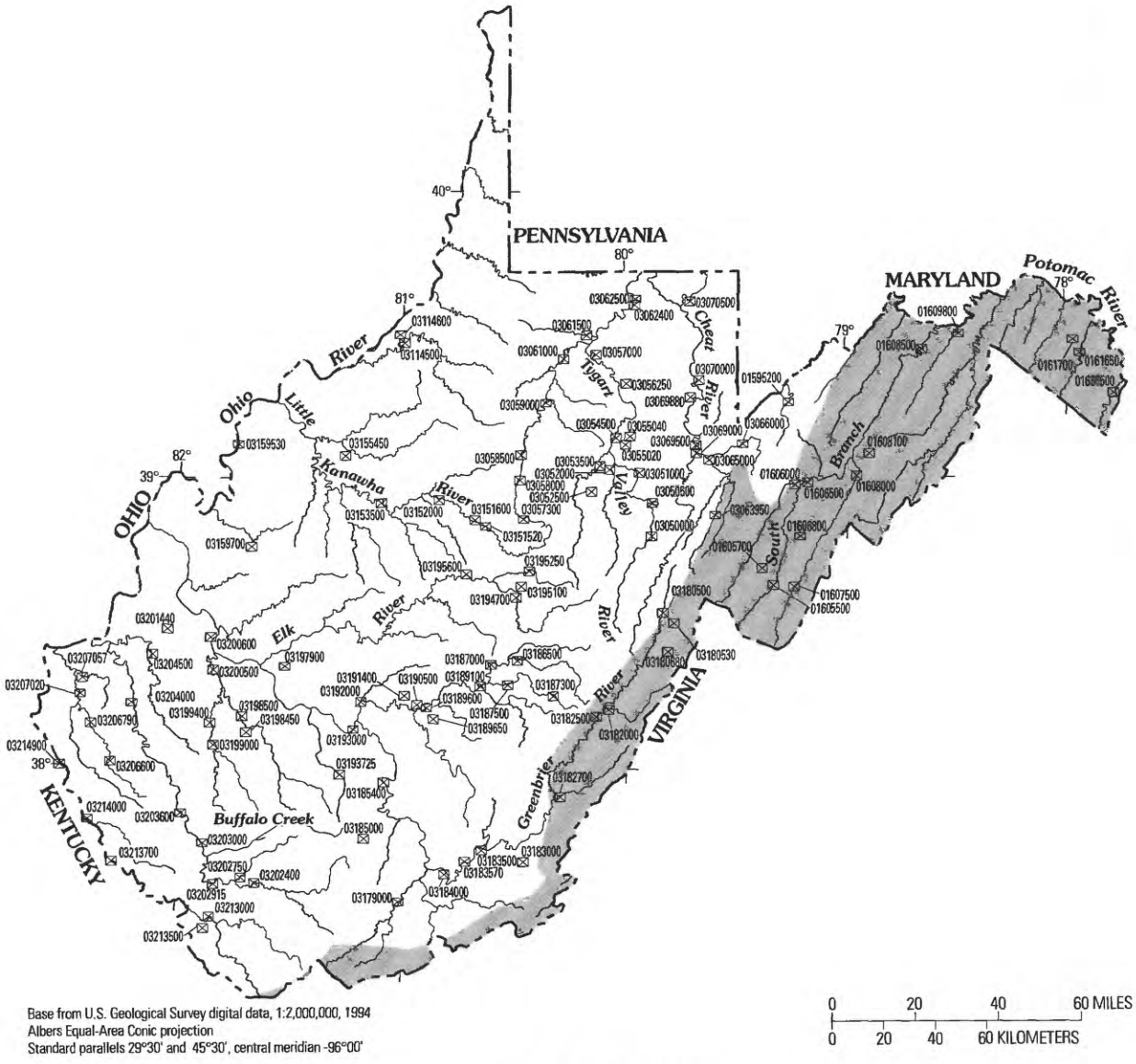


Figure 71. Location of streamflow-gaging stations with significant floods during 1970–89 for West Virginia.

Table 50. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in West Virginia

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
Station number (fig. 71)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
01595200	Stony River near Mount Storm, WV	48.8	1962–94	1986	16.41	14,000	5/31/85 11/05/85	11.85 16.41	7,300 14,000	Y Y	-- --
01605500	South Branch Potomac River at Franklin, WV	182	1936, 1941–69, 1977–94	1986	22.58	44,000	1/04/85	22.58	44,000	N	>100
01605700	Unnamed run on North Fork Mouth near Franklin, WV	0.45	1965–77	1976	4.44	45	--/--/76	4.44	45	N	10–20
01606000	North Fork South Branch Potomac River at Cabins, WV	314	1936, 1940–80, 1986	1986 1949	-- 18.00	90,000 50,000	11/05/85	--	90,000	N	>100
01606500	South Branch Potomac River near Petersburg, WV	642	1877, 1924, 1929–94	1986 1949	21.80 22.83	130,000 62,000	11/05/85	21.80	130,000	N	>100
01606800	Brushy Run near Petersburg, WV	1.43	1965–77	1975	8.00	203	9/23/75	8.00	203	N	10–20
01607500	South Fork South Branch Potomac River at Brandywine, WV	102	1944–94	1949 1986	14.60 18.42	41,200 40,500	11/04/85	18.42	40,500	Y	>100
01608000	South Fork South Branch Potomac River near Moorefield, WV	283	1924, 1929–36, 1939–94	1986	19.99	110,000	11/05/85	19.99	110,000	Y	>100
01608100	Williams Hollow near Moorefield, WV	0.24	1965–77	1972	5.70	75	6/22/72	5.70	75	N	10–20
01608500	South Branch Potomac River near Springfield, WV	1,471	1878, 1900–01, 1904–06, 1929–94	1986	44.22	240,000	11/05/85	44.22	240,000	N	>100
01609800	Little Cacapon River near Levels, WV	108	1967–77	1972	12.97	10,500	6/22/72	12.97	10,500	N	20–30
01616500	Opequon Creek near Martinsburg, WV	272	1906, 1936, 1948–94	1972 1936	17.45 17.50	19,000 19,100	6/22/72 5/19/88	17.45 16.29	19,000 15,500	N N	20–30 10–20
01617000	Tuscarora Creek above Martinsburg, WV	11.3	1949–63, 1968, 1970–77	1975	11.92	610	6/27/75	11.92	610	N	30–40
01636500	Shenandoah River at Millville, WV	3,040	1870, 1896–98, 1900–01, 1903–08, 1924, 1929–94	1943	32.40	230,000	11/06/85	25.60	142,000	N	40–50
03050000	Tygart Valley River near Dailey, WV	187	1916–76, 1986, 1989–94	1986 1932	16.60 17.20	22,000 13,100	11/05/85	16.60	22,000	N	>100
03050500	Tygart Valley River near Elkins, WV	272	1945–94	1986	22.81	23,500	11/05/85	22.81	23,500	N	>100
03051000	Tygart Valley River at Belington, WV	408	1888, 1908–94	1986	23.65	29,500	11/05/85	23.65	29,500	N	>100
03052000	Middle Fork River at Audra, WV	149	1943–79, 1986, 1989–94	1986	15.80	17,100	11/05/85	15.80	17,100	N	75–100
03052500	Sand Run near Buckhannon, WV	14.5	1947–94	1986	8.34	3,200	11/04/85	8.34	3,200	N	75–100
03053500	Buckhannon River at Hall, WV	277	1908, 1916–94	1986	16.88	15,000	11/05/85	16.88	15,000	N	75–100

Table 50. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in West Virginia—Continued

Station number (fig. 71)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03054500	Tygart Valley River at Philippi, WV	916	1912, 1941–94	1986	31.83	61,000	11/05/85	31.83	61,000	N	>100
03055020	Bonica Run on U.S Highway 250 near Phillipi, WV	0.60	1966–77	1971	6.15	156	5/01/71	6.15	156	N	10–20
03055040	Bonica Run on State Route 38 near Phillipi, WV	3.15	1964–77	1971 1968	-- 7.30	660 610	--/--/71	--	660	N	10–20
03056250	Three Fork Creek near Grafton, WV	97.4	1985–94	1986	20.13	12,000	11/05/85	20.13	12,000	N	25–50
03057000	Tygart Valley River at Colfax, WV	1,366	1940–94	1986	18.89	31,700	11/05/85	18.89	31,700	Y	--
03057300	West Fork River at Walkersville, WV	28.9	1985–94	1986	17.87	3,390	11/04/85	17.87	3,390	N	20–50
03058000	West Fork River below Stonewall Jackson Dam near Weston, WV	105	1947–91	1986 1950	16.76 17.20	10,500 6,420	11/05/85	16.76	10,500	N	>100
03058500	West Fork River at Butcherville, WV	181	1916–94	1950 1918	16.81 25.00	18,000 10,700	11/05/85	15.15	14,400	Y	--
03059000	West Fork River at Clarksburg, WV	384	1924–83	1967	23.40	17,800	1/26/78	21.41	16,200	N	10–20
03061000	West Fork River at Enterprise, WV	759	1888, 1908–16, 1934–94	1986 1888	30.37 33.00	41,100 48,000	11/05/85	30.37	41,100	Y	--
03061500	Buffalo Creek at Barrackville, WV	115	1908, 1912, 1916–23, 1933–94	1912	18.00	11,600	11/05/85	14.73	8,000	Y	10
03062400	Cobun Creek at Morgantown, WV	10.9	1966–94	1980	19.94	3,100	8/18/80	19.94	3,100	N	>100
03062500	Deckers Creek at Morgantown, WV	63.2	1947–69, 1972, 1980, 1992–94	1980	12.36	7,550	8/18/80	12.36	7,550	N	75–100
03063950	Job Run near Wymer, WV	1.08	1965–75, 1977	1971	10.40	480	9/12/71	10.40	480	N	75–100
03065000	Dry Fork at Hendricks, WV	345	1941–94	1986	20.74	100,000	11/05/85	20.74	100,000	N	>100
03066000	Blackwater River at Davis, WV	86.2	1922–94	1986	17.67	12,500	11/05/85	17.67	12,500	N	>100
03069000	Shavers Fork at Parsons, WV	214	1888, 1907, 1911–26, 1941–93	1986	19.86	43,000	3/20/82 11/05/85	12.02 19.86	16,800 43,000	N N	15–25 >100
03069500	Cheat River near Parsons, WV	718	1888, 1914–94	1986	24.30	170,000	11/05/85	24.30	170000	N	>100
03069880	Buffalo Creek near Rowlesburg, WV	12.2	1968–78, 1994	1978	8.10	8,400	7/03/78	8.10	8,400	N	>100
03070000	Cheat River at Rowlesburg, WV	937	1844, 1888, 1921, 1924–94	1986	34.90	190,000	11/05/85	34.90	190,000	N	>100
03070500	Big Sandy Creek at Rockville, WV	200	1888, 1910–13, 1915–17, 1922–94	1888	20.00	30,000	6/23/72	15.86	16,200	N	15–25
03114500	Middle Island Creek at Little, WV	458	1875, 1916–22, 1926–94	1875	33.50	30,000	11/05/85	25.12	24,200	N	25–50

Table 50. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in West Virginia—Continued

Station number (fig. 71)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03114600	Little Buffalo Run near Friendly, WV	1.22	1967–77	1974	11.35	635	6/23/74	11.35	635	N	10–25
03151520	Little Kanawha River below Burnsville Dam, WV	163	1977–94	1977	58.81	2,530	10/09/76	58.81	2,530	Y	--
03151600	Little Kanawha River at Burnsville, WV	248	1975–83, 1994	1978	14.30	5,820	1/26/78	14.30	5,820	Y	--
03152000	Little Kanawha River at Glenville, WV	386	1912–94	1986	36.46	26,900	11/05/85	36.46	26,900	Y	--
03153500	Little Kanawha River at Grantsville, WV	913	1929–94	1967	43.90	35,100	11/05/85	42.87	33,700	Y	--
03155450	Big Island Run near Elizabeth, WV	3.52	1965–74, 1976–77, 1994	1971	10.80	1,690	8/04/71	10.80	1,690	N	10–25
03159530	Ohio River at Belleville Dam, WV	39,300	1975–85	1978 1975	-- --	390,000 334,000	1/27/78	--	390,000	Y	--
03159700	Grasslick Run near Ripley, WV	0.70	1965–77	1971	12.00	615	7/19/71	12.00	615	N	50–100
03179000	Bluestone River near Pipestem, WV	394	1951–94	1977	15.82	19,300	4/05/77	15.82	19,300	N	40–60
03180500	Greenbrier River at Durbin, WV	133	1944–94	1986	15.82	37,100	3/20/82 11/04/85	8.76 15.82	11,000 37,100	N N	10–20 >100
03180530	Brush Run near Bartow, WV	1.28	1966–75, 1977	1977	6.28	200	10/09/76	6.28	200	N	10
03180680	Cooper Run near Green Bank, WV	1.52	1965–77	1973	7.20	240	10/05/72	7.20	240	N	10–20
03182000	Knapp Creek at Marlinton, WV	108	1946–58, 1986, 1989, 1994	1986	17.80	20,000	11/05/85	17.80	20,000	N	>100
03182500	Greenbrier River at Buckeye, WV	540	1930–94	1986	23.20	82,000	11/05/85	23.20	82,000	N	>100
03182700	Anthony Creek near Anthony, WV	144	1972–82	1974	19.30	19,700	12/26/73	19.30	19,700	N	10–20
03183000	Second Creek near Second Creek, WV	80.8	1946–73	1972	9.41	7,460	6/21/72	9.41	7,460	N	25–50
03183500	Greenbrier River at Alderson, WV	1,364	1896–94	1986	23.95	90,600	11/05/85	23.95	90,600	N	>100
03183570	Buggar Lick at Pence Springs, WV	2.71	1966–77	1977	9.44	546	4/05/77	9.44	546	N	25–50
03184000	Greenbrier River at Hilldale, WV	1,619	1936–94	1986	25.68	83,800	12/27/73 4/05/77 11/06/85	23.13 22.79 25.68	66,800 65,000 83,800	N N N	15–25 15–25 >100
03185000	Piney Creek at Raleigh, WV	52.2	1952–82	1963	6.49	3,050	4/05/77	6.45	3,020	N	15–25
03185400	New River at Thurmond, WV	6,687	1981–94	1984	18.64	80,000	2/15/84	18.64	80,000	Y	--
03186500	Williams River at Dyer, WV	128	1930–94	1932	18.45	22,000	8/30/84 11/04/85	17.73 16.69	21,500 19,400	N N	45–55 30–40
03187000	Gauley River at Camden on Gauley, WV	236	1902, 1909–16, 1930–77, 1979, 1981–94	1932	27.38	42,500	6/10/81 11/04/85	21.68 23.12	26,000 30,500	N N	15–25 30–40

Table 50. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in West Virginia—Continued

Station number (fig. 71)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03187300	North Fork Cranberry River near Hillsboro, WV	9.78	1969–82, 1994	1979	4.94	1,930	3/05/79	4.94	1,930	N	15–25
03187500	Cranberry River near Richwood, WV	80.4	1945–51, 1954, 1965–82, 1984–94	1954	12.22	12,200	3/21/84	11.98	11,270	N	20–30
03189100	Gauley River near Craigsville, WV	529	1965–83, 1986–94	1986	25.72	61,800	11/04/85	25.72	61,800	N	40–50
03189600	Gauley River below Summersville, WV	806	1967–94	1989	19.39	18,200	8/24/89	19.39	18,200	Y	--
03189650	Collison Creek near Nallen, WV	2.78	1966–77	1974	9.81	342	6/02/74	9.81	342	N	10–20
03190500	Meadow Creek near Summersville, WV	4.22	1966–76	1976	8.24	512	12/31/75	8.24	512	N	10–20
03191400	Laurel Creek near Summersville, WV	4.28	1966–77, 1994	1974	11.12	530	6/02/74	11.12	530	N	5–15
03192000	Gauley River above Belva, WV	1,317	1918, 1929–94	1918	30.00	112,000	7/02/86	17.90	42,200	Y	--
03193000	Kanawha River at Kanawha Falls, WV	8,371	1878–1994	1878	37.80	320,000	2/26/72	20.62	132,000	Y	--
03193725	Little Fork near Mossy, WV	0.42	1966–77	1974	5.82	48	6/02/74	5.82	48	N	25–50
03194700	Elk River below Webster Springs, WV	266	1960–83, 1986–94	1986	17.20	38,000	11/04/85 4/26/89	17.20 16.02	38,000 32,400	N N	>100 50–75
03195100	Right Fork Holly River at Guardian, WV	51.9	1975–82, 1986–87	1979	14.50	6,400	7/16/79	14.50	6,400	N	25–50
03195250	Left Fork Holly River near Replete, WV	46.5	1975–82, 1986–94	1986	11.98	3,480	11/04/85	11.98	3,480	N	5–15
03195600	Granny Creek at Sutton, WV	6.98	1966–77, 1994	1994	14.91	1,615	6/16/75	14.03	1,510	N	10–20
03197900	Elk Twomile Creek tributary near Charleston, WV	0.49	1964–75	1973	8.94	210	6/21/73	8.94	210	N	20–30
03198450	Drawdy Creek near Peytona, WV	7.75	1965–77, 1994	1974	12.93	1,400	11/27/73	12.93	1,400	N	25–50
03198500	Big Coal River at Ashford, WV	391	1909–16, 1931–94	1916	35.66	35,800	1/26/78	26.05	25,100	N	15–25
03199000	Little Coal River at Danville, WV	269	1931–84	1939	27.35	42,800	1/26/78	25.80	23,400	N	10–20
03199400	Little Coal River at Julian, WV	318	1975–84	1979	28.86	23,800	12/09/78	28.86	23,800	N	10–20
03200500	Coal River at Tornado, WV	862	1909–11, 1929–31, 1962–94	1967	31.98	39,000	12/09/78	29.65	34,400	N	10–20
03200600	Little Scary Creek near Nitro, WV	0.87	1966–77	1975	13.50	224	10/16/74	13.50	224	N	20–30
03201440	Sixteenmile Creek near Pliny, WV	1.04	1965–77	1973	13.10	870	-/--/73	13.10	870	N	20–30
03202400	Guyandotte River near Baileysville, WV	306	1969–94	1977	26.89	36,700	4/05/77	26.89	36,700	N	50–75
03202750	Clear Fork at Clear Fork, WV	126	1975–94	1977	18.64	9,900	4/05/77	18.64	9,900	N	30–40
03202915	Guyandotte River below R.D. Bailey Dam, WV	535	1980–94	1980	10.72	7,810	5/01/80	10.72	7,810	Y	--

Table 50. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in West Virginia—Continued

Station number (fig. 71)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
03203000	Guyandotte River at Man, WV	758	1929–94	1963	24.78	49,000	1/11/74	20.22	34,400	Y	--
03203600	Guyandotte River at Logan, WV	833	1961–94	1963	34.98	55,000	1/11/74	30.76	44,400	Y	--
03204000	Guyandotte River at Branchland, WV	1,224	1907, 1916–22, 1929–94	1963 1907	43.83 44.00	44,500 43,500	1/13/74	41.59	40,100	Y	--
03204500	Mud River near Milton, WV	256	1938–80	1962 1979	28.60 29.38	18,800 20,700	12/09/78	29.38	20,700	N	45–55
03206600	East Fork Twelvepole Creek near Dunlow, WV	38.5	1965–94	1979	15.84	5,040	12/09/78 6/16/89	15.84 14.74	5,040 4,130	N N	>100 30–40
03206790	East Fork Twelvepole Creek below East Lynn Dam, WV	138	1939, 1962–86, 1994	1939	37.00	13,000	2/06/72	25.61	3,280	Y	--
03207020	Twelvepole Creek below Wayne, WV	300	1916–22, 1928–31, 1939, 1947–83, 1994	1939 1979	-- 27.88	22,000 10,500	12/09/78	27.88	10,500	Y	--
03207057	Beech Fork below Beech Fork Dam, WV	79.2	1977–86, 1994	1977	10.29	1,840	4/05/77	10.29	1,840	Y	--
03213000	Tug Fork at Litwar, WV	504	1931–86	1977	27.37	54,500	4/04/77 5/07/84	27.37 18.89	54,500 30,300	N N	>100 15–25
03213500	Panther Creek near Panther, WV	31.0	1947–85	1977	12.10	6,160	4/04/77 5/07/84	12.10 11.32	6,160 5,040	N N	30–40 10–20
03213700	Tug Fork at Williamson, WV	936	1968–94	1977	52.56	94,000	4/05/77	52.56	94,000	N	>100
03214000	Tug Fork near Kermit, WV	1,188	1935–85	1977	52.91	104,000	4/06/77 5/08/84	52.91 48.50	104,000 82,200	N N	75–100 30–40
03214900	Tug Fork at Glenhayes, WV	1,507	1977–83, 1991–94	1977	44.00	50,000	4/06/77	44.00	50,000	N	20–30

[1]Regulated during flood: N, no; Y, yes.

Wisconsin

Hydroclimatology

Wisconsin is located in the north-central United States and is bordered on the northwest and east by the Great Lakes. The principal moisture-bearing airmasses originate in the Gulf of Mexico. Moisture is also brought to the State from airmasses originating in the Pacific Ocean, but these airmasses lose most of their moisture crossing the Rocky Mountains. Lake-effect precipitation is a minor source of moisture for Wisconsin. The lake effect is most noticeable in the early winter when the cold air blowing over the unfrozen Great Lakes absorbs moisture, which then is precipitated as snow on the shores of the lakes.

Floods in Wisconsin usually are caused by thunderstorms associated with slow-moving frontal systems in the summer. Winter floods can occur when rain falls on snow causing rapid snowmelt. Ice jam floods are also a hazard in Wisconsin.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, factors affecting the magnitude of maximum discharges for streams in Wisconsin are drainage area; storage, which is the percentage of drainage area covered by lakes, swamps, and wetlands; 2-year, 24-hour rainfall; mean annual snowfall for 1951 through 1980; soil permeability of the least-permeable soil horizon; and forest cover, which is the percentage of drainage area covered by forest. The factors that are significant in urban areas are drainage area and percentage of drainage area that is impervious (Jennings and others, 1994).

Significant Floods

Significant flooding occurred in Wisconsin in March and April 1973. Snowmelt floods combined with excessive rainfall associated with thunderstorm activity and produced flooding in central and southern Wisconsin. Twelve percent of the streamflow-gaging stations in the State recorded significant discharges during March and April 1973.

A series of thunderstorms caused flooding in July 1978. The storms were positioned and moved along a stationary frontal boundary that stretched across southern Wisconsin. The flooding was most intense near the Wisconsin-Minnesota border. The flooding may have been less severe if the area's soils had not already been nearly saturated by rainfall in June.

The Milwaukee area received intense flooding on August 6, 1986. Severe thunderstorms produced 6.8 in. of rain in 24 hours (Paulson and others, 1991). Eleven percent of the streamflow-gaging stations in the State recorded significant discharages.

The location of streamflow-gaging stations in Wisconsin that had significant floods for 1970–89 is shown in figure 72 by station number. The specific data for each significant flood are listed in table 51. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., compilers, 1991, National water summary, 1988–89—Hydrologic events and floods and droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.

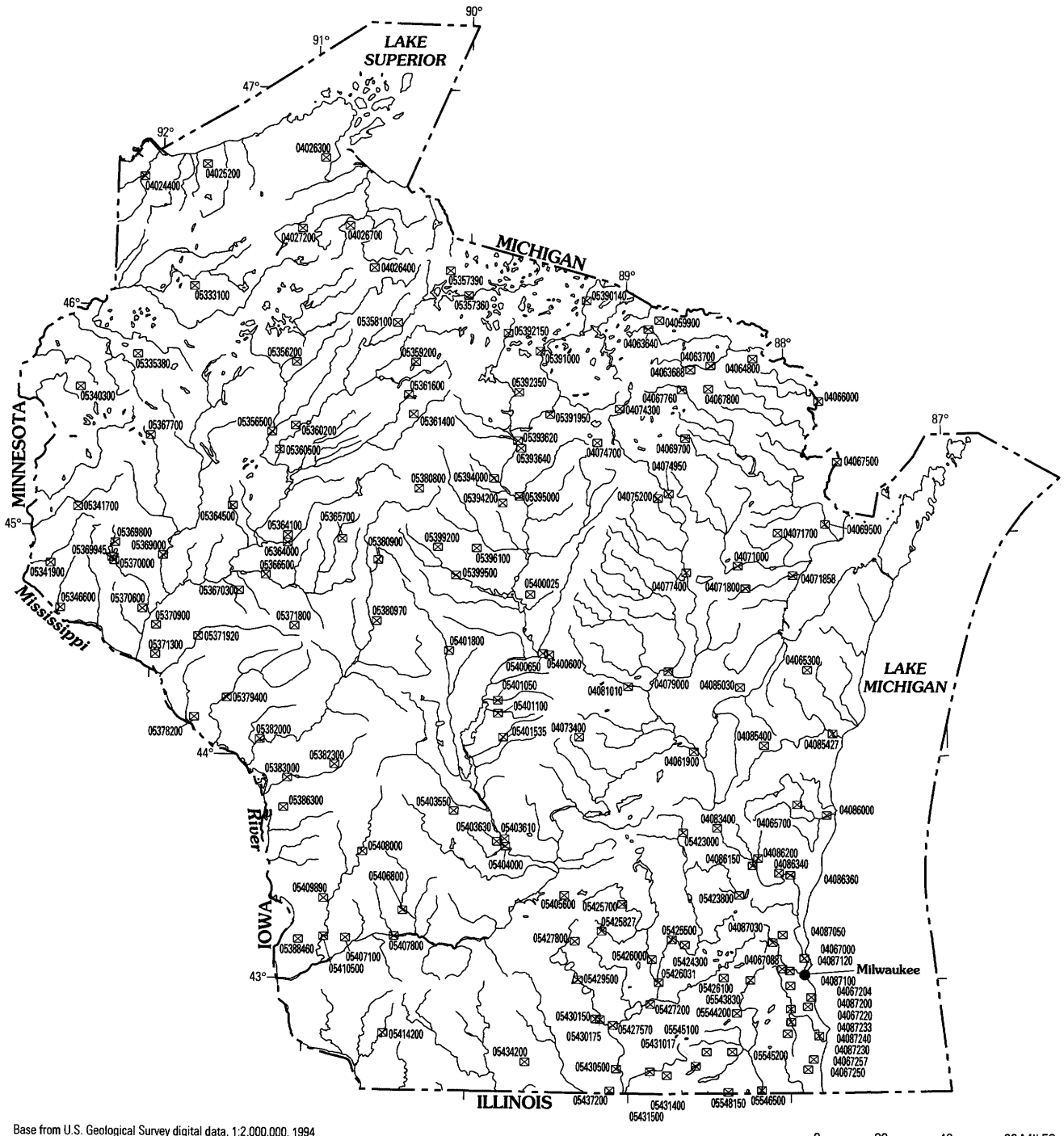


Figure 72. Location of streamflow-gaging station with significant floods during 1970–89 for Wisconsin.

Table 51. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wisconsin

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

Station number (fig. 72)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04024400	Stoney Brook near Superior, WI	1.86	1959–94	1985	35.23	595	9/20/72	26.63	460	N	20
							9/02/85	35.23	595	N	50–100
04025200	Pearson Creek near Maple, WI	4.07	1957–94	1985	31.83	1,440	9/02/85	31.83	1,440	N	25–50
04026300	Sioux River near Washburn, WI	33.9	1959–94	1985	29.45	2,200	9/02/85	29.45	2,200	N	50–100
04026400	Spillerberg Creek near Cayuga, WI	6.59	1958–81	1978	15.57	170	8/23/78	15.57	170	N	25–50
04026700	Trout Brook tributary near Marengo, WI	0.66	1960–81	1977	14.00	305	8/31/77	14.00	305	N	20
04027200	Pearl Creek at Grandview, WI	16.9	1960–94	1992	28.47	1,920	8/16/72	15.99	540	N	20
04059900	Allen Creek tributary near Alvin, WI	1.22	1960–94	1983	11.38	40	5/22/83	11.38	40	N	50
							7/09/87	11.18	33	N	25
04063640	North Branch Pine River at Windsor Dam near Alvin, WI	27.8	1967, 1970–77, 1980–93	1980	3.89	165	4/09/80	3.89	165	N	>100
04063688	South Branch Popple River near Newald, WI	9.47	1970–93	1971	12.81	71	4/15/71	12.81	71	N	25–50
04063700	Popple River near Fence, WI	139	1964–94	1979	4.52	1,640	5/02/72	4.14	1,120	N	15–20
							4/25/79	4.52	1,640	N	100
04064800	Little Popple River near Aurora, WI	35.0	1970–93	1970	15.50	595	5/31/70	15.50	595	N	20–25
				1986	15.57	530					
04066000	Menominee River near Pembine, WI	3,110	1950–82	1960	13.90	26,900	6/16/81	15.84	18,500	Y	5
				1981	15.84	18,500					
04067500	Menominee River near McAllister, WI	3,930	1945–67, 1969–76, 1978, 1980–90 1993–94	1960	20.00	32,500	5/03/72	17.27	23,600	Y	10
04067760	Peshtigo River near Cavour, WI	150	1970–94	1979	15.06	1,440	6/10/79	15.06	1,440	N	20
04067800	Armstrong Creek near Armstrong Creek, WI	23.2	1958–92	1992	11.40	287	4/25/75	11.28	260	N	40–50
04069500	Peshtigo River at Peshtigo, WI	1,080	1954–94	1960	11.59	9,790	5/30/73	10.79	7,550	N	20
04069700	North Branch Oconto River near Wabeno, WI	34.1	1970–94	1981	13.62	420	6/14/81	13.62	420	N	50–75
04071000	Oconto River near Gillett, WI	705	1907–08, 1912, 1914–94	1922	11.20	8,400	3/10/73	9.08	4,900	N	20
04071700	North Branch Little River near Coleman, WI	21.4	1958–94	1967	14.50	640	3/30/76	14.12	520	N	10–25
04071800	Pensaukee River near Pulaski, WI	48.8	1961–93	1973	17.10	1,700	5/28/73	17.10	1,700	N	20
04071858	Pensaukee River near Pensaukee, WI	134	1973–94	1979	13.58	4,310	3/31/79	13.58	4,310	N	20
04073400	Bird Creek at Wautoma, WI	4.14	1959–94	1973	13.07	190	3/07/73	13.07	190	N	50–100
04074300	Mud Creek near Nashville, WI	9.05	1970–93	1981	14.06	105	6/14/81	14.06	105	N	50
04074700	Hunting River near Elcho, WI	9.00	1958–93	1959	12.98	200	4/23/75	12.72	160	N	25

Table 51. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wisconsin—Continued

Station number (fig. 72)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04074950	Wolf River at Langlade, WI	463	1968–79, 1981–94	1973 1990	9.48 10.02	2,200 2,010	3/15/73	9.48	2,200	N	25
04075200	Evergreen Creek near Langlade, WI	8.09	1959–79, 1981–92, 1994	1982	11.66	80	7/11/82	11.66	80	N	50
04077400	Wolf River near Shawano, WI	816	1908, 1912–94	1973 1986	-- 12.91	5,200 4,440	3/15/73 4/01/76 4/01/86	-- 11.41 12.91	5,200 4,500 4,440	N N N	>100 40–50 40–50
04079000	Wolf River at New London, WI	2,260	1896–1907, 1937–94	1952 1973	11.00 11.22	15,200 14,100	3/16/73	11.22	14,100	N	40
04081010	Waupaca River tributary near Waupaca, WI	1.98	1960–81	1973	15.09	106	3/07/73	15.09	106	N	10–25
04081900	Sawyer Creek at Oshkosh, WI	12.0	1961–71, 1973–94	1986	17.47	2,350	9/11/86	17.47	2,350	N	40
04083400	East Branch Fond du Lac River tributary near Eden, WI	0.99	1961–81	1978 1980	13.01 14.59	135 135	5/13/78	13.01	135	N	10–20
04085030	Apple Creek near Kaukauna, WI	15.2	1960–93	1993	15.58	1,900	10/18/84	15.29	1,510	N	10
04085300	Neshota River tributary near Denmark, WI	4.31	1959–92	1990	16.46	1,040	3/24/86	14.74	560	N	20
04085400	Killsnake River near Chilton, WI	29.4	1961–94	1979	14.37	1,840	3/30/79	14.37	1,840	N	40–50
04085427	Manitowoc River at Manitowoc, WI	526	1973–91, 1993–94	1979	13.24	8,280	3/31/79	13.24	8,280	N	50–100
04085700	Sheboygan River tributary near Plymouth, WI	6.51	1959–73, 1975–80	1975	12.87	410	3/23/75	12.87	410	N	50–100
04086000	Sheboygan River at Sheboygan, WI	418	1917–23, 1951–91, 1993–94	1975	11.64	7,680	3/22/75 5/13/78	11.64 11.42	7,680 7,410	N N	30–35 25
04086150	Milwaukee River at Kewaskum, WI	138	1968–81	1975	9.15	3,040	3/22/75	9.15	3,040	N	>50
04086200	East Branch Milwaukee River at New Fane, WI	54.1	1969–81	1975 1974	5.44 5.93	743 210	3/24/75	5.44	743	N	>50
04086340	North Branch Milwaukee River near Fillmore, WI	148	1969–81	1975	8.21	3,100	3/22/75	8.21	3,100	N	>50
04086360	Milwaukee River at Waubeka, WI	432	1968–81, 1984	1975	11.35	6,990	3/23/75	11.35	6,990	N	>50
04087000	Milwaukee River at Milwaukee, WI	696	1915–94	1918 1973	-- 9.29	15,100 12,600	4/21/73	9.29	12,600	N	70
04087030	Menomonee River at Menomonee Falls, WI	34.7	1975–77, 1980–94	1986 1981	6.49 6.57	1,440 1,010	9/11/86	6.49	1,440	N	>50
04087050	Little Menomonee River near Freistadt, WI	8.00	1958–93	1973 1986	13.14 13.28	360 360	4/21/73 9/11/86	13.14 13.28	360 360	N N	20 20
04087088	Underwood Creek at Wauwatosa, WI	18.2	1979–94	1981 1994	5.55 7.72	2,100 1,800	7/13/81	5.55	2,100	N	25–50
04087100	Honey Creek at Milwaukee, WI	3.26	1959–94	1983	22.60	1,050	9/18/72 12/02/82	21.54 22.60	680 1,050	N N	15 >100
04087120	Menomonee River at Wauwatosa, WI	123	1962–94	1973	13.92	13,500	4/21/73 8/06/86	13.92 13.13	13,500 10,600	N N	>100 40–50
04087200	Oak Creek near South Milwaukee, WI	13.8	1958–94	1960	17.49	1,100	9/18/72	17.08	740	N	20
04087204	Oak Creek at South Milwaukee, WI	25.0	1964–94	1986	9.88	1,140	9/13/78 8/06/86	8.19 9.88	1,020 1,140	N N	20–25 40–50

Table 51. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wisconsin—Continued

Station number (fig. 72)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
04087220	Root River near Franklin, WI	49.2	1960, 1964–94	1960	9.57	5,130	4/21/73	9.31	3,700	N	40–50
04087230	West Branch Root River Canal tributary near North Cape, WI	3.99	1962–93	1987	12.88	182	9/11/86 8/17/87	12.68 12.88	168 182	N N	15 20
04087233	Root River Canal near Franklin, WI	57.0	1964–94	1974 1993	9.88 10.36	1,440 1,260	3/04/74	9.88	1,440	N	35–40
04087240	Root River at Racine, WI	190.0	1964–94	1974	8.54	4,500	4/22/73 3/05/74	7.88 8.54	3,790 4,500	N N	20 50
04087250	Pike Creek near Kenosha, WI	7.25	1960–94	1978 1994	17.60 17.63	220 100	9/17/78	17.60	220	N	30
04087257	Pike River near Racine, WI	38.5	1974, 1976–94	1976 1994	8.15 9.14	1,480 940	3/04/76	8.15	1,480	N	25
05333100	Little Frog Creek near Minong, WI	13.0	1961–91, 1993	1982	16.31	600	5/11/82	16.31	600	N	20
05335380	Bashaw Brook near Shell Lake, WI	24.9	1959–93	1965	14.90	600	3/04/83	14.16	375	N	35–40
05340300	Trade River near Fredric, WI	6.34	1958–94	1984	18.89	1,050	6/12/84	18.89	1,050	N	>100
05341700	Willow River tributary near New Richmond, WI	1.40	1959–80	1980 1971	12.75 12.86	134 100	9/04/80	12.75	134	N	10
05341900	Kinnickinnic River tributary at River Falls, WI	7.26	1959–81, 1983–94	1988	15.99	5,200	7/02/78 8/09/88	15.95 15.99	5,100 5,200	N N	20–25 20–25
05346600	Little Trimbelle Creek near Bay City, WI	19.9	1961–80	1978	13.93	3,100	7/02/78	13.93	3,100	N	25–50
05356200	Kenyon Creek near Radisson, WI	7.91	1960–80	1978	13.05	360	7/06/78	13.05	360	N	20
05356500	Chippewa River near Bruce, WI	1,650	1914–94	1994 1941	18.12 20.46	29,000 25,800	4/01/86	15.18	17,500	Y	20
05357360	Bear River near Powell, WI	120	1970–94	1982 1985	12.83 12.87	720 650	4/16/82	12.83	720	N	15
05357390	Weber Creek near Mercer, WI	7.10	1970–93	1972	12.65	270	8/17/72	12.65	270	N	40–50
05358100	Smith Creek near Park Falls, WI	9.46	1970–93	1985	14.49	330	9/08/85	14.49	330	N	30–40
05359200	South Fork Flambeau River tributary near Park Falls, WI	1.61	1960–67 1969–80	1979	12.09	110	4/20/79	12.09	110	N	30–40
05360200	Flambeau River tributary at Ladysmith, WI	1.04	1960–80	1977	12.64	48	5/20/77	12.64	48	N	30–50
05360500	Flambeau River near Bruce, WI	1,860	1952–94	1994	12.44	24,100	4/02/86	10.45	17,600	Y	15
05361400	Hay Creek near Prentice, WI	22.6	1961–94	1994 1967	15.39 15.41	1,650 975	3/31/86	14.47	1,090	N	20
05361600	North Fork Jump River near Phillips, WI	10.5	1970–93	1981 1993	12.72 12.83	250 240	6/14/81	12.72	250	N	15
05364000	Yellow River at Cadott, WI	364	1943–86, 1988–94	1986	15.82	16,600	9/22/86	15.82	16,600	N	75–100
05364100	Seth Creek near Cadott, WI	3.25	1962–94	1986	18.00	785	8/08/80 9/22/86	16.78 18.00	690 785	N N	30–35 50–100
05364500	Duncan Creek at Bloomer, WI	50.3	1945–51, 1958–94	1979	11.81	5,400	6/29/79 6/06/80	11.81 11.80	5,400 5,400	N N	30–40 30–40

Table 51. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wisconsin—Continued

Station number (fig. 72)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05365700	Goggle-Eye Creek near Thorp, WI	6.42	1958–93	1980	21.68	2,880	6/05/80	21.68	2,880	N	50–100
05366500	Eau Claire River near Fall Creek, WI	760	1943–55, 1958, 1960–94	1993	19.38	24,500	3/29/89	17.94	21,400	N	20
05367030	Willow Creek near Eau Claire, WI	3.83	1958–94	1959	14.12	400	9/22/86	13.37	325	N	25
05367700	Lightning Creek at Almena, WI	19.0	1958–86, 1988–94	1967 1991	12.39 12.71	1,550 750	4/06/70	12.08	1,210	N	20
05369000	Red Cedar River at Menomonie, WI	1,770	1908, 1913–23, 1925–94	1934	16.00	40,000	3/28/89	8.12	16,800	N	10
05369800	Eau Galle River tributary near Hersey, WI	0.56	1960–80	1980	16.43	480	6/06/80	16.43	480	N	>50
05369945	Eau Galle River at low-water bridge at Spring Valley, WI	47.9	1982–83, 1986–94	1986	8.80	6,000	9/21/86	8.80	6,000	N	10–25
05370000	Eau Galle River at Spring Valley, WI	64.1	1942, 1944–70, 1972–94	1942 1980	-- 19.90	33,000 3,030	8/31/77	19.24	3,470	Y	20
05370600	Arkansaw Creek tributary near Arkansaw, WI	2.61	1959–93	1992	14.82	525	8/23/75	14.10	420	N	25
05370900	Spring Creek near Durand, WI	6.45	1962–94	1975	15.71	860	8/23/75	15.71	860	N	50–100
05371300	By Golly Creek near Nelson, WI	0.28	1962–73, 1975–80	1975	13.31	154	8/23/75	13.31	154	N	25–50
05371800	Buffalo River tributary near Osseo, WI	1.44	1960–94	1978	12.85	188	9/12/78	12.85	188	N	50–100
05371920	Buffalo River near Mondovi, WI	279	1974–80, 1982–94	1975	15.39	5,180	9/10/75	15.39	5,180	N	25
05378200	Eagle Creek near Fountain City, WI	26.8	1961–80, 1982–92	1978	18.35	6,000	7/07/78 9/07/80	18.35 17.36	6,000 2,500	N N	>100 15–20
05379400	Trempealeau River at Arcadia, WI	552	1968–77	1975	8.64	15,900	8/23/75	8.64	15,900	N	25–50
05380800	Black River tributary near Whittlesey, WI	2.12	1960–86, 1988–93	1980	13.33	305	9/21/80	13.33	305	N	50–100
05380900	Poplar River near Owen, WI	157	1958–82, 1984–94	1980	20.12	12,500	6/06/80	20.12	12,500	N	25
05380970	Cawley Creek near Neillsville, WI	38.6	1961–94	1986	20.62	7,880	9/12/78 9/22/86	20.24 20.62	7,400 7,880	N N	25 30
05382000	Black River near Galesville, WI	2,080	1932–94	1967 1993	14.63 16.64	65,500 64,000	9/23/80	15.46	44,400	N	15
05382300	Beaver Creek tributary near Sparta, WI	1.72	1959–80	1977	14.49	370	6/06/77	14.49	370	N	>100
05383000	La Crosse River near West Salem, WI	398	1914–70, 1978	1935 1978	12.20 12.82	8,200 7,600	7/02/78	12.82	7,600	N	75–100
05386300	Morman Creek near La Crosse, WI	25.2	1961–93	1978	20.60	6,600	7/02/78 7/11/81	20.60 18.98	6,600 5,120	N N	50 25
05388460	Du Charme Creek at Eastman, WI	0.30	1961–81	1978	14.85	415	6/17/78	14.85	415	N	>100
05390140	Muskrat Creek at Conover, WI	10.2	1970–91, 1993	1971	13.26	122	4/11/71	13.26	122	N	25–50

Table 51. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wisconsin—Continued

Station number (fig. 72)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05391000	Wisconsin River at Rainbow Lake near Lake Tomahawk, WI	757	1937–94	1941	7.59	3,570	6/20/81	6.14	2,520	Y	--
05391950	Squaw Creek near Harrison, WI	3.23	1970–94	1987	11.35	51	3/03/87	11.35	51	N	25
05392150	Mishonagon Creek near Woodruff, WI	17.6	1958–94	1972	11.33	117	8/17/72 8/23/78	11.33 11.20	117 110	N N	50 30
05392350	Bearskin Creek near Harshaw, WI	31.1	1959–79, 1981–94	1981	10.97	180	6/14/81	10.97	180	N	>100
05393620	Skanawan Creek near Tomahawk, WI	6.69	1970–79, 1981	1981	14.26	335	6/14/81	14.26	335	N	>100
05393640	Little Pine Creek near Irma, WI	22.0	1970–94	1981	14.38	310	6/14/81	14.38	310	N	50–100
05394000	New Wood River near Merrill, WI	82.2	1953–76, 1978–80	1980	8.20	3,500	9/21/80	8.20	3,500	N	25–50
05394200	Devil Creek near Merrill, WI	9.58	1961–94	1990	17.98	1,600	9/21/80	15.11	765	N	20
05395000	Wisconsin River at Merrill, WI	2,760	1903–94	1941	18.26	49,400	4/01/86	12.57	21,900	Y	--
05396100	Pet Brook near Edgar, WI	6.86	1962–92	1980	20.40	2,280	6/06/80	20.40	2,280	N	40–50
05399200	Marsh Creek tributary near Abbotsford, WI	0.56	1959–80	1980	14.29	385	6/05/80	14.29	385	N	20–25
05399500	Big Eau Pleine River near Stratford, WI	224	1914–25, 1937–91, 1993–94	1938	24.50	41,000	6/06/80	23.47	32,900	N	>100
05400025	Johnson Creek near Knowlton, WI	25.1	1973–94	1980	21.78	3,700	6/06/80	21.78	3,700	N	>100
05400600	Little Plover River near Arnott, WI	2.24	1960–75	1973 1962	3.25 3.43	72 66	3/07/73	3.25	72	N	10
05400650	Little Plover River at Plover, WI	19.0	1960–87	1985	3.19	105	1/01/84	3.19	105	N	30–50
05401050	Tenmile Creek near Nekoosa, WI	73.3	1964–79, 1988–94	1979	6.62	456	3/15/73	6.47	411	N	50–100
05401100	Fourteenmile Creek near New Rome, WI	91.1	1961–79	1973 1961	6.05 12.36	546 260	5/09/73	6.05	546	N	>100
05401535	Big Roche a Cri Creek near Adams, WI	52.8	1964–78	1973	6.82	623	3/09/73	6.82	623	N	>100
05401800	Yellow River tributary near Pittsville, WI	7.23	1959–94	1973	13.82	810	5/02/73	13.82	810	N	35
05403550	Onemile Creek near Mauston, WI	30.2	1958–93	1984	17.18	2,800	6/17/84	17.18	2,800	N	50–100
05403610	Wisconsin River tributary at Wisconsin Dells, WI	1.39	1962–80	1974	11.20	38	5/14/74	11.20	38	N	25
05403630	Hulbert Creek near Wisconsin Dells, WI	11.2	1972–93	1980	6.41	470	8/08/80	6.41	470	N	>100
05404000	Wisconsin River near Wisconsin Dells, WI	8,090	1935–94	1938 1973	18.83 20.70	72,200 62,600	9/30/86 --/--/73	17.89 20.70	53,400 62,600	Y Y	5–10 20
05405600	Rowan Creek at Poynette, WI	10.4	1961–94	1965	17.90	2,260	5/02/73	16.50	1,330	N	30–35
05406800	Rocky Branch near Richland Center, WI	1.68	1960–93	1972	17.40	870	8/26/72	17.40	870	N	50–100
05407000	Wisconsin River at Muscoda, WI	10,400	1881, 1914–94	1938	11.48	80,800	10/03/86	9.77	55,500	Y	10

Table 51. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wisconsin—Continued

Station number (fig. 72)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
05407100	Richland Creek near Plugtown, WI	19.2	1958–93	1982	18.87	4,400	8/04/82	18.87	4,400	N	50–75
							8/25/83	17.86	3,100	N	25–35
05408000	Kickapoo River at La Farge, WI	266	1939–94	1978	14.92	14,300	7/01/78	14.92	14,300	N	>100
05409890	Nederlo Creek near Gays Mills, WI	9.46	1968–80	1978	18.65	8,000	6/30/78	18.65	8,000	N	50–100
05410500	Kickapoo River at Steuben, WI	690	1934–82	1978	14.81	16,500	7/03/78	14.81	16,500	N	>100
05414200	Bear Branch near Platteville, WI	2.72	1958–93	1974	20.35	1,330	6/20/74	20.35	1,330	N	50–100
							7/18/77	17.74	910	N	20
05423000	West Branch Rock River near Waupun, WI	40.7	1949–81	1975	6.51	1,140	3/24/75	6.51	1,140	N	20
				1966	6.89	850					
05423800	East Branch Rock River tributary near Slinger, WI	4.42	1960–93	1972	13.12	340	8/14/72	13.12	340	N	40–50
							9/11/86	13.04	325	N	30–40
05424300	Rock River tributary near Watertown, WI	4.58	1959–80	1975	13.95	260	3/22/75	13.95	260	N	10–25
				1959	14.01	150					
05425500	Rock River at Watertown, WI	969	1932–70, 1977–94	1979	6.19	5,080	3/24/86	5.54	4,030	N	15–20
				1959	6.32	5,030					
05425700	Robbins Creek near Columbus, WI	8.01	1960–75, 1979–93	1993	14.94	344	9/08/85	14.70	335	N	15
05425827	Maunesha River near Sun Prairie, WI	26.0	1973–89	1974	14.77	1,150	3/04/74	14.77	1,150	N	50–100
05426000	Crawfish River at Milford, WI	762	1932–94	1959	11.15	6,140	3/26/75	9.79	4,830	N	30
							4/02/79	10.06	4,510	N	20
05426031	Rock River at Jefferson, WI	1,850	1978–80, 1982–91, 1993–94	1979	--	10,300	4/01/79	--	10,300	N	25–50
				1993	10.29	8,660					
05426100	Scuppernong Creek near Wales, WI	8.39	1962–80	1973	11.22	195	4/21/73	11.22	195	N	50–100
				1972	11.30	120					
05427200	Allen Creek near Fort Atkinson, WI	10.2	1958–93	1960	13.24	380	1/31/88	12.04	255	N	20
05427570	Rock River at Indianford, WI	2,630	1975–94	1979	16.23	11,900	4/05/79	16.23	11,900	N	25–50
05427800	Token Creek near Madison, WI	24.3	1961–80, 1982–93	1976	14.16	576	3/22/75	14.32	575	N	20
				1993	14.83	400	3/12/76	14.16	576	N	20
05429500	Yahara River near McFarland, WI	327	1931–71, 1974–94	1959	5.82	867	5/01/75	5.13	598	Y	10
				1954	6.21	500	7/02/78	5.75	636	Y	15
05430150	Badfish Creek near Cooksville, WI	82.6	1978–94	1994	8.97	1,210	9/01/81	8.11	870	N	10
05430175	Yahara River near Fulton, WI	517	1978–94	1981	8.36	3,040	9/01/81	8.36	3,040	N	25–50
05430500	Rock River at Afton, WI	3,340	1914–94	1929	11.80	13,000	4/05/79	11.86	11,500	N	20
				1979	11.86	11,500					
05431017	Delavan Lake inlet at State Highway 50 at Lake Lawn, WI	21.8	1984–91, 1993–94	1986	--	823	3/10/86	--	823	N	>25
				1984	--	310					
05431400	Little Turtle Creek at Allens Grove, WI	42.4	1962–73, 1975–94	1973	18.28	8,400	4/21/73	18.28	8,400	N	--
05431500	Turtle Creek near Clinton, WI	202	1938, 1940–79	1973	12.85	16,500	4/21/73	12.85	16,500	N	>100
05434200	Skinner Creek tributary near Monroe, WI	0.48	1959–80	1978	14.08	145	7/01/78	14.08	145	N	25–50
				1959	14.24	10					

Table 51. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wisconsin—Continued

Station number (fig. 72)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1994				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulatad during flood[1]	Recurrence interval (years)
05437200	East Fork Raccoon Creek tributary near Beloit, WI	4.64	1958–93	1993	17.92	2,300	6/25/78	15.35	690	N	20
05543830	Fox River at Waukesha, WI	126	1960, 1964–94	1960	8.00	2,500	4/22/73	7.42	2,260	N	50–100
05544200	Mukwonago River at Mukwonago, WI	74.1	1974, 1977–94	1974 1986	2.45 3.55	292 278	3/03/74	2.45	292	N	15–20
05545100	Sugar Creek at Elkhorn, WI	6.63	1962–94	1973	17.47	900	4/21/73 3/04/74	17.47 13.60	900 315	N N	>100 10–15
05545200	White River tributary near Burlington, WI	2.42	1958–94	1973 1959	14.10 15.42	290 100	4/21/73	14.10	290	N	50
05546500	Fox River at Wilmot, WI	868	1940–93	1960	9.25	7,520	4/23/73	7.65	6,530	N	50
05548150	North Branch Nippersink Creek near Genoa City, WI	13.6	1962–94	1986 1994	12.97 13.61	375 350	3/09/86	12.97	375	N	35–40

[1]Regulated during flood: N, no; Y, yes.

Wyoming

Hydroclimatology

Wyoming is located in the Western Interior of the United States. Although most of the State is arid or semiarid, the mountainous areas can average more than 60 in. of precipitation per year. The topography controls the amount and distribution of the precipitation. The mountain ranges in the State generally trend north-south, and they create barriers to the moist Pacific Ocean airmasses moving east across the State. The moisture condenses into precipitation as the mountains create orographic lifting and cooling of the airmasses. The mountain ranges also create barriers to upslope systems from the Gulf of Mexico. The Laramie Range and Bighorn Mountains keep most spring snows and rains from reaching the interior basins. As a result, the mountainous areas of the State receive the majority of the precipitation. Summer thunderstorms deliver most of the precipitation in eastern Wyoming and along the mountain ranges. Wet spring snowstorms that bring moisture from the Gulf also contribute substantially to annual totals.

Flooding in Wyoming generally is caused by rapid melting of snow, intense summer thunderstorms producing flash floods, and ice jams. Some of the most severe floods are the result of spring rainstorms on a melting snowpack.

On the basis of regionalization procedures that relate flood characteristics to watershed and climatic characteristics, the factors affecting the magnitude of maximum discharges for streams in Wyoming are contributing-drainage area, mean basin elevation, mean annual precipitation, and basin slope. In the plains and high desert regions, a geographic factor is used (Jennings and others, 1994).

Significant Floods

Rainfall combined with snowmelt to cause flooding in south-central Wyoming during May 12–17, 1984. The North Platte River and its tributaries and Little Snake River were most affected by the flood. The flooding on the Little Snake River was compounded when a dam was breached.

West-central, southwestern, and south-central Wyoming were stricken by significant flooding in early June 1986. Snowmelt combined with rainfall produced record to near-record discharges at several streamflow-gaging stations in the State. Twenty percent of the gaging stations recorded significant discharges. The maximum discharge on the Green River at Warren Bridge near Daniel (station 09188500, fig. 73) exceeded the 100-year recurrence interval.

On August 1, 1985, a severe thunderstorm in the Cheyenne area created a flash flood on Crow Creek and its tributaries. The death toll was 12, and $61 million in damages were incurred (Paulson and others, 1991).

The location of streamflow-gaging stations in Wyoming that had significant floods for 1970–89 is shown in figure 73 by station number. The specific data for each significant flood are listed in table 52. A significant flood is one that ranks in the top 5 percent of all annual maximum discharges for that station's period of record.

References

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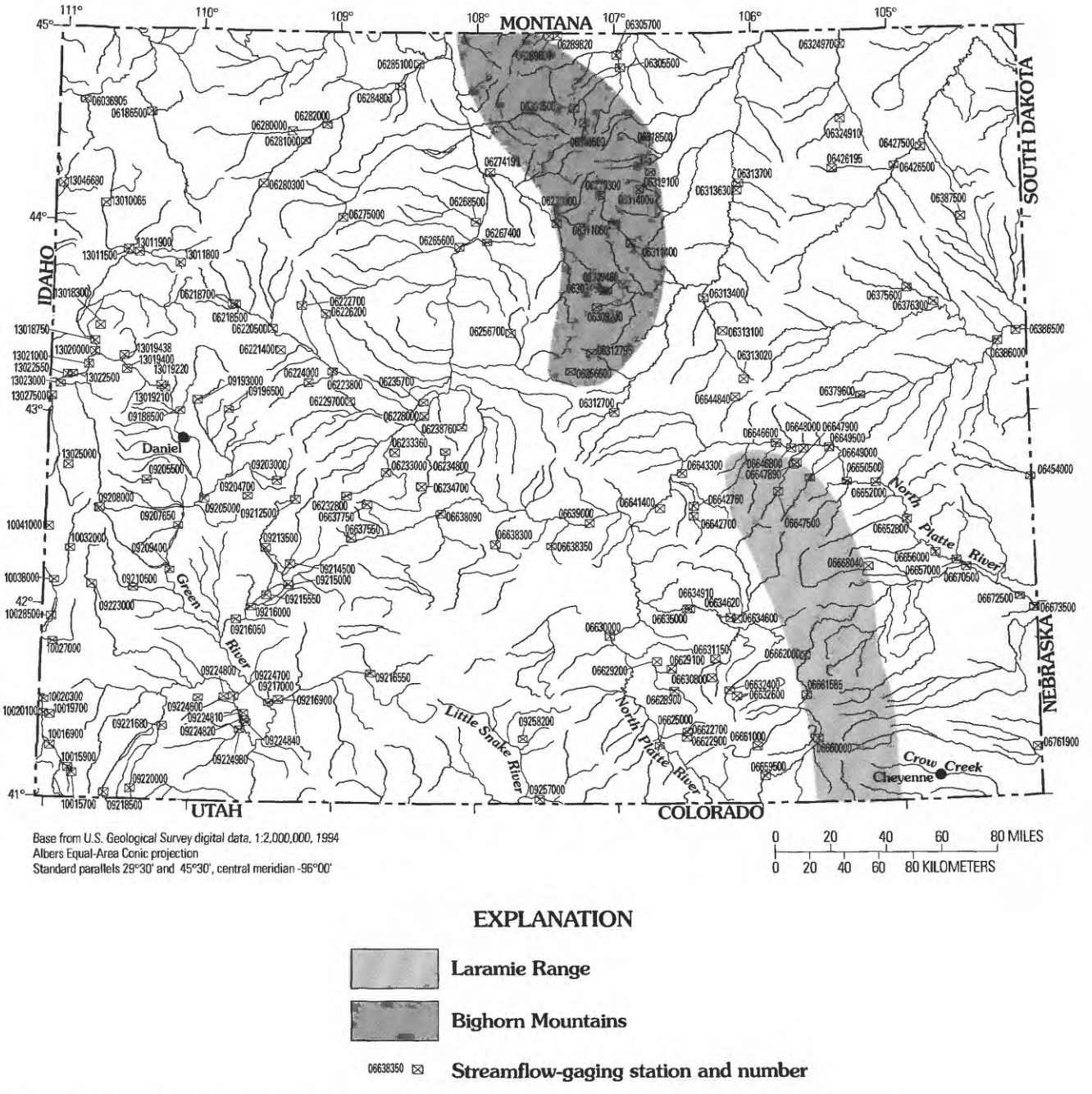

Figure 73. Location of streamflow-gaging stations with significant floods during 1970–89 for Wyoming.

Table 52. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wyoming

[mi^2, square miles; ft, feet above an arbitrary datum; ft^3/s, cubic feet per second; --, not determined or not applicable; >, greater than; <, less than. Source: Recurrence intervals calculated from U.S. Geological Survey data. Other data from U.S. Geological Survey reports or data bases]

			Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
Station number (fig. 73)	Station name	Total drainage area (mi^2)	Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06036905	Firehole River near West Yellowstone, MT	282	1984, 1986–95	1986	5.48	1,520	5/31/86	5.48	1,520	N	15–30
06186500	Yellowstone River at Yellowstone Lake outlet, Yellowstone National Park, WY	1,006	1923–82, 1984–86, 1989–95	1974	8.20	9,170	6/28/71 6/28/74 7/14/82	7.95 8.20 7.71	8,250 9,170 7,700	N N N	30–40 60–80 20–25
06218500	Wind River near Dubois, WY	232	1946–92	1972 1956	5.48 5.66	1,940 1,910	6/08/72 6/03/86	5.48 5.62	1,940 1,910	N N	20–30 20–30
06218700	Wagon Gulch near Dubois, WY	4.89	1961–84	1974	17.91	520	7/19/74	17.91	520	N	--
06220500	East Fork Wind River near Dubois, WY	427	1950–57, 1976–95	1981	7.69	5,980	6/09/81	7.69	5,980	N	25–35
06221400	Dinwoody Creek above lakes near Burris, WY	88.2	1918, 1956, 1958–78, 1989–95	1995 1963	4.50 4.57	1,510 1,270	7/25/77	4.44	1,450	N	20–30
06222700	Crow Creek near Tipperary, WY	30.2	1963–93	1987	6.89	855	7/27/87	6.89	855	N	>100
06223800	Wind River tributary number 2 near Crowheart, WY	3.16	1961–80	1975	8.07	230	8/13/75	8.07	230	N	--
06224000	Bull Lake Creek above Bull Lake, WY	187	1941–53, 1967–95	1981	7.98	4,470	6/09/81	7.98	4,470	N	>100
06226200	Little Dry Creek near Crowheart, WY	10.5	1961–81	1973 1963	6.04 7.78	1,010 240	8/04/73	6.04	1,010	N	20–40
06228000	Wind River at Riverton, WY	2,309	1906, 1908, 1911–95	1935 1991	8.15 10.50	13,300 8,470	6/24/71	8.46	9,380	Y	--
06229700	Norkok Meadow Creek near Fort Washakie, WY	15.4	1965–81	1973	7.65	186	7/13/73	7.65	186	N	10–25
06232800	Little Popo Agie River near Atlantic City, WY	5.99	1958–73	1973 1972	2.91 3.04	189 178	6/14/73	2.91	189	Y	--
06233000	Little Popo Agie River near Lander, WY	125	1946–80, 1982–95	1963	6.64	2,010	6/12/83	5.95	1,440	Y	15–20
06233360	Monument Draw at lower station near Hudson, WY	8.38	1965–84	1973	5.27	387	9/10/73	5.27	387	N	10–20
06234700	South Fork Hall Creek near Lander, WY	3.88	1960–72	1971 1962	-- 6.80	185 116	5/30/71	--	185	N	10–25
06234800	Bobcat Draw near Sand Draw, WY	2.89	1969, 1971–81	1977	8.93	1,280	5/01/77	8.93	1,280	N	25–50
06235700	Haymaker Creek near Riverton, WY	9.52	1961–64, 1966–73	1971	16.16	1,770	8/29/71	16.16	1,770	N	10–25
06238760	West Fork Dry Cheyenne Creek at upper station, near Riverton, WY	0.69	1965–84	1972	5.08	706	6/05/72	5.08	706	N	50–100
06256600	Red Creek near Arminto, WY	7.15	1963–81	1977	16.06	430	7/24/77	16.06	430	N	10–25
06256700	South Bridger Creek near Lysite, WY	10.0	1960–81	1973	9.60	540	7/20/73	9.60	540	N	25–50
06265600	Tie Down Gulch near Worland, WY	1.78	1961–84	1983	9.48	420	8/10/83	9.48	420	N	20–30
06267400	East Fork Nowater Creek near Colter, WY	149	1972–80, 1982–91	1978	6.65	3,040	5/18/78	6.65	3,040	N	50–100
06268500	Fifteen Mile Creek near Worland, WY	518	1951–80, 1982–86	1978	10.58	4,270	5/18/78	10.58	4,270	N	50–100

Table 52. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wyoming—Continued

Station number (fig. 73)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06270000	Nowood River near Ten Sleep, WY	803	1938–43, 1950–55, 1973–92	1978	12.94	3,380	5/19/78	12.94	3,380	N	20–30
06270300	Canyon Creek tributary near Ten Sleep, WY	0.52	1961–74	1973	6.82	28	6/01/73	6.82	28	N	10–25
06274190	Nowood River tributary number 2 near Basin, WY	1.51	1965–84	1981	4.30	302	8/09/81	4.30	302	N	15–25
06275000	Wood River at Sunshine, WY	194	1946–92	1963 1973	7.00 8.57	5,080 1,470	6/10/83	7.46	1,850	Y	--
06280000	North Fork Shoshone River near Wapiti, WY	775	1921–26, 1979, 1981–89	1981	12.00	20,000	6/09/81	12.00	20,000	N	>50
06280300	South Fork Shoshone River near Valley, WY	297	1957–58, 1960–95	1981	9.24	10,000	6/09/81	9.24	10,000	N	>100
06281000	South Fork Shoshone River above Buffalo Bill Reservoir, WY	585	1903, 1905–07, 1921–26, 1974–95	1981	9.41	9,960	6/09/81	9.41	9,960	N	50–100
06282000	Shoshone River below Buffalo Bill Reservoir, WY	1,538	1921–95	1981	11.57	17,300	6/09/81	11.57	17,300	Y	--
06284800	Whistle Creek near Garland, WY	101	1958–59, 1969–87	1975	12.44	4,780	7/03/75	12.44	4,780	Y	--
06285100	Shoshone River near Lovell, WY	2,350	1967–95	1981	9.16	16,400	6/10/81	9.16	16,400	Y	--
06289600	West Pass Creek near Parkman, WY	15.4	1983–95	1984 1995	4.62 3.97	195 340	5/16/84	4.62	195	N	<10
06289820	East Pass Creek near Dayton, WY	21.7	1983–95	1995	4.47	511	5/16/84	3.14	197	N	<10
06300500	East Fork Big Goose Creek near Big Horn, WY	20.1	1954–83, 1985–95	1963 1995	3.59 6.69	1,230 1,140	6/09/73	6.66	1,120	N	25–50
06301500	West Fork Big Goose Creek near Big Horn, WY	24.4	1954–67, 1969–83, 1985–95	1963	5.37	1,030	6/04/86	4.47	646	Y	--
06305500	Goose Creek below Sheridan, WY	392	1942–84	1963 1978	7.82 8.33	5,450 5,430	5/18/78	8.33	5,430	Y	40–60
06305700	Goose Creek near Acme, WY	411	1984–95	1986 1995	7.65 7.30	-- 3,330	6/17/84	6.13	2,150	Y	--
06309200	Middle Fork Powder River near Barnum, WY	45.2	1962–95	1963	12.60	7,110	5/20/73	5.20	1,130	N	5–10
06309450	Beaver Creek below Bayer Creek near Barnum, WY	10.9	1979–89	1982 1984	2.68 3.19	176 --	6/30/82	2.68	176	N	10–25
06309460	Beaver Creek above White Panther Ditch near Barnum, WY	24.2	1979–89	1984 1979	1.78 2.40	219 --	5/16/84	1.78	219	N	15–30
06311060	North Fork Powder River below Bull Creek near Hazelton, WY	32.3	1979–92	1983	4.48	458	5/27/83	4.48	458	Y	--
06311400	North Fork Powder River below Pass Creek near Mayoworth, WY	100	1979–95	1984	8.89	1,590	8/01/84	8.89	1,590	Y	--
06312700	South Fork Powder River near Powder River, WY	262	1961–84	1982	8.89	1,940	7/25/82	8.89	1,940	N	30–50

Table 52. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wyoming—Continued

Station number (fig. 73)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06312795	Sanchez Creek above reservoir near Arminto, WY	5.53	1970–81	1977	16.48	299	7/24/77	16.48	299	N	>50
06313020	Bobcat Creek near Edgerton, WY	8.29	1965–81	1973	4.62	1,060	9/11/73	4.62	1,060	N	10–25
06313100	Coal Draw near Midwest, WY	11.4	1961–84	1982	18.63	6,380	8/02/82	18.63	6,380	N	50–100
06313400	Salt Creek near Sussex, WY	769	1976–81, 1983–93	1978	9.88	10,200	5/18/78	9.88	10,200	N	30–50
06313630	Van Houghton Draw near Buffalo, WY	10.8	1971–81	1979	11.96	3,510	7/26/79	11.96	3,510	N	10–25
06313700	Dead Horse Creek near Buffalo, WY	151	1959–90	1986 1979	10.95 11.73	3,460 2,890	6/16/79 9/18/86	11.73 10.95	2,890 3,460	N N	15–25 20–30
06314000	North Fork Crazy Woman Creek near Buffalo, WY	44.9	1944–49, 1974–84	1984 1978	3.97 4.00	742 530	5/16/84	3.97	742	N	10–25
06318500	Clear Creek near Buffalo, WY	120	1894, 1896–99, 1917–27, 1938–92	1963	6.19	3,420	5/30/71	5.10	1,650	N	20–30
06319100	Bull Creek near Buffalo, WY	10.8	1969–84	1976	10.43	2,260	8/01/76	10.43	2,260	N	10–25
06324910	Cow Creek tributary near Weston, WY	0.72	1971–84	1981	10.56	295	5/27/81	10.56	295	N	<10
06324970	Lower Powder River above Dry Creek near Weston, WY	1,235	1973–95	1978 1978	11.62 11.63	5,300 4,720	5/19/78	11.62	5,300	N	50–100
06375600	Little Thunder Creek near Hampshire, WY	234	1978–81, 1988–95	1978	9.02	3,030	5/18/78	9.02	3,030	N	10–25
06376300	Black Thunder Creek near Hampshire, WY	535	1973–90	1978	14.13	5,050	5/18/78	14.13	5,050	N	>100
06379600	Box Creek near Bill, WY	112	1957, 1959, 1961–81	1978	8.15	2,570	5/17/78	8.15	2,570	N	10–25
06386000	Lance Creek near Riverview, WY	2,070	1948–54, 1957–83	1971	9.67	7,410	5/24/71 5/19/78	9.67 9.43	7,410 7,190	Y Y	-- --
06386500	Cheyenne River near Riverview, WY	5,270	1949–74, 1978	1978	12.22	28,000	5/20/78	12.22	28,000	Y	>100
06387500	Turner Creek near Osage, WY	47.8	1959–84	1979 1981	17.47 18.25	5,660 4,700	8/08/79	17.47	5,660	N	30–50
06426195	Donkey Creek tributary above reservoir near Gillette, WY	0.20	1970–84	1973	16.79	155	7/21/73	16.79	155	N	15–35
06426500	Belle Fourche River below Moorcroft, WY	1,690	1924, 1944–57, 1959–70, 1976–83, 1986–87, 1991–95	1978	14.60	15,300	5/19/78	14.60	15,300	Y	>100
06427500	Belle Fourche River below Keyhole Reservoir, WY	1,954	1951–95	1978 1980	5.85 8.47	1,410 --	5/23/78	5.85	1,410	Y	--
06454000	Niobrara River at WY–NE State line, WY	450	1956–94	1977	8.28	2,120	8/16/77	8.28	2,120	Y	50–100
06622700	North Brush Creek near Saratoga, WY	37.4	1960–95	1983 1964	4.23 5.75	1,360 1,120	6/25/83 6/10/86	4.23 5.36	1,360 1,120	N N	75–150 20–30

Table 52. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wyoming—Continued

Station number (fig. 73)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06622900	South Brush Creek near Saratoga, WY	22.8	1960–74, 1976–77, 1979–95	1965	4.09	559	6/18/83	4.08	527	Y	--
06625000	Encampment River at mouth near Encampment, WY	265	1940–95	1943 1957	-- 7.67	4,510 3,510	6/10/86	7.12	3,870	N	20–30
06628900	Pass Creek near Elk Mountain, WY	91.5	1957–95	1984	9.12	4,660	5/12/84 6/10/86	9.12 7.98	4,660 3,010	Y Y	-- --
06629100	Rattlesnake Creek near Walcott, WY	13.9	1962–74	1973	5.61	125	5/11/73	5.61	125	N	>50
06629200	Coal Bank Draw tributary number 2 near Walcott, WY	2.41	1962–81	1972	12.78	839	8/24/72	12.78	839	N	25–50
06630000	North Platte River above Seminoe Reservoir near Sinclair, WY	4,175	1940–95	1986	11.30	16,200	5/26/84 6/11/86	10.84 11.30	15,000 16,200	Y Y	-- --
06630800	Bear Creek near Elk Mountain, WY	8.93	1962–74	1970	10.87	141	4/05/70	10.87	141	N	15–35
06631150	Third Sand Creek near Medicine Bow, WY	10.8	1965–81	1977	7.67	1,580	8/16/77	7.67	1,580	N	15–25
06632400	Rock Creek above King Canyon Canal near Arlington, WY	62.9	1966–95	1971 1983	5.83 5.92	2,590 2,510	6/19/71	5.83	2,590	N	20–30
06632600	Threemile Creek near Arlington, WY	6.31	1962–74	1970	7.01	863	8/06/70	7.01	863	N	>50
06634600	Lower Medicine Bow River near Medicine Bow, WY	963	1974–92	1978	14.10	9,500	5/17/78	14.10	9,500	N	30–50
06634620	Lower Medicine Bow River at Boles Spring near Medicine Bow, WY	969	1984–95	1984	6.65	1,460	5/13/84	6.65	1,460	N	10–25
06634910	Medicine Bow River tributary near Hanna, WY	3.01	1965–84	1976	6.02	856	8/01/76	6.02	856	N	10–20
06635000	Medicine Bow River above Seminoe Reservoir near Hanna, WY	2,338	1940–93	1973	6.74	6,010	5/12/73 5/18/78	6.74 6.25	6,010 5,220	Y Y	-- --
06637550	Sweetwater River near South Pass City, WY	177	1959–81	1980 1980	8.64 11.49	1,720 --	4/22/80	8.64	1,720	N	50–100
06637750	Rock Creek above Rock Creek Reservoir, WY	9.2	1962–95	1986 1965	7.17 8.54	218 --	6/01/86	7.17	218	N	20–30
06638090	Sweetwater River near Sweetwater Station, WY	849	1974–92	1980	12.40	5,750	4/24/80	12.40	5,750	Y	40–60
06638300	West Fork Crooks Creek near Jeffrey City, WY	11.6	1961–81	1975	8.98	255	7/10/75	8.98	255	N	--
06638350	Coal Creek near Muddy Gap, WY	6.08	1961–81	1977 1973	17.18 17.23	261 250	6/07/77	17.18	261	N	15–20
06639000	Sweetwater River near Alcova, WY	2,327	1914–16, 1924, 1939–95	1924 1983	-- 9.90	4,290 3,160	4/28/80 4/27/83	8.84 9.90	2,410 3,160	Y Y	30–35 >100
06641400	Bear Springs Creek near Alcova, WY	9.33	1960–66, 1968–84	1982	15.28	627	7/25/82	15.28	627	N	40–50
06642700	Lawn Creek near Alcova, WY	11.5	1961–84	1981	13.85	4,760	7/12/81	13.85	4,760	N	50–100

Table 52. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wyoming—Continued

Station number (fig. 73)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06642760	Stinking Creek near Alcova, WY	117	1961–81	1981	11.35	6,700	7/12/81	11.35	6,700	N	25–50
06643300	Coal Creek near Goose Egg, WY	5.39	1961–67, 1970–84	1970	8.72	514	6/12/70	8.72	514	N	40–50
06644840	Mckenzie Draw tributary near Casper, WY	2.02	1965–81	1973	7.03	970	9/11/73	7.03	970	N	25–50
06646600	Deer Creek below Millar Wasteway at Glenrock, WY	213	1961–92	1970	9.45	14,200	6/12/70	9.45	14,200	Y	40–60
06646800	North Platte River near Glenrock, WY	13,538	1960–92	1965	7.10	16,000	5/21/73	6.65	13,500	Y	--
06647500	Box Elder Creek at Boxelder, WY	63.0	1946–51, 1962–67, 1972–95	1965	8.58	4,530	5/17/78	6.61	2,230	N	20–40
06647890	Lower Box Elder Creek near Careyhurst, WY	7.18	1975–88	1981	2.11	193	7/25/81	2.11	193	N	25–50
06647900	Lower Box Elder Creek at Lower Box Elder Cave near Careyhurst, WY	8.47	1975–88	1984 1986	2.02 2.26	50 13	5/12/84	2.02	50	N	10–25
06648000	Box Elder Creek near Careyhurst, WY	202	1928–33, 1935–70	1965	11.85	8,250	6/12/70	--	8,000	Y	--
06649000	La Prele Creek near Douglas, WY	135	1920–92	1970	13.01	17,300	6/12/70 5/09/71	13.01 11.35	17,300 3,440	Y Y	-- --
06649500	La Prele Creek near Orpha, WY	177	1924, 1929–33, 1935, 1937–70	1970	10.15	6,000	6/12/70	10.15	6,000	Y	--
06650500	Wagonhound Creek near La Bonte, WY	112	1929–32, 1937–38, 1940–70	1970	13.93	7,140	6/12/70	13.93	7,140	N	>75
06652000	North Platte River at Orin, WY	15,025	1895, 1899, 1958–95	1965 1970	10.00 10.45	23,800 22,500	6/12/70	10.45	22,500	Y	--
06652800	North Platte River below Glendo Reservoir, WY	15,548	1958–95	1984	11.16	10,300	7/13/83 6/29/84	11.09 11.16	10,200 10,300	Y Y	-- --
06656000	North Platte River below Guernsey Reservoir, WY	16,237	1903–06, 1908, 1912, 1941–95	1908 1983	-- 8.96	30,000 13,000	6/07/73 7/26/83 7/03/84	8.00 8.96 8.51	10,000 13,000 11,500	Y Y Y	-- -- --
06657000	North Platte River below Whalen Diversion Dam, WY	16,237	1909, 1938–95	1955 1995	-- 8.46	22,000 4,300	6/04/71 7/23/83	6.31 7.84	8,280 9,180	Y Y	-- --
06659500	Laramie River and Pioneer Canal near Woods Landing, WY	434	1912, 1916–24, 1927, 1932–95	1923	--	5,060	6/20/83	--	3,480	Y	--
06660000	Laramie River at Laramie, WY	1,071	1933–72	1957	6.83	3,250	6/13/70	6.53	2,450	Y	--
06661000	Little Laramie River near Filmore, WY	157	1911–12, 1914–26, 1933–95	1965 1914	5.33 5.90	3,450 2,400	6/09/86	5.09	1,940	Y	--
06661585	Laramie River near Bosler, WY	1,790	1973–95	1986 1983	7.39 7.43	4,480 4,460	6/11/86	7.39	4,480	Y	--
06662000	Laramie River near Lookout, WY	2,174	1912, 1915–17, 1932–95	1983 1986	6.99 7.02	4,380 4,130	6/29/83 6/12/86	6.99 7.02	4,380 4,130	Y Y	-- --
06668040	Rabbit Creek near Wheatland, WY	1.30	1965–84	1983	2.34	312	8/17/83	2.34	312	N	50–100

Table 52. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wyoming—Continued

Station number (fig. 73)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
06670500	Laramie River near Fort Laramie, WY	4,564	1915–30, 1933–95	1973	9.40	6,260	5/06/71	8.04	5,610	Y	--
							5/10/73	9.40	6,260	Y	--
							5/16/84	7.48	4,540	Y	--
06672500	Cherry Creek Drain near Torrington, WY	356	1935–92	1955	--	2,420	6/12/70	8.12	1,370	Y	--
				1963	8.39	717					
06673500	Katzer Drain near Henry, NE	45.9	1929–92	1977	8.56	1,460	6/11/77	8.56	1,460	Y	--
				1961	12.34	952					
06761900	Lodgepole Creek tributary near Pine Bluffs, WY	0.44	1960–81	1981	10.27	158	7/02/81	10.27	158	N	25–50
09188500	Green River at Warren Bridge near Daniel, WY	468	1932–95	1986	5.65	5,490	6/25/71	5.74	4,780	N	25–50
				1972	5.77	4,840	6/09/72	5.77	4,840	N	25–50
							6/06/86	5.65	5,490	N	>100
09193000	New Fork River below New Fork Lake near Cora, WY	36.2	1939–72	1972	5.74	630	6/10/72	5.74	630	Y	--
09196500	Pine Creek above Fremont Lake, WY	75.8	1955–95	1959	7.15	2,550	6/24/71	7.01	2,440	N	20–30
				1986	7.65	2,070					
09203000	East Fork River near Big Sandy, WY	79.2	1939–92	1986	7.00	2,330	6/02/86	7.00	2,330	N	>100
				1965	7.16	1,790					
09204700	Sand Creek Draw tributary near Boulder, WY	2.77	1961–62, 1965–66, 1968–81	1973	7.14	82	7/20/73	7.14	82	N	25–40
09205000	New Fork River near Big Piney, WY	1,230	1955–95	1986	8.28	9,190	6/10/72	8.15	9,170	Y	--
							6/07/86	8.28	9,190	Y	--
09205500	North Piney Creek near Mason, WY	58.0	1915–16, 1932–72	1971	5.52	747	6/22/71	5.52	747	N	30–60
				1972	5.75	705	6/06/72	5.75	705	N	25–50
09207650	Dry Basin Creek near Big Piney, WY	47.2	1971–81	1975	4.74	450	7/09/75	4.74	450	N	10–25
09208000	La Barge Creek near La Barge Meadows Ranger Station, WY	6.3	1941–42, 1951–81	1972	5.48	196	6/16/72	5.48	196	N	10–25
				1967	7.08	--					
09209400	Green River near La Barge, WY	3,910	1947–95	1986	10.50	18,800	6/11/72	10.34	18,000	Y	--
							6/09/86	10.50	18,800	Y	--
09210500	Fontenelle Creek near Herschler Ranch near Fontenelle, WY	152	1952–95	1986	9.51	907	5/01/80	9.33	904	N	15–20
							4/23/86	9.51	907	N	15–20
09212500	Big Sandy River at Leckie Ranch near Big Sandy, WY	94.0	1911, 1940–87	1965	9.06	2,030	6/02/86	9.06	1,670	N	20–30
09213500	Big Sandy River near Farson, WY	322	1915–17, 1921–24, 1927–34, 1953–95	1986	8.46	1,890	6/09/72	8.10	1,480	N	15–20
							6/03/86	8.46	1,890	N	75–100
09214500	Little Sandy Creek above Eden, WY	134	1955–81	1980	11.89	1,450	4/24/80	11.89	1,450	N	>100
09215000	Pacific Creek near Farson, WY	500	1955–73	1971	7.34	972	3/27/71	7.34	972	N	10–25
09215550	Big Sandy River below Farson, WY	1,097	1982–95	1995	7.44	1,400	4/03/85	7.30	1,120	Y	5–10
09216000	Big Sandy River below Eden, WY	1,610	1955–59, 1961–81	1980	11.08	7,430	4/24/80	11.08	7,430	N	>100
09216050	Big Sandy River at Gasson Bridge near Eden, WY	1,720	1972–95	1980	10.58	7,430	4/24/80	10.58	7,430	Y	>100

Table 52. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wyoming—Continued

Station number (fig. 73)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
09216550	Deadman Wash near Point of Rocks, WY	152	1961–81	1979	11.25	1,320	8/09/79	11.25	1,320	N	20–30
09216900	Bitter Creek tributary near Green River, WY	1.65	1959–82	1972 1978	4.93 15.07	30 25	4/14/72	4.93	30	N	5–10
09217000	Green River near Green River, WY	14,000	1903, 1951–95	1965	8.53	16,800	6/16/72	7.98	15,400	Y	--
09218500	Blacks Fork near Millburne, WY	152	1940–95	1957 1965	6.00 6.46	2,530 1,910	6/05/86	5.04	2,430	Y	--
09220000	East Fork of Smith Fork near Robertson, WY	53.0	1940–95	1965 1977	6.75 6.90	1,450 --	6/24/83	6.66	1,330	Y	--
09221680	Mud Spring Hollow near Church Butte near Lyman, WY	8.83	1965–84	1979	4.08	557	8/14/79	4.08	557	N	10–25
09223000	Hams Fork below Pole Creek near Frontier, WY	128	1953–95	1986 1971	6.72 8.10	2,230 1,520	5/31/84 6/05/86	7.28 6.72	1,580 2,230	N N	15–25 >100
09224600	Blacks Fork tributary near Granger, WY	5.03	1959–81	1973	13.03	770	7/20/73	13.03	770	Y	--
09224700	Blacks Fork near Little America, WY	3,100	1962–95	1965	10.90	9,980	6/03/83	10.47	7,410	Y	--
09224800	Meadow Springs Wash tributary near Green River, WY	5.22	1962–65, 1968–81	1970	6.64	170	6/11/70	6.64	170	N	--
09224810	Blacks Fork tributary number 2 near Green River, WY	12.0	1965–81	1976	7.11	180	4/06/76	7.11	180	N	10–25
09224820	Blacks Fork tributary number 3 near Green River, WY	3.59	1965–84	1984	7.98	245	7/20/84	7.98	245	N	20–30
09224840	Blacks Fork tributary number 4 near Green River, WY	1.26	1965–81	1977	5.84	47	7/24/77	5.84	47	N	10–25
09224980	Summers Dry Creek near Green River, WY	423	1965–81	1973	14.67	13,900	7/20/73	14.67	13,900	N	>50
09257000	Little Snake River near Dixon, WY	988	1917, 1920–23, 1938–95	1984	13.56	13,000	5/16/84	13.56	13,000	N	>100
09258200	Dry Cow Creek near Baggs, WY	49.7	1970–81	1971	9.90	853	5/23/71	9.90	853	N	5–10
10015700	Sulphur Creek above reservoir near Evanston, WY	64.2	1958–95	1983	9.10	8,400	6/01/83 5/16/84	9.10 6.02	8,400 1,230	N N	>100 10–20
10015900	Sulphur Creek below reservoir near Evanston, WY	69.2	1958–92	1984 1989	-- 5.02	740 151	6/01/83 5/15/84	-- --	600 740	Y Y	-- --
10016900	Bear River at Evanston, WY	443	1984–93	1984	7.35	3,680	5/16/84	7.35	3,680	Y	--
10019700	Whitney Canyon Creek near Evanston, WY	8.93	1965–81	1971	7.46	160	4/25/74	7.41	160	N	20–30
10020100	Bear River above reservoir near Woodruff, UT	752	1962–95	1983	6.17	4,150	6/02/83 6/04/86	6.17 5.69	4,150 3,890	Y Y	-- --
10020300	Bear River below reservoir near Woodruff, UT	784	1962–95	1983	8.26	3,820	6/02/83 5/17/84	8.26 8.11	3,820 3,590	Y Y	-- --
10027000	Twin Creek at Sage, WY	246	1944–62, 1976–81	1980	8.13	853	4/23/80	8.13	853	Y	10–25

Table 52. Maximum stage and discharge for period of record for streamflow-gaging stations having significant floods during 1970–89 in Wyoming—Continued

Station number (fig. 73)	Station name	Total drainage area (mi^2)	Maximum stage and discharge for period of record through 1995				Significant floods during 1970–89				
			Period of record	Water year	Stage (ft)	Discharge (ft^3/s)	Date (month/day/year)	Stage (ft)	Discharge (ft^3/s)	Regulated during flood[1]	Recurrence interval (years)
10028500	Bear River below Pixley Dam near Cokeville, WY	2,032	1942–43, 1953–56, 1958–95	1956 1983	8.35 10.90	2,300 2,060	6/05/83	10.90	2,060	Y	--
10032000	Smiths Fork near Border, WY	165	1942–95	1986	5.66	2,100	5/29/83 5/16/84 6/04/86	5.45 5.52 5.66	1,870 1,820 2,100	N N N	30–45 30–45 75–150
10038000	Bear River below Smiths Fork near Cokeville, WY	2,447	1954–95	1983	8.75	5,620	6/07/83 5/25/84	8.75 8.09	5,620 4,630	Y Y	-- -
10041000	Thomas Fork near Wyoming–Idaho State line, WY	113	1950–92	1984 1952	5.00 6.53	1,860 848	5/15/84 5/03/86	5.00 4.37	1,860 1,320	N N	30–50 10–25
13010065	Snake River above Jackson Lake at Flagg Ranch, WY	486	1984–95	1995 1986	9.30 9.41	11,500 10,600	5/31/84	8.39	11,000	N	5–10
13011500	Pacific Creek at Moran, WY	169	1918, 1945–75, 1978–95	1983 1986	6.33 6.73	5,350 3,630	6/09/81 5/29/83	6.48 6.33	4,150 5,350	N N	25–35 >100
13011800	Blackrock Creek tributary near Moran, WY	0.80	1964–74	1974	6.75	110	6/18/74	6.75	110	N	25–50
13011900	Buffalo Fork above Lava Creek near Moran, WY	323	1966–95	1981	8.50	6,540	6/09/81	8.50	6,540	N	50–100
13018300	Cache Creek near Jackson, WY	10.6	1945–95	1971 1972	3.90 3.97	225 162	6/24/71 6/01/86	3.90 3.30	225 184	N N	>100 25–50
13018750	Snake River below Flat Creek near Jackson, WY	2,627	1978–95	1986	10.22	25,600	6/06/86	10.22	25,600	Y	--
13019210	Rim Draw near Bondurant, WY	3.41	1964–74	1971	5.78	18	5/--/71	5.78	18	N	5–15
13019220	Sour Moose Creek near Bondurant, WY	2.77	1964–81	1980	6.15	26	5/08/80	6.15	26	N	10–25
13019400	Cliff Creek near Bondurant, WY	58.6	1964–74	1972	8.84	1,150	6/09/72	8.84	1,150	N	15–30
13019438	Little Granite Creek at mouth near Bondurant, WY	21.1	1982–92	1983 1986	3.86 3.90	876 724	5/29/83	3.86	876	N	10–25
13020000	Fall Creek near Jackson, WY	46.8	1918, 1964–74	1974	7.82	780	6/19/74	7.82	780	N	>50
13021000	Cabin Creek near Jackson, WY	8.71	1918, 1964–74	1972	6.57	167	5/16/72	6.57	167	N	5–10
13022500	Snake River above reservoir near Alpine, WY	3,465	1937–38, 1953–67, 1971–95	1986 1974	-- 11.96	31,300 28,600	6/19/74 6/06/86	11.96 --	28,600 31,300	Y Y	-- --
13022550	Red Creek near Alpine, WY	3.88	1964–73	1970 1965	4.46 4.52	44 24	6/12/70	4.46	44	N	10–25
13023000	Greys River above reservoir near Alpine, WY	448	1918, 1937–38, 1954–95	1971 1956	6.33 7.58	7,230 5,010	6/19/71 6/06/86	6.33 6.40	7,230 6,090	N N	>100 25–50
13025000	Swift Creek near Afton, WY	27.4	1943–80	1975	3.78	793	7/06/75	3.78	793	Y	25–40
13027500	Salt River above reservoir near Etna, WY	829	1918, 1954–67, 1971–95	1986 1983	5.71 5.96	5,090 4,910	5/30/83 6/02/86	5.96 5.71	4,910 5,090	Y Y	25–50 25–50
13046680	Boundary Creek near Bechler Ranger Station, Yellowstone National Park, WY	--	1984–94	1986 1985	-- 4.69	810 516	6/02/86	--	810	N	10–25

[1]Regulated during flood: N, no; Y, yes.

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