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GEOLOGICAL SURVEY CIRCULAR 370

FLOODS IN MISSOURI

MAGNITUDE AND FREQUENCY

Prepared in cooperation with the
STATE HIGHWAY DEPARTMENT OF MISSOURI

UNITED STATES DEPARTMENT OF THE INTERIOR
Douglas McKay, Secretary

GEOLOGICAL SURVEY
W. E. Wrather, Director

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By J. K. Searcy

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CONTENTS

CONTENTS

ILLUSTRATIONS

TABLES

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ABSTRACT

This report presents data on floods that have occurred in the State of Missouri. Flood data are necessary for the structural and economic design of structures built or enterprises conducted within flood plains. The flood data may best be used in the form of flood-frequency curves. Composite frequency curves were plotted that express the relation of mean annual floods to floods having recurrence intervals from 1.1 to 50 years. Other curves define the mean annual floods for separate portions of the State. By combining results from these two types of curves, a flood-frequency relation may be obtained for a site anywhere in the State, within the range of drainage area delimited by the data. The curves shown in this report were formulated by using records from all gaging stations in the region with 5 or more years of record.

INTRODUCTION

The proper design of dams, bridges, culverts, levees, highways, waterworks, sewage disposal plants, and all structures located on the flood plains of streams requires consideration of the flood hazard. The magnitude of floods at the site of the proposed structure becomes a major factor in the design of the structure or in flood protection that must be afforded the structure. The purpose of this report is to describe methods in detailed steps by which the frequency and magnitude of floods at any site in Missouri may be determined.

This report was prepared in cooperation with the State Highway Department of Missouri. The author was assisted in the computation and preparation of data by W. L. Doll, M. S. Petersen, and E. H. Sandhaus. Assistance and advice on the solution of the various problems were furnished by Tate Dalrymple and M. A. Benson.

The streamflow records used, unless otherwise noted, were collected by the U. S. Geological Survey in cooperation with the Missouri Geological Survey, the Corps of Engineers, and many other agencies and individuals who are given credit with the published data; streamflow records are published annually in the water-supply papers of the U. S. Geological Survey and have been compiled and published through 1949 by the Missouri Geological Survey and Water Resources.

FLOOD-FREQUENCY DESIGN DATA

A knowledge of flood frequency will be especially helpful in the design of bridge openings, channel capacities, roadbed levels, levees, and other structure where cost must be balanced against flood damage or liabilities arising from failure and interruption of services. Drainage structures are seldom capable of passing the maximum flood that may occur. It is rarely economically sound to provide for such unusual occurrences. Where economy alone governs design of a structure a choice exists in the magnitude of flood for which the structure is designed. The economical design balances cost of flood protection with flood damage. The selection of the flood to be considered in planning a structure, the "design flood," is usually determined on the basis of some definite frequency of recurrence.

The Design Flood

Determining the recurrence interval of the design flood involves many considerations other than hydrologic factors that are beyond the scope of this report. However, once the recurrence interval of the design flood is decided on, its magnitude may be determined by the following procedure:

1. --Determine the drainage area of the stream above the site of the proposed structure.

2. --From figure 1 obtain the number of the hydrologic area in which the site is located.

3. --Determine the mean annual flood for the site from figures 2, 3, or 4.

4. --From figure 5 identify the flood-frequency region in which the site is located.

5. --From figure 6 determine the ratio to mean annual flood for the selected recurrence interval.

6. --Multiply the ratio to mean annual flood (step 5) by the mean annual flood (step 3) to obtain the design-flood magnitude.

Caution must be exercised in predicting future events on the main stems of the Black, Osage, and St. Francis Rivers below the reservoirs on these streams. The data given herein are based on unregulated conditions.

Flood-Frequency Curve at the Site

A complete annual flood-frequency curve for the site of the proposed structure may be obtained by repeating steps 5 and 6 for various recurrence intervals. The frequency curve obtained in this manner is a better indication of the frequency of future floods at the site than a curve derived from streamflow records at the site alone. Flood data within a region have been combined in the regional flood-frequency curve and nontypical occurrences over a limited area are given little weight in defining the curve. The resulting composite curve does not always accurately define past history at a particular site but it furnishes a more

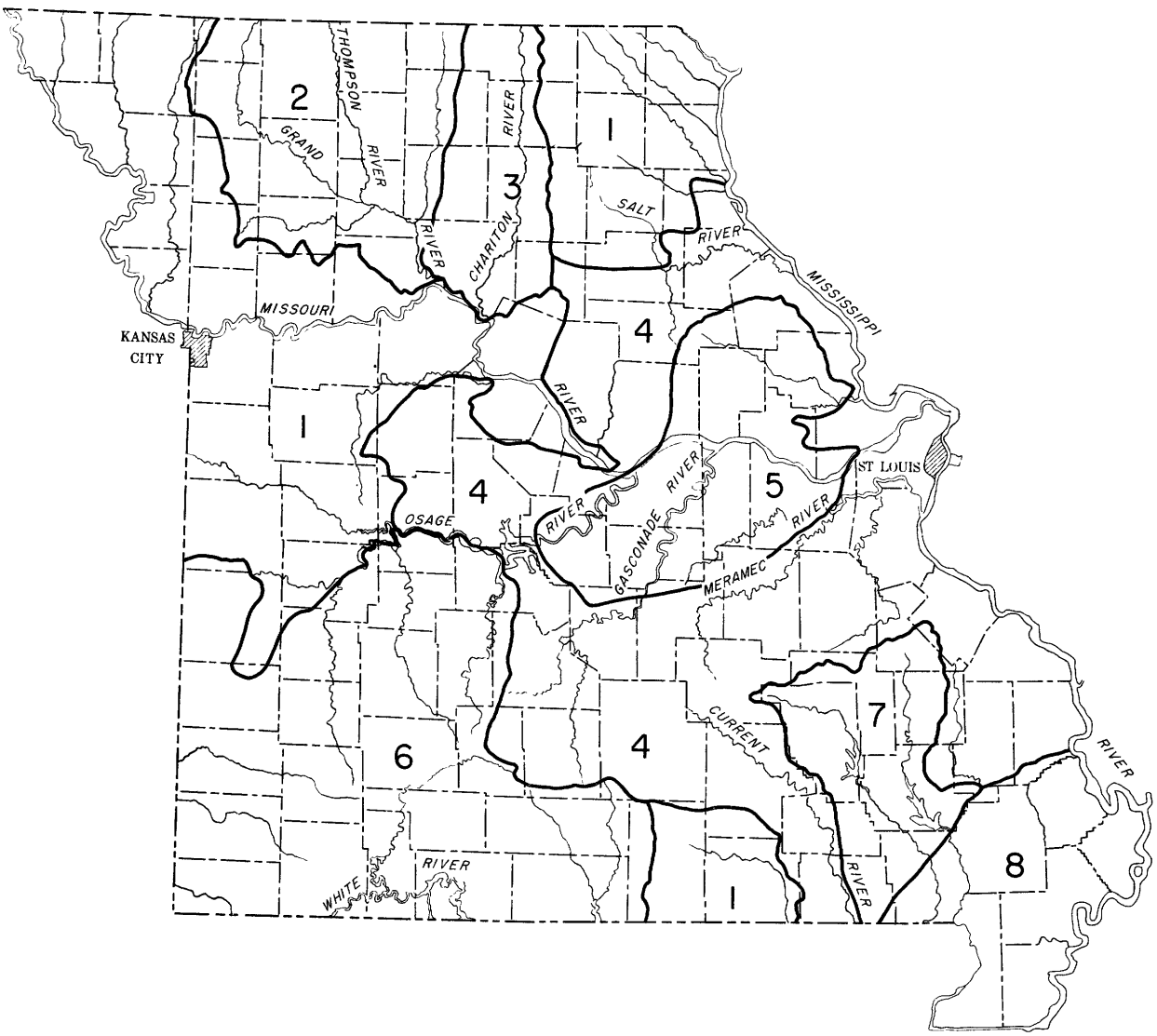

Figure 1.--Location of hydrologic areas.

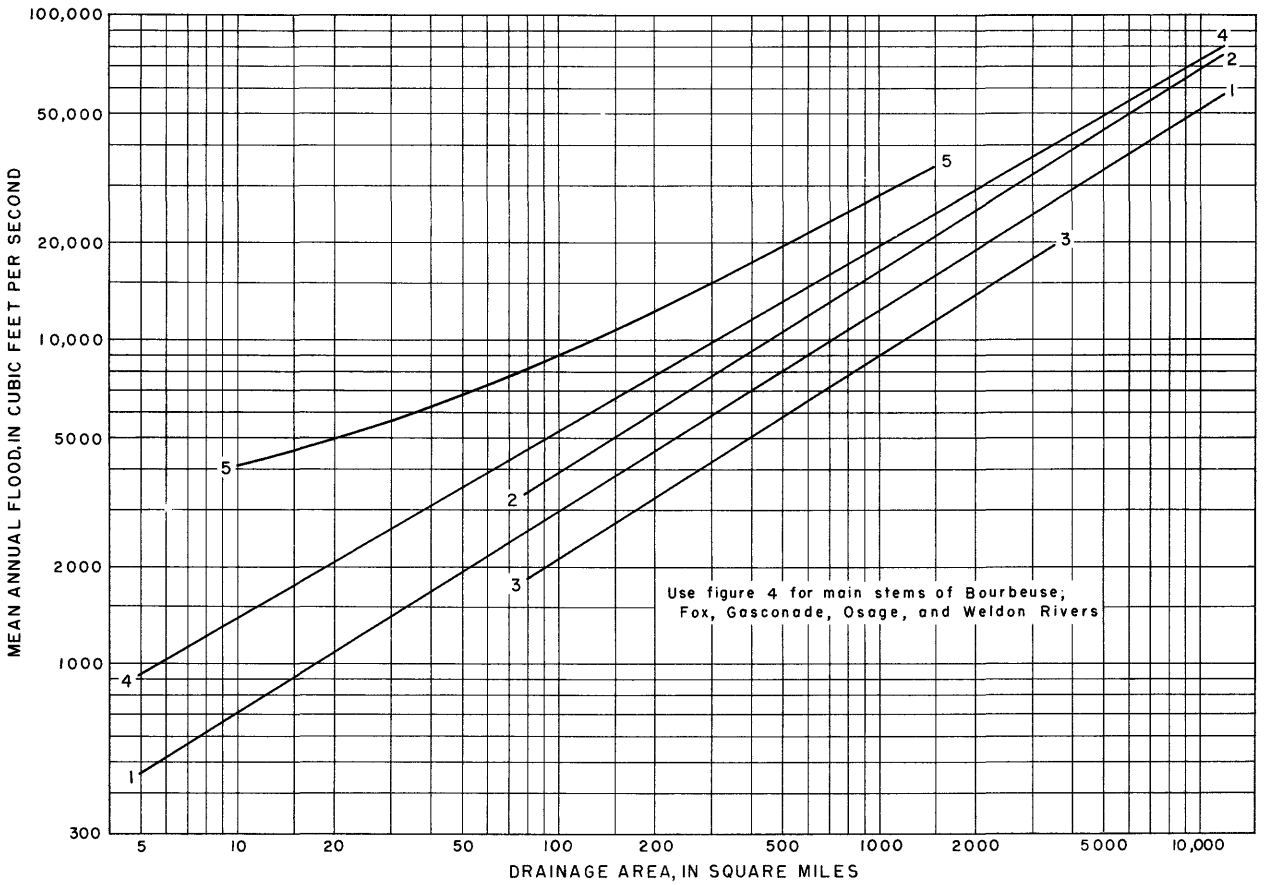

Figure 2. --Variation of mean annual flood with drainage area in hydrologic areas 1-5.

reliable guide of future expectations than a frequency curve based on the streamflow record at the site.

The annual-flood curve so obtained may be transformed into a partial-duration curve (see p. 11) by the following relationship calculated by Langbein (1949):

Recurrence Intervals, in years	
Annual flood	Partial-duration series
1.10	0.41
1.25	.62
1.50	.91
1.75	1.18
2.00	1.45
2.54	2.00
5.0	4.6
10.0	9.5
15.0	14.5
20.5	20
50.5	50
100.5	100

Maximum Floods of Record

Many formulas have been derived and methods originated for computing a "maximum" flood to be expected at a given site. Various flood-estimating methods are discussed in Water-Supply Paper 771 (Jarvis and others, 1936, p. 28-67) which contains an extensive bibliography relating to flood flow, intense rainfall, and flood frequency. More recent references are listed in the bibliography in this report.

One means of determining the "maximum" flood is the limiting-flood method described in the publication of the National Resources Committee (1938, p. 31). This method makes use of the maximum known floods at various stream-gaging stations without regard to frequency of the floods. When the region over which floods are compared is so large that it includes areas of dissimilar hydrologic characteristics the enveloping curve represents only the areas producing the greatest floods and may be grossly in error for other areas.

Figures 7-10 show how maximum known floods in each combination of hydrologic area (see fig. 1) and flood-frequency region (see fig. 5) compare with the corresponding flood of 50-year recurrence interval. These plots provide a rough means of judging the possible frequencies of the maximum flood. The points plotted in figures 7-10 in addition to the gaging stations records (p. 23) include miscellaneous flood measurements at sites other than gaging stations, and measurements of unusual floods at short-term gaging stations.

The Mississippi River

The flow of a stream at any point represents a combination of all factors that affect the rainfall-runoff relationship, modified by storage and other effects of the stream channel throughout its length. Large streams such as the Mississippi River do not belong to the same hydrologic areas and flood-frequency

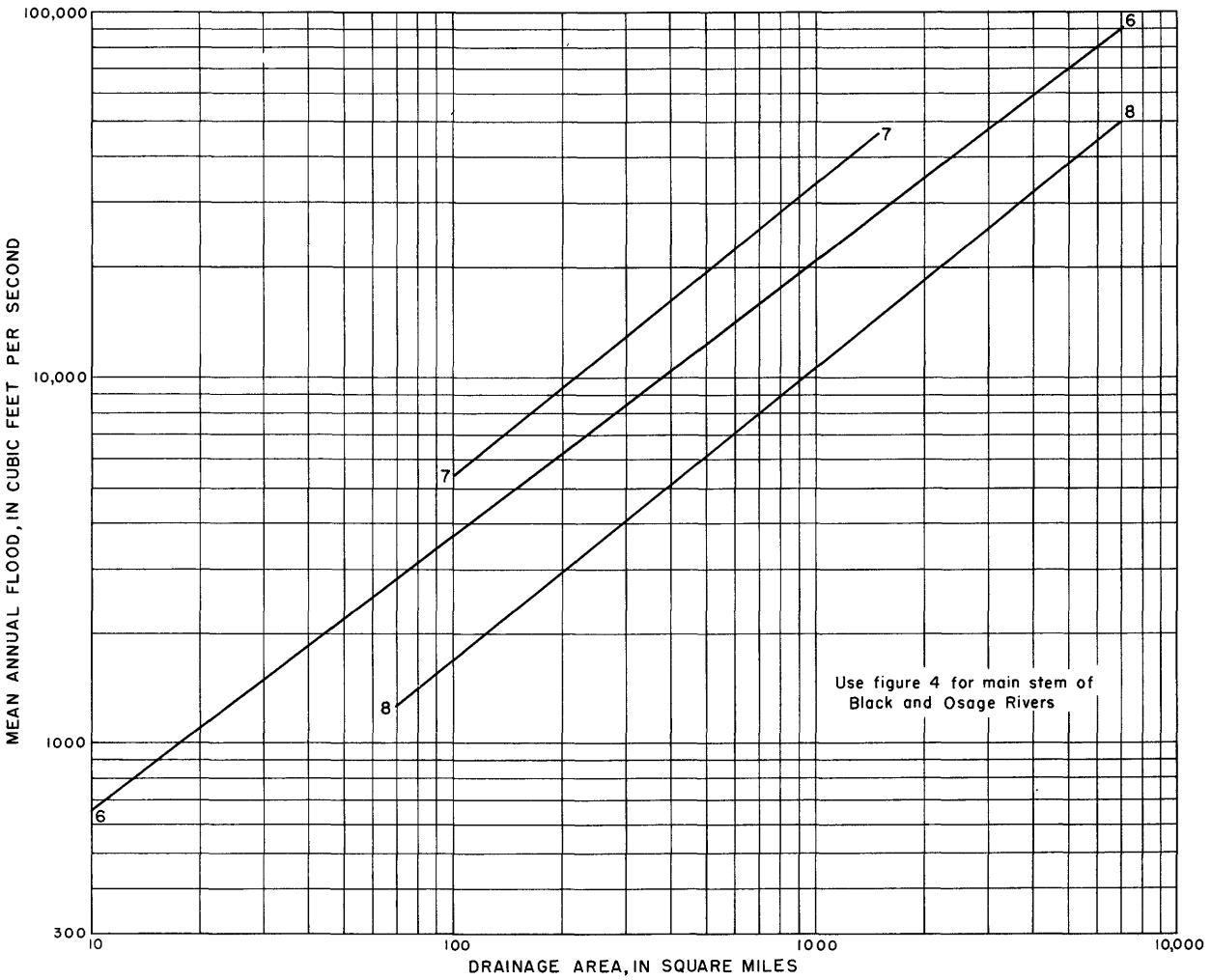

Figure 3.--Variation of mean annual flood with drainage area in hydrologic areas 6-8.

regions represented by the many tributaries. This necessitates separate treatment.

Figure 11 shows the variation of mean annual flood with river distance in miles above the Ohio River (Cairo). The variation in mean annual flood at the mouth of the Illinois and Des Moines Rivers was arbitrarily proportioned on basis of their respective drainage areas. Similar variations for the smaller tributaries are not warranted owing to the uncertainty of the drainage-area ratio assumption. Smaller tributaries usually reach a crest well before that of the main river and make a relatively small contribution to the crest discharge of the main stream. It will be noted that the mean annual flood decreases between Chester and Thebes although the drainage area is increased.

Figure 12 is a curve defining the relationship of peak discharges (expressed in terms of ratio to the mean annual flood) to frequency of occurrence. It applies to the main stem of the Mississippi River between Thebes, Ill., and Keokuk, Iowa.

The design flood for a site along the main stem of the Mississippi River is determined as follows:

1. Determine the river mile of the site from a Corps of Engineers navigation map, by measuring from a gage or tributary, or through other means.

2. Obtain the mean annual flood at the site from figure 11.

3. Determine the ratio to the mean annual flood for the selected frequency from figure 12.

4. Multiply the values from steps 2 and 3 to obtain the design flood.

The Missouri River

The discussion in the preceding section is applicable to the Missouri River main stem except that the variation in mean annual floods between main-stem gaging stations was distributed among the major tributaries in proportion to their mean annual floods (see fig. 13). A curve similar to that in figure 13, but based on drainage area, is found on page 227 of Water-Supply Paper 1139, Kansas-Missouri Floods of July 1951.

Figure 14 is a curve defining the relation of peak discharges (expressed in terms of ratio to the mean annual flood) to frequency of occurrence. The curve of figure 14 applies to the main stem of the Missouri River below Omaha, Nebr., and is the same curve as given on page 228 of Water-Supply Paper 1139 although the period of record and number of records used in deriving the two curves differ slightly.

The design flood for a site along the main stem of the Missouri River is determined as follows:

1. Determine the river mile of the site from a Corps of Engineers Navigation map, river mileage table, by measuring from a gage or tributary, or through other means.

2. Obtain the mean annual flood at the site from figure 13.

3. Determine the ratio to the mean annual flood for the selected frequency from figure 14.

4. Multiply the values from steps 2 and 3 to obtain the design flood.

FLOOD-FREQUENCY ANALYSIS

The subject of flood frequencies has attracted many investigators and much literature on the subject is available. Unfortunately, the viewpoints and theories expressed have not always been consistent; nor is there uniformity of opinion today as to which is the best method. The method used in this report reflects the latest developments of a continuing study of the subject by engineers of the Water Resources Division, U. S. Geological Survey. There will undoubtedly be revisions in methods used herein as additional data become available. Certainly there will be changes in boundaries of the hydrologic areas and flood-frequency regions in the State of Missouri as additional information is gathered.

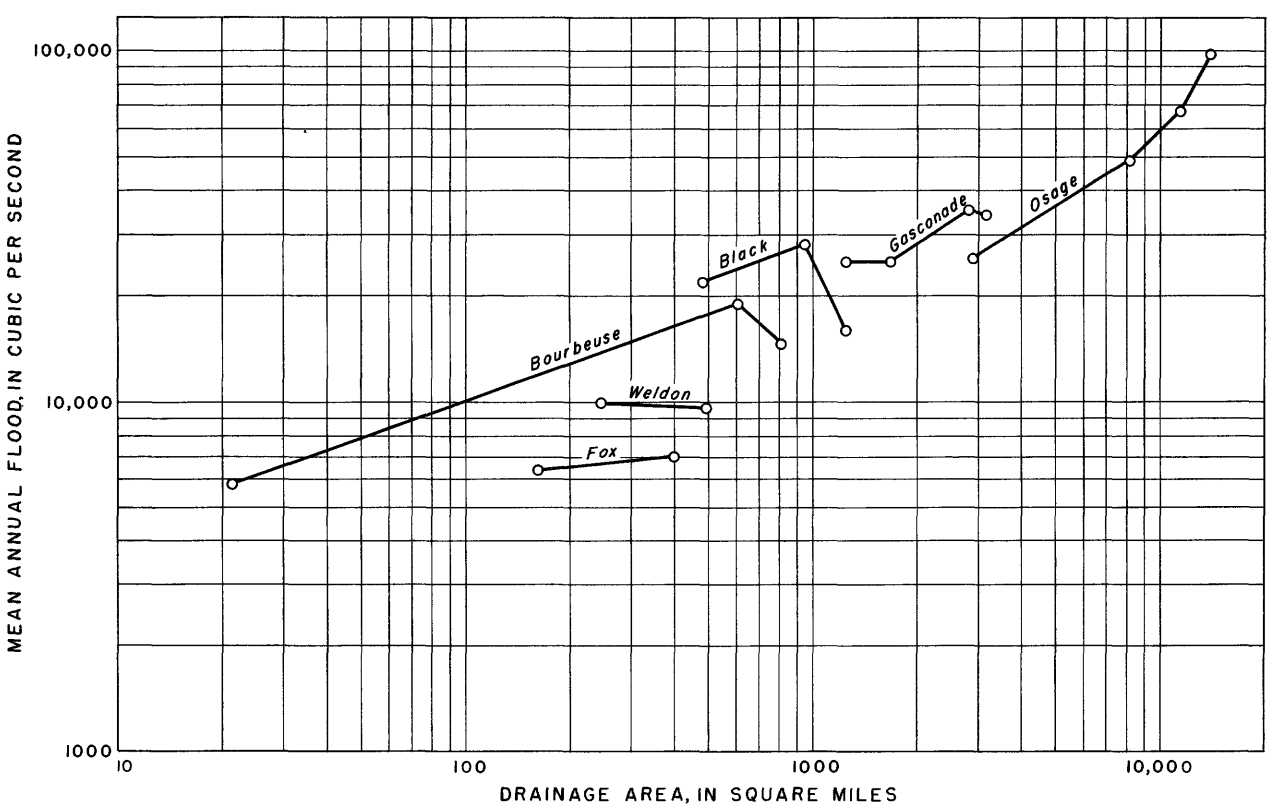

Figure 4.--Variation of mean annual flood with drainage area on the main stems of the Black, Bourbeuse, Fox, Gasconade, Osage, and Weldon Rivers.

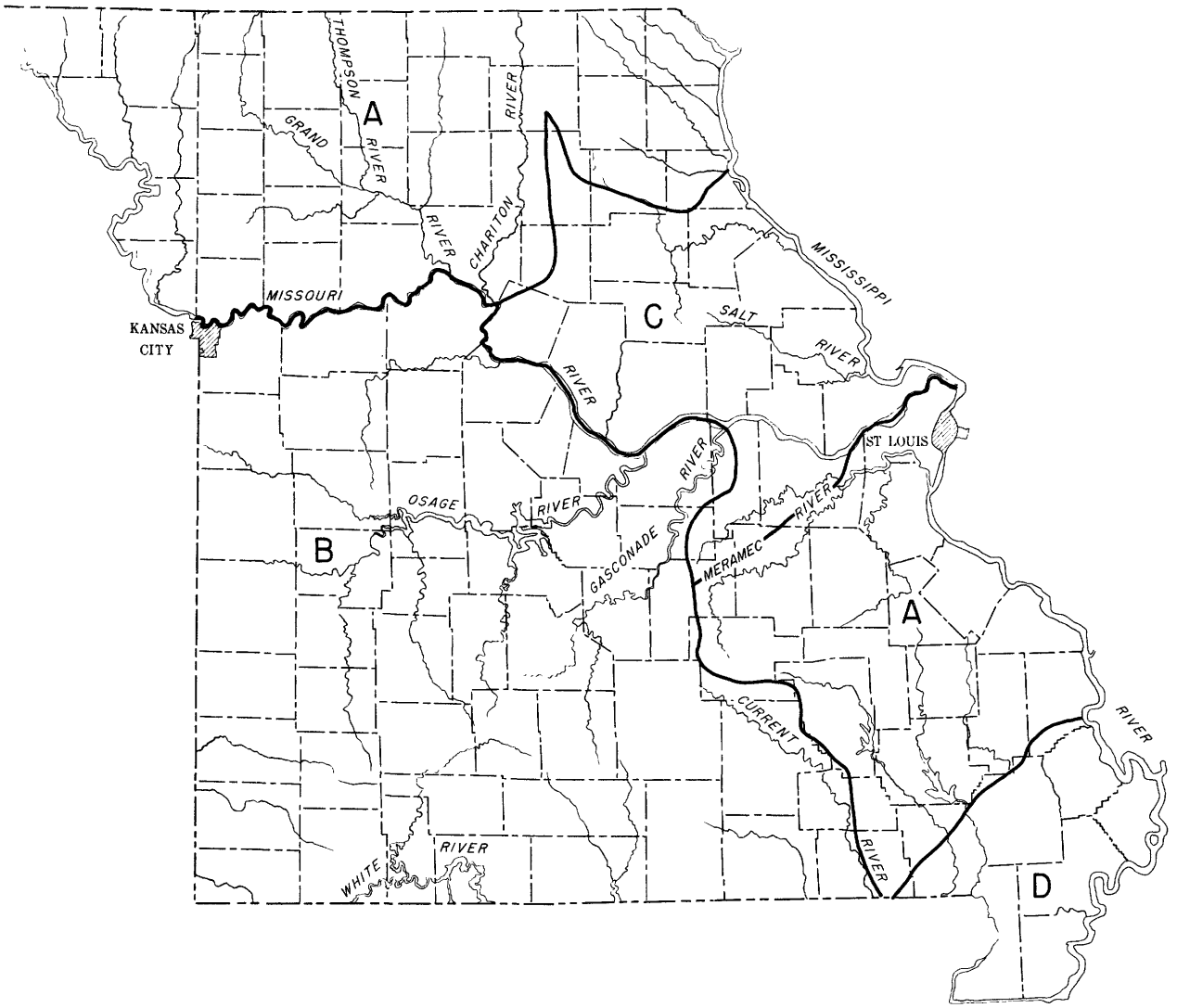

Figure 5. --Location of flood-frequency regions.

A brief description of the State will aid the study of flood characteristics.

Description of the Area

Missouri has a total area of 69,420 square miles and a mean altitude of 800 feet above mean sea level. The State is centrally located geographically and two of the major rivers of the country unite at St. Louis forming the lower half of the State's eastern boundary. The drainage area of the Mississippi River at Eads Bridge in St. Louis is more than 23 percent of the total area of continental United States.

Topography

Missouri has three distinct topographic divisions, shown on figure 15--in the north and west, a prairie; in the extreme southeast, a lowland; and between them, the Ozark Plateau.

The prairies.--The prairie section embraces nearly half of Missouri, including almost all of the area north of the Missouri River(shown as the Till Plains) and an appreciable part south of the river in the western part of the State (shown as the Cherokee Plains). The

plains north of the Missouri River were covered by two major glaciers and a third glacier entered Missouri from Illinois affecting only eastern St. Charles and St. Louis counties. The glaciers left a characteristic drainage pattern with narrow tributary drainage basins paralleling the long, narrow main-stem drainage basins until near their confluence. Altitude ranges from nearly 1,200 feet above mean sea level in the extreme northwest and about 600 feet in the northeast, to about 900 feet along the southern border.

The Cherokee Plains in western Missouri is part of the Great Plains region. Many streams of this region have their origin in Kansas. The altitude of the Cherokee Plains in Missouri ranges from about 800 to 1,000 feet above mean sea level.

Ozark Plateau.--The Ozark Plateau, with altitude ranging from 1,000 feet to slightly more than 1,600 feet above mean sea level, includes about half of the State. The Plateau is thoroughly dissected in the southern part of the State, resulting in sharp ridges separating deeply embedded streams. Streams pass through deep, narrow valleys which at places contract into even narrower gorges known locally as "shut-ins". Many large springs are found in this area, and their recharge areas often serve to absorb storm rainfall and reduce flood discharges. This is particularly noticeable in the Eleven Point River basin.

Rivers with wide headwater drainage basins and narrow downstream basins are common. Such drainage basin shapes at times result in flood crests that decrease in magnitude proceeding downstream in the narrow portion of the basin.

The Salem and Springfield Plateaus, subdivisions of the Ozark Plateau, are relatively level except in the immediate vicinity of the streams.

The St. Francois Mountains are a distinct area of rounded granite and porphyry ridges and knobs. The highest point in the State, Taum Sauk Mountain, altitude 1,772 feet, is in this area.

Southeast lowlands.--The southeast lowlands is a flat region of about 3,000 square miles located in the extreme southeastern corner of the State. Altitude ranges from 230 to 300 feet above mean sea level over most of the area. Crowleys Ridge, about 500 feet above mean sea level, lies diagonally across the area. The region was once largely swampland but drainage has converted the area into excellent farmland.

Climate

Missouri's climate is essentially the continental type. Annual precipitation ranges from slightly over 50 inches in the southeast lowlands to 32 inches in the extreme

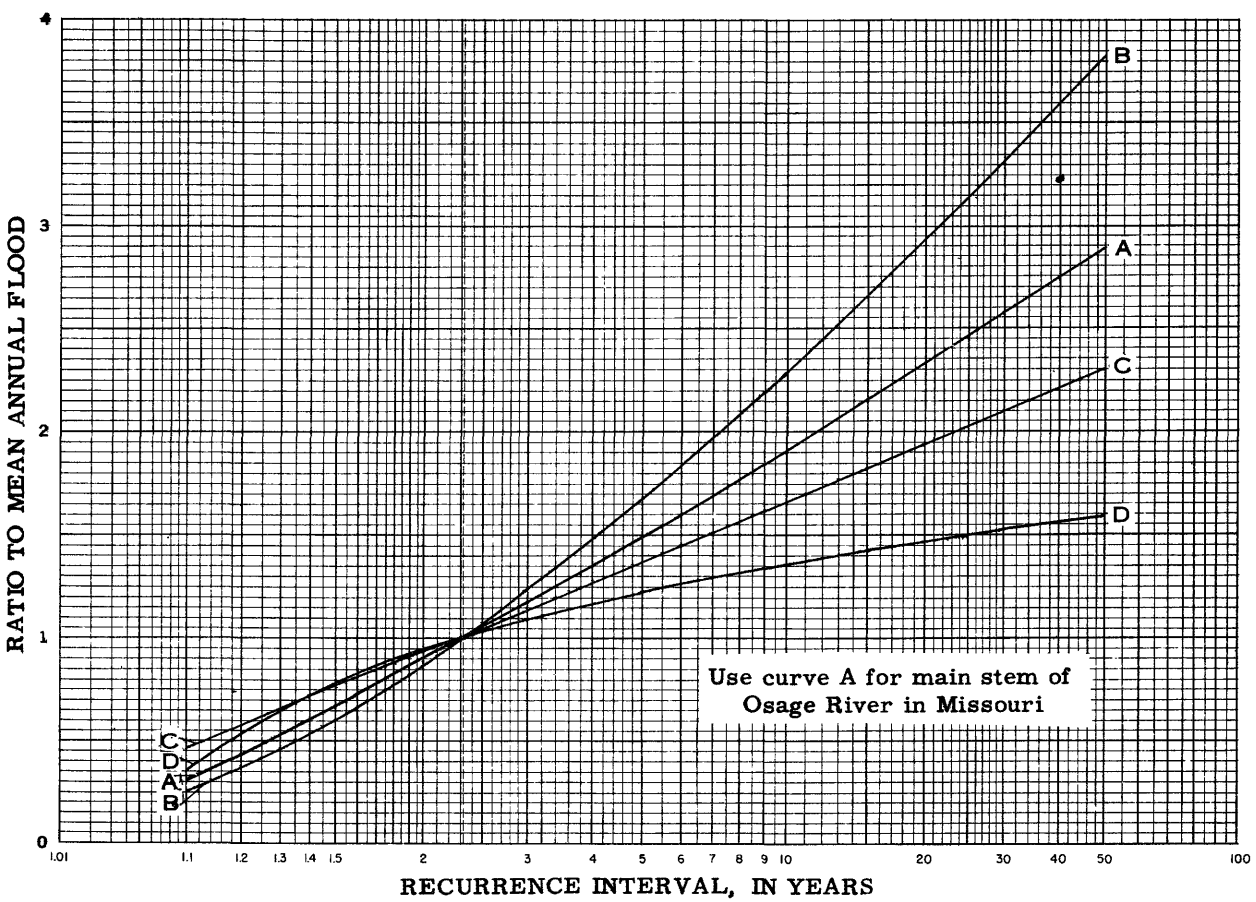

Figure 6.--Frequency of annual floods, regions A-C, period 1921-52, and region E, period 1926-52.

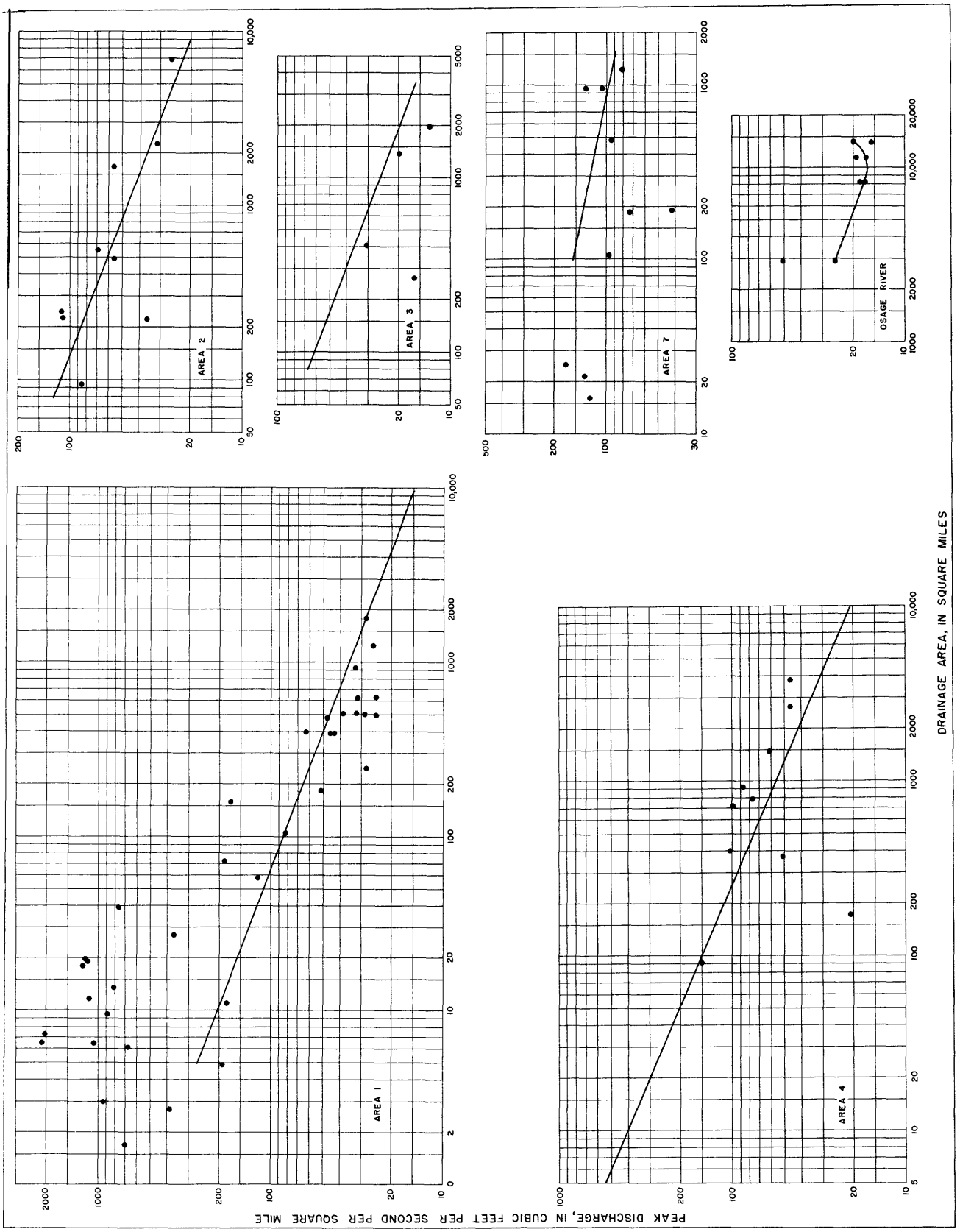

Figure 7. --Relation of maximum to 50-year flood in region A.

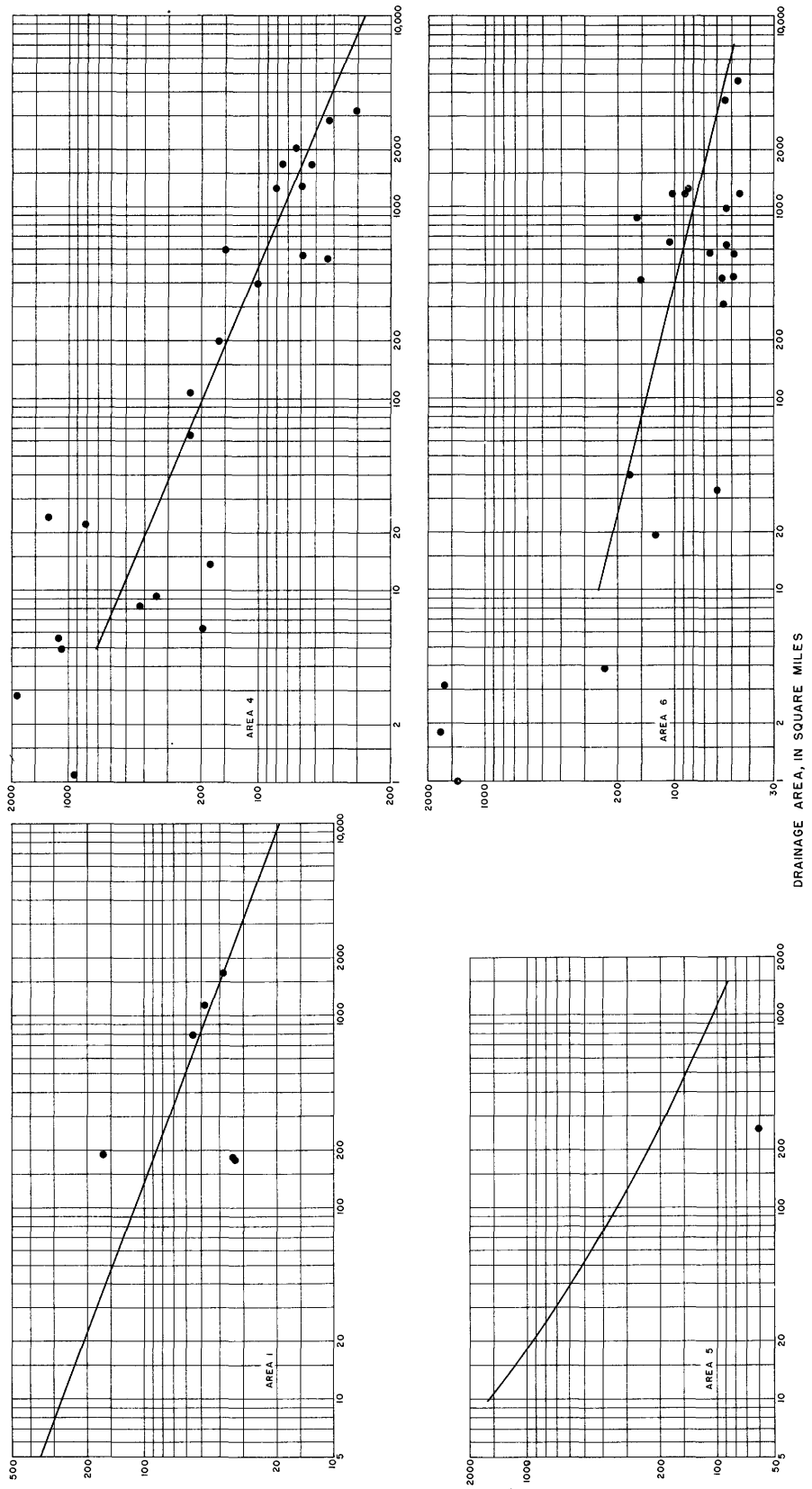

Figure 8.--Relation of maximum to 50-year flood in region B.

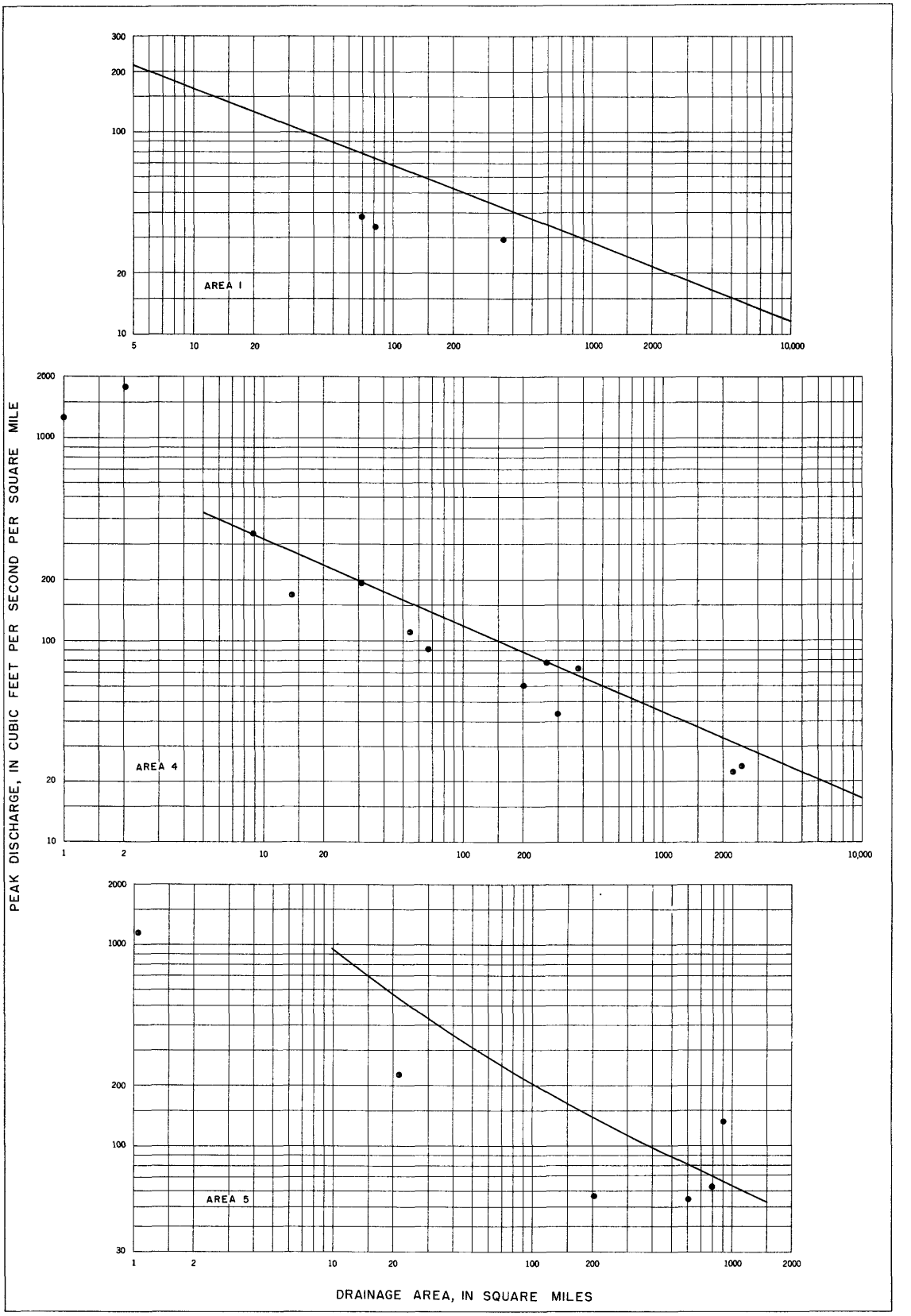

Figure 9.--Relation of maximum to 50-year flood in region C.

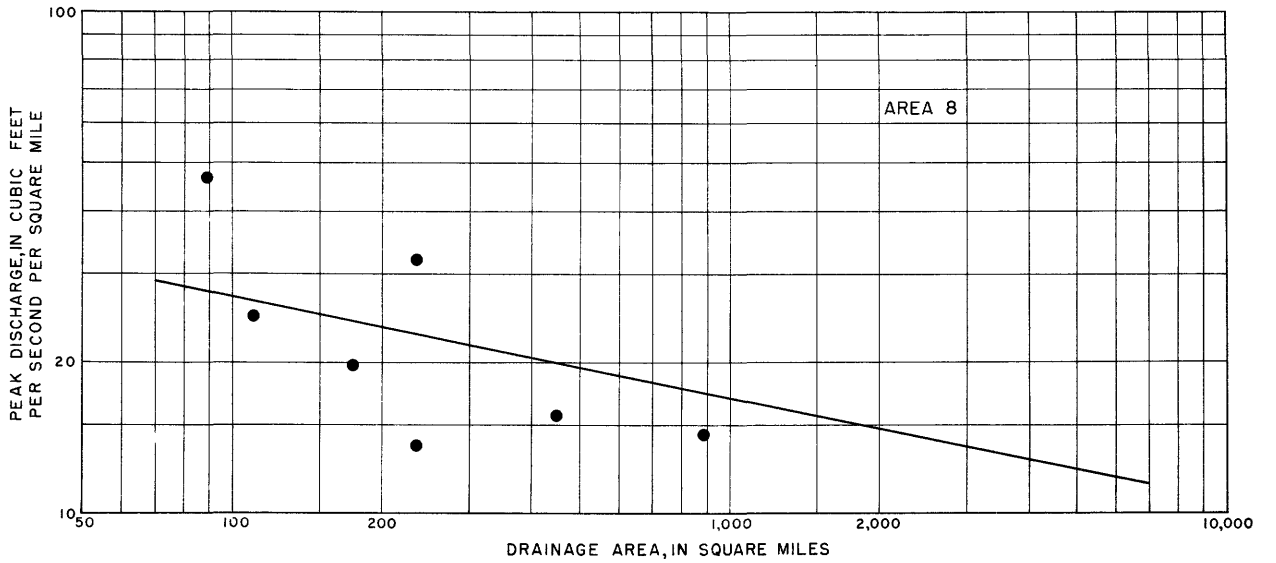

Figure 10. --Relation of maximum to 50-year flood in region D.

northwest. On the average about 42 percent of the precipitation occurs during the period May to August inclusive.

The State's total seasonal snowfall from year to year ranges from 5 to nearly 40 inches and averages about 18 inches. Snowfall seldom plays an important part in the occurrence of floods in Missouri.

Summer rainfall frequently occurs as thundershowers which are occasionally severe. Occasionally more than 10 inches of rainfall has been recorded in 24 consecutive hours. A total of 12 inches of rain fell in 42 minutes at Holt, Mo., on June 22, 1947. The Holt, Mo., storm ranks as the most severe 42-minute rainfall known.

The highest recorded runoff per square mile in Missouri was 3,060 cfs from an area of 0.622 square mile, near Rolla, Mo., on June 9, 1950. Possibly higher runoff has gone unobserved.

Analysis of Flood Data

Gaging-station records 5 or more years in length are of value in flood-frequency analyses. The records of the 104 stream-gaging stations in Missouri were used. In addition to these (page 23), 3 gaging-station records in Arkansas, 5 in Iowa, 3 in Kansas, and 1 in Oklahoma were used to obtain proper coverage within the State and along its boundary.

Flood Frequency at a Gaging Station

Value. --The flood-frequency curve derived from records at a gaging-station site was once considered best for use in designing at or near the site. Now a frequency curve based on regional characteristics is believed to be superior to a frequency curve based only on the floods at a particular site. Exceptions would be a few isolated stations on large streams or stations on streams with characteristics radically different from those of adjacent streams.

The issue may be clarified somewhat by assuming that the life expectancy is desired of a newly born individual belonging to a group of people, closely allied by race, relationship, and environment. The ages at death of a recent generation are available. The extremes of the group are a child who died on its second day and a man who died at 104 years of age. One would hardly consider basing the life expectancy of the infant on either the child who died on the second day or the man who lived for 104 years. However, the experience of both extremes should be considered with the group experience in arriving at the infant's life expectancy. In addition, individuals with characteristics differing greatly from the group would be excluded from the computations.

The flood history at a particular site is an accurate record of what has happened at the site. It could be a poor basis for predicting what will happen at the site if the past record is not typical.

Flood-frequency curves for individual stations are necessary in deriving the regional curve, and their study is basic for an understanding of flood-frequency analysis.

Types of flood series. --Flood series are of two types, the annual-flood series and the partial-duration series. The latter is often termed "floods above a base."

The annual-flood series consists of the highest momentary peak discharge in each water year of station record. This type of series is a complete duration

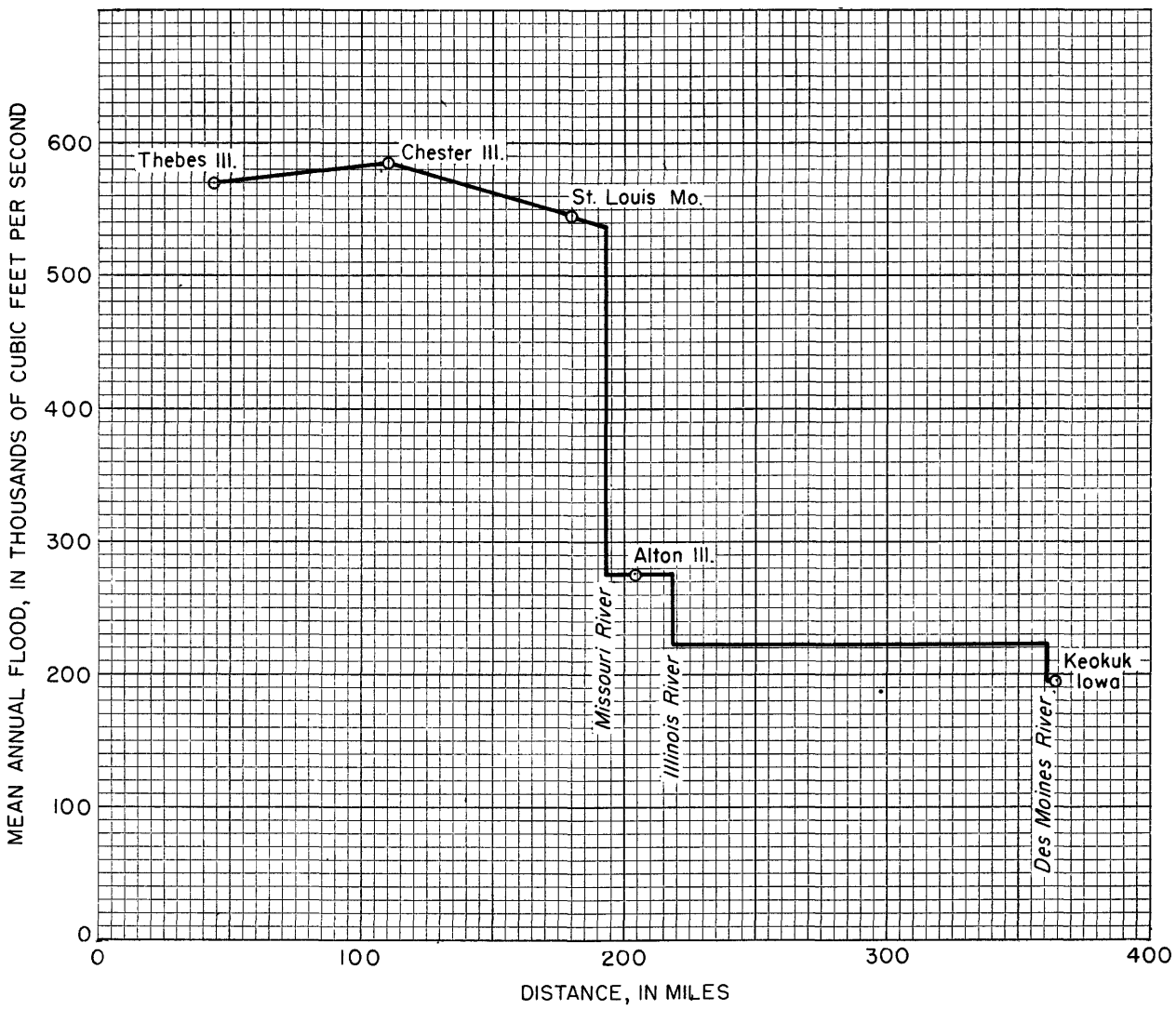

Figure 11. --Mississippi River, variation of mean annual flood with distance (miles) above the Ohio River.

series and is susceptible to mathematical analysis by several methods of which Gumbel's (Gumbel 1945) method is an example. The annual-flood series has the disadvantage that when several high floods occur in the same water year, some floods higher than many annual floods are disregarded.

The partial-duration series overcomes the objection of not considering all high floods by listing all floods above a given discharge (termed the base). The base selected is such that in general 3 floods per year will exceed the base. Some water years will have no floods above the base. Thus the partial-duration series is discontinuous and is not susceptible to rigorous mathematical analysis. Another disadvantage of the partial-duration series is the dependence of some floods. One flood will at times set the stage for another, so that arbitrary rules must be set up for selecting peaks to be included. Peaks for partial-duration for many stations are published in the annual water-supply papers.

The two types give almost identical results for intervals greater than about 10 years. As most designs are for intervals greater than 10 years, there remains little practical difference in choice between types. The simplicity of the annual-flood series makes its use attractive. The frequency curve for the annual-flood series may be converted to a partial-duration curve by the methods described on page 3 .

Although the two types of curves give essentially the same results for larger recurrence intervals there remains the distinction that the annual series gives the interval with which a flood of a given magnitude will occur as an annual flood while the partial-duration series gives the interval with which a flood will recur without regard to flood type.

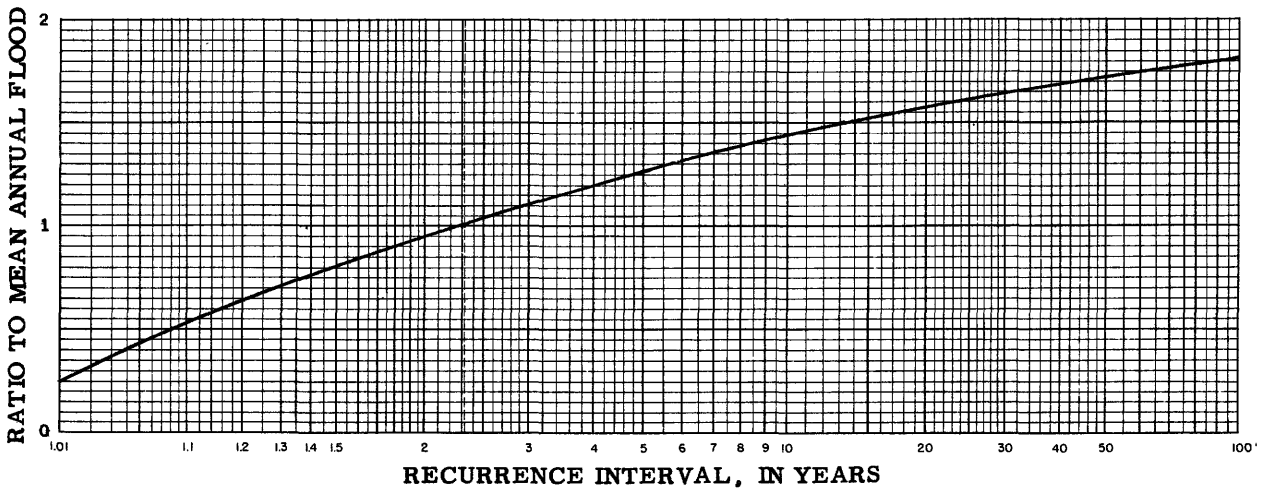

Figure 12.--Frequency of annual floods, Mississippi River main stem from Thebes, Ill., to Keokuk, Iowa, period 1861-1952.

This distinction suggests different uses for the two series. For design floods with recurrence intervals greater than 10 years the annual-flood series may be used. The partial-duration series might be used for studies of damages involving low frequencies, for determining how often a road will be inundated, for design of temporary cofferdams, and similar uses involving quickly repaired structures.

Plotting positions.--Floods are tabulated for either or both types of flood series by assigning an order number to each flood representing its relative rank, beginning with no. 1 for the highest flood.

Plotting positions (recurrence intervals) for each flood are computed by the formula $(N + 1)/M$, where N is the number of years of record and M is the order number beginning with the highest as 1.

Only complete years of peak-flow record should be used, but historical flood data may be used to advantage. The highest annual flood may be known for some years during which the record is not complete for use in the partial-duration series.

Historical data.--Outstanding floods occurring prior to the beginning of records should be plotted in the same manner as floods of record, using for N the number of years during which the historical floods are known to be the greatest. The no. 1 flood during the period of record may be considered as the no. 2 flood for the longer historical period provided no flood between the no. 1 historical flood and beginning of record exceeded the no. 1 flood of record. However, the no. 1 historical flood may be lower than the no. 1 flood of record and become the no. 2 flood for the historical period. In such a case no. 1 flood of record would also be the no. 1 flood for the historical period. Several historical floods may be used when they are known to be higher than all other floods during the historical period.

In order to take full advantage of historical floods research is necessary to avoid errors from omission of floods during the period between historical data and beginning of records. A long gage-height record at the gaging-station site is of great value in the study of historical floods. Care must be exercised in assigning discharge values to historical flood heights because of possible changes in condition of the stream near the gaging-station site.

Fitting frequency graphs.--The choice of graduations on flood-frequency charts is of little importance. However, the chart based on the theory of extreme values (Powell, 1943) has many advantages. Flood discharges plotted on this chart approximate a straight-line graph for many stations. Figure 6 is plotted on this type of chart.

After the floods are plotted a curve must be fitted to the data. The short length of most streamflow records and inherent inaccuracies of small samples do not warrant the effort of analytical curve fitting. The curves used in this report were fitted by inspection, giving greatest weight to position of points along the lower and middle portions of the frequency curve. The computed recurrence intervals for the greater floods rarely equal their actual recurrence interval. Thus little weight should be given the position of high points that lie far above the trend of the more accurately defined lower and middle portions of the frequency curve.

Regional Flood-Frequency Curves

The major portion of the State's streamflow records do not exceed 31 years in length. This does not satisfy the demand for estimates of long-term floods. Extrapolation of individual frequency curves may be dangerous as the linear distance from 25 to 200 years seems very short on the frequency chart. The fitted

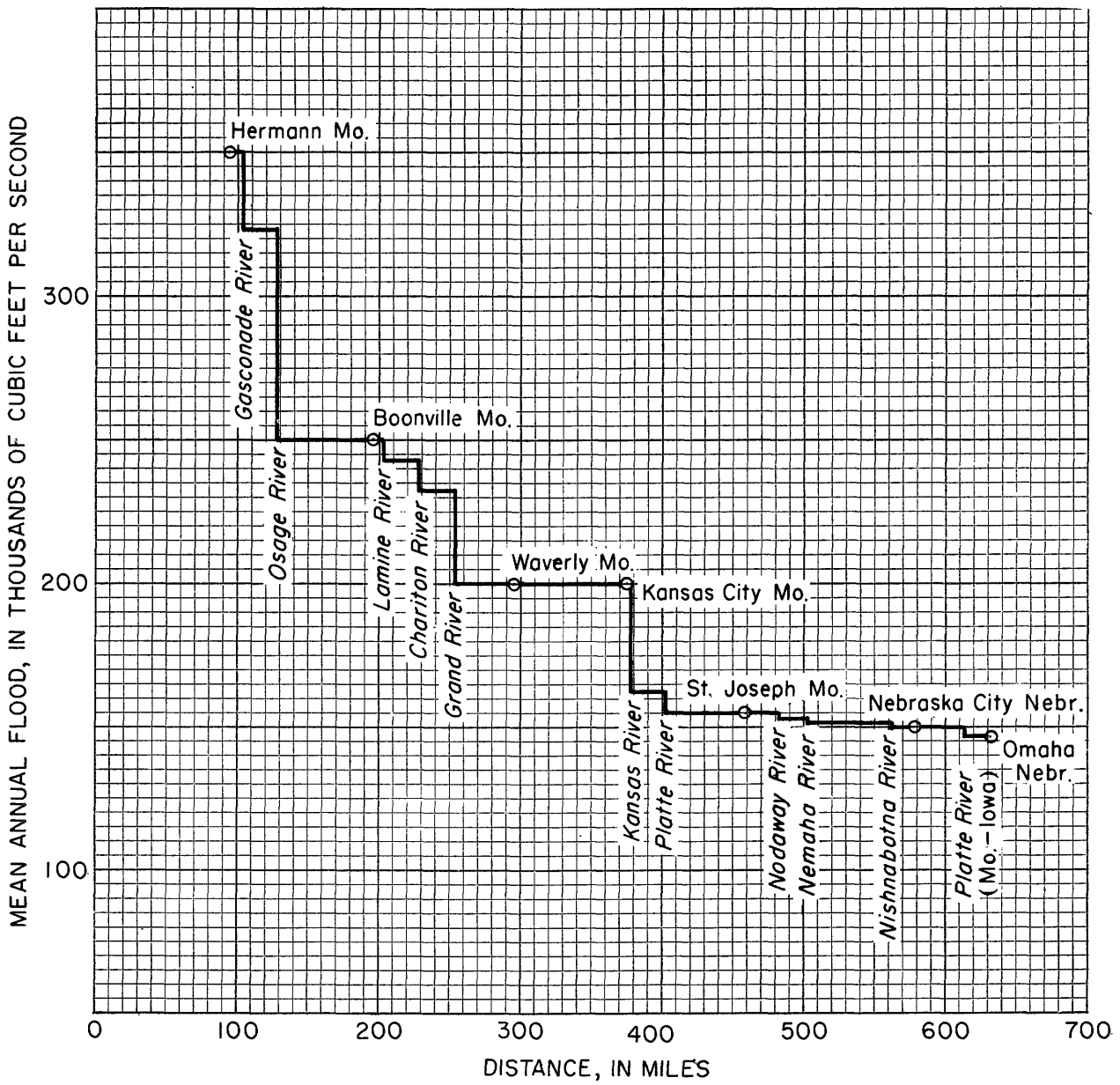

Figure 13.--Missouri River, variation of mean annual flood with distance (miles) above mouth.

curve, although it may approach a straight line, contains errors inherent in small-sample random observations.

Frequency curves from gaging stations located on adjacent streams or at nearby sites on the same stream, may differ in slope when one station includes, by chance, extremely high or low peaks not included in the other station record. Frequency curves differing in slope, when extended to a 100 or 200-year frequency, give divergent results and no criteria exist for selecting the correct curve.

The use of a flood-frequency curve for a gaging-station site is questionable even in the vicinity of the gaging station. The need for flood-frequency data at ungaged sites cannot be met with point data.

The disadvantages of individual flood-frequency curves for gaging-station sites led to investigation of the feasibility of combining flood data of individual sites and relating the flood-frequency function to measurable characteristics of drainage basins. In the first instance, the large sampling errors would be reduced and in the second, data would gain regional significance and

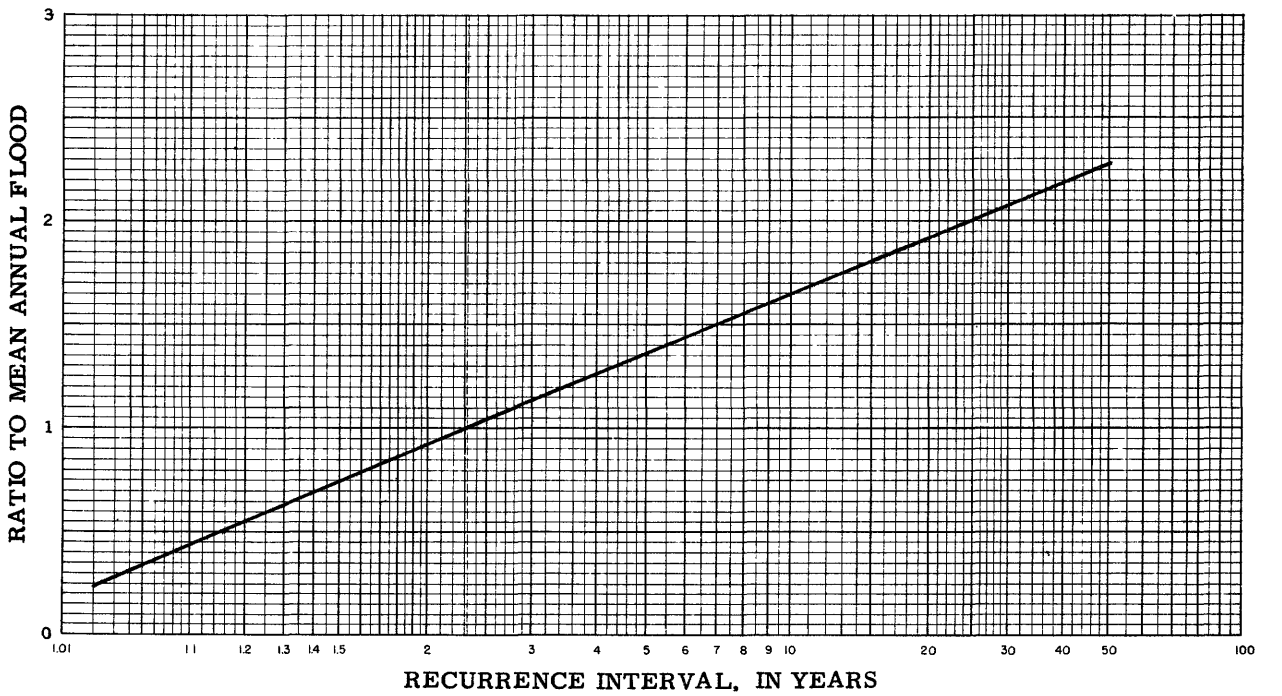

Figure 14.--Frequency of annual floods, Missouri River main stem below Omaha, Nebr.,period 1922-52.

become applicable to ungaged areas. A flood-frequency graph based on the combined experience of a group of stations has firmer support than one drawn to fit data at a single station.

Requirements for combining records. --Before flood-frequency records at different sites may be combined, they must represent the same period of time and be taken from a region having essentially the same flood-frequency characteristics. In order to establish regional relationships, some index of the flood flow must be related to measurable characteristics of the drainage basin.

Mean annual flood. --The mean of the annual flood peaks has been found descriptive of a drainage basin's flood characteristics and good index of the geographical variation of flood flow. The mean annual flood may be defined by a relatively short period of record, thus increasing the fund of data available for flood-frequency study.

The graphical mean is more stable and reliable than the arithmetic mean for flood-frequency studies because a flood of high frequency within a short period of record will unduly influence the arithmetic mean. The graphical mean of a station with more than 5 years of record is determined by plotting a flood-frequency curve for the gaging station. The graphical mean annual flood is taken as the intersection of the graphically fitted flood-frequency curve and the 2.33-year recurrence interval line, based on the theory of extreme values, (Gumbel, 1945).

Computation of comparable means. --In order that the mean annual floods be comparable, the gaging-station records must represent the natural streamflow for the same period. For this study, the period October 1, 1921, to September 30, 1952, was selected as the base period for the majority of records. When gaging-station records did not extend over the base period, annual peaks were correlated with those of a nearby station and the record extended to the base period with computed annual peaks. The computed figures were used only for the purpose of assigning order numbers to the actual peaks of record. Certain records, like those of the Osage River near Bagnell, were corrected for storage in the reservoir above the station before they could be compared with the natural flow of other streams.

Annual peaks for the base period were assigned order numbers, a flood-frequency curve was plotted for each gaging station, and the graphical mean annual flood was determined.

Test for homogeneity of records. --Before a group of station records are combined, a test of homogeneity is necessary to insure that all records are selected from a region with uniform flood-frequency characteristics. The test involves determining whether differences in slopes of individual frequency curves are greater than might occur by chance in random sampling.

The slope of the frequency curve is expressed by the ratio of the 10-year flood to the mean annual flood.

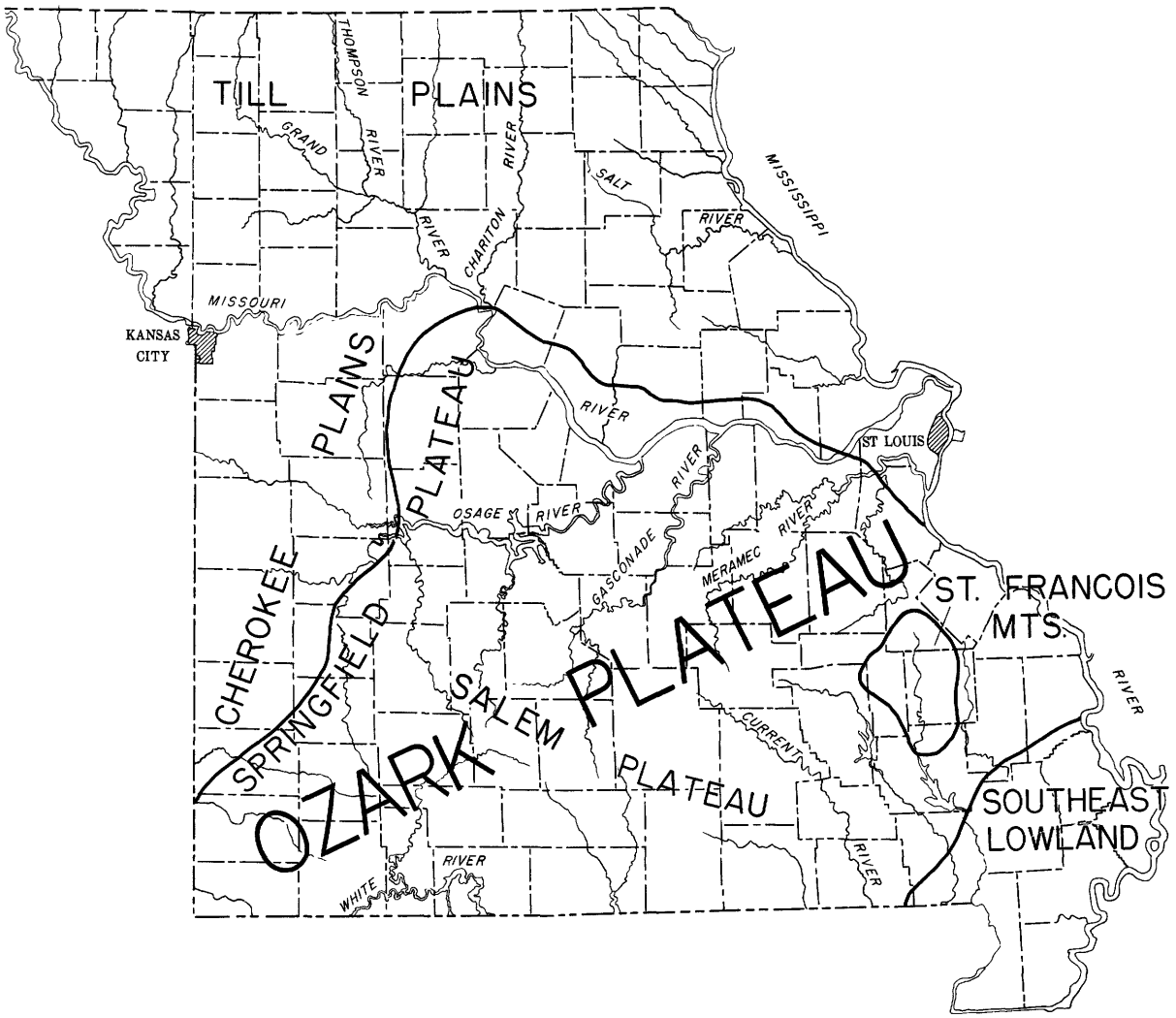

Figure 15.--Principal surface features of Missouri.

Ratios are averaged to obtain the mean ratio of the region. Each mean annual flood is multiplied by the average 10-year ratio and the recurrence interval determined for this value from the station frequency curve. The recurrence interval thus obtained is plotted against the number of years of effective record on the test graph shown in figure 16. The number of years of effective record equals the number of years of actual record plus one-half the number of years of computed record. If the points for all stations are distributed normally between the two curves, the region is homogeneous. Points lying outside the curves indicate gaging stations belonging to other flood-frequency regions.

Flood-frequency regions. --The flood-frequency regions (see fig. 5) are determined by plotting the 10-year ratios at the gaging-station locations on a map of the State. Tentative regional boundaries are drawn and the homogeneity test described in the preceding paragraph is repeated until sufficient refinement in location of regional boundaries is achieved.

The ratios for floods of each order number to the mean annual flood are tabulated for each station within the region. Computed values of annual floods are not used although they were used to obtain the correct order number of recorded floods when station records were extended to the base period.

The median ratio for each order number is determined and plotted against the recurrence interval for that order number based on the length of the base period. The resulting flood-frequency curves are shown in figure 6. Similar curves for the Osage, Missouri, and Mississippi Rivers do not fit curves for the region through which they flow.

Hydrologic areas. --Figure 6 provides a regional frequency curve for each lettered region of figure 5. The task remains of relating the mean annual flood to some measurable property of the drainage basin. The most important feature of a drainage basin is its area. The drainage area proves to be the only feature necessary to consider in subdividing Missouri into hydrologic areas.

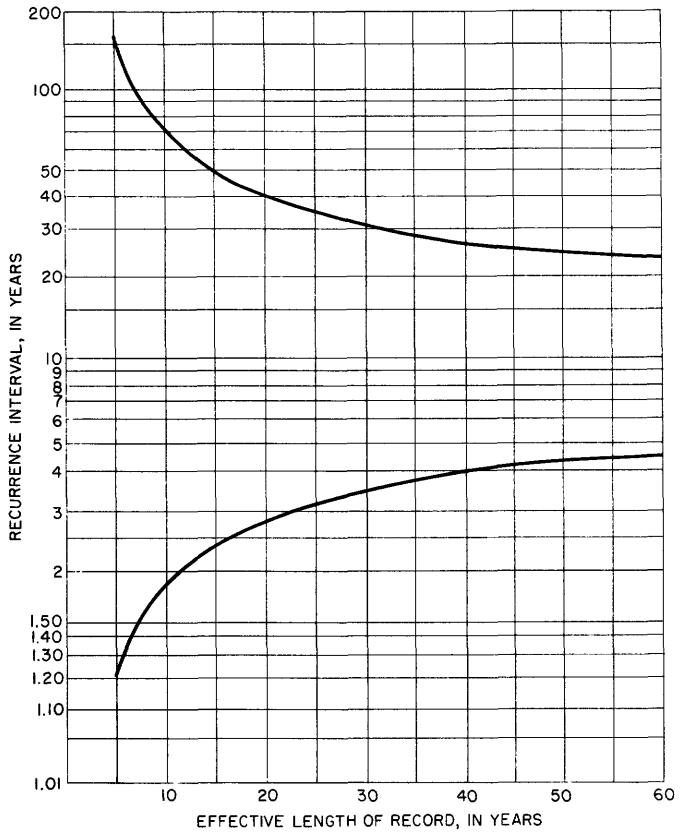

Figure 16.--Homogeneity test graph.

Hydrologic areas, shown in figure 1, are determined by trial. Each area contains those stations that lie on the same relationship curve shown in figures 2 and 3. A statistical test similar to the homogeneity test (see fig. 16) is used to check any station within an area that does not plot closely to its area curve. Adjustments in hydrologic area boundaries are made when indicated by the test.

Owing to habitually lower downstream flood crests on some of the larger streams, downstream gaging stations did not plot on the curve with upstream stations. Such streams were plotted on the individual curves on figure 4. Individual curves were also necessary for the Mississippi and Missouri Rivers (see figures 11 and 13).

Crest-stage-gage program. --The hydrologic areas were determined from station records tabulated in p. 23-124, supplemented by records of other gaging stations with four or more years of record through September 30, 1953. In some instances, boundaries of the hydrologic areas are poorly defined. Some of the curves showing the variation of mean annual flood with drainage area are not defined at the lower end. Both of these faults will be corrected by a crest-stage-gage program recently initiated in cooperation with the Missouri State Highway Department. In addition to extending flood-frequency data, the crest-stage indicator offers a means of improving the accuracy of the stage-discharge relation at the site of a proposed structure, and, if necessary, a means of determining the mean annual flood with only a short record. Where structures are scheduled a few years in advance of design and construction a crest-stage indicator might be installed at the structure site.

The procedure for determining the mean annual flood from short-term records is best explained by an example. Assume the gaging station at Niangua River near Decaturville was operated only for the 4 water years 1947-50. A long-term record, Pomme de Terre River at Hermitage, is available for correlation with the short-term record. Proceed as follows:

1. List all peaks above the base (partial-duration series) for the period of record common to the two stations.

2. Arrange the peaks at each station in descending magnitude and number them beginning with no. 1 for the highest flood (see table 1).

3. Plot the peaks with corresponding order numbers against each other, (see figure 17) and draw a line to average the points.

4. Enter the plot (figure 17) with the mean annual flood of the long-term station and read the corresponding mean annual flood for the short-term station.

Table 1. --Partial-duration series, water years 1947-50.

Order	Short-term station	Long-term station
1	29,000	36,400
2	20,700	35,800
3	17,200	22,700
4	17,200	19,100
5	12,700	18,900
6	10,800	16,000
7	10,300	14,500
8	10,100	14,100
9	10,100	13,800

In the above example the mean annual flood of Pomme de Terre River at Hermitage for the period 1921-52 is 22,000 cfs. The mean annual flood of Niangua River near Decaturville determined from figure 15 is 15,600 cfs, as compared with 15,500 cfs, the actual mean annual flood for period 1921-50.

GAGING-STATION RECORDS

Records Available

The location of gaging stations tabulated in this section are shown on figure 18. The identifying numbers in figure 18 are shown next to the station names on bar graphs of figure 19 and in the station descriptions on p. 23-124. In addition to records contained in this section, records in other states located near the Missouri boundary were used to extend flood-frequency data along the State border.

The existing gaging-station records in the State of Missouri not used in this report and reasons therefore are listed as follows [records too short unless otherwise noted]:

Mississippi River at Louisiana
a/ North Fork South Fabius River at Edina
a/ Little Fabius River near Edina
a/ Bear Creek near Hannibal

a/ Crooked Creek near Shelbina
b/ Davis Creek near Mexico
a/ Long Branch near Paris
a/ Spencer Creek near Frankford
b/ Peno Creek at Frankford
b/ West Fork Cuivre River near Laddonia
Mill Creek at Oregon
Jenkins Branch at Gower
East Fork Fishing River at Excelsior Springs
Medicine Creek near Sturges
Mussel Fork near Musselfork
Shiloh Branch near Marshall
Little Osage River at Stotesbury
Sac River near Collins
Little Sac River near Springfield
Pomme de Terre River near Bolivar
Niangua Branch at Marshfield
c/ Osage River near St. Thomas
d/ Missouri River at Bonnots Mill
Missouri River at Isbell
Rumbo Branch at Danville
Missouri River at Ruegg
Meramec River near St. James
a/ Dry Fork near St. James
a/ Huzzah Creek at Dillard
a/ Courtois Creek at Berryman
Lanes Fork near Rolla
Big River near DeSoto
St. Francis River near Bismark
Wolf Creek near Farmington
Doe Run Creek near Knob Lick
St. Francis River near Roselle
Stouts Creek at Arcadia
Little Francis River at Fredericktown
Twelve-mile Creek at Zion
Cedar Creek at Coldwater
Big Creek at Des Arc
Clark Creek at Patterson
Otter Creek at Taskee
c/ St. Francis River at Wappapello
e/ St. Francis River at Fisk
Little River ditch 81 at Kirk
Little River ditch 1 at Kirk
Little River ditch 66 at Kirk
White River near Branson
Cane Creek at Harviell
Eleven Point River near Thomasville
Stahl Creek near Miller
Lost Creek at Seneca

a/ Fragmentary.
b/ Partially fragmentary; continuous record too short.
c/ Regulated.
d/ Short record too near other stations on same stream.
e/ All peak flow not measured.

The short-term gaging-station records used to help delineate hydrologic area boundaries are listed in table 2.

Table 2.--Short-term gaging-station records in Missouri used to delineate hydrologic area boundaries.

Gaging station	Drainage area (sq mi)	Hydrologic area
Beaver Creek near Rolla	14.0	4
Behmke Branch near Rolla	1.05	4
Big Creek near Yukon	8.36	4
Bourbeuse River near St. James	21.3	5
Coyle Branch at Houston	1.10	4
Crooked River near Richmond	159	1
Green Acre Branch near Rolla	.622	4
Lanes Fork near Vichy	24.1	5
Little Beaver Creek near Rolla	6.41	4
Little Blue River near Lake City	184	1
Loutre River at Mineola	202	5
Maries River at Westphalia	257	5
Moniteau Creek near Fayette	81	1
Moreau River near Jefferson City	531	4
Petite Saline Creek near Boonville	182	1
Wakenda Creek at Carrollton	248	1
White Cloud Creek near Maryville	6.06	1

Explanation of Data

The data for each gaging station consists of a location paragraph giving the most recent location of the gage; the drainage area above the station; a history of the gage as it affects flood heights (minor changes in location are not mentioned); a statement of the permanence of the stage-discharge relation; the generally accepted flood stage (where the flood stages used by various agencies may differ, the U. S. Weather Bureau flood stage is given followed by their name); historical data in addition to that listed in the peak discharge tabulation; pertinent remarks, including the base for the partial-duration series of peaks.

The flood stage is normally the gage height at which the river overtops one or both of its banks in the vicinity of the gage and begins to inundate the surrounding land. Another definition, closely associated with this one, is that the flood stage is that stage at which flood damage begins. The stage is determined by field observations; minor flooding of unimportant low areas adjacent to the stream is often not considered in arriving at the flood stage.

No differentiation between annual peaks and peaks for partial-duration series is made in the tabulation. Annual peaks below the base must be eliminated before using the tabulation for partial-duration studies. A footnote marks these years with incomplete records which may not be used in the partial-duration series.

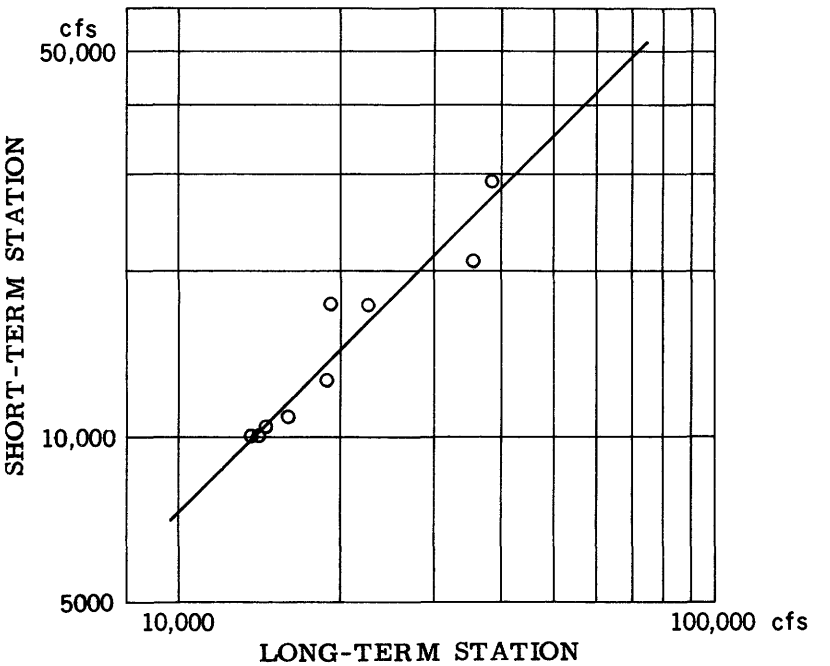

Figure 17. --Determination of mean annual flood from a short-term record.

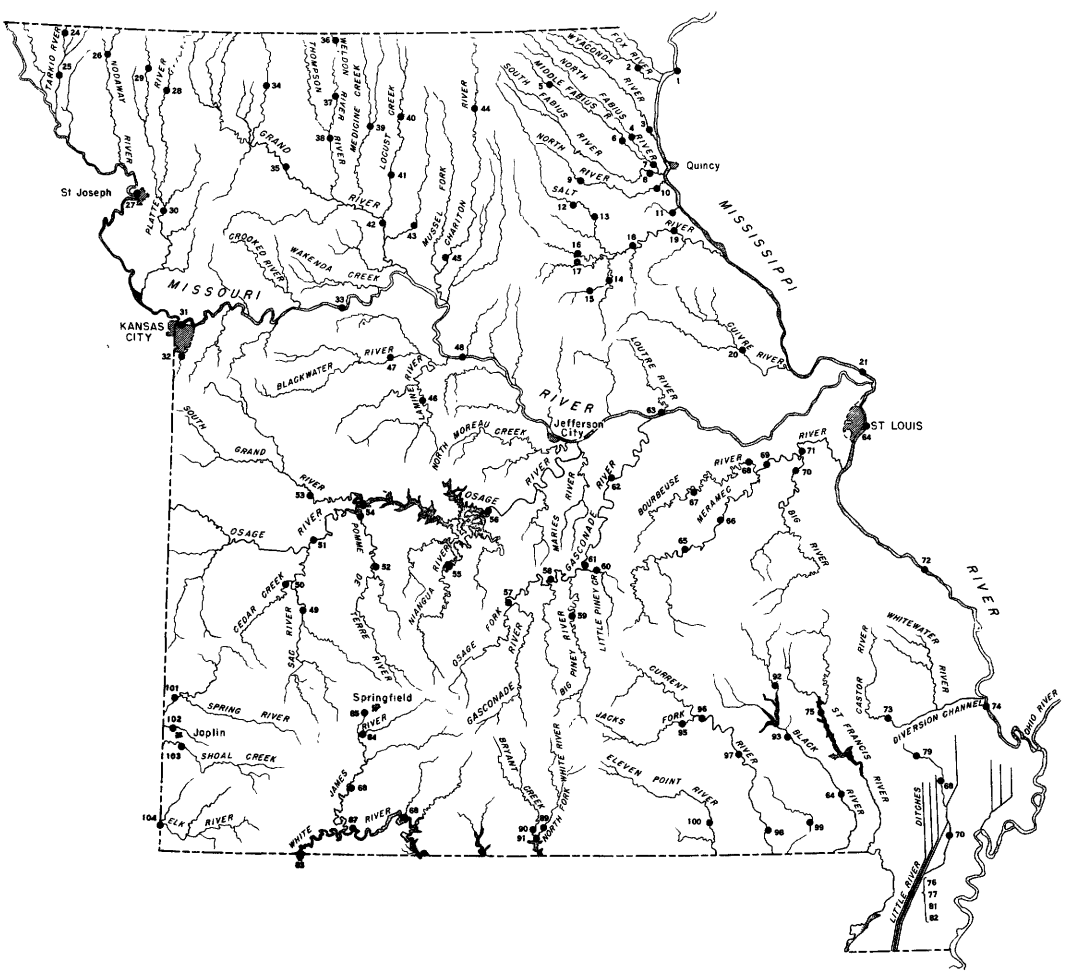

Figure 18. --Location of gaging stations whose flood records are tabulated in this report.

INDEX NUMBER	GAGING STATION	DRAINAGE AREA (sq mi)	MEAN ANNUAL FLOOD (cfs)
1	Mississippi River at Keokuk, Iowa	119,000	194,000
	Fox River basin;		
2	Fox River at Wayland, Mo.	400	7,000
	Wyaconda River basin;		
3	Wyaconda River above Canton, Mo.	393	6,500
	Fabius River basin:		
4	North Fabius River at Monticello, Mo.	452	9,000
5	Middle Fabius River near Baring, Mo.	185	5,200
6	Middle Fabius River near Monticello, Mo.	393	7,900
7	North Fabius River at Taylor, Mo.	930	12,000
8	South Fabius River at Taylor, Mo.	620	8,000
	North River basin:		
9	North River at Bethel, Mo.	58	2,000
10	North River at Palmyra, Mo.	373	11,500
	Bear Creek basin:		
11	Bear Creek at Hannibal, Mo.	31	3,600
	Salt River basin:		
12	Salt River near Shelbina, Mo.	481	7,400
13	Salt River near Hunnewell, Mo.	626	8,500
14	South Fork Salt River at Santa Fe, Mo.	298	8,500
15	Youngs Creek near Mexico, Mo.	67.4	2,920
16	Middle Fork Salt River at Paris, Mo.	356	5,500
17	Elk Fork Salt River near Paris, Mo.	262	8,200
18	Salt River near Monroe City, Mo.	2,230	29,000
19	Salt River near New London, Mo.	2,480	30,000
	Cuivre River basin:		
20	Cuivre River near Troy, Mo.	903	28,400
21	Mississippi River at Alton, Ill.	171,500	275,000
22	Missouri River at Omaha, Nebr.	322,800	146,000
23	Missouri River at Nebraska City, Nebr.	414,400	150,000
	Tarkio River basin:		
24	West Tarkio Creek near Westboro, Mo.	105	6,500
25	Tarkio River at Fairfax, Mo.	508	8,200
	Nodaway River basin:		
26	Nodaway River near Burlington Junction,	1,240	17,000
27	Missouri River at St. Joseph, Mo.	424,300	155,000
	Platte River basin;		
28	Platte River at Conception Junction, Mo.	492	10,500
29	One Hundred and Two River near Maryville,	500	7,200
30	Platte River near Agency, Mo.	1,760	15,000
31	Missouri River at Kansas City, Mo.	489,200	200,000
	Blue River basin:		
32	Blue River near Kansas City, Mo.	188	9,500
33	Missouri River at Waverly, Mo.	491,200	200,000
	Grand River basin:		
34	East Fork Big Creek near Bethany, Mo.	95	3,050
35	Grand River near Gallatin, Mo.	2,250	27,000
36	Weldon River near Mercer, Mo.	246	10,000
37	Weldon River at Mill Grove, Mo.	494	9,600
38	Thompson River at Trenton, Mo.	1,670	22,000
39	Medicine Creek near Galt, Mo.	225	6,700
40	Locust Creek near Milan, Mo.	225	3,680
41	Locust Creek near Linneus, Mo.	550	9,000
42	Grand River near Sumner, Mo.	6,880	57,500
43	Yellow Creek near Rothville, Mo.	405	5,400
	Chariton River basin:		
44	Chariton River at Novinger, Mo.	1,370	11,000
45	Chariton River near Keytesville, Mo.	1,950	13,000
	Lamine River basin:		
46	Lamine River at Clifton City, Mo.	598	16,000
47	Blackwater River at Blue Lick, Mo.	1,120	13,000
48	Missouri River at Boonville, Mo.	505,700	250,000

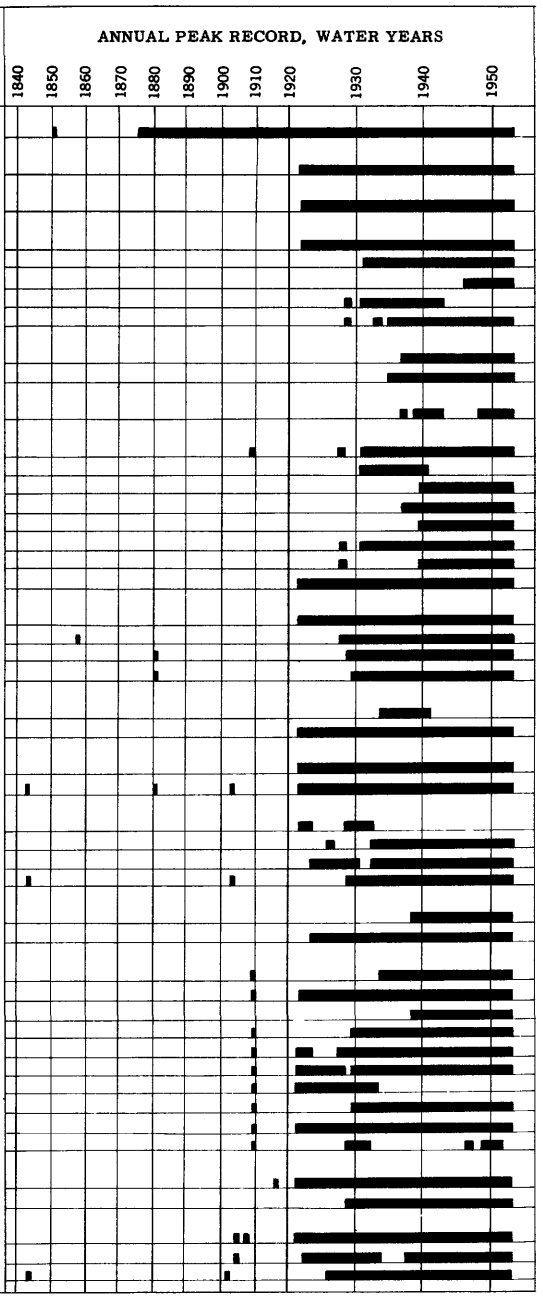

Figure 19.--Period of record of annual peaks at gaging stations.

INDEX NUMBER	GAGING STATION	DRAINAGE AREA (sq mi)	MEAN ANNUAL FLOOD (cfs)	ANNUAL PEAK RECORD, WATER YEARS
	Osage River basin:			
49	Sac River near Stockton, Mo.	1,160	26,500	
50	Cedar Creek near Pleasant View, Mo.	420	13,000	
51	Osage River at Osceola, Mo.	8,220	48,000	
52	Pomme de Terre River at Hermitage, Mo.	655	22,000	
53	South Grand River near Brownington, Mo.	1,660	16,000	
54	Osage River at Warsaw, Mo.	11,500	67,000	
55	Niangua River near Decaturville, Mo.	627	15,500	
56	Osage River near Bagnell, Mo.	14,000	97,000	
	Gasconade River basin:			
57	Gasconade River near Hazlegreen, Mo.	1,250	25,000	
58	Gasconade River near Waynesville, Mo.	1,680	25 000	
59	Big Piney River near Big Piney, Mo.	560	12,300	
60	Little Piney Creek at Newburg, Mo.	200	8,300	
61	Gasconade River at Jerome, Mo.	2,840	35,000	
62	Gasconade River near Rich Fountain, Mo.	3,180	34,000	
63	Missouri River at Hermann, Mo.	528 200	350,000	
64	Mississippi River at St. Louis, Mo.	701,000	544,000	
	Meramec River basin:			
65	Meramec River near Steelville, Mo.	781	20,200	
66	Meramec River near Sullivan, Mo.	1,475	22,800	
67	Bourbeuse River near Spring Bluff, Mo.	608	19,000	
68	Bourbeuse River at Union, Mo.	808	14,600	
69	Meramec River at Robertsville, Mo.	2,673	36,000	
70	Big River at Byrnesville, Mo.	917	17,000	
71	Meramec River near Eureka, Mo.	3,788	40,000	
72	Mississippi River at Chester, Ill.	712,600	585,000	
	Headwater Diversion Channel basin:			
73	Castor River at Zalma, Mo.	423	12,500	
74	Mississippi River at Thebes, Ill.	717,200	570,000	
	St. Francis River basin:			
75	St. Francis River near Patterson, Mo.	956	34,000	
76	Little River ditch 81 near Kennett, Mo.	111	2,000	
77	Little River ditch 1 near Kennett, Mo.	235	4,600	
78	Little River ditch 251 near Lilbourn, Mo.	235	2,320	
79	Castor River at Aquilla, Mo.	175	2,350	
60	Little River ditch 1 near Morehouse, Mo.	450	5,600	
81	Little River ditch 251 near Kennett, Mo.	883	9,700	
82	Little River ditch 259 near Kennett, Mo.	89	1,580	
	White River basin:			
83	White River at Beaver, Ark.	1,238	36,000	
84	James River below Battlefield, Mo.	328	10,200	
65	Wilson Creek near Springfield, Mo.	19.4	1,100	
66	James River at Galena, Mo.	987	21,500	
67	White River near Reeds Spring, Mo.	3,617	55,000	
68	White River at Forsyth, Mo.	4,544	63,000	
89	North Fork River near Tecumseh, Mo.	561	11,200	
90	Bryant Creek near Tecumseh, Mo.	570	14,700	
91	North Fork River near Tecumseh, Mo.	1,157	23,000	
92	Black River near Annapolis, Mo.	484	22,000	
93	Black River at Leeper, Mo.	957	28,000	
94	Black River at Poplar Bluff, Mo.	1,245	16,000	
95	Jacks Fork at Eminence, Mo.	398	11,000	
96	Current River near Eminence, Mo.	1,272	25,000	
97	Current River at Van Buren, Mo.	1,667	27,500	
96	Current River at Doniphan, Mo.	2,038	30,000	
99	Little Black River near Fairdealing, Mo.	187	8,800	
100	Eleven Point River near Bardley, Mo.	793	11,000	
	Arkansas River basin:			
101	Spring River near Waco, Mo.	1,164	20,000	
102	Turkey Creek at Joplin, Mo.	33	1,350	
103	Shoal Creek above Joplin, Mo.	410	11,000	
104	Elk River near Tiff City, Mo.	872	16,000	

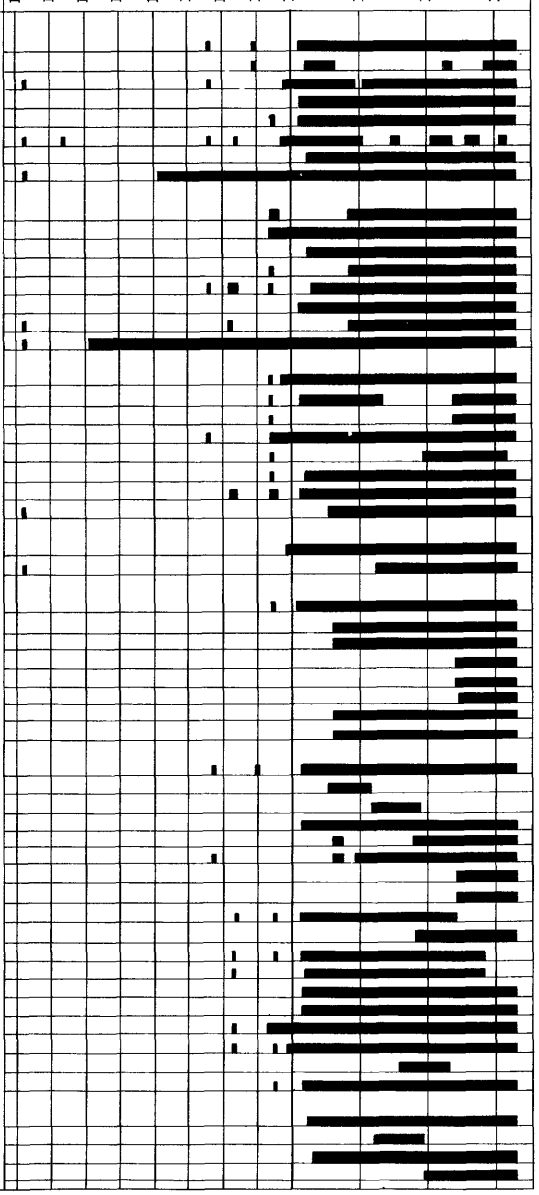

Figure 19. --Period of record of annual peaks at gaging stations--Continued.

The peaks are arranged by the water year, which ends September 30 and begins October 1 of the preceding year. A break in record is indicated by a line in the water-year column alone.

Gage heights are given in the tabulation for their own value. They represent the water level, in feet, above an arbitrary datum (gage zero) which is referred to local benchmarks at the gaging station. Where known, the elevation of this arbitrary datum above mean sea level is given in the station description. Changes in datum are noted in the station description, and are indicated in the tabulation of annual floods by a line across the gage-height column. A change in location of the gage of sufficient magnitude to affect the stage-discharge relation is shown by a full line between two items in the flood listing. Gage heights affected by ice or backwater are shown without the corresponding discharge where the discharge corresponding to the gage height under normal conditions would have exceeded the base discharge.

Peak discharges unless otherwise noted are the instantaneous peaks in cubic feet per second (cfs). In a few instances, principally older records or records furnished by other agencies, data was not available for determining instantaneous peak discharges. In those cases, the maximum daily discharge is given with an appropriate note.

Each annual surface water supply report of the Geological Survey contains an explanation of the computation of streamflow data. Additional information may be found in standard texts and Water-Supply Paper 888, entitled Stream-gaging procedure.

Mississippi River main stem

(1) Mississippi River at Keokuk, Iowa

Location.--Lat 40°23'35", long 91°22'25", in tailwater at dam and power plant of Union Electric Power Co. at Keokuk, 2.8 miles upstream from Des Moines River, and 364.2 miles upstream from Ohio River.

Drainage area.--119,000 sq mi, approximately.

Gage.--Nonrecording gage Jan. 1, 1878, to May 1913 at site 8 miles upstream from present gage and at datum 19.10 ft higher. Recording gage since May 1913 at present site; datum of gage is 477.41 ft above mean sea level, datum of 1929 (levels by Corps of Engineers) and 477.34 ft above mean gulf level.

Stage-discharge relation.--Since 1913, discharge computed from records of operation of turbines in power plant and spillway gates in dam.

Flood stage.--12 ft.

Historical data.--Flood of June 6, 1851, reached a stage of 21.0 ft present site and datum; estimated at 13.5 ft former site and datum.

Remarks.--Keokuk dam completed in 1913. Records January 1878 to September 1932 from report of Iowa State Planning Board; since October 1932 furnished by Union Electric Power Co. Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge* (cfs)	Water year	Date	Gage height (feet)	Discharge* (cfs)
1851	June 6, 1851	--	360,000	1896	June 3, 1896	--	161,000
1878	June 11, 1878	--	150,000	1897	Apr.28,29,1897	--	230,000
1879	June 2,3, 1879	--	110,000	1898	Mar. 20, 1898	--	108,000
1880	June 29, 1880	--	271,000	1899	June 29, 1899	--	159,000
1881	Apr.23,24,1881	--	241,000	1900	Apr.5,6, 1900	--	124,000
1882	Oct. 31, and Nov. 1, 1881	-- --	293,000	1901	Mar.24-26,1901	--	150,000
				1902	July 21,22,1902	--	181,000
1883	May 18, 1883	--	201,000	1903	June 6, 1903	--	270,000
1884	Apr. 1, 1884	--	236,000	1904	Oct. 7, 1903	--	186,000
1885	Oct.9,10, 1884	--	170,000	1905	June 10, 1905	--	212,000
1886	May 6, 1886	--	212,000	1906	Apr.26-28,1906	--	192,000
1887	May 4, 1887	--	156,000	1907	Apr.17,18,1907	--	178,000
1888	May 18, 1888	--	314,000	1908	June 9, 1908	--	178,000
1889	Apr. 20, and June 8,18, 1889	-- --	84,200	1909	May 5-7, 1909	--	181,000
1890	July 1, 1890	--	178,000	1910	Mar.20-23,1910	--	124,000
1891	May 3, 1891	--	141,000	1911	Feb. 21, 1911	--	156,000
1892	June 29, 1892	--	306,000	1912	Apr.6,7, 1912	--	220,000
1893	May 15-17, 1893	--	203,000	1913	Mar. 29, 1913	--	169,000
1894	June 4, 1894	--	158,000	1914	June 24, 1914	--	122,000
1895	Mar. 11, 1895	--	59,200	1915	Feb. 28, 1915	--	142,000

Mississippi River main stem

(1) Mississippi River at Keokuk, Iowa--Continued

Annual peak stages and discharges--Continued

Water year	Date	Gage height (feet)	Discharge* (cfs)	Water year	Date	Gage height (feet)	Discharge* (cfs)
1916	May 9, 1916	--	213,000	1935	Apr.11,12, 1935	--	138,000
1917	June 17, 1917	--	163,000	1936	Apr.9,10, 1936	--	148,000
1918	June 12, 1918	--	192,000	1937	Mar. 10, 1937	--	190,000
1919	May 8, 1919	--	205,000	1938	Sept.26, 1938	--	193,800
1920	Apr.10,11,1920	--	230,000	1939	Oct. 1, 1938	--	159,100
1921	May 12,13,1921	--	108,000	1940	Apr. 19, 1940	--	81,700
1922	Apr.24,25,1922	--	240,000	1941	Apr. 27, 1941	--	154,400
1923	Apr.9,10, 1923	--	148,000	1942	June 16, 1942	--	200,900
1924	Apr.24,25,1924	--	160,000	1943	Apr. 18, 1943	--	174,000
1925	June 23, 1925	--	112,000	1944	May 27, 1944	--	254,500
1926	Sept.28, 1926	--	146,000	1945	Mar. 26, 1945	--	203,300
1927	Apr. 3, 1927	--	175,000	1946	Jan. 11, 1946	--	223,300
1928	Apr. 12, 1928	--	150,000	1947	June 21, 1947	--	245,700
1929	Mar. 23, 1929	--	247,000	1948	Mar. 23, 1948	--	233,600
1930	June 18, 1930	--	163,000	1949	Mar. 12, 1949	--	150,700
1931	July 4, 1931	--	52,500	1950	Apr.25,26,1950	--	175,900
1932	Apr.24,25, 1932	--	106,000	1951	Apr. 29, 1951	--	265,100
1933	Apr. 9, 1933	--	160,000	1952	Apr. 27, 1952	--	253,800
1934	Apr. 22, 1934	--	83,500				

* Mean daily discharges.

Fox River basin

(2) Fox River at Wayland, Mo.
[Published as "near Wayland" prior to 1930]

Location.--Lat 40°23'45", long 91°35'50", in NW¼ sec. 31, T. 65 N., R. 6 W., 90 ft downstream from bridge on State Highway 136, three-quarters of a mile west of Wayland, and 5 miles downstream from Brush Creek.

Drainage area.--400 sq mi, approximately; 392 sq mi prior to Oct. 1, 1929.

Gage.--Nonrecording gage Feb. 22, 1922, to June 11, 1936; recording gage therafter. Prior to Oct. 1, 1929, at site 2.8 miles upstream from present gage at different datum; datum of present gage is 501.52 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements; frequent shifts in relation occur.

Flood stage.--15 ft.

Historical data.--Flood of July 1909 reached a stage of 21.4 ft at present site, prior to construction of highway fill at present site in 1928.

Remarks.--Base for partial-duration series, 4,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	July 12, 1922	11.00	2,400
1923	Mar. 16, 1923	9.75	1,980
1924	Aug.6,7,9,1924	13.32	3,250
1925	Apr. 26, 1925	14.9	3,760
1926	Sept.10, 1926	14.60	4,160
	Sept.17, 1926	17.50	6,570
1927	Oct. 2, 1926	17.90	6,900
	Apr. 20, 1927	18.30	7,300
	May 25, 1927	16.12	5,240
	June 5, 1927	16.00	5,150
	June 13, 1927	15.55	4,830
1928	Oct. 1, 1927	19.10	8,100
	Oct. 12, 1927	15.10	4,430
	Feb. 8, 1928	14.56	4,070
	June 19, 1928	17.70	6,700
	July 5, 1928	15.00	4,350
	Sept.12, 1928	15.95	5,150
1929	Nov. 18, 1928	20.0	16,100
	Mar. 1, 1929	[a] 15.00	--
	Mar. 14, 1929	15.80	5,400
	Apr. 21, 1929	18.80	12,600
	Apr. 25, 1929	17.60	9,470
	June 3, 1939	17.00	8,010
	July 15, 1929	15.40	4,700
1930	June 16, 1930	14.16	3,460
1931	Apr. 21, 1931	17.20	7,090
	June 7, 1931	18.35	9,940
1932	Nov. 24, 1931	16.85	6,440
	Jan. 2, 1932	16.74	6,020
1933	Dec. 24, 1932	15.22	4,000
	Jan. 19, 1933	17.00	6,650
	May 12, 1933	17.13	6,870
	June 29, 1933	21.53	25,000
1934	Apr. 5, 1934	10.92	1,780
1935	June 2, 1935	19.38	13,300
1936	Feb. 26, 1936	17.65	8,060
1937	Feb. 22, 1937	[a] 18.52	--
	Mar. 5, 1937	13.72	3,540
1938	Apr. 6, 1938	14.88	4,070
1939	Mar. 13, 1939	18.22	9,260
	Apr. 16, 1939	17.10	6,390
1940	Apr. 24, 1940	9.08	1,640
1941	June 11, 1941	12.75	3,080
1942	Oct. 11, 1941	15.80	4,510
	Nov. 2, 1941	15.7	4,420
	Feb. 7, 1942	15.41	4,260
1943	May 17, 1943	16.45	5,290
1944	Mar. 16, 1944	16.00	4,800
	Apr. 24, 1944	18.50	10,200
1945	Feb. 17, 1945	15.70	4,510
	May 16, 1945	17.27	6,810
	June 17, 1945	17.34	6,810
1946	Jan. 7, 1946	18.10	8,950
	June 19, 1946	20.66	19,900
	July 19, 1946	18.40	9,880
1947	Apr. 6, 1947	18.20	9,260
	June 7, 1947	19.12	12,200
	June 14, 1947	17.30	6,810
	June 19, 1947	15.1	4,060
1948	Feb. 29, 1948	15.8	5,290
	Mar. 20, 1948	18.2	11,900
	July 26, 1948	16.17	6,310
1949	Feb. 20, 1949	[a] 15.50	--
	Apr. 1, 1949	12.90	3,350
1950	June 16, 1950	17.79	9,560
	June 20, 1950	17.20	7,960
1951	Feb. 20, 1951	[a] 15.40	--
	Mar. 29, 1951	14.85	4,860
	May 12, 1951	15.27	5,250
	June 27, 1951	15.21	5,160
	July 23, 1951	13.84	4,180
1952	Apr. 23, 1952	14.65	4,720
	June 23, 1952	16.3	6,400

[a] Backwater from ice.

Wyaconda River basin

(3) Wyaconda River above Canton, Mo.
[Published as "near Canton" prior to 1933]

Location.--Lat 40°08'30", long 91°33'55", in SE¼ sec. 28, T. 62 N., R. 6 W., at bridge on State Highway 16, 1 mile upstream from Sugar Creek and 2 miles west of Canton.

Drainage area.--393 sq mi; 447 sq mi prior to Oct. 1, 1932.

Gage.--Nonrecording gage Feb. 20, 1922, to Apr. 30, 1939, recording gage thereafter. Prior to Oct. 1, 1932, at site 2 miles downstream from and at different datum from present gage; datum of present gage, 515.41 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur.

Flood stage.--17 ft.

Remarks.--Records for sites "near" and "above" considered equivalent for flood-frequency study. Base for partial-duration series, 5,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	Mar. 14, 1922	11.66	3,270
1923	Mar. 16, 1923	10.10	2,630
	Sept.28, 1923	10.10	2,630
1924	June 27, 1924	12.26	3,520
1925	Apr. 26, 1925	10.18	2,670
1926	Sept.17, 1926	15.76	5,300
1927	Oct. 3, 1926	17.95	6,700
	Apr. 21, 1927	15.65	5,180
	June 13, 1927	15.30	5,000
1928	Oct. 3, 1927	18.78	7,300
1929	Nov. 18, 1928	26.7	16,000
	Apr. 1, 1929	15.94	5,340
	Apr. 21, 1929	20.54	8,750
	Apr. 26, 1929	19.10	7,540
	June 3, 1929	16.73	5,820
	July 16, 1929	17.70	6,490
1930	Feb. 13, 1930	10.88	3,040
1931	June 7, 1931	19.00	7,460
1932	Aug. 15, 1932	15.04	4,930
1933	Dec. 25, 1932	22.40	6,620
	May 13, 1933	23.80	7,870
	June 30, 1933	30.00	17,700
1934	Apr. 5, 1934	10.56	1,470
1935	June 3, 1935	29.30	16,200
1936	Feb. 27, 1936	22.84	6,960
1937	Feb. 22, 1937	[a]21.61	3,120
1938	Apr. 7, 1938	18.84	4,430
1939	Mar. 13, 1939	24.54	9,200
	Apr. 16, 1939	21.54	5,980
1940	Apr. 24, 1940	12.92	2,300
1941	June 10, 1941	14.25	2,720
1942	Feb. 7, 1942	21.7	6,510
1943	Aug. 9, 1943	20.4	5,600
1944	Mar. 16, 1944	21.48	6,350
	Apr. 12, 1944	19.56	5,100
	Apr. 24, 1944	24.45	9,040
1945	June 17, 1945	25.03	8,590
1946	Jan. 6, 1946	25.40	9,100
	June 20, 1946	22.90	6,670
	July 19, 1946	24.70	8,260
1947	Apr. 6, 1947	26.40	11,200
	June 7, 1947	27.14	12,400
	June 14, 1947	21.10	5,440
1948	Mar. 20, 1948	24.10	8,020
1949	Mar. 27, 1949	15.53	2,950
1950	June 20, 1950	26.07	10,800
1951	Feb. 20, 1951	21.79	5,900
	July 22, 1951	20.89	5,320
1952	Mar. 19, 1952	16.5	3,280
	Apr. 24, 1952	16.5	3,280

[a]Backwater from ice.

Fabius River basin

(4) North Fabius River at Monticello, Mo.

Location.--Lat 40°06'30", long 91°42'55", in SW¼SE¼ sec. 6, T. 61 N., R. 7 W., at bridge on State Highway 16, 1 mile south of Monticello and 19 miles upstream from Middle Fabius River.

Drainage area.--452 sq mi.

Gage.--Nonrecording. Prior to Nov. 22, 1930, at site 400 ft downstream from and at datum 0.03 ft lower than present gage; datum of present gage is 540.73 ft above mean sea level, datum of 1929. Gage heights given herein converted to present datum.

Stage-discharge relation.--Defined by current-meter measurements; large shift in relation occurred in 1936.

Flood stage.--17 ft.

Historical data.--Flood of Nov. 18, 1928, was higher than highest previously known floods of 1875 and 1909, from information by local resident.

Remarks.--Considerable improvement work completed on tributaries and main channel upstream from gaging station prior to establishment. Base for partial-duration series, 6,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	July 13, 1922	18.60	4,500
1923	Mar. 16, 1923	15.70	3,590
1924	June 26, 1924	22.9	6,370
1925	Apr. 25, 1925	18.18	4,370
1926	Sept.16, 1926	23.2	6,580
1927	Oct. 3, 1926	23.10	8,490
	Apr. 20, 1927	23.50	8,760
	June 13, 1927	20.30	6,210
1928	Oct. 1, 1927	22.60	8,040
	June 19, 1928	25.00	10,300
1929	Nov. 18, 1928	30.0	16,000
	Apr. 1, 1929	21.00	6,700
	Apr. 21, 1929	22.00	7,500
	Apr. 25, 1929	24.00	9,300
	June 3, 1929	23.30	8,670
	July 16, 1929	26.80	12,200
1930	Oct. 29, 1929	20.50	6,350
1931	Apr. 21, 1931	22.40	7,860
	June 6, 1931	22.80	8,220
1932	Nov. 23, 1931	21.40	7,020
	Jan. 1, 1932	21.42	7,020
	Aug. 15, 1932	21.50	7,100
	Aug. 18, 1932	20.65	6,420
1933	Dec. 24, 1932	25.70	11,000
	Jan. 19, 1933	20.50	6,350
	May 13, 1933	24.00	9,300
	June 30, 1933	30.8	17,400
1934	Sept.29, 1934	8.80	1,270
1935	May 24, 1935	25.85	10,900
	May 28, 1935	20.58	6,340
	June 3, 1935	29.62	15,700
	June 19, 1935	22.17	7,480
1936	Feb. 25, 1936	25.68	10,800
	Sept.28, 1936	21.3	7,800
1937	Feb. 21, 1937	21.34	7,650
1938	May 28, 1938	17.44	4,830
1939	Mar. 13, 1939	26.0	12,100
	Apr. 16, 1939	25.25	10,200
1940	Apr. 24, 1940	12.4	2,360
1941	June 10, 1941	18.0	5,380
1942	Feb. 7, 1942	23.14	9,120
	July 15, 1942	22.30	8,450
1943	May 16, 1943	20.15	6,850
1944	Mar. 16, 1944	21.05	7,410
	Apr. 11, 1944	19.46	6,360
	Apr. 24, 1944	25.1	11,100
1945	Feb. 15 1945	19.80	6,570
	May 15, 1945	19.65	6,430
	May 17, 1945	20.40	6,990
	June 17, 1945	26.7	13,000
1946	Jan. 6, 1946	25.77	11,900
	Mar. 17, 1946	19.80	6,570
	Mar. 24, 1946	19.42	6,290
	June 19, 1946	21.70	7,970
	July 18, 1946	27.00	13,300
1947	Apr. 6, 1947	28.00	14,700
	May 29, 1947	20.36	6,990
	June 7, 1947	28.65	15,600
	June 14, 1947	24.98	11.000
	June 19, 1947	20.00	6,710
	June 22, 1947	19.50	6,360
1948	Dec. 5, 1947	20.00	6,710
	Feb. 28, 1948	21.70	7,970
	Mar. 20, 1948	24.61	10,500
1949	Feb. 24, 1949	[a] 23.2	6,500
1950	June 20, 1950	25.93	11,200
1951	Feb. 19, 1951	21.3	7,170
	July 22, 1951	24.0	9,410
1952	Mar. 11, 1952	19.02	5,580

[a] Backwater from ice.

Fabius River basin

(5) Middle Fabius River near Baring, Mo.

Location.--Lat 40°19'55", long 92°12'50", in NW¼NW¼ sec. 26, T. 64 N., R. 12 W., at bridge on State Highway 15, 1 mile downstream from confluence of North and South Forks and 6 miles north of Baring.

Drainage area.--185 sq mi.

Gage.--Nonrecording gage Apr. 11, 1930, to Sept. 17, 1934; recording gage thereafter. Datum of gage is 679.69 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 6,200 cfs; shifts in relation occur.

Flood stage.--17 ft.

Historical data.--Flood of July 1875 reached a stage of about 27 ft.

Remarks.--Base for partial-duration series, 2,600 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1931	Apr. 21, 1931	19.70	4,840	1943	Dec. 28, 1942	17.52	3,350
	May 29, 1931	18.00	3,830		Apr. 27, 1943	16.9	2,960
	June 6, 1931	18.55	4,160		May 17, 1943	17.0	3,020
	July 3, 1931	15.85	2,840	1944	Mar. 15, 1944	20.4	5,490
1932	Nov. 24, 1931	18.90	4,340		Apr. 23, 1944	24.06	8,640
	Aug. 15, 1932	18.70	4,220	1945	May 16, 1945	16.3	2,600
1933	Dec. 24, 1932	16.00	2,790		June 16, 1945	25.1	9,540
	Jan. 19, 1933	18.10	3,880		June 21, 1945	18.2	3,840
	May 12, 1933	19.90	4,940	1946	Jan. 5, 1946	22.2	6,970
	June 29, 1933	24.23	8,740		Mar. 23, 1946	18.3	3,900
1934	Apr. 4, 1934	8.60	800		July 17, 1946	22.80	7,480
1935	May 4, 1935	15.94	2,740	1947	Apr. 5, 1947	22.0	6,800
	May 24, 1935	19.78	4,880		June 5, 1947	24.2	8,730
1936	Feb. 27, 1936	15.76	2,700		June 13, 1947	23.40	8,010
	Sept. 27, 1936	20.10	5,000	1948	Dec. 5, 1947	17.91	3,480
1937	Oct. 11, 1936	16.38	2,980		Feb. 28, 1948	19.70	4,940
	Feb. 21, 1937	20.07	5,060		Mar. 20, 1948	21.73	6,540
	Mar. 4, 1937	15.75	2,700	1949	June 26, 1949	16.6	2,720
1938	Apr. 7, 1938	15.13	2,230	1950	June 19, 1950	24.55	9,000
1939	Mar. 12, 1939	22.31	7,060	1951	Feb. 20, 1951	19.59	4,180
	Apr. 15, 1939	21.62	6,460		Apr. 8, 1951	17.26	2,710
1940	Mar. 3, 1940	15.40	2,130		July 22, 1951	17.17	2,660
1941	June 10, 1941	19.07	4,500	1952	Apr. 23, 1952	17.26	2,710
					June 3, 1952	17.30	2,710
1942	Nov. 1, 1941	17.5	3,350				
	Dec. 24, 1941	16.4	2,660				
	Feb. 7, 1942	19.24	4,570				

Fabius River basin

(6) Middle Fabius River near Monticello, Mo.

Location.--Lat 40°05'40", long 91°44'10", in SE¼ sec. 12, T. 61 N., R. 8 W., at bridge on State Highway 16, 2½ miles southwest of Monticello, 8 miles downstream from Radish Branch, and 17 miles upstream from mouth.

Drainage area.--393 sq mi.

Gage.--Nonrecording. Datum of gage is 540.46 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Flood stage.--13 ft.

Remarks.--Base for partial-duration series, 3,500 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Jan. 8, 1946	19.2	6,520	1949	Feb. 21, 1949	17.2	5,060
	July 20, 1946	16.88	4,880		July 21, 1949	18.45	5,880
1947	Apr. 5, 1947	20.9	8,100	1950	June 21, 1950	20.9	8,300
	May 29, 1947	15.0	3,880				
	June 7, 1947	26.28	16,200	1951	Feb. 22, 1951	16.5	4,960
	June 16, 1947	18.4	5,880		July 23, 1951	20.1	6,610
	June 19, 1947	16.0	4,380				
				1952	June 3, 1952	15.7	4,230
1948	Mar. 1, 1948	14.50	3,630				
	Mar. 22, 1948	18.04	5,600				

(7) North Fabius River at Taylor, Mo.

Location.--Lat 39°56'05", long 91°31'35", in NE¼SE¼ sec. 2, T. 59 N., R. 6 W., at bridge on U. S. Highway 61 at Taylor, 6.5 miles upstream from mouth.

Drainage area.--930 sq mi, approximately.

Gage.--Nonrecording gage Apr. 12, 1930, to Sept. 17, 1934; recording gage Sept. 18, 1934, to Feb. 28, 1942 (discontinued). Datum of gage is 469.65 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur. Relation affected at times by backwater from the Mississippi River.

Flood stage.--15 ft.

Remarks.--New channel dug from near gage to mouth prior to establishment of gaging station. Peaks for partial-duration series not computed because of backwater conditions; only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	Nov. 19, 1928	23.5	26,000	1936	Feb. 26, 1936	14.50	12,100
1931	June 8, 1931	14.29	11,400	1937	Feb. 23, 1937	11.31	8,480
1932	Aug. 19, 1932	14.36	11,600	1938	Apr. 10, 1938	10.64	7,460
1933	June 30, and July 1, 1933	22.85	30,300	1939	Mar. 14, 1939	15.67	16,200
				1940	Mar. 4, 1940	7.18	3,790
1934	Sept.29, 1934	6.18	2,380	1941	June 11, 1941	8.35	5,050
1935	June 4, 1935	19.44	24,400	1942	Feb. 8, 1942	15.10	13,100

Fabius River basin

(8) South Fabius River near Taylor, Mo.

Location.--Lat 39°53'50", long 91°35'00", in NE¼ sec. 20, T. 59 N., R. 6 W., at highway bridge 4½ miles southwest of Taylor, 5 miles downstream from Grassy Creek, and 5.3 miles upstream from confluence with North Fabius River.

Drainage area.--620 sq mi; 630 sq mi prior to May 14, 1936.

Gage.--Nonrecording gage Dec. 16, 1934, to Dec. 2, 1940; recording gage thereafter. Prior to May 14, 1936, at site 4 miles downstream from and at datum 21.94 ft lower than present gage; datum of present gage is 482.91 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs.

Flood stage.--9.5 ft.

Remarks.--Channel improvements made in Fabius River, 5.3 miles below station, and for distance of 7.5 miles in South Fabius River, about 34 miles upstream from station. Base for partial-duration series, 4,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1929	November 1928	[a]18.49	17,800
1933	June 1933	[a]18.42	17,700
1935	May 2, 1935	17.7	6,670
	May 9, 1935	17.8	6,760
	May 14, 1935	17.4	6,400
	May 30, 1935	18.1	7,030
	June 4, 1935	22.9	11,830
	June 19, 1935	23.38	12,400
1936	Feb. 26, 1936	21.85	10,600
	Sept.29, 1936	9.11	5,110
1937	Feb. 21, 1937	9.80	5,950
	July 13, 1937	8.80	4,780
1938	Jan. 24, 1938	8.10	4,010
	Mar. 30, 1938	10.91	7,190
	Apr. 10, 1938	10.80	7,060
	May 28, 1938	8.14	4,014
	Aug. 28, 1938	9.00	5,000
1939	Nov. 7, 1938	8.40	4,340
	Mar. 13, 1939	12.82	9,510
	Apr. 17, 1939	11.50	7,730
	May 27, 1939	10.40	6,300
	June 22, 1939	9.60	5,360
	Aug. 11, 1939	8.90	4,590
	Aug. 18, 1939	9.00	4,700
1940	Mar. 3, 1940	7.8	3,470
1941	Apr. 20, 1941	6.93	2,580
1942	Nov. 1, 1941	9.33	4,760
	Dec. 26, 1941	8.70	4,070
	Feb. 4, 1942	10.10	5,670
	Feb. 7, 1942	13.62	10,400
	Mar. 16, 1942	9.50	4,950
	Apr. 10, 1942	8.80	4,180
	Apr. 29, 1942	9.12	4,510
	June 26, 1942	10.10	5,670
	July 15, 1942	10.20	5,790
1943	Dec. 27, 1942	10.80	6,540
	May 21, 1943	14.38	11,700
	June 9, 1943	9.91	5,430
	June 19, 1943	9.24	4,620
	July 15, 1943	9.00	4,400
1944	Mar. 17, 1944	13.44	10,200
	Apr. 11, 1944	14.30	11,600
	Apr. 24, 1944	13.15	9,700
	Aug. 21, 1944	10.35	5,970
1945	Mar. 20, 1945	10.35	6,030
	Mar. 25, 1945	10.09	5,670
	Apr. 13, 1945	11.78	7,870
	Apr. 16, 1945	9.20	4,630
	Apr. 26, 1945	9.07	4,520
	May 17, 1945	10.45	6,030
	June 9, 1945	12.20	8,430
	June 18, 1945	13.05	9,550
	Sept.29, 1945	9.30	4,740
1946	Jan. 7, 1946	13.60	10,400
	Mar. 26, 1946	8.80	4,210
	May 6, 1946	8.80	4,210
1947	Oct. 17, 1946	10.40	6,030
	Nov. 2, 1946	9.85	5,310
	Dec. 13, 1946	9.14	4,520
	Apr. 6, 1947	17.30	15,700
	May 30, 1947	10.48	6,150
	June 8, 1947	19.5	19,700
	June 20, 1947	11.2	6,990
1948	Dec. 7, 1947	8.68	4,070
	Feb. 27, 1948	9.25	4,620
	Mar. 21, 1948	11.88	7,830
1949	July 20, 1949	12.19	8,210
	July 22, 1949	9.0	4,400
1950	Apr. 4, 1950	8.34	3,650
1951	Feb. 20, 1951	9.57	5,070
	Mar. 29, 1951	10.40	6,030
	July 24, 1951	10.17	5,790
1952	Mar. 10, 1952	8.97	4,330
	Mar. 19, 1952	9.66	5,100
	Apr. 25, 1952	10.05	5,430
	June 9, 1952	9.07	4,440

[a] Present site and datum; annual peak only.

North River basin

(9) North River at Bethel, Mo.

Location.--Lat 39°52', long 92°01', in NE¼NW¼ sec. 33, T. 59 N., R. 10 W., at bridge on State Highway 15 at Bethel, 2½ miles upstream from Messner Branch.

Drainage area.--58 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 683.37 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 5,600 cfs.

Flood stage.--14 ft.

Remarks.--Base for partial-duration series, 600 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1937	Jan. 31, 1937	[a]10.6	--	1946	Jan. 5, 1946	16.07	3,620
	Feb. 9, 1937	[a]8.8	--		Mar. 24, 1946	11.4	1,310
	Feb. 13, 1937	[a]11.57	--		May 4, 1946	9.1	713
	May 3, 1937	8.3	518		May 7, 1946	9.3	756
1938	Apr. 10, 1938	9.36	777	1947	Dec. 13, 1946	9.9	897
					Apr. 5, 1947	20.9	6,930
1939	Mar. 12, 1939	17.1	4,280		May 29, 1947	11.1	1,220
	Apr. 16, 1939	10.15	972		June 2, 1947	10.0	922
	June 21, 1939	10.20	972		June 6, 1947	18.8	5,460
	Aug. 11, 1939	9.90	894		June 19, 1947	16.4	3,810
					June 21, 1947	14.6	2,530
1940	Mar. 3, 1940	8.6	596		Sept.21, 1947	9.2	713
1941	Jan. 17, 1941	7.5	420	1948	Dec. 5, 1947	10.66	1,110
					Feb. 28, 1948	10.60	1,080
1942	Oct. 22, 1941	8.8	652		Mar. 19, 1948	16.75	4,070
	Nov. 1, 1941	10.7	1,110		Apr. 8, 1948	8.78	652
	Dec. 24, 1941	8.8	652				
	Feb. 6, 1942	15.10	2,960	1949	Jan. 16, 1949	[a]9.45	--
	Mar. 17, 1942	10.2	973		Feb. 14, 1949	[a]9.45	--
	Apr. 10, 1942	10.5	1,050		Feb. 19, 1949	9.97	922
	July 14, 1942	9.6	824		Feb. 24, 1949	8.60	613
					Mar. 27, 1949	9.80	872
1943	Dec. 27, 1942	9.3	756		June 3, 1949	8.67	632
	Feb. 4, 1943	8.6	613		June 27, 1949	11.25	1,250
	May 16, 1943	8.8	652		July 20, 1949	10.40	1,030
	May 20, 1943	12.1	1,530				
	June 9, 1943	9.9	897	1950	Oct. 21, 1949	8.73	632
	June 11, 1943	9.3	756		Jan. 14, 1950	9.22	734
	June 17, 1943	12.2	1,560		Apr. 4, 1950	9.50	801
					Apr. 25, 1950	8.80	652
1944	Mar. 15, 1944	18.04	4,900		June 15, 1950	8.80	652
	Apr. 11, 1944	16.3	3,750				
	Apr. 23, 1944	13.0	1,840	1951	Feb. 20, 1951	[a]12.4	900
	May 24, 1944	9.4	778		June 27, 1951	11.49	1,020
1945	Mar. 26, 1945	10.9	1,190	1952	Mar. 10, 1952	11.8	1,110
	Apr. 17, 1945	9.5	801		Mar. 19, 1952	10.9	850
	Apr. 26, 1945	9.9	897		Apr. 23, 1952	16.0	3,280
	May 17, 1945	12.2	1,560				
	June 10, 1945	12.1	1,530				
	June 16, 1945	17.3	4,410				
	July 1, 1945	9.3	756				
	Sept.29, 1945	13.0	1,840				

[a] Backwater from ice.

FLOODS IN MISSOURI

North River basin

(10) North River at Palmyra, Mo.

Location.--Lat 39°49'05", long 91°31'15", in SE¼SW¼ sec. 13, T. 58 N., R. 6 W., 50 ft upstream from city waterworks dam, 1,000 ft upstream from bridge on U. S. Highway 24 and 61, half a mile north of Palmyra, and 7 miles upstream from mouth.

Drainage area.--373 sq mi.

Gage.--Nonrecording gage, Dec. 14, 1934, to June 22, 1951, recording gage thereafter. Prior to Oct. 1, 1945, at site 1,000 ft downstream at same datum; datum of gage is 464.81 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements below 15,000 cfs; a large shift in relation occurred in 1951.

Flood stage.--19 ft.

Historical data.--Maximum stage known, about 28 ft, from floodmarks, date unknown.

Remarks.--Base for partial-duration series. 4,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1935	May 9, 1935	18.15	[a] 8,790
1936	Feb. 26, 1936	21.00	15,000
1937	Feb. 21, 1937	15.36	5,350
	July 13, 1937	18.45	9,220
	July 19, 1937	16.84	6,550
1938	Mar. 29, 1938	15.63	5,510
	Mar. 31, 1938	18.00	8,380
	May 28, 1939	17.54	7,500
1939	Mar. 12, 1939	19.70	12,200
	Apr. 17, 1939	17.39	7,600
	May 27, 1939	18.80	10,100
	June 21, 1939	17.20	7,310
	July 25, 1939	20.50	14,600
	Aug. 12, 1939	16.00	5,920
	Aug. 17, 1939	15.40	5,350
1940	Mar. 3, 1940	12.4	3,330
1941	Apr. 19, 1941	12.0	3,110
1942	Oct. 5, 1941	15.52	5,480
	Oct. 21, 1941	15.52	5,480
	Nov. 1, 1941	16.32	6,310
	Feb. 7. 1942	18.95	10,800
	Mar. 16, 1942	14.90	5,370
	Apr. 10, 1942	16.90	7,240
	June 19, 1942	[b] 14.90	--
	June 26, 1942	20.48	15,200
	July 10, 1942	15.00	5,450
	July 15, 1942	19.00	10,800
1943	Dec. 27, 1942	19.27	11,500
	May 16, 1943	15.78	6,120
	May 18, 1943	18.00	8,800
	May 21, 1943	16.00	6,300
	June 8, 1943	15.19	5,610
	June 10, 1943	18.30	9,350
1944	Mar. 15, 1944	19.80	12,800
	Apr. 11, 1944	22.96	27,400
	Apr. 23, 1944	19.50	12,000
	May 28, 1944	[b] 13.40	--
1945	Mar. 21, 1945	18.77	10,400
	Mar. 25, 1945	[b] 18.77	--
	Apr. 13, 1945	19.18	11,300
	Apr. 16, 1945	15.98	6,300
	Apr. 26, 1945	15.60	5,940
	May 17, 1945	18.42	9,540
	June 9, 1945	19.00	10,800
	June 16, 1945	20.30	14,400
	July 1, 1945	15.70	6,030
	Sept. 28, 1945	17.00	7,350
1946	Jan. 6, 1946	18.40	8,290
	Jan. 9, 1946	18.6	8,560
	May 11, 1946	14.72	4,485
1947	Oct. 18, 1946	16.80	6,430
	Nov. 3, 1946	16.20	5,980
	Nov. 9, 1946	15.48	5,300
	Dec. 13, 1946	14.70	4,480
	Apr. 5, 1947	21.65	15,600
	May 29, 1947	14.37	4,170
	June 1, 1947	22.4	19,000
	June 7, 1947	[b] 21.41	11,000
	June 20, 1947	[b] 20.02	8,000
1948	Dec. 4, 1947	16.39	6,130
	Dec. 7, 1947	16.04	5,800
	Feb. 28, 1948	15.10	4,900
	Mar. 6, 1948	15.04	4,800
	Mar. 19, 1948	18.84	8,490
	Mar. 22, 1948	15.09	4,900
1949	Feb. 13, 1949	21.0	12,300
	June 2, 1949	15.4	5,200
	June 24, 1949	20.55	11,600
	June 26, 1949	17.0	6,600
	July 20, 1949	22.3	16,000
	July 22, 1949	22.2	15,600
1950	Oct. 21, 1949	14.68	4,480
	Dec. 21, 1949	15.56	5,400
	Jan. 3, 1950	15.56	5,400
	Apr. 4, 1950	15.13	5,000
1951	Feb. 19, 1951	14.45	4,170
	Mar. 29, 1951	22.72	17,900
	June 27, 1951	18.69	8,460
1952	Nov. 12, 1951	17.80	7,350
	Mar. 10, 1952	15.19	5,000
	Mar. 18, 1952	17.94	7,460
	May 9, 1952	14.48	4,280

[a] Annual peak only.
[b] Backwater from Missouri River.

Bear Creek basin

(11) Bear Creek at Hannibal, Mo.

Location.--Lat 39°40'43", long 91°24'41", in SE¼NW¼ sec. 1, T. 56 N., R. 5 W., at bridge on U. S. Highway 61, at Hannibal, 4 3/4 miles upstream from mouth.

Drainage area.--31.0 sq mi.

Gage.--Nonrecording gage Oct. 8, 1936, to Sept. 30, 1942, (fragmentary record prior to December 1938), Nov. 7, 1947, to Mar. 25, 1948; recording gage since Mar. 26, 1947. Datum of gage is 510.91 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 4,000 cfs; shifts in relation occur.

Flood stage.--10 ft.

Remarks.--Base for partial-duration series, 1,500 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1937	June 13, 1937	10.8	6,050	1948	Apr. 7, 1948	7.39	2,090
1939	Mar. 11, 1939	7.53	2,740	1949	June 2, 1949	7.60	2,200
	Apr. 17, 1939	6.58	1,970		June 23, 1949	10.80	4,900
	June 19, 1939	7.50	2,740		July 21, 1949	10.95	5,120
	June 21, 1939	9.5	4,670		Sept.12, 1949	8.30	2,640
	Aug. 11, 1939	6.60	1,970	1950	Oct. 21, 1949	8.20	2,580
1940	Apr. 17, 1940	6.50	1,890		Dec. 21, 1949	7.60	2,200
	Aug. 5, 1940	9.86	5,070	1951	July 28, 1951	7.84	2,380
1941	Sept. 2, 1941	7.4	2,610	1952	Mar. 18, 1952	5.15	988
1942	July 14, 1942	7.1	2,280				

Salt River basin

(12) Salt River near Shelbina, Mo.

Location.--Lat 39°44', long 92°01', in SW¼NE¼ sec. 17, T. 57 N., R. 10 W., at bridge on State Highway 15, 3 miles north of Shelbina, and 15 miles upstream from Black Creek.

Drainage area.--481 sq mi.

Gage.--Nonrecording gage Apr. 7, 1930, to Feb. 28, 1934; recording gage thereafter. Datum of gage is 664.58 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 20,000 cfs.

Flood stage.--15 ft.

Remarks.--Some channel improvements made in drainage basin upstream from gage during period 1906-20. Base for partial-duration series, 3,000 cfs.

Salt River basin

(12) Salt River near Shelbina, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1909	July 1909	23.42	[a] 17,700
1928	June 1928	23.54	[a] 18,000
1931	Apr. 23, 1931	12.58	3,890
	June 8, 1931	17.88	8,270
1932	Nov. 19, 1931	12.30	3,720
	Nov. 26, 1931	13.00	4,110
	Jan. 2, 1932	11.85	3,460
	Aug. 3, 1932	13.04	4,110
	Aug. 18, 1932	16.32	5,920
1933	Dec. 26, 1932	17.20	7,390
	May 14, 1933	15.34	5,490
	July 1, 1933	22.62	16,000
1934	Sept.30, 1934	10.48	2,800
1935	Nov. 5, 1934	11.74	3,360
	May 3, 1935	14.10	4,660
	May 10, 1935	13.60	4,360
	May 12, 1935	17.78	8,140
	May 22, 1935	11.37	3,220
	May 29, 1935	16.78	6,930
	June 3, 1935	20.63	12,300
	June 19, 1935	14.90	5,180
1936	Feb. 27, 1936	17.40	7,040
	Sept.28, 1936	14.15	4,720
1937	Feb. 15, 1937	[b] 12.32	--
	Feb. 21, 1937	[b] 13.94	4,000
1938	Mar. 30, 1938	12.68	3,780
	Apr. 11, 1938	13.24	4,050
1939	Mar. 13, 1939	17.72	7,880
	Apr. 17, 1939	15.80	5,810
	June 22, 1939	14.05	4,500
	Aug. 2, 1939	12.10	3,480
1940	Mar. 4, 1940	12.11	3,560
1941	Jan. 18, 1941	7.69	1,590
1942	Nov. 2, 1941	13.60	4,270
	Dec. 25, 1941	12.00	3,480
	Feb. 7, 1942	17.65	7,750
	Mar. 17, 1942	12.80	3,840
	Apr. 11, 1942	14.40	4,760
1943	Dec. 28, 1942	13.00	3,940
	May 21, 1943	16.00	5,990
	June 10, 1943	15.60	5,630
	June 18, 1943	16.35	6,380
1944	Mar. 16, 1944	18.60	9,160
	Apr. 12, 1944	18.10	8,440
	Apr. 24, 1944	19.39	10,400
	May 4, 1944	11.10	3,010
1945	Mar. 27, 1945	13.60	4,270
	Apr. 18, 1945	12.40	3,630
	Apr. 27, 1945	12.00	3,430
	May 18, 1945	16.00	5,990
	June 11, 1945	15.00	5,160
	June 18, 1945	18.74	9,310
	Sept.30, 1945	11.72	3,290
1946	Jan. 7, 1946	20.66	11,700
	Mar. 25, 1946	14.10	4,560
1947	Apr. 6, 1947	20.90	13,000
	June 1, 1947	14.20	4,630
	June 3, 1947	15.20	5,310
	June 7, 1947	27.4	23,000
	June 15, 1947	13.9	4,440
	June 20, 1947	21.8	13,400
1948	Dec. 6, 1947	12.97	3,940
	Feb. 29, 1948	13.60	4,270
	Mar. 20, 1948	17.80	7,920
1949	Feb. 15, 1949	11.27	3,100
	Feb. 21, 1949	14.20	4,630
	July 12, 1949	11.50	3,080
	July 22, 1949	13.56	4,270
1950	June 17, 1950	12.60	3,730
	June 21, 1950	13.35	4,160
1951	Feb. 21, 1951	15.81	5,810
	June 28, 1951	16.23	6,180
	July 25, 1951	15.32	5,390
1952	Mar. 11, 1952	15.14	5,230
	Mar. 21, 1952	12.73	3,780
	Apr. 24, 1952	14.35	4,760

[a] Annual peak only.
[b] Backwater from ice.

GAGING-STATION RECORDS

Salt River basin

(13) Salt River near Hunnewell, Mo.

Location.--Lat 39°40'05", long 91°54'10", in SW¼NW¼ sec. 10, T. 56 N., R. 9 W., 1½ miles downstream from Black Creek and 2 miles west of Hunnewell.

Drainage area.--626 sq mi.

Gage.--Nonrecording. Station discontinued September 1940. Datum of gage is 615.64 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur.

Flood stage.--12 ft.

Remarks.--Some channel improvements made in drainage basin upstream from gage during period 1906-20. Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1931	June 8, 1931	18.50	9,280	1936	Feb. 26, 1936	18.83	9,590
1932	Aug. 20, 1932	15.22	6,560	1937	Feb. 22, 1937	13.09	4,700
1933	July 1, 1933	21.20	15,400	1938	Mar. 31, 1938	14.9	6,000
1934	Sept.15, 1934	10.00	2,920	1939	Mar. 14, 1939	18.34	9,150
1935	June 4, 1935	19.80	11,300	1940	Mar. 5, 1940	11.05	3,600

(14) South Fork Salt River at Santa Fe, Mo.

Location.--Lat 39°21'45", long 91°49'05", in NW¼ NE¼ sec. 20, T. 53 N., R. 8 W., at county highway bridge a quarter of a mile south of Santa Fe and 1 mile upstream from Elm Creek.

Drainage area.--298 sq mi.

Gage.--Nonrecording gage Sept. 27, 1939, to Feb. 4, 1940; recording gage since Feb. 5, 1940. Datum of gage is 613.05 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 10,400 cfs; shifts in relation occur.

Flood stage.--14 ft.

Historical data.--Flood of about 1929 washed away county highway bridge 100 ft upstream from gage; magnitude unknown.

Remarks.--Base for partial-duration series, 5,800 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	June 11, 1940	13.97	5,460	1945	Mar. 2, 1945	14.40	5,890
					Mar. 21, 1945	15.20	6,580
1941	Apr. 19, 1941	16.78	7,780		Apr. 14, 1945	14.86	6,320
					May 16, 1945	16.90	8,180
1942	Oct. 5, 1941	19.10	10,400		June 7, 1945	16.55	7,880
	Oct. 31, 1941	16.30	7,390		Sept.22, 1945	15.85	7,120
	June 27, 1942	19.12	10,500		Sept.28, 1945	16.10	7,400
1943	Dec. 27, 1942	20.10	11,700	1946	Jan. 9, 1946	16.30	7,580
	May 8, 1943	19.20	10,600				
	May 19, 1943	20.36	12,100	1947	Apr. 25, 1947	17.43	8,680
1944	Apr. 11, 1944	17.10	8,190	1948	Mar. 23, 1948	9.30	2,570
	Apr. 23, 1944	21.10	13,100				
	Apr. 27, 1944	14.90	6,470	1949	Sept.13, 1949	14.82	6,230
				1950	Oct. 21, 1949	17.27	8,580
					Dec. 21, 1949	14.87	6,320
				1951	Mar. 17, 1951	15.88	7,210
				1952	Mar. 18, 1952	13.79	5,410

Salt River basin

(15) Youngs Creek near Mexico, Mo.

Location.--Lat 39°18'40", long 91°56'40", in NW¼SW¼ sec. 5, T. 52 N., R. 9 W., at bridge on State Highway 15, 6 miles upstream from Long Branch and 11 miles north of Mexico.

Drainage area.--67.4 sq mi.

Gage.--Nonrecording. Datum of gage is 704.31 ft above mean sea level, datum of 1929 (levels by Missouri Highway Department).

Flood stage.--13 ft.

Stage-discharge relation.--Defined by current-meter measurements.

Historical data.--Maximum stage known, about 15.1 ft, date unknown, from information by Missouri State Highway Department.

Remarks.--Base for partial-duration series, 1,400 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1937	May 3, 1937	5.08	1,080	1945	Mar. 21, 1945	6.90	2,120
					Mar. 25, 1945	5.80	1,480
1938	Apr. 8, 1938	6.10	1,570		Apr. 14, 1945	7.30	2,380
	July 17, 1938	7.80	2,470		Apr. 17, 1945	7.33	2,380
					June 7, 1945	8.5	3,190
1939	Mar. 12, 1939	7.20	2,140		Sept.22, 1945	6.90	2,120
	Apr. 16, 1939	6.60	1,820				
	May 27, 1939	8.00	2,580	1946	Jan. 5, 1946	5.85	1,890
	June 20, 1939	7.65	2,360				
	June 27, 1939	7.61	2,360	1947	Nov. 3, 1946	5.01	1,420
	Aug. 12, 1939	6.20	1,620		Nov. 10, 1946	5.00	1,420
	Aug. 17, 1939	12.0	5,960		Mar. 13, 1947	5.18	1,520
					Apr. 1, 1947	5.90	1,950
1940	June 11, 1940	7.0	2,030		Apr. 5, 1947	5.30	1,600
					Apr. 11, 1947	5.41	1,660
1941	Jan. 17, 1941	4.0	610		Apr. 25, 1947	7.05	2,610
					June 7, 1947	5.23	1,550
1942	Oct. 5, 1941	7.35	2,450		June 18, 1947	6.60	2,360
	Oct. 21, 1941	6.96	2,190				
	Oct. 31, 1941	6.45	1,820	1948	July 21, 1948	4.4	1,060
	Mar. 16, 1942	7.17	2,320				
	June 19, 1942	6.10	1,640	1949	Sept.13, 1949	4.5	1,120
	June 26, 1942	12.19	6,140				
				1950	Oct. 21, 1949	7.85	3,130
1943	Dec. 27, 1942	10.1	4,390		Dec. 20, 1949	7.3	2,800
	May 8, 1943	7.37	2,450				
	May 11, 1943	6.20	1,700	1951	Feb. 20, 1951	5.8	1,890
	May 15, 1943	8.68	3,330		Mar. 17, 1951	6.46	2,310
	May 18, 1943	9.50	3,920		June 26, 1951	6.29	2,190
	June 6, 1943	6.18	1,700		July 12, 1951	5.10	1,470
	June 10, 1943	5.80	1,480				
	June 22, 1943	5.67	1,430	1952	Mar. 18, 1952	6.00	2,010
					Aug. 21, 1952	6.64	2,370
1944	Mar. 15, 1944	7.62	2,580				
	Apr. 11, 1944	9.33	3,780				
	Apr. 23, 1944	9.06	3,620				
	Apr. 27, 1944	7.20	2,320				
	May 1, 1944	7.42	2,450				

Salt River basin

(16) Middle Fork Salt River at Paris, Mo.

Location.--Lat 39°29'00", long 91°59'50", in SW¼SW¼ sec. 2, T. 54 N., R. 10 W., at Wabash Railroad bridge in Paris, 12½ miles upstream from Elk Fork Salt River.

Drainage area.--356 sq mi.

Gage.--Nonrecording gage Oct. 13, 1939, to Jan. 21, 1940; recording gage thereafter. Datum of gage is 621.71 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Flood stage.--12 ft.

Remarks.--Base for partial-duration series, 2,400 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Mar. 4, 1940	9.35	2,070	1946	Oct. 1, 1945	10.80	2,620
					Jan. 7, 1946	17.2	6,640
1941	Sept. 3, 1941	10.60	2,520				
				1947	Nov. 3, 1946	10.50	2,480
1942	Oct. 4, 1941	11.60	3,040		Apr. 6, 1947	19.75	8,670
	Nov. 2, 1941	10.93	2,670		May 28, 1947	10.95	2,720
	Feb. 8, 1942	12.96	3,860		June 8, 1947	18.80	7,840
	Mar. 18, 1942	10.50	2,470		June 20, 1947	17.15	6,640
	Apr. 8, 1942	11.60	3,040				
	Apr. 11, 1942	11.44	2,930	1948	Feb. 28, 1948	10.40	2,430
	June 27, 1942	21.76	10,500		Mar. 21, 1948	14.65	4,870
1943	Dec. 27, 1942	11.58	3,040	1949	June 29, 1949	11.80	3,150
	May 17, 1943	16.78	6,430				
	June 10, 1943	11.68	3,400	1950	Dec. 22, 1949	10.63	2,520
1944	Mar. 17, 1944	16.86	6,500	1951	Mar. 29, 1951	13.68	4,280
	Apr. 12, 1944	18.52	7,730		June 30, 1951	14.88	5,060
	Apr. 24, 1944	17.50	6,960				
				1952	Mar. 10, 1952	11.01	2,720
1945	Mar. 26, 1945	11.40	2,930		Mar. 19, 1952	10.83	2,620
	Apr. 14, 1945	13.60	4,240		Apr. 24, 1952	11.40	2,930
	Apr. 17, 1945	11.91	3,210		Sept. 3, 1952	10.65	2,520
	May 18, 1945	12.29	3,440				
	June 11, 1945	14.94	5,080				
	June 18, 1945	11.07	2,770				

Salt River basin

(17) Elk Fork Salt River near Paris, Mo.

Location.--Lat 39°26'25", long 92°00'05", in SE¼SE¼ sec. 22, T. 54 N., R. 10 W., at bridge on State Highway 15, 2½ miles south of Paris and 11 miles upstream from mouth.

Drainage area.--262 sq mi.

Gage.--Nonrecording gage Apr. 3, 1930, to Jan. 21, 1935 (fragmentary record); recording gage thereafter. Datum of gage is 630.86 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 16,000 cfs; large shift in relation occurred May 27, 1939.

Flood stage.--14 ft.

Historical data.--Flood of June 1928 was higher than that of 1902 but might have been exceeded by the flood of 1875, from information by local residents.

Remarks.--Base for partial-duration series, 3,600 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1928	June 1928	19.1	[a]18,400	1943	Dec. 27, 1942	12.75	8,040
					May 18, 1943	14.42	10,300
1931	June 12, 1931	12.50	[a]10,100		June 10, 1943	11.70	6,700
1932	Aug. 14, 1932	10.46	[a]7,820	1944	Mar. 15, 1944	13.58	9,140
					Apr. 10, 1944	16.66	14,000
1933	May 13, 1933	12.32	[a]9,490		Apr. 23, 1944	16.55	13,800
					May 1, 1944	9.18	4,560
1934	Sept.12, 1934	8.64	[a]5,400				
				1945	Mar. 20, 1945	10.40	5,570
1935	Mar. 7, 1935	9.03	5,700		Mar. 25, 1945	11.62	6,700
	May 3, 1935	9.11	5,810		Apr. 14, 1945	12.44	7,550
	May 14, 1935	10.70	7,570		May 17, 1945	9.88	5,140
	May 28, 1935	11.08	8,020		June 8, 1945	12.25	7,330
	June 2, 1935	8.80	5,500		June 30, 1945	8.82	4,240
1936	Feb. 26, 1936	12.20	9,360	1946	Jan. 6, 1946	9.32	4,640
					Mar. 23, 1946	9.76	5,050
1937	Feb. 21, 1937	7.57	4,400				
	May 3, 1937	6.88	3,600	1947	Nov. 3, 1946	9.84	5,050
					Nov. 10, 1946	9.06	4,480
1938	Mar. 29, 1938	8.31	5,000		Apr. 1, 1947	9.08	4,480
	Apr. 9, 1938	8.02	4,700		Apr. 5, 1947	9.82	5,050
	May 23, 1938	12.99	10,400		Apr. 25, 1947	9.75	5,050
	July 18, 1938	7.24	3,900		June 7, 1947	11.83	6,900
					June 19, 1947	13.4	8,860
1939	Mar. 12, 1939	9.76	6,580				
	May 27, 1939	11.28	5,850	1948	Feb. 27, 1948	8.38	4,000
	June 21, 1939	13.45	8,860				
	June 28, 1939	14.45	10,300	1949	Jan. 16, 1949	7.86	3,560
	July 25, 1939	14.20	10,000				
	Aug. 17, 1939	12.67	7,910	1950	Oct. 21, 1949	8.45	3,930
					Dec. 21, 1949	11.90	7,000
1940	June 11, 1940	9.56	4,610		Jan. 3, 1950	8.07	3,700
1941	Jan. 17, 1941	6.40	2,420	1951	Feb. 20, 1951	8.10	3,700
					Mar. 17, 1951	9.26	4,640
1942	Oct. 4, 1941	10.97	5,640		Mar. 29, 1951	11.73	6,800
	Oct. 22, 1941	10.04	4,860				
	Oct. 31, 1941	10.07	4,940	1952	Mar. 10, 1952	9.5	4,800
	Feb. 6, 1942	8.45	3,700		Mar. 18, 1952	10.0	5,220
	Mar. 16, 1942	9.41	4,420		Aug. 22, 1952	13.86	9,560
	Apr. 7, 1942	9.55	4,560				
	Apr. 10, 1942	10.06	4,940				
	June 27, 1942	20.22	20,600				

[a] Annual peak only.

Salt River basin

(18) Salt River near Monroe City, Mo.

Location.--Lat 39°32'25", long 91°40'20", in NE¼NW¼ sec. 22, T. 55 N., R. 7 W., at county highway bridge at Joanna, 2,500 ft downstream from Indian Creek, 2 miles upstream from Lick Creek, and 8 miles southeast of Monroe City.

Drainage area.--2,230 sq mi, approximately.

Gage.--Nonrecording gage Oct. 1, 1939, to Feb. 1, 1940; recording gage thereafter. Datum of gage is 520.04 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 44,000 cfs; shifts in relation occur.

Flood stage.--26 ft.

Remarks.--Base for partial-duration series, 20,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1928	June 1928	[a] 36	--	1945	Mar. 21, 1945	21.34	25,400
					Mar. 26, 1945	21.65	26,000
1940	Mar. 3, 1940	13.40	12,600		Apr. 14, 1945	23.45	30,100
					Apr. 17, 1945	18.60	20,500
1941	Apr. 20, 1941	15.30	15,600		May 17, 1945	22.50	28,000
					June 9, 1945	23.45	30,100
1942	Oct. 5, 1941	21.70	26,200		June 16, 1945	18.68	20,700
	Nov. 1, 1941	19.70	22,500				
	Feb. 6, 1942	20.60	24,100	1946	Jan. 9, 1946	22.8	28,600
	Mar. 17, 1942	19.00	21,200				
	June 28, 1942	28.7	44,900	1947	Apr. 6, 1947	21.30	26,300
					Apr. 25, 1947	21.10	25,800
1943	Dec. 28, 1942	26.27	38,000		June 9, 1947	24.17	32,700
	May 18, 1943	30.04	48,800		June 20, 1947	23.65	31,400
	June 11, 1943	21.68	26,200				
				1948	Feb. 28, 1948	16.20	16,500
1944	Mar. 16, 1944	23.52	30,400				
	Apr. 12, 1944	29.63	47,600	1949	July 20, 1949	13.94	12,800
	Apr. 24, 1944	30.34	49,700				
	May 1, 1944	18.64	20,600	1950	Dec. 22, 1949	20.49	24,400
				1951	Feb. 21, 1951	19.36	22,300
					Mar. 18, 1951	19.76	23,000
					Mar. 30, 1951	19.83	23,000
				1952	Mar. 19, 1952	19.22	21,900

[a] Approximate.

Salt River basin

(19) Salt River near New London, Mo.

Location.--Lat 39°36'44", long 91°24'30", in NE¼NW¼ sec. 36, T. 56 N., R. 5 W., 250 ft upstream from bridge on U. S. Highway 61, 2 miles north of New London, and 8 miles upstream from Spencer Creek.

Drainage area.--2,480 sq mi, approximately.

Gage.--Nonrecording gage Feb. 16, 1922, to Jan. 17, 1935; recording gage thereafter. Datum of gage is 477.03 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 50,200 cfs; shifts in relation occur.

Flood stage.--19 ft.

Historical data.--Flood of July 14, 1858, reached a stage of about 27.6 ft present site and datum, from comparison of June 1928 crest at stone marker 1 mile below gage.

Remarks.--Base for partial-duration series, 25,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	Mar. 16, 1922	24.15	39,800
1923	Mar. 12, 1923	15.50	15,800
1924	June 13, 1924	14.21	13,700
1925	Mar. 19, 1925	14,70	14,500
1926	Apr. 8, 1926	24.64	41,700
	Sept. 6, 1926	26.00	49,800
1927	Mar. 21, 1927	23.46	36,600
	Apr. 2, 1927	23.35	36,200
	Apr. 14, 1927	22.60	32,800
1928	June 21, 1928	28.8	58,700
1929	Nov. 19, 1928	24.00	37,800
	Mar. 17, 1929	23.26	35,100
	Apr. 26, 1929	21.65	29,400
	May 15, 1929	21.30	28,500
	May 20, 1929	22.30	21,600
1930	Feb. 13, 1930	16.45	17,400
1931	June 13, 1931	22.54	33,400
1932	Aug. 15, 1932	18.70	23,500
1933	Dec. 25, 1932	20.80	29,600
	May 14, 1933	21,72	32,400
	May 27, 1933	20.36	28,300
1934	Sept.30, 1934	15.40	15,800
1935	May 4, 1935	20.60	28,900
	May 15, 1935	20.26	27,900
	May 30, 1935	19.95	27,000
1936	Feb. 28, 1936	22.90	36,500
1937	Feb. 21, 1937	15.77	16,900
1938	May 24, 1938	18.31	22,400
1939	Mar. 13, 1939	21.13	26,900
	Apr. 18, 1939	21.31	27,500
	June 22, 1939	22.47	31,000
	July 26, 1939	20.66	25,900
1940	Mar. 3, 1940	13.97	12,600
1941	Apr. 20, 1941	16.37	17,600
1942	Oct. 6, 1941	21.36	28,200
	Feb. 7, 1942	20.49	25,800
	June 29, 1942	25.55	43,500
1943	Dec. 29, 1942	24.20	37,500
	May 19, 1943	27.18	51,600
	June 11, 1943	21.28	27,900
1944	Mar. 17, 1944	22.55	31,800
	Apr. 13, 1944	26.08	45,900
	Apr. 25, 1944	26.48	47,900
1945	Mar. 22, 1945	21.38	28,200
	Mar. 26, 1945	21.45	28,200
	Apr. 15, 1945	22.53	31,400
	May 18, 1945	21.95	29,900
	June 10, 1945	23.2	33,800
1946	Jan. 10, 1946	22.11	30,200
1947	Apr. 7, 1947	21.04	25,200
	Apr. 26, 1947	21.02	25,200
	June 10, 1947	22.77	31,100
	June 21, 1947	23.0	31,700
1948	Mar. 23, 1948	16.96	16,800
1949	July 20, 1949	15.65	14,600
1950	Dec. 23, 1949	19.78	22,400
1951	Mar. 18, 1951	19.91	23,500
1952	Mar. 19, 1952	19.13	21,800

Cuivre River basin

(20) Cuivre River near Troy, Mo.

Location.--Lat 39°00'59", long 90°59'00", in SE¼ sec. 14, T. 49 N., R. 1 W., at bridge on U. S. Highway 61, 1¼ miles downstream from confluence of North and West Forks and 2 miles north of Troy.

Drainage area.--903 sq mi.

Gage.--Nonrecording gage Feb. 15, 1922, to July 10, 1939; recording gage thereafter. Prior to Oct. 1, 1930, at site 3 miles downstream at datum 4.31 ft lower than present datum; datum of present gage is 450.27 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 101,000 cfs.

Flood stage.--21 ft.

Historical data.--Flood of October 1941 exceeded the previously known maximum flood of December 1895 by 5 or 6 ft at Frenchmens Bluff, 3 miles downstream, and is highest flood since Frenchmens Bluff bridge was built in 1888.

Remarks.--Base for partial-duration series, 20,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	Mar. 14, 1922	24.50	[a] 44,200
	Apr. 8, 1922	23.30	[a] 36,700
	Apr. 15, 1922	21.00	[a] 24,800
1923	Mar. 12, 1923	22.46	[a] 32,200
	Aug. 17, 1923	22.40	[a] 31,600
1924	Dec. 13, 1923	20.42	[a] 22,400
1925	Mar. 19, 1925	20.24	[a] 21,600
1926	Nov. 8, 1925	21.20	25,700
	Apr. 7, 1926	22.90	34,400
	Sept. 5, 1926	25.40	50,000
1927	Oct. 1, 1926	21.45	26,600
	Oct. 3, 1926	20.40	22,400
	Nov. 15, 1926	20.95	24,800
	Mar. 9, 1927	23.00	34,900
	Apr. 1, 1927	23.40	37,300
	Apr. 13, 1927	23.40	37,300
	May 8, 1927	20.00	20,800
	May 25, 1927	20.35	22,400
1928	Apr. 6, 1928	22.15	30,500
	June 20, 1928	23.77	39,700
1929	Oct. 9, 1928	20.85	24,000
	Mar. 16, 1929	24.40	43,500
	May 3, 1929	20.00	20,800
	May 13, 1929	21.20	25,700
	May 18, 1929	25.75	52,600
	June 13, 1929	20.00	20,800
1930	Jan. 2, 1930	19.10	18,100
1931	May 20, 1931	23.58	21,300
1932	Aug. 13, 1932	20.20	13,900
1933	May 13, 1933	24.22	26,200
1934	Sept.29, 1934	20.20	13,900
1935	May 15, 1935	24.78	30,000
1936	Nov. 5, 1935	22.69	19,000
1937	Nov. 3, 1936	25.80	36,900
1938	Apr. 9, 1938	23.7	23,300
1939	Mar. 12, 1939	23.80	23,900
	Apr. 16, 1939	25.03	31,300
1940	June 28, 1940	15.20	8,540
1941	Apr. 20, 1941	26.4	41,300
1942	Oct. 5, 1941	33.4	120,000
	Oct. 31, 1941	24.20	22,700
	June 26, 1942	24.00	21,900
1943	Dec. 27, 1942	27.58	41,500
	May 11, 1943	24.34	23,100
	May 18, 1943	27.00	37,000
1944	Apr. 11, 1944	25.86	30,500
	Apr. 22, 1944	26.92	36,400
1945	Mar. 26, 1945	24.9	25,600
	May 15, 1945	24.53	23,900
	Sept.23, 1945	23.60	20,500
	Sept.29, 1945	23.48	20,100
1946	Jan. 99, 1946	24.0	21,900
1947	Nov. 1, 1946	26.00	30,000
	Nov. 3, 1946	24.80	24,200
	Apr. 25, 1947	27.1	37,200
1948	July 26, 1948	23.11	18,000
1949	Jan. 24, 1949	24.30	21,000
	July 21, 1949	25.88	29,200
1950	Dec. 22, 1949	23.94	19,400
1951	Feb. 21, 1951	25.80	28,600
	Mar. 18, 1951	25.49	26,900
1952	Apr. 12, 1952	19.51	10,300

[a] Revised.

Mississippi River main stem

(21) Mississippi River at Alton, Ill.

Location.--Lat 38°53'06", long 90°10'51", in sec. 14, T. 5 N., R. 10 W., in downstream end of intermediate lock wall of Lock and Dam 26 at Alton, 300 ft downstream from Missouri Illinois Bridge & Belt Railway bridge, 7.7 miles upstream from Missouri River, and 202.7 miles upstream from Ohio River.

Drainage area.--171,500 sq mi, approximately.

Gage.--Nonrecording gage 1879 to Jan. 4, 1937, and Nov. 11, 1937, to Jan. 31, 1938; recording gage Jan. 5 to Nov. 10, 1937, and since Dec. 1, 1938. Prior to Jan. 1, 1933, at site 15 miles upstream at datum 403.72 ft higher than present gage; Jan. 1, 1933, to Jan. 31, 1938, at present site at datum 395.48 ft higher than present gage; datum of present gage is mean sea level, datum of 1929 (levels by Corps of Engineers). Since July 11, 1940, auxiliary water-stage recorder 5.9 miles downstream; previously various combinations of gages were used. Gage heights for present site given herein converted to present datum.

Stage-discharge relation.--Affected by backwater from Missouri River. Fall between auxiliary gage and reference gage used as a factor in computing discharge.
Frequent current-meter measurements necessary to define relationship.

Flood stage.--421 ft.

Historical data.--Maximum stage known, 432.42 ft, present datum, in June 1844.

Remarks.--Alton gage-height record and discharge record January 1928 to February 1933 (published as "at Grafton" prior to January 1933), February 1938 to September 1939 furnished by Corps of Engineers. Natural flow of stream affected by many reservoirs and navigation dams in upper Mississippi River basin and by diversion through Chicago Sanitary and Ship Canal from Lake Michigan into Illinois River.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1858	June 1858	[a]428.2	[b]573,000	1940	Apr. 19, 1940	407.10	137,000
1928	Apr.9,10,1928	--	216,000	1941	Apr. 21, 1941	[c]417.27	220,000
1929	Apr. 29, 1929	[c]26.2	365,000	1942	June 22, 1942	[g]423.72	253,000
1930	June 21, 1930	14.5	186,000	1943	May 24, 1943	429.91	437,000
1931	June 14, 1931	--	145,000	1944	Apr. 30, 1944	[c]429.33	[h]394,600
1932	Nov. 30, and Dec. 1, 1931	14.4	182,000	1945	June 13, 1945	[c]424.14	308,000
1933	May 17, 1933	418.9	265,000	1946	Jan. 14, 1946	[c]419.10	314,000
1934	Apr. 24, 1934	405.0	97,200	1947	July 3, 1947	[c]429.40	380,000
1935	May 17, 1935	[d]424.4	231,000	1948	Mar. 28, 1948	[c]424.41	366,000
1936	Mar. 1, 1936	413.5	218,000	1949	Mar. 13, 1949	[c]415.08	219,000
1937	Mar. 15, 1937	414.9	255,000	1950	June 24, 1950	[i]417.20	261,000
1938	Apr. 11, 1938	[e]416.9	268,000	1951	May 10, 1951	[j]429.47	333,000
1939	Mar.17,18,1939	[f]421.2	240,000	1952	Apr. 30, 1952	[c]424.47	340,000

[a] Present site and datum.
[b] Computed by Corps of Engineers.
[c] Occurred at different time than peak discharge.
[d] Occurred on June 8, 1935.
[e] Occurred on May 27, 1938.
[f] Occurred on Apr. 20, 1939.
[g] Occurred on June 30, 1942.
[h] Excludes diversion from Missouri River.
[i] Occurred on May 1, 1950.
[j] Occurred on July 21, 1951.

Missouri River main stem

(22) Missouri River at Omaha, Nebr.

Location.--Lat 41°15'40", long 95°55'15", in sec. 23, T. 15 N., R. 13 E., at Ak-Sar-Ben Bridge in Omaha and at mile 632.0

Drainage area.--322,800 sq mi.

Gage.--Nonrecording gage Sept. 1, 1928, to Oct. 18, 1931; recording gage thereafter. Prior to Dec. 1, 1929, at site 2.4 miles upstream at datum 2.97 ft higher than present gage; datum of present gage is 958.24 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Continually shifting, must be defined by frequent current-meter measurements.

Flood stage.--19 ft.

Remarks.--Flow partly regulated by Fort Peck Reservoir. Annual peaks only are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1881	Apr. 25, 1881	[a] 24.65	370,000	1940	June 5, 1940	[c] 10.96	54,600
1929	June 7, 1929	14.28	198,000	1941	June 18, 1941	17.20	107,000
1930	Mar. 15, 1930	11.9	84,400	1942	June 11,12,1942	18.30	121,000
1931	June 18, 1931	10.85	52,800	1943	Apr. 12, 1943	[b] 22.45	200,000
1932	June 19, 1932	15.12	137,000	1944	Apr.16,17,1944	19.40	149,000
1933	May 29, 1933	13.03	102,000	1945	Mar. 22, 1945	14.52	106,000
1934	Mar. 5, 1934	15.00	125,000	1946	June 24, 1946	13.20	84,700
1935	July 19, 1935	16.85	99,800	1947	July 1, 1947	19.10	150,000
1936	Mar. 9, 1936	[a] 16.90	--	1948	Mar. 28, 1948	14.0	112,000
	Mar. 25, 1936	16.00	89,200	1949	Apr. 13, 1949	20.00	183,000
1937	June 24, 1937	18.15	111,000	1950	Apr. 27, 1950	21.24	196,000
1938	July 10, 1938	[b] 18.75	117,000	1951	Apr. 11, 1951	18.20	152,000
1939	Apr.5,6, 1939	19.30	141,000	1952	Apr. 18, 1952	30.20	396,000

[a] Present site and datum; result of ice jam.
[b] Occurred on following day.
[c] Occurred on June 18, 1940.

(23) Missouri River at Nebraska City, Nebr.

Location.--Lat 40°40'35", long 95°50'10", in SW¼ sec. 10, T. 8 N., R. 14 E., at Waubonsie Highway Bridge at Nebraska City and at mile 579.3.

Drainage area.--414,400 sq mi.

Gage.--Nonrecording gage Aug. 12, 1929, to Oct. 21, 1931; recording gage thereafter. Datum of gage is 903.94 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Continually shifting, must be defined by frequent current-meter measurements.

Flood stage.--15 ft.

Remarks.--Flow partly regulated by Fort Peck Reservoir. Only annual peaks are shown.

Missouri River main stem

(23) Missouri River at Nebraska City, Nebr.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1881	Apr. 27, 1881	18.1	380,000	1941	June 19, 1941	17.05	106,000
1930	May 11, 1930	11.63	95,200	1942	May 21, 1942	18.40	134,000
1931	Jan. 5, 1931	[a] 11.02	--	1943	Apr. 14, 1943	19.88	181,000
	June 24, 1931	10.83	56,200	1944	June 14, 1944	17.70	214,000
1932	June 17-19, 1932	12.9	138,000	1945	Feb. 14, 15, 1945	[a] 16.85	--
1933	May 29, 1933	12.2	112,000		June 17, 1945	16.30	129,000
1934	Mar. 5, 1934	12.4	138,000	1946	June 24, 1946	13.7	96,700
1935	Feb. 16, 1935	[a] 15.25	--	1947	July 1, 2, 1947	20.1	172,000
	June 23, 24, 1935	14.00	106,000	1948	Feb. 27, 1948	[a] 18.65	--
1936	Mar. 6, 1936	[a] 15.25	--		July 29, 1948	17.5	135,000
	Mar. 10, 1936	14.00	113,000	1949	Mar. 6, 1949	[a] 25.8	--
1937	June 25, 1937	16.55	111,000		Apr. 13, 1949	20.32	182,000
1938	July 12, 1938	17.90	125,000	1950	Apr. 28, 1950	20.95	185,000
1939	Apr. 6, 1939	17.15	149,000	1951	Mar. 29, 1951	[b] 18.52	163,000
1940	June 8, 1940	12.95	69,500	1952	Apr. 19, 1952	[c] 27.66	414,000

[a] Backwater from ice.
[b] Occurred on June 2, 1951.
[c] Occurred on preceding day.

Tarkio River basin

(24) West Tarkio Creek near Westboro, Mo.

Location.--Lat 40°32'30", long 95°23'00", in NW¼ sec. 13, T. 66 N., R. 40 W., at bridge on county highway C, 3½ miles west of Westboro and 6 miles upstream from confluence with Middle Tarkio Creek.

Drainage area.--105 sq mi.

Gage.--Nonrecording gage Mar. 14 to July 19, 1934; recording gage July 19, 1934 to June 30, 1940, (discontinued). Datum of gage is 926.80 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 2,630 cfs and by slope-area determination at 8,720 cfs.

Flood stage.--25 ft.

Remarks.--Base for partial-duration series, 1,600 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1934	Sept. 26, 1934	5.50	172	1938	June 11, 1938	16.87	5,600
1935	June 1, 1935	9.76	1,710		June 16, 1938	10.00	2,280
	June 17, 1935	14.55	4,640		Aug. 20, 1938	12.00	3,190
	June 26, 1935	12.72	3,430		Sept. 10, 1938	8.70	1,740
1936	Feb. 26, 1936	9.46	1,960	1939	Mar. 8, 1939	8.76	1,670
	Apr. 28, 1936	14.69	5,310		Mar. 11, 1939	18.91	6,810
	May 12, 1936	10.02	2,260		June 10, 1939	9.05	2,378
	June 5, 1936	11.00	2,830		June 22, 1939	11.89	3,741
1937	Feb. 13, 1937	9.82	2,150	1940	July 27, 1940	16.14	[a] 5,760
	Mar. 2, 1937	9.42	1,930				
	July 29, 1937	22.10	8,720				

[a] Annual peak only.

Tarkio River basin

(25) Tarkio River at Fairfax, Mo.

Location.--Lat 40°20'20", long 95°24'20", in SW¼SW¼ sec. 22, T. 64 N., R. 40 W., at county highway bridge 0.5 mile west of Fairfax and 2 miles downstream from unnamed creek.

Drainage area.--508 sq mi.

Gage.--Nonrecording. Prior to Oct. 1, 1931, at datum 2.00 ft higher. Datum of present gage is 867.66 ft above mean sea level, datum of 1929. Gage heights given herein converted to present datum.

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs; shifts in relation occur frequently. Levees confine flow to channel until overtopped or crevassed.

Flood stage.--17 ft.

Remarks.--Channel was straightened and improved prior to beginning of records. Base for partial-duration series, 4,800 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	Apr. 9, 1922	15.06	2,850
1923	May 11, 1923	8.60	1,100
1924	June 12, 1924	17.95	6,610
	June 24, 1924	16.64	5,700
	July 17, 1924	17.00	5,960
	July 19, 1924	16.10	5,580
1925	June 15, 1925	14.80	4,530
1926	June 13, 1926	15.70	5,120
	Sept. 4, 1926	19.3	7,940
1927	Oct. 3, 1926	9.53	1,740
1928	Sept.12, 1928	18.71	7,090
1929	Mar. 6, 1929	17.60	6,350
	July 7, 1929	22.33	15,000
	July 15, 1929	18.00	6,610
1930	June 19, 1930	8.86	1,560
1931	June 15, 1931	16.15	5,310
1932	Nov. 23, 1931	15.70	5,810
	May 30, 1932	15.96	6,000
	Aug. 15, 1932	15.20	5,500
1933	Aug. 21, 1933	11.80	3,570
1934	Sept.26, 1934	5.90	710
1935	Oct. 19, 1934	14.80	4,860
	June 1, 1935	18.00	6,670
1936	Apr. 28, 1936	15.22	5,080
1937	Mar. 2, 1937	15.05	6,300
	Apr. 20, 1937	17.15	8,610
	July 30, 1937	17.20	8,730
1938	June 11, 1938	14.50	5,800
	Aug. 6, 1938	17.7	9,480
	Aug. 21, 1938	14.00	5,300
1939	Mar. 12, 1939	18.8	10,900
	June 21, 1939	16.00	7,410
1940	July 28, 1940	17.00	5,800
	Aug. 27, 1940	17.5	6,150
1941	June 9, 1941	20.3	12,400
	Sept.15, 1941	17.80	7,690
1942	Oct. 4, 1941	16.90	6,600
	Oct. 7, 1941	17.70	7,560
	Oct. 22, 1941	18.55	8,870
	Oct. 31, 1941	16.10	5,770
	May 5, 1942	18.63	8,870
	May 11, 1942	12.70	6,170
	June 20, 1942	18.91	16,300
	June 25, 1942	20.50	13,800
1943	June 5, 1943	17.05	6,710
	June 10, 1943	17.7	7,560
	June 16, 1943	17.00	6,710
1944	May 3, 1944	18.0	7,960
1945	May 14, 1945	15.65	5,310
	July 5, 1945	16.00	5,670
	Aug. 3, 1945	18.91	9,400
	Aug. 14, 1945	15 20	4,960
1946	Sept. 4, 1946	12.0	4,760
1947	June 5, 1947	17.87	11,800
	June 12, 1947	18.56	12,700
	June 18, 1947	19.5	14,000
	June 22, 1947	12.50	5,310
1948	Mar. 19, 1948	14.1	7,340
1949	Feb. 18, 1949	[a] 15.12	--
	Feb. 24, 1949	[a] 20.44	[b] 4,000
	Mar. 4, 1949	[a] 15.2	6,980
	June 2, 1949	19.0	12,800
	June 28, 1949	19.85	14,100
1950	May 9, 1950	18.0	11,200
	June 9, 1950	14.0	5,600
1951	Oct. 2, 1950	13.36	5,000
	Apr. 25, 1951	14.70	8,780
	May 1, 1951	17.50	12,700
	June 2, 1951	16.90	10,500
	June 22, 1951	12.75	5,080
	June 26, 1951	12.70	4,970
	Aug. 26, 1951	13.10	5,420
1952	June 21, 1952	14.08	6,630
	June 27, 1952	13.10	5,420
	July 14, 1952	15.35	8,360

[a] Backwater from ice.
[b] Mean daily discharge.

Nodaway River basin

(26) Nodaway River near Burlington Junction, Mo.

Location.--Lat 40°26'40", long 95°05'20", in NW¼ sec. 17, T. 65 N., R. 37 W., at bridge on State Highway 4, a quarter of a mile upstream from Mill Creek, 0.5 mile downstream from Wabash Railroad bridge, and 1½ miles west of Burlington Junction.
Drainage area.--1,240 sq mi, approximately.
Gage.--Nonrecording gage Mar. 4, 1922, to June 28, 1939; recording gage since June 29, 1939. Prior to Oct. 26, 1928, at present site at approximately same datum; Oct. 26, 1928, to June 9, 1929, at site half a mile upstream at different datum; since June 10, 1929 at present site and datum; datum of present gage is 896.17 ft above mean sea level, datum of 1929.
Stage-discharge relation.--Defined by current-meter measurements; large shifts in relation occur frequently.
Flood stage.--18 ft.
Remarks.--Channel improvement made above and below gage prior to establishment of station. Base for partial-duration series, 8,500 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	July 29, 1922	10.42	6,710
1923	Mar. 26, 1923	7.94	3,480
1924	June 9, 1924	12.60	9,900
	June 26, 1924	13.42	10,200
1925	June 14, 1925	9.50	5,000
1926	Feb. 2, 1926	13.38	10,200
	June 13, 1926	12.26	8,550
	Sept. 3, 1926	19.5	18,200
1927	Oct. 3, 1926	13.25	6,800
1928	June 17, 1928	13.79	9,420
	July 21, 1928	15.70	12,800
1929	Mar. 6, 1929	15.60	12,600
	Mar. 14, 1929	16.20	13,800
	Apr. 21, 1929	14.20	10,000
	June 1, 1929	17.59	16,800
	July 6, 1929	19.40	21,000
	July 15, 1929	17.50	16,600
1930	May 7, 1930	11.20	6,220
1931	Sept.25, 1931	9.40	4,100
1932	Nov. 23, 1931	14.45	13,900
	Aug. 15, 1932	15.00	15,400
1933	Apr. 1, 1933	6.55	1,750
1934	Sept.27, 1934	7.20	2,150
1935	May 31, 1935	13.45	10,600
	June 2, 1935	12.62	9,760
	June 18, 1935	11.97	8,500
1936	Feb. 25, 1936	10.95	6,520
1937	Mar. 4, 1937	14.55	17,100
	May 21, 1937	11.97	11,300
	July 19, 1937	11.50	10,300
1938	May 31, 1938	17.07	19,800
	June 14, 1938	12.50	10,700
	Aug. 21, 1938	11.99	9,860
1939	Mar. 21, 1939	16.7	19,600
	June 21, 1939	12.00	10,300
	July 4, 1939	15.41	17,000
1940	July 28, 1940	11.74	8,140
1941	June 4, 1941	12.80	11,200
	June 9, 1941	18.44	22,100
	Sept.15, 1941	16.47	17,700
1942	Oct. 7, 1941	13.32	12,000
	Oct. 22, 1941	15.26	15,600
	Oct. 31, 1941	15.20	15,400
	May 5, 1942	16.95	19,000
	May 11, 1942	11.93	9,850
	June 20, 1942	13.95	13,200
	June 25, 1942	15.95	16,800
1943	June 5, 1943	15.30	16,700
	June 10, 1943	15.5	17,200
	June 16, 1943	13.60	13,300
	Aug. 3, 1943	12.73	11,600
1944	Apr. 23, 1944	12.16	10,400
	May 2, 1944	16.9	20,300
	June 4, 1944	12.13	10,400
1945	Mar. 15, 1945	12.25	10,900
	Apr. 16, 1945	13.20	12,900
	May 14, 1945	15.93	18,500
	May 21, 1945	11.23	9,100
	July 5, 1945	12.30	11,100
	Aug. 14, 1945	11.20	9,100
1946	Mar. 26, 1946	13.9	13,900
	June 19, 1946	11.29	9,000
1947	Apr. 10, 1947	14.20	18,700
	May 28, 1947	10.12	8,860
	June 6, 1947	17.90	28,800
	June 14, 1947	19.0	32,000
	June 18, 1947	13.60	17,100
	June 21, 1947	16.00	23,800
1948	Mar. 19, 1948	14.6	19,700
1949	Feb. 24, 1949	[a]18.3	9,000
	Mar. 5, 1949	[a]19.69	10,000
	June 2, 1949	15.97	23,500
	June 27, 1949	15.70	22,700
1950	May 9, 1950	13.74	17,400
1951	Feb. 26, 1951	9.65	11,500
	Mar. 28, 1951	12.07	13,400
	Apr. 25, 1951	10.18	9,070
	May 1, 1951	16.42	24,600
	May 10, 1951	10.28	9,280
	May 25, 1951	14.90	20,500
	June 2, 1951	15.50	22,200
	June 15, 1951	12.05	13,200
	July 3, 1951	11.40	11,700
	July 6, 1951	13.90	17,900
	Aug. 15, 1951	10.40	9,490
	Aug. 26, 1951	10.17	9,070
	Sept. 9, 1951	10.25	9,070
1952	Mar. 11, 1952	9.63	9,920
	May 22, 1952	10.10	8,860
	June 22, 1952	12.44	14,100

[a] Backwater from ice; discharge is estimated mean for day.

Missouri River main stem

(27) Missouri River at St. Joseph, Mo.
[Published as "at Leavenworth, Kans." prior to 1929]

Location.--Lat 39°45'10", long 94°51'28", in sec. 17, T. 57 N., R. 35 W., at St. Joseph & Grand Island Railroad bridge in St. Joseph and at mile 460.3.

Drainage area.--424,300 sq mi; 425,000 sq mi prior to Oct. 1, 1928.

Gage.--Nonrecording gage Apr. 1, 1922, to Oct. 20, 1931; recording gage thereafter. Prior to Oct. 1, 1928, at site 52.1 miles downstream from and at datum 74.66 ft lower than present gage; Oct. 1, 1928, to Jan. 1, 1934, at present site and at datum 5.50 ft higher than present gage; datum of present gage is 788.19 ft above mean sea level, datum of 1929. Gage heights given herein for present site are converted to present datum.

Stage-discharge relation.--Continually shifting, must be defined by frequent current-meter measurements.

Flood stage.--17 ft.

Remarks.--Records for sites "at St. Joseph" and "at Leavenworth" considered equivalent for flood-frequency study. Drainage basin above station contains many reservoirs with total usable capacity in excess of 27,175,000 acre-ft. Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1844	June 1844	[a] 24.5	350,000	1936	Mar. 12, 1936	14.10	108,000
1881	Apr. 29, 1881	[a] 27.2	370,000	1937	June 28, 1937	14.85	100,000
1903	June 2, 1903	[a] 20.5	252,000	1938	July 17, 1938	17.05	124,000
1922	June 27, 28, 1922	46.6	242,000	1939	Apr. 10, 1939	15.85	141,000
1923	July 7,8,1923	48.3	241,000	1940	June 10, 1940	12.39	65,600
1924	June 28, 1924	49.3	221,000	1941	June 11, 1941	16.29	115,000
1925	June 16, 1925	47.7	235,000	1942	June 25, 1942	17.15	134,000
1926	June 23, 1926	43.8	75,000	1943	Apr. 18, 1943	18.30	154,000
1927	May 17, 18 June 29,30,1927	49.3	213,000	1944	Apr. 19, June 18, 1944	[c] 19.1	161.000
1928	June 18, 1928	[b] 46.4	146,000	1945	June 16, 1945	17.4	152,000
1929	June 4, 1929	15.6	196,000	1946	June 19, 1946	14.70	114,000
1930	May 14, 1930	13.2	106,000	1947	June 16, 1947	20.4	180,000
1931	June 23, 1931	12.3	65,600	1948	Mar. 20, 1948	17.50	158,000
1932	June 20, 1932	15.8	156,000	1949	Mar. 7,8,1949	[d] 21.3	170,000
1933	May 30, 1933	14.2	112,000	1950	Apr. 29,30,1950	19.0	178,000
1934	Mar. 6, 1934	12.9	94,700	1951	May 3, 1951	19.9	198,000
1935	June 29, 1935	15.42	116,000	1952	Apr. 22,23,1952	26.82	397,000

[a] Referred to present site and datum.
[b] Occurred on June 9, 1928.
[c] Occurred on June 18, 1944.
[d] Backwater from ice.

Platte River basin

(28) Platte River at Conception Junction, Mo.

Location.--Lat 40°16'15", long 94°42'15", on line between NW¼ sec. 14 and SW¼ sec. 11, T. 63 N., R. 34 W., at county highway bridge half a mile west of Conception Junction and 6 miles downstream from Honey Creek.

Drainage area.--492 sq mi.

Gage.--Nonrecording. Prior to Aug. 6, 1928, at site 1 mile upstream at different datum; station discontinued September 1932. Altitude of gage is 940 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 9,000 cfs; large shifts in relation occur frequently.

Flood stage.--13 ft.

Remarks.--Channel improvement made in vicinity of gage during 1923-24. Channel has been improved for some distance upstream and downstream from gage. Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1922	July 10, 1922	20.62	8,730	1930	June 16, 1930	14.02	4,200
1923	Nov. 13, 1922	17.45	3,900	1931	Sept.25, 1931	10.42	1,810
1929	July 6, 1929	21.70	12,200	1932	Nov. 24, 1931	17.12	10,200

Platte River basin (Iowa-Missouri)

(29) One Hundred and Two River near Maryville, Mo.
[Published as "at Maryville" prior to 1935]

Location.--Lat 40°23', long 94°50', in SE¼SW¼ sec. 34, T. 65 N., R. 35 W., at county highway bridge, 2½ miles northeast of Maryville and 5 miles downstream from Norvey Creek.

Drainage area.--500 sq mi, approximately; 515 sq mi prior to June 20, 1934.

Gage.--Nonrecording. Prior to June 20, 1934, at site 3 miles downstream at datum 5.68 ft lower; datum of present gage is 969.90 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur.

Flood stage.--19 ft.

Remarks.--Channel improvements made prior to establishment of station. Base for partial-duration series, 3,500 cfs.

Platte River basin (Iowa-Missouri)

(29) One Hundred and Two River near Maryville, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1926	Sept.16, 1926	21.2	[a] 14,500
1933	Aug. 22, 1933	8.20	2,920
1934	May 14, 1934	3.60	500
1935	June 1, 1935	19.60	10,300
	June 18, 1935	15.45	4,470
1936	Feb. 26, 1936	[b] 17.95	--
	Sept. 5, 1936	17.55	6,330
1937	Mar. 4, 1937	15.50	4,530
	July 19, 1937	14.20	3,840
1938	June 1, 1938	16.1	4,900
1939	Mar. 13, 1939	20.4	12,600
	June 21, 1939	16.4	5,110
	July 4, 1939	19.6	10,300
1940	May 8, 1940	13.9	3,640
1941	June 10, 1941	20.51	11,800
	Sept.15, 1941	17.10	5,170
1942	Oct. 7, 1941	14.60	3,540
	Oct. 9, 1941	16.80	4,910
	Oct. 22, 1941	18.0	6,180
	Nov. 2, 1941	19.2	8,280
	Mar. 6, 1942	16.0	4,340
	Mar. 26, 1942	14.9	3,690
	May 5, 1942	16.4	4,610
	June 20, 1942	17.4	5,470
	Aug. 26, 1942	15.40	3,980
1943	May 16, 1943	17.9	6,050
	June 5, 1943	19.4	8,730
	June 12, 1943	20.02	10,300
	June 16, 1943	17.2	5,270
	Aug. 3, 1943	18.5	6,930
1944	Apr. 23, 1944	18.9	7,680
	May 2, 1944	20.2	10,900
1945	Mar. 15, 1945	16.6	4,750
	Apr. 11, 1945	14.4	3,510
	Apr. 16, 1945	18.94	7,680
	May 14, 1945	19.1	8,080
1946	Mar. 26, 1946	17.9	6,180
	May 4, 1946	14.35	3,510
1947	Apr. 11, 1947	19.3	8,480
	June 6, 1947	20.70	12,400
	June 14, 1947	21.2	14,200
	June 18, 1947	15.8	4,220
	June 23, 1947	19.9	10,000
1948	Mar. 19, 1948	18.1	6,330
1949	Feb. 24, 1949	16.60	4,750
	June 2, 1949	20.07	10,600
1950	May 10, 1950	18.56	7,080
1951	Feb. 26, 1951	13.72	4,090
	Mar. 28, 1951	13.55	3,630
	Apr. 25, 1951	14.70	4,270
	May 1, 1951	19.70	10,500
	May 10, 1951	16.10	5,230
	May 26, 1951	18.70	8,330
	June 3, 1951	14.50	4,150
	June 26, 1951	13.40	3,520
	July 6, 1951	20.10	11,600
	Aug. 26, 1951	14.10	3,910
1952	Nov. 12, 1951	17.30	6,300
	Mar. 13, 1952	13.82	3,740
	Apr. 22, 1952	13.38	3,520
	May 23, 1952	16.54	5,560
	June 21, 1952	16.80	5,820

[a] Annual peak only.
[b] Result of ice jam.

(30) Platte River near Agency, Mo.
[Published as "at Agency" prior to 1932]

Location.--Lat 39°41'20", long 94°42'15", in NE¼NW¼ sec. 10, T. 56 N., R. 34 W., at bridge on U. S. Highway 169, 1½ miles downstream from Third Fork and 3½ miles northeast at Agency.

Drainage area.--1,760 sq mi, approximately; prior to May 13, 1932, 1,790 sq mi, approximately.

Gage.--Nonrecording. Prior to May 13, 1932, at site 4 miles downstream at different datum; datum of present gage is 807.38 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements; relationship is affected by slope at extremely high stages.

Flood stage.--20 ft.

Remarks.--Channel improvement made in vicinity of station during 1921 and 1930. Base for partial-duration series, 7,000 cfs.

Platte River basin (Iowa-Missouri)

(30) Platte River near Agency, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1924	June 27, 1924	20.38	11,800
1925	June 4, 1925	22.60	15,200
1926	Oct. 5, 1925	16.25	7,600
	Sept.10, 1926	20.60	12,000
	Sept.18, 1926	26.83	22,600
1927	Oct. 7, 1926	22.22	14,500
	Apr. 16, 1927	17.25	8,300
	Apr. 21, 1927	19.90	11,100
1928	June 10, 1928	19.30	10,300
	June 19, 1928	20.15	11,500
	July 26, 1928	20.80	12,300
	Sept.14, 1928	22.67	15,300
1929	Nov. 4, 1928	19.65	10,600
	Nov. 18, 1928	22.70	15,600
	Mar. 2, 1929	17.25	8,300
	Mar. 7, 1929	18.45	9,320
	Mar. 16, 1929	20.50	11,900
	Apr. 16, 1929	15.40	7,100
	Apr. 22, 1929	25.40	20,100
	June 3, 1929	26.60	22,300
	July 8, 1929	25.30	19,900
1930	June 6, 1930	14.66	6,690
1933	Sept.27, 1933	13.36	5,560
1934	May 14, 1934	6.01	1,020
1935	May 28, 1935	15.90	7,800
	June 4, 1935	23.10	21,800
	June 20, 1935	19.75	13,500
1936	Mar. 5, 1936	13.54	6,150
1937	Feb. 13, 1937	[a]19.60	[b]7,120
	Mar. 6, 1937	17.90	11,400
	July 13, 1937	15.10	8,150
1938	June 2, 1938	12.13	6,380
1939	Mar. 15, 1939	16.76	9,010
	June 23, 1939	16.05	8,100
1940	Aug. 15, 1940	12.38	4,870
1941	June 13, 1941	20.97	15,900
	Sept.19, 1941	15.15	7,280
1942	Oct. 9, 1941	16.20	8,250
	Oct. 24, 1941	15.10	7,190
	Nov. 3, 1941	18.70	11,200
	Jan. 20, 1942	15.00	7,100
	Mar. 7, 1942	15.20	7,280
	Mar. 27, 1942	16.00	8,050
	June 22, 1942	19.20	12,100
	June 26, 1942	24.2	28,600
1943	May 17, 1943	18.50	10,900
	June 16, 1943	23.53	24,800
	Aug. 4, 1943	15.00	7,100
1944	Apr. 23, 1944	22.60	20,200
	May 5, 1944	24.4	38,300
	May 24, 1944	14.90	7,010
	June 9, 1944	17.00	9,050
	Aug. 5, 1944	14.90	7,010
1945	Apr. 17, 1945	22.50	19,800
	May 17, 1945	22.88	21,300
	June 17, 1945	22.60	20,200
1946	Jan. 6, 1946	21.5	17,100
	Mar. 17, 1946	16.60	9,280
	Mar. 27, 1946	16.40	9,030
	June 20, 1946	15.20	7,620
1947	Apr. 5, 1947	18.60	12,100
	Apr. 12, 1947	18.80	12,400
	May 29, 1947	15.90	8,430
	June 9, 1947	24.80	26,000
	June 23, 1947	30.46	50,000
1948	Mar. 17, 1948	15.7	8,070
	Mar. 20. 1947	17.9	11,000
1949	Feb. 19, 1949	[a]17.83	--
	Feb. 26, 1949	[a]24.7	12,000
	June 4, 1949	19.25	13,000
	July 12, 1949	17.80	10,800
1950	May 11, 1950	17.35	10,200
	Aug. 15, 1950	19.2	13,000
1951	Mar. 3, 1951	14.75	7,100
	Mar. 29, 1951	15.33	7,520
	Apr. 26, 1951	15.45	7,740
	May 3, 1951	23.50	18,800
	May 12, 1951	17.80	9,430
	May 27, 1951	16.33	7,970
	June 16, 1951	18.10	9,760
	June 22, 1951	22.45	16,200
	June 28, 1951	20.70	13,200
	July 7, 1951	22.97	17,500
	July 11, 1951	15.76	7,530
	Aug. 27, 1951	17.10	8,700
	Sept.10, 1951	16.65	8,760
1952	Nov. 13, 1951	19.17	12,200
	Mar. 12, 1952	18.90	11,800
	Apr. 24, 1952	15.70	7,770
	May 24, 1952	16.40	8,540
	June 23, 1952	17.43	9,720

[a] Backwater from ice
[b] Discharge is estimated mean for day.

Missouri River main stem

(31) Missouri River at Kansas City, Mo.

Location.--Lat 39°06'43", long 94°35'16", in sec. 32, T. 50 N., R. 33 W., at Chicago, Burlington & Quincy Railroad bridge at Kansas City, 1.4 miles downstream from Kansas River and at mile 377.5.

Drainage area.--489,200 sq mi.

Gage.--Nonrecording gage Aug. 1, 1928, to May 3, 1931, and May 16, 1947, to Feb. 23, 1948. Recording gage, May 4, 1931, to May 15, 1947, and since Feb. 29, 1948. Datum of gage is 715.79 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Continually shifting, must be defined by frequent current-meter measurements.

Flood stage.--22 ft.

Remarks.--Drainage basin above station contains many reservoirs with total usable capacity in excess of 27,640,000 acre-ft. Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1844	June 16, 1844	38.0	625,000	1940	June 21, 1940	13.25	68,100
1903	June 2, 1903	34.95	548,000	1941	June 13, 1941	24.66	215,000
1929	June 5, 1929	23.4	254,000	1942	June 22, 1942	24.25	206,000
1930	May 9, 1930	16.7	149,000	1943	June 18, 1943	29.1	366,000
1931	June 24, 1931	12.0	64,000	1944	Apr. 24, 1944	27.67	311,000
1932	June 21, 1932	20.90	178,000	1945	June 18, 1945	25.30	242,000
1933	May 31, 1933	14.7	109,000	1946	June 20, 1946	15.75	123,000
1934	Mar. 7, 1934	13.45	87,100	1947	June 27, 1947	[a]27.01	261,000
1935	June 6, 1935	23.80	230,000	1948	Mar. 21, 1948	21.25	208,000
1936	Mar. 12, 1936	16.30	117,000	1949	Mar. 8, 1949	20.4	195,000
1937	June 30, 1937	15.55	102,000	1950	July 21, 1950	20.70	198,000
1938	July 19, 1938	19.30	137,000	1951	July 14, 1951	36.2	573,000
1939	Apr. 10, 1939	17.40	135,000	1952	Apr. 24, 1952	30.63	400,000

[a] Occurred two days earlier.

Blue River basin

(32) Blue River near Kansas City, Mo.

Location.--Lat 38°57'25", long 94°33'32", in SE¼NE¼ sec. 28, T. 48 N., R. 33 W., at bridge on County Highway W, 0.4 mile downstream from Indian Creek and 1.7 miles southeast of Kansas City.

Drainage area.--188 sq mi.

Gage.--Nonrecording gage May 1 to June 30, 1939. Recording gage thereafter. Datum of gage is 753.73 ft above mean sea level (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements.

Flood stage.--14 ft.

Historical data.--Maximum stage known, about 39 ft Nov. 17, 1928, occurred before construction of present bridge and major changes in channel at gage site.

Remarks.--Base for partial-duration series, 5,800 cfs.

Blue River basin

(32) Blue River near Kansas City, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1939	June 25, 1939	21.52	[a] 8,140	1947	Mar. 13, 1947	21.15	7,780
					Apr. 3, 1947	20.9	7,620
1940	Apr. 27, 1940	17.66	5,990		Apr. 5, 1947	27.35	12,100
	May 18, 1940	18.20	6,250		Apr. 10, 1947	20.00	7,120
	June 23, 1940	19.58	7,000		June 21, 1947	21.80	8,120
					June 23, 1947	28.98	14,100
1941	Apr. 4, 1941	18.65	6,460				
				1948	Mar. 19, 1948	22.32	7,970
1942	Oct. 31, 1941	19.15	6,730		July 22, 1948	22.26	7,970
	June 19, 1942	20.10	7,280		July 26, 1948	24.88	9,540
	July 25, 1942	21.2	7,890				
				1949	May 21, 1949	20.93	7,180
1943	June 10, 1943	17.06	5,650		June 6, 1949	23.74	8,800
					June 7, 1949	19.10	6,200
1944	Apr. 23, 1944	35.88	26,400				
	May 21, 1944	19.80	7,010	1950	Oct. 21, 1949	30.85	16,400
					July 12, 1950	19.13	6,200
1945	Mar. 24, 1945	17.89	6,000		Aug. 27, 1950	20.93	7,180
	Apr. 18, 1945	26.3	11,100				
	May 16, 1945	22.40	8,460	1951	June 26, 1951	21.20	7,350
	June 30, 1945	22.90	8,740		June 29, 1951	19.80	6,580
					July 6, 1951	21.90	7,740
1946	May 10, 1946	21.36	7,890		July 11, 1951	38.30	31,100
					Sept. 4, 1951	19.1	6,200
					Sept. 9, 1951	20.20	6,800
				1952	Mar. 10, 1952	23.00	8,380

[a] Annual peak only.

Missouri River main stem

(33) Missouri River at Waverly, Mo.

Location.--Lat 39°12'51", long 93°30'57", in Sec. 14, T. 51 N., R. 24 W., at bridge on U. S. Highway 65 at Waverly and at mile 297.2.

Drainage area.--491,200 sq mi.

Gage.--Nonrecording gage Mar. 1, 1929, to Apr. 4, 1934, and June 14, 1943, to Sept. 15, 1944; recording gage Apr. 5, 1934, to June 13, 1943, and since Sept. 16, 1944. Prior to Jan. 1, 1934, at datum 5.00 ft lower than present gage; datum of present gage is 645.49 ft above mean sea level, datum of 1929. Gage heights given herein converted to present datum.

Stage-discharge relation.--Continually shifting, must be defined by frequent current-meter measurements. Relation affected by levee breaks during extreme floods.

Flood stage.--18 ft.

Remarks.--Drainage basin above station contains many reservoirs with total usable capacity in excess of 27,640,000 acre-ft. Only annual peaks are shown.

Missouri River main stem

(33) Missouri River at Waverly, Mo.--Continued

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	June 5, 1929	19.9	263,000	1941	June 14, 1941	20.9	185,000
1930	May 9, 1930	15.6	146,000	1942	June 27, 1942	21.84	200,000
1931	June 25, 1931	12.4	65,500	1943	June 19, 1943	24.3	310,000
1932	June 23, 1932	19.00	167,000	1944	Apr. 24, 1944	24.4	347,000
1933	June 1, 1933	15.4	111,000	1945	Apr. 18, 1945	22.4	240,000
1934	Mar. 8, 1934	13.6	82,600	1946	June 20,21,1946	15.7	116,000
1935	June 8, 1935	22.02	215,000	1947	June 25,26,1947	25.1	273,000
1936	Mar. 13, 1936	15.20	120,000	1948	Mar. 21,22,1948	21.60	215,000
1937	June 30, 1937	14.45	105,000	1949	Mar. 8, 1949	[a]20.74	187,000
1938	July 20, 1938	17.20	137,000	1950	July 21, 1950	21.75	197,000
1939	Apr. 11, 1939	16.65	133,000	1951	July 16, 1951	[b]28.20	549,000
1940	June 21, 1940	12.55	70,800	1952	Apr. 26, 1952	[b]28.10	369,000

[a] Occurred on June 30, 1949.
[b] Occurred two days earlier.

Grand River basin

(34) East Fork Big Creek near Bethany, Mo.

Location.--Lat 40°17'50", long 94°01'55", in SE¼ sec. 34, T. 64 N., R. 28 W., at bridge on U. S. Highway 69, 2 miles north of Bethany and 4 miles upstream from confluence with West Fork.

Drainage area.--95 sq mi, approximately.

Gage.--Nonrecording gage, Mar. 9 to June 25, 1934; recording gage thereafter. Datum of gage is 854.74 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 2,600 cfs and extended to 8,120 cfs on basis of velocity-area study.

Flood stage.--13 ft.

Remarks.--Base for partial-duration series, 350 cfs.

Grand River basin

(34) East Fork Big Creek near Bethany, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1909	July 6, 1909	23.8	--
1934	June 23, 1934	4.17	590
1935	May 31, 1935	12.04	3,500
	June 2, 1935	10.25	2,520
	June 6, 1935	5.80	1,130
	June 18, 1935	10.40	2,610
1936	Feb. 24, 1936	[a] 9.65	--
	Feb. 26, 1936	[a] 7.87	860
	May 23, 1936	5.27	980
1937	Jan. 30, 1937	7.4	1,610
	Feb. 13, 1937	[a] 12.10	1,460
	Feb. 18, 1937	[a] 10.55	1,460
	Mar. 2, 1937	[a] 10.20	1,400
	Apr. 29, 1937	6.00	1,090
1938	Aug. 21, 1938	3.01	210
1939	Mar. 12, 1939	7.70	1,680
	June 21, 1939	6.00	1,090
	June 25, 1939	8.6	1,960
	Aug. 2, 1939	8.86	2,060
1940	May 8, 1940	8.09	1,780
	July 30, 1940	6.2	1,120
1941	June 3, 1941	10.6	2,770
	June 9, 1941	11.00	2,950
1942	Oct. 9, 1941	6.35	1,19
	Oct. 31, 1941	7.05	1,400
	Dec. 23, 1941	5.60	925
	Feb. 15, 1942	5.55	925
	Mar. 6, 1942	6.6	1,330
	Mar. 26, 1942	6.6	1,330
	June 21, 1942	14.3	5,320
	June 26, 1942	15.9	6,600
1943	Oct. 30, 1942	5.70	958
	Dec. 26, 1942	7.80	1,680
	Feb. 3, 1943	8.70	2,000
	May 16, 1943	11.23	3,110
	May 19, 1943	5.6	925
	June 5, 1943	10.0	2,470
	June 8, 1943	6.85	1,330
	June 10, 1943	6.35	1,190
	June 11, 1943	9.4	2,240
	June 16, 1943	11.15	3,070
1944	Mar. 15, 1944	6.2	1,120
	Apr. 22, 1944	11.38	3,210
	May 2, 1944	10.30	2,620
	June 9, 1944	9.2	2,170
1945	Apr. 16, 1945	11.80	3,490
	May 15, 1945	12.70	4,120
	June 16, 1945	9.60	2,310
	July 13, 1945	9.70	2,350
1946	Jan. 5, 1946	13.10	4,400
	Mar. 16, 1946	7.50	1,580
	June 19, 1946	7.90	1,720
	June 30, 1946	16.10	6,770
	Sept. 27, 1946	8.60	1,960
1947	Apr. 5, 1947	9.40	2,240
	June 6, 1947	17.65	8,120
	June 13, 1947	11.00	2,970
	June 21, 1947	12.10	3,700
	June 23, 1947	13.80	4,920
1948	Mar. 15, 1948	6.60	1,260
	May 6, 1948	9.56	2,310
1949	Feb. 24, 1949	[a] 10.9	[b] 2,000
	Mar. 30, 1949	5.4	859
1950	Feb. 8, 1950	[a] 7.67	--
	May 9, 1950	6.34	1,160
	Sept. 20, 1950	6.72	1,300
1951	Feb. 19, 1951	5.43	859
	Mar. 3, 1951	6.11	1,090
	May 1, 1951	10.92	2,920
	June 14, 1951	6.13	1,090
	June 22, 1951	7.90	1,720
	June 27, 1951	8.85	2,030
	July 6, 1951	5.97	1,060
	July 22, 1951	5.80	991
1952	Nov. 12, 1951	7.07	1,440
	Mar. 10, 1952	7.65	1,610
	Mar. 19, 1952	6.60	1,090
	Apr. 23, 1952	6.52	1,230
	June 21, 1952	11.0	2,970
	June 22, 1952	9.5	2,280

[a] Backwater from ice.
[b] Mean daily discharge.

Grand River basin

(35) Grand River near Gallatin, Mo.

Location.--Lat 39°55'35", long 93°56'35", in SW¼NW¼ sec. 16, T. 59 N., R. 27 W., at bridge on State Highway 6, 100 ft downstream from Chicago, Rock Island & Pacific Railway bridge, 1 mile northeast of Gallatin, and 6 miles upstream from Honey Creek.

Drainage area.--2,250 sq mi, approximately.

Gage.--Nonrecording gage June 30, 1921, to Nov. 14, 1937; recording gage thereafter. Prior to Jan. 31, 1922, at site 100 ft upstream from present gage; Jan. 31, 1922, to Nov. 15, 1936, at site 1,100 ft upstream from and at datum 0.17 ft higher than present gage; datum of present gage is 712.56 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur.

Flood stage.--28 ft.

Remarks.--Some channel improvement work done below Honey Creek. Base for partial-duration series, 18,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1909	July 8, 1909	about 40	[a]70,800
1922	July 12, 1922	36.50	51,400
1923	Nov. 15, 1922	29.30	19,100
1924	June 27, 1924	31.10	22,400
1925	June 4, 1925	30.20	20,800
1926	Sept.17, 1926	36.80	53,200
	Sept.21, 1926	30.20	20,800
1927	Oct. 5, 1926	33.90	37,100
	Apr. 21, 1927	32.40	29,600
	June 4, 1927	28.64	18,000
1928	June 19, 1928	29.79	20,000
	July 24, 1928	33.00	32,600
	Sept.15, 1928	28.74	18,100
1929	Nov. 4, 1928	31.40	24,900
	Nov. 19, 1928	35.50	45,400
	Mar. 8, 1929	28.30	18,100
	Apr. 22, 1929	33.40	34,600
	June 2, 1929	37.38	56,800
	July 8, 1929	34.02	37,600
1930	June 6, 1930	17.00	6,800
1931	Sept.26, 1931	23.95	12,800
1932	Nov. 16, 1931	29.98	21,100
	Nov. 19, 1931	29.16	19,600
	Nov. 25, 1931	33.16	33,600
	Jan. 3, 1932	31.36	24,900
1933	Aug. 22, 1933	23.96	16,600
1934	Apr. 4, 1934	14.25	6,420
1935	May 29, 1935	25.98	19,300
	June 4, 1935	33.60	40,100
1936	Feb. 26, 1936	23.75	16,400
1937	Mar. 5, 1937	22.75	15,700
1938	June 1, 1938	11.72	5,480
1939	June 22, 1939	22.67	18,800
1940	May 8, 1940	18.2	10,900
1941	June 11, 1941	27.45	26,300
1942	Nov. 2, 1941	22.82	19,100
	Mar. 27, 1942	23.49	20,200
	June 23, 1942	31.0	34,200
	June 26, 1942	26.35	24,500
1943	May 17, 1943	24.52	21,500
	June 7, 1943	22.82	18,800
	June 12, 1943	26.99	25,300
	June 17, 1943	25.00	22,400
1944	Apr. 24, 1944	31.55	35,700
	May 4, 1944	26.60	25,100
	June 10, 1944	22.89	19,000
1945	Dec. 5, 1944	21.30	21,100
	Apr. 18, 1945	28.66	39,200
	May 17, 1945	30.35	43,600
	June 18, 1945	26.05	32,400
1946	Jan. 8, 1946	25.76	31,900
	Mar. 18, 1946	21.66	22,000
1947	Apr. 5, 1947	23.10	25,500
	Apr. 11, 1947	19.65	18,000
	May 29, 1947	19.74	18,200
	June 8, 1947	33.30	62,500
	June 15, 1947	24.24	28,200
	June 20, 1947	23.50	26,500
	June 24, 1947	34.55	69,100
1948	Mar. 20, 1948	18.52	16,000
1949	Feb. 25, 1949	20.3	19,400
1950	May 10, 1950	16.78	13,600
1951	May 3, 1951	23.7	27,000
	May 11, 1951	20.15	19,400
	June 23, 1951	20.3	19,600
	June 28, 1951	19.9	18,900
	July 7,8, 1951	27.50	38,100
1952	Mar. 11, 1952	21.32	21,500

[a] Determination by Corps of Engineers; annual peak only.

Grand River basin

(36) Weldon River near Mercer, Mo.

Location.--Lat 40° 33', long 93°36', in SW¼ sec. 3, T. 66 N., R. 24 W., at county highway bridge, 4¼ miles northwest of Mercer and 5 miles upstream from Little River.

Drainage area.--246 sq mi.

Gage.--Nonrecording.

Stage-discharge relation.--Defined by current-meter measurements below 14,000 cfs; large shift in relation occurred June 1950.

Flood stage.--22 ft.

Historical data.--Flood of Mar. 12, 1939, was the highest stage during the period 1922-39, from information by local resident.

Remarks.--Channel improvement work done in 1922. Base for partial-duration series, 4,300 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1939	Mar. 12, 1939	21.6	[a]16,100	1946	Jan. 5, 1946	22.2	19,700
					June 18, 1946	19.3	14,800
1940	May 7, 1940	15.7	8,460		Aug. 24, 1946	16.0	9,700
	July 27, 1940	20.9	15,200				
	July 30, 1940	15.9	8,680	1947	Mar. 13, 1947	13.2	6,220
					Apr. 5, 1947	14.40	7,580
1941	June 9, 1941	9.68	2,350		Apr. 20, 1947	12.05	4,920
					June 5, 1947	25.71	28,000
1942	Oct. 31, 1941	13.0	5,500		June 13, 1947	16.8	10,900
	June 20. 1942	23.81	19,400		June 21, 1947	23.2	21,700
	June 26, 1942	18.8	11,200				
				1948	Feb. 27, 1948	15.11	8,580
1943	Dec. 26, 1942	13.7	6,240		Mar. 19, 1948	11.27	4,320
	Feb. 3, 1943	12.5	5,000				
	May 15, 1943	20.7	14,900	1949	Feb. 18, 1949	[b]10.5	--
	May 19, 1943	14.6	7,210		Feb. 24, 1949	[b]16.5	--
	June 6, 1943	15.6	8,340		Sept.12, 1949	18.74	13,700
	June 11, 1943	16.59	9,520				
	June 16, 1943	12.2	4,700	1950	May 9, 1950	11.59	4,820
					June 15, 1950	13.9	6,990
1944	Apr. 23, 1944	16.8	9,760		June 19, 1950	22.16	21,000
	May 2, 1944	17.7	10,900				
	June 8, 1944	14.0	6,550	1951	Apr. 6, 1951	10.25	4,520
	Sept.21, 1944	13.27	5,820		May 1, 1951	12.36	6,940
					May 10, 1951	11.20	5,620
1945	Mar. 15, 1945	13.14	5,600		June 21, 1951	10.4	4,740
	Mar. 25, 1945	15.85	8,570		June 26, 1951	11.6	6,060
	Apr. 16, 1945	21.30	15,700		July 16, 1951	11.0	5,400
	May 14, 1945	22.0	16,700		July 22, 1951	14.0	8,800
	May 16, 1945	12.2	4,700				
	June 15, 1945	12.5	5,000	1952	Mar. 12, 1952	10.0	4,300
					May 23, 1952	10.0	4,300
					June 21, 1952	12.0	6,500

[a] Annual peak only.
[b] Backwater from ice.

Grand River basin

(37) Weldon River at Mill Grove, Mo.

Location.--Lat. 40°13', long 93°36', in SE¼SE¼ sec. 28, T. 64 N., R. 24 W., at county highway bridge in Mill Grove, 8¼ miles upstream from West Muddy Creek.

Drainage area.--494 sq mi.

Gage.--Nonrecording. Datum of gage is 785.77 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 24,000 cfs; large shift in relation occurred June 1950.

Flood stage.--16 ft.

Remarks.--Channel improvements made prior to establishment of gaging station and additional work in vicinity of station done in September 1945. Base for partial-duration series, 6,100 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909	July -- 1909	23.9	[a]18,000	1944	Apr. 22, 1944	19.00	10,800
					May 3, 1944	19.35	11,700
1930	Oct. 29, 1929	13.08	2,910		June 9, 1944	17.30	7,560
1931	Sept.26, 1931	13.94	3,320	1945	Mar. 16, 1945	16.40	7.080
					Mar. 25, 1945	18.02	9,700
1932	Nov. 24, 1931	19.70	11,200		Apr. 16, 1945	20.20	14,600
	Jan. 1, 1932	18.58	8,020		May 15, 1945	20.76	16,200
	Aug. 2, 1932	20.1	12,400		June 16, 1945	18.25	10,100
	Aug. 18, 1932	19.32	10,000				
				1946	Jan. 6, 1946	21.6	23,800
1933	Sept.27, 1933	17.08	5,400		Mar. 17, 1946	14.80	6,120
					June 19, 1946	18.60	14,800
1934	Apr. 4, 1934	11.73	2,280		Aug. 25, 1946	15.00	6,320
1935	May 24, 1935	19.33	10,300	1947	Mar. 13, 1947	14.80	6,120
	June 3, 1935	20.5	13,200		Apr. 5, 1947	18.62	14,800
	June 18, 1935	20.25	12,400		June 5, 1947	22.79	27,600
					June 13, 1947	17.60	12,000
1936	Feb. 26, 1936	[b]15.06	2,900		June 22, 1947	20.62	20,700
1937	Feb. 20, 1937	16.40	5,540	1948	Feb. 28, 1948	15.7	7,600
1938	Aug. 16, 1938	10.50	2,380	1949	Feb. 24, 1949	14.56	6,910
					Sept.12, 1949	14.46	8,560
1939	Mar. 12, 1939	20.75	14,000				
				1950	Feb. 8, 1950	13.0	6,930
1940	May 8, 1940	17.27	7,300		June 15, 1950	13.7	7,210
	July 31, 1940	16.32	6,240		June 19, 1950	18.70	22,200
1941	June 9, 1941	16.80	6,740	1951	Feb. 20, 1951	11.53	8,360
					Mar. 3, 1951	9.95	6,350
1942	Nov. 2, 1941	18.00	8,750		Apr. 30, 1951	13.00	10,900
	June 21, 1942	22.0	18,000		May 10, 1951	13.17	11,300
	June 26, 1942	20.50	14,100		June 21, 1951	12.30	9,710
					June 24, 1951	11.28	8,050
1943	Dec. 27, 1942	17.50	7,880		June 26, 1951	10.40	6,830
	May 16, 1943	21.8	17,400		July 22, 1951	13.64	12,000
	June 7, 1943	18.05	8,750				
	June 12, 1943	18.03	8,750	1952	Mar. 10, 1952	10.02	6,350
					Mar. 13, 1952	9.90	6,240
					June 21, 1952	11.35	8,200

[a] Determination by Corps of Engineers; annual peak only.
[b] Backwater from ice.

Grand River basin

(38) Thompson River at Trenton, Mo.
[Published as "near Hickory" prior to 1929]

Location.--Lat 40°04'45", long 93°38'35", in SW¼ sec. 18, T. 61 N., R. 24 W., at bridge on State Highway 6, 1 mile west of Trenton and 1¾ miles downstream from Weldon River.

Drainage area.--1,670 sq mi,,approximately; prior to Sept. 6, 1923, 1,700 sq mi approximately.

Gage.--Nonrecording. June 29, 1921, to Sept. 5, 1923, at site 12 miles downstream from and at different datum than present gage; Aug. 3, 1928, to Sept. 15, 1930, at present site and datum; Sept. 16, 1930, to May 31, 1945, at site 1½ miles downstream from and at datum 3.46 ft lower than present gage; since June 1, 1945, at present site and datum. Datum of present gage is 721.58 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 73,000 cfs.

Flood stage.--20 ft.

Historical data.--Flood of July 6, 1909, reached a stage of 30.7 ft at present site, from information by local residents.

Remarks.--Records for sites "near Hickory" and "at Thompson" considered equivalent for flood-frequency study. The channel has been straightened and improved from the Missouri-Iowa line to the Grundy-Livingston county line; work completed in vicinity of gage in 1925. Base for partial-duration series, 15,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1909	July 1909	--	[a] 50,000
1922	July 13, 1922	24.05	16,000
1923	Nov. 16, 17, 1922	22.92	12,500
1928	July 23, 1928	22.5	27,000
1929	Nov. 18, 1928	22.31	26,700
	Feb. 26, 1929	20.95	23,600
	Apr. 20, 1929	21.40	24,600
	June 2, 1929	21.55	25,000
1930	Oct. 30, 1929	11.40	5,980
	June 17, 1930	11.86	5,980
1931	Sept. 25, 1931	10.94	5,100
1932	Nov. 14, 1931	18.25	20,300
	Nov. 24, 1931	20.48	25,400
	Dec. 31, 1931	21.1	26,700
1933	Sept. 26, 1933	14.94	13,500
1934	June 23, 1934	10.42	5,130
1935	May 20, 1935	17.38	18,800
	May 24, 1935	16.20	16,300
	May 30, 1935	16.70	17,400
	June 1, 1935	19.82	24,000
	June 18, 1935	18.86	22,000
1936	Feb. 25, 1936	12.40	5,650
1937	Feb. 20, 1937	14.60	13,900
1938	Sept. 1, 1938	11.1	6,340
1939	Mar. 13, 1939	18.15	22,700
1940	Aug. 18, 1940	14.9	15,700
1941	June 10, 1941	20.0	32,300
1942	Nov. 1, 1941	15.28	21,600
	June 20, 1942	20.35	29,300
	June 27, 1942	22.2	35,400
1943	May 16, 1943	19.0	26,800
	June 8, 1943	16.17	18,000
	June 16, 1943	17.45	21,600
1944	Mar. 15, 1944	15.33	15,400
	Apr. 22, 1944	21.3	34,800
	May 3, 1944	18.00	23,500
	June 9, 1944	15.60	16,200
1945	Mar. 25, 1945	17.00	18,300
	Apr. 16, 1945	20.78	27,600
	May 15, 1945	19.90	25,400
	June 16, 1945	20.2	28,300
1946	Jan. 6, 1946	22.6	45,800
	May 3, 1946	16.10	20,700
	June 19, 1946	14.60	16,100
1947	Mar. 13, 1947	14.20	15,000
	Apr. 5, 1947	20.65	35,500
	June 6, 1947	25.7	95,000
	June 14, 1947	19.70	32,300
	June 18, 1947	16.55	22,300
	June 23, 1947	22.80	47,500
1948	Mar. 19, 1948	16.00	20,400
1949	Feb. 24, 1949	15.6	19,200
1950	Feb. 8, 1950	[b] 14.9	--
	June 19, 1950	16.62	22,300
1951	May 2, 1951	15.62	20,800
	June 22, 1951	14.48	17,700
	June 27, 1951	15.10	19,500
1952	Mar. 13, 1952	13.42	15,000
	June 21, 1952	13.70	16,600

[a] Determination by Corps of Engineers; annual peak only.
[b] Backwater from ice.

Grand River basin

(39) Medicine Creek near Galt, Mo.

Location.--Lat 40°07'58", long 93°21'50", in NW¼ sec. 34, T. 62 N., R. 22 W., at bridge on State Highway 6, 1½ miles upstream from West Medicine Creek and 1½ miles east of Galt.

Drainage area.--225 sq mi.

Gage.--Nonrecording. Prior to Oct. 1, 1924, at datum 4.97 ft higher than present gage; Oct. 1, 1924, to Sept. 30, 1926, at datum 2.97 ft higher than present gage. Datum of present gage is 769.21 ft above mean sea level, datum of 1929. Gage readings herein have been converted to present datum.

Stage-discharge relation.--Defined by current-meter measurements below 19,000 cfs; frequent large shifts in relation occur.

Flood stage.--17 ft.

Remarks.--Major channel improvements made on creek during 1919-20. Base for partial-duration series, 3,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1909	July 1909	--	[a] 8,000
1922	July 13, 1922	18.58	2,960
1923	Nov. 15, 1922	18.00	2,230
1924	June 28, 1924	17.56	3,170
1925	Apr. 25, 1925	17.20	3,000
1926	June 19, 1926	16.40	3,040
	Sept.14, 1926	17.64	3,700
	Sept.17, 1926	29.00	4,640
1927	Apr. 19, 1927	14.60	3,720
1928	June 18, 1928	14.18	6,260
	Sept.12, 1928	14.20	6,260
1930	Oct. 31, 1929	7.64	1,890
1931	Apr. 20, 1931	9.17	3,910
1932	Oct. 7, 1931	8.90	3,280
	Nov. 14, 1931	10.40	5,400
	Nov. 17, 1931	9.05	3,400
	Dec. 31, 1931	11.68	7,440
	Aug. 2, 1932	11.86	7,760
	Aug. 17, 1932	9.78	4,500
1933	May 13, 1933	7.32	1,660
1934	Sept.13, 1934	5.56	456
1935	May 20, 1935	9.75	4,440
	June 1, 1935	11.00	6,340
	June 18, 1935	11.08	6,500
	July 3, 1935	10.30	5,220
1936	Feb. 25, 1936	6.99	1,210
1937	Feb. 13, 1937	9.05	3,280
	Feb. 21, 1937	11.0	6,340
1938	June 2, 1938	6.81	1,090
1939	Mar. 12, 1939	12.9	12,300
	Apr. 15, 1939	8.12	3,720
	June 21, 1939	9.60	6,250
1940	Aug. 18, 1940	7.4	2,820
1941	June 3, 1941	7.94	3,070
	June 9, 1941	12.84	10,000
1942	June 26, 1942	14.3	12,400
1943	Dec. 27, 1942	7.93	3,070
	May 16, 1943	13.17	10,700
	June 8, 1943	8.55	4,120
	June 16, 1943	8.75	4,360
1944	Apr. 21, 1944	10.9	7,180
1945	Oct. 2, 1944	7.40	3,390
	Apr. 15, 1945	8.46	4,460
	May 14, 1945	10.30	6,510
	June 9, 1945	7.40	3,390
	June 16, 1945	10.52	7,010
1946	Jan. 6, 1946	8.61	4,560
1947	Apr. 4, 1947	16.88	16,900
	June 6, 1947	18.9	24,200
	June 12, 1947	8.90	7,110
	June 18, 1947	10.40	9,300
	June 23, 1947	8.40	6,410
	July 6, 1947	8.00	5,850
1948	Feb. 27, 1948	7.66	5,460
	Mar. 19, 1948	11.53	11,000
1949	Feb. 24, 1949	6.0	3,400
	June 14, 1949	12.6	12,700
	Sept.13, 1949	6.0	3,400
1950	June 15, 1950	11.29	13,000
	June 19, 1950	7.5	8,300
1951	Feb. 20, 1951	4.75	3,830
	Apr. 7, 1951	5.48	4,950
	May 10, 1951	5.15	4,470
	June 22, 1951	5.85	5,430
	June 25, 1951	4.80	3,830
	June 28, 1951	4.80	3,830
	July 22, 1951	11.0	14,500
1952	Apr. 22, 1952	5.22	4,470
	June 22, 1952	6.63	6,430

[a] Determination by Corps of Engineers; annual peak only.

Grand River basin

(40) Locust Creek near Milan, Mo.

Location.--Lat 40°11'00", long 93°10'10", in SW¼ sec. 8, T. 62 N., R. 20 W., at bridge on county highway, 3½ miles southwest of Milan.

Drainage area.--225 sq mi.

Gage.--Nonrecording. Station discontinued September 1933.

Stage-discharge relation.--Defined by current-meter measurements below 3,100 cfs.

Flood stage.--13 ft.

Remarks.--24 miles of new channel was dug in 1920, all work being 8 or more miles downstream from station. Base for partial-duration series, 2,150 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909	July 1909	--	[a] 8,000	1929	Nov. 2, 1928	19.92	3,820
					Nov. 18, 1928	20.07	3,880
1922	Apr. 8, 1922	15.00	2,240		Mar. 1, 1929	[b] 17.10	2,400
	July 12, 1922	16.75	2,840		Mar. 8, 1929	15.30	2,380
	July 18, 1922	16.90	2,880		Apr. 20, 1929	19.40	3,650
					June 3, 1929	17.14	2,920
1923	Nov. 14, 1922	15.05	2,240				
				1930	Oct. 13, 1929	15.40	2,410
1924	June 10, 1924	15.40	2,360		Oct. 31, 1929	15.5	2,440
	June 27, 1924	15.75	2,490		Nov. 1, 1929		
1925	Apr. 25, 1925	17.70	3,200	1931	Apr. 22, 1931	14.80	2,230
					June 6, 1931	15.97	2,650
1926	Jan. 5, 1926	[b] 15.10	--				
	Sept. 11, 1926	16.50	2,740	1932	Oct. 8, 1931	15.20	2,350
	Sept. 16, 17, 1926	18.10	3,260		Nov. 15, 1931	16.72	2,800
	Sept. 22, 1926	15.20	2,300		Nov. 25, 1931	17.62	3,070
					Jan. 2, 1932	16.80	2,830
1927	Oct. 5, 1926	16.60	2,770		Apr. 22, 1932	15.36	2,410
	Apr. 3, 1927	15.95	2,590		Aug. 3, 1932	18.00	3,200
	Apr. 21, 1927	16.18	2,650		Aug. 8, 1932	15.18	2,350
	June 5, 1927	15.84	2,530		Aug. 18, 1932	18.12	3,230
1928	June 19, 1928	17.30	2,980	1933	Dec. 26, 1932	14.87	2,260
	Sept. 12, 1928	17.20	2,950				

[a] Determination by Corps of Engineers; annual peak only.
[b] Backwater from ice.

Grand River basin

(41) Locust Creek near Linneus, Mo.

Location (revised).--Lat 39°53'45", long 93°14'10", in NW¼NE¼ sec. 34, T. 59 N., R. 21 W., at county highway bridge, 3 miles northwest of Linneus and 5 miles downstream from West Locust Creek.

Drainage area.--550 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 692.61 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 15,000 cfs and by slope-area measurement at 33,000 cfs; shifts in relation occur frequently.

Flood stage.--20 ft.

Remarks.--Gage located on 24-mile reach of new channel, dug in 1920. Base for partial-duration series, 7,500 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909	July 1909	--	[a] 18,000	1944	Apr. 23, 1944	22.50	20,100
					June 10, 1944	14.78	7,720
1930	June 30, 1930	14.44	7,920				
				1945	Apr. 18, 1945	14.80	7,720
1931	Apr. 20, 1931	15.86	8,800		May 16, 1945	16.80	10,700
	June 6, 1931	15.73	8,610		June 9, 1945	15.60	8,920
					June 16, 1945	20.45	16,500
1932	Nov. 23, 1931	16.04	8,900				
	Dec. 31, 1931	15.70	8,610	1946	Jan. 6, 1946	15.6	8,920
1933	Dec. 24, 1932	11.14	4,390	1947	Apr. 6, 1947	19.60	15,200
					May 28, 1947	16.00	9,520
1934	Apr. 5, 1934	6.22	900		June 6, 1947	26.93	38,000
					June 13, 1947	18.60	14,600
1935	May 28, 1935	15.05	7,940		June 19, 1947	20.11	17,100
	June 2, 1935	18.97	11,800		June 23, 1947	17.75	13,300
	July 4, 1935	15.11	8,040				
				1948	Mar. 20, 1948	16.87	11,900
1936	Feb. 26, 1936	9.89	3,100				
	Sept.26, 1936	9.99	3,100	1949	June 1, 1949	15.3	9,420
					June 15, 1949	15.4	9,570
1937	Jan. 30, 1937	[b] 14.67	5,110		July 12, 1949	14.2	7,600
1938	Apr. 10, 1938	5.81	639	1950	June 16, 1950	17.2	13,200
	June 7, 1938	5.74	639		June 20, 1950	15.3	11,100
1939	June 21, 1939	21.3	15,400	1951	Apr. 6, 1951	14.2	9,320
					June 2, 1951	14.1	9,160
1940	Aug. 18, 1940	10.6	3,110		June 21, 1951	15.0	10,600
					June 27, 1951	13.8	8,680
1941	June 11, 1941	16.7	11,800		July 24, 1951	16.2	12,300
1942	June 26, 1942	21.2	19,000	1952	June 22, 1952	13.5	8,200
1943	Dec. 26, 1942	15.5	8,930				
	May 18, 1943	15.5	8,930				
	June 8, 1943	16.6	10,700				
	June 10, 1943	16.64	10,800				
	June 16, 1943	15.52	8,930				

[a] Determination by Corps of Engineers; annual peak only.
[b] Backwater from ice.

Grand River basin

(42) Grand River near Sumner, Mo.

Location.--Lat 39°38'25", long 93°16'25", in NE¼ sec. 29, T. 56 N., R. 21 W., at bridge on County Highway E, 120 ft downstream from Chicago, Burlington & Quincy Railroad bridge, 2 miles southwest of Sumner and 2½ miles downstream from Locust Creek.

Drainage area.--6,880 sq mi, approximately.

Gage.--Nonrecording gage, Apr. 19, 1924, to July 9, 1939, and Aug. 9, 1952, to date; recording gage, July 10, 1939, to Aug. 8, 1952. Datum of gage is 630.87 ft above mean sea level, datum of 1929.
Auxiliary nonrecording gage at various sites Mar. 15, 1939, to Aug. 4, 1942, and at site 3¼ miles downstream since Aug. 5, 1942.

Stage-discharge relation.--Defined by current-meter measurements below 163,000 cfs; shifts in relation occur. Relation affected by slope at high stages.

Flood stage.--25 ft.

Remarks.--Extensive channel improvement and drainage work in basin above station prior to establishment of gaging station. Base for partial-duration series, 38,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909	July 1909	36.7	[a] [b] 150,000	1939	June 24, 1939	29.95	45,300
1922	July 1922	[c] 31.5	[b] 51,000	1940	Mar. 3, 1940	23.79	18,000
1923	November 1922	[c] 32.0	[b] 54,000	1941	June 12, 1941	29.9	45,500
1924	July 1, 1924	28.56	36,600	1942	June 28, 1942	35.83	89,900
1925	Apr. 27, 1925	28.00	33,000	1943	Dec. 28, 1942	30.46	44,700
					May 18, 1943	30.44	42,600
1926	Sept.21, 1926	32.42	56,400		June 4, 1943	31.89	55,200
					June 19, 1943	32.22	60,600
1927	Oct. 8, 1926	30.50	45,200				
	Apr. 22, 1927	30.80	47,800	1944	Apr. 25, 1944	36.55	115,000
					May 6, 1944	30.37	47,100
1928	Sept.17, 1928	30.70	46,900				
				1945	Apr. 19, 1945	32.60	67,800
1929	Nov. 20, 1928	35.35	107,000		May 18, 1945	33.5	86,200
	Mar. 2, 1929	29.95	41,500		May 19, 1945	34.32	--
	Apr. 23, 1929	33.60	79,400		June 11, 1945	30.58	52,200
	June 4, 1929	35.25	110,000		June 18, 1945	33.32	79,300
1930	Feb. 10, 1930	23.22	18,200	1946	Jan. 8, 1946	34.2	89,300
					Mar. 19, 1946	30.10	43,100
1931	Apr. 22, 1931	28.00	35,600				
				1947	Mar. 15, 1947	30.22	40,600
1932	Nov. 19, 1931	31.32	52,600		Apr. 7, 1947	35.05	98,000
	Nov. 26, 1931	33.30	84,600		May 31, 1947	30.75	51,700
	Jan. 4, 1932	30.92	48,700		June 7,8,1947	39.5	180,000
					June 16, 1947	31.78	56,900
1933	Dec. 26, 1932	25.35	22,800		June 25, 1947	37.15	145,000
1934	Apr. 5, 1934	15.29	8,280	1948	Mar. 21, 1948	31.8	61,000
1935	May 23, 1935	29.61	42,900	1949	Feb.26,27,1949	31.2	54,000
	June 4, 1935	33.25	72,000				
	June 21, 1935	29.30	41,000	1950	June 20, 1950	29.96	35,200
1936	Feb. 28, 1936	29.10	41,000	1951	May 4, 1951	30.70	45,800
					June 24, 1951	31.34	52,400
1937	Feb. 22, 1937	[d] 30.28	--		June 29, 1951	32.3	57,000
	Mar. 6, 1937	28.60	36,800		July 9, 1951	31.57	60,000
1938	June 2, 1938	14.99	8,120	1952	Mar. 12, 1952	31.6	57,100

[a] Determination by Corps of Engineers.
[b] Annual peak only.
[c] From high-water marks.
[d] Backwater from ice.

Grand River basin

(43) Yellow Creek near Rothville, Mo.

Location.--Lat 39°38', long 93°05', on line between NW¼ sec. 31, T. 56 N., R. 19 W., and NE¼ sec. 36, T. 56 N., R. 20 W., at bridge on State Highway 11, 2½ miles southwest of Rothville and 3 miles downstream from East Yellow Creek.

Drainage area.--405 sq mi.

Gage.--Nonrecording. Station discontinued December 1951. Datum of gage is 664.37 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 5,900 cfs.

Flood stage.--19 ft.

Remarks.--Base for partial-duration series, 1,800 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909	July 1909	--	[b][a] 15,000	1947	June 1947	[b] 23.1	--
1929	November 1928	[b] 22.0	--	1949	Jan. 16, 1949	17.4	1,810
					Feb. 26, 1949	17.4	1,810
1930	Oct. 12, 1929	17.6	1,900		June 3, 1949	21.19	7,400
	Nov. 1, 1929	17.4	1,840		July 14, 1949	17.8	1,910
	Feb. 9, 1930	17.9	1,970		Sept.14, 1949	17.7	1,880
	July 2, 1930	19.56	2,630				
				1950	Jan. 2, 1950	18.8	2,230
1931	Apr. 23, 1931	20.60	5,450		June 4, 1950	17.7	1,880
	June 9, 1931	20.4	3,700		June 17, 1950	21.40	9,000
	June 14, 1931	19.3	2,470				
				1951	Feb. 22, 1951	19.80	2,710
1932	Nov. 19, 1931	20.6	3,920		Apr. 9, 1951	20.52	3,640
	Nov. 25, 1931	21.16	7,400		June 24, 1951	20.85	4,900
	Jan. 3, 1932	20.7	4,400		June 29, 1951	21.26	8,200

[a] Determination by Corps of Engineers.
[b] Annual peak only.

Chariton River basin

(44) Chariton River at Novinger, Mo.
[published as "at Elmer" prior to 1931]

Location.--Lat 40°14'05", long 92°41'00", in SE¼NW¼ sec. 27, T. 63 N., R. 16 W., at bridge on State Highway 6, 1,000 ft downstream from Chicago, Burlington & Quincy Railroad bridge, 0.8 mile east of Novinger, and 2 miles upstream from Spring Creek.

Drainage area.--1,370 sq mi, approximately; prior to Oct. 1, 1930, 1,660 sq mi, approximately.

Gage.--Nonrecording gage July 7, 1921, to Dec. 19, 1939; recording gage Dec. 20, 1939, to Sept. 30, 1952 (discontinued). Prior to Oct. 1, 1930, at site 36¼ miles (prior to 1952 shortening) downstream from present gage and July 1, 1921, to Sept. 30, 1924, at datum 43.80 ft lower; Oct. 1, 1924, to Sept. 30, 1926, at datum 46.80 ft lower; and Oct. 1, 1926, to Sept. 30, 1930, at datum 49.80 ft lower than present gage. Jan. 16, 1931, to Dec. 19, 1939, at present site and datum. Datum of present gage is 737.65 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 19,000 cfs at former site; defined by current-meter measurements below 20,000 cfs at present site. Frequent shifts in relation occur.

Flood stage.--20 ft.

Remarks.--Channel improved from point 6 miles downstream from former site to mouth prior to June 1921. Channel improvement made in vicinity of former site during 1922-23 and channel improvement below present gage completed in June 1952. Base for partial-duration series, 6,500 cfs.

Chariton River basin

(44) Chariton River at Novinger, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1917	June 1917	[a] 28.6	27,000
1922	July 13, 1922	19.64	7,350
	July 18, 1922	19.30	7,080
1923	Nov. 14, 1922	17.24	5,560
1924	Mar. 29, 1924	16.00	6,000
1925	Apr. 27, 1925	18.66	7,200
1926	Sept.21, 1926	24.56	18,700
1927	Oct. 4, 1926	22.00	16,400
	Apr. 2, 1927	17.4	8,620
	Apr. 21, 1927	26.10	21,800
	June 4, 1927	19.1	11,300
1928	Oct. 2, 1927	22.67	17,800
	Oct. 11, 1927	17.3	8,480
	June 18, 1928	20.0	12,800
	July 11, 1928	16.2	7,060
	Sept.17, 1928	17.15	8,340
1929	Nov. 17, 1928	24.06	22,500
	Mar. 5, 1929	15.4	8,200
	Apr. 22, 1929	20.6	16,900
	June 5, 1929	15.4	8,200
1930	Nov. 1, 1929	13.80	6,200
1931	Apr. 21, 1931	22.17	6,500
	June 7, 1931	22.60	7,160
1932	Nov. 24, 1931	26.03	15,400
	Aug. 17, 1932	25.47	14,000
1933	Dec. 25, 1932	22.02	6,500
1934	Sept.12, 1934	16.96	3,250
1935	May 21, 1935	22.17	6,500
	June 2, 1935	24.98	12,600
	June 22, 1935	24.04	10,100
	July 9, 1935	23.08	8,100
1936	Feb. 26, 1936	19.50	4,000
1937	Feb. 21, 1937	[b] 23.84	6,820
1938	June 4, 1938	11.89	1,690
1939	Mar. 13, 1939	24.99	12,600
	Mar. 17, 1939	25.09	12,900
	Apr. 17, 1939	23.52	8,940
1940	Aug. 18, 1940	18.42	3,680
1941	June 11, 1941	23.90	9,860
1942	Nov. 2, 1941	22.7	6,900
1943	Dec. 28, 1942	23.14	7,710
	May 21, 1943	24.28	10,600
	June 17, 1943	24.07	10,000
1944	Mar. 17, 1944	22.69	6,640
	Apr. 16, 1944	22.74	6,640
	Apr. 23, 1944	25.86	15,200
	June 14, 1944	23.32	8,060
1945	May 20, 1945	25.37	13,700
	June 10, 1945	23.12	7,540
	June 17, 1945	26.34	16,400
	June 21, 1945	23.66	9,020
1946	Jan. 6, 1946	23.92	9,540
	Jan. 11, 1946	24.25	10,300
	Mar. 24, 1946	23.80	9,280
	June 23, 1946	26.0	15,500
	July 21, 1946	23.93	8,720
1947	Apr. 6, 1947	24.95	12,000
	June 7, 1947	28.50	22,900
	June 13, 1947	28.50	22,900
	June 19, 1947	25.37	12,300
	June 28, 1947	24.68	9,940
1948	Mar. 20, 1948	25.23	11,600
1949	Feb. 25, 1949	[b] 23.85	--
	Feb. 27, 1949	23.10	6,510
	Apr. 1, 1949	23.10	6,510
	June 16, 1949	23.6	7,640
1950	June 15, 1950	26.22	15,000
	June 20, 1950	26.66	16,700
1951	Feb. 20, 1951	24.12	8,020
	Apr. 8, 1951	24.16	8,340
	July 23, 1951	24.32	8,660
1952	Mar. 13, 1952	23.87	7,380

[a] At present site; annual peak only.
[b] Backwater from ice.

Chariton River basin

(45) Chariton River near Keytesville, Mo.

Location.--Lat 39°26'55", long 92°52'10", in SE¼SE¼ sec. 25, T. 54 N., R. 18 W., at county highway bridge, 4½ miles northeast of Keytesville and 5¼ miles upstream from Puzzle Creek.

Drainage area.--1,950 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 616.37 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements; large shifts in relation have occurred as a result of major channel improvement below gage 1947-49.

Flood stage.--15 ft.

Remarks.--During 1906-09 channel 33½ miles long dug from Missouri River at Chariton-Macon county line to replace 290 miles of natural channel. Channel improvement extended upstream after 1909. Base for partial-duration series, 9,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	Nov. 18, 1928	22.54	[a] 24,000	1943	May 20, 1943	22.08	13,000
					June 11, 1943	21.53	10,200
1930	Nov. 2, 1929	18.64	6,800		June 17, 1943	21.89	21,000
1931	June 8, 1931	20.02	9,690	1944	Mar. 16, 1944	21.76	11,400
					Apr. 12, 1944	21.30	9,500
1932	Nov. 19, 1931	19.92	9,100		Apr. 24, 1944	23.01	17,200
	Nov. 27, 1931	21.46	17,500				
	Jan. 6, 1932	19.86	9,100	1945	May 22, 1945	22.17	13,300
	Aug. 20-21, 1932	21.47	17,500		June 10, 1945	21.98	12,300
					June 19, 1945	22.76	16,200
1933	Dec. 25, 1932	20.64	12,500				
	May 13, 1933	20.47	12,000	1946	Jan. 5, 1946	23.0	17,200
					Mar. 26, 1946	21.56	10,500
1934	Apr. 5, 1934	15.78	4,760		June 27, 1946	22.16	12,700
1935	May 29, 1935	22.23	15,000	1947	Apr. 6, 1947	22.80	15,600
	June 3, 1935	22.72	18,000		June 2, 1947	22.20	12,700
					June 8,9, 1947	25.3	25,600
1936	Feb. 27, 1936	21.04	9,200		June 16, 1947	24.10	20,000
					June 19, 1947	24.92	23,700
1937	Feb. 21, 1937	[b] 21.66	--		July 1, 1947	22.55	13,300
	Feb. 22, 1937	[b] 21.29	8,700				
				1948	Mar. 20, 1948	22.6	13,300
1938	Apr. 11, 1938	18.3	6,020		Mar. 23, 1948	22.6	13,300
1939	Mar. 18-20, 1939	21.5	12,000	1949	June 26, 1949	20.1	9,620
	Apr. 19, 1939	21.39	9,600				
	June 22, 1939	21.57	10,600	1950	June 23, 1950	22.36	14,900
1940	Mar. 4, 1940	16.3	4,350	1951	June 27-28, 1951	21.87	10,400
1941	June 14, 1941	20.8	8,370	1952	Mar. 19, 1952	19.25	9,590
1942	June 26, 1942	23.41	21,000				

[a] Annual peak only.
[b] Backwater from ice.

Lamine River basin

(46) Lamine River at Clifton City, Mo.

Location.--Lat 38°45'20", long 93°01'10", in NW¼ sec. 16, T. 46 N., R. 19 W., at county highway bridge, 300 ft upstream from Missouri-Kansas-Texas Railroad bridge, three-quarters of a mile east of Clifton City, and 8 miles downstream from Otter Creek.

Drainage area.--598 sq mi.

Gage.--Nonrecording. Datum of gage is 621.91 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 30,000 cfs.

Flood stage.--15 ft.

Remarks.--Base for partial-duration series, 10,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1905	Sept.18, 1905	35.3	[a] 90,000
1907	Jan. 20, 1907	33.2	[a] 70,000
1922	Apr. 8, 1922	31.5	[a] 55,000
1923	July 4, 1923	19.9	9,300
1924	June 25, 1924	18.85	7,640
1925	Mar. 19, 1925	20.60	10,100
1926	Sept.10, 1926	21.64	11,300
1927	Mar. 20, 1927	27.40	22,700
	Apr. 1, 1927	27.85	25,000
	Apr. 13, 1927	22.70	12,500
	May 8, 1927	22.02	11,700
1928	Oct. 3, 1927	18.11	7,620
1929	Nov. 18, 1928	22.60	12,400
	Apr. 10, 1929	23.50	13,600
	May 3, 1929	24.35	14,800
	May 13, 1929	27.60	23,800
	May 19, 1929	29.00	33,000
	June 4, 1929	24.62	15,100
1930	Feb. 7, 1930	17.60	7,260
1931	Sept.25, 1931	19.10	8,500
1932	Nov. 23, 1931	21.65	11,200
1933	Dec. 25, 1932	26.10	17,800
	May 14, 1933	21.80	11,500
1934	Sept.29, 1934	14.12	5,190
1935	Nov. 23, 1934	21.40	11,000
	May 29, 1935	26.38	18,600
	June 2, 1935	26.19	18,000
	June 21, 1935	22.36	12,200
	June 27, 1935	27.76	25,000
1936	Nov. 5, 1935	23.20	13,200
	Sept.29, 1936	22.93	12,800
1937	Mar. 20, 1937	22.00	11,700
	May 4, 1937	21.95	11,700
	May 23, 1937	27.30	22,200
	June 10, 1937	22.20	11,900
	June 17, 1937	22.80	12,700
1938	May 24, 1938	25.5	16,600
1939	Apr. 16, 1939	29.86	40,200
	May 9, 1939	21.57	11,200
1940	June 12, 1940	13.5	4,280
1941	Apr. 20, 1941	26.5	18,600
1942	Oct. 5, 1941	27.00	19,800
	Oct. 31, 1941	27.5	21,400
	Mar. 17, 1942	21.52	10,300
	June 27, 1942	24.70	14,700
1943	Dec. 28, 1942	26.00	17,200
	May 8, 1943	24.00	13,600
	May 18, 1943	32.0	60,000
	June 5, 1943	21.80	10,700
1944	Apr. 11, 1944	28.00	25,000
	Apr. 23, 1944	29.0	32,500
1945	Apr. 17, 1945	24.0	12,200
	June 11, 1945	23.6	11,800
1946	Jan. 7, 1946	21.80	10,000
	May 11, 1946	25.5	14,500
	Aug. 15, 1946	23.40	11,600
1947	Mar. 14, 1947	22.01	10,200
	Apr. 11, 1947	23.32	11,500
	Apr. 26, 1947	25.4	14,300
1948	June 19, 1948	28.14	25,600
	June 23, 1948	29.0	32,500
1949	Jan. 24, 1949	22.6	10,800
	June 7, 1949	24.2	12,400
	June 9, 1949	23.6	11,800
1950	Dec. 22, 1949	23.5	11,700
	May 31, 1950	23.0	11,200
	June 4, 1950	24.0	12,200
1951	Feb. 21, 1951	24.25	12,400
	June 25, 1951	23.0	11,200
	June 29, 1951	32.5	65,500
	July 4, 1951	22.0	10,200
	July 7, 1951	28.85	30,900
	July 13, 1951	24.4	12,700
	Sept.10, 1951	23.0	11,200
	Sept.13, 1951	22.0	10,200
1952	Nov. 13, 1951	21.50	9,750

[a] Annual peak only.

Lamine River basin

(47) Blackwater River at Blue Lick, Mo.

Location.--Lat 38°58'30", long 93°12'15", on line between secs. 27 and 34, T. 49 N., R. 21, W., at bridge on U. S. Highway 65, three-quarters of a mile downstream from Finney Creek and 1 mile south of Blue Lick.

Drainage area.--1,120 sq mi, approximately.

Gage.--Datum of gage is 593.79 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 32,000 cfs and extended to 54,000 cfs by logarithmic plotting.

Flood stage.--25 ft.

Remarks.--Base for partial-duration series, 10,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1905	Sept. 1905	36	[a][b]26,000	1939	Apr. 18, 1939	29.6	9,810
1923	July 4, 1923	30.9	9,280	1940	Apr. 20, 1940	25.0	5,300
1924	June 30, 1924	29.05	10,800	1941	Jan. 28, 1941	23.8	3,800
1925	June 19, 1925	24.10	7,060	1942	June 23, 1942	31.83	12,400
					June 29, 1942	32.2	13,400
1926	Apr. 8, 1926	28.05	10,000				
				1943	May 20, 1943	36.45	27,900
1927	Mar. 22, 1927	32.01	17,400				
	Apr. 3, 1927	31.0	15,400	1944	Mar. 18, 1944	31.50	12,600
	Apr. 16, 1927	30.25	14,000		Apr. 13, 1944	32.50	15,300
	Apr. 21, 1927	28.95	11,800		Apr. 24, 1944	37.0	32,400
	May 9, 1927	30.68	14,900				
				1945	June 10, 1945	31.85	12,600
1928	Oct. 4, 1927	34.17	21,800				
	Feb. 9, 1928	28.60	11,200	1946	Jan. 8, 1946	31.3	11,300
1929	Nov. 18, 1928	41.25	54,000	1947	Mar. 16, 1947	30.76	10,200
	Apr. 2, 1929	31.30	16,000		Apr. 7, 1947	31.9	12,900
	Apr. 11, 1929	30.00	13,600		July 3, 1947	31.09	10,800
	May 14, 1929	32.10	17,600				
	May 21, 1929	30.10	13,800	1948	June 25, 1948	32.80	15,600
	June 5, 1929	31.19	15,800				
				1949	June 9,10,1949	30.6	9,760
1930	Feb. 10, 1930	26.42	7,990				
				1950	Oct. 23, 1949	32.0	13,200
1931	Sept.24, 1931	18.77	3,200				
				1951	July 1, 1951	--	[b]18,000
1932	Nov. 26, 1931	27.85	9,680		July 8, 1951	34.2	20,400
					July 14, 1951	35.06	23,900
1933	May 14, 1933	25.88	6,900		Aug. 29, 1951	31.06	10,800
1938	May 25, 1938	34.18	19,600	1952	Nov. 15, 1951	28.48	7,100

[a] Annual peak only.
[b] Discharge approximate.

Missouri River main stem

(48) Missouri River at Boonville, Mo.

Location.--Lat 38°58'40", long 92°45'15", in sec. 35, T. 49 N., R. 17 W., at Missouri-Kansas-Texas Railroad bridge at Boonville and at mile 196.7.

Drainage area.--505,700 sq mi.

Gage.--Nonrecording gage Oct. 1, 1925, to May 9, 1931; recording gage thereafter. Prior to Oct. 1, 1928, at site 0.4 miles downstream at datum 3.14 ft lower than present gage. Oct. 1, 1928 to Apr. 13, 1934, at site 0.4 miles downstream from present site at present datum; since Apr. 13, 1934, at present site and datum. Datum of present gage is 565.02 ft above mean sea level, datum of 1929. Gage heights given herein converted to present datum.

Stage-discharge relation.--Continually shifting, must be defined by frequent current-meter measurements.

Flood stage.--21 ft.

Remarks.--Drainage basin above station contains many reservoirs with total usable capacity in excess of 27,640,000 acre-ft. Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1844	June 21, 1844	32.7	[a]710,000	1939	Apr. 18, 1939	20.00	170,000
1903	June 6, 1903	30.5	[a]612,000	1940	Aug. 17, 1940	13.44	76,700
1926	Sept.25, 1926	17.4	175,000	1941	June 17, 1941	22.40	201,000
1927	Apr. 23, 1927	23.9	381,000	1942	June 29, 1942	27.50	312,000
1928	June 20, 1928	19.6	224,000	1943	June 22, 1943	28.82	366,000
1929	June 7, 1929	23.7	344,000	1944	Apr. 27, 1944	30.93	504,000
1930	May 11, 1930	16.2	150,000	1945	Apr. 20, 1945	[b]25.25	280,000
1931	June 9,10, 1931	12.8	79,200	1946	Jan. 10, 1946	17.44	150,000
1932	Nov. 28, 1931	21.5	221,000	1947	June 27, 1947	32.02	448,000
1933	June 2,4,1933	14.9	105,000	1948	Mar. 24, 1948	24.20	247,000
1934	Mar. 9, 1934	12.2	77,000	1949	Mar. 9, 1949	21.15	196,000
1935	June 4, 1935	26.7	306,000	1950	July 20, 1950	21.30	209,000
1936	Mar. 14, 1936	15.4	134,000	1951	July 17, 1951	32.62	550,000
1937	July 25, 1937	15.70	123,000	1952	Apr. 27, 1952	27.70	360,000
1938	July 19, 1938	18.10	142,000				

[a] Computed by Corps of Engineers.
[b] Occurred June 21, 1945.

Osage River basin

(49) Sac River near Stockton, Mo.

Location.--Lat 37°42'30", long 93°45'20", in W½ sec. 11, T. 34 N., R. 26 W., at bridge on State Highway 64, three-quarters of a mile upstream from Bear Creek and 2 miles east of Stockton.

Drainage area.--1,160 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 764.02 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur.

Flood stage.--18 ft.

Remarks.--Base for partial-duration series, 12,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1896	Dec. 19, 1895	27.25	[a] 72,000
1909	July 1909	29.3	[a] 92,000
1922	May 14, 1922	18.00	9,440
1923	May 24, 1923	15.80	7,930
1924	May 29, 1924	21.60	21,400
	July 20, 1924	20.90	14,800
	Aug. 17, 1924	21.05	15,000
1925	Sept.22, 1925	22.30	23,900
1926	Nov. 8, 1925	15.40	8,600
1927	Apr. 1, 1927	24.95	34,800
	Apr. 10, 1927	24.60	33,200
	Apr. 16, 1927	22.00	22,800
	Apr. 20, 1927	18.85	13,300
	June 21, 1927	18.95	13,700
	July 21, 1927	24.45	32,300
	Aug. 9, 1927	21.50	21,000
	Aug. 18, 1927	23.10	27,000
1928	June 10, 1928	20.90	19,000
	June 29, 1928	20.98	19,300
1929	Apr. 9, 1929	20.70	18,400
	May 6, 1929	20.70	18,400
	May 13, 1929	20.50	17,800
	May 19, 1929	20.85	18,700
1930	Feb. 5, 1930	15.55	8,800
1931	May 20, 1931	19.80	15,700
	Aug. 7, 1931	22.40	24,300
1932	June 28, 1932	24.00	30,700
1933	Dec. 25, 1932	23.48	30,400
	May 14, 1933	20.30	20,000
	May 26, 1933	17.80	13,200
1934	Sept.12, 1934	20.50	20,600
1935	Oct. 18, 1934	19.90	19,100
	Mar. 12, 1935	22.59	36,200
	June 8, 1935	17.45	12,300
	June 14, 1935	20.61	22,000
	June 21, 1935	17.45	12,300
1936	Sept.28, 1936	17.06	11,800
1937	Nov. 2, 1936	20.46	19,300
	Jan. 15, 1937	19.30	15,200
	Jan. 31, 1937	18.28	12,700
	Apr. 30, 1937	19.50	15,800
	June 9, 1937	21.40	23,300
	June 14, 1937	23.15	34,300
1938	May 8, 1938	16.50	9,700
1939	May 8, 1939	17.3	10,900
1940	May 1, 1940	13.6	6,830
1941	Apr. 15, 1941	19.10	14,400
	Apr. 19, 1941	26.5	57,000
1942	Oct. 5, 1941	26.4	56,300
	Oct. 31, 1941	22.50	21,600
	June 18, 1942	19.80	12,800
1943	Dec. 28, 1942	22.20	20,300
	May 11, 1943	23.03	23,600
	May 19, 1943	31.8	120,000
1944	Aug. 27, 1944	22.0	27,000
1945	Mar. 3, 1945	18.40	12,500
	Apr. 14, 1945	25.6	56,400
	June 7, 1945	20.30	14,000
	Sept.23, 1945	19.70	12,600
	Sept.26, 1945	23.70	26,900
1946	Feb. 14, 1946	16.28	8,790
1947	Apr. 11, 1947	21.00	16,000
	Apr. 25, 1947	25.25	52,800
	July 1, 1947	20.00	13,200
1948	June 22, 1948	24.6	47,400
	June 26, 1948	20.04	19,300
1949	Feb. 16, 1949	19.2	14,400
1950	Oct. 23, 1949	21.9	26,300
	Jan. 5, 1950	20.37	18,400
	Jan. 14, 1950	21.57	24,300
1951	Feb. 21, 1951	21.40	20,200
	July 1, 1951	22.00	23,300
	July 4, 1951	25.35	50,100
	Sept.10, 1951	20.16	15,600
1952	Nov. 12, 1951	18.80	11,900

[a] Annual peak only.

Osage River basin

(50) Cedar Creek near Pleasant View, Mo.

Location.--Lat 37°50'03", long 93°52'31", in NE¼ sec. 2, T. 35 N., R. 27 W., at bridge on State Highway 39, 1½ miles north of Pleasant View, 1¾ miles downstream from Alder Creek, and 5¾ miles upstream from mouth.

Drainage area.--420 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 739.5 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 15,100 cfs and extended to 24,300 cfs by logarithmic plotting.

Flood stage.--20 ft.

Remarks.--Base for partial-duration series, 3,500 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909	July 20, 1909	[a] 27.7	--	1943	May 1943	24.7	[a] 19,500
1923	June 10, 1923	20.86	[a] 7,310	1949	Jan. 24, 1949	20.2	6,530
					Feb. 17, 1949	15.5	3,900
1924	Dec. 13, 1923	16.75	4,460		June 10, 1949	15.7	3,980
	Feb. 17, 1924	16.61	4,370		July 12, 1949	14.9	3,660
	May 24, 1924	19.32	5,790				
	May 29, 1924	22.92	11,400	1950	July 17, 1950	15.1	3,740
	June 10, 1924	16.60	4,370		July 19, 1950	22.38	9,900
	June 21, 1924	20.11	6,430		Aug. 28, 1950	15.7	4,020
	July 12, 1924	24.00	16,000				
	July 21, 1924	14.77	3,620	1951	Feb. 21, 1951	22.7	10,800
	Aug. 16, 1924	15.70	3,980		June 23, 1951	17.0	4,620
					July 1, 1951	22.2	9,400
1925	Mar. 19, 1925	18.75	5,490		July 4, 1951	25.56	24,300
	Apr. 4, 1925	16.10	4,140		July 11, 1951	19.75	6,320
	Sept.23, 1925	21.78	8,440		Aug. 28, 1951	19.45	6,000
					Sept.10, 1951	24.29	17,500
1926	Nov. 8, 1925	19.12	5,660		Sept.13, 1951	19.0	5,720
	Aug. 21, 1926	15.00	3,700				
	Sept. 6, 1926	17.40	4,750	1952	Nov. 12, 1951	21.50	8,160
					Feb. 2, 1952	14.70	3,580

[a] Annual peak only.

(51) Osage River at Osceola, Mo.

Location.--Lat 38°03'44", long 93°41'37", in NE¼NE¼ sec. 17, T. 38 N., R. 25 W., half a mile downstream from Gallinipper Creek, 1 mile downstream from hydroelectric plant of West Missouri Power Co., and 1 mile northeast of Osceola.

Drainage area.--8,220 sq mi, approximately.

Gage.--Nonrecording gage Mar. 1, 1917, to Sept. 30, 1928, at site 1¼ miles upstream from and at datum 3.67 ft higher than present gage. Recording gage at present site since Nov. 28, 1930. Datum of present gage is 678.91 ft above mean sea level, datum of 1929. Gage heights given herein converted to present site and datum.

Stage-discharge relation.--Defined by current-meter measurements.

Flood stage.--22 ft.

Remarks.--Low and medium flow regulated by power plant 1 mile upstream since 1930. Peak flows not materially affected by regulation. Base for partial-duration series, 32,000 cfs.

Osage River basin

(51) Osage River at Osceola, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1844	June 1844	45	[a]150,000
1896	Dec. 1895	35.3	[a]90,000
1918	Apr. 29, 1918	12.0	16,100
1919	May 20,21,1919	18.9	31,100
1920	Oct. 30, 1919	21.70	37,500
	Mar. 28, 1920	23.4	41,800
1921	Aug. 16, 1921	19.1	31,500
1922	Mar. 20, 1922	23.80	42,300
	Apr. 2, 1922	23.60	41,900
	Apr. 10, 1922	30.8	65,000
	Apr.17,18,1922	29.7	61,200
1923	June 11, 1923	20.7	35,200
	June 17, 1923	22.2	38,700
1924	May 31, 1924	21.40	36,800
	July 14, 1924	24.40	43,800
	July 21, 1924	20.80	35,400
1925	Sept.24, 1925	19.31	32,000
1926	Nov. 9, 1925	18.9	31,100
1927	Oct. 7, 1926	22.00	38,200
	Oct. 11, 1926	24.50	44,800
	Mar. 22, 1927	23.40	41,800
	Apr. 2, 1927	27.30	53,200
	Apr. 11, 1927	32.4	70,900
	Apr. 17, 1927	32.10	69,800
	June 22, 1927	26.10	49,500
	July 23, 1927	23.80	42,900
	Aug. 9, 1927	30.25	62,900
	Aug. 20, 1927	30.50	64,000
1928	Oct. 8, 1927	28.2	56,100
	June 11, 1928	25.35	47,500
	June 19, 1928	19.70	32,900
	June 30, 1928	22.20	38,700
1929	May 21, 1929	[b]32.4	[ac]68,000
1931	May 21, 1931	17.35	27,700
1932	June 30, 1932	16.40	25,300
1933	Dec. 26, 1932	20.66	36,000
	May 16, 1933	21.17	37,200
1934	Sept.13, 1934	11.30	13,800
1935	Mar. 14, 1935	21.32	37,500
	June 9, 1935	29.35	59,700
1936	Sept.29, 1936	16.86	26,200
1937	Nov. 4, 1936	20.61	35,700
	June 12, 1937	24.04	44,500
	June 17, 1937	25.90	49,500
1938	May 30, 1938	24.97	47,300
1939	May 9, 1939	14.55	20,200
1940	May 2, 1940	12.36	15,300
1941	Apr. 21, 1941	30.22	62,600
1942	Oct. 7, 1941	30.00	61,600
	Nov. 2, 1941	31.78	71,100
	June 22, 1942	23.52	40,600
1943	Dec. 30, 1942	24.96	44,600
	May 13, 1943	28.60	55,200
	May 21, 1943	41.48	146,000
	June 9, 1943	21.35	36,200
1944	Mar. 23, 1944	21.36	35,400
	Apr. 13, 1944	22.47	38,000
	May 1, 1944	31.56	69,500
	Aug. 29, 1944	22.66	38,600
1945	Mar. 21, 1945	21.18	35,200
	Mar. 26, 1945	21.71	36,400
	Apr. 17, 1945	31.11	66,600
	Apr. 23, 1945	29.39	58,700
1946	Aug. 14, 1946	20.30	33,100
1947	Nov. 1, 1946	25.73	46,500
	Apr. 13, 1947	25.42	45,700
	Apr. 27, 1947	27.95	53,000
1948	June 24, 1948	29.03	56,900
	Aug. 2, 1948	23.80	41,700
1949	Jan. 24, 1949	20.04	32,600
	Feb. 18, 1949	22.55	38,700
1950	July 19, 1950	24.20	43,500
1951	Feb. 22, 1951	23.85	42,500
	June 24, 1951	20.38	34,300
	July 6, 1951	35.87	98,300
	July 19,20,1951	35.07	92,300
	Sept.14, 1951	32.10	72,400
1952	Nov. 14, 1951	21.39	35,900

[a]Annual peak only.
[b]Furnished by U. S. Weather Bureau; affected by backwater due to dam construction.
[c]From discharge measurements of peak.

Osage River basin

(52) Pomme de Terre River at Hermitage, Mo.

Location.--Lat 37°56'45", long 93°18'35", in SE¼NE¼ sec. 23, T. 37 N., R. 22 W., at bridge on U. S. Highway 54, a quarter of a mile east of Hermitage and 1½ miles downstream from Mill (Crane) Creek.

Drainage area.--655 sq mi.

Gage.--Nonrecording gage July 25, 1921, to July 28, 1937; recording gage thereafter. Prior to Oct. 1, 1925, at site 1.60 miles upstream from and at different datum than present gage; datum of present gage is 726.83 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 41,000 cfs.

Flood stage.--15 ft.

Remarks.--Base for partial-duration series, 12,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	Mar. 14, 1922	18.95	16,600
1923	June 4, 1923	12.38	7,600
1924	May 29, 1924	22.56	24,600
	June 10, 1924	20.00	18,800
1925	Sept.22, 1925	15.80	11,400
1926	Nov. 8, 1925	15.84	9,000
1927	Oct. 5, 1926	19.30	13,100
	Mar. 20, 1927	20.40	14,600
	Apr. 1, 1927	23.50	19,000
	Apr. 16, 1927	19.70	13,600
	June 1, 1927	23.60	19,100
	Aug. 8, 1927	36.45	70,000
1928	June 10, 1928	22.50	19,800
	June 29, 1928	19.30	13,100
	Aug. 2, 1928	21.16	15,700
1929	Apr. 9, 1929	19.72	13,600
	May 7, 1929	23.95	23,700
	May 13, 1929	20.90	15,300
	May 19, 1929	20.24	14,300
1930	Feb. 4, 1930	15.10	8,300
1931	May 20, 1931	21.46	16,100
	Aug. 6, 1931	19.40	13,200
1932	June 28, 1932	18.05	11,500
1933	Dec. 25, 1932	22.20	19,100
	May 14, 1933	19.95	14,000
1934	Apr. 16, 1934	12.14	5,530
1935	Mar. 12, 1935	23.76	23,200
	May 29, 1935	20.82	16,000
	June 15, 1935	29.38	42,200
1936	Sept.28, 1936	17.11	9,740
1937	Nov. 3, 1936	23.05	21,000
	Jan. 15, 1937	20.50	16,500
	Jan. 31, 1937	19.70	15,100
	June 10, 1937	25.97	29,900
	June 16, 1937	19.00	13,900
1938	May 24, 1938	15.50	9,120
1939	Apr. 6, 1939	21.28	17,100
	May 8, 1939	19.80	14,000
1940	May 1, 1940	15.70	8,060
1941	Apr. 16, 1941	21.72	16,700
	Apr. 19, 1941	29.44	39,100
1942	Oct. 5, 1941	30.70	44,300
	Oct. 31, 1941	23.20	19,800
	June 18, 1942	29.60	39,900
	June 21, 1942	21.10	15,600
1943	Dec. 27, 1942	24.58	23,800
	May 11, 1943	24.20	23,000
	May 19, 1943	29.48	39,900
1944	May 1, 1944	19.36	13,000
	Aug. 27, 1944	23.52	21,000
1945	Apr. 3, 1945	19.30	12,800
	Apr. 14, 1945	26.92	30,700
	Sept.23, 1945	20.29	14,400
	Sept.25, 1945	25.57	26,600
1946	Aug. 14, 1946	27.84	33,700
1947	Nov. 1, 1946	24.20	22,700
	Apr. 11, 1947	22.69	19,100
	Apr. 25, 1947	28.44	35,800
1948	June 22, 1948	29.06	38,400
	June 26, 1948	18.90	12,300
	July 20, 1948	20.11	14,100
1949	Feb. 15, 1949	19.87	13,800
	July 7, 1949	21.23	16,000
1950	Jan. 5, 1950	20.38	14,500
	Jan. 14, 1950	22.62	18,900
	May 31, 1950	19.41	13,000
1951	Feb. 21, 1951	19.98	13,900
	July 1, 1951	26.40	29,000
	July 11, 1951	20.3	14,400
	Sept.10, 1951	23.73	21,500
1952	Feb. 2, 1952	18.82	12,100

Osage River basin

(53) South Grand River near Brownington, Mo.

Location.--Lat 38°15'45", long 93°42'50", in NW¼ sec. 17, T. 40 N., R. 25 W., at county highway bridge, 150 ft downstream from St. Louis-San Francisco Railway bridge, 200 ft downstream from Deepwater Creek, and 1 mile north of Brownington.

Drainage area.--1,660 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 675.86 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 47,000 cfs and extended to 63,900 cfs by logarithmic plotting.

Flood stage.--16 ft.

Remarks.--Channel improvement of 57¼ miles of main channel and some tributaries completed in 1921; all work some distance above gage. Base for partial-duration series, 9,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	1915	30	[a]25,000	1940	June 11, 1940	11.2	4,140
1922	Mar. 15, 1922	25.70	18,700	1941	Apr. 20, 1941	16.0	7,210
	Mar. 27, 1922	20.30	13,400				
	Apr. 9, 1922	28.0	21,100	1942	Oct. 7, 1941	21.80	11,000
					Nov. 3, 1941	25.0	14,200
1923	June 13, 1923	24.65	17,500		June 21, 1942	23.97	13,000
1924	June 29, 1924	18.20	11,500	1943	Dec. 29, 1942	23.15	12,100
					May 12, 1943	23.35	12,300
1925	Apr. 6, 1925	20.25	13,300		May 20, 1943	37.88	52,700
	June 3, 1925	17.15	10,600		June 5, 1943	28.00	19,000
1926	Nov. 8, 1925	15.70	9,240	1944	Mar. 18, 1944	24.92	14,100
	Apr. 9, 1926	19.00	12,200		Apr. 13, 1944	26.50	16,400
					Apr. 25, 1944	35.8	43,600
1927	Mar. 22, 1927	27.25	16,500				
	Apr. 3, 1927	25.75	14,300	1945	Apr. 18, 1945	26.40	16,200
	Apr. 17, 1927	--	14,900		May 27, 1945	24.20	13,200
	May 10, 1927	22.49	10,900		May 31, 1945	24.70	13,800
	June 5, 1927	20.33	9,480		June 12, 1945	21.35	10,500
					July 3, 1945	21.50	10,600
1928	Oct. 5, 1927	28.52	18,600				
	Feb. 9, 1928	22.57	11,000	1946	Jan. 8, 1946	24.4	13,500
					Aug. 15, 1946	23.30	12,200
1929	Nov. 19, 1928	39.9	63,900				
	Apr. 9, 1929	20.10	9,340	1947	Mar. 15, 1947	24.75	14,000
	May 14, 1929	29.03	21,000		Apr. 8, 1947	26.40	16,200
	May 20, 1929	25.73	15,200		Apr. 12, 1947	26.02	15,600
	June 5, 1929	20.56	9,740		Apr. 27, 1947	23.20	12,100
	June 25, 1929	22.62	11,500		June 10, 1947	24.34	13,400
					June 27, 1947	27.15	17,600
1930	Feb. 11, 1930	15.32	6,880				
				1948	Mar. 22, 1948	20.15	9,420
1931	May 21, 1931	7.85	2,820		June 27, 1948	26.15	15,900
					July 23, 24, 1948	27.40	17,900
1932	Nov. 26, 1931	19.80	9,580		July 28, 29, 1948	30.8	25,900
1933	May 13, 1933	11.94	4,840	1949	Jan. 18, 1949	20.7	9,830
					Feb. 15, 1949	22.35	11,400
1934	Sept. 30, 1934	7.07	1,990		June 11, 1949	20.1	9,340
1935	June 4, 1935	31.29	29,400	1950	Oct. 24, 1949	22.05	11,000
	June 29, 1935	24.95	14,200		Aug. 30, 1950	27.20	17,600
1936	Sept. 28, 1936	15.16	6,820	1951	July 1, 1951	32.60	31,600
					July 15, 1951	35.5	42,400
1937	Mar. 26, 1937	20.38	9,900		Sept. 7, 1951	25.45	14,800
	May 24, 1937	23.83	12,800		Sept. 10, 1951	25.90	15,500
	June 11, 1937	21.05	10,400				
				1952	Nov. 15, 1951	20.08	9,340
1938	May 26, 1938	31.89	31,100		Mar. 13, 1952	20.78	9,920
1939	Apr. 17, 1939	17.8	8,040				

[a] Annual peak only.

Osage River basin

(54) Osage River at Warsaw, Mo.

Location.--Lat 38°14'40", long 92°23'10", in NE¼SW¼ sec. 17, T. 40 N., R. 22 W., at Warsaw.

Drainage area.--11,500 sq mi, approximately.

Gage.--Nonrecording. Prior to Aug. 6, 1925, at various sites and datums in vicinity. Intermittent record since April 1931. Gage heights given herein converted to present site and datum. Datum of present gage is 681.80 ft above mean sea level (levels by U. S. Weather Bureau).

Stage-discharge relation.--Defined by current-meter measurements. Stage-discharge relation affected at times by storage in Lake of the Ozarks since 1931.

Flood stage.--31 ft.

Historical data.--Flood in 1872 reached a stage of 33.1 ft; that in 1874 a stage of 26.2 ft; and that on Feb. 1, 1916, a stage of 35.5 ft, from reports of U. S. Weather Bureau.

Remarks.--Peaks for period prior to Oct. 1, 1925, and after Apr. 30, 1931, computed from plotted U. S. Weather Bureau gage readings. Base for partial-duration series, 40,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1844	June 1844	44.46	[a]185,000
1855	1855	39.5	[a]112,000
1896	December 1895	38.4	[a]108,000
1905	April 1905	37.4	[a]104,000
1918	Apr. 30, 1918	16.6	32,900
1919	May 20, 1919	23.3	50,800
1920	Oct. 29, 1919	28.7	68,600
	Mar. 27, 1920	28.9	69,300
	Sept.15, 1920	20.3	42,300
	Sept.28, 1920	19.7	40,700
1921	Sept.15, 1921	21.2	[a]44,800
1922	Mar. 15, 1922	26.7	61,800
	Mar. 20, 1922	25.7	58,500
	Apr. 1, 1922	25.5	57,800
	Apr. 4, 1922	26.8	62,100
	Apr. 12, 1922	34.9	90,000
1923	June 12, 1923	22.2	47,600
	June 17, 1923	23.4	51,100
1924	Dec. 15, 1923	19.7	40,700
	May 31, 1924	22.7	49,000
	June 11, 1924	21.8	46,400
	June 21, 1924	21.0	44,200
	July 15, 1924	25.5	57,800
	July 22, 1924	21.1	44,500
1925	Apr. 6, 1925	17.8	35,900
1926	Nov. 9, 1925	20.1	41,800
1927	Oct. 5, 1926	24.0	53,000
	Oct. 11, 1926	24.7	55,200
	Mar. 22, 1927	28.6	68,200
	Apr. 2, 1927	28.7	68,600
	Apr. 17, 1927	34.45	88,300
	May 10, 1927	21.2	44,800
	June 3, 1927	26.7	61,800
	June 22, 1927	26.3	60,500
	July 24, 1927	20.4	42,600
	Aug. 10, 1927	31.8	79,200
	Aug. 21, 1927	25.9	59,200
1928	Oct. 3, 1927	27.0	62,800
	Oct. 9, 1927	28.2	66,900
	June 11, 1928	23.7	52,000
	July 1, 1928	22.2	47,600
1929	Nov. 24, 1928	28.1	66,500
	Apr. 9, 1929	26.2	60,200
	Apr. 22, 1929	19.7	40,700
	Apr. 25, 1929	19.6	40,500
	May 8, 1929	23.0	49,900
	May 19, 1929	34.8	89,700
1930	Feb. 9, 1930	16.4	32,400
1935	June 3, 1935	34.1	[a]94,000
1941	Apr. 21, 1941	33.8	[a]80,000
1942	Nov. 2, 1941	34.5	[a]88,600
1943	May 21, 22, 1943	44.54	[a]220,000
1946	Aug. 14, 1946	35.2	[a]76,000
1947	Apr. 27, 1947	34.40	[a]78,300
1951	July 7, 1951	40.1	[a,b]120,000

[a]Annual peak only
[b]Estimated.

Osage River basin

(55) Niangua River near Decaturville, Mo.
[published as "near Roach" prior to 1931]

Location.--Lat 37°65'20", long 92°50'30", in NW¼NE¼ sec. 19, T. 37 N., R. 17 W., 0.3 mile downstream from hydroelectric plant of Sho-me Power Cooperative, Inc. and 8 miles northwest of Decaturville.
Drainage area.--627 sq mi; about 698 sq mi prior to Oct. 1, 1930.
Gage.--Nonrecording gage Nov. 18, 1922, to Sept. 30, 1930, at site 18 miles downstream from and at datum about 51.15 ft lower datum than present gage. Recording gage at present site since Oct. 1, 1930. Datum of present gage is about 665.9 ft above mean sea level, datum of 1929.
Stage-discharge relation.--Defined by current-meter measurements.
Flood stage.--9 ft.
Historical data.--Flood of September 1914 reached a stage of 28 ft at present site and 23.8 ft at former site near Roach.
Remarks.--Records for site "near Decaturville" and "near Roach" considered equivalent for flood-frequency study. Low flows since 1931 regulated by hydroelectric plant upstream; peak discharges not materially affected. Base for partial-duration series, 9,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1923	June 12, 1923	3.75	1,810
1924	May 30, 1924	13.30	15,200
	Aug. 12, 1924	11.30	11,100
1925	Dec. 21, 1924	11.90	12,800
1926	Nov. 9, 1925	8.52	7,180
1927	Mar. 21, 1927	15.3	22,100
	Apr. 2, 1927	15.1	21,500
	May 10, 1927	12.1	13,200
	June 1, 1927	16.5	25,700
	June 22, 1927	11.2	13,400
	Aug. 9, 1927	17.00	27,200
1928	Apr. 7, 1928	11.80	12,400
	June 10, 1928	15.80	23,600
1929	May 7, 1929	13.12	15,900
	May 19, 1929	10.6	9,520
1930	Jan. 15, 1930	8.80	6,560
1931	Aug. 7, 1931	12.60	9,210
1932	June 28, 1932	17.00	19,000
1933	Dec. 25, 1932	15.62	17,000
	Apr. 17, 1933	13.70	11,800
	May 14, 1933	16.30	17,200
1934	Apr. 17, 1934	8.73	4,410
1935	Mar. 13, 1935	17.12	19,300
	May 29, 1935	12.70	9,730
	June 4, 1935	13.10	10,500
	June 15, 1935	14.40	13,500
	June 21, 1935	15.90	18,000
1936	Sept.28, 1936	11.94	8,280
1937	Jan. 16, 1937	13.45	11,100
	June 9, 1937	13.40	11,100
1938	May 24, 1938	11.26	7,320
1939	Apr. 6, 1939	12.40	9,170
	Apr. 17, 1939	12.43	9,170
1940	May 2, 1940	10.31	6,020
1941	Apr. 20, 1941	20.4	29,000
1942	Oct. 6, 1941	18.20	26,900
	Nov. 1, 1941	13.39	11,100
	June 18, 1942	21.06	31,200
1943	Dec. 28, 1942	20.27	28,700
	May 12, 1943	14.68	13,300
	May 19, 1943	21.84	33,400
1944	Apr. 12, 1944	13.90	11,600
1945	Mar. 4, 1945	13.15	10,300
	Mar. 21, 1945	13.02	9,920
	Apr. 3, 1945	14.97	14,000
	Apr. 14, 1945	19.46	26,200
	Sept.26, 1945	17.17	19,600
1946	Aug. 15, 1946	14.75	13,500
1947	Apr. 12, 1947	13.47	10,800
	Apr. 26, 1947	20.37	29,000
1948	June 23, 1948	16.33	17,200
	June 29, 1948	13.07	10,100
1949	June 9, 1949	13.2	10,300
1950	Oct. 23, 1949	13.12	10,100
	Jan. 5, 1950	17.55	20,700
	Jan. 14, 1950	14.4	12,700
	May 31, 1950	16.29	17,200
1951	July 2, 1951	16.06	16,700
1952	Feb. 3, 1952	10.23	6,220

(56) Osage River near Bagnell, Mo.

Location.--Lat 38°12'26", long 92°35'23", in N½SE¼ sec. 21, T. 40 N., R. 15 W., 1½ miles upstream from Bagnell and 3 miles downstream from hydroelectric plant of Union Electric Co. of Missouri.
Drainage area.--14,00 sq mi, approximately.
Gage.--Nonrecording gage Oct. 1, 1880, to Oct. 14, 1930; recording gage thereafter. Prior to May 5, 1925, at various sites and datums; datum of gage is 548.57 ft above mean sea level, datum of 1929.
Flood stage.--24 ft.
Remarks.--Flow regulated by Lake of the Ozarks (usable capacity, 1,246,000 acre-ft) since 1931. Only annual peaks are shown. Annual peaks since 1931 are the computed maximum daily inflows into the Lake of the Ozarks. Records prior to May 5, 1925,furnished by Union Electric Co. of Missouri and computed from rating defined by measurements made after May 1925.

Osage River basin

(56) Osage River near Bagnell, Mo.--Continued

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1844	June 1844	--	[a]164,000	1917	June 24, 1917	--	[a]27,400
1881	Feb. 10, 1881	--	[a]31,500	1918	Apr. 30, 1918	--	[a]42,300
1882	Feb.22,23,1882	--	[a]119,000	1919	May 19, 1919	--	[a]60,600
1883	Feb. 17, 1883	--	[a]82,100	1920	Oct. 30, 1919	--	[a]101,000
1884	May 4, 1884	--	[a]66,500	1921	Mar. 31, 1921	--	[a]57,600
1885	Sept.15, 1885	--	[a]86,500	1922	Apr. 17, 1922	--	[a]120,000
1886	May 9, 1886	--	[a]44,100	1923	June 18, 1923	--	[a]54,000
1887	Apr. 23, 1887	--	[a]30,000	1924	July 17, 1924	--	[a]64,300
1888	Feb. 1, 1888	--	[a]45,800	1925	Apr. 7, 1925	--	[a]40,900
1889	May 31, 1889	--	[a]72,200	1926	Nov. 10, 1925	--	52,400
1890	Jan. 15, 1890	--	[a]73,700	1927	Apr. 17, 1927	--	106,000
1891	June 8, 1891	--	[a]76,500	1928	Oct. 11, 1927	--	70,600
1892	June 4, 1892	--	[a]94,300	1929	May 21, 1929	--	106,000
1893	May 1, 1893	--	[a]91,000	1930	Feb. 10, 1930	--	39,000
1894	May 8, 1894	--	[a]69,800	1931	May 20, 1931	--	[b]55,500
1895	July 9, 1895	--	[a]54,900	1932	Nov. 27, 1931	--	[b]42,600
1896	Dec. 22, 1895	--	[a]126,000	1933	May 13, 1933	--	[b]85,200
1897	Jan. 5, 1897	--	[a]102,000	1934	Sept.14, 1934	--	[b]19,300
1898	Mar. 24, 1898	--	[a]66,500	1935	June 3, 1935	--	[b]117,000
1899	Apr. 25, 1899	--	[a]54,500	1936	Sept.28, 1936	--	[b]82,400
1900	Mar. 8, 1900	--	[a]48,200	1937	June 10, 1937	--	[b]90,300
1901	Mar. 12, 1901	--	[a]41,900	1938	May 24, 1938	--	[b]85,300
1902	May 27, 1902	--	[a]52,600	1939	May 9, 1939	--	[b]65,800
1903	Mar. 10, 1903	--	[a]79,200	1940	June 24, 1940	--	[b]37,300
1904	Apr.27,28,1904	--	[a]122,000	1941	Apr. 19, 1941	--	[b]145,000
1905	Aug. 1, 1905	--	[a]78,000	1942	Oct. 5, 1941	--	[b]152,000
1906	Aug. 26, 1906	--	[a]52,000	1943	May 19, 1943	--	[b]219,000
1907	May 17, 1907	--	[a]66,200	1944	May 1, 1944	--	[b]116,000
1908	Apr. 13, 1908	--	[a]87,800	1945	Apr. 16, 1945	--	[b]128,000
1909	May 13, 1909	--	[a]78,000	1946	Aug. 14, 1946	--	[b]214,000
1910	June 11, 1910	--	[a]103,000	1947	Apr. 25, 1947	--	[b]140,000
1911	Apr. 7, 1911	--	[a]49,600	1948	June 22, 1948	--	[b]139,000
1912	May 1, 1912	--	[a]108,000	1949	Feb. 17, 1949	--	[b]71,400
1913	Mar. 27, 1913	--	[a]89,600	1950	June 10, 1950	--	[b]79,400
1914	Sept.17, 1914	--	[a]55,000	1951	July 6, 1951	--	[b]134,000
1915	Sept.24, 1915	--	[a]89,600	1952	Feb. 4, 1952	--	[b]64,500
1916	Feb. 1, 1916	--	[a]118,000				

[a] Mean daily discharge.
[b] Estimated reservoir inflow.

Gasconade River basin

(57) Gasconade River near Hazlegreen, Mo.

Location.--Lat 37°45'35", long 92°27'05", in SE¼SE¼ sec. 15, T. 35 N., R. 14 W., at bridge on U. S. Highway 66, 1 mile downstream from Osage Fork and 1½ miles west of Hazlegreen.

Drainage area.--1,250 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 844.75 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 68,000 cfs; shifts in relation occur.

Flood stage.--21 ft.

Remarks.--Base for partial-duration series, 10,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1915	August 1915	30.4	[a]86,000
1916	January 1916	30.6	[a]100,000
1929	Apr. 10, 1929	15.60	17,700
	May 7, 1929	16.21	19,000
	May 14, 1929	14.08	14,600
1930	Jan. 15, 1930	14.48	15,200
1931	Aug. 18, 1931	6.96	4,100
1932	June 28, 1932	13.12	12,700
1933	Dec. 25, 1932	14.12	14,600
	Apr. 17, 1933	17.70	22,300
	May 15, 1933	25.75	53,800
1934	Mar. 29, 1934	6.09	3,100
1935	Mar. 12, 1935	27.50	68,700
	June 4, 1935	17.08	20,600
	June 8, 1935	12.98	12,500
	June 17, 1935	18.32	23,200
	June 21, 1935	18.59	23,800
1936	Nov. 11, 1935	8.51	5,600
1937	Jan. 9, 1937	13.05	12,500
	Jan. 16, 1937	15.90	18,100
	Feb. 1, 1937	14.50	15,400
	May 3, 1937	17.10	20,600
1938	Jan. 26, 1938	17.00	18,000
	Feb. 19, 1938	19.2	23,300
	May 8, 1938	17.97	20,200
	May 24, 1938	17.99	20,200
1939	Nov. 8, 1938	16.15	16,400
	Feb. 21, 1939	15.75	15,600
	Apr. 18, 1939	17.22	18,500
	May 28, 1939	13.80	12,000
1940	Apr. 13, 1940	12.7	10,300
1941	Apr. 17, 1941	18.80	22,200
	Apr. 20, 1941	25.8	54,500
1942	Oct. 19, 1941	14.60	13,400
	Nov. 1, 1941	18.04	20,200
	Apr. 10, 1942	16.08	16,200
	June 14, 1942	12.83	10,500
	June 18, 1942	21.6	31,500
1943	Oct. 31, 1942	15.30	14,600
	Dec. 28, 1942	23.80	41,800
	May 12, 1943	24.00	42,900
	May 19, 1943	25.3	51,000
	June 23, 1943	13.20	11,100
1944	Mar. 1, 1944	12.4	9,860
1945	Feb. 22, 1945	20.60	27,800
	Mar. 3, 1945	18.40	21,200
	Mar. 7, 1945	20.30	26,800
	Mar. 20, 1945	17.30	18,700
	Mar. 26, 1945	12.50	10,000
	Mar. 31, 1945	15.60	15,200
	Apr. 3, 1945	20.00	25,800
	Apr. 14, 1945	29.6	76,400
	June 18, 1945	17.60	19,300
	Sept. 25, 1945	13.00	10,800
1946	Feb. 15, 1946	18.90	22,500
	May 26, 1946	15.75	15,600
	Aug. 14, 1946	19.0	22,800
1947	Nov. 11, 1946	17.60	19,300
	Apr. 12, 1947	12.49	10,000
	Apr. 26, 1947	26.9	58,000
1948	Mar. 3, 1948	12.65	10,200
	June 18, 1948	14.2	12,700
	June 21, 1948	14.8	13,700
	June 28, 1948	16.1	16,200
1949	Jan. 25, 1949	14.1	12,800
	Jan. 28, 1949	12.2	10,100
	Feb. 16, 1949	19.5	24,100
	July 8, 1949	12.2	10,100
1950	Oct. 12, 1949	19.0	22,700
	Oct. 22, 1949	24.75	44,600
	Dec. 22, 1949	13.0	11,200
	Jan. 4, 1950	18.2	20,700
	Jan. 14, 1950	17.5	19,100
	Feb. 14, 1950	13.6	12,100
	Apr. 5, 1950	12.6	10,700
	Apr. 30, 1950	13.0	11,200
	May 11, 1950	24.0	40,500
	May 20, 1950	12.5	10,500
	May 31, 1950	14.0	12,700
	June 11, 1950	14.1	12,800
1951	Feb. 20, 1951	16.25	16,400
	Mar. 12, 1951	15.0	14,300
	Apr. 8, 1951	12.3	10,200
	May 20, 1951	15.31	14,800
	July 1, 1951	23.00	36,000
	July 5, 1951	13.65	12,100
	July 13, 1951	13.0	11,200
	Aug. 28, 1951	14.4	13,300
1952	Nov. 13, 1951	15.00	14,300
	Nov. 17, 1951	16.50	17,000
	Feb. 3, 1952	15.00	14,300
	Mar. 12, 1952	12.48	10,500
	Apr. 5, 1952	12.30	10,200
	Apr. 13, 1952	14.75	14,000

[a] Annual peak only.

Gasconade River basin

(58) Gasconade River near Waynesville, Mo.

Location.--Lat 37°52'20", long 92°13'40", in SE¼SE¼ sec. 3, T. 36 N., R. 12 W., at county highway bridge, 2½ miles downstream from Roubidoux Creek and 4 miles north of Waynesville.

Drainage area.--1,680 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 738.60 ft above mean sea level, datum of 1929.

Stage-discharge realtion.--Defined by current-meter measurements; shifts in relation occur.

Flood stage.--15 ft.

Remarks.--Peaks for period prior to July 19, 1921, computed from plotted readings by Engineering Experiment Station, University of Missouri. Base for partial-duration series, 17,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1915	Aug. 22, 1915	24.3	89,000
	Aug. 28, 1915	14.1	20,300
1916	Jan. 14, 1916	16.7	26,800
	Feb. 1, 1916	23.0	77,000
1917	May 2, 1917	8.35	8,600
1918	Apr. 28, 1918	13.1	18,200
	May 14, 1818	15.4	23,100
1919	May 17, 1919	12.35	16,700
1920	Oct. 28, 1919	15.75	24,000
	Nov. 3, 1919	14.8	20,500
	Sept.15, 1920	14.25	19,300
1921	Mar. 29, 1921	15.0	20,900
	Apr. 28, 1921	16.1	23,100
1922	Mar. 31, 1922	14.14	19,200
1923	Mar. 13, 1923	9.10	9,110
1924	May 29, 1924	13.00	16,900
1925	Dec. 21, 1924	17.50	30,800
1926	Nov. 9, 1925	9.80	10,500
1927	Apr. 2, 1927	17.50	30,800
	Apr. 16, 1927	16.85	24,500
	June 1, 1927	16.00	22,900
	Aug. 10, 1927	15.00	20,900
	Aug. 16, 1927	14.70	20,200
	Aug. 18, 1927	15.25	21,300
1928	Apr. 7, 1928	17.00	27,800
	Apr. 24, 1928	13.85	18,500
	June 10, 1928	18.20	36,300
1929	Apr. 10, 1929	13.80	18,100
	May 7, 1929	15.35	21,400
1930	Jan. 15, 1930	13.20	16,800
1931	May 20, 1931	7.25	5,380
1932	June 29, 1932	15.01	20,600
1933	Apr. 17, 1933	14.60	19,900
	May 15, 1933	19.95	52,200
1934	Apr. 18, 1934	6.35	3,940
1935	Mar. 13, 1935	21.62	69,000
	June 4, 1935	15.00	20,700
	June 18, 1935	16.55	25,900
	June 22, 1935	16.50	25,500
1936	Nov. 12, 1935	8.01	6,400
1937	May 4, 1937	14.42	19,400
1938	Feb. 20, 1938	16.44	24,600
	May 9, 1938	14.74	17,800
	May 25, 1938	15.11	19,100
1939	Apr. 19, 1939	14.9	18,500
1940	Mar. 12, 1940	11.8	10,600
1941	Apr. 20, 1941	20.4	57,700
1942	Nov. 2, 1941	15.4	20,700
	June 19, 1942	17.8	33,200
1943	Dec. 29, 1942	20.7	59,400
	May 12, 1943	19.25	44,700
	May 20, 1943	21.2	64,700
1944	Mar. 1, 1944	10.5	8,470
1945	Feb. 23, 1945	16.35	25,300
	Mar. 4, 1945	16.08	23,900
	Mar. 8, 1945	16.8	27,200
	Mar. 21, 1945	15.0	18,800
	Apr. 4, 1945	17.0	28,100
	Apr. 14, 1945	23.5	81,600
	June 19, 1945	14.25	17,400
1946	Feb. 15, 1946	16.30	24,800
	Aug. 15, 1946	17.57	31,600
1947	Nov. 12, 1946	14.40	18,000
	Apr. 26, 1947	20.6	55,700
1948	June 19, 1948	15.4	21,200
	June 22, 1948	15.2	21,200
	June 29, 1948	14.2	17,400
1949	Feb. 17, 1949	15.6	21.900
1950	Oct. 13, 1949	16.3	23,700
	Oct. 23, 1949	19.15	40,600
	Jan 4, 1950	17.50	29,200
	June 15, 1950	14.95	19,200
	May 12, 1950	18.66	36,600
	June 10, 1950	14.90	18,900
1951	May 20, 1951	14.4	17,700
	July 2, 1951	17.95	32,000
1952	Nov. 13, 1951	12.5	13,700

Gasconade River basin

(59) Big Piney River near Big Piney, Mo.
(published as Piney Creek prior to 1942)

Location.--Lat 37°40'00", long 92°03'05", in NE¼SE¼ sec. 8, T. 34 N., R. 10 W., at Ross Highway bridge, 3 miles east of Big Piney and 14¾ miles upstream from Spring Creek.
Drainage area.--560 sq mi, approximately.
Gage.--Nonrecording. Datum of gage is 800.99 ft above mean sea level, datum of 1929.
Stage-discharge relation.--Defined by current-meter measurements below 19,000 cfs; shifts in relation occur.
Flood stage.--9 ft.
Remarks.--Base for partial-duration series, 6,800 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	Apr. 17, 1922	10.00	7,300
	Apr. 28, 1922	10.26	7,630
1923	May 16, 1923	10.10	7,410
1924	Sept.20, 1924	6.65	3,700
1925	Dec. 20, 1924	12.00	9,650
1926	Oct. 17, 1925	8.40	5,900
1927	Apr. 1, 1927	15.50	15,600
	Apr. 14, 1927	14.50	12,700
	May 25, 1927	10.10	7,420
	June 2, 1927	12.00	9,600
	Aug. 15, 1927	14.20	12,300
	Aug. 18, 1927	12.00	9,600
1928	Dec. 14, 1927	14.20	12,300
	Apr. 6, 1928	11.10	8,560
	Apr. 22, 1928	11.10	8,560
	June 9, 1928	17.00	20,200
1929	Mar. 16, 1929	10.05	7,300
	Apr. 10, 1929	10.50	7,880
	May 6, 1929	10.66	8,100
	May 13, 1929	10.30	7,640
1930	Nov. 1, 1929	12.20	9,840
	Jan. 14, 1930	12.10	9,720
1931	Nov. 21, 1930	7.93	5,100
1932	Jan. 17, 1932	7.70	4,770
1933	Dec. 25, 1932	10.50	7,880
	Apr. 16, 1933	14.60	13,300
	May 14, 1933	17.50	21,800
1934	Mar. 28, 1934	4.05	1,240
	Sept.16, 1934	4.10	1,240
1935	Mar. 11, 1935	19.62	28,800
	June 3, 1935	13.30	11,200
	June 16, 1935	11.22	8,550
1936	Nov. 10, 1935	8.91	5,780
1937	Jan. 15, 1937	12.83	10,600
	Jan. 31, 1937	10.22	7,340
	May 3, 1937	12.24	9,800
1938	Feb. 18, 1938	14.73	13,000
	May 8, 1938	12.33	9,920
	May 24, 1938	14.65	12,900
1939	Nov. 8, 1938	11.15	8,550
	Feb. 20, 1939	11.53	8,920
	Apr. 17, 1939	12.40	10,000
1940	Apr. 12, 1940	10.10	7,220
1941	Apr. 17, 1941	13.74	11,300
	Apr. 19, 1941	12.64	9,280
1942	Apr. 9, 1942	11.00	6,690
1943	Dec. 27, 1942	20.7	32,700
	May 11, 1943	18.30	24,400
	May 19, 1943	15.80	16,500
	June 24, 1943	12.60	9,280
1944	Feb. 29, 1944	9.0	4,660
1945	Feb. 22, 1945	16.81	19,600
	Feb. 27, 1945	11.60	7,600
	Mar. 7, 1945	14.60	13,300
	Mar. 20, 1945	11.80	7,920
	Mar. 31, 1945	13.00	10,000
	Apr. 3, 1945	12.25	8,590
	Apr. 15, 1945	19.08	27,000
	June 18, 1945	16.00	17,100
1946	Feb. 14, 1946	17.75	21,800
	Mar. 7, 1946	11.20	6,990
	May 17, 1946	13.10	10,200
	May 25, 1946	19.53	27,500
	Aug. 14, 1946	15.40	15,200
1947	Nov. 10, 1946	19.00	25,700
	Apr. 26, 1947	16.80	18,800
1948	Jan. 2, 1948	15.0	14,200
	June 19, 1948	15.08	14,500
	June 28, 1948	14.2	12,400
1949	Jan. 19, 1949	12.65	9,280
	Jan. 25, 1949	15.0	14,200
	Jan. 28, 1949	12.1	8,420
	Feb. 15, 1949	15.6	15,700
	July 8, 1949	16.70	18,600
1950	Oct. 21, 1949	11.6	7,600
	Jan. 4, 1950	18.5	24,000
	Jan. 14, 1950	15.5	15,400
	Feb. 13, 1950	11.2	6,990
	Apr. 3, 1950	11.5	7,290
	May 11, 1950	18.6	24,300
	June 10. 1950	12.0	8,250
1951	Feb. 19, 1951	13.0	10,000
	July 1, 1951	17.00	19,400
	July 10, 1951	13.0	10,000
1952	Mar. 11, 1952	12.4	8,930
	Apr. 13, 1952	12.5	9,100

Gasconade River basin

(60) Little Piney Creek at Newburg, Mo.

Location.--Lat 37°54'40", long 91°54'10", in SE¼ sec. 22, T. 37 N., R. 9 W., at bridge on State Highways P and T at Newburg, 2 miles upstream from Mill Creek.

Drainage area.--200 sq mi, approximately.

Gage.--Nonrecording. Prior to Oct. 1, 1951, at datum 3.00 ft higher. Datum of present gage is 693.40 ft above mean sea level, datum of 1929. Gage heights given herein converted to present datum.

Stage-discharge relation.--Defined by current-meter and indirect measurements; shifts in relation occur.

Flood stage.--10 ft.

Remarks.--Base for partial-duration series, 4,900 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	Aug. 20, 1915	16.7	[a] 30,000	1943	Oct. 20, 1942	9.50	6,070
					Dec. 27, 1942	11.30	10,800
1929	May 6, 1929	10.22	8,860		May 18, 1943	9.40	5,870
1930	Feb. 25, 1930	9.26	6,700	1944	Feb. 28, 1944	5.94	1,320
1931	May 19, 1931	6.14	1,110	1945	Apr. 2, 1945	11.50	11,500
					Apr. 14, 1945	13.20	19,200
1932	Dec. 31, 1931	6.38	1,390		June 8, 1945	15.00	26,000
1933	May 13, 1933	10.58	7,840	1946	Aug. 14, 1946	16.20	32,500
1934	Sept.13, 1934	9.98	6,700	1947	Apr. 24, 1947	11.23	11,800
1935	Mar. 11, 1935	11.54	10,100	1948	Oct. 31, 1947	5.82	1,660
	June 16, 1935	9.98	6,520				
	June 21, 1935	12.40	13,100	1949	Feb. 15, 1949	9.00	7,030
	June 26, 1935	16.26	28,000				
				1950	Oct. 6, 1949	9.20	7,390
1936	June 7, 1936	9.12	4,660		Oct. 11, 1949	11.60	13,100
					Oct. 21, 1949	11.00	11,300
1937	July 19, 1937	14.35	20,500		Jan. 3, 1950	12.00	14,400
					Jan. 13, 1950	8.60	6,350
1938	May 23, 1938	10.04	6,050		May 10, 1950	8.00	5,330
					May 19, 1950	8.00	5,330
1939	Apr. 16, 1939	13.00	15,200		June 10, 1950	13.60	20,300
1940	Apr. 17, 1940	7.05	2,540	1951	June 30, 1951	12.00	14,400
					July 10, 1951	10.00	8,950
1941	Apr. 19, 1941	12.50	15,000		July 13, 1951	8.00	5,330
1942	June 25, 1942	8.81	4,820	1952	Mar. 11, 1952	6.30	2,680

[a] Annual peak only.

(61) Gasconade River at Jerome, Mo.
[Published as "near Arlington" prior to 1923]

Location.--Lat 37°55'35", long. 91°58'40", in SE¼ sec. 13, T. 37 N., R. 10 W., 0.5 mile downstream from Little Piney Creek.

Drainage area.--2,840 sq mi, approximately.

Gage.--Nonrecording gage Apr. 11, 1903, to July 21, 1906, and Jan 3, 1923, to Jan. 17, 1939; recording gage thereafter. Prior to July 26, 1904, at site 4,000 ft downstream from present gage at different datum; July 26, 1904, to July 21, 1906, at site 2,600 ft upstream from and at datum about 0.85 ft higher than present gage; Jan. 3, 1923, to Sept. 29, 1928, at site 400 ft downstream from and at datum 0.14 ft lower than present gage; datum of present gage is 657.64 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Flood stage.--15 ft.

Remarks.--Base for partial-duration series, 16,000 cfs.

(61) Gasconade River at Jerome, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1897	Jan. 6, 1897	29.0	[a] 120,000
1904	Jan. 23, 1904	11.5	16,400
	Mar. 26, 1904	16.5	29,900
	Apr. 26, 1904	18.0	33,900
	June 26, 1904	14.5	24,500
1905	Mar. 9, 1905	13.5	24,200
	July 23, 1905	20.3	45,000
	July 30, 1905	19.1	41,100
	Sept.19, 1905	16.5	32,900
1915	Aug.20,22,1915	28.6	[a] 114,000
1923	Mar. 17, 1923	10.30	15,500
1924	May 29, 1924	15.80	30,400
	Aug. 12, 1924	11.85	19,400
1925	Dec. 20, 1924	18.20	38,600
	Sept.29, 1925	12.75	22,000
1926	Nov. 8, 1925	9.80	13,900
1927	Mar. 22, 1927	12.55	21,300
	Apr. 2, 1927	21.06	45,500
	Apr. 15, 1927	19.0	39,300
	Apr. 21, 1927	15.26	28,700
	May 26, 1927	15.45	29,000
	June 3, 1927	19.85	41,600
	June 22, 1927	11.75	19,200
	Aug. 11, 1927	13.6	24,000
	Aug. 16, 1927	17.9	36,100
	Aug. 19, 1927	16.2	31,300
1928	Nov. 16, 1927	11.4	18,100
	Dec. 15, 1927	13.89	24,800
	Apr. 7, 1928	20.0	42,200
	Apr. 23, 1928	15.7	29,900
	May 24, 1928	11.59	18,600
	June 10, 1928	23.25	61,100
	June 20, 1928	12.65	21,300
1929	Mar. 16, 1929	11.00	17,000
	Apr. 11, 1929	14.20	25,700
	May 7, 1929	16.60	32,700
	May 24, 1929	13.45	23,500
1930	Jan. 15, 1930	15.52	29,300
1931	May 20, 1931	6.80	7,500
1932	Jan. 24, 1932	8.50	11,100
1933	Apr. 17, 1933	16.80	31,700
	May 16, 1933	23.40	62,600
1934	Sept.13, 1934	7.28	8,530
1935	Mar. 13, 1935	25.80	76,800
	June 4, 1935	15.70	28,400
	June 21, 1935	20.60	46,900
	June 26, 1935	23.50	62,600
1936	Nov. 11, 1935	7.30	8,480
1937	Jan. 16, 1937	13.96	23,900
	Feb. 2, 1937	11.16	17,000
	May 3, 1937	15.10	27,000
1938	Feb. 19, 1938	18.70	37,900
	May 10, 1938	12.65	19,900
	May 24, 1938	16.2	29,300
1939	Apr. 16, 1939	13.67	22,600
	Apr. 18, 1939	16.19	29,300
1940	Mar. 13, 1940	10.44	14,500
1941	Apr. 21, 1941	22.64	54,600
1942	Nov. 2, 1941	13.35	20,700
	Apr. 11, 1942	13.03	20,000
	June 13, 1942	12.84	19,500
	June 20, 1942	17.4	31,600
1943	Dec. 28, 1942	25.63	74,000
	May 12, 1943	20.57	43,700
	May 21, 1943	24.7	67,800
	June 23, 1943	13.9	22,200
	June 25, 1943	11.76	17,200
1944	Mar. 1, 1944	9.57	12,500
1945	Feb. 23, 1945	15.91	27,400
	Mar. 7, 1945	17.20	31,300
	Mar. 21, 1945	14.35	23,500
	Apr. 3, 1945	17.77	33,300
	Apr. 15, 1945	27.7	101,000
	June 8, 1945	20.01	41,300
	June 19, 1945	14.67	24,200
1946	Feb. 15, 1946	18.06	34,300
	May 26, 1946	17.75	33,300
	Aug. 14, 1946	26.55	87,500
1947	Nov. 11, 1946	16.9	30,400
	Apr. 27, 1947	23.53	60,000
1948	June 20, 1948	16.50	29,200
	June 29, 1948	12.95	20,000
1949	Jan. 26, 1949	13.0	20,000
	Jan. 29, 1949	13.4	21,000
	Feb. 16, 1949	17.3	31,700
	June 3, 1949	13.6	21,500
	June 9, 1949	13.6	21,500
	July 9, 1949	13.9	22,200
1950	Oct. 6, 1949	13.4	21,000
	Oct. 12, 1949	17.3	31,700
	Oct. 24, 1949	18.88	37,100
	Jan. 5, 1950	21.03	45,600
	Jan. 15, 1950	16.73	29,800
	May 13, 1950	21.6	48,700
	May 21, 1950	12.24	18,100
	June 10, 1950	19.14	37,900
1951	Feb. 21, 1951	14.25	23,000
	Mar. 13, 1951	11.78	17,200
	May 21, 1951	12.39	18,600
	June 29, 1951	11.55	16,800
	July 2, 1951	20.08	41,700
	July 6, 1951	12.08	17,900
	July 11, 1951	14.90	24,700
	July 14, 1951	13.70	21,700
1952	Nov. 14, 1951	13.08	20,300
	Nov. 17, 1951	12.42	18,600
	Feb. 4, 1952	11.80	17,200
	Mar. 12, 1952	12.45	18,600
	Apr. 14, 1952	13.00	20,000

[a] Annual peak only. Gage heights converted to present datum.

Gasconade River basin

(62) Gasconade River near Rich Fountain, Mo.

Location.--Lat 38°23'20", long 91°49'15", in SE¼ sec. 16, T. 42 N., R. 8 W., at bridge on State Highway 89, 800 ft upstream from Swan Creek and 4 miles east of Rich Fountain.
Drainage area.--3,180 sq mi, approximately.
Gage.--Nonrecording gage prior to Mar. 10, 1934, and recording gage thereafter. Datum of gage is 553.70 ft above mean sea level, datum of 1929.
Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur.
Flood stage.--20 ft.
Remarks.--Base for partial-duration series, 18,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	Apr. 2, 1922	16.70	27,300
	Apr. 19, 1922	13.70	20,700
	Apr. 29, 1922	14.40	22,300
1923	Mar. 17, 1923	11.20	15,200
1924	May 30, 1924	17.20	27,700
1925	Dec. 21, 1924	18.00	29,600
	Sept.30, 1925	13.22	18,900
1926	Nov. 9, 1925	10.48	13,500
1927	Mar. 23, 1927	14.10	20,900
	Apr. 3, 1927	21.63	41,000
	Apr. 9, 1927	13.14	18,700
	Apr. 17, 1927	20.38	37,400
	Apr. 21, 1927	15.48	24,000
	May 26, 1927	16.13	25,300
	June 3, 1927	20.78	38,600
	Aug. 12, 1927	15.40	23,800
	Aug. 17, 1927	17.75	29,800
	Aug. 20, 1927	16.70	26,800
1928	Dec. 16, 1927	14.55	21,700
	Apr. 8, 1928	19.95	36,000
	Apr. 25, 1928	15.90	24,800
	May 25, 1928	12.86	18,200
	June 11, 1928	22.83	51,000
	June 20, 1928	14.30	21,100
1929	Apr. 12, 1929	15.65	24,000
	May 9, 1929	17.15	27,900
	May 15, 1929	14.70	21,900
	May 18, 1929	13.40	19,200
1930	Jan. 16, 1930	16.30	25,700
1931	May 20, 1931	9.60	11,900
1932	Jan. 25, 1932	9.55	11,900
1933	Apr. 18, 1933	17.21	27,900
	May 17, 1933	24.05	60,600
	May 24, 1933	13.80	20,000
1934	Sept.12, 1934	12.67	17,700
1935	Mar. 14, 1935	26.85	86,000
	June 5, 1935	16.85	26,900
	June 22, 1935	21.74	43,800
	June 27, 1935	21.38	42,200
1936	Nov. 12, 1935	7.92	7,890
1937	Jan. 17, 1937	14.86	22,400
	May 4, 1937	16.61	26,400
	June 9, 1937	18.17	30,600
1938	Feb. 20, 1938	19.00	32,400
	May 11, 1938	13.73	18,300
	May 25, 1938	16.76	25,900
	June 11, 1938	16.13	24,100
1939	Apr. 19, 1939	17.38	27,300
1940	Mar. 13, 1940	11.70	14,000
1941	Apr. 22, 1941	22.80	51,000
1942	Oct. 5, 1941	14.40	19,900
	Nov. 3, 1941	14.60	20,300
	Apr. 12, 1942	14.50	20,100
	June 14, 1942	14.45	19,900
	June 21, 1942	19.10	32,700
1943	Dec. 29, 1942	25.60	74,500
	May 13, 1943	20.60	38,500
	May 22, 1943	25.30	71,700
	June 8, 1943	14.70	20,600
	June 23, 1943	14.80	20,800
1944	Mar. 2, 1944	10.69	12,600
1945	Feb. 24, 1945	16.04	23,800
	Mar. 6, 1945	17.31	27,300
	Mar. 9, 1945	18.34	30,200
	Mar. 22, 1945	15.76	23,300
	Apr. 3, 1945	19.88	35,600
	Apr. 16, 1945	29.13	96,400
	June 9, 1945	20.58	38,500
1946	Feb. 16, 1946	18.21	29,900
	May 27, 1946	17.18	27,000
	Aug. 16, 1946	25.18	67,400
1947	Nov. 12, 1946	16.93	26,200
	Apr. 28, 1947	24.10	59,700
1948	June 23, 1948	16.64	25,400
	June 30, 1948	14.23	19,500
1948	Jan. 27, 1949	14.95	21,300
	Jan. 30, 1949	14.6	20,400
	Feb. 18, 1949	17.4	27,600
	June 4, 1949	15.6	22,800
	June 10, 1949	14.16	19,500
	July 10, 1949	14.5	20,200
1950	Oct. 7, 1949	13.5	18,000
	Oct. 13, 1949	18.6	31,100
	Oct. 25, 1949	19.5	35,000
	Jan. 7, 1950	20.9	40,400
	Jan. 16, 1950	17.7	29,100
	May 14, 1950	22.09	46,400
	May 20, 1950	14.8	21,400
	June 11, 1950	19.3	34,300
1951	Feb. 22, 1951	15.30	22,600
	May 22, 1951	15.0	21,900
	July 3, 1951	20.50	38,700
	July 7, 1951	13.48	18,600
	July 12, 1951	16.85	26,600
1952	Nov. 14, 1951	14.28	20,300
	Mar. 13, 1952	13.80	19,500
	Apr. 15, 1952	13.80	19,500

Missouri River main stem

(63) Missouri River at Hermann, Mo.

Location.--Lat 38°42'36", long 91°26'21", SW¼ sec. 25, T. 46 N., R. 5 W., at bridge on State Highway 19 at Hermann and at mile 96.9.

Drainage area.--528,200 sq mi.

Gage.--Nonrecording gage Aug. 1, 1928, to Mar. 27, 1932, and June 13, 1945, to Apr. 2, 1946. Recording gage Mar. 28, 1932, to June 12, 1945, and since Apr. 3, 1946. Datum of gage is 481.40 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Continually shifting, must be defined by frequent current-meter measurements.

Flood stage.--21 ft.

Remarks.--Drainage basin above station contains many reservoirs with total usable capacity in excess of 28,875,000 acre-ft. Only annual peaks are shown.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1844	June 1844	35.5	[a]892,000	1940	June 12, 1940	14.03	111,000
1903	June 6,7,1903	29.5	[a]676,000	1941	Apr. 20, 1941	23.66	256,000
1929	June 8, 1929	24.6	407,000	1942	June 28, 1942	29.62	435,000
1930	Feb. 7, 1930	[b]16.8	--	1943	May 21, 1943	31.20	550,000
	June 19, 1930	15.0	164,000	1944	Apr. 28, 1944	30.90	577,000
1931	May 20, 1931	13.5	123,000	1945	Apr. 20, 1945	27.74	398,000
1932	Nov. 29, 1931	20.9	269,000	1946	Aug. 15, 1946	20.3	209,000
1933	May 14, 1933	19.4	183,000	1947	June 29, 1947	31.20	487,000
1934	Mar. 10, 1934	11.28	85,000	1948	June 25, 1948	25.2	333,000
1935	June 7, 1935	29.15	473,000	1949	June 5, 1949	22.8	239,000
1936	Feb. 27, 1936	15.85	145,000	1950	Aug. 17, 1950	[c]23.10	265,000
1937	June 10, 1937	19.85	194,000	1951	July 19, 1951	33.33	618,000
1938	May 25, 1938	21.80	231,000	1952	Apr. 28, 1952	27.10	368,000
1939	Apr. 18, 1939	22.75	247,000				

[a]Computed by Corps of Engineers.
[b]Backwater from ice.
[c]Occurred July 21-23, 1950.

Mississippi River main stem

(64) Mississippi River at St. Louis, Mo.

Location.--Lat 38°37'44", long 90°10'54", at foot of Washington Avenue, just downstream from west pier of Eads Bridge in St. Louis, 15.0 miles downstream from Missouri River, and 180.0 miles upstream from Ohio River.
Drainage area.--701,000 sq mi, approximately.
Gage.--Nonrecording Corps of Engineers gages prior to May 5, 1934; recording gage thereafter. Prior to 1934 at site 0.4 mile downstream at present datum. Datum of gage is 379.94 ft above mean sea level, datum of 1929, and 379.80 ft above mean gulf level.
Stage-discharge relation.--Continually shifting, must be defined by frequent current-meter measurements.
Flood stage.--30 ft.
Historical data.--Flood of April 1785 may have reached a stage of 42.0 ft.
Remarks.--Records prior to January 1928 furnished by Corps of Engineers; January 1928 to March 1933 furnished by Mississippi River Commission. Natural flow of stream affected by many reservoirs and navigation dams in upper Mississippi River basin and by many reservoirs and diversions for irrigation in Missouri River basin. Discharges prior to the 1933 water year are maximum daily discharges.

Mississippi River main stem

(64) Mississippi River at St. Louis, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1844	June 27, 1844	41.32	[a]1,300,000	1896	May 26,28,1896	27.70	507,000
1861	May 15, 1861	25.47	466,000	1897	May 2, 1897	30.9	645,400
1862	Apr. 26, 1862	31.45	712,200	1898	May 23, 1898	27.20	487,000
1863	Mar.4,9, 1863	18.02	252,000	1899	Apr. 27, 1899	25.68	432,400
1864	May 14, 1864	20.33	309,500	1900	Mar. 16, 1900	23.53	366,500
1865	July 28, 1865	26.81	512,800	1901	Apr. 18, 1901	22.58	343,400
1866	Apr. 25, 1866	26.77	512,800	1902	July 26, 1902	26.89	475,300
1867	May 1, 1867	28.21	568,400	1903	June 10,11,1903	[b]38.00	1,019,000
1868	May 14,15,1868	24.19	420,800	1904	Apr. 29, 1904	33.60	777,600
1869	July 24, 1869	29.31	615,200	1905	Sept.21, 1905	30.20	613,200
1870	Apr. 16, 1870	26.21	491,200	1906	Apr. 15, 1906	26.20	449,400
1871	Mar. 17, 1871	21.82	347,800	1907	July 25,26,1907	28.00	[a]519,000
1872	June 12,14,1872	23.00	383,000	1908	June 20, 1908	34.95	850,000
1873	Apr. 11, 1873	25.45	462,400	1909	July 15,16,1909	35.25	[a]860,600
1874	June 19,20,1874	18.40	261,200	1910	Jan. 13, 1910	25.2	416,400
1875	Aug. 3, 1875	29.80	637,200	1911	Feb. 23, 1911	19.90	283,000
1876	May 10,12, 1876	[b]32.00	741,000	1912	Apr.5,6, 1912	30.80	640,800
1877	June 14, 1877 July 4, 1877	[c]26,60	505,600	1913	Apr.16,17,1913	27.20	487,000
1878	June 15, 1878	25.75	476,800	1914	June 21, 1914	20.40	293,800
1879	July 3, 1879	21.15	332,200	1915	June 24, 1915	31.60	678,200
1880	July 12, 1880	25.50	466,000	1916	Jan. 31, Feb. 1, 1916	31.40	676,100
1881	May 5,6, 1881	[b]33.65	822,000	1917	June 14, 1917	32.90	743,400
1882	July 5, 1882	32.39	739,200	1918	June 12, 1918	20.80	324,100
1883	June 25,26,1883	[b]34.80	862,800	1919	May 11, 1919	26.90	514,700
1884	Apr. 9,10, 1884	28.10	543,600	1920	Apr. 24, May 22, 1920	28.0	554,000
1885	June 17, 1885	27.10	503,500	1921	May 14, 1921	23.0	397,000
1886	May 13, 1886	27.00	499,500	1922	Apr. 20, 1922	33.95	785,900
1887	Apr. 3, 1887	20.65	307,600	1923	June 17, 1923	20.7	341,200
1888	June 4, 1888	29.38	598,600	1924	July 2,3,1924	26.3	494,900
1889	June 1, 1889	24.62	416,200	1925	June 25, 1925	19.9	325,800
1890	July 1, 1890	20.60	307,600	1926	Sept.29, 1926	24.5	438,000
1891	July 4, 1891	23.7	388,300	1927	Apr. 26, 1927	36.1	889,300
1892	May 19, 1892	36.0	926,500	1928	June 22, 1928	27.6	552,000
1893	May 3, 1893	31.60	700,000	1929	Apr. 25, 1929	[b]34.6	739,000
1894	May 11, 1894	23.4	379,600	1930	June 21, 1930	19.6	310,000
1895	July 8, 1895	17.0	229,000				

Mississippi River main stem

(64) Mississippi River at St. Louis, Mo.--Continued

Annual peak stages and discharges--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1931	June 15, 1931	13.3	200,000	1942	June 30, 1942	34.48	666,000
1932	Dec. 1, 1931	22.11	356,000	1943	May 24, 1943	38.94	840,000
1933	May 17, 1933	27.0	434,000	1944	Apr. 30, 1944	39.14	844,000
1934	Apr. 24, 1934	9.0	136,000	1945	Apr.21-23,1945	[d]35.30	610,000
1935	June 7, 1935	[b]33.52	649,000	1946	Jan. 13, 1946	28.00	502,000
1936	Mar. 1, 1936	21.18	336,000	1947	July 1,2,1947	40.26	783,000
1937	May 5, 1937	23.76	374,000	1948	Mar. 27, 1948	34.63	633,000
1938	May 27, 1938	26.57	434,000	1949	Mar. 11, 1949	24.41	425,000
1939	Apr. 20, 1939	30.13	529,000	1950	May 14, 1950	27.02	466,000
1940	June 14, 1940	13.37	188,000	1951	July 21, 1951	[b]40.28	782,000
1941	Apr. 22, 1941	26.15	451,000	1952	Apr. 29,30,1952	[b]33.83	684,000

[a] Computed by Corps of Engineers.
[b] Occurred at different time than peak discharge.
[c] Occurred on June 14, 1877.
[d] Occurred on June 13, 1945.

Meramec River basin

(65) Meramec River near Steelville, Mo.

Location.--Lat 37°59'55", long 91°21'40", in NE¼ sec. 21, T. 38 N., R. 4 W., at St. Louis-San Francisco Railway bridge, 400 ft upstream from county highway bridge, 0.8 mile upstream from Whittenburg Creek, and 1½ miles north of Steelville.

Drainage area.--781 sq mi.

Gage.--Nonrecording gage Oct. 1, 1916, to May 23, 1934; recording gage thereafter. Prior to Dec. 21, 1922, at site 1 mile upstream from and at datum 5.8 ft higher than present gage; datum of present gage is 681.58 ft above mean sea level, datum of 1929. Peak gage heights for period prior to Dec. 21, 1922, computed from plotted U. S. Weather Bureau readings at site 1 mile upstream, transferred to present site by comparative gage readings.

Stage-discharge relation.--Defined by current-meter measurements below 46,000 cfs; shifts in relation occur.

Flood stage.--25 ft.

Remarks.--Base for partial-duration series, 9,200 cfs.

Meramec River basin

(65) Meramec River near Steelville, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	Aug. 20, 1915	26.5	[a]60,000	1935	Mar. 12, 1935	19.53	31,500
					June 21, 1935	20.31	34,600
1917	Apr. 8, 1917	6.65	5,180		June 26, 1935	23.39	47,800
1918	Apr. 25, 1918	18.7	33,400	1936	Nov. 11, 1935	9.96	8,160
	Apr. 28, 1918	10.7	9,480				
	May 12, 1918	16.3	24,600	1937	May 3, 1937	14.15	14,900
1919	June 4, 1919	10.9	9,790	1938	Feb. 18, 1938	13.84	14,100
					May 24, 1938	14.14	14,700
1920	Oct. 27, 1919	24.1	55,000				
	Nov. 1, 1919	11.5	10,700	1939	Mar. 11, 1939	10.94	9,500
	Mar. 26, 1920	15.9	23,200		Apr. 17, 1939	17.67	25,100
	May 13, 1920	12.1	12,000				
	May 20, 1920	11.0	9,790	1940	May 2, 1940	10.53	8,900
	Sept.11, 1920	12.5	12,900				
				1941	Apr. 20, 1941	16.92	22,600
1921	Mar. 28, 1921	16.7	26,000				
	Apr. 23, 1921	11.8	11,300	1942	June 14, 1942	14.28	15,800
	Apr. 26, 1921	15.6	22,200		June 21, 1942	13.04	13,000
					June 26, 1942	11.19	9,970
1922	Nov. 19, 1921	14.4	18,300				
	Mar. 15, 1922	12.5	12,900	1943	Dec. 28, 1942	22.00	36,100
	Mar. 31, 1922	15.4	21,600		May 12, 1943	14.64	14,500
	Apr. 17, 1922	17.5	29,000		May 20, 1943	17.56	21,500
	Apr. 28, 1922	12.4	12,700				
				1944	May 10, 1944	10.02	7,190
1923	June 16, 1923	12.26	11,800				
				1945	Mar. 3, 1945	13.23	11,900
1924	May 29, 1924	12.43	11,900		Mar. 7, 1945	15.47	16,500
	Aug. 12, 1924	12.40	11,900		Mar. 31, 1945	14.70	14,800
					Apr. 3, 1945	13.47	12,500
1925	Dec. 19, 1924	10.00	9,120		Apr. 15, 1945	21.96	36,200
					May 30, 1945	12.08	10,000
1926	Nov. 8, 1925	8.50	7,270		June 9, 1945	24.30	47,000
1927	Apr. 1, 1927	19.40	36,000	1946	Feb. 14, 1946	17.10	20,300
	Apr. 8, 1927	12.20	12,100		Aug. 15, 1946	16.77	19,500
	Apr. 15, 1927	13.25	14,800				
	May 25, 1927	18.95	34,400	1947	Nov. 11, 1946	14.38	14,200
	June 2, 1927	18.80	33,600		Apr. 25, 1947	20.35	30,100
	June 4, 1927	13.01	14,200				
				1948	July 7, 1948	12.47	10,700
1928	Dec. 14, 1927	10.96	9,900				
	Apr. 6, 1928	15.97	23,600	1949	Jan. 19, 1949	13.01	11,600
	June 10, 1928	17.90	30,300		Feb. 16, 1949	16.68	19,300
1929	May 7, 1929	14.25	17,600	1950	Oct. 7, 1949	13.74	12,900
					Oct. 12, 1949	13.21	11,900
1930	Jan. 15, 1930	14.34	18,000		Oct. 22, 1949	15.17	15,800
	Feb. 26, 1930	13.60	15,900		Jan. 4, 1950	18.74	24,900
					Jan. 14, 1950	14.48	14,600
1931	June 10, 1931	3.53	1,930		May 11, 1950	15.90	17,700
1932	Jan. 23, 1932	4.00	2,460	1951	Feb. 19, 1951	13.59	12,700
					July 1, 1951	15.57	17,000
1933	Apr. 16, 1933	15.60	18,000		July 11, 1951	13.46	12,500
	May 14, 1933	17.50	23,800		July 14, 1951	20.43	30,100
1934	Sept.14, 1934	14.34	15,100	1952	Apr. 13, 1952	11.59	9,210

[a] Annual peak only.

Meramec River basin

(66) Meramec River near Sullivan, Mo.

Location.--Lat 38°09'30", long 91°06'30", in SE¼NE¼ sec. 35, T. 40 N., R. 2 W., at Sappington Bridge, 3 3/4 miles downstream from Brazil Creek and 4 miles southwest of Sullivan.

Drainage area.--1,475 sq mi.

Gage.--Nonrecording. Datum of gage is 581.82 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements below 71,000 cfs; shifts in relation occur.

Flood-stage.--11 ft.

Remarks.--Base for partial-duration series 10,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	August 1915	33.5	[a] 90,000	1931	Apr. 27, 1931	5.56	2,300
1922	Nov. 19, 1921	16.05	16,500	1932	Nov. 20, 1931	7.75	3,800
	Mar. 16, 1922	14.20	12,600				
	Mar. 31, 1922	16.60	18,000	1933	Apr. 16, 1933	19.60	25,900
	Apr. 17, 1922	16.80	18,400		May 14, 1933	22.00	32,700
	Apr. 29, 1922	13.90	12,000				
				1944	May 4, 1944	17.0	19,000
1923	Mar. 13, 1923	14.00	12,200				
	Mar. 16, 1923	14.15	12,600	1945	Mar. 3, 1945	15.80	16,000
	May 17, 1923	13.80	11,800		Mar. 7, 1945	18.35	22,600
	June 17, 1923	13.90	12,000		Mar. 31, 1945	21.30	30,700
					Apr. 3, 1945	17.40	20,000
1924	Apr. 9, 1924	17.25	19,400		Apr. 15, 1945	26.15	45,000
	May 30, 1924	17.10	19,200		Apr. 30, 1945	14.28	12,800
					June 9, 1945	32.00	77,300
1925	Dec. 20, 1924	16.00	16,500				
				1946	Feb. 14, 1946	19.08	23,900
1926	Nov. 8, 1925	14.60	13,400		Aug. 16, 1946	16.40	17,500
1927	Mar. 20, 1927	13.70	11,600	1947	Nov. 10, 1946	16.00	16,500
	Apr. 2, 1927	22.80	35,000		Apr. 26, 1947	24.80	40,500
	Apr. 9, 1927	15.30	14,900				
	Apr. 16, 1927	18.80	23,700	1948	Jan. 2, 1948	14.60	13,200
	May 26, 1927	21.90	32,400		July 8, 1948	13.00	10,100
	June 2, 1927	22.89	35,300				
	June 5, 1927	14.60	13,400	1949	Jan. 19, 1949	15.60	15,300
					Jan. 25, 1949	15.30	14,700
1928	Nov. 8, 1927	15.20	14,700		Jan. 28, 1949	13.80	11,600
	Dec. 1, 1927	14.70	13,600		Feb. 15, 1949	20.30	27,000
	Dec. 14, 1927	17.30	19,700		Mar. 19, 1949	13.30	10,600
	Apr. 6, 1928	19.80	26,400				
	Apr. 23, 1928	13.20	10,600	1950	Oct. 7, 1949	15.05	14,000
	June 11, 1928	20.30	27,800		Oct. 13, 1949	14.40	12,800
	June 14, 1928	14.30	12,800		Oct. 23, 1949	16.54	17,400
	June 21, 1928	13.80	11,800		Dec. 22, 1949	13.63	11,200
	June 29, 1928	13.60	11,400		Jan. 4, 1950	25.50	42,800
					Jan. 14, 1950	17.05	18,600
1929	Apr. 10, 1929	16.50	17,700		May 11, 1950	18.64	22,600
	May 3, 1929	13.80	11,800				
	May 7, 1929	18.20	22,000	1951	Feb. 19, 1951	17.22	19,100
	May 15, 1929	15.20	14,700		Mar. 12, 1951	13.94	11,800
					July 2, 1951	16.73	17,900
1930	Jan. 14, 1930	18.20	22,000		July 14, 1952	21.30	29,800
	Feb. 27, 1930	16.70	18,200				
	Mar. 8, 1930	15.20	14,700	1952	Apr. 5, 1952	13.90	11,800
					Apr. 13, 1952	15.00	14,000

[a] Annual peak only.

Meramec River basin

(67) Bourbeuse River near Spring Bluff, Mo.

Location.--Lat 38°18'40", long 19°16'45", in NE¼ sec. 8, T. 41 N., R. 3 W., at county highway bridge, 1 mile downstream from Boone Creek, 3.5 miles northwest of Spring Bluff, and 9.5 miles northwest of Sullivan.

Drainage area.--608 sq mi.

Gage.--Nonrecording. Datum of gage is 626.34 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements below 31,000 cfs.

Flood stage.--27.5 ft.

Remarks.--Station operated to obtain flows above 1,000 cfs only. Base for partial-duration series 10,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	August 1915	35.7	[a]60,000	1949	Feb. 16, 1949	21.91	11,100
1944	Apr. 11, 1944	21.3	10,200	1950	Oct. 7, 1949	24.8	15,800
	Apr. 23, 1944	21.4	10,400		Oct. 12, 1949	30.34	28,600
	May 10, 1944	23.63	13,700		Oct. 21, 1949	23.05	12,900
					Jan. 4, 1950	28.0	22,000
1945	Mar. 3, 1945	23.6	13,700		Jan. 14, 1950	23.3	13,200
	Mar. 7, 1945	22.1	11,300		Apr. 5, 1950	22.55	12,100
	Mar. 31, 1945	25.1	16,400		May 11, 1950	22.3	11,600
	Apr. 3, 1945	24.9	16,000		May 20, 1950	25.65	17,300
	Apr. 15, 1945	22.5	11,900		May 27, 1950	21.28	10,200
	June 9, 1945	31.0	31,500				
				1951	Mar. 12, 1951	22.57	12,100
1946	Feb. 14, 1946	22.87	12,500		July 14, 1951	29.49	25,800
					Aug. 28, 1951	22.98	12,700
1947	Apr. 26, 1947	31.40	33,300				
				1952	Apr. 5, 1952	20.48	9,200
1948	Jan. 2, 1948	21.91	11,100				
	July 20, 1948	22.16	11,500				
	July 26, 1948	24.35	15,100				

[a] Annual peak only.

(68) Bourbeuse River at Union, Mo.

Location.--Lat 38°26'45", long 90°59'30", in SW¼ sec. 26, T. 43 N., R. 1 W., at bridge on U. S. Highway 50, 800 ft upstream from Flat Creek, half a mile east of Union, and 7 miles upstream from Birch Creek.

Drainage area.--808 sq mi, includes that of Flat Creek.

Gage,--Nonrecording gage prior to June 12, 1944, at various sites nearby; recording gage thereafter. Prior to Oct.1, 1948, at datum 3.00 ft higher than present gage; datum of present gage is 488.58 ft above mean sea level, datum of 1929. Gage heights given herein converted to present datum.

Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur frequently due largely to gravel removal from control. Discharges of the 1897 and 1915 floods determined from extension of rating curve for main channel based on measurements made since 1921 and study of overflow areas in vicinity of gaging station.

Flood stage.--15 ft.

Remarks.--Peaks for period prior to June 7, 1921, computed from plotted U. S. Weather Bureau readings. Base for partial-duration series, 12,000 cfs.

Meramec River basin

(68) Bourbeuse River at Union, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1897	----	27.15	[a]44,500
1915	Aug. 22, 1915	28.5	[a]50,000
1916	February 1916	21.0	[a]21,100
1917	Apr. 30, 1917	14.0	8,840
1918	Apr. 30, 1918	18.7	15,700
1919	Mar. 18, 1919	14.2	9,090
1920	Oct. 30, 1919	22.3	25,100
	Nov. 2, 1919	16.5	12,100
	May 22, 1920	18.7	15,700
1921	Mar. 29, 1921	17.3	13,200
	Apr. 28, 1921	18.1	14,600
1922	Apr. 2, 1922	17.70	14,600
	Apr. 19, 1922	16.94	13,100
1923	Mar. 17, 1923	14.10	8,930
1924	Dec. 15, 1923	16.64	12,600
	May 31, 1924	17.16	13,700
1925	Dec. 21, 1924	15.40	10,700
1926	Nov. 10, 1925	16.14	11,800
1927	Mar. 22, 1927	17.65	13,300
	Apr. 3, 1927	22.10	22,500
1928	Dec. 3, 1927	17.27	12,900
	Apr. 7, 1928	20.00	17,100
1929	Mar. 18, 1929	16.78	12,200
	May 21, 1929	16.90	12,400
1930	Jan. 16, 1930	17.00	12,500
1931	May 21, 1931	12.20	6,650
1932	Jan. 3, 1932	13.80	8,540
1933	May 16, 1933	20.55	18,300
1934	Sept.16, 1934	17.10	12,600
1935	Mar. 13, 1935	17.90	13,800
	June 23, 1935	19.00	15,400
	June 29, 1935	16.60	12,000
1936	Apr. 7, 1936	11.90	6,290
1937	May 5, 1937	17.78	13,600
	June 12, 1937	18.42	14,500
1938	Feb. 20, 1938	17.00	12,800
	June 13, 1938	23.23	28,200
1939	Apr. 19, 1939	16.58	12,200
1940	Feb. 29, 1940	9.45	3,700
1941	Apr. 21, 1941	20.09	18,700
1942	June 23, 1942	17.60	13,700
	June 28, 1942	21.0	21,100
1943	Dec. 29, 1942	22.0	24,100
	May 13, 1943	17.04	12,800
	May 20, 1943	19.60	17,600
1944	May 11, 1944	16.0	11,400
1945	Apr. 2, 1945	17.80	14,700
	Apr. 4, 1945	17.10	13,600
	Apr. 16, 1945	16.20	12,100
	June 10, 1945	23.10	28,500
1946	Feb. 16, 1946	15.46	11,100
1947	Apr. 27, 1947	22.1	25,100
1948	July 28, 1948	14.89	10,500
1949	Feb. 17, 1949	14.82	10,400
1950	Oct. 8, 1949	15.85	12,500
	Oct. 14, 1949	20.05	20,200
	Oct. 23, 1949	15.82	12,500
	Jan. 6, 1950	19.39	18,900
	Jan. 15, 1950	15.62	12,200
	Apr. 6, 1950	15.35	12,000
	May 22, 1950	16.08	12,900
1951	July 15, 1951	19.79	19,800
1952	Apr. 6, 1952	13.20	8,970

[a] Annual peak only.

Meramec River basin

(69) Meramec River At Robertsville, Mo.

Location.--Lat 38°25'40", long 90°49'35", in SW¼NW¼ sec. 32, T. 43 N., R. 2 E., at county highway bridge, 1 mile northwest of Robertsville and 1 3/4 miles upstream from Calvey Creek.

Drainage area.--2,673 sq mi.

Gage.--Recording gage to Sept. 30, 1951 (discontinued). Datum of gage is 448.24 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 97,000 cfs.

Flood stage.--17 ft.

Remarks.--Base for partial-duration series, 20,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	August 1915	[a]36.1	[b]125,000	1946	Feb. 16, 1946	23.22	33,600
1940	May 3 1940	12.49	11,100	1947	Nov. 12, 1946	18.36	21,700
1941	Apr. 22, 1941	25.20	39,400		Apr. 27, 1947	28.95	59,100
1942	June 1, 1942	19.68	24,500	1948	Jan. 3, 1948	16.30	17,700
	June 16, 1942	19.21	23,400	1949	Feb. 17, 1949	22.80	32,400
	June 28, 1942	24.20	34,600	1950	Oct. 14, 1949	20.50	26,400
1943	Dec. 30, 1942	30.12	65,600		Oct. 24, 1949	20.36	26,200
	May 13, 1943	22.70	32,100		Jan. 6, 1950	29.17	60,400
	May 20, 1943	26.50	45,600		Jan. 16, 1950	21.80	29,700
	June 9, 1943	19.20	23,400		Apr. 4, 1950	17.48	20,000
1944	May 11, 1944	17.10	19,200		May 13, 1950	22.68	32,400
1945	Mar. 5, 1945	20.08	25,400	1951	Feb. 21, 1951	21.00	27,600
	Mar. 9, 1945	21.78	29,700		Mar. 14, 1951	18.22	21,300
	Apr. 2, 1945	26.12	43,800		July 3, 1951	18.23	21,300
	Apr. 4, 1945	22.62	31,900		July 16, 1951	26.38	45,200
	Apr. 16, 1945	29.22	60,200				
	June 10, 1945	34.0	102,000				

[a] From floodmarks.
[b] Annual peak only.

(70) Big River at Byrnesville, Mo.

Location.--Lat 38°21'45", long 90°39'05", in SE¼ sec. 12, T. 42 N., R. 3 E., at county highway bridge at Byrnesville, 4 miles upstream from Head Creek.

Drainage area.--917 sq. mi.

Gage.--Nonrecording gage prior to Mar. 9, 1940; recording gage thereafter. Datum of gage is 433,69 ft above mean sea level, datum of 1929. Since Aug. 22, 1945, auxiliary wire-weight gage 4 miles downstream.

Stage-discharge relation.--Defined by current-meter measurements. Occasional backwater from Meramec River; slope used as a factor since 1945. Discharge for flood of Aug. 21, 1915, from slope-area determination.

Flood stage.--16 ft.

Remarks.--Base for partial-duration series, 11,000 cfs.

Meramec River basin

(70) Big River at Byrnesville, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1915	Aug. 21, 1915	30.2	[a]80,000
1923	Mar. 13, 1923	17.30	11,000
	May 17, 1923	17.40	11,100
1924	Apr. 10, 1924	17.10	10,800
1925	Dec. 20, 1924	12.58	6,200
1926	Nov. 9, 1925	18.97	13,100
1927	Apr. 2, 1927	22.63	21,900
	Apr. 16, 1927	19.82	14,800
	May 26, 1927	18.47	12,400
	June 3, 1927	17.98	11,800
1928	Dec. 2, 1927	17.41	11,100
	Dec. 15, 1927	17.60	11,400
	Apr. 7, 1928	17.38	11,100
	June 11, 1928	18.84	12,800
	June 22, 1928	18.65	12,600
	June 30, 1928	17.66	11,500
1929	May 7, 1929	18.62	12,700
	May 15, 1929	20.00	15,200
1930	Jan. 15, 1930	21.00	17,400
1931	Apr. 21, 1931	10.10	3,940
1932	Aug. 13, 1932	13.35	7,000
1933	Apr. 17, 1933	21.57	18,900
	May 15, 1933	21.70	19,200
1934	May 16, 1934	13.70	7,080
1935	Mar. 12, 1935	24.65	28,800
	June 12, 1935	18.62	12,700
	June 22, 1935	20.35	15,800
1936	Nov. 11, 1935	15.97	9,600
1937	Jan. 16, 1937	20.06	17,300
	May 4, 1937	19.00	14,400
1938	Feb. 19, 1938	22.53	24,600
	Mar. 17, 1938	19.05	14,400
	Mar. 31, 1938	19.70	16,200
	May 24, 1938	20.70	19,000
	June 11, 1938	20.15	17,600
1939	Apr. 18, 1939	22.30	24,000
1940	May 2, 1940	14.81	7,540
1941	Apr. 19, 1941	16.15	9,150
1942	June 26, 1942	18.42	13,000
1943	Dec. 28, 1942	22.27	24,000
	May 12, 1943	22.57	25,000
	May 19, 1943	18.43	13,000
1944	Apr. 24, 1944	18.30	12,800
1945	Mar. 4, 1945	18.57	13,500
	Mar. 7, 1945	20.84	19,300
	Apr. 1, 1945	23.4	28,300
	Apr. 16, 1945	22.17	23,600
	June 10, 1945	22.12	17,500
1946	Feb. 15, 1946	21.57	21,800
	May 2, 1946	19.02	14,200
	May 18, 1946	17.91	11,300
1947	Apr. 26, 1947	23.5	28,000
	July 2, 1947	19.56	15,800
1948	Jan. 3, 1948	18.6	13,100
	May 18, 1948	18.83	13,700
1949	Jan. 20, 1949	18.82	13,300
	Jan. 26, 1949	20.31	18,600
	Feb. 16, 1949	20.39	18,700
1950	Jan. 5, 1950	25.23	36,900
	Jan. 14, 1950	18.54	13,400
	Apr. 4, 1950	18.09	12,500
	May 12, 1950	18.34	12,600
1951	Feb. 20, 1951	18.82	14,100
	July 14, 1951	23.48	30,500
1952	Apr. 14, 1952	17.37	10,500

[a]Annual peak only.

Meramec River basin

(71) Meramec River near Eureka, Mo.

Location.--Lat 38°30'20", long 90°35'30", in SE¼ sec. 32, T. 44 N., R. 4 E., at bridge on U. S. Highway 66, 2 miles east of Eureka and 3 miles downstream from Big River.

Drainage area.--3,788 sq mi.

Gage.--Nonrecording gage Aug. 26, 1903, to July 21, 1906, and Oct. 6, 1921, to Sept. 22, 1937; recording gage thereafter. Prior to July 22, 1906, at site 200 ft upstream from present site and at different datum; Oct. 6, 1921, to Jan. 16, 1933, at site 200 ft upstream from and at datum 1.04 ft higher than present gage; datum of present gage is 406.18 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 116,000 cfs and by slope-area measurement at 175,000 cfs.

Flood stage.--22 ft.

Remarks.--Base for partial-duration series, 32,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1904	Mar. 28, 1904	36.2	68,100
	Apr. 27, 1904	28.7	48,600
1905	Sept.20, 1905	29.7	51,200
1915	Aug. 22, 1915	[a]39.2	[b]175,000
1916	Feb. 1, 1916	[a]36.0	[b]113,000
1922	Apr. 19, 1922	24.45	38,600
1923	Mar. 17, 1923	16.95	24,800
1924	May 30, 1924	20.50	31,000
1925	Dec. 22, 1924	14.60	20,100
1926	Nov. 10, 1925	17.18	24,800
1927	Apr. 3, 1927	29.47	64,000
	Apr. 11, 1927	21.54	34,400
	Apr. 17, 1927	25.21	44,200
	May 27, 1927	21.12	33,400
	June 4, 1927	22.80	37,400
1928	Apr.8 & 9,1928	23.80	39,800
	June 11, 1928	20.78	32,700
	June 21, 1928	21.07	33,400
1929	May 15, 1929	21.10	33,400
1930	Jan. 16, 1930	24.41	42,200
1931	May 22, 1931	6.10	6,420
1932	Jan. 3, 1932	8.35	9,540
	Aug. 14, 1932	8.35	9,540
1933	Apr. 18, 1933	21.82	35,700
	May 17, 1933	30.72	63,400
1934	Sept.18, 1934	17.91	27,100
1935	Mar. 14, 1935	30.89	62,200
	June 24, 1935	26.32	48,400
	June 29, 1935	23.04	39,400
1936	Nov. 12, 1935	13.22	17,400
1937	May 6, 1937	21.56	35,700
1938	Feb. 20, 1938	25.10	45,000
	May 25, 1938	23.11	39,700
	June 12, 1938	25.47	46,100
1939	Apr. 19, 1939	26.95	61,600
1940	June 29, 1940	11.41	14,800
1941	Apr. 22, 1941	22.07	38,000
1942	June 28, 1942	21.90	37,400
1943	Dec. 30, 1942	31.78	69,600
	May 13, 1943	24.29	42,800
	May 21, 1943	27.70	52,400
1944	Apr. 25, 1944	17.26	26,100
1945	Mar. 8, 1945	22.38	37,400
	Apr. 2, 1945	28.98	57,100
	Apr. 17, 1945	32.13	72,500
	June 11, 1945	36.94	120,000
1946	Feb. 16, 1946	23.52	40,300
1947	Apr. 27, 1947	31.15	66,400
1948	Jan. 3, 1948	17.00	25,000
1949	Jan. 27, 1949	20.30	32,200
	Feb. 17, 1948	21.80	35,900
1950	Jan. 6, 1950	33.01	79,700
	Jan. 16, 1950	20.53	32,500
	May 13, 1950	21.28	34,600
1951	Feb. 21, 1951	21.33	34,600
	July 15, 1951	27.08	50,700
1952	Apr. 14, 1952	16.99	25,500

[a] From floodmarks.
[b] Annual peak only.

Mississippi River main stem

(72) Mississippi River at Chester, Ill.

Location.--37°54'00", long 89°49'50", in SW¼ sec. 24, T. 7 S. R. 7 W., 3rd principal meridian, 0.4 mile downstream from highway bridge at Chester, 8.3 miles downstream from Kaskaskia River, and 109.5 miles upstream from Ohio River.

Drainage area.--712,600 sq mi. approximately.

Gage.--Nonrecording. Datum of gage is 341.05 ft above mean sea level, datum of 1929, and 340.83 ft above mean gulf level (levels by Corps of Engineers).

Stage-discharge relation.--Continually shifting, must be defined by frequent current-meter measurements.

Flood stage.--27 ft.

Remarks.--Records prior to July 1940 furnished by Mississippi River Commission. Natural flow of stream affected by many reservoirs and navigation dams in upper Mississippi River basin, and by many reservoirs and diversions for irrigation in Missouri River Basin. Discharges prior to the 1942 water year are maximum daily discharges. Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1844	June 30, 1844	39.8	[a]1,350,000	1939	Apr. 21, 1939	30.6	618,000
1926	Sept.30, 1926	23.8	501,000	1940	Apr. 21, 1940	[c]13.6	[d]193,000
1927	Apr. 27, 1927	34.4	1,060,000	1941	Apr. 24, 1941	[b]26.9	[d]455,000
1928	June 23, 1928	28.0	626,000	1942	July 1, 1942	34.0	603,000
1929	Apr. 29, 1929	[b]33.3	878,000	1943	May 24, 1943	38.08	[e]873,000
1930	June 21,22,1930	19.7	342,000	1944	May 2, 1944	37.4	842,000
1931	June 16, 1931	14.4	221,000	1945	Apr. 2, 1945	[f]34.4	716,000
1932	Dec. 1, 1931	23.3	451,000	1946	Jan.13,14,1946	27.5	502,000
1933	May 18, 1933	28.9	500,000	1947	July 3, 1947	[b]38.17	886,000
1934	Apr. 25, 1934	10.2	137,000	1948	Mar. 28, 1948	32.8	668,000
1935	June 10, 1935	[b]33.4	665,000	1949	Apr.3,4, 1949	24.7	426,000
1936	Mar. 1, 1936	20.8	326,000	1950	May 15, 1950	27.6	476,000
1937	May 6,7, 1937	24.6	422,000	1951	July 22, 1951	[b]39.3	795,000
1938	May 28, 1938	27.1	540,000	1952	Apr. 30, 1952	[b]34.4	685,000

[a] Computed by Corps of Engineers, date approximate.
[b] Occurred at different time than peak discharge.
[c] Occurred on June 15, 1940.
[d] Computed on basis of records for stations at St. Louis, Mo., and Thebes, Ill.
[e] Does not include flow bypassing gage through levee breaks upstream.
[f] Occurred on June 14, 1945.

Headwater Diversion Channel basin

(Castor and Whitewater Rivers)

(73) Castor River at Zalma, Mo.

Location.--Lat 37°08'45", long 90°04'30", in SE¼ sec. 29, T. 29 N., R. 9 E., at bridge on State Highway 51 in Zalma, 2½ miles downstream from Perkins Creek.

Drainage area.--423 sq mi.

Gage.--Nonrecording. Prior to Nov. 13, 1930, at site 500 ft upstream from and at datum 49.82 ft lower than present gage July 1, 1919, to Sept. 30, 1925, and at datum 0.18 ft higher than present gage Oct. 1, 1925, to Nov. 12, 1930. Datum of present gage is 350.38 ft above mean sea level, datum of 1929. Since Dec. 18, 1949, auxiliary staff gage 6 miles downstream. Gage heights given herein converted to present site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 25,000 cfs. Slope used as a factor since 1949.

Flood stage.--19 ft.

Remarks.--Peaks for period prior to Sept. 12, 1921, computed from plotted Little River Drainage District gage readings. Work on Headwater diversion channel completed about March 1919. Base for partial-duration series, 8,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1920	May 17, 1920	26.1	17,400	1938	Feb. 19, 1938	23.72	14,900
1921	Apr. 27, 1921	22.4	7,660	1939	Mar. 6, 1939	23.35	10,950
					Apr. 17, 1939	24.17	14,600
1922	Nov. 20, 1921	24.0	10,600				
	Apr. 1, 1922	23.6	9,720	1940	Apr. 20, 1940	22.10	7,730
1923	Feb. 2, 1923	24.0	10,600	1941	Jan. 2, 1941	12.3	2,480
1924	May 30, 1924	24.6	3,160	1942	Apr. 9, 1942	23.20	10,200
1925	June 14, 1925	23.3	2,670	1943	Dec. 28, 1942	22.45	8,150
					May 11, 1943	26.60	31,600
1926	Feb. 26, 1926	20.3	5,920				
				1944	Apr. 24, 1944	23.60	11,700
1927	Apr. 1, 1927	24.0	10,600				
	Apr. 16, 1927	24.6	12,100	1945	Feb. 27, 1945	25.85	22,600
	June 2, 1927	23.6	9,720		Mar. 7, 1945	25.00	17,350
					Mar. 20, 1945	22.80	8,150
1928	Dec. 14, 1927	26.5	19,400		Mar. 26, 1945	22.95	8,550
	June 14, 1928	23.6	9,720		Mar. 31, 1945	24.30	13,550
	June 21, 1928	24.9	13,000		Apr. 15, 1945	25.20	18,550
					June 9, 1945	26.04	24,100
1929	June 14, 1929	22.0	7,250		June 18, 1945	23.40	9,600
1930	Jan. 14, 1930	23.7	9,940	1946	Feb. 14, 1946	24.30	13,550
					May 2, 1946	23.98	12,050
1931	Mar. 8, 1931	16.10	3,800		May 17, 1946	24.5	14,600
1932	Jan. 17, 1932	20.22	5,920	1947	Apr. 26, 1947	18.8	4,990
1933	Dec. 25, 1932	22.82	8,180	1948	Jan. 1, 1948	27.8	38,400
	Jan. 23, 1933	23.63	9,720				
	Apr. 16, 1933	24.30	11,400	1949	Jan. 19, 1949	22.6	8,530
	May 12, 1933	23.45	9,300		Jan. 24, 1949	28.1	40,100
	May 14, 1933	25.86	16,600		Mar. 27, 1949	24.0	13,100
1934	Mar. 27, 1934	12.78	2,560	1950	Jan. 4, 1950	26.4	27,400
					Feb. 13, 1950	26.6	28,800
1935	Mar. 11, 1935	28.20	40,000		Apr. 4, 1950	24.8	17,100
1936	Nov. 16, 1935	9.64	1,610	1951	Feb. 21, 1951	23.20	9,950
1937	Jan. 14, 1937	27.67	40,400	1952	Nov. 25, 1951	23.50	11,000
					Mar. 12, 1952	23.50	11,000

Mississippi River main stem

(74) Mississippi River at Thebes, Ill.
[Published as "at Cape Girardeau, Mo." prior to 1941]

Location.--Lat 37°13'00", long 89°27'50", in NW¼ sec. 17, T. 15 S., R. 3 W., on railroad bridge at Thebes, 5.0 miles downstream from Headwater diversion channel and 43.7 miles upstream from Ohio River.

Drainage area.--717,200 sq mi, approximately.

Gage.--Nonrecording gage Mar. 17, 1933, to Dec. 31, 1934, and Apr. 5, 1941, to Sept. 30, 1943; recording gage Dec. 22, 1934, to Apr. 4, 1941, and since Oct. 1, 1943. Prior to Apr. 5, 1941, at site 8.2 miles upstream at datum 4.65 ft higher than present datum; Apr. 5, 1941, to Sept. 30, 1944, at datum 300.000 ft higher than present datum. Gage heights beginning with 1941 given herein converted to present datum which is at mean sea level, datum of 1929. Since Oct. 1, 1943, former gage at Cape Girardeau used as auxiliary gage; previously, various auxiliary gages used.

Stage-discharge relation.--Affected by backwater from Ohio River. Fall between auxiliary and reference gage used as a factor in computing discharge. Frequent current-meter measurements necessary to define relationship.

Flood stage.--333 ft.

Remarks.--Natural flow of stream affected by many reservoirs and navigation dams in Upper Mississippi River basin, and by many reservoirs and diversions for irrigation in Missouri River basin. Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1844	July 4, 1844	[a]42.53	[a]1,375,000	1943	May 27, 1943	340.26	893,000
1933	May 18,19,1933	[b]34.4	525,000	1944	May 6, 1945	339.05	812,000
1934	Apr. 27, 1934	14.4	140,000	1945	Apr. 2, 1945	[b]337.90	702,000
1935	June 10, 1935	[b]36.26	623,000	1946	Jan. 14, 1946	[b]333.68	506,000
1936	Mar. 2, 1936	25.19	318,000	1947	July 6, 1948	[b]340.08	837,000
1937	May 7, 1937	30.36	420,000	1948	Mar. 28, 1948	[b]336.97	676,000
1938	May 28, 1938	31.0	[c]552,000	1949	Apr. 4, 1949	[b]331.35	447,000
1939	Apr. 21, 1939	35.8	[c]637,000	1950	May 15, 1950	[b]332.29	491,000
1940	Apr. 21, 1940	19.64	199,000	1951	July 24, 1951	[b]339.91	805,000
1941	Apr. 24, 1941	329.11	469,000	1952	May 2, 1952	337.36	685,000
1942	June 30, 1942	[b]335.65	615,000				

[a] Computed by Corps of Engineers for former site and datum.
[b] Occurred at different time than peak discharge.
[c] Computed on basis of records at Chester, Ill.

St. Francis River basin

(75) St. Francis River near Patterson, Mo.

Location.--Lat 37°11'40", long 90°30'10", in NE¼ sec. 16, T. 29 N., R. 5 E., at bridge on State Highway 34, 1 mile upstream from Clark Creek and 3 miles east of Patterson.

Drainage area.--956 sq mi.

Gage.--Nonrecording gage June 16, 1921, to Apr. 12, 1939, recording gage thereafter. Prior to Oct. 1, 1938, at datum 2.00 ft higher than present gage; datum of present gage is 370.45 ft above mean sea level, datum of 1929. Gage heights given herein converted to present datum.

Stage-discharge relation.--Defined by current-meter measurements below 55,000 cfs; shifts in relation occur.

Flood stage.--16 ft.

Remarks.--Occasional backwater from Wappapello Reservoir since Apr. 1, 1941. Base for partial-duration series, 21,000 cfs.

St. Francis River basin

(75) St. Francis River near Patterson, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1915	August 1915	33.8	[a] 100,000
1921	---	22.0	[a] 36,600
1922	Nov. 19, 1921	22.0	36,600
	Mar. 31, 1922	18.95	26,700
1923	Feb. 1, 1923	21.20	34,000
	Mar. 16, 1923	21.38	34,600
	May 16, 1923	19.40	28,000
1924	May 29, 1924	15.50	16,600
1925	Apr. 18, 1925	10.85	6,880
1926	Nov. 8, 1925	22.50	38,200
	Feb. 25, 1926	17.90	23,300
1927	Apr. 1, 1927	26.70	50,000
	Apr. 14, 1927	27.00	51,000
	May 25, 1927	21.60	33,000
	June 1, 1927	20.60	30,200
1928	Dec. 14, 1927	27.20	51,700
	Apr. 6, 1928	21.98	34,300
	June 9, 1928	22.25	34,900
	June 13, 1928	22.80	36,900
	June 21, 1928	25.60	46,100
1929	Jan. 25, 1929	20.80	30,500
	Apr. 9, 1929	19.30	26,000
	May 6, 1929	20.80	30,500
	May 13, 1929	21.60	33,000
1930	Jan. 13, 1930	21.70	33,200
1931	Mar. 7, 1931	15.52	15,300
1932	Dec. 30, 1931	15.86	16,300
1933	Dec. 24, 1932	19.75	27,500
	Jan. 22, 1933	17.80	21,500
	Apr. 16, 1933	25.07	44,400
	May 14, 1933	28.80	57,400
1934	Apr. 7, 1934	13.2	10,200
1935	Mar. 11, 1935	30.70	79,200
	May 5, 1935	20.70	30,200
	May 20, 1935	21.40	32,400
	June 21, 1935	21.50	32,700
1936	Nov. 10, 1935	12.75	9,600
1937	Nov. 3, 1936	19.45	26,300
	Dec. 31, 1936	19.50	26,600
	Jan. 8, 1937	20.00	28,100
	Jan. 15, 1937	26.50	55,200
1938	Feb. 18, 1938	22.65	37,300
	Mar. 29, 1938	18.70	24,100
	Mar. 31, 1938	20.00	28,100
1939	Jan. 30, 1939	19.01	25,000
	Feb. 28, 1939	17.97	22,000
	Mar. 5, 1939	21.90	34,600
	Apr. 6, 1939	20.80	30,700
	Apr. 17, 1939	21.48	33,200
1940	Apr. 19, 1940	17.92	21,700
1941	Jan. 2, 1941	14.40	12,600
1942	Nov. 1, 1941	20.40	25,800
1943	Dec. 28, 1942	22.87	33,300
	May 11, 1943	29.70	68,100
1944	Apr. 23, 1944	19.05	20,600
1945	Feb. 26, 1945	24.60	[b]
	Mar. 6, 1945	21.79	[b]
	Mar. 20, 1945	20.10	[b]
	Mar. 26, 1945	21.17	[b]
	Mar. 31, 1945	27.26	[b]
	Apr. 14, 1945	31.00	[b]
	June 9, 1945	29.20	[a] 64,900
1946	Oct. 22, 1945	22.30	31,100
	Feb. 14, 1946	25.00	42,300
	May 1, 1946	23.80	37,000
	May 16, 1946	23.40	35,300
	May 25, 1946	22.80	32,900
1947	Apr. 25, 1947	23.30	34,900
1948	Jan. 1, 1948	24.86	41,800
1949	Jan. 25, 1948	28.20	59,000
	Feb. 15, 1949	20.20	24,100
1950	Oct. 22, 1949	21.76	29,300
	Jan. 4, 1950	26.37	53,400
	Jan. 14, 1950	18.28	21,300
	Feb. 13, 1950	24.00	41,700
	Apr. 3, 1950	19.25	23,800
	May 10, 1950	23.80	40,900
1951	Feb. 7, 1951	19.40	24,400
	Feb. 21, 1951	19.46	24,800
1952	Nov. 23, 1951	19.29	24,100
	Mar. 11, 1952	19.20	23,800

[a] Annual peak only.
[b] Peak discharge indeterminate, affected by backwater from Wappapello, Mo., Reservoir.

St. Francis River basin

(76) Little River ditch 81 near Kennett, Mo.

Location.--Lat 36°14'10", long 89°58'55", in NE¼ sec. 4, T. 18 N., R. 10 E., at bridge on State Highway 84, about 4 miles east of Kennett.

Drainage area.--111 sq mi.

Gage.--Nonrecording. Datum of gage is 241.00 ft above mean sea level, datum of 1929 (Corps of Engineers benchmark).

Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur.

Flood stage.--10 ft.

Remarks.--Records not comparable with those of station at Kirk, 1921-26, because of additional ditch construction. Annual peaks only are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1927	Apr. 21, 1927	15.11	[a] 2,760	1940	Apr. 20, 1940	7.10	837
1928	June 30, 1928	13.06	2,710	1941	Jan. 25, 1941	4.57	330
1929	Feb. 27, 1929	10.88	2,000	1942	Apr. 9, 1942	10.1	1,850
1930	Jan. 10, 14, 1930	11.38	1,770	1943	May 12, 1943	9.3	1,380
1931	Mar. 8, 1931	4.48	303	1944	Apr. 13, 1944	10.36	1,950
1932	Jan. 18, 1932	9.80	1,370	1945	June 18, 1945	12.18	2,620
1933	Jan. 1, 1933	10.34	1,380	1946	Jan. 9, 1946	10.15	1,890
1934	Mar. 27, 1934	10.28	1,490	1947	Apr. 12, 1947	6.3	805
1935	Mar. 15, 1935	12.11	2,610	1948	Mar. 27, 1948	8.5	1,400
1936	Apr. 7, 1936	5.27	386	1949	Jan. 28, 1949	11.26	2,300
1937	Jan. 26, 1937	12.53	2,310	1950	Feb. 16, 1950	11.90	2,440
1938	Feb. 18, 1938	11.46	1,960	1951	Feb. 21, 1951	11.21	2,200
1939	Apr. 18, 1939	10.36	1,600	1952	Jan. 5, 1952	11.44	2,230

[a] Includes some overflow from levee breaks on St. Francis River.

(77) Little River ditch 1 near Kennett, Mo.

Location.--Lat 36°14'10", long 89°58'50", in NE¼ sec. 4, T. 18 N., R. 10 E., at bridge on State Highway 84, about 4 miles east of Kennett.

Drainage area.--235 sq mi.

Gage.--Nonrecording. Datum of gage is 241.00 ft above mean sea level, datum of 1929 (Corps of Engineers benchmark).

Stage-discharge relation.--Defined by current-meter measurements; frequent large shifts in relation occur.

Flood stage.--13 ft.

Remarks.--Records not comparable with those of station at Kirk, 1921-26, because of additional ditch construction. A spillway 6.3 miles upstream diverted water at high stages from ditches 66, 66-A, and 251 to ditch 1. This spillway was washed out and closed April 1951. Ditch 1 near Kennett has no connection with ditch 1 near Morehouse. Crests have been corrected where necessary for spillway diversion with data supplied by the Little River Drainage District. Only annual peaks are shown.

St. Francis River basin

(77) Little River ditch 1 near Kennett, Mo.--Continued

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1927	Apr. 25, 1927	16.56	[a] 7,520	1940	Apr. 21, 1940	7.08	2,310
1928	June 24, 1928	10.34	2,990	1941	Jan. 25, 1941	3.7	582
1929	Feb. 27, 1929	11.63	4,010	1942	Apr. 10, 1942	10.8	4,080
1930	Jan. 15, 1930	13.24	5,040	1943	May 12, 1943	11.8	3,550
1931	Mar. 9, 1931	5.05	545	1944	Apr. 14, 1944	12.8	5,010
1932	Jan. 18, 1933	10.95	3,510	1945	June 15, 1945	16.41	[b] 6,730
1933	May 16, 1933	11.16	3,040	1946	Jan. 10, 1946	12.26	[b] 4,460
1934	Mar. 27, 1934	12.37	2,810	1947	Apr. 12, 1947	7.4	2,250
1935	Mar. 17, 1935	16.22	4,800	1948	Mar. 27, 1948	11.10	4,130
1936	Apr. 7, 1936	8.32	1,180	1949	Feb. 16-18, 1949	15.68	[b] 5,740
1937	Jan. 25, 1937	16.80	7,260	1950	Jan. 14, 1950	16.57	[b] 7,360
1938	Feb. 19, 1938	12.65	3,940	1951	Jan. 16, 1951	14.60	[b] 5,840
1939	Apr. 18, 1939	12.22	[b] 3,700	1952	Jan. 5, 1952	14.50	5,900

[a] Includes some inflow from levee breaks on St. Francis River.
[b] Corrected for inflow from ditches 66, 66-A, and 251.

(78) Little River ditch 251 near Lilbourn, Mo.

Location.--Lat 36°33'20", long 89°40'10", on line between secs. 8 and 17, T. 22 N., R. 13 E., at bridge on U. S. Highway 62, 3.7 miles southwest of Lilbourn and 4 miles northwest of Marston.

Drainage area.--235 sq mi.

Gage.--Nonrecording. Datum of gage is 263.46 ft above mean sea level, datum of 1929 (levels by Missouri State Highway Department).

Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur.

Flood stage.--14 ft.

Remarks.--Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	June 1945	15.6	3,200	1949	Jan. 28, 1949	14.88	3,120
1946	May 27, 1946	13.35	2,500	1950	Feb. 15, 1950	15.16	3,210
1947	Apr. 11, 1947	9.10	1,300	1951	Feb. 21, 1951	13.55	2,700
1948	Mar. 27, 1948	12.0	2,100	1952	Jan. 4, 1952	13.37	2,780

St. Francis River Basin

(79) Castor River at Aquilla, Mo.

Location.--Lat 36°57'10", long 89°54'25", in NE¼SE¼ sec. 25, T. 27 N., R. 10 E., at bridge on State Highway 25, half a mile north of Aquilla and 4 miles north of Bloomfield.

Drainage area.--175 sq mi.

Gage.--Nonrecording. Datum of gage is 317.11 ft above mean sea level (levels by Missouri State Highway Department).

Stage-discharge relation.--Defined by current-meter measurements; frequent large shifts in relation occur.

Flood stage.--13 ft.

Remarks.--Entire flow from headwaters of Castor River is diverted 22 miles above station to Headwater diversion channel. See Castor River at Zalma for records of flow above diversion. Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	June 1945	14.2	3,600	1949	Jan. 25, 1949	12.75	3,000
1946	May 3, 1946	11.02	2,000	1950	Jan. 4, 1950	13.45	3,430
1947	Apr. 11, 1947	9.65	1,560	1951	Jan. 15, 1951	11.56	1,760
1948	Jan. 1, 1948	10.95	2,220	1952	Mar. 11, 1952	12.20	1,960

(80) Little River ditch 1 near Morehouse, Mo.

Location.--Lat 36°50'05", long 89°43'50", in NW¼SE¼ sec. 2., T., 25 N., R. 12 E., at bridge on U. S. Highway 60, 1½ miles downstream from Little River ditch 39 and 2 miles west of Morehouse.

Drainage area.--450 sq mi.

Gage.--Nonrecording. Datum of gage is 280.76 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements; large shift in relation during summer of 1947 due to channel enlargement.

Flood stage.--13 ft.

Remarks.--This ditch has no connection with ditch 1 near Kennett. Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	June 1945	19.85	5,830	1949	Jan. 25, 1949	15.35	6,270
1946	May 3, 1946	17.2	4,600	1950	Jan.13,16,1950	16.30	6,920
1947	Apr. 12, 1947	13.92	3,230	1951	Jan. 15, 1951	14.60	5,570
1948	Jan. 2, 1948	13.6	4,760	1952	Mar. 11, 1952	16.50	7,020

St. Francis River basin

(81) Little River ditch 251 near Kennett, Mo.
[Includes records for ditches 66 and 66-A published separately in annual water-supply papers]

Location.--Lat 36°14'10", long 89°58'40", in NW¼ sec. 3, T. 18 N., R. 10 E., at bridge on State Highway 84, about 4 miles east of Kennett.

Drainage area.--883 sq mi, includes that of Little River ditches 66 and 66-A.

Gage.--Nonrecording. Datum of gage is 241.00 ft above mean sea level, datum of 1929 (Corps of Engineers benchmark).

Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur.

Flood stage.--15 ft.

Remarks.--Ditch 251 completed after November 1926. At high stages a spillway 6.3 miles upstream diverted water from ditches 66, 66-A, and 251 into ditch 1. This spillway was washed out and closed April 1951. Crests have been corrected where necessary for spillway diversions with data supplied by the Little River Drainage District. Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1927	Apr. 25, 1927	17.67	12,500	1940	Apr. 21, 1940	13.35	6,980
1928	June 24, 1928	14.95	9,040	1941	Jan. 26, 1941	7.75	2,240
1929	Feb. 28, 1929	15.37	9,500	1942	Apr. 10, 1942	15.3	8,480
1930	Jan.14,15,1930	16.41	11,000	1943	May 14, 1943	14.9	6,830
1931	Mar. 9, 1931	10.12	4,110	1944	Apr. 13, 1944	15.6	8,470
1932	Jan. 18, 1932	14.50	8,250	1945	June 13, 1945	17.71	[a] 11,000
1933	May 16, 1933	15.18	8,190	1946	Jan. 11, 1946	17.0	[a] 10,200
1934	Mar. 28, 1934	13.66	6,260	1947	Apr. 12, 1947	13.7	6,110
1935	Mar. 16, 1935	16.40	8,960	1948	Mar. 28, 1948	15.36	[a] 7,900
1936	Apr. 8, 1936	11.28	4,190	1949	Jan. 28, 1949	18.75	[a] 12,700
1937	Jan. 25, 1937	18.20	12,700	1950	Jan. 16, 1950	18.17	[a] 11,700
1938	Feb. 20, 1938	15.76	9,280	1951	Feb. 22, 1951	18.80	[a] 12,100
1939	Mar. 7, 1939	15.59	[a] 9,130	1952	Jan. 6, 1952	19.60	11,000

[a] Corrected for diversion into ditch 1.

St. Francis River basin

(82) Little River ditch 259 near Kennett, Mo.

Location.--Lat 36°14'10", long 89°58'35", in NW¼ sec. 3, T. 18 N., R. 10 E., at bridge on State Highway 84, about 4 miles east of Kennett.

Drainage area.--89.0 sq mi.

Gage.--Nonrecording. Datum of gage is 241.00 ft above mean sea level, datum of 1929 (Corps of Engineers benchmark).

Stage-discharge relation.--Defined by current-meter measurements; large shifts in relation occur frequently.

Flood stage.--10 ft.

Remarks.--Ditch completed after November 1926. Only annual peaks are shown.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1927	Apr. 29, 1927	15.57	[a] 4,140	1940	Apr. 20, 1940	7.84	1,110
1928	June 24, 1928	8.15	966	1941	Jan. 24, 1941	4.3	355
1929	Feb. 26, 1929	9.43	1,330	1942	Apr. 10, 1942	10.69	1,720
1930	Jan. 14, 1930	11.04	1,820	1943	Mar. 20, 1943	9.3	962
1931	Apr. 27, 1931	4.50	212	1944	Apr. 12, 1944	11.27	1,540
1932	Jan. 17, 1932	9.82	1,350	1945	June 12-15, 1945	11.6	1,890
1933	Apr. 23, 1933	10.72	1,360	1946	Jan. 11, 1946	10.98	1,730
1934	Mar. 29, 1934	11.38	1,160	1947	Apr. 11, 1947	8.95	1,200
1935	Mar. 15, 1935	11.30	1,150	1948	Mar. 23, 1948	9.45	1,360
1936	July 3, 1936	7.72	454	1949	Mar. 27, 1949	10.78	1,470
1937	Jan. 23, 1937	12.23	3,420	1950	Feb. 15, 16, 1950	11.73	2,370
1938	Feb. 19, 1938	11.10	1,940	1951	Feb. 22, 23, 1951	11.37	2,110
1939	Feb. 3, 1939	10.63	1,780	1952	Mar. 11, 1952	11.95	2,670

[a] Includes some overflow from levee breaks on Mississippi River.

White River basin

(83) White River at Beaver, Ark.

Location.--Lat 36°28'20", long 93°45'55", in NE¼ sec. 20, T. 21 N., R. 26 W., at Missouri & North Arkansas Railway bridge, a quarter of a mile east of Beaver, 2¾ miles upstream from Leatherwood Creek, and at mile 595.5.

Drainage area.--1,238 sq mi.

Gage.--Nonrecording. Datum of gage is 883.04 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Flood stage.--18 ft.

Remarks.--Peaks for period 1921-23 computed from plotted Empire District Electric Co. readings at site 1,500 ft upstream corrected to read same as present gage. Base for partial-duration series, 22,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1898	---	40	[a] 94,000
1910	May 17, 1910	17.35	[a] 21,500
1922	Apr. 6, 1922	10.50	9,400
1923	Feb. 2, 1923	21.08	28,200
1924	May 1, 1924	18.35	23,500
1925	Dec. 20, 1924	18.12	22,900
1926	Oct. 10, 1925	12.3	12,300
1927	Jan. 25, 1927	21.70	29,900
	Apr. 16, 1927	37.0	80,200
	Apr. 20, 1927	25.00	38,100
1928	Oct. 2, 1927	25.65	39,700
	Oct. 4, 1927	26.85	43,000
	Dec. 15, 1927	30.60	48,900
	Apr. 7, 1928	22.10	30,800
	Apr. 22, 1928	26.50	42,200
	June 14, 1928	23.73	34,800
	June 22, 1928	18.78	23,500
1929	Jan. 26, 1929	23.85	33,900
	Apr. 10, 1929	19.01	23,900
	May 10, 1929	20.99	28,300
	July 9, 1929	22.00	30,600
1930	May 12, 1930	19.15	24,500
1931	Feb. 10, 1931	19.69	25,100
1932	Jan. 18, 1932	16.15	19,100
1933	Dec. 25, 1932	20.46	27,200
	May 15, 1933	27.70	42,200
	Sept. 5, 1933	18.89	23,700
1934	Oct. 23, 1933	14.83	16,500
1935	Mar. 13, 1935	22.74	32,300
	June 4, 1935	23.73	34,800
	June 9, 1935	21.70	29,900
	June 19, 1935	27.55	41,100
1936	Dec. 8, 1935	12.32	12,000
1937	Jan. 16, 1937	18.58	23,400
1938	Feb. 19, 1938	26.80	40,300
	May 24, 1938	19.82	25,700
1939	Apr. 18, 1939	16.70	19,700
1940	Apr. 13, 1940	16.00	18,400
1941	Jan. 3, 1941	19.44	24,800
	Apr. 20, 1941	26.3	39,500
1942	Nov. 1, 1941	20.5	27,200
	Apr. 10, 1942	20.35	27,000
1943	Dec. 29, 1942	31.95	59,500
	May 12, 1943	42.33	105,000
1944	June 16, 1944	22.3	31,300
1945	Feb. 23, 1945	23.00	33,000
	Feb. 28, 1945	21.40	29,200
	Mar. 4, 1945	19.96	26,100
	Mar. 20, 1945	28.25	47,100
	Apr. 1, 1945	22.65	32,000
	Apr. 16, 1945	40.9	98,200
	May 17, 1945	18.38	22,600
	June 12, 1945	29.75	52,000
1946	Feb. 15, 1946	22.55	32,000
	May 26, 1946	32.50	61,400
1947	Nov. 11, 1946	20.60	27,400
	Dec. 12, 1946	20.97	28,300
1948	Aug. 16, 1948	24.52	36,800
1949	Jan. 26, 1949	26.3	41,600
	Feb. 16, 1949	28.5	48,000
1950	Jan. 6, 1950	19.9	25,900
	Jan. 15, 1950	21.0	28,300
	Feb. 14, 1950	20.1	26,300
	May 12, 1950	31.95	59,500
	July 20, 1950	21.3	29,000
	Aug. 7, 1950	20.1	26,300
1951	Feb. 20, 1951	27.75	45,900
1952	Mar. 12, 1952	18.58	23,100
	Apr. 14, 1952	19.10	24,100

[a] Annual peak only.

White River basin

(84) James River below Battlefield, Mo.
[Published as "near Battlefield" prior to June 1929]

Location.--Lat 37°05'30", long 93°12'25", in NE¼ sec. 32, T. 28 N., R. 22 W., at Blue Spring Highway bridge, 1.6 miles southwest of Battlefield and 3 miles upstream from Wilson Creek.

Drainage area.--328 sq mi; 303 sq mi prior to May 13, 1929.

Gage.--Nonrecording. Feb. 17, 1926, to May 13, 1929, at site 3 miles upstream from and at datum about 10 ft higher than last used site and datum. May 13, 1929, to Jan 7, 1932 (discontinued) at last used site and datum. Altitude of gage at last used site is 1,090 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 8,800 cfs..

Remarks.--Base for partial-duration series, 4,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1926	Sept.30, 1926	6.30	1,920	1928	Nov. 15, 1927	11.5	8,350
					Dec. 14, 1927	11.6	8,520
1927	Mar. 31, 1927	14.3	13,300		Apr. 6, 1928	14.3	13,300
	Apr. 9, 1927	10.70	7,020		Apr. 22, 1928	11.3	8,010
	Apr. 15, 1927	15.00	14,600		June 9, 1928	15.80	16,200
	Apr. 19, 1927	10.50	6,700		June 13, 1928	9.00	4,450
	June 21, 1927	9.40	5,010		June 28, 1928	16.10	16,800
	Aug. 8, 1927	12.0	9,200				
	Aug. 17, 1927	10.7	7,020	1929	Apr. 9, 1929	11.20	8,010
					May 13, 1929	9.60	5,450
					May 28, 1929	10.04	5,450
				1930	Jan. 14, 1930	9.82	4,630
				1931	Aug. 6, 1931	10.50	5,350

White River basin

(85) Wilson Creek near Springfield, Mo.

Location.--Lat 37°11'35", long 93°20'20", in NW¼SE¼ sec. 28, T. 29 N., R. 22 W., three-quarters of a mile downstream from Jordan Creek and 2 miles southwest of Springfield.

Drainage area.--19.4 sq mi.

Gage.--Recording. Station discontinued November 1939. Datum of gage is 1,196.16 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 900 cfs and extended to 2,440 cfs on basis of area-velocity studies.

Flood stage.--5 ft.

Remarks.--Gage-height record during 11 months of operation at new site, 0.5 mile upstream, imcomplete during highwater periods; not used in this report. Sewage from Springfield enters creek above station. Springfield water supply is pumped from Little Sac River basin. Base for partial-duration series, 400 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1932	June 27, 1932	7.62	[a] 2,440	1937	Oct. 6, 1936	4.00	480
					Oct. 25, 1936	4.30	580
1933	Dec. 23, 1932	4.12	520		Nov. 2, 1936	4.60	692
	Apr. 15, 1933	4.12	520		Jan. 8, 1937	3.90	452
	May 13, 1933	4.69	732		Jan. 14, 1937	4.55	692
	July 8, 1933	5.07	922		Jan. 30, 1937	4.10	512
	Sept. 2, 1933	3.98	488		Apr. 29, 1937	4.64	692
					May 21, 1937	4.10	512
1934	June 15, 1934	3.82	424		June 2, 1937	5.04	858
					June 9, 1937	4.90	806
1935	Mar. 11, 1935	4.58	692		June 14, 1937	6.87	1,880
	Mar. 15, 1935	4.50	654		July 19, 1937	3.95	480
	May 29, 1935	4.46	654		Sept. 5, 1937	4.20	544
	June 2, 1935	4.27	580				
	June 7, 1935	5.13	882	1938	Jan. 20, 1938	3.80	424
	June 14, 1935	5.40	1,000		Feb. 18, 1938	3.90	452
	June 16, 1935	5.57	1,080		May 6, 1938	4.10	512
	July 2, 1935	4.12	512		May 23, 1938	3.95	480
	Aug. 12, 1935	3.85	424		June 16, 1938	5.35	980
	Aug. 27, 1935	4.65	692				
1936	Sept.28, 1936	3.77	398				

[a] Annual peak only.

White River basin

(86) James River at Galena, Mo.

Location.--Lat 36°48'20", long 93°27'50", in NW¼ sec. 7, T. 24 N., R. 23 W., at bridge on State Highway 13 and 44 in Galena, half a mile upstream from Bailey Creek and 42.3 miles above mouth.

Drainage area.--987 sq mi.

Gage.--Nonrecording gage Oct. 27, 1921, to July 22, 1939; recording gage thereafter. Prior to Dec. 11, 1927, at site 500 ft downstream from and at datum 0.52 ft lower than present gage. Datum of present gage is 923.37 ft above mean sea level, datum of 1929. Gage heights given herein converted to present site and datum.

Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur.

Flood stage.--Indeterminate.

Remarks.--Base for partial-duration series, 12,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	Apr. 1, 1922	8.3	7,220
1923	Mar. 12, 1923	9.9	9,940
1924	July 12, 1924	13.5	15,600
	Aug. 11, 1924	13.2	15,000
1925	Dec. 19, 1924	14.7	18,000
1926	Sept.30, 1926	7.8	5,700
1927	Apr. 1, 1927	18.4	25,500
	Apr. 10, 1927	16.6	21,700
	Apr. 15, 1927	25.1	41,900
	Apr. 19, 1927	15.1	18,700
	May 9, 1927	12.4	13,000
	Aug. 9, 1927	16.1	20,600
	Aug. 16, 1927	15.9	20,400
1928	Nov. 15, 1927	13.2	14,800
	Apr. 7, 1928	17.78	24,200
	June 10, 1928	19.94	28,900
	June 21, 1928	14.68	17,700
	June 29, 1928	18.72	26,100
1929	Apr. 9, 1929	14.30	16,800
	May 13, 1929	12.74	13,600
1930	Jan. 14, 1930	10.68	9,760
1931	Aug. 6, 1931	14.55	17,500
1932	June 28, 1932	11.50	11,000
1933	Dec. 24, 1932	15.20	18,700
	Apr. 16, 1933	13.20	14,600
	May 14, 1933	22.08	34,200
1934	Apr. 6, 1934	4.77	2,130
1935	Mar. 11, 1935	27.05	50,200
	June 3, 1935	14.83	17,900
	June 7, 1935	14.81	17,900
	June 18, 1935	17.00	22,800
1936	Sept.23, 1936	10.85	10,300
1937	Jan. 9, 1937	12.54	13,200
	Jan. 15, 1937	14.80	17,900
	Jan. 31, 1937	12.90	14,000
	June 14, 1937	13.40	15,000
1938	Feb. 19, 1938	14.08	16,400
1939	Feb. 20, 1939	11.0	10,700
1940	Apr. 12, 1940	12.44	13,100
1941	Apr. 17, 1941	13.50	14,300
	Apr. 20, 1941	26.87	49,900
1942	Oct. 31, 1941	15.54	18,100
	Apr. 9, 1942	12.20	12,000
	June 18, 1942	13.10	13,600
1943	Dec. 28, 1942	21.26	33,500
	May 11, 1943	23.39	39,600
	May 20, 1943	27.82	52,700
1944	Apr. 11, 1944	13.48	14,400
1945	Feb. 22, 1945	14.70	16,800
	Mar. 3, 1945	17.80	24,100
	Mar. 7, 1945	17.29	22,800
	Apr. 3, 1945	19.55	28,900
	Apr. 15, 1945	23.87	41,000
1946	Feb. 14, 1946	15.07	17,600
1947	Apr. 25, 1947	23.65	40,100
1948	June 19, 1948	15.30	18,100
1949	Feb. 16, 1949	13.6	14,700
1950	Oct. 22, 1949	20.65	31,600
	Jan. 4, 1950	12.8	13,200
	Jan. 14, 1950	15.0	17,500
	May 11, 1950	18.4	25,600
1951	Feb. 19, 1951	14.59	16,700
	June 23, 1951	14.86	17,400
	July 1, 1951	18.90	26,900
	July 5, 1951	19.95	29,900
1952	Feb. 2, 1952	14.62	16,800

White River basin

(87) White River near Reeds Springs, Mo.

Location.--Lat 36°37'20", long 93°25'20", in NE¼SE¼ sec. 9, T. 22 N., R. 23 W., at bridge on State Highway 13, 5¾ miles downstream from James River, 12 miles south of Reeds Springs, and at mile 543.8.

Drainage area.--3,617 sq mi.

Gage.--Nonrecording gage Feb. 18, 1938, to Dec. 17, 1938; May 11 to Oct. 1, 1943; and Mar. 11, 1945, to Feb. 14, 1947. Recording gage Dec. 18, 1938, to May 10, 1943 (destroyed by flood); Oct. 2, 1943, to Mar. 10, 1945 (destroyed by flood); and Feb. 15, 1947, to Sept. 30, 1952 (discontinued). Datum of gage is 739.00 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 175,000 cfs.

Flood stage.--15 ft.

Remarks.--Base for partial-duration series, 30,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1927	Apr, 15, 1927	[a] 46.8	[b] 195,000	1945	Feb. 23, 1945	20.09	46,500
					Feb. 28, 1945	17.57	38,000
1938	Feb. 18, 1938	31.0	95,100		Mar. 4, 1945	23.52	58,200
	Mar. 30, 1938	15.3	31,300		Mar. 21, 1945	26.25	68,400
	May 24, 1938	19.9	47,400		Apr. 2, 1945	25.60	66,000
					Apr. 16, 1945	47.00	196,000
1939	Feb. 21, 1939	15.03	30,300		May 17, 1945	17.8	38,700
	Apr. 18, 1939	18.55	42,700		June 12, 1945	27.75	75,000
	May 13, 1939	19.74	46,700				
				1946	Feb. 15, 1946	20.95	49,600
1940	Apr. 13, 1940	15.57	32,300		May 27, 1946	26.94	71,200
1941	Apr. 16, 1941	19.2	44,800	1947	Dec. 12, 1946	21.2	50,300
	Apr. 20, 1941	34.8	107,000		Apr. 26, 1947	20.9	49,300
1942	Nov. 1, 1941	22.35	53,900	1948	Aug. 17, 1948	16.57	34,800
	Apr. 10, 1942	19.1	42,200				
				1949	Jan. 27, 1949	21.5	51,300
1943	Oct. 31, 1942	15.50	30,800		Feb. 16, 1949	26.56	70,000
	Dec. 28, 1942	32.15	94,300				
	May 11, 1943	44.9	183,000	1950	Jan. 5, 1950	17.62	38,000
	May 20, 1943	30.05	84,200		Jan. 15, 1950	20.00	46,200
					Feb. 14, 1950	18.04	39,400
1944	Apr. 11, 1944	15.33	30,100		May 12, 1950	38.65	135,000
					July 20, 1950	15.56	31,700
				1951	Feb. 21, 1951	27.80	75,000
					July 2, 1951	18.76	42,100
					July 5, 1951	18.71	41,800
				1952	Mar. 12, 1952	15.90	32,600
					Apr. 14, 1952	17.09	36,400

[a] From floodmarks.
[b] Annual peak only.

White River basin

(88) White River at Forsyth, Mo.

Location.--Lat 36°40'55", long 93°06'05", in SE¼ sec. 33, T. 24 N., R. 20 W., at bridge on State Highway 80 in Forsyth, a quarter of a mile downstream from Swan Creek, 2 miles downstream from hydroelectric plant of Empire Electric Co., and at mile 503.8.

Drainage area.--4,544 sq mi.

Gage.--Recording. Datum of gage is 640.64 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements; shifts in relation occur.

Flood stage.--30 ft (U. S. Weather Bureau).

Remarks.--Low flow regulated by Lake Taneycomo (total capacity, 23,700 acre-ft) and hydroelectric plant (capacity 11,250 KVA); peak discharges not affected by regulation. Base for partial-duration series, 36,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1898	---	38.80	[a]160,000	1943	Dec. 29, 1942	28.45	96,000
					May 12, 1943	42.0	193,000
1927	Apr. 16, 1927	45.36	[a]212,000		May 20, 1943	28.68	97,500
1930	May 12, 1930	14.50	31,100	1944	Mar. 22, 1944	14.76	34,600
1931	Feb. 11, 1931	14.50	31,100	1945	Feb. 22, 1945	18.83	51,300
					Mar. 1, 1945	16.38	41,200
1932	Jan. 17, 1932	15.70	35,500		Mar. 4, 1945	21.05	61,300
					Mar. 21, 1945	23.36	71,600
1933	Dec. 25, 1932	19.18	47,400		Apr. 2, 1945	26.92	88,600
	May 15, 1933	29.3	84,600		Apr. 16, 1945	43.77	209,000
					May 18, 1945	16.00	39,500
1934	Apr. 7, 1934	11.25	21,300		June 13, 1945	23.83	73,800
1935	Mar. 11, 1935	35.23	127,000	1946	Feb. 15, 1946	18.63	50,500
	Mar. 25, 1935	18.57	50,700		May 27, 1946	22.90	69,800
	June 4, 1935	23.10	68,700				
	June 8, 1935	23.68	71,100	1947	Nov. 6, 1946	17.80	47,500
	June 19, 1935	26.31	81,600		Nov. 10, 1946	16.50	42,400
					Dec. 12, 1946	20.46	59,200
1936	Sept.29, 1936	12.53	28,100		Apr. 26, 1947	18.40	50,100
1937	Jan. 16, 1937	18.49	50,600	1948	June 19, 1948	17.43	46,100
	Feb. 1, 1937	15.18	37,900				
				1949	Jan. 27, 1949	22.0	65,700
1938	Feb. 18, 1938	29.84	110,000		Feb. 17, 1949	23.37	72,000
	Mar. 29, 1938	15.22	37,600				
	May 24, 1938	17.93	49,800	1950	Jan. 5, 1950	16.28	41,500
					Jan. 15, 1950	18.17	49,400
1939	Apr. 19, 1939	16.19	42,000		Feb. 14, 1950	16.66	43,200
	May 13, 1939	18.83	54,100		May 12, 1950	38.75	161,000
1940	Apr. 12, 1940	16.32	42,500	1951	Feb. 20, 1951	25.64	82,400
					July 2, 1951	16.88	44,000
1941	Apr. 16, 1941	20.17	56,900		July 4, 1951	17.10	44,800
	Apr. 20, 1941	30.57	106,000				
				1952	Mar. 22, 1952	14.22	36,100
1942	Nov. 1, 1941	20.00	56,000		Apr. 14, 1952	15.07	40,100
	Apr. 11, 1942	17.15	44,000				

[a] Annual peak only.

White River basin

(89) North Fork River near Tecumseh, Mo.

Location.--Lat 36°37'22", long 92°14'53", in NE¼SE¼ sec. 35, T. 23 N., R. 12 W., 3.2 miles downstream from Spring Creek and 3½ miles northeast of Tecumseh.

Drainage area.--561 sq mi.

Gage.--Nonrecording gage Oct. 1, 1944, to May 11, 1945, at datum 0.22 ft lower than present gage. Recording gage since May 12, 1945. Datum of present gage is 584.67 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Gage heights given herein converted to present datum.

Stage-discharge relation.--Defined by current-meter measurements below 22,000 cfs.

Flood stage.--14 ft.

Remarks.--Base for partial-duration series, 5,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Feb. 21, 1945	9.0	9,590	1949	Jan. 19, 1949	7.4	6,290
	Feb. 26, 1945	13.2	17,700		Jan. 24, 1949	14.9	20,600
	Mar. 6, 1945	6.6	5,400		Jan. 28, 1949	8.76	8,690
	Mar. 19, 1945	8.0	7,610		Feb. 15, 1949	11.9	14,500
	Mar. 30, 1945	10.7	12,800		June 11, 1949	8.44	7,980
	Apr. 2, 1945	8.1	7,790		July 7, 1949	8.83	8,690
	Apr. 15, 1945	16.7	25,100				
	May 10, 1945	7.2	6,400	1950	Jan. 4, 1950	18.05	27,400
	June 9, 1945	6.38	5,400		Jan. 13, 1950	9.30	9,590
	June 11, 1945	8.75	9,590		Feb. 13, 1950	7.69	6,790
	June 17, 1945	10.60	12,900		Apr. 4, 1950	6.91	5,500
					May 10, 1950	12.80	16,300
1946	Feb. 14, 1946	12.22	15,100		June 10, 1950	6.64	5,050
	Mar. 6, 1946	7.60	6,620				
	May 16, 1946	11.23	13,100	1951	Feb. 11, 1951	7.47	6,450
	May 25, 1946	9.81	10,500		July 11, 1951	7.30	6,130
1947	Nov. 10, 1946	9.94	10,700	1952	Nov. 24, 1951	7.94	7,130
	Dec. 12, 1946	7.79	6,790		Mar. 11, 1952	9.17	9,410
	Apr. 25, 1947	8.22	7,640		Apr. 12, 1952	9.74	10,300
1948	Jan. 1, 1948	7.25	5,970				
	June 18, 1948	7.46	6,450				

(90) Bryant Creek near Tecumseh, Mo.

Location.--Lat 36°37'35", long 92°18'25", in E½ sec. 32, T. 23 N., R. 12 W., three-quarters of a mile downstream from Pine Creek, 3 miles northwest of Tecumseh, and 5 miles upstream from mouth.

Drainage area.--570 sq mi.

Gage.--Nonrecording gage prior to July 30, 1945, recording gage thereafter. Datum of gage is 573.15 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements below 14,000 cfs, and by slope-area determination of peak flow above.

Flood stage.--15 ft.

Remarks.--Base for partial-duration series, 6,000 cfs.

White River basin

(90) Bryant Creek near Tecumseh, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Feb. 21, 1945	15.50	18,800	1949	Jan. 25, 1949	14.3	14,200
	Feb. 26, 1945	15.80	20,000		Jan. 28, 1949	12.55	9,260
	Mar. 6, 1945	10.85	6,230		Feb. 15, 1949	14.75	16,000
	Mar. 19, 1945	11.45	7,110		July 8, 1949	11.2	6,800
	Mar. 31, 1945	11.00	6,500		July 10, 1949	10.88	6,360
	Apr. 2, 1945	11.40	7,110				
	Apr. 14,15,1945	18.00	30,000	1950	Jan. 4, 1950	19.50	37,500
	May 10, 1945	10.75	6,100		Jan. 13, 1950	12.87	9,960
	June 11, 1945	11.20	6,800		Feb. 13, 1950	12.29	8,640
	June 17, 1945	14.50	15,000		Apr. 4, 1950	10.80	6,230
					May 12, 1950	14.99	16,800
1946	Feb. 14, 1946	15.86	20,400		Aug. 8, 1950	12.9	9,960
	May 16, 1946	14.21	13,900		Aug. 28, 1950	10.96	6,500
1947	Nov. 10, 1946	16.17	21,600	1951	Feb. 19, 1951	10.99	6,500
	Dec. 12, 1946	10.76	6,230		July 1, 1951	13.22	10,700
	Apr. 25, 1947	11.19	6,800		July 4, 1951	11.66	7,590
					July 11, 1951	11.45	7,110
1948	June 19, 1948	11.00	6,500				
				1952	Mar. 11, 1952	12.45	8,840
					Apr. 12, 1952	12.10	8,280

(91) North Fork River at Tecumseh, Mo.
[Published as "North Fork of White River" prior to 1940]

Location.--Lat 36°36'16", long 92°17'19", in NW¼NE¼ sec. 16, T. 22 N., R. 12 W., at bridge on State Highway 80 at Tecumseh, half a mile downstream from Bryant Creek, 3 miles upstream from Lick Creek, and 9 miles upstream from Missouri-Arkansas border.

Drainage area.--1,157 sq mi.

Gage.--Nonrecording gage Oct. 24, 1921, to May 31, 1940, recording gage June 1, 1940, to Feb. 28, 1945 (discontinued). Prior to June 29, 1924, at site 200 ft downstream from and at different datum from present gage. Datum of present gage is 547.75 ft above mean sea level, datum of 1929. Gage heights given herein converted to present datum.

Stage-discharge relation.--Defined by current-meter measurements below 48,000 cfs and extended above by logarithmic plotting. Shifts in relation occur.

Flood stage.--24 ft.

Remarks.--Station discontinued because of backwater from Norfolk Dam. Base for partial-duration series, 10,000 cfs.

White River basin

(91) North Fork River at Tecumseh, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1905	July 1905	[a]31.6	[b]85,000	1933	May 14, 1933	15.70	25,200
1915	Aug 1915	[a]31.0	[b]80,000	1934	Mar. 28, 1934	2.44	1,850
1922	Mar. 31, 1922	7.1	8,180	1935	Mar. 11, 1935	20.53	39,900
					June 3, 1935	10.99	15,300
1923	Feb. 1, 1923	18.6	34,400		June 18, 1935	8.95	12,000
	Mar. 16, 1923	8.4	10,500				
				1936	Sept.24, 1936	4.75	5,300
1924	June 11, 1924	20.0	38,300				
				1937	Jan. 15, 1937	10.33	14,100
1925	Dec. 19, 1924	10.50	14,600		May 2, 1937	9.06	12,200
					June 10, 1937	10.60	14,600
1926	Oct. 17, 1925	5.70	5,980				
				1938	Feb. 18, 1938	16.80	28,600
1927	Apr. 1, 1927	10.36	14,300		Mar. 29, 1938	8.86	11,600
	Apr. 14, 1927	20.80	41,300		May 23, 1938	14.00	21,400
	Apr. 19, 1927	15.31	24,200				
	May 6, 1927	8.73	11,500	1939	Apr. 17, 1939	12.6	19,200
	June 21, 1927	12.90	18,800				
	Aug. 15, 1927	11.39	16,000	1940	Apr. 11, 1940	8.9	13,800
1928	Nov. 8, 1927	8.97	12,000	1941	Apr. 16, 1941	10.95	18,700
	Dec. 14, 1927	16.20	26,600				
	Apr. 6, 1928	8.70	11,500	1942	Oct. 18, 1941	9.25	15,000
	Apr. 21, 1928	10.30	14,100		Oct. 31, 1941	12.4	22,500
	June 9, 1928	11.48	16,200		June 18, 1942	9.37	15,300
	June 13, 1928	24.00	53,000				
				1943	Dec. 27, 1942	22.28	51,000
1929	Jan. 25, 1929	9.10	12,200		Dec. 29, 1942	11.90	21,300
					May 11, 1943	22.86	52,900
1930	Jan. 14, 1930	8.50	11,200		May 18, 1943	21.67	48,700
					May 20, 1943	13.23	24,800
1931	Feb. 9, 1931	4.30	4,550		June 23, 1943	8.50	13,200
1932	Jan.17,23, 1932	4.18	4,250	1944	Apr. 11, 1944	3.82	3,830

[a] From floodmarks.
[b] Annual peak only.

(92) Black River near Annapolis, Mo.

Location.--Lat 37°20'10", long 90°47'15", in SW¼NW¼ sec. 25, T. 31 N., R. 2 E., 0.4 mile downstream from Mayberry Branch, 7 miles southwest of Annapolis, 11 miles downstream from East Fork, and mile 278.5.

Drainage area.--484 sq mi.

Gage.--Recording. Prior to Aug. 21, 1942, at site 415 ft upstream at same datum. Datum of gage is 569.72 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements below 33,000 cfs.

Flood-stage.--Indeterminate.

Remarks.--Gage-height record prior to Oct. 1, 1939, furnished by Corps of Engineers. Base for partial-duration series, 7,000 cfs.

White River basin

(92) Black River near Annapolis, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1939	Apr. 17, 1939	17.4	[a] 32,500	1947	Apr. 25, 1947	15.22	26,200
					June 27, 1947	12.30	16,700
1940	Apr. 19, 1940	8.51	6,920				
				1948	Jan. 1, 1948	13.72	21,200
1941	Apr. 17, 1941	10.14	9,330				
				1949	Jan. 19, 1949	11.6	14,600
1942	Oct. 31, 1941	9.60	8,240		Jan. 24, 1949	17.15	33,600
	Jan. 31, 1942	10.27	9,560		Jan. 28, 1949	9.03	7,820
					Feb. 15, 1949	12.66	18,000
1943	Oct. 30, 1942	9.15	7,740				
	Dec. 27, 1942	17.60	33,400	1950	Oct. 21, 1949	9.55	9,160
	May 11, 1943	18.9	37,900		Jan. 4, 1950	17.63	35,200
	May 18, 1943	10.1	9,520		Jan. 12, 1950	9.66	9,400
					Feb. 13, 1950	9.61	9,160
1944	Apr. 23, 1944	10.13	9,520		May 10, 1950	12.38	17,000
	May 3, 1944	11.58	13,400		June 10, 1950	8.57	7,080
1945	Mar. 31, 1945	16.6	31,300	1951	Feb. 7, 1951	8.95	7,820
	Apr. 14, 1945	17.7	35,600		Feb. 19, 1951	11.22	13,400
	June 8, 1945	20.1	45,400		June 24, 1951	9.57	9,160
	June 10, 1945	20.1	45,400		June 30, 1951	11.82	15,200
					July 10, 1951	11.22	13,400
1946	Jan. 9, 1946	9.40	8,680		July 13, 1951	12.99	19,000
	Feb. 13, 1946	16.67	31,700				
	Mar. 6, 1946	9.90	9,900	1952	Nov. 12, 1951	9.13	8,020
	May 1, 1946	10.4	11,200		Mar. 11, 1952	10.84	12,300
	May 16, 1946	12.6	17,700		Apr. 4, 1952	9.13	8,020
	May 25, 1946	15.6	27,600		Apr. 13, 1952	9.34	8,460

[a] Annual peak only.

(93) Black River at Leeper, Mo.

Location.--Lat 37°04'45", long 90°42'50", in SE¼SW¼ sec. 22, T. 28 N., R. 3 E., at bridge on State Highway 34, half a mile northwest of Leeper, 2 miles downstream from McKenzie Creek, 6 miles downstream from Clearwater Dam, and at mile 251.0.

Drainage area.--957 sq mi.

Gage.--Nonrecording gage June 15, 1921, to Oct. 21, 1937, and Jan.22 to Apr. 6, 1942; recording gage Oct. 22, 1937 to Jan. 21, 1942, and since Apr. 7, 1942. Prior to Apr. 7, 1942, gages at site 1,900 ft downstream from and at datum 3.85 ft lower than present gage. Datum of present gage is 428.51 ft above mean sea level, datum of 1929. Gage heights given herein converted to present site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 55,000 cfs.

Flood stage.--11 ft (U. S. Weather Bureau).

Remarks.--Flow regulated by Clearawater Reservoir (capacity, 413,700 acre-ft) since June 3, 1948. Base for partial-duration series, 9,000 cfs.

White River basin

(93) Black River at Leeper, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1904	March 1904	[a] 22.3	[b] 125,000	1935	Mar. 11, 1935	16.9	72,300
					June 21, 1935	9.65	17,900
1915	August 1915	[a] 18.8	[b] 90,000				
				1936	Nov. 5, 1935	7.15	8,660
1922	Nov. 19, 1921	11.1	24,000				
	Mar. 31, 1922	10.0	20,700	1937	Oct. 9, 1936	8.00	10,800
	Apr. 18, 1922	7.74	10,400		Jan. 8, 1937	7.75	9,820
	Apr. 28, 1922	7.46	9,460		Jan. 15, 1937	11.85	28,400
1923	Feb. 1, 1923	9.90	19,600	1938	Feb. 18, 1938	13.0	36,200
	Mar. 12, 1923	8.22	12,030		May 24, 1938	8.25	11,500
	Mar. 16, 1923	10.50	21,900				
	May 16, 1923	10.48	21,870	1939	Mar. 6, 1939	8.54	12,500
					Apr. 17, 1939	12.60	33,400
1924	June 12, 1924	6.72	7,250				
				1940	Apr. 20, 1940	8.05	10,800
1925	Dec. 20, 1924	4.63	2,520				
				1941	Apr. 18, 1941	7.10	8,000
1926	Nov. 8, 1925	8.90	14,600				
				1942	Nov. 1, 1941	8.37	12,000
1927	Apr. 1, 1927	13.75	42,400		Jan. 31, 1942	7.88	10,300
	Apr. 15, 1927	13.90	44,100				
	Apr. 20, 1927	9.00	14,900	1943	Dec. 28, 1942	14.32	47,200
	May 25, 1927	12.65	33,400		May 11, 1943	16.36	54,400
	June 1, 1927	13.45	40,000		May 19, 1943	8.76	13,600
1928	Dec. 14, 1927	13.10	36,900	1944	Apr. 23, 1944	9.04	14,400
	Apr. 6, 1928	8.64	13,500		May 4, 1944	8.40	12,100
	Apr. 22, 1928	7.33	9,050				
	June 10, 1928	13.00	36,200	1945	Feb. 22, 1945	9.08	14,300
	June 13, 1828	13.20	37,700		Feb. 26, 1945	12.16	28,200
	June 17, 1928	7.68	10,200		Mar. 7, 1945	10.85	21,500
	June 21, 1928	11.90	29,000		Mar. 31, 1945	13.86	37,400
					Apr. 14, 1945	15.10	45,100
1929	Jan. 25, 1929	9.50	18,100		June 8, 1945	17.08	59,700
	Apr. 10, 1929	9.20	15,640		June 10, 1945	16.08	52,200
	May 7, 1929	10.30	21,000		June 17, 1945	8.16	11,200
	May 13, 1929	13.10	36,900				
	June 13, 1929	7.95	11,200	1946	Jan. 9, 1946	8.45	11,900
					Feb. 14, 1946	14.35	40,400
1930	Jan. 14, 1930	9.10	18,500		Mar. 7, 1946	8.10	11,900
					May 1, 1946	8.95	14,700
1931	Mar. 8, 1931	6.10	6,000		May 17, 1946	11.10	23,300
					May 25, 1946	14.7	42,400
1932	Jan. 23, 1932	5.90	5,600				
				1947	Apr. 11, 1947	7.8	10,200
1933	Apr. 16, 1933	14.55	49,200		Apr. 25, 1947	13.27	34,000
	May 14, 1933	17.5	78,400		June 28, 1947	11.45	25,200
1934	Aug. 22, 1934	5.50	4,280	1948	Jan. 2, 1948	8.65	[b] 12,600

[a] From floodmarks.
[b] Annual peak only.

(94) Black River at Poplar Bluff, Mo.

Location.--Lat 36°45'25", long 90°23'25", in NW¼SE¼ sec. 2, T. 24 N., R. 6 E., at bridge on U. S. Highway 60 in Poplar Bluff, 5 miles downstream from Indian Creek and at mile 210.9.
Drainage area.--1,245 sq mi.
Gage.--Nonrecording. Prior to July 17, 1935, at site 300 ft downstream from and at datum 1.89 ft higher than present gage. July 17, 1935, to Sept. 30, 1940, at present site at datum 2.0 ft higher than present gage. Datum of present gage is 317.40 ft above mean sea level, datum of 1929. Gage heights given herein converted to present site and datum.
Stage-discharge relation.--Defined by current-meter measurements below 44,000 cfs; shifts in relation occur. Stage-discharge relation affected by right-bank levee constructed 1906-10 and left-bank levee constructed 1918-22.
Flood stage.--16 ft (U. S. Weather Bureau).
Historical data.--Flood of August 1915 reached a stage of 21.1 ft.
Remarks.--Flow regulated by Clearwater Reservoir (capacity 413,700 acre-ft) since June 3, 1948. Peaks for period prior to Oct. 1, 1936, and for period Oct. 1, 1937, to Sept. 30, 1939, computed from plotted U. S. Weather Bureau readings. Base for partial-duration series, 6,000 cfs.

White River basin

(94) Black River at Poplar Bluff, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1904	March 1904	-	[a]100,000
1923	Jan. 21, 1923	16.3	7,260
	Feb. 3, 1923	19.3	23,900
	Mar. 17, 1923	18.5	17,700
	May 6, 1923	17.1	9,900
	May 17, 1923	19.2	23,100
1924	May 31, 1924	14.8	5,000
1925	June 14, 1925	15.9	6,420
1926	Oct. 18, 1925	15.8	6,250
	Nov. 10, 1925	17.5	11,700
1927	Jan. 23, 1927	18.0	14,500
	Mar. 19, 1927	17.2	10,300
	Apr. 2, 1927	19.8	28,100
	Apr. 16, 1927	20.3	32,500
	May 10, 1927	16.7	8,420
	May 27, 1927	19.3	23,900
	June 3, 1927	20.0	29,800
1928	Dec. 15, 1927	20.0	30,700
	Apr. 8, 1928	18.5	17,700
	Apr. 23, 1928	17.9	13,900
	June 15, 1928	19.9	29,000
	June 23, 1928	19.8	28,100
1929	Jan. 27, 1929	18.5	17,700
	Apr. 11, 1929	18.0	14,500
	May 15, 1929	20.2	31,600
	June 15, 1929	17.2	10,300
1930	Jan. 16, 1930	19.3	23,900
1931	Mar. 9, 1931	14.6	4,820
1932	Jan. 24, 1932	14.6	4,820
1933	Dec. 31, 1932	16.6	8,100
	Jan. 23, 1933	16.8	8,760
	Apr. 17, 1933	19.5	25,600
	May 16, 1933	20.6	35,300
1934	Mar. 27, 1934	10.0	2,880
1935	Mar. 12, 1935	21.1	40,200
	May 6, 1935	15.7	6,090
	June 23, 1935	17.7	12,700
1936	Apr. 6, 1936	12.6	3,796
1937	Oct. 11, 1936	16.2	7,020
	Jan. 10, 1937	17.2	10,300
	Jan. 16, 1937	19.66	27,300
	May 4, 1937	16.51	7,800
1938	Feb. 20, 1938	19.42	24,800
	Mar. 31, 1938	17.81	13,300
	May 26, 1938	15.9	6,420
1939	Feb. 1, 1939	16.5	7,260
	Mar. 7, 1939	17.9	13,900
	Apr. 19, 1939	19.4	24,800
1940	Apr. 21, 1940	17.8	10,300
1941	Apr. 19, 1941	13.6	4,880
1942	Nov. 3, 1941	17.38	8,520
	Feb. 2, 1942	16.26	6,770
	Apr. 10, 1942	17.3	8,290
1943	Dec. 29, 1942	19.56	21,500
	May 12, 1943	20.77	52,600
	May 21, 1943	17.53	8,770
1944	Apr. 25, 1944	17.40	8,520
	May 5, 1944	15.68	6,190
1945	Feb. 24, 1945	16.00	6,260
	Feb. 28, 1945	19.70	27,000
	Mar. 8, 1945	18.82	14,800
	Mar. 21, 1945	17.18	8,080
	Apr. 1, 1945	19.85	28,800
	Apr. 16, 1945	20.54	43,400
	June 10, 1945	20.80	50,800
	June 19, 1945	17.78	9,670
1946	Jan. 11, 1946	16.73	7,210
	Feb. 15, 1946	19.53	23,500
	May 3, 1946	17.77	9,670
	May 18, 1946	18.21	11,200
	May 26, 1946	20.02	32,600
1947	Apr. 13, 1947	16.29	6,620
	Apr. 27, 1947	18.81	14,800
	June 29, 1947	16.25	6,490
1948	Jan. 3, 1948	18.09	10,800

[a] Annual peak only, estimated.

(95) Jacks Fork at Eminence, Mo.

Location.--Lat 37°09'15", long 91°21'30", in W½ sec. 26, T. 29 N., R. 4 W., at bridge on State Highway 19 at Eminence, 1½ miles downstream from Mahans Creek and 8.0 miles upstream from mouth.

Drainage area.--398 sq mi.

Gage.--Nonrecording. Prior to July 27, 1934, at site 1,400 ft upstream from and at datum 2.11 ft higher than present gage. Datum of present gage is 617.91 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 21,000 cfs; shifts in relation occur.

Flood stage.--28 ft.

Remarks.--Base for partial-duration series, 3,900 cfs.

White River basin

(95) Jacks Fork at Eminence, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	Nov. 19, 1921	7.65	7,240
	Mar. 31, 1922	7.07	6,300
	Apr. 11, 1922	5.90	4,240
1923	Jan. 21, 1923	6.30	4,890
	Feb. 1, 1923	10.00	12,200
	Mar. 12, 1923	6.12	5,070
	Mar. 16, 1923	7.83	8,040
	May 16, 1923	7.10	6,780
	June 13, 1923	6.75	6,260
1924	June 21, 1924	4.69	2,970
1925	Apr. 28, 1925	6.10	5,070
1926	Oct. 17, 1925	5.65	4,270
1927	Apr. 1, 1927	6.63	5,920
	Apr. 14, 1927	8.46	9,350
	Apr. 19, 1927	8.69	9,730
	May 6, 1927	7.40	7,320
	May 25, 1927	6.69	6,090
	June 2, 1927	8.80	10,900
	Aug. 15, 1927	5.50	4,110
1928	Dec. 14, 1927	11.00	14,200
	Apr. 6, 1928	8.81	9,920
	June 9, 1928	8.98	10,300
	June 13, 1928	16.24	40,000
	June 21, 1928	6.50	4,700
1929	Jan. 25, 1929	8.60	8,360
	May 9, 1929	6.12	4,060
	May 14, 1929	7.30	5,980
	June 13, 1929	7.30	5,980
1930	Jan. 14, 1930	7.70	7,420
	Feb. 26, 1930	6.05	3,920
1931	Oct. 8, 1930	4.80	2,740
1932	Jan. 18, 1932	4.70	2,610
1933	Apr. 15, 1933	9.70	12,700
	May 14, 1933	11.50	17,000
1934	Sept.15, 1934	4.60	1,270
1935	Mar. 11, 1935	14.26	26,700
	June 3, 1935	9.98	11,800
1936	Nov. 10, 1935	5.67	2,620
1937	Jan. 8, 1937	7.22	5,220
	Jan. 15, 1937	8.34	7,590
	May 2, 1937	8.37	7,820
1938	Feb. 18, 1938	10.56	13,600
	Mar. 29, 1938	8.00	7,100
	May 23, 1938	11.03	14,800
1939	Jan. 30, 1939	7.38	6,060
	Apr. 6, 1939	6.75	4,960
	Apr. 17, 1939	11.1	15,100
1940	Apr. 12, 1940	6.5	4,450
1941	Jan. 2, 1941	4.6	1,860
1942	Oct. 18, 1941	6.53	4,450
	Oct. 31, 1941	8.6	8,050
	Apr. 9, 1942	7.59	5,970
	May 31, 1942	6.70	4,480
	June 18, 1942	6.60	4,330
1943	Dec. 27, 1942	14.50	27,500
	May 11, 1943	12.60	20,000
	May 20, 1943	8.09	6,960
1944	May 3, 1944	5.26	2,570
1945	Feb. 22, 1945	6.92	4,790
	Feb. 26, 1945	11.36	16,080
	Mar. 6, 1945	7.02	5,310
	Mar. 31, 1945	10.95	14,800
	Apr. 2, 1945	7.56	6,450
	Apr. 14, 1945	11.5	16,400
	June 10, 1945	7.47	6,250
	June 17, 1945	10.60	13,600
1946	Feb. 13, 1946	11.7	16,700
	Mar. 6, 1946	7.93	7,050
	May 16, 1946	7.03	5,310
	May 25, 1946	10.20	12,460
	Aug. 14, 1946	11.50	16,400
1947	Nov. 10, 1946	9.1	9,640
	Apr. 25, 1947	9.0	9,400
1948	Jan. 1, 1948	8.25	7,670
	June 19, 1948	8.85	8,960
1949	Jan. 19, 1949	9.1	9,640
	Jan. 24, 1949	13.85	24,600
	Jan. 28, 1949	7.5	6,250
	Feb. 15, 1949	10.85	14,200
	Mar. 27, 1949	6.5	4,490
	May 24, 1949	7.8	6,850
	June 13, 1949	9.55	10,900
	July 8, 1949	8.5	8,300
1950	Dec. 22, 1949	6.1	3,900
	Jan. 4, 1950	13.2	22,300
	Jan. 13, 1950	7.0	5,800
	Feb. 13, 1950	7.0	5,800
	Apr. 3, 1950	8.8	9,340
	May 10, 1950	14.5	27,500
	May 20, 1950	5.9	4,000
	June 10, 1950	5.9	4,000
1951	Feb. 19, 1951	8.5	8,650
	Feb. 21, 1951	7.15	6,160
	Mar. 12, 1951	6.6	5,120
	July 1, 1951	7.0	5,800
	July 10, 1951	9.0	9,860
1952	Nov. 13, 1951	6.28	4,630
	Nov. 24, 1951	6.46	4,950
	Mar. 11, 1952	8.59	8,870
	Apr. 5, 1952	6.36	4,790
	Apr. 13, 1952	8.17	8,030

White River basin

(96) Current River near Eminence, Mo.

Location.--Lat 37°11'00", long 91°15'30", in SW¼NE¼ sec. 15, T. 29 N., R. 3 W., 1 mile downstream from Jacks Fork, 8 miles northeast of Eminence, and at mile 123.0.

Drainage area.--1,272 sq mi.

Gage.--Nonrecording gage prior to Dec. 8, 1934, and recording gage thereafter. Datum of gage is 568.82 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 48,000 cfs.

Flood stage.--Indeterminate.

Historical data.--Flood of March 1904 reached a height of about 36 ft above water surface at a point 1 mile above gage, when gage in use Oct. 19, 1921, read 1.65 ft.

Remarks.--Base for partial-duration series, 12,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1922	Nov. 19, 1921	14.2	25,800	1940	Apr. 17, 1940	8.64	9,790
	Mar. 31, 1922	11.5	17,800				
	Apr. 17, 1922	11.0	16,400	1941	Apr. 17, 1941	5.11	4,210
1923	Feb. 1, 1923	13.4	23,700	1942	Nov. 1, 1941	9.70	11,100
	Mar. 16, 1923	13.5	24,000				
	May 16, 1923	12.5	21,200	1934	Dec. 27, 1942	26.97	75,100
					May 11, 1943	21.49	48,800
1924	June 21, 1924	6.4	6,920		May 19, 1943	14.56	23,400
1925	Apr. 28, 1925	7.0	8,000	1944	Apr. 23, 1944	9.97	11,400
1926	Oct. 17, 1925	8.3	10,700	1945	Feb. 22, 1945	13.20	19,800
					Feb. 26, 1945	14.59	23,700
1927	Apr. 1, 1927	14.1	25,100		Mar. 7, 1945	12.40	17,700
	Apr. 15, 1927	16.0	39,000		Mar. 31, 1945	16.25	28,800
	Apr. 19, 1927	12.1	19,500		Apr. 2, 1945	12.35	17,700
	May 25, 1927	12.0	19,000		Apr. 14, 1945	21.23	47,600
	June 2, 1927	20.0	43,800		June 10, 1945	14.30	22,800
					June 17, 1945	13.46	20,600
1928	Dec. 14, 1927	15.5	27,900				
	June 9, 1928	24.3	59,400	1946	Feb. 14, 1946	18.96	39,800
	June 13, 1928	21.0	46,900		Mar. 6, 1946	11.67	16,300
					May 16, 1946	10.89	14,300
1929	Jan. 25, 1929	10.3	13,600		May 25, 1946	20.20	44,300
	May 13, 1929	13.8	21,200		Aug. 14, 1946	23.95	60,200
	June 13, 1929	9.8	12,500				
				1947	Nov. 10, 1946	12.00	17,000
1930	Jan. 14, 1930	10.2	13,600		Apr. 25, 1947	14.7	25,300
1931	Mar. 8, 1931	6.6	6,250	1948	June 19, 1948	10.52	13,400
1932	Jan. 23, 1932	5.7	4,850	1949	Jan. 19, 1949	12.6	18,800
					Jan. 25, 1949	20.40	45,000
1933	Apr. 16, 1933	17.9	35,900		Feb. 15, 1949	15.77	28,900
	May 14, 1933	21.4	48,300		June 13, 1949	10.6	13,800
					July 8, 1949	11.10	15,000
1934	Sept.15, 1934	5.47	4,760				
				1950	Jan. 4, 1950	22.35	53,000
1935	Mar. 11, 1935	24.35	59,600		Jan. 14, 1950	12.95	20,700
	June 3, 1935	12.62	19,500		Apr. 3, 1950	13.23	21,300
	June 26, 1935	11.50	16,700		May 10, 1950	20.6	47,300
					May 12, 1950	12.80	20,100
1936	Nov. 10, 1935	7.27	7,860		June 10, 1950	13.00	20,700
1937	Jan. 15, 1937	13.05	20,500	1951	Feb. 19, 1951	13.20	21,300
	May 3, 1937	13.35	21,600		July 1, 1951	13.47	22,200
					July 11, 1951	12.90	20,400
1938	Feb. 18, 1938	16.48	31,200		July 13, 1951	14.50	25,300
	Mar. 29, 1938	10.16	13,700				
	May 23, 1938	14.84	25,700	1952	Nov. 24, 1951	9.70	12,500
	July 17, 1938	10.75	15,000		Mar. 11, 1952	12.37	19,000
					Apr. 13, 1952	12.92	20,400
1939	Apr. 17, 1939	19.43	41,100				

White River basin

(97) Current River at Van Buren, Mo.

Location.--Lat 36°59'30", long 91°00'55", in NE¼NW¼ sec. 25, T. 27 N., R. 1 W., at bridge on U. S. Highway 60 in Van Buren, 0.4 mile downstream from Pike Creek, 4.7 miles upstream from Big Spring, and at mile 90.4.

Drainage area.--1,667 sq mi.

Gage.--Nonrecording gage Aug. 25, 1912, to Oct. 19, 1934; recording gage thereafter. Prior to Sept. 1, 1926, at site 100 ft downstream from present gage at different datum; Sept. 1, 1926, to Oct. 1, 1939, at present site at datum 3.00 ft higher than present gage. Datum of present gage is 442.78 ft above mean sea level, datum of 1929. Gage heights given herein converted to present site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 62,000 cfs; shifts in relation occur.

Flood stage.--20 ft.

Historical data.--Flood of Mar. 26, 1904, reached a stage of 29.0 ft and that of Aug. 21, 1915, a stage of 25.9 ft as determined by Missouri State Highway Commission from several reliable high-water marks in vicinity of gage. Investigations by J. C. Lester, Project Engineer, State Highway Commission, led to the conclusion that the discharge of the 1904 flood was less than that of 1915. The 1904 flood crests were the lower of the two floods at points upstream and downstream from the gage.

Remarks.--Peak discharges for the period prior to June 1, 1921, from records of Prof. T. J. Rodhouse, University of Missouri (based on stages measured from a reference point). Base for partial-duration series, 14,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1904	Mar. 26, 1904	29.0	--
1913	Mar. 26, 1913	--	[a] 11,500
1914	Apr. 29, 1914	--	[a] 36,000
1915	Aug. 21, 1915	25.9	[a] 125,000
1916	Jan. 31, 1916	--	[a] 85,000
1917	Apr. 8, 1917	--	[a] 11,800
1918	May 12, 1918	--	[a] 29,000
1919	June 4, 1919	--	[a] 16,000
1920	Mar. 26, 1920	--	[a] 22,900
1921	Apr. 28, 1921	--	[a] 22,200
1922	Nov. 20, 1921	13.2	22,100
	Apr. 1, 1922	12.0	17,600
	Apr. 18, 1922	11.5	15,600
1923	Feb. 2, 1923	13.2	21,800
	Mar. 17, 1923	13.0	21,000
	May 17, 1923	12.8	20,200
1924	May 31, 1924	9.7	9,500
1925	Apr. 29, 1925	8.2	5,800
1926	Oct. 17, 1925	9.67	9,500
1927	Apr. 1, 1927	14.48	27,400
	Apr. 15, 1927	16.10	34,500
	May 26, 1927	13.02	21,200
	June 2, 1927	16.22	35,000
1928	Dec. 14, 1927	15.34	31,000
	Apr. 7, 1928	12.56	19,400
	Apr. 22, 1928	12.25	18,300
	June 10, 1928	19.45	49,300
	June 13, 1928	18.59	45,700
	June 22, 1928	12.40	18,800
1929	Jan. 25, 1929	11.12	14,100
	Apr. 10, 1929	11.29	14,800
	May 7, 1929	12.20	18,100
	May 9, 1929	11.08	14,100
	May 13, 1929	13.48	23,100
	June 13, 1929	12.21	18,100
1930	Jan. 15, 1930	13.32	22,300
1931	Mar. 8, 1931	9.80	11,000
1932	Jan. 23, 1932	8.76	7,560
1933	Apr. 16, 1933	17.01	40,900
	May 14, 1933	19.7	56,000
1934	Sept. 15, 1934	8.12	5,720
1935	Mar. 11, 1935	22.84	86,600
	June 3, 1935	12.53	19,200
	June 27, 1935	11.50	15,500
1936	Nov. 11, 1935	8.23	6,800
1937	Jan. 15, 1937	13.00	25,100
	May 3, 1937	12.86	24,500
1938	Feb. 19, 1938	15.66	37,700
	May 24, 1938	13.38	26,820
	July 18, 1938	11.36	17,900
1939	Apr. 18, 1939	17.09	45,400

White River basin

(97) Current River at Van Buren, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Apr. 19, 1940	9.57	12,000	1947	Nov. 11, 1946	14.42	29,000
					Apr. 26, 1947	14.53	29,500
1941	Apr. 18, 1941	6.47	4,700				
				1948	Jan. 2, 1948	12.52	19,900
1942	Nov. 1, 1941	10.38	14,800				
				1949	Jan. 19, 1949	12.6	20,700
1943	Dec. 28, 1942	21.66	77,000		Jan. 25, 1949	19.26	59,200
	May 11, 1943	19.01	57,100		Jan. 28, 1949	11.7	17,300
	May 19, 1943	13.57	25,100		Feb. 16, 1949	14.9	31,600
1944	Apr. 23, 1944	13.11	22,800	1950	Jan. 5, 1950	19.90	61,500
					Jan. 14, 1950	12.75	21,600
1945	Feb. 22, 1945	12.72	21,200		Feb. 13, 1950	10.79	15,600
	Feb. 26, 1945	14.82	31,100		Apr. 4, 1950	13.95	26,800
	Mar. 7, 1945	12.69	21,100		May 11, 1950	19.26	56,900
	Mar. 31, 1945	16.30	39,500		June 11, 1950	13.31	23,900
	Apr. 15, 1945	19.5	60,600				
	June 10, 1945	13.73	25,600	1951	Feb. 19, 1951	12.95	22,700
	June 18, 1945	13.56	25,100		July 1, 1951	11.92	18,600
					July 11, 1951	13.42	24,300
1946	Feb. 14, 1946	17.14	44,400		July 14, 1951	13.17	23,500
	Mar. 7, 1946	11.66	17,300				
	May 17, 1946	11.16	15,300	1952	Nov. 24, 1951	11.28	16,600
	May 26, 1946	18.26	52,300		Mar. 12, 1952	12.44	20,400
	Aug. 15, 1946	20.74	69,400		Apr. 13, 1952	12.44	20,400

[a] Annual peak only.

(98) Current River at Doniphan, Mo.

Location.--Lat 36°37'25", long 90°50'55", in NW¼NW¼ sec. 27, T. 23 N., R. 2 E., half a mile upstream from State Highway 14, 1 mile west of Doniphan, 2½ miles upstream from Briar Creek, and at mile 51.3.

Drainage area.--2,038 sq mi.

Gage.--Nonrecording gage Aug. 1, 1918, to July 2, 1936; recording gage thereafter. Prior to May 22, 1928, at site 2,700 ft downstream from and at datum 0.06 ft higher than present gage; May 22, 1928, to Sept. 30, 1929, at site 2,800 ft downstream from and at datum 0.07 ft lower than present gage; Oct. 1, 1929, to Sept. 30, 1932, at site 2,800 ft downstream from and at datum 1.07 ft lower than present gage; Oct. 1, 1932, to July 2, 1936, at site 2,800 ft downstream from and datum 3.07 ft lower than present gage; datum of present gage is 322.21 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 60,000 cfs.

Flood stage.--12 ft (U. S. Weather Bureau).

Remarks.--Peaks for 1919 to 1921, computed from plotted Corps of Engineer readings. Base for partial-duration series, 14,000 cfs.

White River basin

(98) Current River at Doniphan, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1904	March 1904	[a]23.4	[b]130,000
1915	August 1915	[a]22.2	[b]105,000
1919	June 5, 1919	10.0	19,400
1920	Mar. 27, 1920	10.1	19,700
1921	Mar. 28, 1921	9.8	18,800
	Apr. 27, 1921	14.3	35,400
1922	Nov. 21, 1921	11.10	21,000
	Apr. 1, 1922	11.50	22,000
1923	Feb. 3, 1923	13.00	29,600
	Mar. 17, 1923	11.02	20,800
	May 17, 1923	11.22	21,300
1924	May 31, 1924	5.48	8,300
1925	June 13, 1925	4.50	6,540
1926	Oct. 18, 1925	6.50	10,300
1927	Apr. 7, 1927	12.55	28,600
	Apr. 15, 1927	17.30	48,800
	Apr. 20, 1927	12.58	28,600
	May 27, 1927	9.45	17,600
	June 2, 1927	15.98	43,000
1928	Dec. 15, 1927	14.80	37,600
	Apr. 7, 1928	9.35	17,600
	Apr. 23, 1928	10.33	20,400
	June 10, 1928	15.94	42,600
	June 14, 1928	15.98	43,000
	June 23, 1928	10.42	20,700
1929	Jan. 26, 1929	9.55	18,200
	Apr. 11, 1929	8.84	16,000
	May 8, 1929	9.60	18,200
	May 14, 1929	12.40	27,800
	June 14, 1929	8.60	15,500
1930	Jan. 15, 1930	12.10	25,500
1931	Mar. 9, 1931	6.95	9,500
1932	Jan. 24, 1932	6.41	8,300
1933	Jan. 22, 1933	11.20	14,500
	Apr. 17, 1933	17.65	35,200
	May 15, 1933	19.93	49,000
1934	Sept.16, 1934	6.63	6,210
1935	Mar. 12, 1935	23.89	94,400
	June 4, 1935	13.47	20,200
1936	Nov. 11, 1935	7.45	7,400
1937	Jan. 14, 1937	16.28	48,400
	May 4, 1937	12.28	22,400
1938	Feb. 19, 1938	15.72	43,100
	Mar. 31, 1938	10.26	15,500
	May 25, 1938	11.74	20,100
1939	Mar. 5, 1939	10.10	14,900
	Apr. 18, 1939	16.41	49,300
1940	Apr. 20, 1940	9.02	12,500
1941	Jan. 3, 1941	5.00	5,110
1942	Nov. 2, 1941	9.89	15,400
	Apr. 9, 1942	9.80	15,100
1943	Dec. 29, 1942	19.13	63,600
	May 12, 1943	18.06	55,400
	May 20, 1943	12.65	24,100
1944	Apr. 24, 1944	11.70	20,300
1945	Feb. 27, 1945	15.11	35,200
	Mar. 8, 1945	11.92	21,000
	Apr. 1, 1945	15.65	38,000
	Apr. 16, 1945	19.05	62,800
	June 11, 1945	14.10	30,200
	June 19, 1945	13.40	27,000
1946	Feb. 15, 1946	15.70	38,600
	Mar. 8, 1946	9.75	15,600
	May 18, 1946	9.3	14,300
	May 26, 1946	16.71	44,900
	Aug. 16, 1946	17.46	50,600
1947	Nov. 12, 1946	11.80	20,600
	Apr. 27, 1947	13.2	26,800
1948	Jan. 2, 1948	11.50	20,600
1949	Jan. 20, 1949	10.8	18,400
	Jan. 26, 1949	18.3	57,000
	Jan. 29, 1949	10.8	18,400
	Feb. 16, 1949	13.5	28,000
	Mar. 27, 1949	9.3	14,700
1950	Jan. 5, 1950	18.0	54,600
	Jan. 15, 1950	10.82	18,400
	Feb. 15, 1950	9.2	14,500
	Apr. 5, 1950	14.7	33,500
	May 11, 1950	18.2	56,200
	June 12, 1950	11.3	20,000
1951	Feb. 20, 1951	12.11	23,700
	July 2, 1951	10.20	17,700
	July 11, 1951	12.26	24,400
	July 15, 1951	10.90	19,700
1952	Nov. 25, 1951	10.46	18,600
	Mar. 12, 1952	11.73	22,200
	Apr. 14, 1952	11.22	20,600

[a] From floodmarks.
[b] Annual peak only.

White River basin

(99) Little Black River near Fairdealing, Mo.

Location.--Lat 36°39'40", long 90°34'25", in NW¼NW¼ sec. 7, T. 23 N., R. 5 E., at bridge on State Highway 14, 2½ miles downstream from Beaverdam Creek and 2½ miles east of Fairdealing.

Drainage area.--187 sq mi.

Gage.--Nonrecording gage Feb. 27, 1936, to Sept. 30, 1942 (discontinued). Prior to Oct. 1, 1939, at site 100 ft upstream from and at datum 1.5 ft higher than last used gage. Datum of last used gage is 297.15 ft above mean sea level, datum of 1929. Gage heights given herein converted to last used gage.

Stage-discharge relation.--Defined by current-meter measurements below 5,900 cfs.

Flood stage.--13 ft.

Remarks.--Peaks for period prior to Oct. 1, 1939, computed from plotted Corps of Engineer gage readings. Base for partial-duration series, 4,000 cfs.

Annual peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1936	Apr. 6, 1936	18.6	5,230	1939	Jan. 30, 1939	19.5	6,750
	Sept. 2, 1936	19.5	6,750		Mar. 5, 1939	19.1	6,070
					Apr. 17, 1939	19.9	7,470
1937	Nov. 3, 1936	19.3	6,410				
	Dec. 31, 1936	18.9	5,730	1940	Apr. 12, 1940	18.12	4,200
	Jan. 15, 1937	22.5	13,600				
				1941	Jan. 25, 1941	9.7	825
1938	Feb. 18, 1938	21.4	10,400				
	Mar. 29, 1938	20.3	8,190	1942	Apr. 9, 1942	20.0	6,270

(100) Eleven Point River near Bardley, Mo.

Location.--Lat 36°38'55", long 91°12'03", in NE¼SE¼ sec. 17, T. 23 N., R. 2 W., at bridge on State Highway 14, 7 miles southwest of Bardley and 7½ miles upstream from Fredericks Fork.

Drainage area.--793 sq mi.

Gage.--Nonrecording gage prior to Oct. 20, 1939, and recording gage thereafter. Datum of gage is 410.84 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 25,000 cfs.

Flood stage.--12 ft.

Remarks.--Base for partial-duration series, 4,000 cfs.

White River basin

(100) Eleven Point River near Bardley, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	Aug. 20, 1915	[a]19.7	[b]44,000	1940	Apr. 12, 1940	8.3	6,530
1922	Mar. 31, 1922	10.0	7,560	1941	Apr. 4, 1941	3.4	976
1923	Feb. 2, 1923	10.1	7,600	1942	Oct. 31, 1941	10.1	9,830
	Mar. 12, 1923	7.2	4,400		Apr. 8, 1942	7.7	5,750
	Mar. 16, 1923	10.6	9,450		May 31, 1942	15.7	28,300
	May 15, 1923	8.8	6,120				
	June 11, 1923	8.1	5,350	1943	Nov. 18, 1942	6.86	4,620
					Nov. 22, 1942	6.56	4,230
1924	Aug. 10, 1924	3.9	1,680		Dec. 28, 1942	14.10	22,200
					May 11, 1943	15.18	25,800
1925	June 13, 1925	7.2	4,400				
				1944	Apr. 23, 1944	8.36	6,840
1926	Nov. 8, 1925	5.1	2,490		May 3, 1944	8.12	6,360
1927	Apr. 14, 1927	18.7	40,000	1945	Feb. 27, 1945	--	[c]15,000
	Apr. 19, 1927	11.6	11,400		Mar. 3, 1945	--	[c]4,000
	May 5, 1927	10.0	8,640		Mar. 7, 1945	--	[c]7,200
	June 1, 1927	10.2	8,960		Mar. 20, 1945	--	[c]6,900
	June 21, 1927	8.2	6,040		Mar. 31, 1945	15.5	27,200
					Apr. 15, 1945	13.6	20,360
1928	Dec. 14, 1927	15.0	18,700		June 11, 1945	10.01	9,600
	Apr. 6, 1928	11.6	11,400		June 18, 1945	8.32	6,680
	Apr. 21, 1928	9.3	7,560				
	June 13, 1928	15.6	27,200	1946	Jan. 9, 1946	7.30	5,280
	June 21, 1928	7.8	5,560		Feb. 14, 1946	10.88	11,400
					Mar. 6, 1946	8.21	6,570
1929	Jan. 25, 1929	9.5	8,000		May 17, 1946	7.07	5,010
	Feb. 26, 1929	6.9	4,480		May 25, 1946	9.30	8,330
	Apr. 9, 1929	7.3	4,960		Aug. 14, 1946	7.42	5,420
1930	Jan. 13, 1930	8.0	5,800	1947	Dec. 12, 1946	5.50	3,100
1931	Aug. 6, 1931	5.2	2,640	1948	Jan. 1, 1948	7.75	5,980
					June 19, 1948	9.54	8,680
1932	Jan.23?4, 1932	3.6	1,280				
				1949	Jan. 18, 1949	6.9	4,750
1933	Apr. 16, 1933	10.9	10,100		Jan. 24, 1949	16.7	33,200
	May 14, 1933	9.5	8,000		Jan. 28, 1949	8.3	6,700
					Feb. 14, 1949	7.1	5,010
1934	Sept.15, 1934	3.5	1,190		Feb. 16, 1949	8.6	7,180
1935	Mar. 12, 1935	13.7	20,200	1950	Jan. 4, 1950	12.80	16,200
	June 3, 1935	9.5	7,840		Feb. 13, 1950	8.67	7,340
	June 17, 1935	7.8	5,560		May 11, 1950	9.55	8,860
					May 30, 1950	7.22	5,140
1936	Dec. 8, 1935	3.1	900		June 3, 1950	8.20	6,570
1937	Jan. 14, 1937	13.9	20,900	1951	Feb. 21, 1951	8.50	7,020
					July 11, 1951	8.00	6,270
1938	Feb. 19, 1938	10.0	9,100				
	Mar. 29, 1938	9.3	7,640	1952	Nov. 24, 1951	9.66	9,040
	May 24, 1938	8.1	5,800		Mar. 11, 1952	9.16	8,160
					Apr. 13, 1952	6.41	4,120
1939	Mar. 5, 1939	8.4	6,670				
	Apr. 17, 1939	13.9	20,900				

[a] From floodmarks.
[b] Annual peak only.
[c] Estimated on basis of records for station near Elevenpoint, Ark.

Arkansas River basin

(101) Spring River near Waco, Mo.

Location.--Lat 37°14'45", long 94°33'55", on line between SE¼ sec. 7 and NE¼ sec. 18, T. 29 N., R. 33 W., at county highway bridge, three-quarters of a mile downstream from Blackberry Creek, 1½ miles east of Waco, and 47.6 miles above mouth.

Drainage area.--1,164 sq mi.

Gage.--Nonrecording gage prior to Feb. 23, 1935, and recording gage thereafter. Datum of gage is 833.23 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 87,000 cfs.

Flood stage.--19 ft.

Remarks.--Base for partial-duration series, 13,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1923	----	[a] 22	[b] 21,000
1924	May 29, 1924	20.12	18,200
	June 11, 1924	19.63	17,500
1925	Sept.22, 1925	10.37	6,550
1926	Sept. 5, 1926	16.40	13,400
1927	Oct. 4, 1926	16.20	13,100
	Apr. 1, 1927	23.58	28,100
	Apr. 10, 1927	21.78	22,100
	Apr. 15, 1927	20.13	18,400
	Apr. 19, 1927	20.05	18,200
	July 23, 1927	18.10	15,500
	Aug. 9, 1927	20.14	18,400
	Aug. 17, 1927	28.6	57,400
1928	Oct. 2, 1927	17.26	14,500
	June 10, 1928	20.80	19,800
	June 18, 1928	16.30	13,300
	June 22, 1928	20.54	19,200
1929	Apr. 9, 1929	20.57	19,400
	Apr. 20, 1929	21.15	20,600
	May 13, 1929	22.65	25,000
	May 19, 1929	19.78	17,900
1930	June 16, 1930	12.96	9,350
1931	May 19, 1931	11.92	8,140
1932	June 28, 1932	20.88	19,800
1933	Dec. 25, 1932	17.84	15,100
	May 14, 1933	16.64	13,600
1934	Apr. 15, 1934	7.70	3,950
1935	Mar. 12, 1935	20.23	18,700
	June 7, 1935	18.00	15,300
1936	Sept.28, 1936	15.70	12,500
1937	Nov. 3, 1936	17.57	14,800
	Jan. 14, 1937	16.59	13,500
	June 10, 1937	19.42	17,200
1938	May 31, 1938	18.50	16,000
	June 16, 1938	17.23	14,300
1939	May 22, 1939	15.34	11,900
1940	July 23, 1940	11.46	7,700
1941	Apr. 16, 1941	17.50	15,400
	Apr. 20, 1941	24.66	38,800
1942	Oct. 5, 1941	24.4	37,300
	Oct. 31, 1941	23.66	33,500
1943	Dec. 27, 1942	18.08	16,400
	May 11, 1943	22.75	29,900
	May 19, 1943	30.94	103,000
	June 4, 1943	15.97	13,200
1944	Apr. 11, 1944	16.30	13,700
	June 20, 1944	16.60	14,200
1945	Mar. 20, 1945	16.18	13,600
	Apr. 14, 1945	23.61	33,400
	Apr. 16, 1945	24.65	38,300
	Apr. 22, 1945	17.38	15,600
	May 27, 1945	17.33	15,400
	June 6, 1945	18.00	16,500
	June 17, 1945	16.36	13,900
	Sept.26, 1945	21.98	26,800
1946	June 1, 1946	19.1	18,400
1947	Apr. 11, 1947	16.16	13,700
	Apr. 25, 1947	24.6	38,300
1948	June 22, 1948	24.63	38,300
	June 26, 1948	17.62	15,900
	July 26, 1948	18.79	17,800
1949	Jan. 24, 1949	15.50	13,000
1950	Aug. 28, 1950	24.50	37,800
1951	Feb. 21, 1951	19.52	19,200
	July 1, 1951	15.95	13,700
	July 4, 1951	16.20	13,900
	Sept.10, 1951	16.43	14,200
	Sept.13, 1951	17.74	16,000
1952	Nov. 12, 1951	16.28	14,000
	Feb. 2, 1952	20.08	20,700

[a] From floodmark.
[b] Annual peak only.

Arkansas River basin

(102) Turkey Creek at Joplin, Mo.

Location.--Lat 37°06'46", long 94°31'34", in NW¼NW¼ sec. 34, T. 28 N., R. 33 W., 80 ft downstream from bridge on Long Elm Road, a quarter of a mile downstream from Joplin Creek and about 1 mile northwest of Joplin.

Drainage area.--33 sq mi, approximately.

Gage.--Recording. Datum of gage is 903.98 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 700 cfs.

Flood stage.--6 ft.

Historical data.--Highest stage known in over 36 years (1932), 10.ft, date unknown, from information by road district employee.

Remarks.--Base for partial-duration series, 510 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1933	Dec. 24, 1932	7.38	1,090	1936	May 1, 1936	5.44	610
	Apr. 20, 1933	7.57	1,150		July 1, 1936	6.65	890
	May 13, 1933	6.58	876		Sept.27, 1936	7.15	890
	May 15, 1933	5.70	658				
	May 24, 1933	5.51	610	1937	Oct. 6, 1936	9.86	1,980
	Aug. 3, 1933	6.50	850		Oct. 8, 1936	6.43	838
					Jan. 14, 1937	5.81	696
1934	Sept.29, 1934	5.01	500		Jan. 30, 1937	5.53	630
1935	Mar. 11, 1935	7.30	1,090	1938	Mar. 30, 1938	6.48	864
				1939	May 12, 1939	5.04	530
					May 22, 1939	5.12	550

(103) Shoal Creek above Joplin, Mo.
[Published as "near Joplin" prior to 1942]

Location.--Lat 37°00'45", long 94°28'45", in NE¼ sec. 1, T. 26 N., R. 33 W., at bridge on U. S. Highway 71, 4 miles southeast of Joplin, 6 miles downstream from Baynham Branch, and 15.0 miles above mouth.

Drainage area.--410 sq mi; 439 sq mi prior to Oct. 1, 1941.

Gage.--Nonrecording gage Apr. 21, 1924, to Apr 24, 1934, at site 5.0 miles downstream from and at datum 45.21 ft lower than present gage. Recording gage since Apr. 25, 1934; prior to Oct. 1, 1941, at site 5.0 miles downstream from and at datum 44.21 ft lower than present gage. Datum of present gage is 902.37 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 41,000 cfs at former site. Defined by current-meter measurements at present site. Shifts in relation occur.

Flood stage.--10 ft.

Remarks.--Low flow prior to Apr. 15, 1941, regulated by power plant; peak discharges not affected by regulation. Records for sites "near" and "above" considered equivalent for flood-frequency study. Base for partial-duration series, 6,000 cfs.

Arkansas River basin

(103) Shoal Creek above Joplin, Mo.--Continued

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1924	July 13, 1924	13.08	[a] 14,200
1925	Apr. 9, 1925	4.83	2,580
1926	Sept. 6, 1926	8.33	6,230
1927	Apr. 15, 1927	12.33	12,700
	Apr. 19, 1927	12.42	12,900
	Aug. 8, 1927	10.50	9,550
	Aug. 18, 1927	8.70	6,780
1928	June 2, 1928	8.70	6,430
	June 10, 1928	13.83	15,100
	June 19, 1928	13.83	15,100
	June 21, 1928	12.75	13,200
	June 28, 1928	9.00	6,850
	Aug. 5, 1928	11.50	11,000
1929	Apr. 9, 1929	9.42	7,450
	Apr. 21, 1929	11.50	11,000
	May 9, 1929	9.08	7,000
	May 13, 1929	12.92	13,400
	May 18, 1929	9.17	7,150
	June 3, 1929	8.42	6,020
1930	Sept.10, 1930	13.92	15,200
	Sept.16, 1930	10.92	9,930
1931	July 26, 1931	6.33	3,760
1932	June 2, 1932	9.00	6,850
	June 27, 1932	15.00	17,200
1933	Dec. 25, 1932	12.33	9,930
	May 14, 1933	13.0	11,900
1934	Oct. 23, 1933	3.16	1,260
1935	Mar. 12, 1935	18.25	20,100
	June 8, 1935	16.24	15,100
1936	Sept.27, 1936	8.88	5,220
1937	June 10, 1937	8.92	5,330
1938	June 8, 1938	10.10	6,610
1939	May 13, 1939	8.35	4,420
1940	Aug. 18, 1940	4.78	1,630
1941	Apr. 19, 1941	28.0	54,000
1942	Oct. 5, 1941	11.86	11,500
1943	May 10, 1943	12.16	16,600
	May 18, 1943	16.8	62,100
1944	June 20, 1944	10 0	7,260
1945	Apr. 13, 1945	13.3	24,800
	Apr. 15, 1945	12.8	21,000
	May 10, 1945	11.57	14,000
	May 17, 1945	10.35	8,650
	Sept.24, 1945	12.84	20,400
1946	May 31, 1946	10.56	9,840
1947	Apr. 10, 1947	10.80	10,300
	Apr. 25, 1947	12.73	20,400
1948	June 23, 1948	9.36	6,070
	July 26, 1948	9.90	7,440
1949	June 14,15,1949	8.07	3,620
1950	Jan. 14, 1950	9.57	6,570
	Aug. 5, 1950	10.75	10,500
	Aug. 27, 1950	13.6	27,300
1951	June 30, 1951	10.87	10,900
1952	Aug. 22, 1952	7.68	3,110

[a] Annual peak only.

Arkansas River basin

(104) Elk River near Tiff City, Mo.

Location.--Lat 36°38', long 94°35', in NE¼ sec 22, T. 22 N., R. 34 W., at bridge on State Highway 43, three-qraters of a mile downstream from Blackfoot Branch, 2¾ miles upstream from Buffalo Creek, and 3 miles southeast of Tiff City.

Drainage area.--872 sq mi.

Gage.--Nonrecording gage Oct. 1, 1939, to Nov. 3, 1939; recording gage thereafter. Datum of gage is 750.61 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements below 60,000 cfs and by slope-area measurement at 137,000 cfs.

Flood stage.--15 ft.

Remarks.--Low flow regulated at times by power plant at Noel, 9 miles above station; peak discharges not affected by regulation. Base for partial-duration series, 9,000 cfs.

Flood stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Apr. 12, 1940	11.62	9,480	1946	Feb. 14, 1946	13.79	15,200
					May 25, 1946	11.22	10,400
1941	Apr. 16, 1941	21.46	48,000				
	Apr. 19, 1941	28.4	137,000	1947	Dec. 10, 1946	15.94	20,800
					Apr. 11, 1947	14.29	16,500
1942	Oct. 5, 1941	11.60	9,480		Apr. 25, 1947	16.10	21,400
	Oct. 31, 1941	19.69	36,400				
	Apr. 9, 1942	12.66	11,700	1948	Aug. 15, 1948	10.50	8,410
1943	Oct. 31, 1942	16.70	23,000	1949	May 20, 1949	11.29	9,860
	Nov. 6, 1942	12.99	12,400				
	Dec. 28, 1942	14.35	15,600	1950	Jan. 14, 1950	15.13	18,500
	Apr. 12, 1943	12.26	11,000		May 11, 1950	21.72	45,900
	May 10, 1943	23.55	62,400		July 20, 1950	17.52	24,000
	May 18, 1943	23.60	62,900		Aug. 6, 1950	19.60	33,000
					Aug. 27, 1950	11.83	10,500
1944	Apr. 11, 1944	15.36	18,500				
	June 21, 1944	14.46	16,600	1951	Feb. 19, 1951	17.00	22,000
1945	Feb. 22, 1945	14.90	18,000	1952	Aug. 22, 1952	11.85	10,300
	Mar. 3, 1945	17.54	26,200				
	Mar. 7, 1945	13.57	14,900				
	Mar. 19, 1945	16.16	21,700				
	Mar. 25, 1945	13.46	14,700				
	Apr. 15, 1945	23.5	63,200				
	May 10, 1945	12.46	12,200				
	May 17, 1945	15.83	20,500				
	May 27, 1945	11.20	10,400				
	June 18, 1945	10.61	9,320				
	Sept.25, 1945	12.84	13,300				

PEAK DISCHARGES NOT PREVIOUSLY LISTED

Table 3 contains a list of peak discharges at miscellaneous sites and unusual floods at short-term gaging stations. These data have been plotted on the appropriate regional curves of figures 7 to 10.

Table 3. --Peak discharges not previously listed

Hydrologic area	Stream	Drainage area (sq mi)	Peak discharge (cfs per sq mi)
4	Behmke Branch near Rolla	1.03	1,133
4	Bow Creek at Odin	4.94	1,090
6	Buffalo Creek near Tiff City	22	1,045
1	Carroll Creek near Kearney (3.5 mi NE)	9.52	882
1	Carroll Creek near Kearney (2.7 mi E)	13.7	803
1	Clear Creek near Holt (2.9 mi NW)	7.37	2,035
1	Clear Creek near Holt (3 mi W)	19.4	1,135
1	East Fork Fishing River at Excelsior Springs	19.8	1,167
6	Eldred Branch at Macks Creek	1.80	1,722
6	Eldred Branch at Macks Creek	3.12	1,603
1	Fishing River near Kearney	39.4	761
5	Flat Creek at Union	6.68	1,000
4	Green Acre Branch near Rolla	0.622	3,060
6	Holder Branch at Macks Creek	1.00	1,400
1	Holt Creek at Holt	11.7	1,115
1	Holt Creek near Holt	18.1	1,215
4	Little Gravois Creek near Bagnell	24.1	1,286
4	Lost Creek near Elsberry	8.84	340
4	Middle Fork Glaize Creek near Antonia	2.23	342
4	Newburg Branch at Newburg	2.8	1,857
1	New Hope Creek at Haynesville	6.46	1,068
1	New Hope Creek near Holt	11.6	1,116
4	Nichols Branch near Palmyra	2.03	1,823
4	North Prong Little Gravois Creek near Bagnell	17.2	814
4	Todd Branch near Palmyra	0.99	1,230
6	Tributary Spring River near Freistatt	5.04	595
1	Unnamed Creek near Holt	6.52	2,147
1	Unnamed Creek near Kahoka	3.0	933
1	Unnamed Creek near Lees Summit	1.31	931
5	Unnamed Creek at Union	2.52	825
1	White Clous Creek near Maryville	6.06	677
4	Wright Creek near Bagnell	5.65	1,133

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