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UNITED STATES DEPARTMENT OF THE INTERIOR

SURFACE WATER SUPPLY
of the **UNITED STATES**
1933

PART 7
LOWER MISSISSIPPI RIVER BASIN

Prepared in cooperation with the States of
ARKANSAS, KANSAS, MISSOURI, NEW MEXICO, TENNESSEE, and TEXAS

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 747

UNITED STATES DEPARTMENT OF THE INTERIOR
HAROLD L. ICKES, Secretary
GEOLOGICAL SURVEY
W. C. MENDENHALL, Director

Water-Supply Paper 747

SURFACE WATER SUPPLY
of the UNITED STATES
1933

PART 7
LOWER MISSISSIPPI RIVER BASIN

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Prepared in cooperation with the States of
ARKANSAS, KANSAS, MISSOURI, NEW MEXICO
TENNESSEE, and TEXAS



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ILLUSTRATION

FIGURE 1. Typical river-measurement station showing concrete well and house for water-stage recorder and staff gages, cable, and car.

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3

SURFACE WATER SUPPLY OF THE LOWER MISSISSIPPI RIVER BASIN, 1933

AUTHORIZATION AND SCOPE OF WORK

This volume is one of a series of 14 reports presenting results of measurements of flow made on streams in the United States during the year ending September 30, 1933.

The data presented in these reports were collected by the United States Geological Survey under the following authority contained in the organic law (20 Stat.L., p. 394):

Provided, That this officer [the Director] shall have the direction of the Geological Survey and the classification of the public lands and examination of the geological structure, mineral resources, and products of the national domain.

The work was begun in 1888 in connection with special studies relating to irrigation. Since the fiscal year ending June 30, 1895, successive appropriation bills passed by Congress have carried the following items:

For gaging the streams and determining the water supply of the United States, and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources.

Annual appropriations for the fiscal years ending June 30, 1895-1934

1895-----	\$12, 500. 00	1911-17 ---	\$150, 000. 00	1928-----	\$147, 000. 00
1896-----	24, 500. 00	1918-----	175, 000. 00	1929-----	270, 500. 00
1897-99 ---	50, 000. 00	1919-----	148, 244. 10	1930-----	275, 000. 00
1900-----	70, 000. 00	1920-----	175, 000. 00	1931-----	565, 000. 00
1901-2 ---	100, 000. 00	1921-23 ---	180, 000. 00	1932-----	711, 000. 00
1903-6 ---	200, 000. 00	1924-25 ---	170, 000. 00	1933-----	600, 000. 00
1907-----	150, 000. 00	1926-----	165, 000. 00	1934-----	¹ 540, 000. 00
1908-10 ---	100, 000. 00	1927-----	151, 000. 00		

In the execution of the work many private and State organizations have cooperated, either by furnishing data or by assisting in collecting data. Acknowledgments for cooperation of the first kind are made in connection with the description of each station affected; cooperation of the second kind is acknowledged on page 10.

Measurements of stream flow have been made at about 6,680 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July 1933, 2,800 gaging stations were being maintained by the Geological Survey and the cooperating

¹ Only \$340,000 available for expenditure.

organizations. Many miscellaneous discharge measurements were made at other points. In connection with this work data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in water-supply papers from time to time.

DEFINITION OF TERMS

The volume of water flowing in a stream—the “run-off” or “discharge”—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, miner’s inches, and discharge in second-feet per square mile, and (2) those that represent the actual quantity of water, as run-off in inches, acre-feet, and millions of cubic feet. The principal terms used in this series of reports are second-feet, second-feet per square mile, run-off in inches, and acre-feet. They may be defined as follows:

“Second-feet” is an abbreviation for “cubic feet per second.” A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section 1 foot wide and 1 foot deep at an average velocity of 1 foot per second. It is generally used as a fundamental unit from which others are computed.

“Second-feet per square mile” is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

“Run-off in inches” is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in inches.

“An acre-foot”, equivalent to 43,560 cubic feet, is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

The following terms not in common use are here defined:

“Stage-discharge relation”, an abbreviation for the term “relation of gage height to discharge.”

“Control”, a term used to designate the natural section or stretch of the channel or artificial structure below the gage which determines the stage-discharge relation at the gage.

EXPLANATION OF DATA

The data presented in this report cover the year beginning October 1, 1932, and ending September 30, 1933. At the beginning of January in most parts of the United States much of the precipitation in the preceding 3 months is stored in the form of snow or ice, or in ponds, lakes, and swamps, or as underground water, and this stored water

passes off in the streams during the spring break-up. At the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for the year beginning October 1 is practically all derived from precipitation within that year.

The base data collected at gaging stations consists of records of stage, measurements of discharge, and general information used to

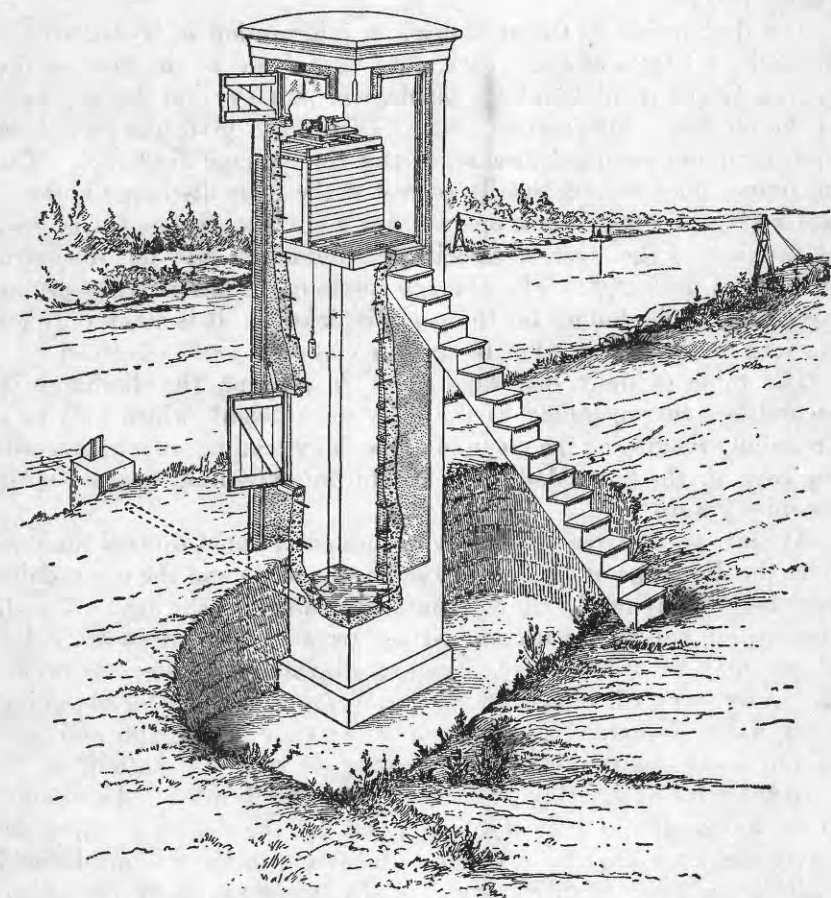


FIGURE 1.—Typical river-measurement station showing concrete well and house for water-stage recorder and staff gages, cable, and car.

supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings on a staff or chain gage or from a water-stage recorder that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge. A typical gaging station, equipped with water-stage recorder and measuring cable and car, is shown in figure 1.

Rating tables giving the discharge for any stage are prepared from the discharge measurements. The application of the daily gage heights to these rating tables gives the daily discharge from which the monthly and yearly mean discharge is computed.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

The description of the station gives information in regard to the location and type of gage, diversions that decrease the flow at the gage, artificial regulation from pondage or storage, and the accuracy of the records. Information under "Discharge" gives the maximum and minimum recorded discharges and the average discharge. The maximum does not necessarily represent the crest discharge unless a water-stage recorder was in operation or a nonrecording gage was read at the time of the crest. Likewise, the minimum may not represent the lowest discharge. The average discharge is the average of the mean annual discharges for the years indicated. It is given only for stations for which there are 10 or more complete years of record.

The table of daily discharge gives, in general, the discharge in second-feet corresponding to the daily gage height, which may be a once-daily reading or the mean of twice-daily readings of a nonrecording gage, or the mean daily gage height obtained from a water-stage recorder graph.

At stations on streams subject to sudden or rapid diurnal fluctuation, the discharge obtained from the rating table and the mean daily gage height may not be the true mean discharge for the day. If such stations are equipped with water-stage recorders, the mean daily discharge may be obtained by averaging discharge for intervals of the day or by using the discharge integrator, an instrument for obtaining mean daily discharge from a continuous gage-height graph and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the maximum daily discharge, and not the discharge when the water surface was at crest height. Likewise, in the column headed "Minimum" the quantity given is the minimum daily discharge. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow are based computations recorded in the remaining columns, which are defined on page 2.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily (1) on the permanency of the stage-discharge relation and (2) on the accuracy of observation of stage, measurements of flow, and interpretation of records.

The station description gives a statement in regard to the general accuracy of the records. "Excellent" indicates that, in general, the daily records are accurate within 5 percent; "good," within 10 percent; "fair", within 15 percent; and "poor", within 20 percent or more.

The monthly means for any station may represent with high accuracy the quantity of water flowing past the gage, but the figures showing discharge per square mile and depth in inches may be subject to gross errors caused by the inclusion of large noncontributing districts in the measured drainage area, by lack of information concerning water diverted for irrigation or other use, or by inability to interpret the effect of artificial regulation of the flow of the river above the station. "Second-feet per square mile" and "run-off in inches" are therefore not computed if such errors appear probable. The computations are also omitted for stations on streams draining areas in which the annual rainfall is less than 20 inches.

The table of monthly discharge gives a general idea of the flow at the station. The table of daily discharge allows more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

Many gaging stations on streams in the irrigated areas of the United States are situated above most of the diversions from those streams, and the discharge recorded does not show the water supply available for further development, as prior appropriations below the station must first be satisfied.

PUBLICATIONS

Investigation of water resources by the United States Geological Survey has consisted in large part of measurements of the volume of flow of streams and studies of the conditions affecting that flow, but it has comprised also investigation of such closely allied subjects as irrigation, water storage, water power, underground waters, and quality of waters. Most of the results of these investigations have been published in the series of water-supply papers, but some have appeared in the bulletins, professional papers, monographs, and annual reports.

The results of stream-flow measurements are now published annually in 12 parts, each part covering an area whose boundaries coincide with natural drainage features as indicated below:

- PART 1. North Atlantic slope basins (St. John River to York River).
2. South Atlantic slope and eastern Gulf of Mexico basins (James River to Mississippi River).
3. Ohio River Basin.
4. St. Lawrence River Basin.
5. Hudson Bay and upper Mississippi River Basins.
6. Missouri River Basin.

PART 7. Lower Mississippi River Basin.

8. Western Gulf of Mexico basins.
9. Colorado River Basin.
10. The Great Basin.
11. Pacific slope basins in California.
12. North Pacific slope basins in three parts:
 - A, Pacific slope basins in Washington and upper Columbia River Basin.
 - B, Snake River Basin.
 - C, Pacific slope basins in Oregon and lower Columbia River Basin.

Water-supply papers and other publications of the United States Geological Survey containing data in regard to the water resources of the United States may be obtained or consulted as indicated below.

1. Copies may be purchased at nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D.C. who will, on application, furnish lists giving prices.

2. Sets of the reports may be consulted in the libraries of the principal cities in the United States.

3. Sets are available for consultation in the local offices of the water-resources branch of the Geological Survey, as follows:

Augusta, Maine, Statehouse.
 Boston, Mass., 945 Post Office Building.
 Hartford, Conn., 203 Federal Building.
 Albany, N.Y., 353 Broadway.
 Trenton, N.J., 228 Federal Building.
 Harrisburg, Pa., 492 Education Building.
 Charlottesville, Va., University of Virginia.
 South Charleston, W.Va., Naval Ordnance Plant.
 Asheville, N.C., 220 Post Office Building.
 Columbia, S.C., 801 National Loan & Exchange Bank Building.
 Ocala, Fla., Post Office Building.
 Montgomery, Ala., Post Office Building.
 Chattanooga, Tenn., 217 Post Office Building.
 Columbus, Ohio, Engineering Experiment Station, Ohio State University.
 Indianapolis, Ind., 319 Federal Building.
 Urbana, Ill., 302 University New Agricultural Building.
 Madison, Wis., 337N State Capitol.
 St. Paul, Minn., 808 New Post Office Building.
 Iowa City, Iowa, 402 Hydraulic Laboratory, University of Iowa.
 St. Louis, Mo., 3 Customhouse.
 Rolla, Mo., Missouri Geological Survey Building, Missouri School of Mines and Metallurgy.
 Topeka, Kans., 305 Federal Building.
 Fort Smith, Ark., Post Office Building.
 Austin, Tex., State Highway Building.
 Santa Fe, N.Mex., State Capitol.
 Tucson, Ariz., 210 Post Office Building.
 Denver, Colo., 403 Post Office Building.
 Salt Lake City, Utah, 303 Federal Building.
 Idaho Falls, Idaho, 228 Federal Building.
 Boise, Idaho, 429 Federal Building.
 Helena, Mont., 421 New Federal Building.

Tacoma, Wash., 406 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 303 Customhouse.
Los Angeles, Calif., 510 Eighth and Figueroa Building.
Honolulu, Hawaii, 225 Federal Building.

A list of the Geological Survey publications may be obtained by applying to the Director, United States Geological Survey, Washington, D.C.

Stream-flow records have been obtained at about 6,680 points in the United States, and the data obtained have been published in the reports tabulated on page 8.

The records at most of the stations discussed in these reports extend over a series of years. Miscellaneous measurements at many points other than regular gaging stations have been made each year and are published under "Miscellaneous discharge measurements" at the end of each report in the same relative order as the regular gaging stations. An index of the reports containing records obtained prior to 1904 has been published in Water-Supply Paper 119.

The following table gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1933. The data for any particular station will, as a rule, be found in the reports covering the years during which the station was maintained. For example, data from 1910 to 1920 for any station in the area covered by part 3 are published in Water-Supply Papers 283, 303, 323, 353, 383, 403, 433, 453, 473, and 503, which contain records for the Ohio River Basin for those years.

Stream-flow data in reports of the United States Geological Survey

[A=Annual report; B=Bulletin; W=Water-Supply Paper]

Report	Character of data	Year
10th A, pt. 2	Descriptive information only	
11th A, pt. 2	Monthly discharge and descriptive information	1884 to Sept. 1890.
12th A, pt. 2	do	1884 to June 30, 1891.
13th A, pt. 3	Mean discharge in second-feet	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871-93)	1888 to Dec. 31, 1893.
B 131	Descriptions, measurements, gage heights, and ratings	1893-94.
16th A, pt. 2	Descriptive information only	
B 140	Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years).	1895.
W 11	Gage heights (also gage heights for earlier years)	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895-96.
W 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas River.	1897.
W 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte Rivers, and western United States.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	1897.
W 27	Measurements, ratings, and gage heights, eastern United States, eastern Mississippi River, and Missouri River.	1898.
W 28	Measurements, ratings, and gage heights, Arkansas River and western United States.	1898.
20th A, pt. 4	Monthly discharge (also for many earlier years)	1898.
W 35 to 39	Descriptions, measurements, gage heights, and ratings	1899.
21st A, pt. 4	Monthly discharge	1899.
W 47 to 52	Descriptions, measurements, gage heights, and ratings	1900.
22d A, pt. 4	Monthly discharge	1900.
W 65, 66	Descriptions, measurements, gage heights, and ratings	1901.
W 75	Monthly discharge	1901.
W 82 to 85	Complete data	1902.
W 97 to 100	do	1903.
W 124 to 135	do	1904.
W 165 to 178	do	1905.
W 201 to 214	do	1906.
W 241 to 252	do	1907-8.
W 261 to 272	do	1909.
W 281 to 292	do	1910.
W 301 to 312	do	1911.
W 321 to 332	do	1912.
W 351 to 362	do	1913.
W 381 to 394	do	1914.
W 401 to 414	do	1915.
W 431 to 444	do	1916.
W 451 to 464	do	1917.
W 471 to 484	do	1918.
W 501 to 514	do	1919-20.
W 521 to 534	do	1921.
W 541 to 554	do	1922.
W 561 to 574	do	1923.
W 581 to 594	do	1924.
W 601 to 614	do	1925.
W 621 to 634	do	1926.
W 641 to 654	do	1927.
W 661 to 674	do	1928.
W 681 to 694	do	1929.
W 696 to 709	do	1930.
W 711 to 724	do	1931.
W 726 to 739	do	1932.
W 741 to 754	do	1933.

[For basins included see pp. 5-6]

PUBLICATIONS

Year	1	2	3	4	5	6	7	8	9	10	11	12-A	12-B	12-C
1899 ^a	35	35, 36	36	36	36	36, 37	37	37	37, 38	38, 39	38, 39	38	38	38
1900 ^a	47, 48	48	48, 49	49	49	49, 50	50	50	50	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	65, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82, 83	82, 83	83	83	83	83	83	83	83	83	83	83	83	83
1903	87, 98	87, 98	98	98	98	98	98	98	98	98	98	98	98	98
1904	124, 125, 126	124, 125, 126	124, 125, 126	124, 125, 126	124, 125, 126	124, 125, 126	124, 125, 126	124, 125, 126	124, 125, 126	124, 125, 126	124, 125, 126	124, 125, 126	124, 125, 126	124, 125, 126
1905	166, 166, 167	166, 166, 167	166, 166, 167	166, 166, 167	166, 166, 167	166, 166, 167	166, 166, 167	166, 166, 167	166, 166, 167	166, 166, 167	166, 166, 167	166, 166, 167	166, 166, 167	166, 166, 167
1906	201, 202	201, 202	201, 202	201, 202	201, 202	201, 202	201, 202	201, 202	201, 202	201, 202	201, 202	201, 202	201, 202	201, 202
1907-8	241	241	241	241	241	241	241	241	241	241	241	241	241	241
1909	261	261	261	261	261	261	261	261	261	261	261	261	261	261
1910	281	281	281	281	281	281	281	281	281	281	281	281	281	281
1911	301	301	301	301	301	301	301	301	301	301	301	301	301	301
1912	321	321	321	321	321	321	321	321	321	321	321	321	321	321
1913	341	341	341	341	341	341	341	341	341	341	341	341	341	341
1914	361	361	361	361	361	361	361	361	361	361	361	361	361	361
1915	381	381	381	381	381	381	381	381	381	381	381	381	381	381
1916	401	401	401	401	401	401	401	401	401	401	401	401	401	401
1917	421	421	421	421	421	421	421	421	421	421	421	421	421	421
1918	441	441	441	441	441	441	441	441	441	441	441	441	441	441
1919-20	461	461	461	461	461	461	461	461	461	461	461	461	461	461
1921	481	481	481	481	481	481	481	481	481	481	481	481	481	481
1922	501	501	501	501	501	501	501	501	501	501	501	501	501	501
1923	521	521	521	521	521	521	521	521	521	521	521	521	521	521
1924	541	541	541	541	541	541	541	541	541	541	541	541	541	541
1925	561	561	561	561	561	561	561	561	561	561	561	561	561	561
1926	581	581	581	581	581	581	581	581	581	581	581	581	581	581
1927	601	601	601	601	601	601	601	601	601	601	601	601	601	601
1928	621	621	621	621	621	621	621	621	621	621	621	621	621	621
1929	641	641	641	641	641	641	641	641	641	641	641	641	641	641
1930	661	661	661	661	661	661	661	661	661	661	661	661	661	661
1931	681	681	681	681	681	681	681	681	681	681	681	681	681	681
1932	701	701	701	701	701	701	701	701	701	701	701	701	701	701
1933	721	721	721	721	721	721	721	721	721	721	721	721	721	721
1934	741	741	741	741	741	741	741	741	741	741	741	741	741	741

^a Rating tables and index to Water-Supply Papers 35-39 contained in Water-Supply Paper 39. Tables of monthly discharge for 1899 in Twenty-first Annual Report, pt. 4.

^b James River only.

^c Gallatin River.

^d Green and Gunnison Rivers and Colorado River above Gunnison River.

^e Mojave River only.

^f Kings and Kern Rivers and south Pacific slope drainage basins.

^g Rating tables and index to Water-Supply Papers 47-52 and data on precipitation, wells, and irrigation in California and Utah contained in Water-Supply Paper 52.

^h Tables of monthly discharge for 1900 in Twenty-second Annual Report, pt. 4.

ⁱ Wissahickon and Schuylkill Rivers to James River.

^j Scioto River.

^k Loup and Platte Rivers near Columbus, Nebr., and all tributaries below junction with Platte River.

^l Tributaries of Mississippi River from east.

^m Lake Ontario and tributaries to St. Lawrence River proper.

ⁿ Hudson Bay only.

^o New England rivers only.

^p Hudson River to Delaware River, inclusive.

^q Susquehanna River to Yackin River, inclusive.

^r Platte and Kansas Rivers.

^s The Great Basin in California, except Truckee and Carson River Basins.

^t Below junction with Gila River.

^u Rogue, Umpqua, and Siletz Rivers only.

COOPERATION

The work in the several States was done under cooperative agreements as follows: In Arkansas, with the Arkansas Geological Survey, Dr. George C. Branner, State geologist; in Kansas, with the water-resources division of the Kansas Board of Agriculture, George S. Knapp, chief engineer; in Missouri and for the station on the White River at Beaver, Ark., with the Missouri Bureau of Geology and Mines, H. A. Buehler, State geologist, the Missouri Game and Fish Department, J. A. Ross succeeded by W. C. Buford, commissioner, the Missouri Highway Department, T. H. Cutler, chief highway engineer, and the city of Joplin, J. J. Sanders, commissioner, department of streets and public works; in New Mexico, with the office of the State engineer, George M. Neel succeeded by Thomas M. McClure, State engineer; in Tennessee, with the Tennessee Division of Geology, Walter F. Pond, State geologist; in Texas, with the State through the Board of Water Engineers, consisting of John A. Norris, chairman, C. S. Clark, and A. H. Dunlap.

Acknowledgments are also due to the Corps of Engineers, United States Army, for financial assistance in collecting the records on the Mississippi River at St. Louis and Cape Girardeau, Mo.

Assistance in collecting records was also rendered by the following municipalities, organizations, corporations and individuals: In Arkansas, by the Arkansas Power & Light Co., Arkansas Missouri Power Co., Arkansas River Association, Fort Smith Water Works District, Van Buren Waterworks Improvement District No. 1, and White River Power Co.; in Kansas, by the Kansas Gas & Electric Co.; in Mississippi, by the Vicksburg Bridge & Terminal Co.; in Missouri, by the Little River Drainage District, Empire District Electric Co., Current River Power Co.; in New Mexico, by Springer Ditch Co. and Phelps Dodge Co.; in Oklahoma, by the Grand Hydro.

DIVISION OF WORK

The data for stations in the several States were collected and prepared for publication as follows: In Arkansas (except for the station on the Red River near Denison, Tex.), by John H. Gardiner, district engineer, assisted by C. A. Young; in Kansas, by J. B. Spiegel, district engineer, assisted by Charles Wells, Joseph A. Sterling, Henry P. Rolfe, Emilie Langsdorf, and Mrs. Maude Moon; in Mississippi, by C. E. McCashin, district engineer, assisted by D. H. Barber, J. L. Saunders, C. H. Prior, I. E. Anderson, A. E. Lloyd, Miss Annie L. Hardin, and Mrs. Marie Barkley; in Missouri and for the station on the White River at Beaver, Ark., by H. C. Beckman, district engineer, assisted by F. M. Bell, H. C. Bolon, R. D. Schmickle, W. M. Littlefield, C. J. Eyberg, and C. H. Jennings; in New Mexico, by Berkeley Johnson, district engineer, assisted by

E. L. Barrows, H. G. Neel, W. G. Bratschi, T. E. Yates, W. C. Smith, Russell Dallas, Mrs. Jean Teague, and Miss Dorothy Harvey; in Tennessee, by W. R. King, district engineer, assisted by Warren Withee, C. E. Knox, M. R. Williams, W. J. Perry, and Miss Gladys Boulton; and in Texas, by C. E. Ellsworth, district engineer, assisted by Trigg Twichell, S. D. Breeding, Tate Dalrymple, V. W. Rupp; N. C. Magnuson, Tinnie Schmitt, P. H. Holland, F. C. Ames, V. L. Austin, R. W. Yarborough, Jr., and W. C. Dodd.

The records were reviewed and the manuscript assembled by J. L. Lamson.

GAGING-STATION RECORDS

MISSISSIPPI RIVER

MISSISSIPPI RIVER AT ST. LOUIS, MO.

LOCATION.—Staff gage in T. 45 N., R. 7 E., near foot of Market Street, St. Louis, half a mile below Eads Bridge and three quarters of a mile above Municipal Bridge. Zero of gage is 379.80 feet above mean Gulf level and 379.93 feet above mean sea level (1929 adjustment of U. S. Coast and Geodetic Survey).

DRAINAGE AREA.—701,000 square miles (measured by Mississippi River commission).

RECORDS AVAILABLE.—March to September 1932.

DISCHARGE.—Maximum during period, 434,000 second-feet May 17 (gage height, 27.0 feet); minimum, 59,000 second-feet Sept. 7 (gage height, 0.1 foot); minimum gage height, -0.2 foot Sept. 8-9.

Maximum stage known, 41.39 feet June 28, 1844.

REMARKS.—Records good. Gage-height record furnished by Corps of Engineers, United States Army.

Gage height, in feet, 1933

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1		14.7	13.5	24.7	10.4	4.0	0.5
2		16.3	13.2	23.6	14.2	3.9	1.3
3		17.3	13.3	22.5	17.2	3.8	1.9
4		18.0	12.7	22.3	17.2	3.7	1.5
5		18.4	12.7	21.8	15.3	3.8	1.0
6		18.5	12.9	20.9	13.1	3.8	.5
7		18.7	13.1	20.2	11.5	3.5	.1
8		18.6	13.6	19.4	10.8	3.4	-.2
9		18.8	15.4	18.0	11.3	3.1	-.2
10		19.7	15.4	16.8	11.6	2.6	.4
11		20.6	14.8	15.9	11.3	2.5	.7
12		21.0	15.1	15.1	10.6	2.9	.6
13		20.8	19.0	14.1	10.2	3.1	.3
14		20.4	22.6	13.2	10.3	3.2	0
15	8.3	19.7	25.4	12.7	9.8	3.6	.7
16	7.8	20.0	26.5	12.2	9.1	3.0	1.4
17	7.8	19.8	27.0	11.6	8.5	2.1	1.8
18	8.0	20.0	26.5	11.2	7.8	1.8	2.1
19	8.3	20.0	25.5	11.1	7.3	1.7	1.9
20	8.6	19.5	24.3	12.1	6.9	1.5	1.9
21	8.6	18.7	23.6	12.3	6.7	1.2	3.0
22	8.1	17.8	22.7	12.0	6.5	.9	3.7
23	7.4	16.7	22.3	11.6	5.8	.6	3.5
24	7.4	16.1	22.4	11.1	5.4	.2	2.9
25	7.9	15.8	23.6	10.7	5.3	.1	2.7
26	9.0	15.4	25.2	10.3	5.2	.3	3.0
27	10.1	15.1	25.5	9.9	4.8	1.1	3.4
28	10.4	14.9	25.5	9.6	4.5	2.0	3.1
29	10.5	14.5	26.0	9.5	4.3	1.7	3.0
30	11.2	14.1	26.4	9.7	4.1	1.7	2.9
31	11.9		25.8		4.0	.5	

Discharge, in second-feet, of Mississippi River at St. Louis., 1933

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1		216,000	185,000	379,000	145,000	86,400	65,900
2		245,000	183,000	354,000	189,000	86,600	70,600
3		264,000	180,000	334,000	237,000	85,800	71,800
4		286,000	176,000	326,000	232,000	86,600	68,300
5		291,000	177,000	313,000	200,000	86,800	64,800
6		291,000	178,000	297,000	174,000	85,600	61,600
7		293,000	182,000	282,000	160,000	83,200	59,000
8		293,000	191,000	268,000	153,000	82,400	59,200
9		295,000	222,000	245,000	160,000	80,000	59,800
10		310,000	218,000	227,000	162,000	76,200	63,600
11		325,000	209,000	214,000	159,000	75,500	64,600
12		332,000	214,000	202,000	154,000	78,500	62,900
13		326,000	277,000	190,000	150,000	82,000	61,000
14		317,000	342,000	181,000	149,000	82,800	59,600
15	130,000	302,000	406,000	174,000	143,000	86,000	66,800
16	125,000	304,000	426,000	169,000	134,000	79,200	69,700
17	125,000	298,000	434,000	162,000	128,000	74,500	73,200
18	127,000	300,000	423,000	157,000	122,000	72,400	76,200
19	130,000	298,000	400,000	156,000	118,000	72,400	74,800
20	132,000	289,000	377,000	169,000	114,000	69,700	75,500
21	132,000	273,000	361,000	171,000	113,000	67,600	84,000
22	127,000	258,000	342,000	166,000	110,000	65,500	88,800
23	120,000	240,000	334,000	161,000	102,000	64,200	87,200
24	119,000	229,000	336,000	155,000	99,700	61,600	80,800
25	124,000	224,000	361,000	152,000	99,900	62,000	80,000
26	135,000	218,000	394,000	147,000	97,000	64,200	81,600
27	147,000	212,000	401,000	143,000	92,800	67,900	84,800
28	149,000	208,000	401,000	140,000	90,400	73,200	82,400
29	150,000	202,000	412,000	138,000	88,800	71,100	80,800
30	162,000	195,000	418,000	140,000	87,200	66,200	80,000
31	174,000		405,000		86,400	64,900	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 15-31	174,000	119,000	136,000	4,580,000
April	332,000	195,000	271,000	16,100,000
May	434,000	176,000	309,000	19,000,000
June	379,000	138,000	210,000	12,500,000
July	237,000	86,400	137,000	8,420,000
August	86,800	61,600	75,500	4,640,000
September	88,800	59,000	72,000	4,280,000
The period				69,590,000

MISSISSIPPI RIVER AT CAPE GIRARDEAU, MO.

LOCATION.—Staff gage in T. 30 N., R. 14 E., at foot of Themis Street, Cape Girardeau, half a mile above highway bridge and 52 miles above mouth of Ohio River. Zero of gage is 304.54 feet above mean Gulf level and 304.75 feet above mean sea level (1929 adjustment of U. S. Coast and Geodetic Survey).

DRAINAGE AREA.—716,000 square miles.

RECORDS AVAILABLE.—March to September 1933.

DISCHARGE.—Maximum during period, 525,000 second-feet May 18, 19; maximum gage-height 34.4 feet May 19; minimum, 61,000 second-feet Sept. 9, 10; minimum gage height, 7.9 feet Sept. 10, 11.

Maximum stage known, 42.53 feet July 4, 1844.

REMARKS.—Records good. Stage-discharge relation occasionally affected by backwater from Ohio River. Discharge determined on basis of slope as obtained by use of an auxiliary staff gage located at Moccasin Springs, Mo. Gage-height record furnished by Corps of Engineers, United States Army.

Gage height, in feet, 1933

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....		21.6	20.4	32.2	15.1	11.0	8.7
2.....		23.2	20.0	31.4	15.4	10.9	8.5
3.....		24.8	19.6	30.1	17.5	10.9	8.6
4.....		25.9	19.0	28.7	19.9	10.8	9.1
5.....		26.5	19.1	27.8	20.8	10.7	9.2
6.....		27.0	19.2	27.0	19.9	10.6	8.9
7.....		27.1	18.7	25.9	18.4	10.6	8.6
8.....		27.0	18.9	24.9	17.0	10.6	8.4
9.....		26.8	19.0	24.0	16.4	10.6	8.1
10.....		26.5	20.3	22.9	16.6	10.4	7.9
11.....		26.9	21.1	21.7	16.6	10.6	7.9
12.....		27.3	21.6	20.8	16.5	10.4	8.3
13.....		27.5	21.8	19.8	16.1	10.1	8.6
14.....		27.3	26.7	19.0	15.7	10.2	8.4
15.....		27.2	30.5	18.2	15.6	10.4	8.3
16.....		28.5	32.5	17.7	15.4	10.5	8.3
17.....	13.8	28.6	33.6	17.3	14.9	10.5	8.7
18.....	13.7	27.8	34.3	16.9	14.4	10.0	9.0
19.....	14.3	27.6	34.4	16.5	14.0	9.5	9.3
20.....	14.7	27.5	34.1	16.3	13.6	9.3	9.4
21.....	15.0	27.1	33.1	16.7	13.2	9.2	9.2
22.....	15.1	26.2	32.4	17.1	12.9	9.1	9.3
23.....	15.3	25.2	31.7	17.0	12.7	8.9	10.2
24.....	15.3	24.2	30.9	16.8	12.6	8.7	10.5
25.....	15.4	23.3	30.7	16.3	12.4	8.5	10.3
26.....	16.0	22.6	31.0	16.1	12.1	8.3	9.9
27.....	16.9	22.0	31.9	15.7	11.9	8.2	10.0
28.....	17.9	21.4	32.3	15.5	11.8	8.6	10.2
29.....	18.7	20.9	32.4	15.2	11.6	9.1	10.6
30.....	19.2	20.6	32.5	15.0	11.3	9.3	10.4
31.....	20.3		32.5		11.1	9.1	

Discharge, in second-feet, of Mississippi River at Cape Girardeau, Mo., 1933

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....		191,000	215,000	437,000	141,000	88,000	67,900
2.....		224,000	214,000	416,000	146,000	87,600	65,500
3.....		257,000	209,000	394,000	182,000	87,600	67,300
4.....		279,000	204,000	379,000	223,000	87,600	71,500
5.....		298,000	210,000	364,000	233,000	86,600	72,900
6.....		312,000	207,000	349,000	233,000	87,200	69,600
7.....		318,000	207,000	331,000	190,000	88,200	65,200
8.....		320,000	209,000	312,000	169,000	86,600	63,200
9.....		318,000	213,000	292,000	160,000	86,000	61,000
10.....		320,000	228,000	273,000	162,000	84,000	61,000
11.....		335,000	244,000	251,000	162,000	87,200	61,400
12.....		350,000	248,000	233,000	162,000	82,800	64,900
13.....		356,000	246,000	214,000	157,000	80,000	66,300
14.....		352,000	346,000	199,000	151,000	81,600	64,200
15.....		349,000	427,000	185,000	150,000	85,100	62,900
16.....		379,000	472,000	177,000	147,000	85,100	63,200
17.....	138,000	371,000	501,000	173,000	139,000	86,000	68,900
18.....	137,000	356,000	525,000	165,000	131,000	82,200	71,300
19.....	144,000	352,000	525,000	161,000	126,000	75,000	75,000
20.....	147,000	355,000	499,000	159,000	120,000	74,200	77,300
21.....	150,000	340,000	467,000	167,000	115,000	73,800	75,000
22.....	149,000	321,000	444,000	174,000	113,000	71,000	76,500
23.....	153,000	299,000	419,000	173,000	112,000	68,900	84,200
24.....	145,000	278,000	401,000	168,000	109,000	66,800	89,600
25.....	136,000	262,000	396,000	161,000	104,000	64,900	87,400
26.....	138,000	249,000	412,000	156,000	100,000	63,600	81,000
27.....	143,000	237,000	435,000	153,000	100,000	64,000	81,000
28.....	153,000	230,000	452,000	148,000	98,400	66,800	82,600
29.....	162,000	223,000	456,000	144,000	93,500	72,300	85,400
30.....	164,000	220,000	455,000	142,000	90,800	74,100	83,400
31.....	169,000		458,000		88,600	71,800	
Month	Maximum		Minimum		Mean		Run-off in acre-feet
March 17-31.....	169,000		137,000		140,000		4,430,000
April.....	379,000		191,000		302,000		18,000,000
May.....	525,000		204,000		353,000		21,700,000
June.....	437,000		142,000		235,000		14,000,000
July.....	233,000		88,600		142,000		8,730,000
August.....	88,200		63,600		78,900		4,850,000
September.....	89,600		61,000		72,200		4,300,000
The period.....							76,000,000

MISSISSIPPI RIVER NEAR VICKSBURG, MISS.

LOCATION.—In T. 16 N., R. 3 E., at combined highway and railway bridge of Vicksburg Bridge & Terminal Co., $1\frac{1}{2}$ miles below mouth of Yazoo River and 3 miles southwest of Vicksburg.

DRAINAGE AREA.—1,144,500 square miles (revised) (measured by Mississippi River Commission).

RECORDS AVAILABLE.—April 1930 to September 1933. Stages only, April 1930 to June 1931.

GAGE.—Water-stage recorder in concrete house on fourth pier from left bank. The downstream cavity of the pier is used as the stilling well. Water is admitted to the well by three 6-inch intake pipes at different elevations and inclined 30 degrees from the vertical. Zero of gage is 46.16 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Discharge measurements are made from the downstream side of the highway section of the bridge. The highway section is on the upstream side of the bridge, and the railway section on the downstream side. The metering equipment is lowered through an opening between the floors of the highway and railway. The equipment is operated by means of a reel and boom mounted on a low-wheeled truck frame. The truck frame also carries a four-cylinder automobile engine which supplies power for operating the metering equipment and moving the truck from point to point along the bridge. Depth of water and position of meter are shown by a depth indicator attached to the reel. During medium and high stages the depth of water and velocity are such that the metering equipment is carried downstream and the indicated depth is too large. Conversion to true depth is effected by use of two correction tables, one of which gives the correction to slant length of supporting line above water surface, and the other gives the correction to curved length of line below water surface. The use of each table requires a measurement of the vertical angle in the supporting line above the water surface, and this measurement is accomplished by use of a protractor applied to the line just below the bridge floor. The corrections to indicated depth are lessened by the use of large sounding weights. The maximum sounding weight used at the Vicksburg station is 300 pounds.

DISCHARGE.—Maximum during year, 1,360,000 second-feet June 8-11; maximum gage height, 47.50 feet June 10; minimum, 156,000 second-feet Oct. 3 (gage height, 5.08 feet).

1930-33: Maximum, 1,410,000 second-feet Feb. 26, 1932; maximum gage height, 50.27 feet Feb. 29, 1932; minimum, 125,000 second-feet Nov. 19, 1931 (gage height, 2.85 feet).

Maximum stage known since 1870, 58.7 feet May 4, 1927 (Weather Bureau record from their gage at Vicksburg, Miss.).

DETERMINATION OF DISCHARGE.—Daily discharge determined by shifting-control method. Changes in stage-discharge relation determined by frequent measurements. Gage heights partly estimated Aug. 8-9, 16. Discharge interpolated Aug. 11-15. Records excellent.

Discharge measurements of Mississippi River near Vicksburg, Miss., 1932-33

Date	Width	Area of section	Mean velocity	Gage height	Discharge	Date	Width	Area of section	Mean velocity	Gage height	Discharge
	Feet	Square feet	Feet per second	Feet	Second-feet		Feet	Square feet	Feet per second	Feet	Second-feet
1932						1933					
Oct. 1	2,415	77,100	2.05	5.34	158,000	Apr. 4	2,847	159,000	5.91	37.23	939,000
6	2,430	79,700	2.28	6.42	182,000	6	2,876	159,000	5.98	38.47	952,000
8	2,435	81,700	2.37	7.17	194,000	8	2,885	165,000	6.12	39.78	1,010,000
10	2,432	80,700	2.37	6.80	191,000	11	2,920	171,000	6.32	41.80	1,080,000
14	2,430	80,700	2.28	6.80	184,000	14	2,968	189,000	6.33	43.74	1,140,000
18	2,425	79,700	2.21	6.10	176,000	17	3,018	184,000	6.33	45.24	1,220,000
22	2,415	77,000	2.11	5.06	163,000	19	^b 5,900	^b 209,000	6.12	45.93	1,280,000
26	2,445	86,500	2.73	9.03	236,000	21	^b 5,970	^b 211,000	5.88	46.57	1,240,000
27	2,455	89,700	2.88	10.46	258,000	22	^b 5,970	^b 212,000	5.98	46.70	1,270,000
28	2,460	91,600	3.01	11.24	276,000	24	^b 5,970	^b 211,000	5.97	46.65	1,260,000
29	2,462	92,100	3.01	11.39	277,000	26	^b 5,970	^b 209,000	5.93	46.56	1,240,000
Nov. 1	2,445	88,100	2.75	9.90	242,000	May 2	^b 5,970	^b 206,000	6.02	46.62	1,240,000
4	2,436	83,800	2.49	8.04	209,000	9	^b 5,970	^b 211,000	5.71	46.01	1,210,000
9	2,450	85,100	2.67	9.06	227,000	12	^b 5,840	^b 205,000	5.43	44.96	1,130,000
14	2,448	86,600	2.75	9.32	238,000	14	3,040	180,000	6.06	44.00	1,090,000
23	2,450	87,700	2.85	9.60	260,000	16	2,985	176,000	5.85	43.04	1,030,000
29	2,455	91,500	2.96	11.40	271,000	19	2,985	169,000	6.10	42.08	1,030,000
Dec. 3	2,550	95,900	3.26	12.90	312,000	23	2,985	172,000	6.33	42.54	1,090,000
6	2,562	97,300	3.32	13.71	323,000	26	2,975	174,000	6.61	43.33	1,150,000
10	2,477	92,800	2.99	11.77	277,000	29	2,995	180,000	6.95	44.76	1,250,000
27	2,580	107,000	3.66	17.32	392,000	30	2,925	182,000	6.81	45.17	1,240,000
31	2,535	121,000	4.50	22.96	545,000	June 4	^b 5,960	^b 214,000	6.17	46.58	1,320,000
1933						6	^b 5,590	^b 213,000	6.20	47.00	1,320,000
Jan. 2	2,685	130,000	4.74	25.94	615,000	9	^b 5,995	^b 218,000	6.20	47.36	1,350,000
5	2,745	142,000	5.29	30.63	751,000	12	^b 5,995	^b 218,000	6.01	47.26	1,310,000
6	2,770	144,000	5.47	31.83	786,000	14	^b 5,995	^b 215,000	5.96	46.70	1,280,000
7	2,785	147,000	5.41	32.84	785,000	17	3,025	184,000	6.36	44.92	1,170,000
9	2,795	152,000	5.64	34.36	842,000	19	2,990	176,000	5.74	42.65	1,010,000
10	2,800	154,000	5.64	34.80	854,000	20	2,885	172,000	5.43	40.62	934,000
11	2,813	155,000	5.64	35.18	874,000	22	2,795	161,000	4.98	36.87	801,000
12	2,813	157,000	5.67	35.56	890,000	23	2,740	153,000	4.82	34.43	737,000
13	2,815	156,000	5.74	35.92	896,000	24	2,740	146,000	4.72	32.07	688,000
14	2,822	159,000	5.68	36.30	904,000	26	2,690	132,000	4.25	26.90	561,000
16	2,835	157,000	5.87	36.91	923,000	28	2,635	122,000	3.92	22.52	479,000
18	2,853	156,000	6.00	37.43	935,000	30	2,585	111,000	3.62	18.85	401,000
19	2,853	158,000	5.96	37.55	942,000	July 3	2,560	101,000	3.28	15.04	331,000
21	2,845	160,000	5.62	37.42	900,000	5	2,500	97,600	3.17	13.64	309,000
23	2,830	154,000	5.70	36.70	879,000	8	2,485	95,600	3.02	12.19	288,000
25	2,800	151,000	5.45	35.35	823,000	11	2,505	99,000	3.35	13.88	331,000
28	2,790	148,000	5.34	33.82	792,000	13	2,505	101,000	3.36	14.58	339,000
31	2,800	152,000	5.38	34.48	817,000	18	2,500	96,100	3.11	12.46	299,000
Feb. 2	2,810	151,000	5.64	35.33	851,000	25	2,495	89,800	2.80	10.34	251,000
4	2,822	155,000	5.58	36.06	865,000	31	2,485	88,500	2.84	10.06	251,000
6	2,838	157,000	5.77	36.56	906,000	Aug. 5	2,505	94,900	3.22	12.44	305,000
9	2,855	159,000	5.73	37.76	912,000	9	2,495	95,000	3.15	12.14	299,000
11	2,861	159,000	5.84	38.08	929,000	14	2,490	92,200	3.12	11.48	288,000
14	2,859	156,000	5.94	38.08	926,000	16	2,490	92,300	3.03	11.18	280,000
17	2,837	151,000	5.75	37.12	869,000	22	2,490	88,400	2.84	9.50	251,000
20	2,802	148,000	5.51	35.24	816,000	28	2,475	82,700	2.52	7.32	208,000
23	2,785	146,000	5.32	33.72	776,000	31	2,470	79,800	2.38	6.31	190,000
25	2,785	147,000	5.37	33.55	790,000	Sept. 6	2,475	82,000	2.62	7.70	215,000
Mar. 1	2,798	149,000	5.58	34.62	831,000	9	2,495	90,900	3.12	10.79	283,000
4	2,803	154,000	5.77	35.36	^a 889,000	12	2,510	96,000	3.39	12.84	325,000
8	2,825	157,000	5.81	36.76	912,000	14	2,510	96,400	3.42	12.88	329,000
13	2,842	157,000	5.67	37.16	889,000	19	2,490	88,400	2.91	9.62	257,000
17	2,795	150,000	5.29	34.40	783,000	22	2,485	83,900	2.62	7.84	221,000
24	2,710	135,000	5.01	29.28	677,000	27	2,470	81,200	2.55	6.78	207,000
28	2,770	144,000	5.41	32.36	781,000						

^a Experimental, probably in error^b Includes overflow.

Gage height, in feet, of Mississippi River near Vicksburg, Miss., 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	5.32	9.81	12.13	24.63	34.97	34.65	35.38	46.57	45.80	17.17	10.51	6.44
2.....	5.15	9.05	12.55	26.15	35.37	34.92	36.02	46.61	46.09	15.95	11.07	6.54
3.....	5.09	8.42	12.92	27.75	35.75	35.14	36.62	46.54	46.38	14.98	11.63	6.63
4.....	5.36	8.04	13.25	29.26	36.08	35.40	37.23	46.51	46.62	14.25	12.15	6.92
5.....	5.85	7.96	13.54	30.69	36.37	35.67	37.86	46.58	46.83	13.61	12.43	7.35
6.....	6.45	8.01	13.71	31.94	36.58	36.06	38.52	46.48	47.02	12.99	12.47	7.76
7.....	6.96	8.20	13.64	32.91	37.18	36.48	39.15	46.38	47.18	12.45	12.38	8.32
8.....	7.15	8.59	13.03	33.72	37.62	36.78	39.82	46.21	47.28	12.20	12.27	9.46
9.....	7.00	9.10	12.28	34.38	37.76	37.03	40.46	45.96	47.36	12.46	12.15	10.92
10.....	6.79	9.53	11.72	34.80	37.92	37.24	41.12	45.67	47.47	13.16	12.05	12.02
11.....	6.71	9.84	11.30	35.21	38.08	37.32	41.81	45.30	47.38	13.94	(°)	12.53
12.....	6.76	9.80	10.95	35.58	38.15	37.30	42.45	44.90	47.24	14.49	(°)	12.85
13.....	6.84	9.57	10.53	35.96	38.15	37.11	43.10	44.43	47.02	14.55	(°)	12.99
14.....	6.79	9.28	10.12	36.32	38.06	36.72	43.82	43.95	46.64	14.22	(°)	12.86
15.....	6.70	9.02	9.92	36.66	37.88	36.10	44.46	43.45	46.18	13.72	(°)	12.45
16.....	6.61	8.83	10.06	36.94	37.53	35.26	44.98	43.00	45.58	13.32	11.14	11.84
17.....	6.31	8.57	10.40	37.21	37.07	34.35	45.38	42.58	44.80	12.94	10.67	11.16
18.....	6.08	8.48	10.94	37.45	36.49	33.28	45.68	42.26	43.80	12.42	10.10	10.34
19.....	5.84	8.53	11.98	37.56	35.82	32.42	45.95	42.08	42.53	11.97	9.61	9.64
20.....	5.56	8.68	12.90	37.54	35.18	31.49	46.33	42.06	40.90	11.58	9.35	8.81
21.....	5.29	8.92	14.06	37.38	34.57	30.46	46.58	42.15	38.94	11.23	9.37	8.22
22.....	5.08	9.25	15.30	37.11	34.04	29.66	46.70	42.32	36.68	10.88	9.64	7.83
23.....	5.00	9.66	16.05	36.62	33.71	29.26	46.67	42.56	34.26	10.61	9.89	7.64
24.....	5.35	10.23	16.72	35.94	33.56	29.32	46.62	42.88	31.73	10.45	9.87	7.57
25.....	6.88	10.61	17.08	35.26	33.59	29.90	46.57	43.26	29.15	10.37	9.40	7.47
26.....	9.07	10.87	17.20	34.57	33.74	30.70	46.56	43.64	26.64	10.32	8.67	7.20
27.....	10.53	10.95	17.33	34.09	33.92	31.58	46.59	44.05	24.36	10.05	7.91	6.84
28.....	11.25	11.17	17.60	33.81	34.33	32.42	46.58	44.44	22.35	9.79	7.27	6.50
29.....	11.36	11.43	18.70	33.85	-----	33.15	46.54	44.80	20.49	9.74	6.73	6.23
30.....	11.08	11.72	20.96	34.15	-----	33.83	46.55	45.16	18.66	9.86	6.38	6.06
31.....	10.55	-----	23.12	34.55	-----	34.64	-----	45.50	-----	10.10	6.33	-----

• Recorder not operating.

Discharge, in thousands of second-feet, of Mississippi River near Vicksburg, Miss., 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	158	239	291	585	840	837	886	1,250	1,290	371	260	192
2-----	158	227	304	619	855	846	905	1,250	1,300	348	272	193
3-----	156	216	311	671	862	852	922	1,240	1,320	331	286	195
4-----	164	209	318	714	868	865	940	1,240	1,330	318	297	200
5-----	170	209	320	755	896	874	950	1,250	1,330	309	304	210
6-----	183	209	322	788	908	890	958	1,240	1,330	300	306	217
7-----	192	212	320	801	912	905	982	1,240	1,340	293	304	229
8-----	193	219	307	824	912	916	1,010	1,230	1,369	288	304	255
9-----	193	227	289	846	916	919	1,040	1,220	1,360	297	300	286
10-----	190	234	275	855	926	922	1,060	1,190	1,360	313	300	309
11-----	190	239	270	880	933	922	1,080	1,160	1,360	331	297	318
12-----	187	239	265	896	933	902	1,100	1,130	1,310	338	293	325
13-----	183	239	258	902	933	890	1,120	1,120	1,300	340	280	329
14-----	183	238	253	908	930	877	1,150	1,090	1,280	331	287	339
15-----	183	236	250	919	919	855	1,180	1,060	1,250	322	283	318
16-----	182	234	253	926	896	828	1,210	1,030	1,220	315	280	306
17-----	178	234	260	933	871	796	1,230	1,030	1,170	307	270	291
18-----	175	232	268	936	855	769	1,260	1,030	1,100	297	256	272
19-----	172	232	288	947	834	747	1,290	1,030	1,010	288	246	255
20-----	168	236	307	933	815	726	1,260	1,030	947	279	244	241
21-----	166	239	329	902	801	704	1,250	1,040	877	270	244	229
22-----	162	244	354	896	785	684	1,270	1,060	798	263	251	221
23-----	162	251	367	880	777	676	1,270	1,090	736	256	258	217
24-----	167	256	380	849	793	678	1,260	1,120	681	255	256	217
25-----	197	261	386	824	793	701	1,250	1,150	619	253	248	216
26-----	236	265	388	809	798	726	1,250	1,180	557	251	234	212
27-----	260	265	390	801	807	758	1,250	1,210	516	244	219	205
28-----	275	268	399	793	821	788	1,250	1,230	477	241	209	202
29-----	277	270	428	796	-----	807	1,240	1,250	434	241	197	197
30-----	270	280	490	807	-----	834	1,250	1,250	399	246	192	197
31-----	255	-----	550	824	-----	858	-----	1,260	-----	251	190	-----

Month	Maximum	Minimum	Mean	Run-off in thousands of acre-feet
October-----	277	156	193	11,900
November-----	280	209	239	14,200
December-----	550	250	329	20,200
January-----	947	585	833	51,200
February-----	933	777	864	48,000
March-----	922	676	818	50,300
April-----	1,290	886	1,140	67,800
May-----	1,260	1,030	1,160	71,300
June-----	1,360	399	1,050	62,500
July-----	371	241	293	18,000
August-----	306	190	264	16,200
September-----	329	192	246	14,600
The year-----	1,360	156	616	446,000

MERAMEC RIVER BASIN

MERAMEC RIVER NEAR STEELVILLE, MO.

LOCATION.—Chain gage in NE¼ sec. 21, T. 38 N., R. 4 W., 2½ miles north of Steelville. Zero of gage is 681.86 feet above mean sea level.

DRAINAGE AREA.—830 square miles.

RECORDS AVAILABLE.—December 1922 to September 1933.

DISCHARGE.—Maximum during year, 23,800 second-feet May 14 (gage height, 17.50 feet); minimum, 82 second-feet Oct. 3, 7 (gage height, 0.40 foot).

1922-33: Maximum, 36,000 second-feet Apr. 1, 1927 (gage height, 19.40 feet); minimum, that of Oct. 3, 7, 1932. Average, 10 years (1923-33), 598 second-feet.

Maximum stage known, 26.5 feet Aug. 20, 1915 (discharge, about 60,000 second-feet).

REMARKS.—Records good except those for days of considerable change in discharge, which are generally fair, and those estimated, which are poor. Discharge estimated Oct. 27, Dec. 19-22, 25, 28, May 20, Sept. 24, and when stage-discharge relation was affected by ice, Dec. 16, 18, Feb. 9.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	280	158	1,010	322	230	322	442	649	167	130	125
2	92	301	158	722	301	214	416	832	547	162	130	135
3	82	230	153	526	262	214	392	1,160	515	146	151	239
4	106	200	153	469	262	185	322	722	457	141	178	293
5	106	185	153	416	245	200	280	587	380	135	173	274
6	106	172	153	368	230	200	322	442	404	141	162	274
7	82	172	142	322	245	795	368	442	355	135	156	207
8	87	172	136	280	230	1,380	368	1,230	334	135	146	173
9	101	153	136	262	220	1,090	322	1,090	293	162	135	167
10	111	153	142	245	214	688	322	722	274	156	135	146
11	101	147	142	230	185	469	262	653	274	141	2,060	130
12	106	147	142	214	185	442	262	941	256	141	686	141
13	106	142	142	200	185	416	245	4,960	239	146	457	135
14	106	142	136	185	185	302	245	21,700	239	156	256	135
15	104	142	106	185	172	322	280	11,000	239	146	178	135
16	106	116	110	185	185	301	12,400	8,290	239	151	173	135
17	106	136	106	172	185	280	5,860	3,000	239	146	151	130
18	104	147	110	185	172	280	2,440	1,980	223	151	141	125
19	106	142	110	262	172	262	1,680	1,530	223	146	135	125
20	106	147	110	556	172	280	1,310	1,300	223	135	135	115
21	106	147	110	587	172	262	1,010	1,090	207	135	135	110
22	106	147	110	1,460	172	245	832	1,090	207	135	125	110
23	106	262	147	1,380	172	230	688	868	201	141	125	141
24	106	392	1,310	1,090	158	214	653	795	184	146	115	140
25	136	280	1,600	868	172	230	556	1,010	178	146	115	115
26	185	245	1,380	904	172	214	526	3,420	178	151	115	115
27	210	214	832	653	245	230	442	2,920	173	156	115	130
28	214	185	650	526	262	230	416	1,380	178	156	120	162
29	172	172	469	442	-----	214	416	1,090	173	151	125	141
30	153	172	416	416	-----	245	392	868	173	141	125	135
31	200	-----	526	392	-----	245	-----	722	-----	135	125	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	214	82	120	0.145	0.17	7,380
November	392	116	188	.227	.25	11,200
December	1,600	106	331	.399	.46	20,400
January	1,460	172	507	.611	.70	31,200
February	322	158	209	.252	.26	11,600
March	1,380	185	361	.435	.50	22,200
April	12,400	245	1,140	1.37	1.53	67,800
May	21,700	442	2,530	3.05	3.52	156,000
June	649	173	282	.340	.38	16,800
July	167	135	146	.176	.20	8,980
August	2,060	115	233	.281	.32	14,300
September	293	110	155	.187	.21	9,220
The year	21,700	82	520	.627	8.50	377,000

MERAMEC RIVER NEAR SULLIVAN, MO.

LOCATION.—Chain gage in N½SW¼ sec. 35, T. 40 N., R. 2 W., at Sappington highway bridge 6 miles southeast of Sullivan. Zero of gage is 582.64 feet above mean sea level.

DRAINAGE AREA.—1,550 square miles.

RECORDS AVAILABLE.—September 1921 to September 1933 (discontinued).

DISCHARGE.—Maximum during year, 26,500 second-feet May 14 (gage height, 22.00 feet); minimum, 160 second-feet Oct. 2, 3; minimum gage height, 1.39 feet Oct. 3.

1921-33: Maximum, 28,300 second-feet June 2, 1927 (gage height, 22.89 feet); minimum, 160 second-feet Sept. 22-30, Oct. 2, 3, 1932; minimum gage height, 1.38 feet Sept. 28, 29, 1932. Average, 12 years (1921-33), 1,170 second-feet.

Maximum stage known, about 30.7 feet in August 1915 (discharge, about 90,000 second-feet).

REMARKS.—Records fair.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	170	335	315	2,250	700	460	910	855	1,190	355	315	295
2-----	160	355	295	1,730	650	460	965	4,350	1,080	355	315	315
3-----	160	575	295	1,250	625	460	965	2,180	965	335	315	355
4-----	192	438	295	1,080	575	460	910	1,430	910	315	335	438
5-----	205	438	278	965	528	460	855	1,310	800	315	396	528
6-----	205	335	278	855	505	505	750	1,130	800	315	375	625
7-----	180	335	280	750	460	650	750	1,130	700	315	355	482
8-----	180	315	260	650	438	1,430	800	3,270	650	315	335	417
9-----	180	295	260	600	438	1,550	750	2,380	600	315	355	355
10-----	180	295	260	550	438	1,370	750	1,800	575	355	335	335
11-----	180	278	278	505	396	1,020	700	1,490	550	375	2,510	295
12-----	180	278	278	460	375	940	855	1,800	550	375	2,440	295
13-----	192	260	260	438	375	800	800	10,400	505	355	1,370	295
14-----	192	260	260	417	375	750	750	24,300	482	355	750	278
15-----	192	278	260	396	375	700	910	23,900	482	355	575	278
16-----	192	295	260	375	375	700	18,200	17,100	482	335	482	278
17-----	192	278	230	375	375	650	15,600	9,650	460	335	438	278
18-----	192	278	245	396	375	600	6,090	4,350	438	335	396	260
19-----	192	295	260	550	355	600	3,270	3,200	417	335	375	260
20-----	180	278	260	700	375	575	2,440	2,380	417	315	355	260
21-----	180	278	260	1,020	355	550	1,990	2,060	417	315	335	245
22-----	180	278	260	1,800	335	528	1,730	1,990	396	315	315	245
23-----	192	460	260	2,320	335	505	1,490	1,860	396	295	315	278
24-----	192	482	528	1,990	355	482	1,370	1,490	375	295	295	278
25-----	192	575	1,310	1,610	375	482	1,190	1,730	375	315	295	260
26-----	355	575	2,510	1,490	417	460	1,130	5,250	375	335	295	245
27-----	460	460	1,730	1,370	438	482	1,020	5,150	375	417	295	375
28-----	460	355	1,250	1,250	482	482	965	3,970	375	375	295	910
29-----	438	335	1,080	965	-----	482	910	1,990	375	335	295	528
30-----	375	335	855	855	-----	528	855	1,610	355	335	315	482
31-----	355	-----	1,130	800	-----	600	-----	1,370	-----	315	295	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October-----	460	160	228	0.147	0.17	14,000
November-----	575	260	354	.228	.25	21,100
December-----	2,510	230	534	.345	.40	32,800
January-----	2,320	375	992	.640	.74	61,000
February-----	700	335	436	.281	.29	24,200
March-----	1,550	460	667	.430	.50	41,000
April-----	18,200	700	2,360	1.52	1.70	140,000
May-----	24,300	855	4,740	3.06	3.53	261,000
June-----	1,190	355	562	.363	.40	33,400
July-----	417	295	336	.217	.25	20,700
August-----	2,510	295	531	.343	.40	32,600
September-----	910	245	359	.232	.26	21,400
The year-----	24,300	160	1,010	.652	8.89	733,000

MERAMEC RIVER NEAR EUREKA, MO.

LOCATION.—Wire gage in SE¼ sec. 32, T. 44 N., R. 4 E., at State highway bridge 2 miles east of Eureka. Zero of gage is 406.18 feet above mean sea level.

Prior to Jan. 16, 1933, chain gage on bridge 200 feet upstream was used. Zero of gage was 407.22 feet above mean sea level.

DRAINAGE AREA.—3,800 square miles.

RECORDS AVAILABLE.—August 1903 to July 1906; October 1921 to September 1933.

DISCHARGE.—Maximum during year, 63,400 second-feet May 17 (gage height, 30.72 feet); minimum, 315 second-feet Oct. 2, 3 (gage height, 0.33 foot at former location).

1921-33: Maximum, 64,000 second-feet Apr. 3, 1927; maximum gage height, that of May 17, 1933; minimum, 295 second-feet Aug. 12, 1930, Sept. 22, 1931. Average, 12 years (1921-33), 3,000 second-feet.

Maximum stage known, 39.2 feet Aug. 22, 1915 (discharge, about 175,000 second-feet).

REMARKS.—Records good. Discharge estimated when stage-discharge relation was affected by ice, Feb. 10-13.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	340	940	795	6,960	1,800	1,080	3,750	2,140	3,040	591	530	472
2.....	320	1,580	760	5,240	1,640	1,080	5,590	5,710	2,680	591	530	472
3.....	320	1,220	728	4,010	1,480	1,080	4,680	5,580	2,410	560	501	472
4.....	375	1,140	695	2,940	1,400	1,010	3,640	3,860	2,140	530	472	472
5.....	330	980	665	2,390	1,320	1,010	3,040	3,240	1,970	530	472	472
6.....	330	865	635	2,060	1,240	1,010	2,860	2,860	1,880	530	472	530
7.....	365	795	695	1,860	1,400	2,770	2,680	2,590	1,720	501	530	654
8.....	360	760	665	1,580	1,240	3,440	2,590	3,040	1,640	472	560	686
9.....	350	728	635	1,490	1,080	8,460	2,500	4,080	1,480	560	530	622
10.....	350	665	635	1,310	1,070	4,930	2,320	3,540	1,400	591	501	591
11.....	355	635	635	1,220	1,050	3,240	2,140	3,140	1,320	1,080	501	560
12.....	360	635	665	1,140	1,040	2,590	2,410	11,100	1,240	972	2,060	530
13.....	365	605	728	1,060	1,020	2,230	2,680	17,100	1,180	824	2,770	753
14.....	330	575	728	1,020	1,010	1,880	2,320	30,800	1,080	686	1,800	591
15.....	350	575	695	940	972	1,800	3,860	41,900	1,080	787	1,240	654
16.....	350	635	635	900	972	1,970	18,700	58,300	1,010	654	1,010	591
17.....	345	635	635	898	935	1,800	30,400	62,300	972	591	860	530
18.....	370	635	695	898	898	1,970	36,300	42,800	935	530	787	501
19.....	350	605	635	1,080	935	4,200	28,600	16,300	860	530	686	501
20.....	340	605	575	1,560	898	4,200	10,200	6,380	860	530	622	444
21.....	350	635	575	2,320	898	4,560	5,190	5,970	824	530	591	416
22.....	360	635	575	5,970	898	2,680	4,320	6,520	753	501	560	416
23.....	360	695	605	7,220	860	2,230	3,970	6,240	719	501	501	472
24.....	370	940	900	6,940	860	1,880	3,440	5,320	686	501	501	444
25.....	455	940	1,310	4,680	898	2,500	3,040	9,260	686	472	472	472
26.....	865	1,020	4,250	3,640	935	2,320	2,770	20,200	686	472	444	501
27.....	728	1,220	7,240	3,540	972	2,680	2,590	16,900	686	686	444	472
28.....	760	1,140	3,650	3,440	1,080	2,410	2,410	11,100	654	686	444	654
29.....	795	980	2,610	2,680	-----	1,970	2,140	5,970	622	591	444	2,680
30.....	760	865	2,170	2,320	-----	2,320	2,060	4,200	622	591	444	2,230
31.....	830	-----	4,250	1,970	-----	2,590	-----	3,440	-----	560	444	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October.....	865	320	438	0.115	0.13	26,900
November.....	1,580	575	829	.218	.24	49,300
December.....	7,240	575	1,340	.353	.41	82,400
January.....	7,220	898	2,750	.724	.83	169,000
February.....	1,800	860	1,100	.289	.30	61,100
March.....	8,460	1,010	2,580	.679	.78	159,000
April.....	36,300	2,060	6,777	1.78	1.99	403,000
May.....	62,300	2,140	13,600	3.58	4.13	836,000
June.....	3,040	622	1,260	.332	.37	75,000
July.....	1,080	472	604	.159	.18	37,100
August.....	2,777	444	733	.193	.22	45,100
September.....	2,680	416	662	.174	.19	39,400
The year.....	62,300	320	2,740	.721	9.77	1,980,000

BOURBEUSE RIVER AT UNION, MO.

LOCATION.—Chain gage in SW $\frac{1}{4}$ sec. 26, T. 43 N., R. 1 W., at bridge on State highway 50 about 800 feet above Flat Creek and 1 mile east of Union. Zero of gage is 491.93 feet above mean sea level.

DRAINAGE AREA.—767 square miles.

RECORDS AVAILABLE.—June 1921 to September 1933.

DISCHARGE.—Maximum during year, 18,300 second-feet May 16 (gage height, 17.55 feet); minimum, 22 second-feet Oct. 10; minimum gage height, 0.60 foot Sept. 11.

1921-33: Maximum, 22,500 second-feet Apr. 3, 1927 (gage height, 19.10 feet); minimum, 17 second-feet Nov. 5, 1931, July 22, 1932; minimum gage height, that of Sept. 11, 1932. Average, 12 years (1921-33), 649 second-feet.

Maximum stage known, 25.5 feet Aug. 22, 1915 (discharge, about 50,000 second-feet).

REMARKS.—Records fair. Corrected for ice effect Dec. 11-15, Feb. 10-14.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	37	113	154	667	370	144	2,440	273	486	57	35	27
2	30	87	135	1,190	320	135	3,520	353	406	55	35	27
3	27	84	126	619	288	135	2,070	370	353	55	37	38
4	27	75	118	445	259	135	1,440	466	288	50	35	37
5	30	73	118	370	245	135	960	486	259	47	31	42
6	32	73	118	320	219	144	895	370	219	47	31	50
7	27	73	118	288	219	529	960	320	219	42	31	47
8	24	67	102	273	195	4,460	895	288	195	42	31	31
9	24	70	102	232	164	5,520	774	273	174	126	35	38
10	22	75	99	219	150	1,620	619	304	154	65	33	81
11	40	70	95	195	150	960	486	245	144	84	31	25
12	32	79	95	184	150	667	406	1,890	135	68	29	33
13	32	70	95	184	150	529	370	7,460	126	63	29	102
14	32	67	95	164	150	445	336	11,000	118	52	28	118
15	32	67	95	154	144	338	445	15,000	102	73	28	60
16	30	73	93	154	144	320	4,360	16,600	99	52	135	76
17	32	75	96	154	154	304	7,460	10,900	96	45	102	65
18	30	75	93	154	154	338	7,220	2,920	93	45	87	50
19	27	78	93	164	144	3,300	2,070	1,530	87	47	73	40
20	30	78	90	195	154	3,830	1,270	960	76	45	65	45
21	35	84	93	1,110	135	2,540	895	1,110	79	42	57	33
22	37	78	90	1,800	154	1,270	667	1,270	79	40	50	33
23	43	93	96	3,830	144	895	573	3,010	76	40	50	45
24	43	96	144	2,340	135	619	529	1,190	70	57	37	47
25	43	122	619	1,110	144	833	486	3,620	68	57	37	37
26	67	224	5,630	895	207	1,350	445	9,140	68	70	37	35
27	59	330	1,800	1,800	154	1,350	370	5,300	68	60	35	63
28	61	237	833	960	154	833	336	2,720	76	47	40	154
29	61	178	573	667	-----	573	304	1,350	65	42	35	1,890
30	130	167	445	508	-----	895	304	774	63	40	35	619
31	139	-----	445	426	-----	895	-----	667	-----	40	31	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	139	22	42.4	0.055	0.06	2,610
November	330	67	104	.136	.15	6,190
December	5,630	90	416	.542	.62	25,600
January	3,830	154	702	.915	1.05	43,200
February	370	135	154	.240	.25	10,200
March	5,520	135	1,160	1.51	1.74	71,300
April	7,460	304	1,460	1.90	2.12	86,900
May	16,600	245	3,300	4.30	4.96	203,000
June	486	63	151	.197	.22	8,980
July	126	40	54.7	.071	.08	3,360
August	135	28	44.7	.058	.07	2,750
September	1,890	25	131	.171	.19	7,800
The year	16,600	22	652	.850	11.51	472,000

BIG RIVER AT BYRNESVILLE, MO.

LOCATION.—Chain gage in SE¼ sec. 12, T. 42 N., R. 3. E., at highway bridge 200 feet below dam and mill at Byrnesville.

DRAINAGE AREA.—892 square miles.

RECORDS AVAILABLE.—May 1922 to September 1933.

DISCHARGE.—Maximum during year, 19,200 second-feet May 15 (gage height, 21.70 feet); minimum, 64 second-feet Oct. 3 (gage height, 2.00 feet).

1922-33: Maximum, 21,900 second-feet Apr. 2, 1927 (gage height, 22.63 feet); minimum, 34 second-feet July 18, 1931; minimum gage height, 1.80 feet Aug. 5, 1930, July 21, 1932. Average, 11 years (1922-33), 804 second-feet.

Maximum stage known, 30.2 feet in August 1915 (discharge, about 80,000 second-feet).

REMARKS.—Records fair.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	68	728	166	5,710	450	373	1,650	1,430	522	127	138	111
2.....	68	1,080	166	1,650	418	330	1,320	2,890	466	111	132	111
3.....	64	618	157	1,130	373	302	1,040	1,480	415	132	122	106
4.....	92	344	150	920	358	288	842	1,040	368	116	116	106
5.....	73	330	150	766	330	262	690	920	345	106	101	106
6.....	78	275	157	653	316	302	618	920	324	106	116	132
7.....	82	248	166	583	388	804	618	920	285	106	106	122
8.....	82	223	157	515	316	786	653	1,080	285	106	101	116
9.....	82	188	142	450	262	766	583	1,040	267	111	101	127
10.....	82	176	150	418	236	653	583	880	250	116	96	116
11.....	87	166	150	388	236	548	583	804	217	990	101	106
12.....	87	157	150	330	262	482	1,650	2,890	217	368	1,300	233
13.....	87	142	157	302	248	418	1,320	7,900	217	250	616	217
14.....	87	142	150	288	262	388	960	12,200	202	188	345	304
15.....	82	142	142	262	248	388	8,600	18,600	188	175	250	188
16.....	87	157	122	248	236	728	11,100	13,200	188	150	202	188
17.....	87	166	122	248	236	548	18,400	8,280	175	144	162	144
18.....	87	166	122	275	236	515	6,700	2,610	175	138	144	116
19.....	82	166	115	583	236	450	2,330	1,560	162	127	122	101
20.....	87	166	122	960	223	418	1,700	1,210	162	127	122	92
21.....	92	166	135	1,650	236	388	1,380	1,080	162	127	111	78
22.....	92	166	142	2,060	223	373	1,320	1,450	150	116	101	74
23.....	92	302	157	2,890	211	358	1,540	830	144	111	106	82
24.....	98	388	358	1,760	199	344	1,130	1,610	144	111	101	96
25.....	92	302	653	1,180	223	450	1,000	3,210	144	101	92	111
26.....	236	262	2,120	960	248	548	920	3,450	144	188	92	106
27.....	288	248	880	804	388	583	880	1,610	144	304	87	122
28.....	275	223	653	690	450	548	804	1,080	144	267	92	267
29.....	248	199	515	583	-----	482	690	830	138	188	101	3,130
30.....	199	188	618	548	-----	515	653	650	132	138	116	1,160
31.....	236	-----	2,540	482	-----	618	-----	584	-----	144	116	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October.....	288	64	115	0.129	0.15	7,100
November.....	1,080	142	274	.307	.34	16,310
December.....	2,540	115	377	.423	.49	23,170
January.....	5,710	248	977	1.10	1.27	60,070
February.....	450	199	287	.322	.34	15,960
March.....	804	262	482	.540	.62	29,630
April.....	18,400	583	2,251	2.52	2.81	133,900
May.....	18,600	584	3,169	3.55	4.09	194,900
June.....	522	132	229	.257	.29	13,640
July.....	990	101	180	.202	.23	11,090
August.....	1,300	87	181	.203	.23	11,120
September.....	3,130	74	269	.302	.34	16,000
The year.....	18,600	64	736	.825	11.20	532,900

HEADWATER DIVERSION CHANNEL BASIN

CASTOR RIVER AT ZALMA, MO.

LOCATION.—Chain gage in S½ sec. 29, T. 29 N., R. 9 E., at bridge on State highway 51 in Zalma. Zero of gage is 350.55 feet above mean sea level.

DRAINAGE AREA.—395 square miles.

RECORDS AVAILABLE.—September 1921 to September 1933.

DISCHARGE.—Maximum during year, 16,600 second-feet May 14 (gage height, 25.86 feet); minimum, 43 second-feet Oct. 5 (gage height 1.27 feet).

1921-33: Maximum, 19,400 second-feet Dec. 14, 1927 (gage height, 26.50 feet); minimum, 30 second-feet Aug. 31, 1924; minimum gage height, 1.06 feet Sept. 21, 30, 1931. Average, 12 years (1921-33), 538 second-feet.

Maximum stage known, 28.0 feet in August 1915 (discharge, about 30,000 second-feet).

REMARKS.—Records good except those for days of considerable change in discharge, which are generally fair. Discharge estimated during period of ice effect Dec. 17-19.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	44	1,280	108	4,070	429	560	2,720	2,430	225	60	60	57
2	44	740	108	1,360	393	447	1,560	2,720	225	54	57	57
3	44	483	102	1,160	321	429	1,090	3,550	210	57	66	60
4	47	375	96	970	304	393	784	1,640	195	57	57	63
5	47	321	96	720	272	339	660	1,670	166	54	57	134
6	50	288	86	580	240	321	784	1,780	120	47	47	127
7	52	272	127	483	321	411	1,430	1,210	153	44	50	96
8	50	240	134	240	1,360	483	922	2,720	146	50	50	72
9	47	210	146	393	465	447	806	1,690	134	63	47	66
10	50	195	146	357	447	375	700	1,140	120	78	47	66
11	52	195	140	321	393	357	874	3,270	108	69	2,210	60
12	52	188	134	272	357	339	784	8,900	96	75	375	57
13	54	180	134	256	339	321	640	5,420	108	69	210	57
14	54	160	134	256	321	321	600	9,940	96	66	188	195
15	52	153	127	210	321	560	2,860	9,500	102	63	134	153
16	52	153	120	210	304	483	10,200	6,980	91	57	108	120
17	52	153	115	640	288	375	6,800	3,760	75	57	91	96
18	52	153	110	2,180	288	375	2,830	2,240	82	52	75	86
19	52	146	110	1,800	304	2,300	1,750	1,590	82	50	78	75
20	52	140	108	828	304	1,620	1,310	1,230	82	47	72	72
21	50	140	108	1,260	288	1,070	1,020	946	69	47	69	66
22	50	120	102	7,250	240	762	806	740	75	50	63	63
23	47	134	114	8,040	272	680	700	762	72	47	66	60
24	52	146	5,720	3,550	256	640	600	580	69	47	63	54
25	54	134	7,900	1,830	288	640	521	502	72	50	63	57
26	60	140	3,940	1,330	850	600	465	465	60	82	57	57
27	69	140	1,720	1,040	740	521	411	393	66	72	54	66
28	86	108	1,230	720	640	483	393	357	66	72	57	102
29	86	108	850	540	-----	447	339	357	60	69	60	357
30	82	114	1,280	447	-----	411	2,060	339	60	66	60	321
31	357	-----	5,980	447	-----	465	-----	288	-----	66	60	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	357	44	64.3	0.163	0.19	3,950
November	1,280	108	244	.618	.69	14,500
December	7,900	86	1,010	2.56	2.95	62,100
January	8,040	210	1,410	3.57	4.12	86,700
February	1,360	240	405	1.03	1.07	22,500
March	2,300	321	580	1.47	1.70	35,700
April	10,200	339	1,580	4.00	4.46	94,000
May	9,940	288	2,550	6.46	7.45	157,000
June	225	60	110	.278	.31	6,550
July	82	44	59.6	.151	.17	3,660
August	2,210	47	153	.387	.45	9,410
September	357	54	99.1	.251	.28	5,900
The year	10,200	44	693	1.76	23.84	502,000

OBION RIVER BASIN

SOUTH FORK OF OBION RIVER NEAR GREENFIELD, TENN.

LOCATION.—Staff gage at bridge on State highway 43, 2½ miles south of Greenfield, Weakly County, and 10 miles above confluence with Middle Fork.

DRAINAGE AREA.—431 square miles,

RECORDS AVAILABLE.—July 1929 to September 1933.

DISCHARGE.—Maximum during year, 6,400 second-feet Jan. 22 (gage height, 13.95 feet); minimum, 105 second-feet July 5-8; minimum gage height, 2.02 feet July 8.

1929-33: Maximum, 12,800 second-feet Jan. 10, 1930 (gage height, 15.52 feet); minimum, 97 second-feet several days in August, September 1930, October, November 1931, and September 1932; minimum gage height, 1.5 feet several days in August and September 1930.

REMARKS.—Records fair.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	166	640	179	2,430	366	304	3,450	259	151	119	143	143
2	148	334	179	3,080	334	289	3,790	672	143	112	380	135
3	130	192	179	3,300	319	274	3,790	305	135	112	2,430	259
4	204	166	179	1,910	304	260	1,470	187	135	112	1,360	832
5	485	166	179	600	289	246	625	1,550	135	105	393	217
6	179	205	232	415	260	260	2,520	832	135	105	187	151
7	136	192	218	449	1,190	1,330	2,350	329	127	105	169	135
8	124	179	192	467	2,000	580	2,200	367	127	105	151	135
9	118	179	154	1,390	959	415	896	217	135	127	143	127
10	192	166	640	862	334	600	880	2,200	127	187	135	127
11	274	260	1,160	522	350	366	3,310	2,710	127	119	151	127
12	148	232	1,060	432	503	334	3,050	4,480	127	112	135	135
13	130	179	560	366	449	319	2,810	3,170	135	112	135	169
14	118	166	366	334	2,840	319	946	3,450	127	143	135	135
15	112	179	350	319	3,180	334	1,730	2,710	127	119	135	127
16	118	289	246	319	3,000	260	2,430	980	119	119	127	143
17	304	260	205	661	3,180	260	1,320	550	119	112	151	143
18	218	205	205	1,580	2,390	1,910	520	270	119	112	151	127
19	154	334	205	934	1,270	4,550	341	217	119	112	135	119
20	136	274	205	725	2,840	3,870	281	197	119	112	127	119
21	124	246	246	3,620	2,840	5,640	270	187	119	112	127	119
22	124	205	560	6,020	2,840	3,990	237	169	119	112	127	119
23	124	192	485	4,910	2,100	1,200	217	197	119	112	127	119
24	124	260	1,670	4,910	600	448	207	169	119	505	127	119
25	118	382	1,670	3,300	467	329	207	207	119	1,140	127	151
26	580	304	747	1,220	415	281	197	420	112	1,260	119	127
27	560	246	415	580	350	248	187	912	112	2,430	119	197
28	205	192	366	398	334	227	169	565	112	1,730	127	354
29	179	179	334	366	-----	207	169	217	135	420	505	341
30	166	179	2,470	350	-----	207	207	187	151	237	329	151
31	232	-----	2,890	350	-----	3,450	-----	160	-----	169	227	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	580	112	198	0.459	0.53
November	640	166	239	.555	.62
December	2,890	154	605	1.40	1.61
January	6,020	319	1,520	3.53	4.07
February	3,180	260	1,300	3.02	3.14
March	5,640	207	1,070	2.48	2.86
April	3,790	169	1,360	3.16	3.53
May	4,480	160	937	2.17	2.50
June	151	112	127	.295	.33
July	2,430	105	342	.794	.92
August	2,430	119	288	.668	.77
September	832	119	180	.418	.47
The year	6,020	105	678	1.57	21.35

OBION RIVER AT OBION, TENN.

LOCATION.—Chain gage at toll bridge on State highway 3, a quarter of a mile south of Obion, Obion County, and 7 miles below mouth of North Fork. Gage datum raised 10.00 feet Oct. 1, 1932. Zero of present gage is 261.23 feet above mean Gulf level.

DRAINAGE AREA.—1,880 square miles.

RECORDS AVAILABLE.—July 1929 to September 1933.

DISCHARGE.—Maximum during year, 25,700 second-feet May 15 (gage height, 18.27 feet); minimum, 368 second-feet July 8 (gage height, 0.64 foot).

1929-33: Maximum, 47,000 second-feet Jan. 11, 1930 (gage height, 21.9 feet, present datum); minimum, 311 second-feet several days during August and September 1930; minimum gage height, 0.22 foot, present datum, Sept. 21, 1931.

REMARKS.—Records fair. Some possibility of back water from Mississippi River during extremely high stages on both rivers.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,860	815	634	19,700	3,060	2,740	10,000	1,090	900	435	10,000	832
2	2,860	1,070	618	21,700	2,620	2,360	17,200	1,070	855	435	6,600	764
3	2,770	781	602	20,200	2,220	1,880	18,200	1,150	810	450	4,300	764
4	2,770	730	602	18,200	2,000	1,440	16,300	1,210	765	407	3,550	1,800
5	2,740	698	602	14,500	1,820	1,170	14,000	1,780	720	394	4,300	2,390
6	2,770	666	570	10,900	1,490	938	11,800	2,080	675	381	5,550	2,560
7	2,800	650	570	7,800	1,360	1,950	11,800	2,270	630	381	5,200	2,800
8	2,740	666	602	5,550	1,630	2,270	13,600	2,680	585	368	3,550	2,800
9	2,330	634	632	3,550	1,900	2,360	12,200	2,920	540	555	2,980	2,620
10	1,680	618	781	3,100	2,330	2,440	10,900	3,150	495	1,510	2,590	2,140
11	1,210	650	900	2,950	2,560	2,440	14,500	3,210	450	1,610	1,780	1,380
12	965	747	1,490	2,830	2,770	2,300	21,200	10,400	465	1,250	1,470	832
13	798	764	1,750	2,740	2,620	2,030	20,700	20,700	450	682	1,050	540
14	682	730	1,820	2,560	2,530	1,730	17,700	24,700	450	495	698	525
15	586	781	1,800	2,000	2,860	1,730	15,000	25,200	450	450	510	540
16	540	957	1,610	1,680	4,900	2,030	13,200	19,700	450	450	480	586
17	525	1,030	1,380	1,530	10,900	2,160	15,800	12,700	435	450	450	781
18	495	1,030	1,010	1,750	12,200	2,300	22,700	5,900	435	435	435	798
19	570	1,360	764	2,050	9,100	2,770	20,200	2,980	420	407	450	650
20	634	919	666	2,240	8,200	7,000	14,000	2,530	420	407	450	525
21	570	900	618	3,100	7,800	15,000	6,600	2,030	420	407	435	465
22	525	883	781	12,200	8,200	16,800	3,210	1,560	420	394	420	450
23	525	815	1,130	22,700	8,200	16,300	2,890	1,290	407	394	420	435
24	510	866	2,190	25,200	7,000	13,600	2,620	995	407	450	407	420
25	540	976	2,420	24,700	4,600	10,900	2,160	849	407	525	407	570
26	666	938	2,530	17,700	4,300	7,400	1,800	883	407	1,270	394	602
27	866	866	3,060	17,700	3,290	5,200	1,560	919	495	2,500	394	919
28	1,010	794	3,550	11,400	2,980	3,550	1,380	995	450	10,900	407	1,330
29	1,130	722	3,400	8,650	-----	2,980	1,210	1,070	420	15,000	480	1,820
30	1,010	650	4,300	5,550	-----	2,740	1,130	1,090	450	15,000	650	2,000
31	815	-----	9,550	3,550	-----	3,290	-----	1,030	-----	13,600	832	-----

Month	Maximum	Minimum	Mean	Persquare mile	Run-off in inches
October	2,860	495	1,340	0.713	0.82
November	1,360	618	826	.439	.49
December	9,550	570	1,710	.910	1.05
January	25,200	1,530	9,680	5.15	5.94
February	12,200	1,360	4,480	2.38	2.48
March	16,800	938	4,640	2.47	2.85
April	22,700	1,130	11,200	5.96	6.65
May	25,200	849	5,170	2.75	3.17
June	900	407	523	.278	.31
July	15,000	368	2,340	1.24	1.43
August	10,000	394	1,990	1.06	1.22
September	2,800	420	1,190	.633	.71
The year	25,200	368	3,750	1.99	27.12

RUTHERFORD FORK OF OHION RIVER NEAR BRADFORD, TENN.

LOCATION.—Chain gage at bridge on old State highway 54, 5½ miles southwest of Bradford, Gibson County, and 17 miles above confluence with South Fork.

DRAINAGE AREA.—190 square miles.

RECORDS AVAILABLE.—July 1929 to September 1933.

DISCHARGE.—Maximum during year, 5,870 second-feet Mar. 19 (gage height, 15.7 feet); minimum, 20 second-feet June 24, 26.

1929-33: Maximum, 7,650 second-feet Jan. 9, 1930 (gage height, 18.10 feet): minimum, 13 second-feet several days during October 1931; minimum gage height, 0.83 foot June 22, 26, 1932.

REMARKS.—Records fair except those estimated, which are poor.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	48	* 150	* 50	1,220	107	107	3,320	86	38	34	135	82
2.....	39	* 85	* 45	427	107	100	825	685	33	29	121	70
3.....	32	* 50	* 45	233	100	93	353	186	32	27	525	217
4.....	121	* 45	* 45	171	93	83	233	100	32	27	389	201
5.....	128	* 45	* 45	149	81	81	353	1,480	30	26	249	121
6.....	67	* 55	* 50	114	77	86	2,570	371	28	25	142	86
7.....	42	* 55	* 60	114	353	585	1,060	217	27	25	128	70
8.....	34	* 50	* 55	128	353	249	371	353	27	25	114	64
9.....	30	* 45	* 40	505	283	171	233	186	26	30	100	61
10.....	34	* 45	389	217	201	217	625	525	26	46	100	58
11.....	61	* 65	156	164	135	149	2,720	605	26	30	107	56
12.....	39	* 60	100	142	114	135	875	1,770	26	26	86	55
13.....	32	* 55	142	93	233	128	317	408	38	26	86	59
14.....	30	* 45	107	86	3,920	121	249	975	32	26	85	61
15.....	30	* 45	* 90	77	2,280	186	2,280	335	26	86	83	54
16.....	29	* 50	* 60	74	765	107	850	353	25	33	80	60
17.....	41	* 75	* 55	283	427	389	465	249	24	27	107	55
18.....	86	* 65	* 55	335	317	465	233	114	23	26	86	50
19.....	54	* 80	* 55	233	525	5,060	171	86	22	27	76	45
20.....	* 40	* 70	* 55	233	2,420	2,140	135	65	22	28	70	45
21.....	* 30	* 60	* 65	3,620	950	625	114	55	22	29	69	41
22.....	* 30	* 55	93	2,880	408	283	107	65	22	30	67	41
23.....	* 30	* 50	142	745	249	201	100	56	22	73	65	39
24.....	* 30	* 70	1,120	371	186	149	93	149	20	317	64	38
25.....	* 30	* 100	525	353	178	156	107	128	21	266	63	217
26.....	335	* 80	233	217	156	128	93	217	20	300	63	44
27.....	* 100	* 65	164	164	135	114	76	283	22	1,950	60	128
28.....	* 60	* 50	100	128	121	100	68	128	38	408	67	142
29.....	* 50	* 45	86	107	-----	93	65	77	30	249	142	128
30.....	* 45	* 45	2,100	100	-----	114	80	67	135	135	107	83
31.....	* 60	-----	3,920	100	-----	5,130	-----	52	-----	201	93	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	335	29	58.6	0.308	0.36
November.....	150	45	61.8	.325	.36
December.....	3,920	45	331	1.74	2.01
January.....	3,620	74	445	2.34	2.70
February.....	3,920	77	546	2.87	2.99
March.....	5,130	81	572	3.01	3.47
April.....	3,320	65	638	3.36	3.75
May.....	1,770	52	336	1.77	2.04
June.....	135	20	30.5	.161	.18
July.....	1,930	25	147	.774	.89
August.....	525	60	120	.632	.73
September.....	217	38	82.4	.434	.48
The year.....	5,130	20	279	1.47	19.96

* Estimated.

NORTH FORK OF OBION RIVER NEAR UNION CITY, TENN.

LOCATION.—Staff gage at bridge on State highway 22, 4½ miles southeast of Union City, Obion County, and 9 miles above confluence with Obion River.

DRAINAGE AREA.—490 square miles.

RECORDS AVAILABLE.—July 1929 to September 1933.

DISCHARGE.—Maximum during year, 11,600 second-feet Dec. 31 (gage height, 18.10 feet); minimum, 128 second-feet Oct. 16, 17, 21–25; minimum gage height, 4.05 feet July 19, 20, 24.

1929–33: Maximum, about 13,800 second-feet Jan. 10, 1930 (gage height, estimated, 19.7 feet); minimum, 85 second-feet Aug. 10, 1931.

REMARKS.—Records fair.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	186	178	162	9,330	940	260	7,500	263	190	150	400	252
2.....	155	162	162	8,030	621	240	6,380	340	190	150	352	252
3.....	141	155	162	5,720	373	212	5,130	263	170	150	2,600	364
4.....	2,140	148	155	1,520	270	186	1,250	190	170	150	2,390	2,020
5.....	2,610	141	155	880	260	186	590	1,630	170	150	2,140	1,670
6.....	820	141	162	570	203	212	5,630	955	170	150	730	534
7.....	281	170	170	445	495	1,940	5,290	376	170	140	364	364
8.....	186	148	178	545	1,590	1,300	3,460	2,200	170	140	229	318
9.....	170	141	170	940	820	621	710	980	170	1,420	296	307
10.....	155	134	194	940	445	373	448	4,130	170	1,130	296	296
11.....	445	303	240	545	270	303	9,400	4,820	160	340	388	274
12.....	445	221	621	470	545	250	7,260	10,000	170	200	318	274
13.....	155	178	445	349	281	240	4,820	11,000	180	170	296	296
14.....	148	162	303	303	2,820	240	1,010	8,810	170	160	274	307
15.....	134	148	281	281	5,720	2,940	3,670	6,590	160	160	274	285
16.....	128	570	194	250	3,180	610	4,970	1,750	160	160	252	755
17.....	128	281	155	940	1,760	388	2,750	590	160	150	252	552
18.....	148	203	155	1,180	1,150	448	755	424	160	140	252	340
19.....	141	240	155	1,760	850	6,380	448	352	160	130	252	307
20.....	134	260	155	1,090	2,880	6,590	340	318	160	130	241	296
21.....	128	240	170	2,660	1,830	5,630	307	285	150	150	241	274
22.....	128	186	349	8,540	940	3,780	296	252	160	140	241	263
23.....	128	170	570	9,600	570	1,560	263	241	160	140	241	252
24.....	128	470	2,460	9,060	421	805	230	230	150	130	241	252
25.....	128	303	3,460	7,560	349	830	230	518	150	690	230	412
26.....	230	240	1,520	2,880	760	650	252	296	150	7,030	230	352
27.....	445	203	647	1,180	445	412	220	552	150	7,500	230	318
28.....	281	178	621	621	326	296	210	285	150	8,260	230	1,120
29.....	170	170	303	373	-----	252	190	285	150	8,260	252	1,420
30.....	162	170	3,940	326	-----	307	220	241	160	4,970	285	630
31.....	148	-----	11,600	303	-----	7,750	-----	210	-----	780	274	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	2,610	128	352	0.718	0.83
November.....	570	134	214	.437	.49
December.....	11,600	155	968	1.98	2.28
January.....	9,600	250	2,550	5.20	6.00
February.....	5,720	203	1,110	2.27	2.36
March.....	7,750	186	1,490	3.04	3.50
April.....	9,400	190	2,470	5.04	5.62
May.....	11,000	190	1,920	3.92	4.52
June.....	190	150	164	.335	.37
July.....	8,260	130	1,400	2.86	3.30
August.....	2,600	230	496	1.01	1.16
September.....	2,020	252	512	1.04	1.16
The year.....	11,600	128	1,140	2.33	31.59

SOUTH FORK OF FORKED DEER RIVER AT JACKSON, TENN.

LOCATION.—Chain gage at bridge on State highway 5, half a mile south of Jackson, Madison County. Zero of gage is 331.14 feet above mean Gulf level. Prior to Mar. 9, 1933, staff gage at same location and datum.

DRAINAGE AREA.—574 square miles.

RECORDS AVAILABLE.—July 1929 to September 1933.

DISCHARGE.—Maximum during year, 8,570 second-feet Apr. 2 (gage height, 16.76 feet); minimum, 112 second-feet July 7, 8, Aug. 17, 22, 25–28; minimum gage height, 2.58 feet Aug. 27.

1929–33: Maximum, 19,800 second-feet Jan. 14, 1932 (gage height, 19.8 feet); minimum, 91 second-feet Oct. 13, 1931; minimum gage height, 1.58 feet July 9, 1929.

REMARKS.—Records fair.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	125	298	263	6, 070	535	400	7, 330	220	190	125	252	181
2.....	310	274	252	5, 570	454	374	8, 570	2, 450	181	220	733	241
3.....	200	263	230	3, 550	348	348	5, 250	1, 310	181	132	1, 380	2, 630
4.....	591	252	220	2, 130	298	322	2, 270	454	181	125	940	2, 750
5.....	970	241	200	1, 470	274	298	791	3, 600	172	118	762	1, 470
6.....	241	263	263	563	252	298	4, 830	1, 540	164	118	298	970
7.....	200	274	400	563	2, 130	2, 000	5, 730	1, 220	155	112	200	427
8.....	190	274	374	704	3, 600	791	3, 760	6, 590	155	112	181	274
9.....	172	263	427	1, 900	1, 760	619	2, 710	7, 720	147	125	181	241
10.....	181	220	2, 960	1, 090	1, 630	1, 800	820	5, 410	155	172	164	286
11.....	230	970	2, 000	675	850	1, 000	4, 710	3, 450	155	139	132	230
12.....	200	675	1, 630	508	619	619	4, 500	3, 450	322	125	139	1, 600
13.....	190	508	1, 090	454	762	563	2, 270	1, 630	241	118	132	348
14.....	181	274	733	400	3, 350	563	1, 470	791	155	675	132	508
15.....	181	263	675	348	4, 500	1, 250	2, 490	675	147	322	118	220
16.....	704	508	400	322	4, 500	508	2, 130	1, 730	147	164	118	230
17.....	1, 160	374	322	647	4, 150	374	1, 670	880	147	147	121	200
18.....	591	374	230	1, 800	3, 450	1, 310	850	427	139	132	200	220
19.....	348	481	286	1, 090	1, 830	5, 250	619	263	139	132	125	164
20.....	263	374	263	591	5, 570	7, 520	481	241	132	139	118	155
21.....	210	310	348	675	7, 720	7, 330	400	210	132	132	118	147
22.....	190	298	733	2, 490	6, 770	4, 600	374	1, 000	125	125	112	139
23.....	190	286	675	910	4, 010	1, 410	508	454	125	619	118	139
24.....	190	427	1, 930	563	1, 160	619	335	335	132	454	118	132
25.....	181	1, 280	2, 340	1, 670	791	850	374	481	125	850	112	132
26.....	675	1, 000	1, 160	762	704	535	286	374	132	910	112	125
27.....	454	619	820	508	508	454	220	675	125	2, 410	112	147
28.....	427	348	910	348	454	374	200	400	172	647	112	139
29.....	286	298	910	322	-----	348	190	274	220	348	619	791
30.....	241	274	1, 090	298	-----	335	348	241	400	252	791	230
31.....	286	-----	5, 570	322	-----	5, 410	-----	210	-----	762	263	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	1, 160	125	341	0. 594	0. 68
November.....	1, 280	220	419	. 730	. 81
December.....	5, 570	200	958	1. 67	1. 92
January.....	6, 070	298	1, 270	2. 21	2. 55
February.....	7, 720	252	2, 250	3. 92	4. 08
March.....	7, 520	288	1, 560	2. 72	3. 14
April.....	8, 570	190	2, 220	3. 87	4. 52
May.....	7, 720	210	1, 570	2. 74	3. 16
June.....	400	125	170	. 296	. 33
July.....	2, 410	112	354	. 617	. 71
August.....	1, 380	112	290	. 505	. 58
September.....	2, 750	125	516	. 899	1. 00
The year.....	8, 570	112	984	1. 71	23. 28

SOUTH FORK OF FORKED DEER RIVER AT CHESTNUT BLUFF, TENN.

LOCATION.—Staff gage at highway bridge 1 mile west of Chestnut Bluff, Crockett County, and 12 miles above confluence with North Fork of Forked Deer River. Zero of gage is 256.71 feet above mean Gulf level.

DRAINAGE AREA.—1,080 square miles.

RECORDS AVAILABLE.—July 1929 to September 1933.

DISCHARGE.—Maximum during year, 7,950 second-feet Apr. 6 (gage height, 17.4 feet); minimum, 159 second-feet July 23 and Aug. 26; minimum gage height, 5.40 feet Oct. 15, 16.

1929-33: Maximum, 21,500 second-feet Jan. 17, 1932 (gage height 19.9 feet); minimum, that of July 23 and Aug. 26, 1933; minimum gage height, 3.2 feet Aug. 5-13, 1930.

REMARKS.—Records fair.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,040	479	439	5,690	525	1,470	6,150	320	420	460	900	420
2	720	552	426	6,680	660	950	7,500	845	350	350	685	320
3	552	465	414	6,680	630	720	7,500	2,180	320	290	1,300	1,010
4	699	414	414	6,680	500	575	7,500	2,840	290	248	1,480	2,180
5	1,100	370	402	6,680	430	475	7,500	3,400	275	222	1,180	2,460
6	1,040	370	391	6,500	371	475	7,950	3,490	260	199	955	2,460
7	678	414	414	6,150	525	2,460	7,280	3,850	248	178	590	1,540
8	507	402	537	5,050	1,920	2,920	6,320	4,300	248	168	420	845
9	414	391	522	3,490	2,600	2,920	5,420	5,170	235	188	335	545
10	370	391	720	2,920	2,920	2,680	4,930	6,320	235	222	290	420
11	360	568	1,880	2,530	3,080	2,760	5,050	6,680	235	222	350	368
12	370	889	2,720	1,680	2,460	2,320	5,290	7,070	460	210	290	500
13	351	742	3,090	1,190	1,420	1,300	5,170	7,500	545	188	275	900
14	333	568	2,860	950	3,000	900	4,930	7,500	402	222	248	590
15	317	493	1,830	780	4,120	1,360	5,170	6,680	320	440	222	545
16	317	537	1,360	690	4,500	1,480	5,420	5,420	290	335	210	500
17	351	638	946	750	5,420	955	5,170	3,670	260	275	199	420
18	836	601	742	1,800	5,550	1,970	4,600	2,040	235	235	199	335
19	742	584	619	2,760	5,420	4,500	3,240	1,060	222	188	222	275
20	537	619	552	2,600	6,150	4,710	1,660	735	210	178	210	260
21	439	552	552	3,400	6,680	5,990	1,060	545	210	168	188	235
22	380	493	742	4,400	7,280	6,500	845	590	199	168	178	210
23	360	465	1,280	4,210	6,680	6,320	735	955	199	159	178	210
24	342	452	2,570	4,210	6,320	6,680	735	735	188	335	168	188
25	333	493	3,240	3,240	6,500	7,070	590	845	178	590	168	188
26	370	522	3,480	2,180	6,870	6,150	500	900	222	1,060	159	210
27	946	678	3,640	1,620	5,990	4,090	402	1,660	350	3,400	178	210
28	1,100	584	3,160	1,110	3,850	1,540	335	1,660	335	3,160	178	210
29	742	507	2,060	780	-----	845	290	1,060	735	2,680	335	290
30	568	465	3,640	630	-----	635	275	735	590	1,480	500	500
31	479	-----	5,730	525	-----	5,290	-----	545	-----	955	635	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,100	317	571	0.529	0.61
November	889	370	523	1.484	.54
December	5,730	391	1,060	1.54	1.78
January	6,680	525	3,180	2.94	3.39
February	7,280	371	3,660	3.39	3.53
March	7,070	475	2,870	2.66	3.07
April	7,950	275	3,980	3.69	4.12
May	7,500	320	2,950	2.73	3.15
June	735	178	309	.286	.32
July	3,400	159	618	.572	.66
August	1,480	159	433	.401	.46
September	2,460	188	645	.597	.67
The year	7,950	159	1,770	1.64	22.80

MIDDLE FORK OF FORKED DEER RIVER NEAR ALAMO, TENN.

LOCATION.—Staff gage at highway bridge on State highway 54, 5 miles north of Alamo, Crockett County, and 15 miles above confluence with North Fork.

DRAINAGE AREA.—410 square miles.

RECORDS AVAILABLE.—July 1929 to September 1933.

DISCHARGE. Maximum during year, 9,530 second-feet Mar. 19 (gage height, 13.8 feet); minimum, 105 second-feet several days in July; minimum gage height, 1.70 feet several days in October, July, and September.

1929-33: Maximum, 10,500 second-feet Jan. 29, 1932 (gage height, 14.0 feet); minimum, 71 second-feet several days in August 1930; minimum gage height, 1.26 feet July 1, 11, 17, 1931.

REMARKS.—Records fair.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	160	234	146	5,090	234	269	7,730	251	160	118	234	251
2.....	153	184	160	2,360	305	234	5,350	1,540	138	124	646	217
3.....	131	153	153	1,900	234	234	2,360	734	131	111	1,060	1,180
4.....	287	153	146	520	208	217	583	420	131	111	847	870
5.....	541	146	146	381	200	217	381	4,250	138	111	460	801
6.....	269	176	146	305	184	217	4,250	1,180	131	111	251	324
7.....	146	153	146	305	305	1,540	2,130	1,060	131	111	217	200
8.....	138	153	176	400	1,010	712	1,930	4,250	138	111	184	176
9.....	131	138	176	1,260	916	305	1,040	2,700	138	105	200	176
10.....	131	131	184	712	500	1,010	381	1,480	131	208	208	168
11.....	217	440	870	500	381	520	3,500	1,290	160	131	200	160
12.....	168	234	1,160	305	362	324	1,370	2,050	287	118	184	153
13.....	138	168	440	234	305	324	1,240	1,480	400	111	184	153
14.....	131	138	287	184	5,930	324	734	1,240	192	105	200	234
15.....	124	131	251	217	5,350	870	520	668	131	105	192	184
16.....	124	251	208	200	1,790	420	1,140	1,260	124	111	184	200
17.....	153	217	192	234	1,560	287	1,040	916	124	105	176	269
18.....	153	184	160	2,090	870	1,600	541	420	124	105	184	160
19.....	146	168	153	801	604	8,590	362	305	124	105	176	153
20.....	146	184	146	562	6,950	5,090	287	269	124	105	176	146
21.....	131	176	160	5,090	2,410	3,630	269	251	124	105	176	138
22.....	124	168	362	3,380	1,930	2,310	251	251	124	105	168	138
23.....	124	160	440	1,720	1,060	520	234	343	124	105	168	131
24.....	124	168	1,210	1,140	520	362	234	234	124	105	168	131
25.....	124	160	1,110	541	381	343	217	756	124	192	160	200
26.....	269	160	824	480	324	305	217	324	124	801	160	153
27.....	604	153	734	362	269	269	200	500	124	2,260	160	200
28.....	234	146	440	343	251	251	192	305	118	756	160	269
29.....	168	138	287	234	-----	234	184	217	269	625	1,210	324
30.....	153	146	2,090	234	-----	234	217	305	124	420	625	287
31.....	146	-----	7,730	234	-----	6,950	-----	184	-----	381	520	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	604	124	187	0.456	0.53
November.....	440	131	177	.432	.48
December.....	7,730	146	672	1.64	1.89
January.....	5,090	184	1,040	2.54	2.93
February.....	6,950	184	1,260	3.07	3.20
March.....	8,590	217	1,250	3.05	3.52
April.....	7,730	184	1,300	3.17	3.54
May.....	4,250	184	1,010	2.46	2.84
June.....	400	118	151	.368	.41
July.....	2,260	105	264	.644	.74
August.....	1,210	160	317	.773	.89
September.....	1,180	131	272	.663	.74
The year.....	8,590	105	656	1.60	21.71

HATCHIE RIVER BASIN

HATCHIE RIVER AT BOLIVAR, TENN.

LOCATION.—Staff gage at new highway bridge on State highway 18, 250 feet upstream from Illinois Central Railroad bridge, 2,000 feet below mouth of Spring Creek, and 1 mile north of Bolivar, Hardeman County. Zero of gage is 323.86 feet above mean Gulf level.

DRAINAGE AREA.—1,430 square miles.

RECORDS AVAILABLE.—July 1929 to September 1933.

DISCHARGE.—Maximum during year, 27,800 second-feet Feb. 20 (gage height, 17.98 feet); minimum, 278 second-feet Aug. 25–27, Sept. 24; minimum gage height, 2.38 feet Aug. 26, 27, Sept. 24.

1929–33: Maximum, 39,700 second-feet Jan. 14, 1932 (gage height, 19.6 feet); minimum, 134 second-feet Aug. 12–14, 1930 (gage height, 1.1 feet).

REMARKS.—Records good.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13,100	3,420	2,840	10,700	3,420	4,590	9,030	1,620	1,090	1,140	1,020	841
2	11,900	3,530	2,840	10,100	2,910	4,400	11,900	1,820	863	1,140	841	1,000
3	9,030	3,650	2,720	9,030	2,380	3,320	20,900	2,010	819	1,020	669	1,090
4	8,060	3,530	2,420	8,060	1,950	2,510	18,500	2,300	753	885	863	1,280
5	6,830	3,320	1,950	7,620	1,900	2,200	13,700	2,720	690	669	1,280	1,600
6	5,840	2,840	1,680	7,620	1,720	1,980	13,700	3,140	669	495	1,260	1,580
7	5,280	2,130	1,600	6,480	2,130	2,510	14,300	4,070	629	406	908	1,140
8	4,800	1,800	1,600	5,840	3,140	3,060	12,500	18,500	589	372	589	775
9	4,400	1,650	1,620	5,840	3,530	3,230	11,300	18,500	551	372	477	495
10	4,070	1,550	2,230	5,030	3,780	3,650	9,560	14,900	551	406	423	532
11	3,920	1,550	3,230	4,070	4,070	3,780	11,900	11,300	551	629	406	649
12	3,230	1,650	3,920	4,070	4,400	3,780	9,030	9,030	669	819	389	775
13	2,460	1,900	4,070	3,530	5,550	3,650	7,210	9,030	819	669	389	775
14	1,600	1,920	4,400	3,230	8,530	3,530	6,150	8,060	977	495	389	908
15	1,360	1,700	5,280	2,910	14,900	3,320	5,840	7,620	931	423	372	908
16	1,090	1,520	6,150	2,420	16,100	2,780	5,550	9,030	841	669	356	669
17	1,400	1,430	8,060	2,510	19,100	2,510	5,030	9,030	669	711	389	532
18	1,950	1,520	8,060	2,780	18,500	2,980	4,590	6,480	532	775	356	423
19	2,510	1,580	7,620	3,060	17,300	9,030	4,230	5,550	495	711	340	423
20	2,780	1,620	6,480	3,320	25,000	13,700	3,920	3,920	459	532	340	406
21	3,140	1,620	6,150	3,230	19,100	13,700	3,650	3,650	441	441	340	372
22	3,420	1,680	5,550	3,320	14,300	16,100	3,320	3,420	423	459	340	308
23	3,780	1,430	5,550	3,320	11,300	14,300	2,980	2,980	406	441	340	293
24	4,230	1,310	5,280	3,230	9,560	11,300	2,840	2,660	389	669	308	278
25	4,400	1,360	4,230	3,320	8,060	9,030	2,780	2,510	389	841	278	308
26	4,590	1,480	3,920	3,420	6,480	7,210	2,660	2,200	389	1,000	278	293
27	4,400	1,920	4,800	3,530	6,150	6,150	2,420	2,040	406	1,620	293	308
28	3,920	2,260	4,800	3,530	5,030	5,280	2,200	1,900	477	1,900	340	308
29	3,530	2,510	5,030	3,650	4,400	4,400	1,950	1,820	551	1,980	441	753
30	3,420	2,780	6,480	3,780	3,780	3,780	1,800	1,650	885	1,820	669	1,020
31	3,420	-----	11,300	3,650	-----	6,830	-----	1,380	-----	1,430	954	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	13,100	1,090	4,450	3.11	3.58
November	3,650	1,310	2,070	1.45	1.62
December	11,300	1,600	4,580	3.20	3.69
January	10,700	2,420	4,720	3.30	3.80
February	25,000	1,720	8,580	6.00	6.25
March	16,100	1,980	5,760	4.03	4.65
April	20,900	1,800	7,510	5.25	5.86
May	18,500	1,380	6,640	3.94	4.54
June	1,090	389	630	.441	.49
July	1,980	372	837	.585	.67
August	1,280	278	537	.376	.43
September	1,600	278	701	.490	.55
The year	25,000	278	3,810	2.66	36.13

HATCHIE RIVER NEAR STANTON, TENN.

LOCATION.—Staff gage at bridge on State highway 1, 1 mile below Nashville, Chattanooga & St. Louis Railway bridge and 4 miles north of Stanton, Haywood County. Zero of gage is 267.34 feet above mean Gulf level.

DRAINAGE AREA.—1,940 square miles.

RECORDS AVAILABLE.—July 1929 to September 1933.

DISCHARGE.—Maximum during year, 30,100 second-feet Feb. 21 (gage height, 17.96 feet); minimum, 475 second-feet Aug. 27, 28; minimum gage height, 3.05 feet Aug. 28.

1929-33: Maximum, 46,200 second-feet Jan. 17, 1932 (gage height, 19.40 feet); minimum, 308 second-feet Aug. 12-15, 1930 (gage height, 2.1 feet).

REMARKS.—Records fair.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,270	4,150	1,980	17,200	3,770	6,850	18,000	3,150	2,400	725	1,800	635
2	2,850	4,150	2,080	15,400	3,840	6,420	14,600	3,150	2,010	820	1,780	820
3	4,150	4,070	2,230	12,100	3,910	5,720	11,300	3,090	1,640	965	1,580	1,200
4	12,100	3,910	2,400	11,300	3,990	5,220	11,300	2,970	1,340	1,060	1,470	1,610
5	11,300	3,840	2,490	10,500	3,990	4,840	19,000	3,150	1,170	1,060	1,200	1,520
6	9,090	3,770	2,590	9,780	3,910	4,540	19,900	3,630	1,060	985	1,010	1,470
7	7,860	3,700	2,690	9,780	3,840	4,680	16,200	3,840	965	880	1,010	1,420
8	7,330	3,700	2,790	9,090	3,910	4,540	14,600	7,860	900	760	1,240	1,600
9	6,420	3,630	2,690	9,090	3,840	4,230	13,700	11,300	860	690	1,170	1,400
10	5,720	3,630	2,540	8,450	3,630	4,150	12,100	17,200	800	635	965	1,120
11	5,220	3,560	2,690	7,330	3,560	3,990	11,300	18,000	780	620	820	860
12	4,840	3,420	2,910	6,420	3,560	3,840	12,100	15,400	760	620	725	760
13	4,540	2,910	2,910	5,720	3,700	3,840	12,100	12,100	760	620	670	760
14	4,320	2,490	2,970	5,450	4,320	3,910	10,500	9,780	760	705	635	920
15	4,230	2,150	3,070	5,420	6,420	4,070	9,090	9,090	820	800	620	1,030
16	3,990	2,080	3,210	4,680	10,500	4,070	8,450	8,450	920	760	585	965
17	3,770	2,120	3,420	4,540	14,600	4,150	7,330	7,860	965	690	565	985
18	3,420	2,040	3,630	4,680	16,200	4,320	6,850	8,450	940	690	550	920
19	2,690	1,950	3,990	4,540	19,900	6,040	6,040	8,450	860	740	565	800
20	2,080	1,830	4,680	4,320	26,900	7,860	5,720	7,860	780	800	565	725
21	2,010	1,800	9,090	4,150	29,000	9,780	5,220	6,420	705	820	535	655
22	2,080	1,780	9,090	4,150	25,800	12,900	4,840	5,720	655	780	520	600
23	2,150	1,780	8,450	4,070	19,900	12,900	4,680	5,220	635	760	505	585
24	2,310	1,780	8,450	3,990	15,400	14,600	4,420	4,840	600	670	505	550
25	2,440	1,740	9,090	3,910	12,100	14,600	4,230	4,540	585	725	505	535
26	2,690	1,720	8,450	3,840	9,780	11,300	3,990	4,320	585	1,030	490	535
27	2,910	1,660	7,330	3,840	9,090	9,780	3,770	4,070	565	1,780	475	535
28	3,150	1,610	6,850	3,840	7,860	8,450	3,630	3,770	550	1,520	475	520
29	3,420	1,690	6,040	3,840	-----	7,330	3,420	3,490	620	1,470	550	655
30	3,770	1,830	6,850	3,840	-----	6,420	3,280	3,150	690	1,610	535	800
31	3,990	-----	12,100	3,770	-----	9,780	-----	2,740	-----	1,720	585	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	12,100	2,010	4,490	2.31	2.66
November	4,150	1,610	2,680	1.38	1.54
December	12,100	1,980	4,830	2.49	2.87
January	17,200	3,770	6,730	3.47	4.00
February	29,000	3,560	9,900	5.10	5.31
March	14,600	3,840	6,940	3.58	4.13
April	19,900	3,280	9,390	4.84	5.40
May	18,000	2,740	6,870	3.54	4.08
June	2,400	550	923	.476	.53
July	1,780	620	920	.474	.55
August	1,800	475	813	.419	.48
September	1,610	520	913	.471	.53
The year	29,000	475	4,590	2.37	32.08

WOLF RIVER BASIN

WOLF RIVER AT ROSSVILLE, TENN.

LOCATION.—Chain gage at county highway bridge half a mile north of Rossville, Fayette County, and 8 miles downstream from Moscow and mouth of North Fork.

DRAINAGE AREA.—531 square miles.

RECORDS AVAILABLE.—July 1929 to September 1933.

DISCHARGE.—Maximum during year, 12,100 second-feet Mar. 20 (gage height, 10.60 feet); minimum, 169 second-feet Aug. 26 (gage height, 3.24 feet).

1929-33: Maximum, 16,400 second-feet Jan. 9, 1930 (gage height, 11.32 feet); minimum, 125 second-feet Oct. 1-27, 1931; minimum gage height, 2.24 feet Aug. 12-14, 1930.

REMARKS.—Records fair.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	1,780	300	360	5,840	500	452	10,000	405	300	218	244	4,670
2-----	810	270	315	4,670	532	420	6,690	548	257	231	270	2,920
3-----	375	270	285	2,600	420	390	1,090	690	257	244	244	1,580
4-----	330	285	285	1,580	405	375	745	596	244	231	405	885
5-----	360	270	270	1,020	360	360	745	1,290	244	205	330	1,020
6-----	360	257	270	631	315	500	2,300	1,420	231	193	420	580
7-----	516	257	330	500	845	1,420	2,600	1,780	231	193	405	315
8-----	631	244	315	516	2,920	1,420	3,250	4,670	218	193	244	244
9-----	484	244	300	745	2,020	1,420	2,020	3,590	218	193	218	231
10-----	285	244	1,090	845	1,290	1,580	1,180	2,600	218	244	205	231
11-----	257	596	2,300	775	2,020	1,180	1,420	2,020	270	300	205	436
12-----	244	548	2,600	613	1,090	845	1,780	1,290	452	360	205	330
13-----	244	452	2,920	532	650	596	1,780	1,090	405	330	205	244
14-----	244	436	2,600	420	2,600	516	1,290	2,020	452	244	205	257
15-----	231	390	1,580	360	7,589	452	970	2,300	452	218	205	345
16-----	231	360	1,090	345	8,040	405	970	1,420	285	218	205	436
17-----	231	315	715	690	4,300	596	925	1,180	244	205	205	452
18-----	257	330	650	1,290	2,020	2,020	885	1,090	244	218	193	315
19-----	315	345	532	1,290	2,600	6,260	775	885	231	205	193	231
20-----	360	330	436	1,090	10,500	11,100	631	532	231	218	193	205
21-----	300	330	484	970	8,510	5,840	715	360	218	205	181	205
22-----	244	315	845	885	4,670	2,600	1,290	375	218	231	181	193
23-----	218	300	970	690	2,300	1,420	925	360	218	218	181	193
24-----	218	360	1,780	548	1,420	885	715	405	205	205	181	181
25-----	205	500	2,600	548	925	690	670	613	205	405	181	193
26-----	300	548	2,300	596	690	613	564	1,180	205	580	181	193
27-----	436	613	1,780	532	564	500	484	810	205	775	181	193
28-----	390	613	1,580	468	500	468	420	500	205	745	390	231
29-----	420	580	1,180	436	-----	420	390	436	205	631	375	810
30-----	452	500	1,580	390	-----	405	420	452	218	390	1,290	3,250
31-----	360	-----	6,690	360	-----	5,840	-----	360	-----	270	4,300	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October-----	1,780	205	390	0.734	0.85
November-----	613	244	380	.715	.80
December-----	6,690	270	1,320	2.49	2.87
January-----	5,840	345	1,060	2.00	2.31
February-----	10,500	315	2,520	4.75	4.95
March-----	11,100	360	1,680	3.16	3.64
April-----	10,000	390	1,620	3.05	3.40
May-----	4,670	360	1,200	2.26	2.61
June-----	452	205	260	.490	.55
July-----	775	193	301	.567	.65
August-----	4,300	181	407	.766	.88
September-----	4,670	181	719	1.35	1.51
The year-----	11,100	181	978	1.84	25.92

ST. FRANCIS RIVER BASIN

ST. FRANCIS RIVER NEAR PATTERSON, MO.

LOCATION.—Chain gage in N½ sec. 16, T. 29 N., R. 5 E., 3 miles east of Patterson. Zero of gage is 372.70 feet above mean sea level.

DRAINAGE AREA.—956 square miles.

RECORDS AVAILABLE.—June 1921 to September 1933.

DISCHARGE.—Maximum during year, 57,400 second-feet May 14 (gage height, 26.80 feet); minimum, 25 second-feet Oct. 2, 3; minimum gage height, 1.13 feet Aug. 28.

1921-33: Maximum, that of May 14, 1933; minimum, 18 second-feet July 21, 22, 1932. Average, 12 years (1921-33), 1,150 second-feet.

Maximum stage known, about 31.8 feet in August 1915.

REMARKS.—Records good except those for days of considerable change in discharge, which are generally fair. Discharge estimated for period of ice effect Dec. 17, 18.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	27	3,450	162	5,080	775	1,160	1,640	3,250	450	58	85	40
2.....	25	2,290	157	2,380	690	930	2,200	10,800	391	53	71	40
3.....	25	1,080	152	1,800	580	865	1,640	4,440	338	51	65	60
4.....	28	775	157	1,480	530	745	1,320	2,380	306	48	68	68
5.....	37	690	147	1,320	458	635	1,160	2,290	277	46	60	250
6.....	37	530	152	1,080	435	580	2,040	2,950	250	44	51	116
7.....	34	480	205	930	480	865	2,850	2,040	224	42	48	75
8.....	32	412	192	805	775	1,880	2,040	3,760	212	40	46	71
9.....	32	368	435	718	635	1,800	1,640	2,470	200	42	44	65
10.....	34	325	480	608	555	1,320	1,640	1,800	177	50	48	60
11.....	41	325	412	530	505	1,080	1,720	14,100	155	735	516	53
12.....	41	288	345	480	480	930	2,290	7,730	145	306	200	68
13.....	39	235	305	435	458	805	1,960	5,950	131	177	224	166
14.....	39	235	305	390	458	745	1,640	53,100	116	124	177	200
15.....	37	220	270	345	435	745	20,100	19,500	112	102	116	516
16.....	37	205	205	325	435	865	38,500	15,600	107	88	98	450
17.....	34	192	180	325	435	775	7,390	5,080	100	74	82	277
18.....	32	178	170	2,040	480	690	3,550	3,150	95	60	71	200
19.....	32	173	192	1,800	550	1,560	2,560	2,250	87	55	63	145
20.....	31	170	178	3,350	480	2,040	1,960	1,550	82	51	58	124
21.....	32	168	178	2,470	505	1,640	1,640	1,330	79	47	55	98
22.....	32	162	178	20,900	480	1,240	1,560	1,260	76	44	51	85
23.....	32	157	220	7,560	480	1,240	1,480	1,010	71	42	48	76
24.....	32	162	20,900	3,150	458	1,400	1,240	895	68	1,330	45	60
25.....	34	178	11,900	2,290	1,160	1,320	1,080	787	65	79	42	63
26.....	72	173	3,650	1,880	2,560	1,320	930	951	63	71	40	60
27.....	83	170	2,200	1,560	1,880	1,160	805	1,010	88	145	39	76
28.....	79	178	1,640	1,320	1,480	1,000	718	840	74	177	38	124
29.....	94	173	1,240	1,080	-----	865	635	840	65	145	44	6,890
30.....	100	170	1,480	1,000	-----	805	2,290	634	62	116	42	1,200
31.....	3,550	-----	18,700	865	-----	1,000	-----	538	-----	98	40	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acres-feet
October.....	3,550	25	155	0.162	0.19	9,530
November.....	3,450	157	477	.499	.56	28,400
December.....	20,900	147	2,160	2.26	2.61	133,000
January.....	20,900	325	2,270	2.37	2.73	140,000
February.....	2,560	435	700	.732	.76	38,900
March.....	2,040	580	1,100	1.15	1.33	67,600
April.....	38,500	635	3,740	3.91	4.36	223,000
May.....	53,100	538	5,620	5.88	6.78	346,000
June.....	450	62	156	.163	.18	9,280
July.....	1,330	40	146	.153	.18	8,980
August.....	516	38	86.3	.090	.10	5,310
September.....	6,890	40	393	.411	.46	23,400
The year.....	53,100	25	1,430	1.50	20.24	1,030,000

ST. FRANCIS RIVER AT FISK, MO.

LOCATION.—Chain gage in SW¼ sec. 28, T. 25 N., R. 8 E., at bridge on State highway 60 at Fisk. Zero of gage is 307.94 feet above mean sea level.

DRAINAGE AREA.—1,370 square miles.

RECORDS AVAILABLE.—October 1927 to September 1933.

DISCHARGE.—Maximum during year, 41,900 second-feet May 15 (gage height, 26.89 feet); minimum, 136 second-feet Oct. 1-3, 5-7, 22, 23; minimum gage height, 1.79 feet Oct. 3.

1927-33: Maximum, that of May 15, 1933; minimum, 125 second-feet Aug. 5, 7-13, 1930; minimum gage height, 1.69 feet July 21, 1932.

Maximum stage known, 28.0 feet Apr. 18, 1927 (discharge, about 50,000 second-feet).

REMARKS.—Records good except those for days of considerable change in discharge, which are generally fair.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	136	1,170	300	9,000	1,480	1,650	2,000	3,090	1,020	217	225	162
2.....	136	1,900	290	10,400	1,360	1,470	2,370	4,770	926	209	209	162
3.....	136	1,720	290	8,600	1,220	1,300	2,530	6,960	852	201	201	177
4.....	142	1,410	290	6,200	1,080	1,160	2,330	7,800	780	185	193	330
5.....	136	1,150	290	4,040	965	1,030	2,000	6,960	708	185	193	300
6.....	136	913	270	2,740	876	952	1,860	5,800	660	177	185	270
7.....	136	768	300	2,190	1,100	1,040	2,100	4,860	612	169	177	243
8.....	142	660	330	1,920	1,340	1,240	2,570	4,120	576	169	169	225
9.....	142	600	351	1,650	1,340	1,470	2,410	4,440	417	162	162	217
10.....	148	528	417	1,480	1,220	1,570	2,000	4,360	472	177	155	193
11.....	142	494	516	1,340	1,060	1,480	2,490	3,510	428	177	290	177
12.....	142	472	505	1,190	991	1,340	2,840	5,340	406	193	804	177
13.....	148	428	472	1,070	913	1,200	2,790	7,800	373	395	684	193
14.....	148	417	439	978	913	1,110	2,410	8,600	340	330	540	261
15.....	148	395	395	888	913	1,070	2,840	29,200	330	290	450	300
16.....	148	395	384	780	900	1,080	7,200	36,000	310	252	340	300
17.....	148	384	373	768	900	1,070	23,100	22,000	300	225	280	708
18.....	148	373	351	978	978	1,070	27,900	13,500	290	201	243	406
19.....	142	351	330	2,000	978	1,650	14,100	9,400	280	193	225	362
20.....	142	340	320	2,490	952	2,070	8,600	6,720	270	177	209	310
21.....	142	330	310	3,140	900	2,300	6,200	4,200	261	169	193	270
22.....	136	320	310	5,040	852	2,050	4,200	3,140	252	162	185	243
23.....	136	310	330	9,000	804	1,840	3,140	2,490	243	155	177	225
24.....	142	310	2,300	12,900	768	1,650	2,370	2,130	234	155	169	209
25.....	142	320	6,360	9,900	852	1,620	1,960	1,840	234	217	162	209
26.....	148	320	10,400	7,500	1,370	1,570	1,690	1,650	225	330	162	209
27.....	155	290	11,900	5,540	1,800	1,480	1,480	1,580	234	290	162	270
28.....	169	300	8,200	3,260	1,820	1,410	1,330	1,430	261	243	155	744
29.....	185	290	5,440	2,410	-----	1,300	1,200	1,360	252	234	155	1,080
30.....	201	300	4,680	1,980	-----	1,070	1,820	1,290	243	243	162	1,330
31.....	252	-----	6,720	1,740	-----	1,400	-----	1,150	-----	234	162	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October.....	252	136	150	0.109	0.13	9,220
November.....	1,900	290	599	.437	.49	35,600
December.....	11,900	270	2,070	1.51	1.74	127,000
January.....	12,900	768	3,970	2.90	3.34	244,000
February.....	1,820	768	1,090	.796	.83	60,500
March.....	2,300	952	1,410	1.03	1.19	86,700
April.....	27,900	1,200	4,730	3.45	3.85	281,000
May.....	36,000	1,150	7,020	5.12	5.90	432,000
June.....	1,020	225	426	.311	.35	25,300
July.....	395	155	217	.158	.18	13,300
August.....	804	155	251	.183	.21	15,400
September.....	1,330	162	342	.250	.28	20,400
The year.....	36,000	136	1,870	1.36	18.49	1,350,000

LITTLE RIVER DITCH 81 NEAR KENNETT, MO.

LOCATION.—Chain gage in NE¼ sec. 4, T. 18 N., R. 10 E., at bridge on State highway 84, 4 miles east of Kennett. Zero of gage is about 240 feet above mean sea level.

RECORDS AVAILABLE.—October 1926 to September 1933; September 1921 to September 1926 at Kirk, 1¼ miles upstream.

DISCHARGE.—Maximum during year, 1,380 second-feet Jan. 1 (gage height, 10.34 feet); minimum, 63 second-feet Oct. 28; minimum gage height, 2.58 feet Oct. 21, 22.

1926-33: Maximum, 2,760 second-feet Apr. 21, 1927 (gage height, 15.11 feet); minimum, 42 second-feet Sept. 5-8, 1930 (gage height, 2.31 feet). Average, 12 years (1921-33), 314 second-feet.

REMARKS.—Records good except those for days of considerable change in discharge, which are generally fair. Discharge estimated Oct. 29 and for period of ice effect Dec. 17-20. Little River Ditch 81 and Little River Ditches 1, 66, 66-A, 251, and 259, records of which appear on the following pages, are the six main ditches that drain the lowlands of southeastern Missouri and empty into Big Lake at the Missouri-Arkansas State line.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	75	75	90	1,350	264	240	1,130	192	192	110	105	90
2.....	70	100	85	1,160	240	216	923	216	192	105	100	90
3.....	70	85	85	1,010	228	204	755	204	181	105	105	90
4.....	85	80	90	901	216	204	675	204	181	100	126	149
5.....	80	75	85	775	204	192	563	240	170	100	115	276
6.....	85	75	85	675	204	192	513	465	170	100	110	228
7.....	85	75	85	599	228	216	465	513	170	100	105	170
8.....	80	75	85	513	372	300	385	411	159	100	100	148
9.....	80	75	95	465	372	288	336	324	148	100	100	137
10.....	80	75	95	411	288	240	300	276	148	100	95	120
11.....	85	80	90	348	264	228	411	264	148	100	132	115
12.....	80	90	90	312	240	216	715	465	159	95	181	105
13.....	80	90	85	276	240	216	563	775	148	95	148	137
14.....	75	85	85	264	228	192	465	901	148	90	132	137
15.....	70	85	85	240	276	192	451	1,200	148	90	115	126
16.....	70	95	85	228	324	192	879	1,160	148	90	115	126
17.....	70	110	85	216	324	192	835	991	137	90	110	115
18.....	66	110	85	216	312	192	655	857	137	85	105	115
19.....	66	105	85	264	348	599	513	715	148	85	100	105
20.....	66	105	85	288	324	879	437	617	126	85	100	105
21.....	66	95	85	312	288	715	385	513	126	90	95	105
22.....	66	95	85	563	264	599	336	451	126	85	95	100
23.....	70	95	90	755	252	529	300	437	126	85	95	100
24.....	66	95	148	635	228	451	276	276	120	85	95	100
25.....	66	95	300	545	228	424	264	336	115	105	90	95
26.....	70	95	288	563	252	360	252	300	115	110	90	105
27.....	66	90	240	497	288	324	240	385	115	132	90	115
28.....	66	90	216	411	252	288	228	385	115	126	85	132
29.....	66	90	192	360	252	252	216	240	115	132	85	159
30.....	66	90	324	312	240	204	228	110	120	100	100	216
31.....	70	-----	1,350	288	-----	715	-----	216	-----	110	100	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	85	66	72.9	4,480
November.....	110	75	89.2	5,310
December.....	1,350	85	163	10,000
January.....	1,350	216	508	31,200
February.....	372	204	270	15,000
March.....	879	192	332	20,400
April.....	1,130	204	489	29,100
May.....	1,200	192	476	29,300
June.....	192	110	145	8,630
July.....	132	85	100	6,150
August.....	181	85	107	6,580
September.....	276	90	131	7,800
The year.....	1,350	66	240	174,000

LITTLE RIVER DITCH 1 NEAR KENNETT, MO.

LOCATION.—Chain gage in NE¼ sec. 4, T. 18 N., R. 10 E., at bridge on State highway 84, 4 miles east of Kennett. Zero of gage is about 240 feet above mean sea level.

RECORDS AVAILABLE.—October 1926 to September 1933; September 1921 to September 1926 at Kirk, 1¼ miles upstream.

DISCHARGE.—Maximum during year, 3,040 second-feet May 16 (gage height, 11.16 feet); minimum, 29 second-feet July 24 (gage height, 2.80 feet).

1926-33: Maximum, 7,520 second-feet Apr. 25, 1927 (gage height, 16.56 feet); minimum, 8 second-feet Sept. 13-18, 1932; minimum gage height, 2.57 feet Sept. 18, 1932. Average, 12 years (1921-33), 720 second-feet.

REMARKS.—Records good except those for days of considerable change in discharge, which are generally fair, those estimated, Oct. 23-27, 29, Jan. 2-4, and those for period of ice effect, Dec. 16-20, which are poor.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	43	85	2,820	626	545	2,760	349	349	68	105	52
2	30	49	85	2,880	571	493	2,710	349	307	66	91	49
3	30	65	85	2,770	519	441	2,400	349	307	122	91	52
4	57	65	81	2,660	493	393	1,900	327	268	60	114	114
5	52	69	71	2,550	467	371	1,540	393	268	55	114	194
6	54	55	71	2,300	441	349	1,370	654	240	54	96	287
7	63	52	71	2,000	441	393	1,200	740	230	52	88	307
8	60	46	71	1,680	740	598	974	902	212	49	76	268
9	54	49	74	1,450	974	654	770	740	194	49	71	203
10	46	49	74	1,240	770	545	654	598	176	54	65	149
11	55	55	85	974	626	467	974	519	176	49	91	122
12	48	58	81	834	493	393	2,150	1,240	167	52	158	102
13	48	71	76	598	493	393	1,860	2,050	167	46	176	131
14	44	68	76	626	441	393	1,540	2,400	167	43	149	122
15	44	68	76	545	571	371	1,370	2,930	158	43	61	114
16	46	78	75	519	800	371	2,450	3,040	149	40	80	114
17	46	98	70	493	800	371	2,400	2,930	140	38	103	102
18	46	122	70	467	770	349	1,950	2,600	131	38	88	95
19	43	122	70	545	974	1,720	1,580	2,150	114	38	85	90
20	43	122	75	654	868	2,400	1,320	1,810	114	38	78	88
21	40	122	80	770	770	2,250	1,090	1,450	105	33	68	81
22	40	105	76	1,760	654	1,860	800	1,200	103	33	65	78
23	38	102	81	2,150	571	1,450	682	1,160	102	31	61	78
24	38	98	140	2,000	519	1,200	598	974	98	29	58	71
25	38	93	393	1,760	493	936	545	800	88	66	55	71
26	36	88	710	1,810	545	868	519	710	81	65	52	71
27	36	85	626	1,580	710	770	467	545	85	103	49	102
28	36	85	493	1,280	654	654	441	545	76	149	48	95
29	36	85	417	974	-----	571	327	467	71	167	52	149
30	37	85	417	800	-----	519	393	417	69	149	68	307
31	42	-----	2,660	710	-----	1,580	-----	371	-----	131	58	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	63	30	43.9	2,700
November	122	43	78.1	4,650
December	2,660	70	246	15,100
January	2,880	467	1,430	87,900
February	974	441	636	35,300
March	2,400	349	796	48,900
April	2,760	327	1,320	78,600
May	3,040	327	1,150	70,700
June	349	69	164	9,760
July	167	29	64.8	3,980
August	176	48	84.3	5,180
September	307	49	127	7,560
The year	3,040	29	512	370,000

LITTLE RIVER DITCH 66 NEAR KENNETT, MO.

LOCATION.—Chain gage in NE¼ sec. 4, T. 18 N., R. 10 E., at bridge on State highway 84, 4 miles east of Kennett. Zero of gage is about 240 feet above mean sea level.

RECORDS AVAILABLE.—October 1926 to September 1933; September 1921 to September 1926 at Kirk, 1¼ miles upstream.

DISCHARGE.—Maximum during year, 2,720 second-feet May 16 (gage height, 15.14 feet); minimum, 50 second-feet July 23, 24 (gage height, 3.02 feet).

1926-33: Maximum, 3,650 second-feet Apr. 25, 1927 (gage height, 17.69 feet); minimum, 26 second-feet Sept. 5-8, 1930; minimum gage height, 2.60 feet Sept. 6-8, 1930, Oct. 6, 10, 1931. Average, 12 years (1921-33), 356 second-feet.

REMARKS.—Records good except those for days of considerable change in discharge, which are generally fair. Discharge estimated for period of ice effect Dec. 17-22. Little River Ditch 66-A is an auxiliary to Little River Ditch 66, the two ditches being separated by a low, narrow bank and interconnected by cut-offs. Above stage of 6.4 feet part of the flow is carried by Little River Ditch 66-A, and above stage of 13 feet the two ditches in the vicinity of the gage unite to form one continuous body of water. For the purpose of determining the discharge of each ditch, the division between them is taken at the top of the bank which separates them during low stages.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	74	134	2,530	579	684	1,850	396	380	96	141	61
2	78	167	134	2,600	545	562	2,220	596	350	96	128	59
3	76	221	134	2,530	494	477	2,130	630	320	90	128	61
4	84	167	128	2,420	460	412	1,940	666	291	84	263	108
5	96	134	122	2,350	428	380	1,710	613	277	78	180	193
6	122	122	122	2,160	396	365	1,380	850	263	76	134	277
7	134	108	122	2,060	412	380	1,110	1,380	249	74	115	249
8	108	102	122	1,790	579	528	970	1,350	235	69	102	207
9	96	96	167	1,550	779	1,050	738	810	1,220	221	96	167
10	90	96	193	1,350	990	648	702	1,110	207	74	90	148
11	90	102	167	1,050	774	528	910	1,010	207	90	115	128
12	90	115	160	910	528	460	1,580	1,380	193	115	167	122
13	90	128	148	738	494	428	1,260	2,060	193	84	305	128
14	78	134	148	613	460	428	1,220	2,350	180	74	235	122
15	75	128	128	545	511	396	1,010	2,640	167	69	167	115
16	78	134	128	511	666	380	1,610	2,720	167	69	148	122
17	75	167	128	477	684	396	2,130	2,640	160	67	128	102
18	71	193	128	477	666	380	2,060	2,490	154	61	115	96
19	65	193	128	562	738	720	1,850	2,320	154	61	102	96
20	63	180	128	850	738	1,580	1,580	2,160	148	59	96	90
21	63	167	128	1,110	702	1,740	1,290	1,880	141	57	84	84
22	63	160	128	1,350	630	1,450	1,030	1,660	134	53	78	84
23	65	154	128	1,790	562	1,110	774	1,430	128	50	76	78
24	63	154	167	1,880	511	870	648	1,240	128	50	74	77
25	60	148	562	1,770	460	792	579	1,050	115	78	70	74
26	62	154	1,130	1,660	511	738	528	910	115	84	66	74
27	60	148	1,200	1,400	870	702	494	738	108	154	63	115
28	60	141	1,050	1,130	850	666	460	579	108	221	59	115
29	61	141	870	890	-----	579	428	494	108	277	63	444
30	60	134	684	738	-----	528	396	444	102	235	72	738
31	64	-----	1,530	648	-----	756	-----	428	-----	180	67	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	134	60	78.2	4,810
November	221	74	142	8,450
December	1,530	122	334	20,500
January	2,600	477	1,370	84,200
February	1,050	396	617	34,300
March	1,740	365	671	41,300
April	2,220	396	1,220	72,600
May	2,720	396	1,340	82,400
June	380	102	190	11,300
July	277	50	96.6	5,940
August	305	59	120	7,380
September	738	59	151	8,980
The year	2,720	50	528	382,000

LITTLE RIVER DITCH 66-A NEAR KENNETT, MO.

LOCATION.—Chain gage in NE¼ sec. 4, T. 18 N., R. 10 E., at bridge on State highway 84, 4 miles east of Kennett. Zero of gage is about 240 feet above mean sea level.

RECORDS AVAILABLE.—January 1927 to September 1933.

DISCHARGE.—Maximum during year, 1,210 second-feet May 16 (gage height, 15.17 feet); no flow on many days.

1927-33: Maximum, 2,340 second-feet Apr. 25, 1927 (gage height, 17.62 feet); no flow on many days.

REMARKS.—Records poor. See "Remarks" under Little River Ditch 66.

Discharge, in second-feet, 1932-33

Day	Dec.	Jan.	Feb.	Mar.	Apr.	May	Sept.
1.....	0	1,060	3	18	508	0	0
2.....	0	1,080	0	0	796	7	0
3.....	0	1,000	0	0	746	8	0
4.....	0	952	0	0	554	15	0
5.....	0	900	0	0	380	7	0
6.....	0	770	0	0	180	42	7
7.....	0	650	0	0	106	202	0
8.....	0	442	0	0	68	190	0
9.....	0	292	88	24	36	142	0
10.....	0	190	83	10	17	106	0
11.....	0	88	33	0	52	83	0
12.....	0	56	0	0	308	190	0
13.....	0	24	0	0	250	674	0
14.....	0	0	0	0	136	900	0
15.....	0	0	0	0	78	1,110	0
16.....	0	0	10	0	324	1,210	0
17.....	9	0	17	0	698	1,130	0
18.....	0	0	14	0	674	1,030	0
19.....	0	0	24	3	486	900	0
20.....	0	44	27	292	380	746	0
21.....	0	106	18	380	164	530	0
22.....	0	180	10	226	88	342	0
23.....	0	464	0	106	33	226	0
24.....	0	530	0	54	11	148	0
25.....	0	442	0	33	2	94	0
26.....	124	360	0	24	0	56	0
27.....	142	214	50	22	0	24	0
28.....	112	112	42	12	0	2	0
29.....	54	48	-----	2	0	0	0
30.....	21	24	-----	0	0	0	26
31.....	278	12	-----	24	-----	0	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
December.....	278	0	23.6	1,450
January.....	1,080	0	324	19,900
February.....	88	0	15.0	833
March.....	380	0	39.7	2,440
April.....	796	0	236	14,000
May.....	1,210	0	326	20,000
September.....	26	0	.87	52
The year.....	1,210	0	81.2	58,700

NOTE.—No flow during months omitted.

LITTLE RIVER DITCH 251 NEAR KENNETT, MO.

LOCATION.—Chain gage in NW¼ sec. 3, T. 18 N., R. 10 E., at bridge on State highway 84, 4 miles east of Kennett. Zero of gage is about 240 feet above mean sea level.

RECORDS AVAILABLE.—November 1926 to September 1933.

DISCHARGE.—Maximum during year, 4,260 second-feet May 16 (gage height, 15.18 feet); minimum, 110 second-feet Oct. 25, 26, 28–30; minimum gage height, 2.82 feet Oct. 25.

1926–33: Maximum, 6,510 second-feet Apr. 24, 25, 1927 (gage height, 17.67 feet); minimum, 52 second-feet Sept. 5–8, 1930 (gage height, 2.10 feet).

REMARKS.—Records good except those for days of considerable change in discharge, which are generally fair, and those corrected for ice effect, Dec. 17–21, and that estimated, Sept. 23, which are poor.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	170	134	244	3,990	1,170	1,260	3,150	818	818	225	362	152
2.....	152	282	244	4,080	1,080	1,080	3,590	1,140	738	216	322	143
3.....	152	384	244	3,990	1,020	902	3,460	1,170	686	206	302	152
4.....	170	302	234	3,900	930	818	3,240	1,230	634	197	494	244
5.....	179	302	225	3,760	874	764	2,860	1,140	586	188	494	384
6.....	234	206	225	3,540	790	712	2,390	1,700	562	188	384	538
7.....	282	188	225	3,370	818	738	2,020	2,430	538	170	302	494
8.....	216	170	225	2,990	1,140	1,020	1,800	2,360	494	170	282	406
9.....	197	170	302	2,660	1,910	1,360	1,530	2,170	472	179	244	342
10.....	179	170	322	2,360	1,770	1,200	1,360	1,980	450	179	225	302
11.....	179	179	302	1,870	1,390	990	1,730	1,800	428	197	282	282
12.....	170	206	282	1,660	1,020	874	2,700	2,510	428	234	384	244
13.....	170	225	263	1,390	960	818	2,580	3,410	406	188	586	263
14.....	152	225	244	1,200	902	846	2,130	3,810	384	179	472	263
15.....	143	216	244	1,080	1,020	764	1,840	4,120	362	170	362	263
16.....	152	234	216	1,020	1,390	738	2,780	4,260	342	170	322	244
17.....	143	282	210	960	1,390	738	3,460	4,170	342	161	282	234
18.....	134	342	210	930	1,360	712	2,940	3,990	322	161	263	216
19.....	134	322	210	1,080	1,460	1,530	3,110	3,760	322	152	244	206
20.....	117	322	210	1,560	1,420	2,780	2,700	3,540	302	143	225	206
21.....	117	322	220	1,950	1,330	2,990	2,240	3,150	302	143	206	197
22.....	117	282	244	2,390	1,230	2,550	1,870	2,740	282	134	197	188
23.....	117	282	225	3,030	1,110	2,020	1,530	2,510	282	134	188	184
24.....	117	282	322	3,150	960	1,660	1,330	2,200	282	126	179	179
25.....	110	263	960	2,990	930	1,490	1,200	1,910	263	188	170	170
26.....	110	263	2,050	2,860	990	1,460	1,140	1,660	263	197	170	170
27.....	117	263	2,130	2,430	1,560	1,390	1,050	1,460	244	322	161	225
28.....	110	244	1,870	2,050	1,530	1,260	960	1,230	244	538	152	234
29.....	110	244	1,560	1,630	-----	1,140	902	1,080	244	738	152	738
30.....	110	244	1,230	1,420	-----	1,020	874	960	244	586	179	1,290
31.....	117	-----	2,780	1,260	-----	1,590	-----	902	-----	450	170	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	282	110	151	9,280
November.....	384	134	252	15,000
December.....	2,780	210	596	36,600
January.....	4,080	930	2,340	144,000
February.....	1,910	790	1,200	66,600
March.....	2,990	712	1,260	77,500
April.....	3,590	874	2,150	128,000
May.....	4,260	818	2,300	141,000
June.....	818	244	409	24,300
July.....	738	126	233	14,300
August.....	586	152	282	17,300
September.....	1,290	143	305	18,100
The year.....	4,260	110	957	692,000

LITTLE RIVER DITCH 289 NEAR KENNETT, MO.

LOCATION.—Chain gage in NW¼ sec. 3, T. 18 N., R. 10 E., at bridge on State highway 84, 4 miles east of Kennett. Zero of gage is about 240 feet above mean sea level.

RECORDS AVAILABLE.—November 1926 to September 1933.

DISCHARGE.—Maximum during year, 1,360 second-feet Apr. 2, 3 (gage height, 10.72 feet); minimum, 0.6 second-foot July 17, 18, 21, 24; minimum gage height, 1.80 feet July 21, 24.

1926-33: Maximum, 4,140 second-feet Apr. 29, 1927 (gage height, 15.57 feet); minimum, 0.1 second-foot Aug. 4, 5, Oct. 22 to Nov. 17, 1931, Sept. 16-19, 1932; minimum gage height, 1.33 feet Aug. 29, 30, Sept. 4-8, 19, 20, 22, 23, 1930.

REMARKS.—Records fair except those for discharges below 10 second-feet, which are poor.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.0	2.8	10	1,090	154	120	1,330	72	42	2.0	20	4.8
2	2.0	3.4	11	1,090	134	106	1,360	69	36	1.8	15	3.7
3	1.8	4.8	11	1,090	124	98	1,360	66	32	1.8	14	7
4	6	5	10	1,040	110	90	1,270	59	28	1.2	20	39
5	4.6	4.8	10	932	102	86	1,090	102	24	1.8	22	102
6		4.4	10	754	98	83	828	224	21	1.6	26	120
7	20	4.0	10	522	106	115	600	212	21	1.4	22	90
8	20	3.7	9	357	288	200	386	176	18	1.3	17	66
9	15	3.4	9	315	275	188	275	144	15	1.3	14	47
10	12	3.1	10	275	200	176	200	120	14	1.3	12	36
11	9	4.4	9	212	144	154	249	110	13	1.0	21	29
12	8	4.4	9	188	115	134	371	522	12	1.0	29	24
13	8	4.8	10	165	110	129	301	778	13	1.0	34	24
14	7	6	8	144	115	124	236	880	12	1.0	26	32
15	6	6	8	129	236	110	315	932	11	.8	20	32
16	7	7	8	120	386	106	828	932	8	.8	17	27
17	6	8	7	115	357	102	778	854	8	.6	14	23
18	5	11	7	115	315	102	560	684	8	.6	13	21
19	4.8	13	7	129	275	932	402	504	7	1.0	12	18
20	4.0	14	9	154	236	1,040	275	301	6	.9	9	15
21	3.4	14	9	200	200	1,010	212	200	6	.6	9	13
22	3.4	12	9	600	165	880	176	154	6	.9	7	7
23	2.8	12	10	662	144	662	144	154	5	.8	6	7
24	3.1	12	36	580	129	468	124	134	4.4	.6	5	8
25	3.1	12	144	468	124	357	115	110	3.6	1.8	4	8
26	3.4	12	176	357	134	301	106	102	3.2	2.4	3.4	7
27	2.8	11	154	357	144	249	94	86	3.2	6	3.1	7
28	2.6	11	129	275	134	212	83	76	3.1	15	2.8	21
29	2.5	11	102	224	-----	176	80	62	2.6	56	3.0	47
30	2.5	10	176	188	-----	165	76	56	2.5	47	4.4	62
31	3.2	-----	1,090	165	-----	1,150	-----	47	-----	32	5	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	20	1.8	6.06	373
November	14	2.8	7.83	466
December	1,090	7	71.5	4,400
January	1,090	115	420	25,800
February	386	98	180	10,000
March	1,150	83	317	19,500
April	1,360	76	474	28,200
May	932	47	288	17,700
June	42	2.5	13.0	774
July	56	.6	6.04	371
August	34	2.8	13.9	855
September	120	3.7	31.6	1,880
The year	1,360	.6	152	110,000

BIG LAKE OUTLET NEAR MANILA, ARK.

LOCATION.—Chain gage in SE¼ sec. 9, T. 14 N., R. 9 E., 3½ miles southeast of Manila. Zero of gage is 223.44 feet above mean sea level.

RECORDS AVAILABLE.—September 1927 to September 1933.

DISCHARGE.—Maximum during year, 12,800 second-feet May 21–22 (gage height, 16.8 feet); minimum, 305 second-feet Oct. 4 (gage height, 3.3 feet).

1927–33: Maximum, 15,900 second-feet Jan. 16, 1930 (gage height, 19.85 feet); minimum, 105 second-feet Sept. 18, 1932 (gage height, 2.4 feet).

REMARKS.—Records poor. Gage-height record furnished by Mississippi County Drainage District 17.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	380	330	685	3, 770	9, 880	4, 720	7, 120	5, 900	6, 830	820	1, 200	645
2.....	355	380	685	4, 820	9, 140	4, 630	8, 080	5, 430	6, 150	775	1, 150	645
3.....	330	480	685	6, 410	8, 600	4, 540	9, 330	5, 100	5, 660	730	1, 200	685
4.....	305	610	685	8, 080	8, 250	4, 450	10, 500	4, 820	5, 210	730	1, 300	730
5.....	405	610	685	9, 510	7, 910	4, 360	11, 500	4, 720	4, 720	685	1, 400	1, 000
6.....	430	610	685	10, 700	7, 430	4, 360	12, 100	4, 630	4, 280	645	1, 450	1, 300
7.....	510	610	685	11, 500	7, 120	4, 200	12, 100	4, 630	3, 910	610	1, 500	1, 500
8.....	510	540	685	11, 900	6, 690	3, 980	11, 900	4, 910	3, 640	575	1, 500	1, 700
9.....	510	510	685	11, 900	6, 020	3, 770	11, 500	5, 210	3, 400	575	1, 350	1, 750
10.....	510	480	685	11, 900	5, 540	3, 770	10, 900	5, 430	3, 100	575	1, 250	1, 750
11.....	455	480	775	11, 700	5, 320	3, 770	10, 500	5, 660	2, 800	575	1, 250	1, 700
12.....	455	480	775	11, 300	5, 100	3, 770	9, 880	5, 900	2, 550	575	1, 300	1, 600
13.....	480	540	775	10, 700	5, 660	3, 770	9, 700	6, 020	2, 300	575	1, 350	1, 500
14.....	430	575	775	10, 100	5, 660	3, 700	9, 880	6, 690	2, 050	540	1, 400	1, 400
15.....	430	575	775	9, 140	5, 430	3, 700	9, 880	7, 740	1, 900	540	1, 450	1, 350
16.....	430	610	775	8, 780	5, 320	3, 520	9, 880	8, 960	1, 750	510	1, 400	1, 300
17.....	405	610	775	8, 250	5, 320	3, 460	10, 100	10, 100	1, 650	480	1, 350	1, 250
18.....	405	610	775	7, 740	5, 320	3, 340	10, 500	11, 300	1, 550	455	1, 250	1, 200
19.....	405	865	775	7, 280	5, 430	3, 400	10, 900	12, 100	1, 450	455	1, 150	1, 150
20.....	405	820	540	6, 830	5, 430	3, 580	11, 100	12, 600	1, 350	430	1, 050	1, 100
21.....	380	865	540	6, 830	5, 540	4, 360	11, 100	12, 800	1, 300	430	955	1, 050
22.....	380	865	775	7, 280	5, 540	5, 540	10, 900	12, 800	1, 200	430	865	955
23.....	380	865	775	7, 910	5, 540	6, 690	10, 500	12, 300	1, 100	405	820	1, 150
24.....	380	865	820	8, 600	5, 320	7, 430	9, 880	11, 900	1, 050	380	730	820
25.....	380	775	820	9, 510	5, 320	7, 910	9, 140	11, 500	1, 000	405	685	775
26.....	380	775	865	10, 300	5, 100	8, 080	8, 600	10, 900	955	510	645	730
27.....	380	775	1, 850	10, 900	4, 910	7, 910	7, 910	10, 300	910	645	575	730
28.....	355	775	1, 750	11, 100	4, 815	7, 740	7, 280	9, 510	910	820	575	775
29.....	355	775	2, 250	10, 900	-----	7, 430	6, 830	8, 780	910	1, 000	685	955
30.....	355	685	2, 750	10, 700	-----	6, 980	6, 280	8, 080	865	1, 150	685	1, 150
31.....	355	-----	3, 400	10, 100	-----	6, 980	-----	7, 430	-----	1, 200	685	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	510	305	407	25, 000
November.....	865	380	646	38, 400
December.....	3, 400	540	999	61, 400
January.....	11, 900	3, 770	9, 240	568, 000
February.....	9, 880	4, 815	6, 170	343, 000
March.....	8, 080	3, 340	5, 030	309, 000
April.....	12, 100	6, 280	9, 860	587, 000
May.....	12, 800	4, 630	8, 200	504, 000
June.....	6, 830	865	2, 550	152, 000
July.....	1, 200	380	620	38, 100
August.....	1, 500	575	1, 100	67, 600
September.....	1, 750	645	1, 140	67, 800
The year.....	12, 800	305	3, 810	2, 760, 000

WHITE RIVER BASIN

WHITE RIVER AT BEAVER, ARK.

LOCATION.—Chain gage in sec. 20, T. 21 N., R. 26 W., at Missouri & North Arkansas Railroad bridge a quarter of a mile east of depot at Beaver. Zero of gage is 885.55 feet above mean sea level.

DRAINAGE AREA.—1,270 square miles.

RECORDS AVAILABLE.—July 1909 to December 1910; May 1923 to September 1933.

DISCHARGE.—Maximum during year, 42,200 second-feet May 15 (gage height, 27.70 feet); minimum, 47 second-feet Oct. 24 (gage height, 2.06 feet).

1909-10, 1923-33: Maximum, 65,000 second-feet Apr. 16, 1927 (gage height, 37.0 feet); minimum, 33 second-feet Sept. 10, 1925; minimum gage height, 1.55 feet Oct. 1-8, 1909.

REMARKS.—Records good. Stage-discharge relation affected by ice Dec. 16; discharge estimated.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	58	114	179	3,200	1,450	3,440	745	3,840	770	121	66	550
2	52	855	170	2,410	1,300	3,440	799	2,970	695	115	70	1,800
3	50	693	162	2,020	1,230	2,750	1,040	2,320	620	118	79	9,920
4	54	489	156	1,720	1,100	2,220	972	2,020	550	161	70	19,800
5	54	385	153	1,450	972	1,920	912	1,720	485	118	103	19,200
6	52	290	153	1,300	912	2,020	1,160	1,720	452	105	221	5,100
7	209	256	139	1,160	855	4,700	2,220	1,530	402	98	157	2,990
8	165	240	130	1,040	745	8,740	1,920	1,300	349	93	170	2,100
9	142	240	133	972	745	5,900	1,620	1,160	338	108	198	1,530
10	128	489	139	912	645	4,260	1,370	972	295	93	145	1,180
11	104	693	139	855	645	3,200	1,230	855	275	88	229	930
12	96	532	133	799	599	2,640	1,100	799	265	86	201	732
13	87	426	128	745	544	2,220	972	2,220	246	84	198	710
14	80	365	128	693	527	2,020	855	9,410	225	79	140	620
15	75	308	122	645	519	1,720	1,820	36,400	280	75	113	550
16	78	290	125	599	510	1,450	6,660	35,100	327	70	98	518
17	80	256	128	553	502	1,300	10,600	20,900	265	66	84	452
18	71	240	122	799	502	1,160	12,600	7,460	238	70	79	372
19	67	224	106	4,400	502	1,160	7,940	4,950	216	75	70	327
20	62	209	106	9,750	485	3,320	6,050	3,640	198	103	70	275
21	58	209	109	9,410	468	2,420	10,300	2,990	183	118	70	246
22	54	194	122	10,100	455	1,920	11,000	2,520	176	98	66	242
23	49	194	502	13,100	434	1,530	6,350	2,410	170	95	66	208
24	47	194	10,600	6,820	426	1,370	4,700	2,160	157	95	64	190
25	67	194	22,700	4,850	1,620	1,160	4,700	1,800	145	93	70	187
26	60	179	15,300	4,260	7,140	1,100	4,120	1,620	140	83	140	225
27	58	194	4,850	3,320	5,300	972	3,300	1,620	140	84	154	550
28	54	209	3,300	2,640	3,440	912	3,430	1,440	140	79	485	930
29	54	194	2,530	2,120	-----	855	2,930	1,180	134	75	1,010	1,350
30	54	194	2,020	1,920	-----	799	2,470	1,010	131	72	1,180	4,060
31	94	-----	1,920	1,620	-----	745	-----	890	-----	70	810	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	209	47	77.8	0.061	0.07	4,780
November	855	114	818	2.50	.28	18,900
December	22,700	106	2,150	1.69	1.95	132,000
January	13,100	553	3,100	2.44	2.81	191,000
February	7,140	426	1,230	.969	1.01	68,300
March	8,740	745	2,370	1.87	2.16	146,000
April	12,600	745	2,860	3.04	3.39	230,000
May	36,400	799	5,190	4.09	4.72	319,000
June	770	131	300	.236	.26	17,900
July	161	66	93.2	.073	.08	5,730
August	1,180	64	215	.169	.19	13,200
September	19,800	187	2,590	2.04	2.28	154,000
The year	36,400	47	1,800	1.42	19.20	1,300,000

WHITE RIVER AT FORSYTH, MO.

LOCATION.—Water-stage recorder in SE¼ sec. 33, T. 24 N., R. 20 W., in Forsyth, a quarter of a mile below Swan Creek. Zero of gage is 642.98 feet above mean sea level.

DRAINAGE AREA.—4,610 square miles.

RECORDS AVAILABLE.—January to September 1926; February 1930 to September 1933.

DISCHARGE.—Maximum during year, 84,600 second-feet May 15 (gage height, 29.3 feet); minimum, 84 second-feet Aug. 27, 28; minimum gage height, 1.22 feet many hours of several days during October.

1926, 1930-33: Maximum, that of May 15, 1933; minimum, that of Aug. 27, 28, 1933.

Maximum stage known, 45.36 feet Apr. 15, 1927 (discharge, about 160,000 second-feet).

REMARKS.—Records good. Flow regulated by hydroelectric plant of Empire District Electric Co.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	242	710	910	6,160	5,330	7,970	2,500	6,940	3,820	1,630	439	1,790
2-----	223	1,350	774	7,470	5,000	7,250	2,040	7,170	2,260	300	375	2,900
3-----	249	1,350	620	6,440	4,760	6,740	2,940	6,560	2,130	393	4,960	4,750
4-----	349	1,450	300	5,590	3,500	5,960	2,800	5,600	1,340	524	3,740	8,020
5-----	216	1,870	650	5,050	3,080	4,530	2,680	5,440	2,010	723	3,650	24,100
6-----	195	463	876	4,730	3,470	5,840	3,460	4,940	2,010	550	1,990	21,100
7-----	209	1,170	646	4,020	1,430	10,300	3,470	3,590	1,770	723	825	8,400
8-----	277	1,860	571	1,660	3,160	13,200	3,270	4,580	1,650	556	460	4,680
9-----	253	1,180	612	2,900	3,380	16,400	3,490	3,930	1,340	1,010	670	3,220
10-----	533	1,350	424	3,080	2,870	13,200	4,480	3,520	1,440	943	772	2,500
11-----	265	1,910	342	3,390	1,230	10,200	4,290	2,370	388	1,400	956	1,350
12-----	244	2,140	483	2,440	1,080	8,200	3,990	2,700	1,770	1,110	765	1,760
13-----	254	1,090	488	1,780	2,700	7,530	3,000	9,470	1,200	1,080	1,448	1,400
14-----	298	1,670	450	1,690	2,050	6,460	2,020	38,700	1,130	782	1,100	2,570
15-----	293	1,190	1,020	902	1,470	5,600	9,010	74,900	1,200	961	896	1,810
16-----	248	1,200	554	1,650	1,250	5,200	27,300	80,800	1,110	162	771	1,390
17-----	289	1,100	408	1,950	1,850	4,570	33,300	64,000	1,120	543	1,030	568
18-----	258	1,240	808	2,350	2,760	4,550	28,200	32,800	414	300	691	1,290
19-----	277	1,210	526	6,970	1,220	4,060	25,300	17,000	1,150	543	157	1,290
20-----	278	261	490	10,800	1,610	5,020	18,800	12,700	1,080	702	538	961
21-----	245	648	500	20,500	1,680	5,760	20,500	9,830	1,120	745	401	800
22-----	234	721	532	22,300	1,440	5,750	24,400	8,930	1,200	500	655	605
23-----	252	615	2,410	21,100	1,620	5,230	22,500	7,310	1,200	120	732	1,050
24-----	163	249	32,700	19,700	1,570	4,570	16,600	6,620	847	251	592	121
25-----	626	467	43,900	14,400	3,320	4,740	13,400	6,030	242	925	509	707
26-----	266	805	36,900	12,100	6,710	3,220	12,000	5,630	372	970	200	801
27-----	245	692	22,200	11,100	11,700	2,630	10,500	5,240	424	1,240	107	623
28-----	567	781	11,800	9,430	10,400	2,450	9,040	3,460	978	1,010	678	528
29-----	585	823	7,290	7,380	-----	3,540	8,060	5,320	1,200	688	1,040	3,500
30-----	321	730	6,910	6,860	-----	2,760	7,410	4,540	1,440	470	821	5,290
31-----	2,450	-----	6,660	5,760	-----	2,600	-----	4,810	-----	1,030	1,320	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October-----	2,450	163	368	0.080	0.09	22,600
November-----	2,140	249	1,080	.234	.26	64,300
December-----	43,900	300	5,930	1.29	1.49	365,000
January-----	22,300	902	7,470	1.62	1.87	459,000
February-----	11,700	1,080	3,270	.709	.74	182,000
March-----	16,400	2,450	6,320	1.37	1.58	389,000
April-----	33,300	2,020	11,000	2.39	2.67	655,000
May-----	80,800	2,370	14,700	3.19	3.68	904,000
June-----	3,820	242	1,270	.275	.31	75,600
July-----	1,630	120	738	.160	.18	45,400
August-----	3,740	107	977	.212	.24	60,100
September-----	24,100	121	3,660	.794	.89	218,000
The year-----	80,800	107	4,750	1.03	14.00	3,440,000

WHITE RIVER NEAR FLIPPIN, ARK.

LOCATION.—Staff gage in NW¼ sec. 9, T. 19 N., R. 15 W., 2½ miles north of Flippin. Zero of gage is 420.92 feet above mean sea level.

DRAINAGE AREA.—6,170 square miles.

RECORDS AVAILABLE.—October 1928 to September 1933.

DISCHARGE.—Maximum during year, 116,000 second-feet May 16 (gage height, 32.3 feet); minimum, 134 second-feet Dec. 18 (gage height, 4.08 feet).

1928-33: Maximum, that of May 16, 1933; minimum, that of Dec. 18, 1932.

Maximum stage known, 46.6 feet Apr. 16, 1927.

REMARKS.—Records good. Discharge estimated for ice period Dec. 15-17.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	322	850	850	11,500	7,680	12,100	4,550	8,780	7,680	1,450	670	1,570
2.....	298	2,490	850	10,800	6,640	9,940	3,730	9,340	5,920	1,330	1,270	3,350
3.....	310	2,650	1,100	10,200	5,680	7,680	3,530	9,060	3,350	1,700	670	4,990
4.....	322	2,490	800	7,940	5,210	7,420	2,990	7,940	3,350	710	590	9,940
5.....	334	1,770	670	6,640	4,990	6,900	2,810	6,640	2,990	394	3,530	8,220
6.....	394	1,450	630	5,440	3,530	6,160	3,170	6,400	1,840	394	4,330	26,500
7.....	322	1,210	550	5,210	3,530	10,800	3,530	6,400	2,190	710	3,930	23,500
8.....	316	800	800	4,330	2,810	16,900	3,350	4,770	2,330	710	1,910	9,940
9.....	316	1,700	850	2,810	3,530	17,600	3,530	3,930	2,050	800	1,390	4,990
10.....	304	1,270	710	2,490	3,170	19,100	3,730	5,210	1,450	900	1,050	4,130
11.....	334	1,910	670	2,810	2,990	15,500	4,770	4,330	1,510	950	1,050	3,730
12.....	364	1,910	590	3,730	1,840	12,100	4,770	4,330	1,770	950	1,000	2,810
13.....	510	2,330	494	2,810	1,840	10,200	3,530	6,400	950	1,630	1,700	2,190
14.....	446	2,650	510	2,490	1,700	9,060	3,350	37,900	1,840	1,150	1,270	2,190
15.....	310	1,910	500	2,330	1,630	7,940	6,900	78,600	1,510	1,210	1,840	2,810
16.....	310	2,190	500	2,490	1,570	5,920	28,800	108,000	850	710	1,570	3,730
17.....	298	1,910	500	2,050	1,270	4,770	42,800	106,000	1,390	800	1,840	2,190
18.....	310	1,840	138	6,160	1,100	5,680	45,600	82,000	1,270	550	1,570	1,700
19.....	292	1,770	186	8,220	1,330	6,400	34,600	38,400	1,270	462	1,630	1,100
20.....	286	1,840	186	11,100	1,390	5,440	29,700	20,200	590	462	1,050	1,390
21.....	280	1,770	322	15,100	1,450	8,220	24,600	15,500	1,330	446	630	1,510
22.....	304	800	292	35,800	1,570	9,060	28,500	12,400	1,150	494	394	1,450
23.....	298	900	1,270	30,900	2,190	7,680	30,100	10,800	1,150	630	710	1,450
24.....	304	1,000	6,900	26,900	2,050	6,900	26,200	8,220	1,270	550	630	1,270
25.....	286	750	50,400	25,000	2,810	6,160	20,200	9,340	1,270	590	800	1,150
26.....	310	710	54,400	17,600	4,770	5,440	16,200	9,060	750	328	800	1,100
27.....	422	486	47,000	15,500	8,500	4,130	14,400	7,680	590	630	710	1,050
28.....	340	1,100	22,400	14,100	15,100	3,170	12,700	5,680	486	950	630	1,450
29.....	446	800	15,100	11,500	-----	3,730	10,500	4,130	550	1,700	750	1,390
30.....	428	800	14,100	9,940	-----	3,170	9,940	6,640	1,150	1,510	1,910	3,980
31.....	550	-----	14,800	8,780	-----	3,730	-----	5,210	-----	670	1,840	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October.....	550	280	344	0.056	0.06	21,200
November.....	2,650	486	1,540	.250	.28	91,600
December.....	54,400	138	7,710	1.25	1.44	474,000
January.....	35,800	2,050	10,400	1.69	1.95	639,000
February.....	15,100	1,100	3,640	.590	.61	202,000
March.....	19,100	3,170	8,350	1.35	1.56	513,000
April.....	45,600	2,810	14,400	2.33	2.60	857,000
May.....	108,000	3,950	20,900	3.39	3.91	1,290,000
June.....	7,680	486	1,860	.301	.34	111,000
July.....	1,700	328	854	.138	.16	52,500
August.....	4,330	394	1,410	.229	.26	86,700
September.....	26,500	1,050	4,560	.739	.82	271,000
The year.....	108,000	138	6,370	1.03	13.99	4,610,000

WHITE RIVER AT DE VALLS BLUFF, ARK.

LOCATION.—Staff gage in sec. 16, T. 2 N., R. 4 W., 1 mile northeast of De Valls Bluff and 21 miles (revised) above mouth of Cache River. Zero of gage is 152.67 feet above mean sea level.

DRAINAGE AREA.—23,500 square miles.

RECORDS AVAILABLE.—December 1927 to September 1933.

DISCHARGE.—Maximum during year ending Sept. 30, 1932, 96,600 second-feet Jan. 30–31 (gage height, 25.7 feet); minimum, 3,760 second-feet Sept. 26–30 (gage height, 2.7 feet).

Maximum during year ending Sept. 30, 1933, 114,000 second-feet May 25 (gage height, 26.9 feet); minimum, 3,600 second-feet Oct. 27–29 (gage height, 2.5 feet).

1927–33: Maximum, 140,000 second-feet June 28, 29, 1928 (gage height, 28.5 feet); minimum, that of Oct. 27–29, 1932.

Maximum stage known, 34.6 feet Apr. 23, 1927 (previously published as 33.8 feet Apr. 24, 1927).

REMARKS.—Records fair. Gage-height record furnished by United States Weather Bureau. Discharge estimated July 11 to Sept. 30, 1933.

Discharge, in second-feet, 1931–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1931–32												
1.....	5,080	4,990	11,300	27,400	93,800	43,400	38,800	14,500	7,600	9,600	7,840	4,990
2.....	4,990	4,990	14,500	34,100	92,300	42,600	39,400	14,000	7,720	11,200	7,840	4,900
3.....	4,900	4,900	15,900	40,000	89,400	40,600	38,800	13,700	7,720	13,700	7,480	4,720
4.....	4,900	4,810	16,200	43,400	85,000	39,400	37,100	13,200	7,600	17,200	7,240	4,720
5.....	4,810	4,720	15,100	46,500	82,200	35,500	35,500	12,800	7,360	19,500	7,120	4,720
6.....	4,720	4,720	15,800	49,100	74,900	34,100	33,600	12,400	7,240	20,000	7,120	4,810
7.....	4,630	4,630	15,400	51,000	70,700	32,300	31,500	11,900	8,200	20,400	7,720	4,900
8.....	4,630	4,630	15,100	54,200	65,400	30,400	30,000	11,600	10,200	18,700	7,720	4,900
9.....	4,630	4,630	14,500	58,800	58,800	28,800	28,500	11,400	11,200	19,100	7,480	4,720
10.....	4,630	4,540	13,800	62,800	55,300	27,400	28,500	11,300	11,400	20,400	7,000	4,630
11.....	4,540	4,540	13,100	64,100	51,000	26,400	28,800	11,300	11,000	20,800	6,760	4,450
12.....	4,540	4,360	12,500	64,100	48,100	24,700	28,800	11,600	10,600	20,800	6,400	4,360
13.....	4,540	4,270	14,600	65,400	45,700	23,400	28,200	12,000	10,200	21,200	6,400	4,360
14.....	4,540	4,270	21,400	64,100	43,400	22,100	27,700	12,200	9,740	21,000	6,400	4,270
15.....	4,450	4,270	24,700	64,100	42,700	20,800	27,000	11,900	9,600	20,400	6,280	4,180
16.....	4,450	4,360	27,200	65,400	42,700	19,700	26,200	11,300	9,880	18,700	6,060	4,090
17.....	4,540	4,360	29,700	69,400	43,400	18,900	25,200	10,900	10,300	16,900	5,660	4,000
18.....	4,540	4,450	30,400	85,600	44,100	18,600	24,000	10,300	10,400	15,300	5,460	3,920
19.....	4,540	4,450	29,400	77,800	46,500	18,000	22,900	9,600	10,700	13,600	5,460	3,920
20.....	4,540	4,810	29,000	79,200	47,300	18,000	22,100	9,320	10,700	12,000	5,660	4,000
21.....	4,630	4,810	29,000	79,200	48,100	18,200	20,600	9,040	10,600	10,700	5,760	4,000
22.....	4,630	5,260	28,500	76,400	49,100	18,900	19,500	8,620	10,300	9,600	5,860	4,000
23.....	4,630	5,860	27,700	79,200	48,100	19,800	18,700	8,480	9,740	8,760	5,860	3,920
24.....	4,630	7,000	27,000	82,200	48,100	20,400	18,200	8,080	9,180	7,960	5,760	3,840
25.....	4,720	7,720	26,000	83,600	48,100	20,800	17,700	7,960	8,900	7,480	5,560	3,840
26.....	4,720	7,960	24,700	86,500	47,300	20,600	17,200	7,840	8,340	7,360	5,360	3,760
27.....	4,720	7,840	22,900	89,400	47,300	20,800	16,900	7,720	8,080	7,600	5,260	3,760
28.....	4,720	7,600	21,400	90,800	46,500	25,200	16,200	7,600	7,960	7,480	5,170	3,760
29.....	4,720	7,840	20,000	92,300	45,700	28,200	15,600	7,480	8,480	7,240	5,080	3,760
30.....	4,720	8,620	18,600	96,600	-----	31,500	15,100	7,360	9,040	7,120	5,080	3,760
31.....	4,900	-----	20,000	96,600	-----	36,600	-----	7,360	-----	7,600	5,080	-----

Discharge, in second-feet, of White River at De Valls Bluff, Ark., 1931-33—Contd.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932-33												
1	3,760	3,840	5,080	40,600	56,500	19,100	46,500	70,700	86,500	12,000	9,500	5,500
2	3,760	3,840	4,990	42,700	56,500	20,600	45,700	70,700	82,200	11,600	9,600	6,000
3	3,760	3,920	4,900	45,700	56,500	22,700	44,100	69,400	74,900	11,000	9,600	7,500
4	3,920	4,270	4,900	54,200	53,000	24,700	44,900	69,400	68,000	10,600	9,600	9,600
5	3,920	4,810	4,810	64,100	51,000	26,000	44,900	69,400	62,800	10,200	10,000	12,000
6	4,180	5,760	4,810	69,400	49,100	26,400	45,700	68,000	57,600	9,880	10,500	13,500
7	4,720	6,640	4,900	70,700	47,300	26,400	44,100	68,000	53,000	9,600	11,000	16,000
8	5,460	6,880	4,900	70,700	45,700	26,200	43,400	64,100	48,100	9,600	11,000	21,000
9	5,660	7,000	4,900	69,400	43,400	26,000	42,700	61,400	46,500	9,320	10,500	25,000
10	5,260	7,000	4,900	66,700	41,300	26,400	42,000	56,500	44,100	9,040	10,500	27,500
11	4,900	6,880	4,900	64,100	40,000	27,700	40,600	55,300	41,300	8,900	10,500	30,000
12	4,720	6,760	4,810	50,100	37,600	29,700	39,400	58,800	38,800	9,000	10,500	29,500
13	4,540	6,640	4,810	56,500	35,500	30,700	38,200	55,300	36,000	9,300	10,000	28,000
14	3,920	6,400	4,900	63,000	33,600	32,300	37,100	53,000	32,300	9,600	9,600	23,000
15	4,180	6,400	4,900	50,100	32,300	33,200	37,100	52,000	28,800	9,300	9,300	20,500
16	4,090	6,400	4,900	47,300	30,400	33,200	36,600	52,000	26,200	9,000	8,800	19,500
17	4,000	6,400	4,900	46,500	28,500	32,700	36,600	53,000	23,600	8,800	8,300	17,000
18	4,000	6,640	4,810	43,400	27,200	32,300	36,600	55,300	21,800	8,500	8,300	15,500
19	3,920	6,520	4,810	42,700	26,400	32,300	37,100	60,100	19,800	8,200	8,500	14,500
20	3,920	6,400	4,810	40,000	25,700	35,000	37,600	70,700	18,000	8,000	8,300	14,000
21	3,840	6,400	4,720	37,600	24,700	37,600	40,000	85,000	16,900	7,500	8,100	13,500
22	3,760	6,160	4,630	38,200	23,600	40,600	42,000	99,600	15,600	7,200	7,800	13,000
23	3,760	5,960	4,720	40,000	22,700	43,400	44,100	108,000	14,800	7,000	7,700	12,500
24	3,680	5,860	4,900	42,000	21,600	44,900	45,700	113,000	13,700	6,800	7,500	12,000
25	3,680	5,760	5,260	44,900	20,600	45,700	49,100	114,000	13,100	6,600	7,100	11,000
26	3,680	5,760	9,600	48,100	19,700	45,700	55,300	113,000	12,500	7,100	6,800	10,500
27	3,600	5,660	20,000	50,100	18,900	45,700	61,400	112,000	12,200	8,200	6,400	9,700
28	3,600	5,460	25,700	51,000	18,600	44,900	65,400	108,000	11,800	8,900	6,100	9,500
29	3,600	5,260	28,500	52,000	-----	44,100	69,400	104,000	11,600	9,000	5,700	9,300
30	3,680	5,170	31,900	54,200	-----	44,100	70,700	98,100	11,900	9,000	5,500	9,500
31	3,760	-----	37,100	55,300	-----	45,700	-----	92,300	-----	9,200	5,400	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1931-32						
October	5,080	4,450	4,670	0.199	0.23	287,000
November	8,620	4,270	5,410	.230	.26	322,000
December	30,400	11,300	20,800	.885	1.02	1,280,000
January	96,600	27,400	68,300	2.91	3.36	4,200,000
February	93,800	42,700	56,900	2.42	2.61	3,270,000
March	43,400	18,000	26,600	1.13	1.30	1,640,000
April	39,400	15,100	25,900	1.10	1.23	1,540,000
May	14,500	7,360	10,500	.446	.51	646,000
June	11,400	7,240	9,330	.397	.44	555,000
July	21,200	7,120	14,200	.604	.69	873,000
August	7,840	5,080	6,290	.268	.31	387,000
September	4,990	3,760	4,260	.181	.21	254,000
The year	96,600	3,760	21,000	.894	12.17	15,300,000
1932-33						
October	5,660	3,600	4,120	.175	.20	253,000
November	7,000	3,840	5,900	.251	.28	351,000
December	37,100	4,630	8,860	.377	.43	545,000
January	70,700	37,600	51,700	2.20	2.54	3,180,000
February	56,500	18,600	35,300	1.50	1.56	1,960,000
March	45,700	19,100	33,700	1.43	1.65	2,070,000
April	70,700	36,600	45,500	1.94	2.16	2,710,000
May	114,000	52,000	76,800	3.26	3.76	4,720,000
June	86,500	11,600	34,800	1.48	1.65	2,070,000
July	12,000	6,600	8,960	.381	.44	551,000
August	11,000	5,400	8,650	.368	.42	532,000
September	30,000	5,500	15,500	.660	.74	922,000
The year	114,000	3,600	27,400	1.17	15.83	19,900,000

JAMES RIVER AT GALENA, MO.

LOCATION.—Chain gage in NW¼ sec. 7, T. 24 N., R. 23 W., at bridge on State highway 44 at Galena, half a mile above Railey Creek. Zero of gage is 925.94 feet above mean sea level.

DRAINAGE AREA.—1,000 square miles.

RECORDS AVAILABLE.—October 1921 to September 1933.

DISCHARGE.—Maximum during year, 34,200 second-feet May 14 (gage height, 22.08 feet); minimum, 64 second-feet Oct. 14 (gage height, 0.98 foot).

1921-33: Maximum, 41,900 second-feet Apr. 15, 1927 (gage height, 25.15 feet; minimum, 52 second-feet Sept. 6, 7, 9, 10, 1925 (gage height, 0.56 foot).

Average, 11 years (1922-33), 1,060 second-feet.

REMARKS.—Records good.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	104	154	131	1,190	1,070	827	460	946	922	320	193	163
2.....	100	162	126	1,130	1,010	711	460	886	822	265	217	171
3.....	97	154	128	1,010	886	626	486	827	790	238	3,250	474
4.....	102	151	126	946	827	597	460	769	662	220	1,800	474
5.....	100	154	117	886	740	541	486	740	660	206	1060	418
6.....	108	167	119	769	682	569	460	711	660	190	692	320
7.....	95	146	115	740	626	827	460	682	565	193	504	269
8.....	91	167	108	682	597	2,950	433	626	534	187	418	224
9.....	91	170	100	654	460	2,130	433	569	534	922	367	200
10.....	86	173	122	597	569	1,660	433	541	446	990	298	181
11.....	86	167	106	569	433	1,390	408	486	418	628	628	157
12.....	99	170	99	541	460	1,190	383	597	418	474	628	165
13.....	95	159	100	514	433	1,070	383	14,200	392	367	565	171
14.....	74	136	93	460	433	946	360	30,700	367	298	392	171
15.....	72	156	117	460	408	886	1,130	14,600	344	260	298	217
16.....	86	167	190	408	383	740	12,300	13,800	344	231	261	190
17.....	77	151	88	408	383	682	7,300	6,250	320	214	231	181
18.....	82	133	71	460	383	654	4,410	4,270	320	231	206	184
19.....	74	141	100	597	360	740	3,050	3,050	298	242	193	151
20.....	76	133	81	827	336	1,070	2,300	2,480	298	217	184	140
21.....	70	122	97	1,590	336	1,010	2,850	2,130	277	203	168	138
22.....	97	122	108	2,040	314	886	3,610	1,880	265	193	163	128
23.....	93	143	248	2,850	314	769	2,660	1,640	254	181	160	126
24.....	79	133	16,200	2,040	291	711	2,130	1,480	246	474	151	116
25.....	106	156	13,200	2,130	360	654	1,830	1,480	231	565	138	108
26.....	626	170	4,550	3,150	541	597	1,590	1,410	238	660	128	105
27.....	251	154	2,950	2,390	1,010	569	1,390	1,720	246	392	126	320
28.....	167	149	2,130	1,880	946	514	1,260	1,340	1,340	344	151	418
29.....	151	146	1,740	1,590	-----	460	1,130	1,270	534	277	184	2,130
30.....	146	143	1,520	1,390	-----	460	1,070	1,060	392	246	242	1,130
31.....	176	-----	1,390	1,190	-----	486	-----	990	-----	220	190	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October.....	626	70	121	0.121	0.14	7,440
November.....	173	122	152	.152	.17	9,040
December.....	16,200	71	1,500	1.50	1.73	92,200
January.....	3,150	408	1,160	1.16	1.34	71,300
February.....	1,070	291	557	.557	.58	30,900
March.....	2,950	460	901	.901	1.04	55,400
April.....	12,300	360	1,870	1.87	2.09	111,000
May.....	30,700	486	3,680	3.68	4.24	226,000
June.....	1,340	231	472	.472	.53	28,100
July.....	990	181	343	.343	.40	21,100
August.....	3,250	126	458	.458	.53	28,200
September.....	2,130	105	310	.310	.35	18,400
The year.....	30,700	70	967	.967	13.14	699,000

WILSON CREEK NEAR SPRINGFIELD, MO.

LOCATION.—Water-stage recorder in NW¼SE¼ sec. 28, T. 29 N., R. 22 W., three-quarters of a mile below Jordan Creek and 2 miles southwest of Springfield.

DRAINAGE AREA.—19.4 square miles (revised).

RECORDS AVAILABLE.—May 1932 to September 1933.

DISCHARGE.—Maximum during year, 922 second-feet July 8 (gage height, 5.07 feet); minimum, 2.6 second-feet Oct. 7–10, 12–15, 17 (gage height, 0.40 foot).

1932–33: Maximum, about 2,440 second-feet June 27, 1932 (gage height, 7.62 feet); minimum, 2.2 second-feet Sept. 30, 1932 (gage height, 0.38 foot).

REMARKS.—Records fair. Discharge estimated Apr. 20, May 12, 13, June 27, July 30 to Aug. 3, Aug. 26 to Sept. 1. Sewage from Springfield enters above this station. Springfield water supply is pumped from Little Sac River Basin.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	3.8	8	7	30	35	15	18	28	17	12	10	9
2.....	3.8	7	7	28	28	15	18	27	17	12	60	127
3.....	10	7	8	27	27	14	20	24	16	11	30	38
4.....	11	17	8	25	23	15	17	28	15	11	16	25
5.....	4.4	14	8	23	21	14	25	27	15	11	11	20
6.....	3.6	9	8	23	21	47	20	23	15	10	9	17
7.....	3.4	14	8	22	20	49	17	20	15	10	9	15
8.....	3.2	22	9	21	17	34	17	20	15	139	9	14
9.....	3.4	11	9	21	17	30	16	20	14	88	9	12
10.....	4.8	9	7	20	16	28	16	8	14	34	15	11
11.....	3.6	9	6	19	17	26	16	48	12	23	24	15
12.....	3.6	9	6	17	18	26	16	100	12	18	21	12
13.....	3.4	8	7	18	18	24	17	250	11	17	21	22
14.....	3.6	9	7	17	17	23	23	148	11	14	13	18
15.....	3.8	12	7	17	17	21	348	298	11	14	11	12
16.....	3.8	9	7	17	17	21	122	112	11	14	10	10
17.....	4.1	12	7	18	18	21	79	79	12	12	10	11
18.....	4.8	11	7	32	17	31	61	66	11	14	9	12
19.....	5	10	7	23	17	24	51	57	11	12	9	11
20.....	4.8	9	8	31	17	21	120	47	11	12	9	11
21.....	5	11	11	65	16	20	107	42	11	11	9	10
22.....	4.1	11	15	51	14	18	70	39	12	10	9	10
23.....	4.1	36	154	38	14	18	57	35	12	10	9	10
24.....	4.8	14	180	73	14	18	70	42	12	11	8	7
25.....	96	12	66	66	31	20	52	39	9	11	9	9
26.....	14	10	57	47	17	18	45	32	1	10	9	43
27.....	9	8	47	40	15	18	40	27	80	10	8	26
28.....	8	9	40	38	16	18	39	34	20	10	12	70
29.....	7	7	38	36	-----	36	39	26	15	9	10	34
30.....	8	7	43	32	-----	26	31	22	13	9	9	21
31.....	14	-----	32	34	-----	22	-----	18	-----	9	9	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	96	3.2	8.58	528
November.....	36	7	11.4	678
December.....	180	6	26.8	1,650
January.....	66	17	31.3	1,820
February.....	35	14	19.1	1,069
March.....	49	14	23.6	1,450
April.....	348	16	52.9	3,150
May.....	298	8	57.6	3,549
June.....	80	9	15.4	916
July.....	139	9	19.3	1,190
August.....	60	8	13.4	824
September.....	127	7	22.1	1,320
The year.....	348	3.2	25.2	18,200

BUFFALO RIVER NEAR RUSH, ARK.

LOCATION.—Staff gage in SE¼ sec. 10, T. 17 N., R. 15 W., immediately above Rush Creek, 24 miles above mouth, and 1½ miles southeast of Rush. Zero of gage is 458.70 feet above mean sea level.

DRAINAGE AREA.—1,110 square miles.

RECORDS AVAILABLE.—October 1928 to September 1933.

DISCHARGE.—Maximum during year, 65,800 second-feet May 14 (gage height, 23.9 feet); minimum, 62 second-feet Oct. 1-4 (gage height, 0.62 foot).

1928-33: Maximum, that of May 14, 1933; minimum, 54 second-feet Oct. 10-12, 1931; minimum gage height, 0.6 foot Sept. 25-30, Oct. 1-3, 7-9, 1929, Sept. 10-22, 1932.

Maximum stage known, 49.5 feet in April 1927.

REMARKS.—Records good.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	62	158	94	5,000	810	1,500	4,240	4,090	680	160	210	260
2-----	62	730	94	3,000	730	1,400	3,390	2,880	600	160	160	260
3-----	62	455	98	2,200	650	1,300	2,520	2,000	520	160	160	320
4-----	62	343	100	1,800	570	1,120	2,000	1,500	520	440	160	8,580
5-----	309	275	98	1,400	492	1,075	1,700	1,700	520	380	110	2,850
6-----	292	225	98	1,120	455	985	1,700	2,000	440	260	160	1,480
7-----	240	190	94	900	420	4,840	1,900	1,700	440	210	160	880
8-----	200	185	94	770	385	4,840	1,700	1,400	380	160	110	600
9-----	254	175	94	650	385	3,390	1,500	1,210	380	160	110	520
10-----	134	166	94	570	349	2,640	1,300	985	320	160	110	380
11-----	115	240	94	492	308	2,000	1,120	810	320	160	160	320
12-----	106	215	100	420	276	1,800	1,030	850	320	110	110	320
13-----	100	195	98	379	260	1,600	895	6,320	440	110	110	260
14-----	96	185	98	361	276	1,400	770	38,300	600	110	110	260
15-----	92	175	103	325	303	1,210	940	38,800	440	110	110	380
16-----	88	175	158	297	349	1,075	5,000	31,600	380	110	65	380
17-----	84	166	142	281	355	940	6,320	10,090	320	110	65	320
18-----	84	154	124	303	361	1,890	5,000	5,960	320	110	110	260
19-----	80	142	112	510	420	3,530	3,950	4,070	260	110	65	210
20-----	80	130	103	4,090	420	3,390	3,260	2,850	260	110	65	160
21-----	80	121	98	2,640	385	2,520	6,680	2,130	260	65	65	160
22-----	80	115	94	11,700	355	1,900	6,860	2,400	260	65	65	160
23-----	80	115	118	6,860	319	1,600	4,840	2,130	210	65	65	160
24-----	78	115	7,550	4,090	314	1,400	3,810	1,610	210	65	65	110
25-----	82	109	9,550	3,000	373	1,210	3,390	1,350	210	110	65	110
26-----	100	103	4,090	2,300	1,500	1,120	2,880	1,480	210	440	65	110
27-----	92	103	2,300	1,900	1,900	1,030	2,300	2,000	160	320	65	160
28-----	86	98	1,500	1,500	1,700	895	2,000	1,350	210	260	65	160
29-----	78	98	1,120	1,210	-----	810	1,700	1,100	210	260	210	2,130
30-----	86	98	5,485	1,030	-----	770	1,500	880	160	260	320	440
31-----	100	-----	11,200	895	-----	1,300	-----	780	-----	210	260	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October-----	309	62	114	0.103	0.12	7,010
November-----	730	98	192	.173	.19	11,400
December-----	11,200	94	1,460	1.32	1.52	89,800
January-----	11,700	281	2,000	1.80	2.08	123,000
February-----	1,900	260	551	.496	.52	30,600
March-----	4,840	770	1,820	1.64	1.89	112,000
April-----	6,860	770	2,870	2.59	2.89	171,000
May-----	38,800	780	5,690	5.13	5.91	350,000
June-----	680	160	352	.317	.35	20,900
July-----	440	65	178	.160	.19	10,900
August-----	320	65	120	.108	.12	7,380
September-----	8,580	110	757	.682	.76	45,000
The year-----	38,800	62	1,350	1.21	16.54	979,000

NORTH FORK OF WHITE RIVER AT TECUMSEH, MO.

LOCATION.—Chain gage in sec. 16, T. 22 N., R. 12 W., at bridge on State highway 80 at Tecumseh, half a mile below Bryant Creek. Zero of gage is 548.39 feet above mean sea level.

DRAINAGE AREA.—1,180 square miles.

RECORDS AVAILABLE.—October 1921 to September 1933.

DISCHARGE.—Maximum during year, 25,200 second-feet May 14 (gage height, 15.70 feet); minimum, 364 second-feet Oct. 8, 10 (gage height, 0.84 foot).

1921-33: Maximum, 53,000 second-feet June 13, 1928 (gage height, 24.00 feet); minimum, 358 second-feet Sept. 12, 1932. Average, 11 years (1922-33), 1,330 second-feet.

Maximum stage known, 31.6 feet in July 1905.

REMARKS.—Records good. Discharge estimated Mar. 12, Sept. 18.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	391	1,340	441	1,990	1,070	1,020	2,250	1,750	1,630	735	605	690
2.....	384	825	434	1,630	1,020	970	1,990	1,630	1,510	690	564	690
3.....	377	690	434	1,340	920	920	1,750	1,510	1,390	690	648	1,750
4.....	434	605	441	1,170	920	870	1,630	1,450	1,340	690	605	1,450
5.....	413	605	434	1,070	870	825	1,510	1,510	1,280	690	605	1,220
6.....	391	564	434	970	825	870	1,510	1,450	1,220	648	564	1,020
7.....	377	522	434	870	870	1,390	1,510	1,390	1,170	648	564	870
8.....	364	522	434	825	780	2,380	1,450	1,630	1,120	648	564	780
9.....	377	564	434	780	690	1,870	1,340	1,630	1,120	690	735	690
10.....	370	564	441	735	735	1,510	1,280	1,450	1,070	735	648	648
11.....	398	522	434	735	735	1,390	1,220	1,340	1,070	690	648	648
12.....	391	522	427	690	735	1,300	1,120	1,990	1,020	648	605	780
13.....	391	514	420	648	735	1,220	1,070	2,380	970	648	564	690
14.....	377	506	434	648	735	1,170	1,020	21,700	970	648	564	690
15.....	406	514	434	648	690	1,120	2,790	15,000	920	605	522	648
16.....	377	498	427	648	648	1,070	8,160	10,700	870	605	522	648
17.....	377	498	413	690	690	1,020	4,400	5,760	920	605	522	605
18.....	391	490	406	1,630	648	1,020	3,350	4,250	870	605	522	584
19.....	377	482	420	1,750	690	1,630	2,790	3,350	870	605	522	564
20.....	377	473	420	1,870	690	1,630	2,380	2,790	870	605	522	564
21.....	377	465	420	1,750	648	1,450	3,800	2,380	825	605	522	522
22.....	384	465	427	5,000	648	1,340	3,500	2,380	825	605	522	522
23.....	377	482	434	3,500	648	1,220	2,930	2,120	825	605	514	522
24.....	384	473	3,500	2,380	648	1,170	2,650	3,950	780	605	506	522
25.....	434	465	4,100	1,990	870	1,070	2,650	2,380	780	648	506	522
26.....	506	457	1,870	1,750	1,070	1,020	2,380	5,920	780	605	498	506
27.....	514	449	1,340	1,630	1,170	1,020	2,120	2,790	780	648	482	506
28.....	457	434	1,120	1,340	1,120	970	1,870	2,380	780	648	498	514
29.....	449	434	970	1,220	-----	920	1,870	2,120	735	605	1,070	564
30.....	434	441	1,870	1,170	-----	970	1,870	1,870	735	605	970	564
31.....	870	-----	3,070	1,120	-----	1,630	-----	1,750	-----	605	735	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acres-feet
October.....	870	364	417	0.353	0.41	25,600
November.....	1,340	434	546	.463	.52	32,500
December.....	4,100	406	894	.758	.87	55,000
January.....	5,000	648	1,430	1.21	1.41	87,900
February.....	1,170	648	804	.681	.71	44,700
March.....	2,380	825	1,220	1.03	1.19	75,000
April.....	8,160	1,020	2,340	1.98	2.21	139,000
May.....	21,700	1,340	3,700	3.14	3.62	228,000
June.....	1,630	735	1,000	.847	.94	59,500
July.....	735	605	642	.544	.63	39,500
August.....	1,070	482	595	.504	.58	36,600
September.....	1,750	506	716	.607	.68	42,600
The year.....	21,700	364	1,200	1.02	13.77	866,000

NORTH FORK OF WHITE RIVER NEAR HENDERSON, ARK.

LOCATION.—Staff gage in NE¼SW¼ sec. 26, T. 20 N., R. 12 W., 1 mile below Bennetts Bayou, 19 miles above mouth, and 1 mile southeast of Henderson.

DRAINAGE AREA.—1, 640 square miles.

RECORDS AVAILABLE.—July 1909 to December 1910; October 1928 to September 1933.

DISCHARGE.—Maximum during year, 28,600 second-feet May 16 (gage height, 13.8 feet); minimum, 380 second-feet Oct. 1-3, 8, 9, 13-24; minimum gage height, 1.33 feet Oct. 21-23.

1928-33: Maximum, 39,800 second-feet Jan. 24, 1929 (gage height, 17.0 feet); minimum, 380 second-feet several days during September and October 1932; minimum gage height, 1.33 feet Oct. 21-23, 1932.

Maximum stage known, 29.5 feet in August 1915.

REMARKS.—Records good.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	380	1,590	432	3,320	1,370	1,480	3,180	2,220	2,090	730	620	810
2.....	380	1,070	432	2,220	1,270	1,370	2,760	2,350	1,830	730	585	810
3.....	380	730	432	1,830	1,170	1,270	2,350	1,960	1,710	692	655	1,830
4.....	432	692	432	1,480	1,070	1,170	1,960	1,830	1,590	692	620	1,960
5.....	405	620	432	1,270	980	1,070	1,830	1,830	1,480	692	620	1,590
6.....	405	620	432	1,270	935	1,070	2,090	1,830	1,370	655	620	1,270
7.....	405	585	432	1,170	935	1,830	1,830	1,830	1,370	655	620	1,020
8.....	380	520	432	1,020	890	2,900	1,830	1,830	1,310	655	585	935
9.....	380	490	405	935	810	2,480	1,710	2,090	1,270	655	585	850
10.....	405	520	405	850	770	2,090	1,590	1,710	1,270	655	620	810
11.....	405	520	405	770	810	1,830	1,590	1,590	1,220	655	655	730
12.....	405	490	405	770	770	1,710	1,480	2,480	1,170	655	620	850
13.....	380	490	405	730	730	1,480	1,370	3,180	1,070	655	620	810
14.....	380	490	432	692	730	1,370	1,270	27,600	1,020	655	585	850
15.....	380	490	432	692	730	1,270	3,180	26,000	1,020	620	585	810
16.....	380	490	405	655	730	1,270	10,800	22,400	980	620	552	770
17.....	380	460	405	692	730	1,270	6,610	9,090	935	620	585	692
18.....	380	460	405	2,350	730	1,590	5,420	5,800	935	620	585	655
19.....	380	460	405	2,900	730	2,760	4,070	4,230	935	585	552	620
20.....	380	460	405	2,900	730	2,350	3,760	3,760	890	620	552	585
21.....	380	460	405	2,620	730	2,090	7,930	3,460	890	620	585	585
22.....	380	460	405	7,700	730	1,710	5,060	3,460	850	585	552	585
23.....	380	460	956	5,240	692	1,590	4,070	2,760	850	585	552	585
24.....	380	460	4,400	3,460	692	1,480	3,760	5,240	850	980	520	552
25.....	405	460	6,080	2,760	1,270	1,370	3,460	3,460	850	1,020	520	552
26.....	460	460	2,620	2,350	1,590	1,270	3,180	9,330	810	810	520	552
27.....	460	432	1,830	2,090	1,480	1,170	2,760	5,060	810	770	520	585
28.....	460	432	1,590	1,960	1,480	1,120	2,480	3,180	770	692	520	552
29.....	432	432	1,220	1,830	-----	1,070	2,350	2,900	770	655	935	552
30.....	432	432	7,140	1,590	-----	1,020	2,220	2,480	770	655	1,120	552
31.....	585	-----	5,060	1,480	-----	1,170	-----	2,350	-----	655	935	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October.....	585	380	405	0.247	0.28	24,900
November.....	1,590	432	558	.340	.38	33,200
December.....	7,140	405	1,290	.786	.91	79,300
January.....	7,700	655	1,990	1.21	1.40	122,000
February.....	1,590	692	939	.573	.60	52,000
March.....	2,900	1,020	1,570	.957	1.10	97,000
April.....	10,800	1,270	3,260	1.99	2.22	194,000
May.....	27,600	1,590	5,460	3.33	3.84	336,000
June.....	2,090	770	1,120	.683	.76	66,600
July.....	1,020	585	682	.416	.48	41,900
August.....	1,120	520	623	3.80	.44	38,300
September.....	1,960	552	850	.506	.56	49,400
The year.....	27,600	380	1,570	.957	12.97	1,130,000

BLACK RIVER AT LEEPER, MO.

LOCATION.—Chain gage in SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 27, T. 28 N., R. 3 E., at Missouri Southern Railway bridge at Leeper. Zero of gage is 425.22 feet above mean sea level.

DRAINAGE AREA.—957 square miles.

RECORDS AVAILABLE.—June 1921 to September 1933.

DISCHARGE.—Maximum during year, 50,000 second-feet May 14 (gage height, 20.01 feet); minimum, 187 second-feet Oct. 5 (gage height, 1.35 feet).

1921-33: Maximum, that of May 14, 1933; minimum, 178 second-feet July 22, 1932. Average, 12 years (1921-33), 992 second-feet.

Maximum stage known, about 24.7 feet in March 1904.

REMARKS.—Records good except those for days of considerable change in discharge, which are generally fair.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	190	1,460	283	4,760	790	925	1,810	1,380	925	382	326	229
2	194	1,460	283	2,570	758	890	1,810	2,280	890	365	316	261
3	190	1,220	296	1,900	660	855	1,810	1,990	855	360	301	265
4	190	1,140	296	1,630	628	660	1,460	1,810	822	343	306	296
5	187	855	292	1,460	595	660	1,380	1,720	790	326	270	274
6	214	725	296	1,380	565	628	1,380	1,630	692	316	301	261
7	211	535	301	995	565	725	1,380	1,540	692	310	296	261
8	211	505	301	758	535	995	1,380	2,670	660	296	296	241
9	204	420	296	660	535	1,140	1,220	2,370	660	321	326	245
10	200	420	348	628	535	1,070	1,220	1,540	628	326	301	233
11	208	420	354	628	475	1,070	1,720	1,990	628	301	1,380	225
12	211	392	348	628	448	1,070	3,110	2,670	595	288	420	229
13	204	365	338	595	448	822	2,180	3,380	565	326	354	343
14	204	365	332	505	420	758	2,080	38,500	535	316	326	420
15	204	360	332	505	420	822	5,640	12,200	535	296	301	354
16	200	343	326	505	420	692	30,200	11,200	505	306	265	326
17	200	321	316	505	420	660	7,170	5,280	505	296	257	278
18	197	316	301	628	392	628	4,120	3,820	505	261	253	278
19	211	301	283	1,140	392	1,070	2,990	2,370	475	249	249	274
20	208	288	274	1,140	420	995	2,570	2,080	475	270	253	274
21	200	274	261	1,630	365	925	2,280	1,900	448	270	249	257
22	197	270	288	5,100	365	890	2,080	1,720	448	257	249	249
23	197	257	278	4,120	360	855	1,990	1,460	448	249	241	237
24	197	288	2,880	2,670	360	725	1,900	1,300	420	265	229	233
25	214	288	5,460	2,080	448	725	1,810	1,380	420	365	229	214
26	241	278	2,990	1,720	475	692	1,810	1,380	420	505	229	233
27	253	261	2,080	1,630	475	628	1,540	1,380	505	475	218	1,140
28	249	257	1,630	1,460	855	595	1,540	1,380	420	448	222	505
29	222	249	1,460	1,300	-----	595	1,540	1,300	420	420	211	420
30	222	245	1,220	1,220	-----	565	1,540	1,140	392	420	233	448
31	995	-----	5,640	1,220	-----	565	-----	1,070	-----	360	225	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acro-feet
October	995	187	233	0.243	0.28	14,300
November	1,460	245	496	.518	.58	29,500
December	5,640	261	980	1.02	1.18	60,300
January	5,100	505	1,540	1.61	1.86	94,700
February	855	360	504	.527	.55	28,000
March	1,140	565	803	.839	.97	49,400
April	30,200	1,220	3,160	3.30	3.68	188,000
May	38,500	1,070	3,800	3.97	4.58	234,000
June	925	392	576	.602	.67	34,300
July	505	249	332	.347	.40	20,400
August	1,380	211	311	.325	.37	19,100
September	1,140	214	317	.331	.37	18,900
The year	38,500	187	1,090	1.14	15.49	791,000

CURRENT RIVER NEAR EMINENCE, MO.

LOCATION.—Staff gage in SE¼NW¼ sec. 15, T. 29 N., R. 3 W., 1 mile below Jacks Fork and 8 miles northeast of Eminence. Zero of gage is 568.9 feet above mean sea level.

DRAINAGE AREA.—1,230 square miles.

RECORDS AVAILABLE.—August 1921 to September 1933.

DISCHARGE.—Maximum during year, 48,300 second-feet May 14 (gage height, 21.42 feet); minimum, 420 second-feet Oct. 8, 9 (gage height, 0.86 foot).

1921-33: Maximum, 59,400 second-feet June 9, 1928 (gage height, 24.3 feet); minimum, 415 second-feet Aug. 28 to Sept. 13, 1925, Sept. 12-14, 1932. Average, 12 years (1921-33), 1,550 second-feet.

REMARKS.—Records good except those for days of considerable change in discharge, which are generally fair.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	437	2,240	494	3,640	1,040	1,120	2,150	1,520	1,880	744	659	558
2	437	1,360	494	2,630	968	968	2,150	1,880	1,700	744	659	558
3	437	1,200	474	1,880	900	900	1,880	1,700	1,610	714	659	633
4	437	900	474	1,700	900	835	1,610	1,520	1,480	714	686	659
5	437	714	474	1,440	835	804	1,440	1,520	1,360	686	659	686
6	437	659	514	1,280	804	773	1,610	1,360	1,280	686	659	633
7	437	607	494	1,200	804	1,120	1,610	3,280	1,280	686	633	607
8	420	607	474	1,080	773	2,240	1,440	4,260	1,200	686	633	558
9	420	582	474	968	744	1,880	1,360	3,060	1,120	714	607	558
10	474	582	494	900	714	1,610	1,280	2,240	1,120	714	607	547
11	456	558	494	835	686	1,360	2,150	1,970	1,040	686	714	536
12	437	558	474	804	686	1,200	1,700	2,840	1,040	686	714	633
13	437	536	474	773	686	1,200	1,440	2,840	968	659	659	607
14	437	536	474	714	659	1,120	1,440	36,600	968	659	633	633
15	437	536	474	714	659	1,040	11,700	13,900	900	633	607	633
16	437	536	456	686	633	968	23,900	15,300	900	633	607	607
17	437	536	456	659	633	900	8,050	6,770	900	633	607	582
18	437	514	456	1,040	659	900	5,420	4,810	900	633	582	714
19	437	514	456	1,610	659	1,200	4,260	4,260	835	633	607	659
20	437	514	456	1,970	633	1,360	3,280	3,640	900	633	582	633
21	437	514	474	1,970	607	1,280	3,280	3,170	835	620	582	607
22	437	514	474	5,110	607	1,200	3,280	3,400	804	607	558	558
23	437	514	494	3,760	607	1,120	2,630	2,840	804	607	558	558
24	437	514	2,430	2,950	607	1,040	2,430	2,530	773	607	558	556
25	437	514	4,960	2,330	804	968	2,150	2,730	773	1,360	558	514
26	558	514	2,840	1,970	1,080	968	1,970	10,400	773	900	558	514
27	558	514	1,970	1,700	1,360	900	1,790	4,260	900	714	536	714
28	514	494	1,520	1,520	1,200	900	1,610	2,950	835	714	582	714
29	514	494	1,360	1,360	-----	835	1,610	2,630	835	900	582	659
30	514	494	3,400	1,200	-----	900	1,520	2,240	773	773	558	633
31	2,150	-----	6,420	1,120	-----	1,610	-----	2,060	-----	686	558	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	2,150	420	508	0.413	0.48	31,200
November	2,240	494	662	.538	.60	39,400
December	6,420	456	1,160	.943	1.09	71,300
January	5,110	659	1,660	1.35	1.56	102,000
February	1,360	607	784	.637	.66	43,500
March	2,240	773	1,140	.927	1.07	70,100
April	23,900	1,280	3,400	2.76	3.08	202,000
May	36,600	1,360	4,980	4.05	4.67	306,000
June	1,880	773	1,050	.854	.95	62,500
July	1,360	607	712	.579	.67	43,800
August	714	536	612	.498	.57	37,600
September	714	514	607	.493	.55	36,100
The year	36,600	420	1,450	1.18	15.95	1,050,000

* Interpolated.

CURRENT RIVER AT VAN BUREN, MO.

LOCATION.—Chain gage in NE¼NW¼ sec. 25, T. 27 N., R. 1 W., at bridge on State highway 60 in Van Buren. Zero of gage is 445.62 feet (revised) above mean sea level.

DRAINAGE AREA.—1,640 square miles.

RECORDS AVAILABLE.—June 1921 to September 1933.

DISCHARGE.—Maximum during year, 56,000 second-feet May 14 (gage height, 16.7 feet); minimum, 572 second-feet Oct. 8, 9.

1921-33: Maximum, that of May 14, 1933; minimum, 542 second-feet Sept. 6, 8, 9, 12, 1925. Average, 12 years (1921-33), 1,940 second-feet.

Maximum stage known, 26.0 feet Mar. 23, 1904.

REMARKS.—Records good. Discharge interpolated Dec. 19, Feb. 3.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	595	2,450	680	5,940	1,490	1,490	2,320	2,320	2,770	1,120	905	748
2.....	595	2,190	680	3,570	1,380	1,380	2,720	3,000	2,470	1,120	905	825
3.....	595	1,490	680	2,860	1,300	1,280	2,320	2,580	2,320	1,080	865	905
4.....	622	1,180	680	2,450	1,230	1,180	2,070	2,320	2,180	1,080	945	865
5.....	622	1,040	680	2,190	1,140	1,140	1,830	2,320	2,430	1,030	945	865
6.....	595	958	680	1,830	1,140	1,140	2,190	2,070	2,180	988	905	905
7.....	595	915	680	1,600	1,230	1,280	2,190	2,070	1,910	988	865	865
8.....	572	840	680	1,490	1,140	2,320	2,070	5,720	1,910	988	905	785
9.....	572	808	680	1,380	1,090	2,320	1,950	4,680	1,780	1,080	865	785
10.....	595	808	680	1,280	1,040	2,070	1,830	3,720	1,660	1,080	825	748
11.....	622	808	680	1,180	1,000	1,830	2,320	3,140	1,660	1,030	945	748
12.....	595	775	680	1,140	958	1,600	2,450	3,720	1,660	988	988	785
13.....	595	775	650	1,090	958	1,490	2,190	4,180	1,540	988	988	945
14.....	572	742	680	1,040	958	1,490	2,070	31,000	1,540	988	905	988
15.....	595	742	680	958	958	1,490	8,900	28,000	1,430	945	865	945
16.....	595	775	650	915	915	1,380	33,000	21,300	1,430	945	865	945
17.....	595	742	650	915	915	1,280	15,200	11,300	1,430	945	825	825
18.....	595	742	650	1,830	915	1,280	8,060	7,560	1,320	945	825	905
19.....	595	710	650	2,070	878	1,600	6,160	5,940	1,320	905	825	1,170
20.....	595	742	650	2,720	878	1,710	5,060	5,060	1,320	865	825	1,030
21.....	572	710	650	2,580	878	1,830	4,340	4,660	1,270	865	785	905
22.....	572	710	650	5,940	840	1,600	4,180	4,320	1,270	865	785	825
23.....	595	710	710	6,160	840	1,600	3,870	4,160	1,270	865	785	825
24.....	595	710	3,280	4,180	878	1,600	3,570	3,520	1,220	905	710	748
25.....	622	710	7,800	3,000	958	1,490	3,140	3,370	1,120	1,320	710	785
26.....	742	710	5,060	2,860	1,600	1,380	2,860	4,660	1,540	1,270	710	748
27.....	775	680	2,860	2,320	1,830	1,280	2,580	7,320	1,660	1,080	710	1,540
28.....	742	680	2,070	2,070	1,710	1,230	2,450	4,660	1,320	1,030	785	1,030
29.....	710	680	1,830	1,950	-----	1,180	2,190	4,160	1,270	1,030	785	1,030
30.....	680	680	2,720	1,710	-----	1,180	2,190	3,680	1,220	1,030	748	945
31.....	1,600	-----	6,600	1,600	-----	1,380	-----	3,070	-----	988	785	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October.....	1,600	572	649	0.396	0.46	39,900
November.....	2,450	680	907	.553	.62	54,000
December.....	7,800	650	1,540	.939	1.08	94,700
January.....	6,160	915	2,350	1.43	1.65	144,000
February.....	1,830	840	1,110	.677	.70	61,600
March.....	2,320	1,140	1,500	.915	1.05	92,200
April.....	33,000	1,830	4,610	2.81	3.14	274,000
May.....	31,000	2,070	6,440	3.93	4.53	390,000
June.....	2,770	1,120	1,640	1.00	1.12	97,600
July.....	1,320	865	1,010	.616	.71	62,100
August.....	988	710	841	.513	.59	51,700
September.....	1,540	748	899	.548	.61	53,500
The year.....	33,000	572	1,960	1.20	16.26	1,420,000

CURRENT RIVER AT DONIPHAN, MO.

LOCATION.—Chain gage in N½ sec. 27, T. 23 N., R. 2 E., at bridge on State highway 42 three-quarters of a mile west of Doniphan. Datum of gage lowered 2.00 feet Oct. 1, 1932. Zero of present gage is 319.13 feet (revised) above mean sea level.

DRAINAGE AREA.—2,030 square miles.

RECORDS AVAILABLE.—June 1921 to September 1933.

DISCHARGE.—Maximum during year, 49,000 second-feet May 15 (gage height, 19.93 feet); minimum, 920 second-feet Oct. 1-3, 7-9, 19-23; minimum gage height, 2.00 feet Oct. 3.

1921-33: Maximum, 51,700 second-feet (revised) Apr. 15, 1927 (gage height, 20.3 feet, present datum); minimum discharge and gage height, those of October 1932. Average, 12 years (1921-33), 2,920 second-feet.

Maximum stage known, 26.8 feet (present datum; previously published incorrectly) during March 1904 (discharge, about 107,000 second-feet).

REMARKS.—Records good.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	920	2,740	1,050	9,620	2,630	2,520	2,850	3,570	4,060	1,860	1,560	1,290
2	920	3,090	1,050	6,800	2,410	2,300	3,810	4,570	3,810	1,760	1,470	1,380
3	920	2,410	1,050	5,090	2,300	2,190	3,810	4,310	3,570	1,760	1,470	1,380
4	980	1,970	1,050	4,180	2,190	1,970	3,450	3,830	3,330	1,660	1,470	1,470
5	980	1,660	1,050	3,570	1,970	1,860	3,210	3,830	3,210	1,660	1,560	1,380
6	980	1,560	1,050	3,090	1,970	1,860	3,330	3,690	3,090	1,660	1,380	1,470
7	920	1,380	1,050	2,850	2,190	1,970	3,570	3,450	2,970	1,660	1,380	1,380
8	920	1,290	1,050	2,630	2,190	2,410	3,330	5,090	2,850	1,660	1,380	1,290
9	920	1,290	1,050	2,410	1,970	3,330	3,330	6,950	2,740	1,660	1,380	1,290
10	980	1,290	1,050	2,190	1,860	3,210	3,210	5,510	2,630	1,660	1,380	1,210
11	980	1,210	1,050	2,080	1,860	2,850	3,330	4,570	2,630	1,660	1,470	1,210
12	980	1,210	1,050	1,970	1,760	2,630	4,060	4,440	2,520	1,560	1,560	1,290
13	980	1,130	1,050	1,860	1,760	2,410	3,810	5,510	2,410	1,560	1,560	1,290
14	980	1,130	1,050	1,760	1,760	2,300	3,570	10,700	2,410	1,560	1,380	1,380
15	980	1,130	980	1,660	1,660	2,300	9,620	41,300	2,300	1,560	1,380	1,470
16	980	1,130	980	1,660	1,660	2,190	20,500	26,400	2,190	1,470	1,290	1,380
17	980	1,130	980	1,660	1,560	2,080	33,800	21,300	2,190	1,470	1,290	1,380
18	980	1,130	980	2,080	1,660	2,190	14,500	11,100	2,080	1,470	1,290	1,290
19	920	1,130	980	3,210	1,560	2,740	9,120	8,800	2,080	1,380	1,290	1,470
20	920	1,130	980	3,810	1,560	2,850	7,550	7,400	1,970	1,380	1,290	1,760
21	920	1,130	980	4,180	1,560	2,970	6,500	6,800	1,970	1,380	1,290	1,470
22	920	1,050	980	12,700	1,560	2,850	5,930	6,210	1,970	1,380	1,290	1,380
23	920	1,050	1,210	9,120	1,470	2,630	5,550	5,930	1,970	1,380	1,290	1,290
24	980	1,050	6,800	7,550	1,470	2,630	5,090	5,970	1,970	1,470	1,210	1,210
25	980	1,050	6,950	5,930	1,760	2,520	4,570	4,960	1,860	1,470	1,210	1,210
26	1,050	1,050	8,150	4,830	1,970	2,410	4,310	5,090	1,970	1,970	1,210	1,210
27	1,130	1,050	5,090	4,180	2,520	2,190	3,830	8,630	2,520	1,760	1,210	1,290
28	1,130	1,050	3,830	3,690	2,630	2,190	3,690	6,950	2,080	1,660	1,290	1,860
29	1,130	1,050	3,210	3,210	-----	2,080	3,450	5,650	2,080	1,560	1,380	1,660
30	1,050	1,050	6,210	2,970	-----	1,970	4,060	5,090	1,970	1,660	1,290	1,560
31	1,560	-----	8,300	2,740	-----	2,300	-----	4,180	-----	1,660	1,210	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,560	920	996	0.491	0.57	61,200
November	3,090	1,050	1,560	.670	.75	80,900
December	8,300	980	2,530	1.15	1.33	143,000
January	12,700	1,660	4,040	1.99	2.29	248,000
February	2,630	1,470	1,910	.941	.98	106,000
March	3,330	1,860	2,420	1.19	1.37	149,000
April	33,800	2,850	6,360	3.13	3.49	378,000
May	41,300	3,450	8,100	3.99	4.60	498,000
June	4,060	1,860	2,510	1.24	1.38	149,000
July	1,970	1,380	1,690	.783	.90	97,800
August	1,560	1,210	1,360	.670	.77	83,600
September	1,860	1,210	1,390	.685	.76	82,700
The year	41,300	920	2,870	1.41	19.19	2,080,000

ROUND SPRING AT ROUND SPRING, MO.

LOCATION.—Staff gage in sec. 20, T. 30 N., R. 4 W., at Round Spring. Zero of gage is 666.4 feet above mean sea level.

RECORDS AVAILABLE.—October 1928 to September 1933.

DISCHARGE.—Maximum during year, about 520 second-feet during backwater from Current River May 14; minimum, 14 second-feet Oct. 12 (gage height, 0.30 foot).

1928-33: Maximum, that of May 14, 1933; minimum, 13 second-feet Aug. 24, 31, 1932.

REMARKS.—Records fair except those estimated, which are poor.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	15	53	18	244	33	31	}	45	75	26	21	19
2.....	16	42	17	146	32	27		46	65	26	22	20
3.....	16	36	18	97	29	24		45	54	26	22	20
4.....	16	31	19	75	27	22		45	53	25	22	19
5.....	16	27	19	56	26	32		45	48	24	23	19
6.....	16	26	20	51	24	42	}	42	46	24	24	19
7.....	16	24	20	45	25	58		40	45	24	26	19
8.....	16	23	20	40	24	53		133	43	25	25	18
9.....	16	21	19	34	24	43		103	39	25	25	18
10.....	16	20	18	32	23	37		75	37	25	25	18
11.....	16	20	19	31	22	33	}	60	33	24	26	18
12.....	14	20	18	29	21	58		54	33	22	24	19
13.....	16	19	17	27	20	30		86	33	22	23	19
14.....	19	22	16	25	20	293		520	32	23	22	22
15.....	20	21	16	24	19	480		32	22	22	22	19
16.....	19	21	15	23	19	350	}	440	32	22	22	22
17.....	18	20	15	24	20	390		32	24	22	22	19
18.....	18	20	25	20	20	325		352	31	22	21	22
19.....	18	20	75	19	19	293		31	22	21	24	24
20.....	18	19	15	70	19	201		229	31	22	20	20
21.....	19	18	65	18	18	159	}	187	31	21	20	19
22.....	19	20	180	18	18	133		152	31	21	21	22
23.....	19	20	18	133	18	115		127	29	21	25	20
24.....	19	18	250	103	19	103		115	29	22	20	19
25.....	20	18	250	80	42	92		103	31	24	20	19
26.....	20	17	65	33	33	75	}	259	32	22	20	18
27.....	21	16	51	36	33	65		215	32	22	20	22
28.....	21	18	70	42	33	56		159	31	22	23	20
29.....	20	20	37	37	37	53		121	29	21	20	19
30.....	20	19	270	34	33	25		97	27	21	22	19
31.....	121	270	33	33	33	25		86	22	20	20	22

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	121	14	21.1	1,300
November.....	53	16	23.0	1,370
December.....	270	15	55.4	3,410
January.....	244	23	64.4	3,960
February.....	42	18	24.4	1,360
March.....	58	20	28.9	1,780
April.....	350	30	95.7	5,690
May.....	520	40	166	10,200
June.....	75	27	37.6	2,240
July.....	26	21	23.0	1,410
August.....	26	20	22.2	1,860
September.....	24	18	19.7	1,170
The year.....	520	14	48.7	35,200

* Estimated.

JACKS FORK AT EMINENCE, MO.

LOCATION.—Chain gage in W½ sec. 26, T. 29 N., R. 4 W., at bridge on State highway 19, at Eminence. Zero of gage is 620.3 feet above mean sea level.

DRAINAGE AREA.—376 square miles.

RECORDS AVAILABLE.—October 1921 to September 1933.

DISCHARGE.—Maximum during year, 17,000 second-feet May 14 (gage height, 11.50 feet); minimum, 94 second-feet Oct. 2, 22 (gage height, 1.36 feet).

1922-33: Maximum, about 25,000 second-feet June 13, 1928 (gage height, 16.24 feet); minimum, 86 second-feet Sept. 1, 6-11, 1925. Average, 12 years (1921-33), 480 second-feet.

REMARKS.—Records good.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	100	870	150	1,100	299	299	1,110	544	760	213	161	129
2.....	94	364	148	832	299	281	990	613	715	222	150	154
3.....	100	281	156	648	263	246	758	544	670	213	158	190
4.....	109	246	150	510	246	230	613	478	585	204	150	228
5.....	107	200	148	445	246	215	510	445	568	194	146	244
6.....	105	168	141	388	230	215	578	388	551	176	146	213
7.....	109	163	153	340	215	340	613	510	508	176	139	181
8.....	100	160	148	320	230	990	544	2,020	476	190	139	165
9.....	100	148	143	281	230	684	445	1,110	444	199	143	150
10.....	107	148	148	263	200	510	445	832	428	185	139	129
11.....	107	132	153	230	200	416	388	684	412	185	165	132
12.....	103	143	150	246	200	364	388	832	382	181	161	158
13.....	101	143	146	230	200	340	340	1,190	375	169	146	158
14.....	101	143	148	200	200	320	364	15,600	338	161	143	217
15.....	101	139	146	200	200	320	4,580	5,910	318	158	132	208
16.....	101	141	148	186	186	281	7,330	4,410	318	154	126	165
17.....	101	136	143	200	176	263	2,800	2,540	304	143	122	181
18.....	101	136	139	340	176	281	1,790	1,820	291	154	122	805
19.....	103	134	143	648	181	388	1,370	1,600	284	154	122	390
20.....	103	134	143	870	176	578	1,110	1,280	277	146	122	266
21.....	103	148	143	758	176	510	1,190	1,180	277	139	122	217
22.....	96	163	143	2,520	173	416	1,370	1,280	277	143	119	181
23.....	101	166	158	1,680	173	416	1,110	1,090	272	143	119	161
24.....	101	163	1,470	1,030	184	340	990	988	266	139	116	146
25.....	115	163	2,020	795	200	340	910	1,040	244	154	119	139
26.....	125	158	950	648	320	320	795	3,870	250	150	109	139
27.....	139	158	613	510	416	281	720	1,820	304	154	113	146
28.....	132	141	478	445	364	263	613	1,330	304	181	119	154
29.....	123	150	388	388	-----	263	578	1,130	260	390	126	154
30.....	143	150	648	340	-----	263	510	1,040	233	233	129	154
31.....	340	-----	3,250	340	-----	613	-----	895	-----	185	129	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October.....	340	94	115	0.306	0.35	7,070
November.....	870	132	190	.505	.56	11,300
December.....	3,250	139	426	1.13	1.30	26,200
January.....	2,520	186	581	1.54	1.78	35,700
February.....	416	173	227	.604	.63	12,600
March.....	990	215	374	.995	1.11	23,000
April.....	7,330	340	1,200	3.19	3.56	71,400
May.....	15,600	388	1,880	5.00	5.76	116,000
June.....	760	233	390	1.04	1.16	23,200
July.....	390	139	180	.479	.55	11,100
August.....	165	109	134	.356	.41	8,240
September.....	805	129	202	.537	.60	12,000
The year.....	15,600	94	494	1.31	17.77	358,000

ALLEY SPRING AT ALLEY, MO.

LOCATION.—Staff gage in sec. 25, T. 29 N., R. 5 W., at Alley, 400 feet below spring outlet. Zero of gage is 664.49 feet above mean sea level.

RECORDS AVAILABLE.—October 1928 to September 1933.

DISCHARGE.—Maximum during year, 633 second-feet May 14 (gage height, 3.37 feet); minimum, 65 second-feet Oct. 16–25, Feb. 21–25.

1928–33: Maximum, 633 second-feet May 14, 1929, May 14, 1933; maximum gage height, that of May 14, 1933; minimum, 56 second-feet Dec. 27–29, 1931, Apr. 2–6, 1932.

REMARKS.—Records good except those for days of considerable change in discharge, which are generally fair. Discharge estimated Oct. 5–7, Dec. 23, Jan. 2, 3, May 7–9, 17–19. Occasional run-off from small valley above spring is included in records.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	67	179	67	302	122	76	167	203	240	116	92	76
2.....	67	179	67	250	113	76	167	192	215	116	92	76
3.....	67	90	67	220	113	76	156	181	215	112	88	79
4.....	67	90	67	191	113	76	156	170	203	112	88	79
5.....	67	90	67	144	156	76	156	160	192	112	88	79
6.....	67	82	67	144	131	76	144	160	192	108	88	79
7.....	67	82	67	144	126	167	144	180	192	108	85	77
8.....	67	82	67	144	104	167	144	300	181	104	85	77
9.....	67	78	67	140	92	167	144	260	170	104	85	76
10.....	67	74	67	126	84	144	131	240	170	104	83	76
11.....	67	74	67	126	76	135	131	227	170	100	90	76
12.....	67	74	67	126	76	126	131	215	160	100	90	76
13.....	67	70	67	96	76	113	131	240	160	100	88	88
14.....	67	67	67	96	72	104	126	633	150	100	85	160
15.....	67	67	67	144	69	96	144	598	150	96	83	120
16.....	65	67	67	137	69	96	529	598	139	96	83	100
17.....	65	67	67	126	69	92	529	500	139	92	83	92
18.....	65	67	67	126	69	92	461	450	137	92	83	108
19.....	65	67	67	167	69	92	429	400	137	92	81	94
20.....	65	67	67	167	69	92	381	365	133	92	81	88
21.....	65	67	67	167	65	96	350	350	133	92	79	83
22.....	65	67	70	167	65	96	320	335	128	92	79	85
23.....	65	67	80	244	65	96	292	320	128	92	79	83
24.....	65	67	317	258	65	96	278	320	124	92	79	81
25.....	65	67	317	217	65	96	265	320	124	92	79	79
26.....	70	67	204	204	69	88	240	381	120	88	79	81
27.....	70	67	204	167	69	88	215	397	120	88	77	81
28.....	67	67	204	156	76	88	240	381	124	88	77	88
29.....	67	67	204	156	-----	88	227	335	120	92	77	85
30.....	67	67	364	167	-----	104	215	320	120	92	77	83
31.....	179	-----	364	144	-----	104	-----	265	-----	92	77	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	179	65	70.2	4,320
November.....	179	67	79.4	4,720
December.....	364	67	120	7,380
January.....	302	96	167	10,300
February.....	156	65	86.0	4,780
March.....	167	76	103	6,330
April.....	529	126	238	14,200
May.....	633	160	322	19,800
June.....	240	120	156	9,280
July.....	116	88	98.6	6,060
August.....	92	77	83.2	5,120
September.....	160	76	86.8	5,160
The year.....	633	65	135	97,400

BIG SPRING NEAR VAN BUREN, MO.

LOCATION.—Staff gage in sec. 6, T. 26 N., R. 1 E., 400 feet below spring outlet and 4 miles southeast of Van Buren. Zero of gage is 431.26 feet above mean sea level.

RECORDS AVAILABLE.—January to June 1922; April 1923 to September 1933.
DISCHARGE.—Maximum during year (estimated), 1,200 second-feet May 15; minimum, 269 second-feet Oct. 16–28.

1922–33: Maximum (estimated), 1,300 second-feet (revised) during back-water from Current River in June 1928; minimum, 268 second-feet Sept. 17–24, 1926.

REMARKS.—Records good except those estimated, which are poor.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	272	458	279	• 800	494	423	• 500	706 • 690	• 590	418	372	337
2.....	272	409	279	• 700	448	413	• 547			418	372	337
3.....	272	341	279	• 650	458	400	• 556			418	368	337
4.....	272	316	279	• 610	448	395	569			418	368	337
5.....	272	301	279	578	433	386	529	569	418	368	337	
6.....	272	279	279	522	428	386	706	706	569	418	368	337
7.....	272	294	279	484	423	413	706	706	569	418	368	337
8.....	272	290	279	463	433	448	624	• 750	569	395	368	337
9.....	272	286	279	448	418	• 529	569	631	569	395	363	337
10.....	272	283	279	433	409	489	569	• 530	529	395	368	332
11.....	272	283	279	413	404	458	624		529	395	368	332
12.....	272	283	279	409	400	438	• 750		500	395	368	332
13.....	272	283	279	395	395	423	706		500	395	359	332
14.....	272	283	279	386	390	423	706		494	395	359	332
15.....	272	283	279	377	386	413	• 706	494	395	359	332	
16.....	269	279	279	372	381	400	• 900	• 880	468	390	354	332
17.....	269	279	279	363	381	400	• 1,000		468	390	354	332
18.....	269	279	279	473	377	400	887		468	390	354	332
19.....	269	279	279	552	377	500	• 670		468	386	350	332
20.....	269	279	279	• 720	377	516		468	386	346	332	
21.....	269	276	279		372	516		468	386	346	332	
22.....	269	276	279		372	489		468	381	346	332	
23.....	269	276	301		368	473	468	381	341	332		
24.....	269	276	• 600	• 800	368	453	• 610	• 610	468	381	341	337
25.....	269	276	• 800		368	448			443	381	341	337
26.....	269	276	• 700		413	428			443	381	341	337
27.....	269	276	• 600		413	423			443	381	337	337
28.....	269	276	552	653	418	418	443	443	381	337	337	
29.....	272	276	484	569	-----	409	• 730	• 660	418	381	337	337
30.....	272	276	458	529	-----	409	• 750		418	377	337	337
31.....	290	-----	• 617	500	-----	413	-----		-----	377	337	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	290	269	271	16,700
November.....	458	276	294	17,500
December.....	800	279	363	22,300
January.....	800	363	563	34,600
February.....	494	368	405	22,500
March.....	529	386	437	26,900
April.....	1,000	500	678	40,300
May.....	880	530	694	42,700
June.....	590	418	502	29,900
July.....	418	377	394	24,200
August.....	372	337	355	21,800
September.....	337	332	335	19,900
The year.....	1,000	269	441	319,000

• Estimated.

ELEVEN POINT RIVER NEAR BARDLEY, MO.

LOCATION.—Chain gage in NW¼ sec. 20, T. 23 N., R. 2 W., at bridge on State highway 42, 7 miles southwest of Bardley. Zero of gage is about 410.8 feet above mean sea level.

RECORDS AVAILABLE.—October 1921 to September 1933.

DISCHARGE.—Maximum during year, 10,100 second-feet Apr. 16 (gage height, 10.93 feet); minimum, 204 second-feet Dec. 17–22 (gage height, 1.73 feet).

1921–33: Maximum, 27,800 second-feet Apr. 14, 1927 (gage height, 18.74 feet); minimum, 200 second-feet Sept. 23–25, 29, 30, 1932; minimum gage height, 1.06 feet Sept. 6–11, 1925. Average, 12 years (1921–33), 815 second-feet. Maximum stage known, 19.7 feet in August 1915.

REMARKS.—Records good.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	216	480	210	1,340	738	590	1,340	1,190	1,260	705	505	455
2.....	213	355	210	1,040	705	562	970	2,160	1,260	675	505	480
3.....	210	310	210	970	645	535	900	1,730	1,260	675	505	480
4.....	228	290	210	835	618	505	900	1,420	1,190	675	505	480
5.....	219	280	210	738	618	505	835	1,420	1,120	645	505	480
6.....	210	269	210	675	590	505	970	1,260	1,120	645	505	480
7.....	210	262	216	645	645	562	970	1,190	1,120	645	480	455
8.....	210	258	213	618	645	645	970	1,120	1,040	645	480	455
9.....	210	249	216	590	590	645	900	1,120	1,040	645	480	455
10.....	216	249	216	562	562	618	900	1,040	1,040	618	480	430
11.....	213	243	216	562	562	590	1,420	970	970	618	480	430
12.....	210	234	216	535	535	562	1,120	1,650	970	618	480	430
13.....	210	231	210	505	535	562	970	1,730	970	590	480	455
14.....	210	228	216	480	535	562	970	5,560	900	590	455	455
15.....	210	231	210	480	505	562	5,320	5,440	900	590	455	455
16.....	210	228	210	455	480	535	8,000	5,440	835	590	455	430
17.....	210	225	207	480	480	505	3,360	3,060	835	590	455	430
18.....	210	222	207	675	480	562	2,460	2,360	835	562	455	430
19.....	210	222	204	970	480	802	1,980	2,070	835	562	455	430
20.....	210	222	204	970	480	835	1,810	1,810	802	562	455	405
21.....	210	222	204	900	455	770	1,890	1,730	802	535	455	405
22.....	210	216	204	2,860	455	705	1,810	1,890	802	535	455	405
23.....	210	222	243	1,730	455	675	1,650	1,730	770	535	430	405
24.....	210	216	2,760	1,420	455	645	1,570	1,980	770	535	430	380
25.....	216	216	1,190	1,260	562	645	1,490	2,360	770	618	430	380
26.....	222	216	835	1,120	705	618	1,420	2,460	770	562	430	380
27.....	216	213	738	1,040	675	590	1,340	2,260	802	562	430	380
28.....	210	210	618	900	618	590	1,260	1,730	738	562	430	430
29.....	210	210	562	835	-----	562	1,190	1,570	738	535	480	430
30.....	210	210	1,120	835	-----	562	1,260	1,420	705	535	455	405
31.....	562	-----	2,360	770	-----	590	-----	1,340	-----	535	455	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	562	210	224	13,800
November.....	480	210	248	14,800
December.....	2,760	204	486	29,960
January.....	2,860	455	897	55,260
February.....	738	455	565	31,400
March.....	835	505	603	37,180
April.....	8,000	835	1,730	103,060
May.....	5,560	970	2,070	127,000
June.....	1,260	705	932	55,500
July.....	705	535	597	36,700
August.....	505	430	466	28,700
September.....	480	380	433	25,800
The year.....	8,000	204	772	559,000

ELEVEN POINT RIVER NEAR ELEVEN POINT, ARK.

LOCATION.—Chain gage in SE¼SE¼ sec. 30, T. 20 N., R. 1 W., 2 miles southwest of Eleven Point and 15 miles above mouth.

DRAINAGE AREA.—1,090 square miles.

RECORDS AVAILABLE.—November 1929 to June 1933 (discontinued).

DISCHARGE.—Maximum during period, about 14,000 second-feet May 15, (gage height, 14.92 feet); minimum, 325 second-feet Oct. 21, Dec. 18 (gage height, 2.26 feet).

1929-33: Maximum that of May 15, 1933; minimum, 290 second-feet Sept. 30, 1932 (gage height, 2.21 feet).

REMARKS.—Records fair.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1.....	335	1,000	345	3,090	1,260	1,000	1,570	2,160	1,890
2.....	335	672	355	2,160	1,230	970	1,730	3,080	1,810
3.....	340	588	335	1,730	1,150	928	1,570	3,370	1,730
4.....	385	510	335	1,490	1,070	886	1,570	2,520	1,650
5.....	355	492	345	1,340	998	858	1,380	2,520	1,570
6.....	345	462	350	1,190	1,050	837	1,490	2,250	1,570
7.....	335	444	385	1,080	1,230	1,080	1,490	1,980	1,490
8.....	335	438	355	1,040	1,150	1,080	1,490	1,890	1,490
9.....	330	414	355	1,010	1,040	1,080	1,420	1,810	1,420
10.....	340	402	375	921	1,000	1,030	1,340	1,730	1,420
11.....	360	420	360	914	970	991	1,420	1,650	1,370
12.....	340	396	355	858	935	956	1,730	1,810	1,340
13.....	345	385	350	802	935	940	1,490	3,280	1,340
14.....	330	396	350	802	935	940	1,420	7,890	1,300
15.....	335	396	345	774	970	970	6,480	12,400	1,260
16.....	335	380	330	753	921	893	12,800	10,600	1,230
17.....	335	375	340	767	914	872	11,400	6,940	1,230
18.....	330	365	325	1,360	893	1,000	4,890	4,560	1,190
19.....	335	370	335	2,160	879	2,610	3,760	3,660	1,160
20.....	330	365	345	1,570	858	1,730	3,080	3,180	1,150
21.....	325	365	345	1,650	830	1,490	4,160	2,900	1,140
22.....	335	355	360	9,760	809	1,300	3,370	2,700	1,120
23.....	335	365	360	4,670	802	1,260	2,990	2,800	1,120
24.....	345	375	8,760	2,700	788	1,160	2,700	2,430	1,080
25.....	340	370	4,260	2,340	886	1,140	2,520	4,890	1,080
26.....	408	355	1,650	1,980	1,140	1,080	2,340	3,080	1,040
27.....	360	345	1,340	1,730	1,140	1,040	2,160	4,890	1,120
28.....	345	355	1,120	1,490	1,080	1,000	1,980	2,900	1,080
29.....	340	345	970	1,420	-----	970	1,890	2,430	1,040
30.....	335	335	8,140	1,340	-----	970	3,960	2,160	1,000
31.....	600	-----	8,760	1,260	-----	1,810	-----	1,980	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	600	325	351	21,600
November.....	1,000	335	428	25,500
December.....	8,760	325	1,390	85,500
January.....	9,760	753	1,810	111,000
February.....	1,260	788	995	55,300
March.....	2,610	837	1,120	68,900
April.....	12,800	1,340	3,050	181,000
May.....	12,400	1,650	3,630	223,000
June.....	1,890	1,000	1,310	77,900
The period.....				850,000

GREER SPRING AT GREER, MO.

LOCATION.—Staff gage in SE¼SW¼ sec. 36, T. 25 N., R. 4 W., 500 feet below lower outlet of spring and 1 mile north of Greer. Zero of gage is about 539 feet above mean sea level.

RECORDS AVAILABLE.—August to December 1904; November 1921 to September 1933.

DISCHARGE.—Maximum during year, 873 second-feet May 15 (gage height, 1.25 feet); minimum, 138 second-feet Oct. 25–27; minimum gage height, 0.40 foot Oct. 25, 27.

1922–33: Maximum, 903 second-feet May 26, 1927 (gage height, 1.43 feet); minimum, that of Oct. 25–27, 1932. Average, 11 years (1922–33), 374 second-feet.

REMARKS.—Records fair. Gage read three times a week; discharge estimated for remaining days.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	149	160	145	497	427	301	374	540	742	440	330	295
2.....	153	177	150	480	410	300	450	540	735	430	325	295
3.....	149	170	149	470	390	290	497	540	728	327	322	290
4.....	160	160	150	467	370	289	500	530	686	420	322	289
5.....	150	157	149	450	358	285	500	520	670	410	322	290
6.....	145	157	150	440	350	283	507	518	655	408	322	295
7.....	145	157	150	427	345	280	510	510	640	405	322	290
8.....	145	155	153	380	345	280	520	497	624	399	315	283
9.....	145	153	153	358	343	301	529	485	620	395	315	280
10.....	149	153	153	343	335	310	529	477	612	390	308	280
11.....	149	153	153	343	329	329	529	480	588	390	308	277
12.....	149	155	150	335	325	329	530	500	570	380	308	275
13.....	149	155	150	329	320	329	600	518	555	382	315	275
14.....	149	157	145	320	315	329	700	700	540	382	322	271
15.....	149	155	145	308	310	329	728	873	529	382	322	265
16.....	145	155	144	300	308	335	700	860	520	366	322	265
17.....	145	153	142	300	305	343	686	858	507	366	322	265
18.....	145	153	141	343	301	340	686	850	507	366	322	265
19.....	145	153	141	400	295	360	686	840	507	366	322	265
20.....	145	153	141	467	290	374	686	828	500	366	325	265
21.....	145	152	141	470	290	370	670	810	487	366	329	260
22.....	141	151	140	507	285	370	660	798	480	366	325	260
23.....	140	150	140	500	283	366	650	785	477	360	320	259
24.....	140	149	153	490	280	360	640	770	470	358	320	259
25.....	138	145	250	487	277	358	636	770	460	355	315	259
26.....	138	145	336	487	280	350	630	770	457	355	310	255
27.....	138	145	340	487	290	343	620	770	455	350	308	255
28.....	140	145	343	487	289	343	610	770	450	350	300	253
29.....	141	145	343	487	-----	343	600	770	450	350	295	250
30.....	140	145	343	470	-----	340	670	760	447	340	295	247
31.....	153	-----	400	450	-----	350	-----	750	-----	336	295	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	160	138	146	8, 980
November.....	177	145	154	9, 160
December.....	400	140	190	11, 700
January.....	507	300	422	25, 900
February.....	427	277	323	17, 900
March.....	374	280	329	20, 200
April.....	728	374	594	35, 300
May.....	873	477	677	41, 600
June.....	742	447	556	33, 100
July.....	440	336	379	23, 300
August.....	330	295	316	19, 400
September.....	295	247	271	16, 100
The year.....	873	138	363	263, 000

LITTLE RED RIVER NEAR HEBER SPRINGS, ARK.

LOCATION.—Staff gage in NE¼ sec. 1, T. 10 N., R. 10 W., 4 miles northeast of Heber Springs.

DRAINAGE AREA.—1,160 square miles.

RECORDS AVAILABLE.—September 1927 to September 1933.

DISCHARGE.—Maximum during year, about 67,500 second-feet May 16 (gage height, 38.0 feet); minimum, 12 second-feet July 24 (gage height, 2.64 feet).

1927-33: Maximum, about 88,800 second-feet Apr. 6, 1928 (gage height, 42.35 feet); no flow Oct. 1-19, 22-30, 1929, Aug. 2-18, 1930.

REMARKS.—Records fair. Gage-height record furnished by Arkansas Power & Light Co. Discharge estimated Jan. 5-14, 20-21, 27-31.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	16	190	160	12,400	1,430	2,460	12,200	2,250	700	52	56	55
2.....	16	700	160	6,480	1,430	2,390	7,280	2,460	660	52	180	52
3.....	14	660	140	4,440	1,370	2,040	4,880	2,250	520	46	520	278
4.....	278	490	136	3,280	1,220	1,850	3,550	1,730	400	43	1,970	370
5.....	2,390	385	160	3,100	1,020	1,610	2,960	1,730	340	38	1,320	4,330
6.....	1,070	315	160	2,900	970	1,430	2,600	2,040	302	33	780	1,790
7.....	550	290	140	2,700	1,220	1,850	2,480	2,110	265	20	252	700
8.....	355	252	140	2,500	2,530	3,460	2,110	1,910	230	29	200	680
9.....	252	240	140	2,300	1,850	2,880	1,850	1,670	210	24	160	490
10.....	230	230	140	2,100	1,670	2,530	1,670	1,490	190	29	132	370
11.....	210	370	140	1,900	1,490	2,390	1,550	1,320	160	30	122	340
12.....	180	370	140	1,700	1,320	2,110	1,490	1,270	140	32	134	280
13.....	150	370	160	1,500	1,220	1,910	1,430	3,640	265	38	490	265
14.....	122	328	160	1,300	1,170	1,790	1,370	7,420	870	30	190	252
15.....	99	302	170	1,120	1,170	1,610	1,490	35,200	370	26	210	230
16.....	84	290	160	1,020	1,220	1,430	3,830	67,500	340	24	160	190
17.....	77	265	160	970	1,270	1,320	4,880	9,900	265	23	132	160
18.....	71	240	160	920	1,270	1,220	3,550	5,580	220	23	132	132
19.....	61	220	132	1,070	1,220	27,000	2,810	3,550	180	21	106	114
20.....	50	210	190	1,730	1,320	9,750	3,200	2,740	160	18	84	99
21.....	48	190	200	1,730	1,270	5,580	4,030	2,040	122	16	71	84
22.....	44	180	220	23,850	1,170	3,460	9,600	3,370	108	14	65	77
23.....	41	190	370	21,200	1,070	2,960	5,700	2,460	99	13	52	65
24.....	33	200	4,230	7,140	920	2,460	4,030	3,040	99	12	44	55
25.....	35	190	8,850	4,880	920	2,110	3,280	4,130	75	13	41	55
26.....	37	180	7,140	3,830	1,170	1,970	2,740	3,280	65	14	37	71
27.....	36	170	3,460	3,400	1,430	1,670	2,040	2,600	77	15	160	99
28.....	35	170	2,810	3,000	1,910	1,490	1,910	2,040	91	93	160	140
29.....	44	170	2,390	2,600	-----	1,220	1,730	1,550	99	180	160	99
30.....	105	170	7,840	2,200	-----	1,170	1,910	1,220	99	132	99	65
31.....	132	-----	43,800	1,800	-----	2,530	-----	920	-----	84	77	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acres-feet
October.....	2,390	14	221	0.191	0.22	13,600
November.....	700	170	284	.245	.27	16,900
December.....	43,800	132	2,720	2.34	2.70	167,000
January.....	23,850	920	4,230	3.65	4.21	260,000
February.....	2,530	920	1,330	1.15	1.20	73,900
March.....	27,000	1,170	3,210	2.77	3.19	197,000
April.....	12,200	1,370	3,470	2.99	3.34	206,000
May.....	67,500	920	5,950	5.13	5.91	366,000
June.....	870	65	257	.222	.25	15,300
July.....	180	12	39.6	.034	.04	2,440
August.....	1,970	37	268	.231	.27	16,500
September.....	4,330	52	399	.344	.38	23,700
The year.....	67,500	12	1,880	1.62	21.98	1,360,000

ARKANSAS RIVER BASIN

ARKANSAS RIVER AT SYRACUSE, KANS.

LOCATION.—Water-stage recorder in NW¼ sec. 18, T. 24 S., R. 40 W., at highway bridge half a mile south of Syracuse.

DRAINAGE AREA.—25,500 square miles.

RECORDS AVAILABLE.—August 1902 to July 1906; June 1921 to September 1933.

DISCHARGE.—Maximum during year, 14,000 second-feet Aug. 28 (gage height, 6.56 feet); minimum, 5 second-feet June 11–13.

1902–6, 1921–33: Maximum gage height, about 11.75 feet, present datum, June 6, 1921 (discharge not determined); minimum, 1 second-foot July 31, 1931. Average, 12 years (1921–33), 355 second-feet. Bank-full stage, 7.0 feet.

REMARKS.—Records good except those for December, February, June, July, and August, which are fair. Discharge estimated Dec. 8–15, Feb. 6–16, July 4–7. Diversion for irrigation above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6	6	43	74	82	71	14	32	14	22	24	1,500
2	6	6	46	82	84	63	14	32	12	20	22	807
3	6	6	46	86	101	56	14	42	11	23	555	516
4	6	6	45	94	89	51	14	270	11		2,860	369
5	6	10	45	96	96	38	14	3,376	10		1,300	255
6	7	11	46	101		40	14	5,680	10	• 22	1,520	192
7	8	12	25	111		71	14	2,640	8		888	147
8	8	17		111		63	12	1,100	7	43	436	101
9	8	25		117		54	11	512	6	28	267	69
10	8	28		123		46	11	329	6	22	279	47
11	8	25	• 48	193	• 89	36	11	211	5	22	324	42
12	9	33		156		28	10	168	5	38	948	465
13	8	35		138		22	10	142	5	41	390	3,680
14	7	32		94		21	10	123	1,010	30	210	2,210
15	8	22		82		20	10	108	1,770	30	139	1,930
16	9	24	42	91		18	10	94	640	28	88	936
17	10	31	40	78	160	15	9	78	301	76	60	532
18	10	36	42	82	138	18	9	63	158	477	53	383
19	10	33	48	86	142	36	9	54	110	641	42	314
20	11	33	46	103	132	60	10	46	114	295	37	220
21	10	32	51	106	323	49	11	43	135	191	30	151
22	12	32	51	117	317	32	17	40	178	187	60	108
23	13	33	48	101	264	22	20	33	114	251	63	85
24	14	35	54	98	171	20	16	31	91	229	210	66
25	15	36	56	101	123	27	13	31	74	142	460	55
26	11	33	67	111	106	25	25	28	58	104	210	50
27	11	33	67	86	96	22	38	27	38	84	2,560	50
28	10	36	76	91	86	20	26	22	30	65	2,720	40
29	9	38	78	123		17	20	20	24	45	6,300	32
30	8	40	76	114		15	24	19	20	33	5,200	24
31	7		65	98		14		18		27	2,840	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	15	6	9.0	553
November	40	6	26.0	1,550
December	78	25	51.2	3,150
January	193	74	105	6,430
February	323	82	125	6,920
March	71	14	35.2	2,160
April	38	9	14.7	873
May	5,680	18	497	30,600
June	1,770	5	166	9,870
July	641	20	106	6,500
August	6,330	22	1,000	61,700
September	3,680	24	513	30,500
The year	6,330	5	222	161,000

• Estimated.

ARKANSAS RIVER AT GARDEN CITY, KANS.

LOCATION.—Water-stage recorder in NW¼ sec. 19, T. 24 S., R. 32 W., half a mile south of Garden City.

DRAINAGE AREA.—28,800 square miles.

RECORDS AVAILABLE.—June 1922 to September 1933.

DISCHARGE.—Maximum during year, 7,700 second-feet May 6 (gage height, 6.32 feet); no flow during several periods.

1922-33: Maximum, 21,200 second-feet Aug. 9, 1929 (gage height, 7.74 feet); no flow during several periods. Average, 11 years (1922-33), 270 second-feet. Bank-full stage, 7.0 feet.

REMARKS.—Records fair. Discharge estimated Oct. 1 to Feb. 22, Sept. 24-30. Diversions for irrigation above station.

Discharge, in second-feet, 1932-33

Day	Feb.	Mar.	Apr.	May	June.	Aug.	Sept.
1.....		11	0	8	0	0	1,670
2.....		9	0	9	0	0	610
3.....		9	0	12	0	0	187
4.....		10	0	55	0	361	60
5.....		11	0	478	0	549	26
6.....		12	0	4,180	0	55	6
7.....		12	0	3,560	0	3	3
8.....		8	0	1,130	0	0	4
9.....		0	0	299	0	0	3
10.....		0	0	82	0	0	2
11.....		0	0	34	0	0	1
12.....	2	0	0	25	0	0	2
13.....		0	0	10	0	0	4
14.....		0	0	8	0	0	1,810
15.....		0	0	8	0	0	1,240
16.....		0	0	7	90	0	776
17.....		9	0	5	34	0	253
18.....		0	0	4	0	0	97
19.....		0	0	3	0	0	12
20.....		0	0	2	0	0	5
21.....		8	0	2	0	0	4
22.....		12	2	2	0	0	5
23.....	26	7	5	1	0	0	2
24.....	14	2	4	1	0	0	
25.....	9	0	0	3	0	0	
26.....	10	0	1	2	0	0	
27.....	9	0	6	1	0	0	2
28.....	9	0	2	1	0	264	
29.....		0	3	1	0	2,320	
30.....		0	4	0	0	2,160	
31.....		0		0		2,160	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....			1	61
November.....			2	119
December.....			2	123
January.....			2	123
February.....	26		4.3	240
March.....	12	0	3.9	238
April.....	6	0	.9	54
May.....	4,180	0	320	19,700
June.....	90	0	4.1	246
August.....	2,320	0	254	15,600
September.....	1,810		227	13,500
The year.....	4,180	0	690	50,000

NOTE.—No flow during July.

ARKANSAS RIVER AT LARNED, KANS.

LOCATION.—Water-stage recorder in NE¼ sec. 5, T. 22 S., R. 16 W., at Larned, about a quarter of a mile (revised) above Pawnee River.

DRAINAGE AREA.—34,900 square miles.

RECORDS AVAILABLE.—June 1922 to September 1933.

DISCHARGE.—Maximum during year, 3,580 second-feet May 8 (gage height, 5.74 feet); no flow during several periods.

1922-33: Maximum, 14,300 second-feet Aug. 25, 1923 (gage height, 9.5 feet); no flow during several periods. Average, 11 years (1922-33), 270 second-feet. Bank-full stage, 8.5 feet.

REMARKS.—Records fair except those estimated, Dec. 7-17, Dec. 25 to Jan. 17, Feb. 6-15, Apr. 24-26, May 23-29, June 15-19, July 12-19, which are poor. Diversions for irrigation above station.

Discharge, in second-feet, 1932-33

Day	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	39	10	29	60	21	59	77	1	0	1,500
2	0	41	12	29	55	21	53	70	0	0	1,880
3	0	41	15	27	46	20	53	62	0	0	2,210
4	0	39	25	30	48	21	77	57	0	0	1,260
5	0	41		33	46	19	99	48	0	0	885
6	0	38			44	19	86	41	0	0	441
7	0				44	19	79	32	0	0	289
8	0				44	19	906	31	164	0	217
9	0				43	19	1,850	30	66	0	178
10	0				42	17	1,080	25	24	0	134
11	0		50	14	43	15	627	19	5	0	107
12	0	5			23	16	533	19		0	94
13	0				30	13	328	20		0	84
14	0				37	12	263	17		0	83
15	0				36	14	230			0	73
16	0			6	37	16	192		1	0	56
17	0			14	38	15	171	10		0	164
18	0	0	41	22	37	18	156			0	475
19	0	0	60	62	33	28	145			0	386
20	0	0	59	103	22	37	137	6	0	0	239
21	0	0	53	115	29	36	126	15	0	99	169
22	0	0	48	92	33	70	156	24	0	364	134
23	6	0	42	75	31	174		9	0	259	109
24	11	0	37	70	30			9	0	176	91
25	15	1	35	59	29	210		9	0	154	77
26	17	1	36	57	29		140	9	0	112	63
27	18	1	32	59	27	186		6	0	90	59
28	30	4	30	59	27	121		3	0	67	57
29	41	4	29		28	86		1	0	52	55
30	39	5	33		29	105		1	0	46	45
31		8	32		26	67	91		0	41	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
November	41	6	5.9	351
December	41	0	10.3	631
January	74	10	41.3	2,540
February	115	6	38.6	2,140
March	60	22	36.2	2,230
April		12	58.3	3,470
May	1,850		277	17,000
June	77	1	23.0	1,370
July	164	0	8.6	532
August	364	0	47.1	2,900
September	2,210	45	386	23,000
The year	2,210	0	77.6	56,200

NOTE.—No flow during October.

ARKANSAS RIVER NEAR WICHITA, KANS.

LOCATION.—Chain gage on line between secs. 7 and 18, T. 27 S., R. 1 E., $1\frac{1}{2}$ miles above mouth of Little Arkansas River.

DRAINAGE AREA.—40,300 square miles.

RECORDS AVAILABLE.—June 1921 to September 1933.

DISCHARGE.—Maximum during year, 4,880 second-feet Aug. 27 (gage height, 8.56 feet); minimum, 2 second-feet Aug. 14–19.

1921–33: Maximum, 12,000 second-feet Aug. 18, 1927 (gage height, 14.75 feet); no flow at times. Average, 12 years (1921–33), 539 second-feet. Bank-full stage, 14 feet.

REMARKS.—Records good except those for Oct. 1 to Feb. 18, and April, which are fair. Discharge estimated Dec. 24–28, Feb. 6–18, July 18.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	11	23	20	17	174	79	680	1,090	24	11	1,110
2	17	11	23	7	17	154	62	530	800	20	12	1,740
3	14	11	23	7	18	146	58	425	680	18	12	1,560
4	13	11	23	18	16	154	54	400	530	17	18	1,740
5	12	11	23	19	18	222	56	375	500	15	17	1,370
6	12	11	23	23	17	238	47	400	425	14	9	1,370
7	12	11	22	27		218	56	375	325	14	8	1,280
8	10	11	22	25		198	50	350	285	17	6	1,070
9	10	16	20	26		190	46	300	265	18	7	870
10	11	15	19	27		178	42	425	238	19	6	660
11	12	13	15	25		146	35	1,710	234	19	5	545
12	12	13	7	26		130	30	1,510	222	18	4	518
13	11	12	7	26		121	30	1,010	210	18	3	572
14	11	12	7	26		112	33	940	174	18	2	692
15	12	12	6	25		106	35	710	162	18	2	545
16	12	12	7	26		100	29	560	158	12	2	410
17	12	7	6	22		103	26	530	134	9	2	385
18	11	7	6	20		121	25	560	127	34	2	335
19	12	7	6	19	375	121	30	680	121	60	2	312
20	12	26	6	19	590	112	30	620	115	295	3	312
21	12	24	6	19	222	82	33	500	88	154	6	290
22	12	22	21	19	210	73	33	325	79	146	70	312
23	12	23	27	19	202	73	29	300	73	238	182	435
24	12	19		19	210	76	30	425	64	130	2,390	312
25	12	18		19	194	70	31	1,170	48	54	3,040	312
26	12	18	27	20	182	70	34	1,090	48	35	3,740	290
27	12	21		20	178	73	1,420	1,010	54	25	4,700	270
28	12	21		19	182	94	1,610	1,170	28	14	4,030	290
29	12	21	27	18		94	1,420	940	30	18	1,940	232
30	12	22	28	16		85	940	2,510	28	18	1,070	232
31	12		28	17		97		1,510		13	985	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	17	10	12.2	748
November	26	7	15.0	891
December		6	18.3	1,120
January	27	7	20.6	1,270
February	590		102	5,660
March	238	70	127	7,800
April	1,610	25	214	12,800
May	2,510	300	775	47,700
June	1,090	28	244	14,500
July	295	9	49.1	3,020
August	4,700	2	719	44,200
September	1,740	232	679	40,400
The year	4,700	2	249	180,000

ARKANSAS RIVER AT ARKANSAS CITY, KANS.

LOCATION.—Water-stage recorder in NW¼ sec. 25, T. 34 S., R. 3 E., half a mile west of Arkansas City and 5 miles above mouth of Walnut River.

DRAINAGE AREA.—44,700 square miles.

RECORDS AVAILABLE.—September 1902 to July 1906; September 1921 to September 1933.

DISCHARGE.—Maximum during year, 16,800 second-feet Sept. 3 (gage height, 15.84 feet); minimum, 30 second-feet Aug. 19 (gage height, 6.30 feet).

1902-5, 1921-33: Maximum gage height, 25.46 feet June 11, 1923 (discharge not determined); minimum, 12 second-feet in March and April 1923, owing to diversion by a power canal of Kansas Gas & Electric Co. Average, 12 years (1921-33), 1,300 second-feet. Bank-full stage, 16.0 feet.

REMARKS.—Records good except those estimated for periods of ice effect, Dec. 9-21, Feb. 7-16, which are fair. No diversions for irrigation from Arkansas River below a point 55 miles east of Colorado-Kansas State line.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	243	165	210	344	277	381	393	1,060	1,800	199	140	3,880
2.....	232	165	221	295	277	381	375	867	1,400	159	154	10,400
3.....	232	156	301	283	283	375	351	749	1,130	135	144	13,900
4.....	271	160	260	295	277	375	345	685	960	111	126	9,640
5.....	170	160	232	313	277	438	345	678	816	100	115	4,460
6.....	133	160	221	325	277	484	345	685	717	82	111	3,229
7.....	129	165	200	325	554	363	648	632	73	100	2,660	
8.....	115	180	190	325	582	357	632	575	96	92	2,270	
9.....	103	195	325	554	357	618	547	547	92	73	2,039	
10.....	95	180	307	498	357	596	540	540	126	70	1,710	
11.....	91	175	313	470	333	582	498	126	140	1,500		
12.....	87	170	301	431	339	701	464	107	126	1,350		
13.....	87	165	295	424	339	1,440	424	164	119	1,500		
14.....	87	165	283	390	339	1,250	381	274	92	3,660		
15.....	91	160	220	387	357	1,100	363	274	79	4,170		
16.....	103	160	319	369	363	986	333	188	60	2,460		
17.....	99	160	271	357	357	884	303	135	54	1,810		
18.....	99	170	295	357	363	881	898	291	159	51	1,500	
19.....	95	160	295	405	363	387	733	263	199	45	1,250	
20.....	95	165	325	418	357	381	774	225	214	453	1,110	
21.....	99	205	377	470	351	393	1,160	299	258	7,470	1,010	
22.....	103	248	254	344	327	397	1,968	264	648	9,880	943	
23.....	103	254	377	307	526	327	1,860	194	709	4,750	943	
24.....	107	238	397	295	464	357	733	1,250	178	717	4,240	925
25.....	147	226	357	289	424	351	741	926	173	561	6,690	840
26.....	170	210	332	289	387	357	701	799	154	424	5,600	760
27.....	180	205	351	289	399	369	670	765	154	333	4,970	704
28.....	175	205	377	307	375	339	648	1,210	144	263	8,080	658
29.....	170	205	377	301	-----	339	1,310	1,169	149	230	13,200	635
30.....	165	205	370	283	-----	339	1,210	2,250	303	199	9,400	620
31.....	165	-----	397	271	-----	381	-----	2,190	-----	168	4,820	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	271	87	137	8,410
November.....	254	156	185	11,000
December.....	397	-----	267	16,400
January.....	377	271	305	18,800
February.....	540	-----	332	18,400
March.....	582	327	399	24,600
April.....	1,310	333	450	28,500
May.....	2,250	582	1,090	63,500
June.....	1,800	144	454	28,800
July.....	717	73	242	14,900
August.....	13,200	45	2,630	162,000
September.....	13,900	620	2,750	164,000
The year.....	13,900	45	772	559,000

ARKANSAS RIVER AT VAN BUREN, ARK.

LOCATION.—Chain gage in sec. 24, T. 9 N., R. 32 W., at Van Buren, 1½ miles below Lee Creek. Zero of gage is 372.36 feet (revised) above mean sea level.

DRAINAGE AREA.—150, 000 square miles.

RECORDS AVAILABLE.—October 1927 to September 1933.

DISCHARGE.—Maximum during year, 278,000 second-feet May 17 (gage height, 27.88 feet); minimum, 740 second-feet Dec. 18—(gage height, 3.00 feet).

1927-33: Maximum, 315,000 second-feet May 16, 1929 (gage height, 29.0 feet); minimum, that of Dec. 18, 1932.

Maximum stage known, 35.0 feet in April 1927.

REMARKS.—Records good.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	2,140	4,150	1,380	31,000	11,100	24,600	8,570	38,300	37,200	2,910	3,410	79,900
2.....	2,140	3,770	1,380	28,100	10,100	23,100	10,100	27,200	34,000	2,910	21,800	82,500
3.....	2,290	3,230	1,450	21,800	9,790	23,100	9,790	20,000	26,300	2,750	25,400	122,000
4.....	3,070	2,910	1,380	18,400	9,170	16,000	9,170	17,000	19,500	2,590	17,000	179,000
5.....	2,910	2,750	1,450	16,500	8,570	12,500	9,790	15,200	15,200	2,590	14,000	173,000
6.....	4,970	2,440	1,380	14,800	8,270	23,800	16,000	14,000	12,800	2,440	21,200	137,000
7.....	6,130	2,290	1,320	12,800	7,430	76,000	61,600	12,800	11,800	2,440	29,000	116,000
8.....	6,130	2,000	1,320	13,600	6,890	85,100	79,900	11,800	10,800	2,590	24,600	83,800
9.....	4,550	2,140	1,260	14,000	6,630	82,500	70,000	42,100	9,790	2,590	17,400	61,600
10.....	3,950	2,000	1,380	16,500	5,190	77,300	46,000	11,400	9,170	2,910	12,500	43,800
11.....	3,950	1,860	1,380	14,800	4,970	55,600	29,000	12,800	8,570	2,590	9,170	36,100
12.....	3,590	1,860	1,320	11,400	5,410	37,200	20,000	14,400	7,990	2,440	9,170	27,200
13.....	3,410	1,720	1,200	9,170	5,410	26,300	15,600	21,800	7,990	2,590	10,400	31,000
14.....	3,070	1,720	1,140	8,270	5,190	20,000	14,000	135,000	9,470	4,150	9,170	21,200
15.....	2,590	1,720	1,020	7,710	5,650	17,400	13,200	228,000	8,870	4,550	8,870	18,400
16.....	2,440	1,650	960	7,150	5,410	15,200	22,400	274,000	7,430	3,590	7,150	16,500
17.....	2,290	1,720	1,020	6,630	4,970	13,600	39,400	278,000	6,370	3,230	5,190	20,600
18.....	2,000	1,580	850	6,370	5,190	12,500	40,500	257,000	5,890	3,070	6,130	19,500
19.....	2,000	1,580	905	14,400	5,410	12,100	50,800	188,000	5,190	3,410	6,130	15,200
20.....	1,720	1,520	1,020	25,400	5,410	15,600	47,200	99,600	4,970	5,410	6,370	12,100
21.....	1,720	1,520	1,080	28,100	5,410	15,600	61,600	49,600	4,550	8,270	7,150	11,800
22.....	1,650	1,380	1,200	44,900	5,190	12,100	81,200	47,200	4,350	8,570	6,130	11,100
23.....	1,520	1,520	1,720	42,700	4,970	10,100	107,000	40,500	3,950	6,890	15,600	11,100
24.....	1,520	1,520	35,000	48,400	4,970	8,570	108,000	37,200	3,770	6,370	38,300	10,100
25.....	1,520	1,580	136,000	50,800	5,190	7,990	107,000	34,000	3,770	6,890	34,000	9,470
26.....	1,520	1,520	170,000	34,000	6,890	7,430	86,400	46,000	3,590	6,370	48,400	7,990
27.....	1,380	1,520	175,000	22,400	13,200	6,630	77,300	60,400	3,590	5,890	49,600	7,430
28.....	1,720	1,450	123,000	20,600	20,600	6,130	71,200	56,800	3,230	4,970	37,200	6,630
29.....	2,590	1,380	74,800	19,000	-----	5,890	64,000	49,600	3,070	4,150	65,200	6,630
30.....	3,070	1,380	44,900	15,200	-----	5,890	50,800	53,200	3,070	3,590	65,200	7,710
31.....	4,150	-----	34,000	12,800	-----	5,650	-----	46,000	-----	2,910	66,400	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	6,130	1,380	2,830	174,000
November.....	4,150	1,380	1,980	118,000
December.....	175,000	850	26,500	1,630,000
January.....	50,800	6,370	20,600	1,270,000
February.....	20,600	4,970	7,250	403,000
March.....	85,100	5,650	24,600	1,510,000
April.....	108,000	8,570	47,600	2,830,000
May.....	278,000	11,400	71,200	4,380,000
June.....	37,200	3,070	9,880	588,000
July.....	8,570	2,440	4,080	251,000
August.....	66,400	3,410	22,500	1,380,000
September.....	179,000	6,630	46,200	2,750,000
The year.....	278,000	850	23,900	17,300,000

AMAZON CANAL NEAR HARTLAND, KANS.

LOCATION.—Water-stage recorder in SE¼ sec. 9, T. 25 S., R. 37 W., half a mile west of Hartland and 2½ miles below head gate. Prior to Apr. 25, 1932, station was located in sec. 8, 1 mile below head gate.

RECORDS AVAILABLE.—Irrigation seasons 1921-24; October 1930 to September 1933. (State records available since 1921.)

DISCHARGE.—Maximum during year ending Sept. 30, 1932, 267 second-feet June 5 (gage height, 6.70 feet); no flow during extensive periods.

Maximum during year ending Sept. 30, 1933, 490 second-feet Aug. 28 (gage height, 8.80 feet); no flow during extensive periods.

1930-33: Maximum that of Aug. 28, 1933; no flow during extensive periods.

REMARKS.—Records fair. Canal diverts water from left bank of Arkansas River at a point in sec. 7, T. 25 S., R. 37 W. Water used for irrigation.

Discharge, in second-feet, 1932-33

Day	1932						1933						
	Feb.	Mar.	Apr.	May	June	July	Jan.	Feb.	May	June	July	Aug.	Sept.
1	0	0	45	61	0	134	0	0	0	0	0	0	287
2	0	0	40	56	0	149	0	0	0	0	0	0	267
3	0	0	33	44	0	132	0	0	0	0	0	0	227
4	0	0	29	36	9	34	8	0	1	0	0	209	197
5	0	0	27	11	160	0	11	0	95	0	0	307	217
6	0	0	0	0	222	0	3	0	277	0	0	232	197
7	0	0	0	0	109	0	0	0	307	0	0	213	136
8	0	0	0	0	0	0	0	0	297	0	0	186	31
9	55	0	0	0	0	0	0	0	267	0	0	172	0
10	138	0	0	0	0	0	0	0	257	0	0	54	0
11	147	0	0	0	0	0	0	0	232	0	0	136	0
12	56	0	0	0	0	0	0	0	212	0	0	204	0
13	0	0	0	0	26	0	0	0	197	0	0	181	172
14	0	0	0	0	45	0	0	0	187	0	0	181	278
15	66	89	0	0	0	0	0	0	187	205	0	172	278
16	130	33	0	0	0	0	0	0	163	258	0	74	288
17	110	0	0	0	0	0	0	0	140	50	27	36	278
18	63	0	0	0	0	0	0	41	121	39	0	0	258
19	0	55	0	0	0	0	0	90	17	29	53	0	243
20	0	70	0	0	0	0	0	124	0	0	27	0	238
21	0	24	0	0	0	0	0	145	0	0	0	0	208
22	0	87	0	0	0	0	0	187	0	0	0	0	132
23	0	53	0	0	47	0	0	73	0	0	0	0	26
24	0	72	0	0	47	0	0	7	0	0	0	0	0
25	0	103	0	0	0	0	0	0	0	0	0	0	0
26	0	103	0	0	99	0	0	0	0	0	0	0	0
27	0	104	0	0	154	0	0	0	0	0	0	134	0
28	0	92	18	0	187	0	0	0	0	0	0	118	0
29	0	82	68	0	192	0	2	0	0	0	0	70	0
30	0	65	77	0	154	0	13	0	0	0	0	257	0
31	0	58	0	0	0	0	3	0	0	0	0	287	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1931-32				
February (8 days)-----	147	55	95.6	1,520
March (15 days)-----	104	24	72.7	2,160
April (8 days)-----	77	18	42.1	668
May (5 days)-----	61	11	41.6	413
June (13 days)-----	222	9	112	2,880
July (4 days)-----	149	34	112	891
The year (53 days)-----				8,530
1932-33				
January (6 days)-----	13	2	6.6	79
February (7 days)-----	187	7	95.3	1,320
May (16 days)-----	307	1	185	5,870
June (5 days)-----	258	29	116	1,160
July (3 days)-----	53	27	35.7	212
August (19 days)-----	307	36	170	6,390
September (19 days)-----	288	26	208	7,850
The year (75 days)-----				22,900

NOTE.—No flow during months omitted.

SOUTH SIDE DITCH NEAR HARTLAND, KANS.

LOCATION.—Water-stage recorder in SE¼ sec. 15, T. 25 S., R. 37 W., on north bank of ditch three-quarters of a mile south of Hartland and 1½ miles below point of diversion from Arkansas River.

RECORDS AVAILABLE.—Irrigation seasons 1921–24; October 1930 to September 1933. (State records published since 1921.)

DISCHARGE.—Maximum during year ending Sept. 30, 1932, 227 second-feet June 5 (gage height, 7.55 feet); no flow during extensive periods.

Maximum during year ending Sept. 30, 1933, 245 second-feet, Aug. 6 (gage height, 7.84 feet); no flow during extensive periods.

1930–33: Maximum, that of Aug. 6, 1933; no flow during extensive periods.

REMARKS.—Records fair. Ditch diverts water from right bank of Arkansas River in sec. 16, T. 25 S., R. 37 W. Water used for irrigation.

Discharge, in second-feet, 1931–33

Day	1932				1933				
	May	June	July	Aug.	May	June	July	Aug.	Sept.
1.....	0	0	0	0	0	14	0	0	87
2.....	0	0	0	129	0	10	0	0	107
3.....	0	0	0	132	0	5	0	0	93
4.....	0	13	51	119	0	0	0	181	85
5.....	17	205	107	97	0	0	0	192	56
6.....	31	200	111	29	34	0	0	209	35
7.....	29	196	77	6	28	0	0	168	22
8.....	36	176	58	0	45	0	0	104	69
9.....	36	148	44	0	45	0	0	34	115
10.....	39	132	29	0	15	0	0	25	111
11.....	33	116	17	0	0	0	0	88	119
12.....	24	100	0	0	0	0	0	124	150
13.....	16	108	0	0	0	0	0	177	102
14.....	10	61	0	0	0	33	0	97	97
15.....	4	90	0	0	0	195	0	31	104
16.....	0	70	0	0	0	195	0	76	77
17.....	0	66	0	0	0	156	0	93	68
18.....	0	82	0	0	0	136	123	62	68
19.....	0	45	0	0	33	124	107	30	102
20.....	0	0	0	0	68	100	38	24	115
21.....	0	0	0	0	52	116	0	23	96
22.....	0	0	0	0	39	132	0	23	82
23.....	0	0	0	65	26	0	0	22	97
24.....	0	0	0	44	14	0	0	43	54
25.....	0	0	0	77	4	0	0	104	48
26.....	0	0	0	37	0	0	0	136	0
27.....	0	0	0	0	0	0	0	200	0
28.....	0	0	0	0	0	0	0	140	0
29.....	0	0	0	0	6	0	0	148	0
30.....	0	0	0	0	22	0	0	144	0
31.....	0	-----	0	0	18	-----	0	112	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1931–32				
May (11 days).....	39	4	25.0	545
June (16 days).....	205	13	113	3,590
July (8 days).....	111	17	61.8	980
August (10 days).....	132	6	73.5	1,460
The year (45 days).....	-----	-----	-----	6,580
1932–33				
May (15 days).....	68	4	29.9	891
June (12 days).....	195	5	101	2,410
July (3 days).....	123	38	89.3	532
August (28 days).....	209	22	100	5,570
September (25 days).....	150	22	86.4	4,280
The year (83 days).....	-----	-----	-----	13,700

NOTE.—No flow during months omitted.

GREAT EASTERN CANAL AT LAKIN, KANS.¹

LOCATION.—Water-stage recorder in NE¼ sec. 28, T. 24 S., R. 36 W., half a mile west of Lakin and 6 miles northeast of Hartland. Prior to Dec. 19, 1931, in sec. 15, T. 25 S., R. 37 W.

RECORDS AVAILABLE.—Irrigation seasons 1921–24; October 1930 to September 1933. (State records published since 1921.)

DISCHARGE.—Maximum during year ending Sept. 30, 1932, 435 second-feet June 6 (gage height, 7.40 feet); no flow during extensive periods.

Maximum during year ending Sept. 30, 1933, 423 second-feet, June 15 (gage height, 7.60 feet); no flow during extensive periods.

1930–33: Maximum, 435 second-feet June 6, 1932; maximum gage height, 7.60 feet June 15, 1933; no flow during extensive periods.

REMARKS.—Records fair. Canal diverts water from left bank of Arkansas River at a point in sec. 16, T. 25 S., R. 37 W. Water used for irrigation.

Discharge, in second-feet, 1931–33

Day	Dec.	Jan.	Feb.	Mar.	Apr.	June	July	Aug.
1931–32								
1.....	0	3	12	0	0	0	0	0
2.....	0	0	40	0	0	0	0	240
3.....	0	0	70	0	0	0	0	202
4.....	5	0	103	0	0	0	5	33
5.....	18	0	87	0	0	98	15	0
6.....	15	0	101	68	0	277	0	0
7.....	30	0	153	39	0	129	0	0
8.....	57	5	118	0	0	104	0	0
9.....	75	68	158	0	0	38	0	0
10.....	76	125	10	0	0	22	0	0
11.....	68	113	5	10	0	0	0	0
12.....	61	97	3	17	0	0	0	0
13.....	20	129	0	10	0	4	0	0
14.....		113	0	30	0	238	0	0
15.....		70	0	57	0	153	0	0
16.....	* 35	43	0	3	0	83	0	0
17.....		87	0	0	0	44	0	0
18.....		140	0	0	0	7	0	0
19.....		147	0	0	0	34	0	0
20.....	82	162	0	0	6	162	0	0
21.....	74	133	0	0	3	152	0	0
22.....	75	150	0	0	0	133	0	0
23.....	79	42	0	56	0	133	0	8
24.....	62	18	0	19	6	136	0	0
25.....	62	26	0	14	11	267	0	0
26.....	48	8	0	0	0	53	0	0
27.....	3	43	0	0	0	0	0	0
28.....	58	84	0	0	8	0	0	0
29.....	53	67	0	0	0	0	0	0
30.....	70	40	-----	0	0	0	0	0
31.....	31	3	-----	0	-----	-----	0	0

* Estimated.

NOTE—No flow during months omitted.

¹ Previously published as Great Eastern Canal near Hartland, Kans.

Discharge, in second-feet, of Great Eastern Canal at Lakin, Kans., 1931-33—
Continued

Day	Nov.	Dec.	Jan.	Feb.	Mar.	May	June	July	Aug.	Sept.
1932-33										
1-----	0	21	35	76	67	0	0	0	0	288
2-----	0	21	42	6	50	0	0	0	0	288
3-----	0	18	50	86	29	1	0	0	0	256
4-----	0	12	50	76	35	13	0	0	192	224
5-----	0	15	4	135	9	42	0	8	256	122
6-----	0	12	4	122	0	240	0	2	338	23
7-----	0	8	50	35	65	256	0	0	240	0
8-----	0	0	62	0	76	156	0	11	29	60
9-----	0	0	102	0	42	86	0	7	0	60
10-----	0	0	141	0	29	74	0	0	0	32
11-----	0	0	114	0	0	29	0	0	0	22
12-----	0	0	88	0	0	0	0	0	49	1
13-----	0	0	68	} 47	0	0	0	0	179	114
14-----	5	0	60		0	0	0	0	18	339
15-----	3	0	52		0	0	324	0	0	359
16-----	0	0	38		0	0	256	0	0	400
17-----	0	0	60	0	0	0	97	0	0	280
18-----	10	0	77	0	0	42	133	0	0	224
19-----	21	0	68	0	0	0	9	211	0	77
20-----	10	0	68	86	0	0	0	277	0	77
21-----	10	0	52	97	0	0	34	267	0	52
22-----	10	0	68	149	0	0	3	229	0	22
23-----	13	0	32	122	0	0	96	178	0	52
24-----	13	0	27	164	0	0	96	229	0	128
25-----	13	2	52	149	0	6	57	49	104	52
26-----	10	4	60	122	0	0	36	0	76	52
27-----	31	13	45	97	0	0	21	0	50	45
28-----	21	18	32	86	0	0	5	0	194	32
29-----	21	23	45	-----	0	0	5	0	272	27
30-----	21	29	52	-----	0	0	0	0	256	18
31-----	-----	29	27	-----	0	0	-----	0	288	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1931-32				
December (28 days)-----	82	5	47.6	2,640
January (25 days)-----	162	3	76.6	3,800
February (12 days)-----	158	3	71.7	1,710
March (11 days)-----	68	3	29.4	640
April (5 days)-----	11	3	6.8	67
June (20 days)-----	277	4	113	4,500
July (2 days)-----	15	5	10	40
August (4 days)-----	240	8	121	958
The year (107 days)-----	-----	-----	-----	14,400
1932-33				
November (15 days)-----	31	3	14.1	420
December (14 days)-----	29	2	16.1	446
January-----	141	4	55.6	3,420
February (23 days)-----	164	6	84.2	3,840
March (9 days)-----	76	9	44.7	797
May (10 days)-----	256	1	90.3	1,790
June (14 days)-----	324	3	77.2	2,140
July (12 days)-----	277	2	133	3,180
August (15 days)-----	338	18	169	5,040
September (29 days)-----	400	18	128	7,390
The year (172 days)-----	-----	-----	-----	28,500

• Estimated.

NOTE.—No flow during months omitted.

FARMERS' DITCH NEAR GARDEN CITY, KANS.

LOCATION.—Water-stage recorder in NW¼ sec. 4, T. 24 S., R. 34 W., 4 miles below head gate, 4 miles northwest of Holcomb, and 10 miles west of Garden City. Datum lowered about 4.5 feet June 8, 1932.

RECORDS AVAILABLE.—Irrigation seasons 1921-24; October 1930 to September 1933. (State records published since 1921.)

DISCHARGE.—Maximum during year ending Sept. 30, 1932, 265 second-feet June 21 (gage height, 7.34 feet, present gage); no flow during extensive periods.

Maximum during year ending Sept. 30, 1933, 317 second-feet Aug. 5 (gage height, 7.97 feet, present gage); no flow during extensive periods.

1930-33: Maximum, that of Aug. 5, 1933; no flow during extensive periods.

REMARKS.—Records fair. Ditch diverts water from left bank of Arkansas River in sec. 12, T. 24 S., R. 35 W. Water used for irrigation.

Discharge, in second-feet, 1931-33

Day	Feb.	Mar.	Apr.	May	June	July	Aug.
1931-32							
1	0	77	21	0	0	49	0
2	0	75	18	0	0	37	19
3	0	73	18	0	0	30	52
4	0	0	17	0	0	22	8
5	0	8	16	0	42	12	0
6	0	21	0	0	111	7	0
7	0	0	0	1	157	5	0
8	31	0	0	9	96	0	0
9	53	0	14	2	84	0	0
10	77	0	24	16	65	0	0
11	81	0	0	9	49	0	0
12	61	0	0	0	43	0	0
13	60	0	0	4	32	0	0
14	0	6	0	9	86	0	0
15	0	42	0	0	92	0	0
16	28	42	0	0	43	0	0
17	2	101	0	0	35	0	0
18	40	137	0	0	32	0	0
19	75	124	0	0	37	0	0
20	109	67	0	0	55	0	0
21	96	26	0	0	245	0	0
22	101	24	0	0	196	0	0
23	93	45	0	0	156	0	0
24	92	39	0	0	127	0	0
25	93	38	0	0	118	0	0
26	87	35	0	0	92	0	0
27	83	38	0	0	73	0	0
28	80	30	0	0	52	0	0
29	78	26	0	0	59	0	0
30		24	0	0	84	0	0
31		24		0		0	0

Discharge, in second-feet, of Farmers' Ditch near Garden City, Kans., 1931-33—
Continued

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932-33									
1.....	0	3	13	8	26	2	5	8	55
2.....	0	4	13	7	37	1	4	6	56
3.....	0	3	13	7	45	1	4	6	45
4.....	0	4	11	6	125	0	4	176	30
5.....	0	2	13	6	109	0	4	295	12
6.....	0	1	6	6	127	0	3	176	8
7.....	0	0	2	7	161	0	3	273	45
8.....	0	0	7	6	171	0	3	169	56
9.....	0	0	9	6	181	0	7	166	41
10.....	0	0	12	5	141	0	4	161	30
11.....	0	0	16	5	86	0	7	191	25
12.....	0	0	30	4	104	0	6	72	30
13.....	0	0	26	4	104	0	3	86	30
14.....	0	0	32	6	87	0	2	13	65
15.....	0	0	40	4	61	182	5	0	72
16.....	0	1	29	4	44	306	4	0	166
17.....	0	4	24	4	36	102	4	0	156
18.....	0	0	22	4	31	30	65	0	64
19.....	0	0	22	4	28	20	62	0	104
20.....	0	0	32	5	37	15	136	0	67
21.....	13	0	43	13	40	13	71	0	39
22.....	19	2	48	67	35	26	30	0	28
23.....	18	21	41	48	35	15	17	0	34
24.....	10	17	30	22	32	12	14	0	20
25.....	8	16	24	17	48	11	24	0	35
26.....	17	15	20	14	65	9	90	65	52
27.....	12	19	17	15	34	9	76	31	51
28.....	30	15	15	16	30	7	58	42	50
29.....	37	-----	13	23	22	8	37	109	50
30.....	32	-----	9	16	6	6	24	118	44
31.....	18	-----	8	-----	3	-----	12	66	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1931-32				
February (20 days).....	109	2	71.0	2,820
March (23 days).....	137	6	48.8	2,230
April (7 days).....	24	14	18.3	254
May (7 days).....	16	1	7.1	99
June (26 days).....	245	32	87.0	4,480
July (7 days).....	49	5	23.1	321
August (3 days).....	52	8	26.3	157
The year (93 days).....	-----	-----	-----	10,400
1932-33				
January (11 days).....	37	8	19.5	424
February (15 days).....	21	1	8.5	252
March.....	48	2	20.6	1,270
April.....	67	4	12.0	712
May.....	181	3	67.5	4,150
June (19 days).....	306	1	40.8	1,540
July.....	136	2	25.4	1,560
August (20 days).....	295	6	111	4,420
September.....	166	8	51.7	3,070
The year (218 days).....	-----	-----	-----	17,400

NOTE.—No flow during months omitted.

GARDEN CITY CANAL NEAR GARDEN CITY, KANS.

LOCATION.—Water-stage recorder in SW¼ sec. 3, T. 24 S., R. 34 W., 1½ miles below point of diversion from Arkansas River, 3 miles west of Holcomb, and 9 miles west of Garden City. Datum lowered about 3.5 feet June 21, 1932.

RECORDS AVAILABLE.—Irrigation seasons 1921-24; October 1930 to September 1933. (State records published since 1921.)

DISCHARGE.—Maximum during year ending Sept. 30, 1932, 43 second-feet (gage height, 2.96 feet, old datum); no flow during extensive periods.

Maximum during year ending Sept. 30, 1933, 69 second-feet Sept. 16 (gage height, 7.65 feet, present datum); no flow during extensive periods.

1930-33: Maximum, 80 second-feet Oct. 5, 1930; no flow during extensive periods.

REMARKS.—Records good. Canal diverts water from left bank of Arkansas River in sec. 5, T. 24 S., R. 34 W. Water used for irrigation.

Discharge, in second-feet, 1931-32

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1.....	2	4	1	2	5	1	2	26	1	3	5
2.....	2	3	1	2	5	1	2	25	1	3	4
3.....	2	1	1	2	4	1	2	20	1	3	3
4.....	2	1	1	2	3	1	2	19	23	4	6
5.....	2	1	1	4	3	1	2	8	21	13	12
6.....	2	1		4	2	1	2	4	8	21	8
7.....	2	2		4	0	1	2	3	2	18	5
8.....	2	2		4	4	1	2		1	17	5
9.....	3	2	1	3	3	3	2		0	13	5
10.....	2	2		3	2	2	6		0	11	3
11.....	2	2		3	1	2	20	2	0	11	3
12.....	4	2	1	4	1	1	24		0	8	5
13.....	2	2	1	4	1	1	22		0	6	2
14.....	3	2	1	4	1	1	16		0	6	3
15.....	4	2	1	4	1	1	14	7	0	5	3
16.....	4	2	2	4	2	1	17	8	0	4	2
17.....	4	2	2	4	1	1	16	6	0	4	2
18.....	4	2	2	4	1	1	22	5	0	4	1
19.....	4	2	2	4	1	1	23	4	0	3	1
20.....	4	3	2	5	1	1	24	4	0	2	0
21.....	6	2	2	5	1	2	16	4	0	2	0
22.....	4		2	5	1	2	14	4	4	2	0
23.....	4		2	4	1	3	17	3	14	2	1
24.....	4		2	4	1	8	21	5	8	9	14
25.....	4	2	2	5	1	4	18	4	8	11	8
26.....	4		2	5	1	3	15	3	6	8	2
27.....	3		2	5	1	3	29	3	5	4	2
28.....	4	2	2	4	1	2	40	4	4	3	2
29.....	3	2	2	6	1	2	28	4	4	2	1
30.....	4	2	2	5		2	28	3	4	2	1
31.....	4		3	5		2		2		2	1

Discharge, in second-feet, of Garden City Canal near Garden City, Kans., 1931-33—
Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932-33												
1.....	0	2	4	8	6	2	3	7	20	0	0	13
2.....	0	2	4	9	7	2	3	5	18	0	0	3
3.....	0	2	4	9	7	2	3	8	18	0	1	2
4.....	0	1	4	7	8	2	3	34	14	0	17	1
5.....	0	1	4	6	10	2	3	30	15	0	18	10
6.....	0	1	4	4	8	4	3	47	13	0	2	23
7.....	0	2	4	6	0	10	3	21	10	0	2	28
8.....	0	2	1	6	0	8	3	12	10	1	1	11
9.....	0	2	0	6	0	4	3	9	9	1	1	2
10.....	0	2	2	6	0	3	3	7	10	1	0	2
11.....	0	2	0	7	1	3	3	5	9	1	0	1
12.....	0	2	0	10	2	3	3	4	7	1	12	2
13.....	0	3	0	10	3	2	3	4	7	1	25	7
14.....	0	2	0	9	5	4	3	3	7	1	21	51
15.....	0	2	0	9	7	3	3	3	15	1	19	44
16.....	0	2	0	7	8	3	3	2	15	0	11	27
17.....	0	2	2	12	13	2	3	2	7	1	11	6
18.....	0	3	5	12	14	2	3	2	4	2	22	2
19.....	0	4	6	11	17	2	3	1	4	1	13	2
20.....	0	3	6	13	0	3	3	1	3	1	18	1
21.....	0	3	5	7	0	3	5	1	2	1	15	1
22.....	2	3	6	3	0	2	7	2	2	1	14	1
23.....	1	3	3	4	0	2	6	1	2	1	10	1
24.....	0	3	5	2	0	2	5	2	2	0	17	1
25.....	1	3	7	9	2	2	4	2	1	0	14	1
26.....	1	3	8	9	3	2	5	3	1	0	3	1
27.....	0	4	7	10	4	2	5	3	0	0	0	1
28.....	0	5	9	6	3	4	4	5	0	0	34	1
29.....	0	4	8	5		3	5	6	0	0	47	1
30.....	1	4	7	6		3	4	18	0	0	33	1
31.....	1		8	5		3		20		0	33	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1931-32				
October.....	6	2	3.2	198
November.....	4	1	2.9	119
December.....	3		1.6	95
January.....	6	2	4.0	244
February.....	5	1	1.9	105
March.....	8	1	1.8	113
April.....	40	2	14.9	889
May.....	26		6.2	381
June (17 days).....	23	0	6.8	228
July.....	21	2	6.6	409
August (28 days).....	14	0	3.9	218
The year (315 days).....				3,000
1932-33				
October (6 days).....	2	1	1.2	14
November.....	4	1	2.6	153
December (24 days).....	9	1	5.1	244
January.....	13	2	7.5	462
February (19 days).....	17	1	6.7	254
March.....	10	2	3.0	186
April.....	7	3	3.7	218
May.....	47	1	8.7	536
June (26 days).....	20	1	8.7	446
July (15 days).....	2	1	1.1	32
August (26 days).....	47	1	15.9	821
September.....	51	1	8.3	492
The year (299 days).....				3,860

NOTE.—No flow during September 1932.

PAWNEE RIVER NEAR LARNED, KANS.

LOCATION.—Water-stage recorder in NW¼ sec. 34, T. 21 S., R. 18 W., at Moffet Dam, 11½ miles west of Larned. Prior to May 16, 1933, in sec. 33, 200 feet upstream from present site.

DRAINAGE AREA.—2,300 square miles.

RECORDS AVAILABLE.—November 1924 to September 1933.

DISCHARGE.—Maximum during year, 3,640 second-feet, May 26 (gage height, 23.37 feet, present gage); no flow Mar. 12-18.

1924-33: Maximum, that of May 26, 1933; no flow during periods in 1926, 1930, 1931, and 1933. Bank-full stage, 24 feet.

REMARKS.—Records fair except those estimated, which are poor. Diversions for irrigation by pumping above station.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4	3	6		4	3		95	80	7	3	103
2	4	3	6		3	3		95	70	6	3	52
3	5	3	5		3	3		95	68	6	3	76
4	3	4	5		3	3		95	64	5	3	127
5	3	4	5		3	3		• 95	60	5	3	74
6	3	4	5		3	3		95	54	6	3	34
7	3	4	4		3	3		95	54	6	3	18
8	2	5	4	• 2	3	2		95	52	6	3	11
9	2	4	4		3	2		95	45	5	3	16
10	2	4	4		3	2		95	35	5	3	17
11	2	5	4		3	2	• 3	95	25	5	3	7
12	3	5	4		3	0		95	25	5	34	4
13	3	5			3	0		95	22	5	40	4
14	3	5			3	0		95	15	4	12	15
15	2	5			3	0		95	16	4	4	139
16	2	4			4	0		86	18	4	50	48
17	2	5			4	0		83	11	4	95	17
18	6	4			4	0		71	3	3	72	11
19	4	4			4	2		63	3	3	86	7
20	2	4		• 3	4	2		52	4	3	862	4
21	2	4	• 3		4			62	5	4	413	3
22	3	4			4			400	1,920	5	3	127
23	3	4			5			2,360	1,470	6	3	225
24	2	4			5			2,360	142	8	4	229
25	3	5			5			1,110	1,400	6	11	243
26	3	5			4	• 3		572	3,490	9	10	78
27	3	5			4			272	3,060	7	5	39
28	3	5			3	3		113	1,630	5	4	212
29	3	5			4			95	265	6	3	354
30	3	5			4			95	121	6	3	464
31	3				4				90		3	265

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	6	2	2.9	180
November	5	3	4.3	258
December	6	3	5.6	224
January	4		2.7	165
February	5	3	3.6	199
March	3	0	2.1	131
April	2,360		245	14,800
May	3,490	52	498	30,600
June	80	3	26.2	1,560
July	11	3	4.8	298
August	862	3	127	7,810
September	139	3	27.3	1,630
The year	3,490	0	79.9	57,900

• Estimated.

LITTLE ARKANSAS RIVER AT VALLEY CENTER, KANS.

LOCATION.—Chain gage in SW¼ sec. 1, T. 26 S., R. 1 W., 1 mile south of Valley Center and 14 miles above mouth.

DRAINAGE AREA.—1,340 square miles.

RECORDS AVAILABLE.—June 1922 to September 1933.

DISCHARGE.—Maximum during year, 1,950 second-feet Aug. 27 (gage height, 9.20 feet); minimum, 7 second-feet May 4 and July 7.

1922-33: Maximum, 10,500 second-feet June 10, 1923 (gage height, 18.02 feet); minimum, 4 second-feet Dec. 17, 1922. Average, 11 years (1922-33), 154 second-feet. Bank-full stage, 10 feet.

REMARKS.—Records fair to March 4; poor thereafter.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	33	27	34	39	35	33		8	87	8	10	273
2.....	28	27	34	36	36	33		8	53	8	10	214
3.....	27	27	33	36	36	33		8	36	8	12	192
4.....	25	28	33	35	38	35		7	28	8	11	151
5.....	24	28	34	36	33			10	20	8	10	133
6.....	23	28	34	36	33			11	18	8	10	117
7.....	23	28	33	36	30	* 26		12	14	7	10	94
8.....	23	29	30	35				12	12	8	10	81
9.....	23	29	26	36				10	12	10	10	75
10.....	23	29	28	38			* 23	11	11	10	10	69
11.....	23	29		36				12	10	9	12	63
12.....	22	29		42	* 32			10	11	10	10	58
13.....	23	29		43				10	10	11	10	94
14.....	23	30		43				10	10	14	11	125
15.....	23	30		39				9	10	15	11	87
16.....	23	30		40				9	10	13	11	69
17.....	23	30	* 36	40				10	10	13	11	53
18.....	23	30		42	36			10	9	25	12	48
19.....	22	30		42	33			1,350	9	526	12	40
20.....	22	30		42	35			1,430	8	389	15	40
21.....	22	31		42	35	* 24	498	1,860	8	554	20	36
22.....	23	31		40	35		582	1,110	8	101	22	33
23.....	25	31		40	36		249	309	8	69	610	33
24.....	25	33		39	36		94	192	9	48	1,350	33
25.....	25	33	46	38	36		40	142	9	36	1,040	30
26.....	25	33	43	38	35		16	101	9	28	1,540	28
27.....	25	31	45	36	35		13	81	10	20	1,950	28
28.....	26	33	42	35	33		11	171	8	15	1,250	30
29.....	26	33	40	35			10	94	8	14	696	33
30.....	25	33	39	35			9	69	10	12	470	33
31.....	26		43	35				109		12	335	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	33	22	24.3	1,490
November.....	33	27	30.0	1,780
December.....	46	26	36.1	2,220
January.....	43	35	38.2	2,350
February.....	38	30	33.8	1,880
March.....	35		25.6	1,570
April.....	582	9	66.1	3,930
May.....	1,860	7	232.0	14,300
June.....	87	8	15.8	942
July.....	554	7	65.1	4,000
August.....	1,950	10	306	18,800
September.....	273	28	79.8	4,750
The year.....	1,950	7	80.2	58,000

* Estimated.

WALNUT RIVER AT WINFIELD, KANS.

LOCATION.—Chain gage in NE¼ sec. 33, T. 32 S., R. 4 E., 1 mile south of Winfield and 1 mile above Black Creek.

DRAINAGE AREA.—1,860 square miles.

RECORDS AVAILABLE.—November 1921 to September 1933.

DISCHARGE.—Maximum during year, 22,800 second-feet Aug. 21 (gage height, 29.98 feet); minimum, 8 second-feet June 28 (gage height, 2.40 feet).

1921-33: Maximum, 94,400 second-feet Nov. 18, 1928 (gage height, 40.61 feet); no flow Nov. 11, 1928. Average, 12 years (1921-33), 660 second-feet. Bank-full stage, 30 feet.

REMARKS.—Records fair. Occasional storage above station on Sundays.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	35	22	31	34	26	25	26	17	73	12	18	336
2.....	42	22	36	36	28	24	22	14	71	13	14	2,820
3.....	39	24	30	27	25	23	23	13	55	14	13	293
4.....	37	23	34	30	22	15	18	21	44	12	750	264
5.....	31	22	34	27	26	37	21	40	42	13	336	209
6.....	27	21	35	28	26	39	19	54	40	13	142	139
7.....	30	17	34	24	16	55	20	159	21	264	59	106
8.....	27	17	28	25	17	31	16	103	39	203	40	95
9.....	27	18	27	26	73	15	60	35	87	23	71	71
10.....	22	21	32	25	62	17	50	27	66	18	68	68
11.....	22	25	* 25	24	* 18	54	14	40	20	40	1,720	55
12.....	19	22		22		44	13	27	19	27	229	46
13.....	21	22		25		46	12	23	20	26	59	39
14.....	22	19		24		35	13	22	17	23	39	57
15.....	20	18		28		35	13	17	15	19	25	78
16.....	21	20	* 25	26	* 18	52	13	16	14	16	20	71
17.....	25	21		25		35	13	16	13	20	16	55
18.....	23	20		36		28	12	12	12	39	13	42
19.....	24	22		34		31	26	13	1,160	11	22	37
20.....	23	22		34		32	26	26	1,570	12	27	431
21.....	21	22	-----	28	31	26	40	374	10	69	11,000	31
22.....	21	27	49	37	31	27	40	212	10	91	545	27
23.....	22	26	80	28	31	24	25	165	10	73	924	27
24.....	20	30	62	28	32	22	80	136	12	55	1,620	31
25.....	24	36	122	28	32	24	80	153	13	54	1,360	32
26.....	26	34	114	27	35	22	49	131	13	54	585	19
27.....	19	35	30	28	26	25	36	103	13	43	469	18
28.....	25	34	120	30	27	27	24	112	10	30	3,450	20
29.....	22	28	49	27	-----	22	22	89	12	22	6,010	18
30.....	27	28	46	27	-----	26	18	71	13	19	2,650	18
31.....	28	-----	37	22	-----	26	-----	98	-----	18	585	-----
Month					Maximum	Minimum	Mean	Run-off in acre-feet				
October.....					42	19	25.5	1,570				
November.....					36	17	23.9	1,420				
December.....					122	-----	42.1	2,590				
January.....					37	22	28.1	1,730				
February.....					35	-----	24.8	1,370				
March.....					73	15	33.9	2,090				
April.....					80	12	25.1	1,480				
May.....					1,570	12	164	10,100				
June.....					73	10	23.9	1,420				
July.....					264	12	47.8	2,640				
August.....					11,000	11	1,070	65,900				
September.....					2,820	18	175	10,400				
The year.....					11,000	-----	142	103,000				

* Estimated.

CIMARRON RIVER NEAR FOLSOM, N. MEX.

LOCATION.—Water-stage recorder in NE¼SW¼ sec. 9, T. 31 N., R. 36 E., 45 miles east of Folsom, about 8 miles west of Kenton, Okla., and 6 miles above the mouth of Carrizo Creek.

RECORDS AVAILABLE.—October 1930 to November 1933 (discontinued). Records for 1927–30 published by State engineer.

DISCHARGE.—Maximum during year ending Sept. 30, 1933, about 2,460 second-feet July 23 (gage height, 8.12 feet); no flow Aug. 17.

1930–33: Maximum, about 3,800 second-feet Sept. 24, 1931 (gage height, 9.61 feet); no flow Aug. 17, 1933.

REMARKS.—Records October to June, fair; others poor. Diversions for irrigation above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
1.....	0.3	0.9	0.6	0.5	0.7	0.4	0.6	0.6	0.4	0.3	2.4	a5	0.4	0.7
2.....	.3	1.0	.6	.5	.7	.5	.6	.7	.4	.3			.4	.9
3.....	.3	1.0	.6	.5	.7	.5	.7	.6	.4	.4	a 15	a50	.5	.8
4.....	.2	1.0	.6	.6	.7	.5	.7	2.1	.4	.4			1.5	
5.....	.2	1.0	.6	.6	.7	a .4	.7	2.0	.4	.5			97	
6.....	.2	.9	.6	.6	.7	.4	.7	1.5	.4	.5	6.0	a5	2.2	
7.....	.2	.8	.6	.6	.7	.2	1.3	1.1	.4	.5	3.3		1.3	
8.....	.2	.7	.6	.6	.8	.2	1.1	.5	.4	.5	317	.7	.7	
9.....	.2	.7	.6	.7	.7	.2	1.0	.4	.4	.5		.6	.7	
10.....	.5	.7	.6	.7	.6	.2	.9	.4	.6	9.6	a100	.6	.6	
11.....	.5	.7	.6	.6	.6	.2	.9	.3	.6	10		42	.6	
12.....	.5	.6	.6	.6	.6	.3	.8	.4	.6	.8	.6		.6	
13.....	.5	.6	.5	.7	.6	.4	.7	.4	.5	.6	.4	a5	.6	
14.....	.6	.6	.4	.7	.5	.4	.7	.5	.6	.5	.2		.6	
15.....	.7	.6	.4	.7	.5	.4	.7	.5	.6	a 30	.1	.8	.6	
16.....	.7	.5	.4	.7	.5	.3	.7	.4	.6	a 80	.1	.7	.6	
17.....	.8	.6	.4	.7	.5	.3	.6	.4	.6	a 200	0	.8	.7	
18.....	.8	.6	.4	.6	.5	.4	.6	.4	.7	1.6	90	.8	.7	
19.....	.7	.6	.4	.6	.5	.4	.6	.4	.5	1.3		.7	.6	
20.....	.6	.6	.4	.7	.5	.4	.6	.3	1.5	.7		.7	.4	
21.....	.7	.6	.4	.7	.6	.4	.6	.4	2.7	.6	a 15	.7	.4	
22.....	.6	.6	.4	a .8	.6	.4	.6	.4	.9	151		.7	.4	
23.....	.5	.5	.5	.8	.6	.4	.7	.3	.4	a350	a150	.7	.5	
24.....	.5	.5	.5	.8	.6	.7	.7	.4	a .4	a150		.7	.4	
25.....	.5	.5	.5	.7	.6	1.7	.6	1.8	a .3	a100	a 20	.7	.4	
26.....	.5	.7	.5	.7	.6	1.7	.6	1.4	.3	5.1		.7	.4	
27.....	1.1	.7	.5	.7	.5	1.5	.6	.5	.5	4.7	a100	.7	.5	
28.....	1.1	.7	.5	.7	.4	.4	.7	.5	.4	4.5		.7	.5	
29.....	1.0	.6	.5	.6		a .7	.5	.4	.4	4.3	a10	.5	.6	
30.....	.9	.6	.5	.7		.6	.7	.4	.3	3.9		.4	.6	
31.....	.9		.5	.7		.6		.4		3.2			.6	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1932–33				
October.....	1.1	0.2	0.56	34
November.....	1.0	.5	.69	41
December.....	.6	.4	.51	31
January.....	.8	.5	.66	40
February.....	.8	.4	.60	33
March.....	1.7	.2	.51	31
April.....	1.3	.6	.72	43
May.....	2.1	.3	.67	41
June.....	2.7	.3	.59	35
July.....	350	.3	36.0	2,210
August.....	317	0	43.9	2,700
September.....		.4	5.00	297
The year.....	350	0	7.65	5,540
1933				
October.....	97	.4	3.76	231
November 1–3.....	.9	.7	.80	5

• Estimated.

VERDIGRIS RIVER AT INDEPENDENCE, KANS.

LOCATION.—Chain gage in NE¼ sec. 32, T. 32 S., R. 16 E., 2 miles east of Independence and 3½ miles below Elk River.

DRAINAGE AREA.—2,800 square miles.

RECORDS AVAILABLE.—April to September 1904; November 1921 to September 1933.

DISCHARGE.—Maximum during year, 18,800 second-feet May 13 (gage height, 30.25 feet); no flow Oct. 18, 20, 22–24.

1904, 1921–33: Maximum, 124,000 second-feet Oct. 3, 1927 (gage height, 46.04 feet at former site); minimum, that of Oct. 18, 20, 22–24, 1932. Average, 12 years (1921–33), 1,590 second-feet. Bank-full stage, 36 feet.

REMARKS.—Records good except those estimated for ice periods, Nov. 13–19, Dec. 9–24, Jan. 12–14, Feb. 7–24, and those for March, April, July, and September, which are fair.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	124	1	3	59	23	21	146	190	424	2	10	1,570
2	100	1	3	50	18	24	84	177	262	2	5	2,880
3	75	1	2	56	20	18	75	154	188	1	4	1,200
4	51	1	2	47	17	15	51	116	144	1	2	921
5	32	1	3	38	11	32	2,600	125	106	1	2	569
6	28	2	2	45	19	285	595	154	106	1	1	341
7	17	1	3	35		505	190	165	106	1	26	230
8	11	1	2	26		601	237	177	90		82	146
9	10	2	16	16		473	177	134	70		32	82
10	11	2	10	10		383	106	116	43		23	90
11	8	1		9		285	90	1,460	26		230	51
12	7	1				230	75	8,960	18		1,040	32
13	4			7		205	67	17,300	13	5	443	1,700
14	3		3			169	58	4,560	10		205	1,410
15	2			12		146	54	1,180	6		117	473
16	2	1		18	15	124	57	745	7		58	243
17	1			21		102	56	480	6		41	158
18	0			13		98	43	2,950	5	640	19	124
19	1			18		82	37	4,240	3	1,310	47	94
20	0	3		33		50	625	2,200	3	700	54	58
21	1	4	10	53		54	9,310	1,140	2	383	666	37
22	0	5		44		84	4,950	715	2	124	2,700	23
23	0	5		61		51	4,300	342	2		666	22
24	0	8		45		35	1,780	1,330	2		2,760	1,040
25	2	12	443	20	24	44	1,110	566	1	64	1,530	146
26	3	12	257	15	18	45	625	424	2		633	86
27	5	13	193	11	14	29	424	537	4		341	47
28	5	9	169	15	16	18	369	1,420	4		2,290	37
29	3	6	146	20		22	315	2,650	5	33	4,750	32
30	2	8	106	33		80	262	1,180	2	18	4,400	23
31	2		75	38		271		685		17	1,160	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	124	0	16.5	1,010
November	13		3.57	212
December	443		48.1	2,960
January	61		28.5	1,750
February	24		16.1	893
March	601	15	148	9,090
April	9,310	37	962	57,300
May	17,300	116	1,820	112,000
June	424	1	55.4	3,300
July	1,310		117	7,190
August	4,750	1	785	48,300
September	2,880	22	462	27,500
The year	17,300	0	375	272,000

° Estimated.

NEOSHO RIVER NEAR IOLA, KANS.

LOCATION.—Water-stage recorder in NE¼ sec. 9, T. 25 S., R. 18 E., 3 miles southwest of Iola and half a mile below Elm Creek.

DRAINAGE AREA.—3,800 square miles.

RECORDS AVAILABLE.—August 1895 to November 1903; October 1917 to September 1933.

DISCHARGE.—Maximum during year, 10,500 second-feet May 29 (gage height, 13.80 feet); minimum, 20 second-feet Oct. 23 (gage height, 2.73 feet).

1895-1903, 1917-33: Maximum, 46,000 second-feet Sept. 13, 1926 (gage height, 33.2 feet); no flow for several days in September and October 1897. Average, 16 years (1917-33), 1,210 second-feet.

REMARKS.—Records good except those for May, July, August, and September, which are fair. Discharge estimated for ice periods, Dec. 9-15, Feb. 7-12.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	140	52	79	167	72	100	171	343	614	36	41	361
2.....	137	50	86	157	68	105	157	256	383	38	38	495
3.....	128	93	81	70	70	140	103	213	288	81	36	1,080
4.....	108	119	77	91	65	128	105	206	260	96	34	658
5.....	113	81	68	100	59	125	105	206	240	68	31	1,920
6.....	110	68	81	81	54	116	122	210	196	59	52	890
7.....	108	59	79	74		137	86	181	174	50	125	402
8.....	128	52	74	84		244	81	147	171	44	65	288
9.....	137	63		84		188	79	322	154	68	68	206
10.....	96	42		81	50	105	72	520	140	575	61	147
11.....	98	26		74		122	59	1,110	103	1,180	374	110
12.....	88	48	70	74		113	54	3,620	100	636	113	119
13.....	84	59		77	57	154	59	4,500	98	288	63	119
14.....	86	52		81	55	147	46	1,710	70	199	63	81
15.....	86	65		77	59	134	48	110	68	91	70	174
16.....	88	59	72	79	48	113	48	480	63	88	55	2,240
17.....	77	54	65	84	57	91	50	356	57	72	42	860
18.....	74	54	77	65	48	88	48	2,420	55	91	36	365
19.....	77	72	59	79	68	91	50	5,890	48	84	28	233
20.....	81	74	63	86	88	65	96	1,640	50	96	105	174
21.....	70	68	63	84	100	81	7,500	2,510	52	100	110	154
22.....	55	72	84	81	77	74	6,980	3,950	52	128	70	122
23.....	20	63	100	68	86	61	9,320	1,670	46	128	110	93
24.....	24	74	79	79	96	65	8,150	770	39	88	330	98
25.....	33	79	72	61	108	74	2,510	1,670	41	68	339	74
26.....	52	81	70	63	74	63	1,110	5,770	42	61	330	61
27.....	72	81	86	84	52	63	740	1,300	42	48	280	65
28.....	72	63	113	61	55	81	575	2,080	42	48	2,420	74
29.....	68	77	134	74		125	460	8,930	44	42	712	630
30.....	54	86	164	55		174	411	2,900	39	39	288	192
31.....	54		154	79		167		1,210		41	520	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	140	20	84.4	5,190
November.....	119	26	66.2	3,940
December.....	164	59	82.9	5,100
January.....	167	55	82.4	5,070
February.....	108		64.9	3,600
March.....	244	61	114	7,010
April.....	9,320	46	1,310	78,100
May.....	8,930	110	1,850	113,000
June.....	614	39	126	7,470
July.....	1,170	36	153	9,380
August.....	2,420	28	226	13,900
September.....	2,240	61	416	24,700
The year.....	8,320	20	383	276,000

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LOCATION.—Chain gage in NW¼ sec. 22, T. 31 S., R. 21 E., half a mile above St. Louis-San Francisco Railroad bridge and 10 miles east of Parsons.

RECORDS AVAILABLE.—October 1921 to September 1933.

1921-33: Maximum, 48,100 second-feet Nov. 24, 1928 (gage height, 27.50 feet); minimum, 12 second-feet Sept. 20, 1931. Average, 12 years (1921-33), 2,180 second-feet. Bank-full stage, 24 feet.

REMARKS.—Records good except those estimated for ice periods, Dec. 9-22, Feb. 6-16, and those for March to May, July, and August, which are fair.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	225	38	69	146	108	88	198	677	1,990	23	42	729
2	198	41	65	146	86	82	213	625	1,130	27	32	783
3	141	41	58	130	75	72	198	504	783	24	30	4,350
4	116	38	66	114	77	77	213	416	551	23	28	2,190
5	106	36	68	101	75	86	3,880	395	416	22	25	963
6	95	40	72	88		725	3,450	338	338	23	24	2,970
7	90	85	62	86		1,090	980	338	285	35	22	1,390
8	86	71	58	101		2,260	552	302	240	49	20	625
9	85	65		101		1,200	405	254	185	55	20	395
10	88	54		82		725	278	225	172	43	20	254
11	82	48		75	75	445	213	2,680	148	42	45	198
12	78	43		75		330	186	10,800	139	1,260	459	148
13	75	39		78		295	128	18,600	118	895	338	126
14	69	40		71		244	146	13,400	99	459	160	319
15	66	38		75		228	126	3,450	93	240	95	254
16	66	35	60	75		228	138	1,650	88	185	64	139
17	54	31		75	198	198	126	953	74	130	52	1,780
18	49	43		80	213	198	116	1,610	65	101	61	1,130
19	48	55		128	213	177	100	6,250	62	108	65	504
20	53	61		106	198	154	126	6,750	54	102	72	285
21	50	55		102	163	141	14,200	2,470	50	90	72	198
22	45	53		459	136	128	16,000	3,210	45	65	160	135
23	43	57	625	376	121	118	9,460	4,450	44	66	212	116
24	45	61	2,470	185	121	107	9,220	2,540	42	88	285	139
25	88	59	1,190	437	111	100	8,740	1,320	41	97	551	141
26	139	58	376	225	82	86	3,450	3,700	45	83	481	104
27	77	54	172	148	77	82	1,710	7,080	42	64	356	85
28	59	57	160	106	86	91	1,190	2,970	37	50	338	74
29	48	58	160	99		114	839	6,250	34	49	4,650	895
30	30	66	116	88		128	677	9,940	33	45	2,470	504
31	26		133	85		124		4,650		45	839	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	225	26	81.3	5,000
November.....	85	31	50.7	3,010
December.....	2,470	-----	218	13,500
January.....	459	71	137	8,420
February.....	213	-----	106	5,880
March.....	2,260	72	326	20,100
April.....	16,000	100	2,580	153,000
May.....	18,600	225	3,830	235,000
June.....	1,990	33	248	14,800
July.....	1,260	22	148	9,100
August.....	4,650	20	390	24,000
September.....	4,350	74	730	43,500
The year.....	18,600	20	740	535,600

NEOSHO RIVER NEAR GROVE, OKLA.

LOCATION.—Chain gage in SE¼ sec. 27, T. 25 N., R. 23 E., 3 miles below Spring Branch and 3½ miles northwest of Grove.

DRAINAGE AREA.—7,100 square miles.

RECORDS AVAILABLE.—February 1925 to December 1932 (discontinued).

DISCHARGE.—Maximum during period, 76,300 second-feet Dec. 25 (gage height, 23.2 feet); minimum, 345 second-feet Oct. 22 (gage height, 0.24 foot).

1925-32: Maximum, 133,000 second-feet Apr. 15, 1927 (gage height, 34.6 feet); minimum, 250 second-feet September 1925.

REMARKS.—Records good. Regulation at low stages by power plants upstream.

Discharge, in second-feet, 1932

Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.
1.....	420	568	448	11.....	395	635	448	21.....	370	448	568
2.....	448	568	448	12.....	395	600	420	22.....	345	420	448
3.....	448	505	505	13.....	395	505	420	23.....	370	420	2, 110
4.....	535	635	448	14.....	370	505	420	24.....	370	448	47, 200
5.....	475	740	475	15.....	395	448	475	25.....	600	475	69, 200
6.....	420	635	448	16.....	370	420	568	26.....	1, 320	448	33, 900
7.....	448	705	420	17.....	370	420	535	27.....	1, 130	475	16, 700
8.....	370	740	448	18.....	370	420	568	28.....	1, 220	475	8, 130
9.....	395	635	448	19.....	370	420	600	29.....	1, 040	475	5, 660
10.....	395	705	420	20.....	370	420	600	30.....	1, 000	448	5, 130
								31.....	920		5, 130

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	1, 320	345	543	33, 400
November.....	740	420	525	31, 200
December.....	69, 200	420	6, 570	404, 000
The period.....				469, 000

COTTONWOOD RIVER AT COTTONWOOD FALLS, KANS.

LOCATION.—Chain gage in NW¼ sec. 28, T. 19 S., R. 8 E., at Atchison, Topeka & Santa Fe Railway bridge at Cottonwood Falls.

DRAINAGE AREA.—1,390 square miles.

RECORDS AVAILABLE.—April 1932 to September 1933.

DISCHARGE.—Maximum during year ending Sept. 30, 1933, 5,300 second-feet May 19 (gage height, 10.99 feet); minimum, 4 second-feet Aug. 21 (gage height, 2.16 feet).

1932-33: Maximum, 11,800 second-feet July 6, 1932 (gage height, 20.92 feet); minimum, 4 second-feet Aug. 21, 1933 (gage height, 2.16 feet).

REMARKS.—Records fair. Discharge estimated for ice period Feb. 9-15.

Discharge, in second-feet, 1932-33

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1932							1932						
1.....		151	141	318	216	121	16.....	185	129	106	440	146	74
2.....		154	126	249	216	154	17.....	185	131	97	396	136	70
3.....		185	129	232	216	170	18.....	170	121	81	356	121	70
4.....		318	159	4, 080	216	141	19.....	197	121	1, 070	356	117	65
5.....		283	200	10, 300	216	115	20.....	200	115	4, 080	336	117	62
6.....		216	170	11, 800	185	106	21.....	200	110	2, 140	318	104	68
7.....		336	151	11, 700	200	91	22.....	200	108	805	300	101	74
8.....	170	606	162	11, 200	185	83	23.....	200	104	336	300	95	124
9.....	165	705	185	3, 580	170	85	24.....	216	106	283	318	99	440
10.....	162	300	126	1, 290	170	81	25.....	200	101	805	300	93	170
11.....	162	200	165	755	154	77	26.....	185	216	857	462	97	129
12.....	165	170	136	655	146	81	27.....	170	216	1, 740	909	91	119
13.....	167	151	126	582	141	75	28.....	167	185	2, 200	440	87	108
14.....	170	146	119	534	300	79	29.....	159	185	582	283	81	108
15.....	170	126	117	462	185	77	30.....	162	156	336	266	72	93
							31.....		162		232	121	

Discharge, in second-feet, of Cottonwood River at Cottonwood Falls, Kans., 1932-33—
Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932-33												
1-----	75	48	70	79	60	25	57	70	66	188	8	50
2-----	74	63	70	75	62	37	47	77	73	206	10	824
3-----	70	60	68	70	62	45	47	60	42	188	13	300
4-----	62	60	70	68	60	42	45	59	45	185	9	75
5-----	67	62	68	70	62	54	44	116	42	206	8	47
6-----	68	60	67	68	57	54	45	139	42	188	6	47
7-----	65	60	74	60	57	77	45	496	40	185	5	41
8-----	51	58	70	77	54	88	41	206	30	206	5	29
9-----	48	63	68	74		81	42	128	33	52	5	29
10-----	65	63	72	67		62	41	94	28	36	6	18
11-----	57	65	63	70		57	40	83	20	21	9	12
12-----	68	67	67	70	45	57	40	73	17	16	8	10
13-----	52	63	63	70		55	41	68	17	15	5	1,310
14-----	57	60	63	67		54	31	62	25	14	5	178
15-----	63	60	70	67		48	29	66	25	14	50	70
16-----	57	67	70	74	41	47	36	59	19	25	22	57
17-----	58	75	65	67	54	45	31	59	14	16	15	44
18-----	54	74	65	70	45	37	26	50	11	20	5	38
19-----	58	74	63	70	45	37	38	4,730	13	24	5	28
20-----	60	74	63	68	47	33	593	3,580	13	28	6	20
21-----	52	74	65	70	44	33	1,750	382	10	32	4	15
22-----	56	81	77	67	45	30	1,750	206	13	32	5	15
23-----	52	83	83	68	47	36	668	223	12	29	5	12
24-----	51	72	110	63	44	37	223	139	9	23	5	10
25-----	50	74	126	67	42	50	142	131	11	17	79	9
26-----	54	70	106	72	45	88	123	134	10	15	90	10
27-----	58	68	104	63	37	101	101	103	12	12	60	8
28-----	60	70	92	62	36	79	90	131	13	13	88	33
29-----	56	67	91	54		68	83	96	11	12	320	50
30-----	58	70	85	60		57	70	103	10	12	134	47
31-----	48		79	57		59		90		9	77	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1932				
April 8-30-----	216	159	179	8,190
May-----	705	101	204	12,500
June-----	4,080	81	591	35,200
July-----	11,800	232	2,060	126,000
August-----	300	72	148	9,110
September-----	440	62	110	6,570
The period-----				200,000
1932-33				
October-----	75	48	58.8	3,620
November-----	83	48	66.8	3,980
December-----	126	63	76.4	4,690
January-----	79	54	68.2	4,190
February-----	62		48.6	2,700
March-----	101	25	54.0	3,320
April-----	1,750	26	212	12,600
May-----	4,730	50	388	23,800
June-----	73	9	24.2	1,440
July-----	206	9	65.8	4,040
August-----	320	4	34.6	2,130
September-----	1,310	8	115	6,820
The year-----	4,730	4	101	73,300

SPRING RIVER NEAR WACO, MO.

LOCATION.—Chain gage on line between SE¼ sec. 7 and NE¼ sec. 18, T. 29 N., R. 33 W., at highway bridge 1½ miles east of Waco. Zero of gage is 835.25 feet above mean sea level.

DRAINAGE AREA.—1,160 square miles.

RECORDS AVAILABLE.—April 1924 to September 1933.

DISCHARGE.—Maximum during year, 15,100 second-feet Dec. 25 (gage height, 17.84 feet); minimum, 30 second-feet Oct. 11 (gage height, 1.04 feet).

1924-33: Maximum, 57,400 second-feet Aug. 17, 1927 (gage height, 28.6 feet); minimum, 22 second-feet Sept. 8, 1925 (gage height, 0.90 foot).

REMARKS.—Records good except those for discharges below 150 second-feet, being affected by regulation from operation of gristmill, and those corrected for ice effect, Dec. 13-18, Feb. 8-13, which are fair.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	65	123	84	780	727	219	192	627	950	192	136	144
2.....	47	117	87	727	780	206	180	539	727	192	114	278
3.....	65	86	92	676	627	206	192	519	676	167	3,770	890
4.....	96	90	66	627	539	192	167	499	581	180	1,520	1,130
5.....	78	106	72	627	479	192	1,520	539	539	140	727	401
6.....	69	82	112	539	479	328	3,320	539	539	167	345	248
7.....	51	75	74	479	420	1,310	2,100	519	499	156	248	206
8.....	74	110	86	459	350	1,870	950	519	459	156	206	180
9.....	72	89	78	459	300	1,190	627	440	420	727	192	167
10.....	61	102	78	420	250	627	539	420	382	1,010	206	119
11.....	53	87	75	382	250	499	440	2,820	382	459	192	117
12.....	74	82	62	364	300	459	401	1,310	304	248	167	142
13.....	69	101	50	345	300	440	382	6,750	364	206	144	134
14.....	68	72	50	328	328	401	539	12,200	345	180	140	156
15.....	75	101	50	328	345	364	627	12,100	328	180	129	110
16.....	61	117	50	328	310	328	1,380	10,100	310	167	129	131
17.....	56	89	50	294	310	294	2,740	4,400	294	140	131	129
18.....	89	87	50	263	310	294	1,520	2,100	278	156	129	97
19.....	62	92	58	1,730	310	294	1,130	1,450	278	156	129	119
20.....	57	82	65	1,450	310	294	4,400	1,250	248	156	125	115
21.....	56	56	84	1,450	278	278	4,220	1,070	248	142	125	112
22.....	74	76	82	4,850	263	263	3,410	1,010	219	131	294	101
23.....	48	84	950	3,230	248	248	1,800	950	248	156	180	89
24.....	41	84	10,400	1,310	263	219	1,310	1,190	219	127	156	62
25.....	80	65	14,800	2,020	248	192	1,130	1,190	234	167	136	86
26.....	151	129	5,550	1,940	248	206	1,010	2,180	248	192	125	142
27.....	263	123	2,580	1,250	263	206	890	1,520	234	167	104	127
28.....	197	75	1,310	890	234	206	780	1,380	219	140	156	117
29.....	158	112	1,070	727	-----	192	727	5,450	219	131	180	263
30.....	138	92	950	727	-----	192	676	3,230	206	121	248	328
31.....	75	-----	890	627	-----	180	-----	1,940	-----	121	167	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October.....	263	41	84.6	0.073	0.08	5,200
November.....	129	56	92.9	.080	.09	5,530
December.....	14,800	50	1,290	1.11	1.28	79,300
January.....	4,850	263	988	.852	.98	60,800
February.....	780	234	360	.310	.32	20,000
March.....	1,870	180	400	.345	.40	24,600
April.....	4,400	167	1,310	1.13	1.26	78,000
May.....	12,200	420	2,600	2.24	2.58	160,000
June.....	950	206	375	.323	.36	22,300
July.....	1,010	121	217	.187	.22	13,300
August.....	3,770	104	347	.299	.34	21,300
September.....	1,130	62	215	.185	.21	12,800
The year.....	14,800	41	695	.599	8.12	503,000

TURKEY CREEK AT JOPLIN, MO.

LOCATION.—Water-stage recorder in NW¼ NW¼ sec. 34, T. 28 N., R. 33 W., 80 feet below bridge on Lone Elm Road, a quarter of a mile below Joplin Creek, and about 1 mile northwest of Joplin.

DRAINAGE AREA.—33 square miles.

RECORDS AVAILABLE.—July 1932 to September 1933.

DISCHARGE.—Maximum during year, 1,150 second-feet Apr. 20 (gage height, 7.57 feet); minimum, 1.9 second-feet Oct. 1; minimum gage height, 0.34 foot July 30, Sept. 1.

1932-33: Maximum, that of Apr. 20, 1933; minimum, that of Oct. 1, 1932; minimum gage height, that of July 30, Sept. 1, 1933.

REMARKS.—Records fair except those estimated, Nov. 6-28, Sept. 30, and those corrected for ice effect, Feb. 7-11, which are poor. Considerable diversion around gage by Joplin storm sewers.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	2.0	4.9	2.5	18	21	8	6	21	20	3.7	4.5	59
2.....	2.1	5	2.6	16	16	8	6	20	18	3.6	3.6	122
3.....	2.1	5	2.6	16	16	8	8	18	16	3.6	178	52
4.....	2.2	6	2.6	14	15	8	9	23	15	3.6	13	24
5.....	2.1	4.5	2.6	13	14	14	76	20	13	3.7	9	14
6.....	2.1	3.0	2.6	12	13	22	26	16	11	3.6	8	9
7.....	2.1	3.0	2.6	11	10	25	20	17	10	3.2	6	7
8.....	2.2	3.0	2.5	10	8	20	18	15	10	29	6	5
9.....	2.1	3.0	2.5	10	7	16	15	14	9	20	6	5
10.....	2.4	3.0	2.5	10	8	14	14	13	10	5	10	4.4
11.....	2.3	3.0	2.6	10	8	14	13	21	9	4.2	7	4.5
12.....	2.1	3.0	2.6	10	9	13	12	14	8	4.0	6	4.2
13.....	2.0	3.0	2.6	10	10	12	12	270	8	3.7	4.8	7
14.....	2.1	3.0	2.5	9	10	12	13	54	8	3.6	4.4	4.8
15.....	2.1	3.0	2.5	9	9	11	26	332	7	3.8	4.1	4.2
16.....	2.1	3.0	2.5	9	9	10	18	64	7	3.3	3.8	4.0
17.....	2.2	3.0	2.4	9	12	10	15	44	7	3.3	3.5	3.6
18.....	2.2	3.0	2.6	82	11	11	14	36	6	5	4.0	3.3
19.....	2.2	3.0	2.8	30	10	9	115	28	6	4.1	3.5	3.2
20.....	2.1	3.0	3.2	26	10	9	453	24	6	3.6	5	3.0
21.....	2.2	3.0	3.4	69	9	8	185	22	5	3.3	6	2.8
22.....	2.2	3.0	15	62	9	8	70	21	5	3.0	25	2.6
23.....	2.2	3.0	325	32	8	8	52	20	4.5	2.9	6	2.6
24.....	33	3.0	582	50	9	8	46	127	4.8	5	3.8	2.5
25.....	72	3.0	79	42	10	8	38	47	7	3.2	3.5	2.6
26.....	6	3.0	46	32	9	7	34	32	14	3.1	4.4	33
27.....	4.0	3.0	38	26	9	7	30	24	4.8	2.7	5	11
28.....	3.6	3.0	30	24	8	7	26	74	4.5	2.7	8	6
29.....	3.9	2.6	26	22	-----	7	26	37	4.0	2.7	4.6	4.8
30.....	4.5	2.6	22	20	-----	7	22	24	3.7	2.6	3.5	4.0
31.....	4.7	-----	21	24	-----	7	-----	21	-----	10	3.1	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	72	2.0	5.84	359
November.....	6	2.6	3.32	188
December.....	582	2.4	40.0	2,460
January.....	82	9	23.8	1,460
February.....	21	7	10.6	589
March.....	25	7	10.8	664
April.....	453	6	47.3	2,810
May.....	332	13	48.8	3,000
June.....	20	3.7	8.71	518
July.....	29	2.6	5.12	315
August.....	178	3.1	11.7	719
September.....	122	2.5	13.8	821
The year.....	582	2.0	19.2	13,900

SHOAL CREEK NEAR JOPLIN, MO.

LOCATION.—Indicating float gage in S½ sec. 28, T. 27 N., R. 33 W., at Grand Falls hydroelectric plant of Empire District Electric Co., 4 miles south of Joplin.

DRAINAGE AREA.—458 square miles.

RECORDS AVAILABLE.—April 1924 to September 1933.

DISCHARGE.—Maximum during year, 11,900 second-feet May 14 (gage height, 13.0 feet); minimum, 9.9 second-feet Nov. 30.

1924-33: Maximum, about 17,200 second-feet June 27, 1932; minimum, 8 second-feet Oct. 9, 1931, while power plant was shut down.

REMARKS.—Records good. Flow regulated by Grand Falls hydroelectric plant.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	65	122	67	590	345	171	162	537	665	284	178	231
2.....	64	105	93	547	333	183	161	494	593	231	162	348
3.....	87	105	72	520	309	200	158	449	570	206	1,180	383
4.....	79	87	52	474	283	157	152	478	556	178	831	389
5.....	78	99	69	449	275	191	228	457	540	251	344	331
6.....	82	84	89	398	260	217	388	437	506	198	286	248
7.....	62	123	50	387	284	283	366	421	507	200	228	239
8.....	63	86	88	372	241	304	354	417	434	174	206	218
9.....	62	84	68	335	217	310	366	357	463	367	189	211
10.....	96	86	86	336	250	296	322	272	436	255	208	232
11.....	83	124	63	299	238	292	305	372	424	244	215	197
12.....	71	84	81	294	219	264	229	370	415	206	192	202
13.....	65	89	68	304	185	287	262	5,650	343	227	182	224
14.....	62	80	87	292	244	241	225	8,570	322	171	250	218
15.....	66	86	68	274	170	272	299	4,890	368	261	178	188
16.....	62	88	90	261	244	256	571	4,200	321	229	163	177
17.....	64	105	68	232	202	222	1,090	1,910	300	224	179	174
18.....	64	74	87	297	168	224	844	1,510	331	188	184	159
19.....	63	84	68	330	224	222	737	1,270	273	255	177	155
20.....	64	84	86	334	155	213	3,430	1,120	292	200	177	154
21.....	50	84	85	298	205	190	1,460	1,060	290	188	516	182
22.....	67	81	87	373	178	206	1,220	949	295	195	490	139
23.....	66	84	706	408	170	169	1,010	862	251	165	280	157
24.....	57	118	5,940	379	156	203	895	947	262	193	200	133
25.....	153	73	4,950	430	192	189	796	840	274	267	257	149
26.....	340	92	1,430	450	171	144	737	919	253	230	257	190
27.....	221	86	1,120	438	183	177	669	821	288	199	215	597
28.....	152	72	948	420	203	157	638	889	228	173	190	568
29.....	124	89	831	396	-----	194	590	1,060	229	161	383	353
30.....	105	86	712	343	-----	182	553	808	236	174	272	355
31.....	125	-----	659	340	-----	179	-----	721	-----	178	222	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October.....	340	50	92.3	0.202	0.23	5,680
November.....	124	72	91.5	.200	.22	54,400
December.....	5,940	50	612	1.34	1.54	37,600
January.....	590	232	374	.817	.94	23,000
February.....	345	155	225	.491	.51	12,500
March.....	310	144	219	.478	.55	13,500
April.....	3,430	152	641	1.40	1.56	38,100
May.....	8,570	272	1,420	3.10	3.57	87,300
June.....	665	228	376	.821	.92	22,400
July.....	367	161	215	.469	.54	13,200
August.....	1,180	162	290	.633	.73	17,800
September.....	597	133	250	.546	.61	14,900
The year.....	8,570	50	403	.880	11.92	291,000

CANADIAN RIVER NEAR BELL RANCH, N.MEX.

LOCATION.—Water-stage recorder in Pablo Montoya grant, 9 miles southwest of Bell ranch and 1 mile above mouth of Perra Creek.

DRAINAGE AREA.—6,400 square miles.

RECORDS AVAILABLE.—October 1930 to September 1933. Records 1915-17, 1927-30 published by State engineer.

DISCHARGE.—Maximum during year, about 17,500 second-feet Aug. 4 (gage height, 7.95 feet); no flow during several periods.

1930-33: Maximum, about 19,600 second-feet Oct. 1, 5, 1930 (gage height, 8.30 feet); no flow during several periods.

REMARKS.—Records fair except those estimated, which are poor. Stage-discharge relation affected by ice Dec. 9, 11, 14-29, Jan. 1, 4, Feb. 2-12, 14-21. Diversions for irrigation above station.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	132	58	28	° 32	39	63		° 1	111	140	° 20	2, 280
2-----	132	51	28	35		59		1	22	103	° 350	445
3-----	127	48	30	45		52		1	42	81	462	254
4-----	124	46	27	° 40	° 35	51		1	52	83	6, 740	182
5-----	117	46	25	30		49		1	42	98	1, 210	176
6-----	° 90	46	24	32		46	° 1	1	26	68	910	124
7-----	68	46	26	39		43		2	17	296	433	98
8-----	66	49	22	33		36		2	10	176	254	° 80
9-----	64	49	° 22	35		32		° 1	° 5	98	° 160	° 70
10-----	58	42	22	42	° 20	28		° 0	° 0	64	° 180	° 160
11-----	56	41	° 21	48		27		0	° 0	52	536	122
12-----	51	39	20	34	° 25	26				41	543	220
13-----	49	38	14	23	72					36	° 250	377
14-----	43	38		22		° 20				92	° 150	152
15-----	43	35		28					° 600	61	° 100	292
16-----	43	34	° 10	28			° 0	° 0		880	° 100	536
17-----	45	36		39	° 70	° 10				1, 400	° 500	399
18-----	42	38		49		9			480	2, 980	710	246
19-----	36	38		54		8			362	710	451	149
20-----	35	38		42					305	314	227	103
21-----	43	36		52		7		0	718	173	210	° 90
22-----	68	35		41	59	6			595	117	146	° 70
23-----	64	32		39	56	5	0		616	120	° 90	° 55
24-----	70	33		41	58	5	° 0		451	117	° 70	° 40
25-----	76	34	° 15	45	70	4			1, 120	143	° 80	26
26-----	85	32		45	70	3		° 0	883	100	° 230	
27-----	76	30		51	72	3			609	77	1, 400	
28-----	66	31		42	74	2	° 1		427	77	1, 410	° 25
29-----	61	30	° 35	51		2			266	° 60	3, 400	
30-----	58	30	38	49		2			196	41	1, 690	
31-----	59		30	42		° 1		3		° 30	959	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October-----	132	35	69.3	4, 260
November-----	58	30	39.3	2, 340
December-----	38		19.4	1, 190
January-----	54	22	39.6	2, 440
February-----			51.1	2, 840
March-----	63	1	21.3	1, 310
April-----		0	.5	30
May-----		0	.5	28
June-----	1, 120	0	365	21, 700
July-----	2, 980	30	285	17, 500
August-----	6, 740	20	773	47, 500
September-----	2, 280		229	13, 690
The year-----	6, 740	0	159	115, 000

° Estimated.

CANADIAN RIVER AT LOGAN, N.MEX.

LOCATION.—Water-stage recorder in sec. 15, T. 13 N., R. 33 E., 1 mile south of Logan, three-quarters of a mile above Southern Pacific Railroad bridge, 5 miles below Ute Creek, and 5 miles above Tucumcari Creek.

DRAINAGE AREA.—11,200 square miles.

RECORDS AVAILABLE.—June 1904 to February 1905; December 1908 to May 1914; October 1930 to September 1933. Records for 1922-30 published by State engineer.

DISCHARGE.—Maximum discharge and stage during year not determined; no flow during several periods.

1930-33: Maximum, about 102,000 second-feet Oct. 11, 1930 (gage height, 19.00 feet); no flow during several periods.

REMARKS.—Records fair except those estimated, which are poor. Stage-discharge relation affected by ice Feb. 7-15. Diversions for irrigation above station.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	June	July	Aug.	Sept.
1.....	438	44	20	40	23	54	0	13	} 2,500	}
2.....	240	41	19	44	23	60	0	8		
3.....	204	40	18	47	18	56	0	924	} 500	}
4.....	161	36	16	50	18	50	0	0		
5.....	139	34	15	36	24	42	0	0	} 5,000	}
6.....	119	32	14	31	25	36	0	150		
7.....	107	30	14	26	33	0	0	0	} 800	}
8.....	85	27	10	27	32	0	0	0		
9.....	66	27	9	26	28	0	0	0	} 300	}
10.....	54	32	9	25	24	0	0	0		
11.....	46	34	9	22	30	21	0	75	309	} 200
12.....	42	33	9	20	20	15	0	54	250	
13.....	41	35	8	22	9	4	0	34	400	} 500
14.....	56	35	8	18	2	2	0	18	524	
15.....	44	32	8	20	4	4	0	18	343	329
16.....	41	28	8	23	34	1	0	97	285	219
17.....	30	28	8	26	64	0	0	0	303	484
18.....	22	26	8	24	72	0	1,000	3,000	585	585
19.....	18	25	8	22	54	0	0	1,000	800	350
20.....	17	25	8	19	44	0	0	0	800	219
21.....	18	24	8	21	36	0	0	300	250	147
22.....	75	24	9	15	34	0	0	0	132	} 70
23.....	72	22	8	22	32	0	0	279	104	
24.....	60	22	9	28	26	0	549	224	86	} 200
25.....	54	23	9	23	24	0	468	92	0	
26.....	48	22	9	33	22	0	1,500	70	0	} 40
27.....	44	22	9	27	27	0	800	58	0	
28.....	40	22	14	25	32	0	0	72	0	} 3,000
29.....	38	22	36	22	0	0	400	48	0	
30.....	44	22	41	23	0	0	0	32	0	} 40
31.....	46	0	38	24	0	0	0	20	0	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	438	17	80.9	4,980
November.....	44	22	29.0	1,720
December.....	41	8	13.4	825
January.....	50	15	26.8	1,650
February.....	72	18	32.2	1,790
March.....	60	0	15.1	926
June.....	0	0	531	31,600
July.....	0	18	342	21,000
August.....	0	8	1,100	67,900
September.....	0	0	377	22,400
The year.....	0	0	214	155,000

* Estimated.

NOTE.—No flow during months omitted.

VERMEJO RIVER NEAR DAWSON, N.MEX.

LOCATION.—Water-stage recorder in Maxwell grant, about T. 28 N., R. 20 E., 2¼ miles north of Dawson, Colfax County.

DRAINAGE AREA.—250 square miles.

RECORDS AVAILABLE.—October 1930 to September 1933. Records for 1915–23, 1927–30 published by State engineer.

DISCHARGE.—Maximum during year, 752 second-feet July 21 (gage height, 5.05 feet); no flow Dec. 28 to Jan. 8.

1930–33: Maximum, about 2,400 second-feet July 10, 1932 (gage height, 6.42 feet); no flow during several periods.

REMARKS.—Records fair except those estimated, which are poor. Diversions for irrigation above station. Stage-discharge relation affected by ice Feb. 6–10.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8	6	5	0	3	12	4		38	23	° 6	° 10
2	8	6	3	0	3	° 12	4		36	21		
3	7	6	4	0	° 4	° 13	4	° 10	58	20	° 20	
4	8	6	2	0	4	13	4		54	33		
5	10	5	2	0	3	7	4		46	45	28	
6		9	4	2	0	7	4	16	40	44	22	° 5
7		9	4	2	0	8	4		32	48	16	
8		7	3	° 2	° 3	3	3		27	32	47	
9		6	4	1		° 8	3		20	65	11	
10		6	4	2				° 30	16	45	35	
11		6	3	1	2	3	8			38	13	
12		6	3	1	3	3	9	° 4		28	10	
13		6	2	2	3	5	10		24	° 10	21	° 15
14		6	5	2	2	5	7			16	8	
15		6	4	° 3	2	6		4		20	8	
16		5	3		2	° 6		3	° 35	° 30	90	11
17		5	4	3	3	° 7				54	60	10
18		5	7	3	3	7				53	32	17
19		5	7	3	3	5	° 7	° 5		51	19	11
20		5	6	4	3	5		48	60	17		6
21		5	5	4	2	5			97	85		6
22		5	4	4	2	10	7	° 55	84	84	° 10	4
23			6	2	3	10	7		61	64	27	4
24			3	2	3	° 12	7		60	60	19	3
25		° 6	° 3	2	3	13	7		54	52	19	3
26			° 3	1	3	12	5		44	44	12	2
27			3	1	3	12	5	° 8	38	36	10	° 20
28			3	0	3	11	5		36	34	9	2
29		6	3	° 0	3			8	35	29	8	2
30		6	7		3		° 5	° 7	33	27	° 7	° 50
31		5	0	3					34			1

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	10		6.3	389
November	7	2	4.4	262
December	5	0	2.2	135
January	3	0	1.9	119
February	13		6.0	335
March	13		7.6	470
April			5.1	303
May			33.3	2,050
June	97		39.7	2,360
July	90		32.4	1,990
August			18.8	1,160
September		1	7.0	419
The year	97	0	13.8	9,990

° Estimated.

CIMARRON RIVER AT UTE PARK, N.MEX.

LOCATION.—Water-stage recorder in Maxwell grant, about 1 mile east of post office at Ute Park, Colfax County, and half a mile below mouth of Ute Creek.

DRAINAGE AREA.—235 square miles.

RECORDS AVAILABLE.—July 1907 to December 1914; October 1930 to September 1933. Records for 1915-30 published by State engineer.

DISCHARGE.—Maximum during year, 144 second-feet June 12 (gage height, 2.72 feet); minimum, 2.8 second-feet Sept. 26.

1930-33: Maximum, that of June 12, 1933; minimum, 2.5 second-feet Jan. 31 to Feb. 5, 1931.

REMARKS.—Records good except those estimated, which are poor. Flow regulated by storage in Eagle Nest Reservoir. Diversions for irrigation above station. Stage-discharge relation affected by ice Dec. 7 to Jan. 16, Jan. 19 to Feb. 22.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.8	5.2	8.4			5.0	17	39	92	24	84	7.3
2	7.3	4.6	5.9			5.2	20	40	97	49	88	5.9
3	7.0	4.8	4.6			5.6	20	39	102	39	91	5.2
4	6.7	4.8	4.8			5.6	19	36	129	60	71	4.3
5	6.7	5.0	4.6			7.0	19	16	132	65	23	4.1
6	6.7	9.5	4.6			8.1	19	16	136	65	33	3.7
7	6.4	13				6.4	20	15	134	61	65	5.6
8	6.4	14				6.4	20	16	119	21	73	9.1
9	5.9	12				6.2	23	17	138	42	73	9.8
10	5.6	12				6.2	29	16	139	54	69	9.8
11	5.4	17				6.4	31	16	138	58	61	7.8
12	5.9	20				6.7	36	16	139	64	46	8.1
13	7.6	20				7.3	37	17	110	69	51	9.5
14	7.0	20				7.8	42	16	41	67	70	9.8
15	6.7	21				7.8	38	15	29	48	71	8.1
16	7.0	20				7.6	38	15	28	32	73	7.8
17	7.6	20				7.6	36	15	26	23	67	7.3
18	7.3	20			5.0	7.6	36	16	26	62	65	7.3
19	8.1	8.8			5.9	7.6	37	18	28	61	46	7.3
20	8.1	7.0				7.6	39	19	27		47	7.0
21	8.4	6.7				7.3	40	20	27		66	7.0
22	9.1	7.6				7.6	40	21			65	6.7
23	8.8	9.1				6.7	40	22			65	7.3
24	8.8	8.4				4.1	8.8	23			66	5.2
25	8.4	8.1				4.6	9.8	40			56	4.3
26	8.1	9.8				4.3	11	40	43	31	53	4.1
27	7.8	8.4				4.8	11	39	46	31	54	5.4
28	7.3	8.4				5.0	12	39	65	28	54	6.7
29	7.0	8.4					13	39	67	40	37	11
30	5.9	8.4					16	39	73	46	40	10
31	5.9						17		85		70	10

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	9.1	5.4	7.18	442
November	21	4.6	11.4	678
December			4.29	264
January			5.03	309
February			4.91	273
March	17	5.0	8.25	508
April	42	17	32.5	1,930
May	85	15	29.1	1,790
June	139		71.1	4,230
July	70	21	51.7	3,180
August	91	10	54.4	3,350
September	9.8	3.7	6.84	407
The year	139		24.0	17,400

* Estimated.

CIMARRON RIVER AT SPRINGER, N. MEX.

LOCATION.—Water-stage recorder in sec. 33, T. 25 N., R. 22 E., at highway bridge one-eighth mile west of Springer, 6 miles below mouth of Rayado River, and 6 miles above confluence with Canadian River.

RECORDS AVAILABLE.—July 1907 to December 1909; October 1930 to September 1933. Records for 1919-30 published by State engineer.

DISCHARGE.—Maximum during year, about 1,130 second-feet June 14 (gage height, 4.02 feet); minimum, 0.1 second-foot Apr. 11.

1930-33: Maximum, about 1,130 second-feet Oct. 11, 1930, and June 14, 1933; maximum gage height, 4.02 feet June 14, 1933; minimum, that of Apr. 11, 1933.

REMARKS.—Records fair except those estimated, which are poor. Diversions for irrigation above station. Stage-discharge relation affected by ice Jan. 12-16, 19-24, 27, 28, Feb. 1, 3-5, 7-10, 12-17, 19-23.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.6	2.6	2.6	6.5	*9	3.6	3.1	2.2	15	2.6	3.1	
2	1.6	2.6	2.4	6.5	7.5	3.6	2.6	2.2	2.2	3.1		
3	1.3	2.6	2.6	7.0		3.6	2.4	2.2	1.1	4.1		
4	1.8	2.6	2.6	8.3	*7	3.6	2.2	6.0	.7	4.6		
5	2.0	2.6	3.1	14		4.1	2.0	7.5	1.6	6.5	*20	
6	1.8	3.1	2.6	12	6.5	4.1		6.5	2.2	7.0		
7	1.8	3.1	3.1	8.3		3.6	*2	5.5	1.8	8.3	6.0	*20
8	1.6	3.1	3.6	9.1		3.1	1.8	3.6	1.6	8.3	30	
9	2.0	3.1	4.6	11	*5	2.6	2.2	2.6	1.6	6.0	8.3	
10	2.2	3.1	2.4	4.6		2.4	1.8	3.6	1.3	4.6	7.0	
11	2.2	3.1	4.1	2.6	3.6	2.4	.5	4.6	2.2	4.1	4.6	
12	2.6	3.1	3.1			2.4	1.6	3.1	83	6.0	4.1	
13	2.6	3.1	3.1			2.4	1.6	3.6	57		*4	14
14	2.4	2.6	4.6			2.4	3.6	5.5	268		3.1	148
15	2.0	2.4	6.0	*3	*7	2.6	3.1	6.0	18		5.0	18
16	1.6	2.6	11			2.6	2.2	4.6	30	*125		9.9
17	2.2	2.6	11	4.1		2.6	2.0	4.6	7.5			6.5
18	2.4	2.6	11	3.6	9.9	2.0	1.8	3.1	6.0	30		5.5
19	2.2	3.1	9.9			2.0	1.6	3.1	5.0	9.9		4.6
20	2.2	3.1	9.9			4.1	1.3	3.1	6.0	5.5		4.6
21	2.4	2.6	8.3	*5	*8	2.6	1.3	2.6	7.0	4.6		4.1
22	3.6	3.1	6.5			3.1	1.3	5.0	9.9	8.3		4.6
23	2.4	3.6	5.5			2.0	*2	3.1	7.5	6.5		4.6
24	2.2	3.1	5.5		6.5	3.1	2.6	2.4	6.5		*15	4.6
25	2.2	3.1	8.3	6.5	5.0	3.1	3.1	2.2	11	*5		5.0
26	2.4	2.6	6.5	7.5	5.0	2.6	3.6	2.4	9.9	4.6		5.5
27	2.6	2.4	5.5		4.6	2.6	5.0	2.6	3.6	4.6		4.6
28	2.6	2.4	5.5	*8	4.1	2.2	3.1	2.0	3.1	4.1		4.1
29	2.4	2.4	5.5	8.3		2.6	2.6	2.0	3.1	3.6		6.0
30	2.4	2.4	6.0	8.3		2.6	2.4	1.8	2.6	2.0		5.0
31	2.6		6.5	9.9		3.1		1.8		1.8		

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3.6	1.3	2.19	135
November	3.6	2.4	2.82	168
December	11	2.4	5.58	343
January	14		6.42	395
February			6.60	366
March	4.1	2.0	2.88	177
April	5.0	.5	2.28	136
May	7.5	1.8	3.58	220
June	268	.7	19.2	1,140
July		1.8	17.9	1,100
August			13.4	824
September	148	4.1	16.6	990
The year	268	.5	8.29	5,990

* Estimated.

CIENEGUILLA CREEK NEAR THERMA, N.MEX.

LOCATION.—Water-stage recorder in Maxwell grant, 6 miles south of Therma, Colfax County, 2,000 feet above high-water line of Eagle Nest Reservoir, and half a mile below mouth of Schoolhouse Draw.

RECORDS AVAILABLE.—October 1930 to September 1933. Records for 1928–30 published by State engineer.

DISCHARGE.—Maximum during year not determined; minimum, 0.6 second-foot Sept. 7.

1930–33: Maximum, 147 second-feet Apr. 25, 1932; minimum not determined.

REMARKS.—Records poor. No discharge record Dec. 1–30, Jan. 1–4, 6–9, Jan. 11 to Mar. 20. Stage-discharge relation affected by ice Oct. 27, 28, Nov. 4, 6, 8–13, Nov. 15 to Apr. 6. Diversion for irrigation above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.5	3.2					15	3		1.9	0.8
2	2.2	3.1					17		7	2.0	.8
3	2.2	3.1					16	2.5		3.4	.8
4	2.7	2.8				6	100	3.0		4.7	.8
5	3.2	2.5		2.2			61	3.3	6.2	3.4	.8
6	3.0	2.8					44	4.9	6.2	2.9	.7
7	2.9	3.0				5.6	35	3.3	7.6	2.7	.6
8	2.8					6.4	38	1.8	8.2	2.5	.8
9	3.3					9.9	40	1.8	7.1	2.6	.9
10	3.1			2.4		6.4	36	1.4	14	2.5	1.2
11	3.0	3				3.8	30	1.6	8	2.4	1.2
12	3.4					8	22	2.3	2.4	2.2	1.2
13	3.6					4	17	12	2.4	2.0	1.8
14	3.8	2.9				1.4	36	12	2.0	1.9	1.6
15	3.8					5.1	38	15	1.9	2.4	1.4
16	3.8					7.6	24	19	2.3	2.3	1.2
17						6.4	14	18	4.6	1.9	1.2
18	2.5					6.4	9.4	24	2.2	1.7	1.2
19	1.5					5.2	9.4	45	1.8	1.5	1.3
20	1.1					4.3	8.7	36	2.2	1.4	1.3
21	1.4				13	8.7	8.9	42	2.2	1.4	1.2
22	3.7	3				6.9	8.5		2.5	1.3	1.3
23	3.8					5.4	7.6	30	2.1	1.2	1.2
24	3.5					4.2	7.8	19	2.5	1.6	1.2
25	4.2					4.2	7.3	15	2.7	1.2	1.2
26	4.9				10	3.4	6.1	12	2.0	1.0	1.2
27						2.4	8.5	11	2.0	.9	1.2
28	4					1.8	9.7	10	1.8	.9	1.2
29	3.0					3.2	8.7		1.8	.9	1.2
30	3.0		1			11	4.8	9	1.6	.9	1.2
31	3.0						3.7		1.8	.8	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	4.9	1.1	3.08	189
November			2.98	177
March 21–31			10.3	224
April	11	1.4	5.69	333
May	100	3.7	22.3	1,370
June	45	1.4	13.3	793
July	14	1.6	4.20	268
August	4.7	.8	1.95	120
September	1.8	.6	1.12	67

• Estimated.

SIXMILE CREEK NEAR THERMA, N.MEX.

LOCATION.—Water-stage recorder in Maxwell grant, at highway bridge 3 miles southwest of Therma, Colfax County, and a quarter of a mile above high-water line of Eagle Nest Reservoir.

RECORDS AVAILABLE.—October 1930 to September 1933. Records for 1928–30 published by State engineer.

DISCHARGE.—Maximum during year, 16 second-feet May 4 (gage height, 2.06 feet); no flow July 29.

1930–33: Maximum, that of May 4, 1933; maximum gage height, 2.06 feet Sept. 20, 1931, and May 4, 1933; no flow during several periods.

REMARKS.—Records fair except those estimated, which are poor. No record Dec. 6–29, Dec. 31 to Jan. 4, Jan. 6–9, Jan. 11 to Mar. 20. Stage-discharge relation affected by ice Nov. 8–20, 22–28, Dec. 1–3. Diversions for irrigation above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	0.9	1.9	* 2	-----	-----	2.5	3.8	2.9	0.5	1.2	1.2
2.....	.9	1.9		-----	-----	1.7	3.3	2.7	.4	1.0	1.2
3.....	1.0	1.9		-----	-----	1.3	3.3	2.4	.2	1.4	1.2
4.....	1.0	1.9		1.7	-----	1.3	10.	2.7	.1	2.4	1.4
5.....	1.2	2.2	1.3	1.0	-----	2.4	4.4	2.0	.3	1.4	1.2
6.....	1.3	2.0	-----	-----	-----	-----	4.1	.9	.4	1.4	1.0
7.....	1.3	2.0	-----	-----	-----	-----	4.1	.3	.4	1.2	1.2
8.....	1.3	* 2	-----	-----	-----	* 3	4.1	.3	.3	.2	.8
9.....	1.3		-----	-----	-----		3.8	.2	.2	.6	1.0
10.....	1.4		-----	2.5	-----		4.1	.1	.2	1.4	1.3
11.....	1.6		-----	-----	-----	-----	4.7	.1	.5	1.4	1.4
12.....	1.6	* 3	-----	-----	-----	3.1	-----	.1	.5	1.3	2.0
13.....	1.6		-----	-----	-----	5.0	-----	.3	.4	1.2	3.6
14.....	1.7		-----	-----	-----	6.1	* 4	.2	.3	1.3	3.6
15.....	1.7		-----	-----	-----	6.1		.4	.3	1.6	3.1
16.....	1.7	* 2	-----	-----	-----	4.4	2.9	.5	.3	1.4	2.5
17.....	1.7		-----	-----	-----	2.9	3.3	.8	.6	1.6	2.2
18.....	1.7		-----	-----	-----	2.7	3.3	1.2	.3	1.3	1.9
19.....	1.9		-----	-----	-----	2.5	4.1	2.2	.2	1.3	1.7
20.....	1.9	* 1.5	-----	-----	-----	2.7	4.1	2.7	.8	1.2	1.6
21.....	2.0		1.4	-----	4.1	2.5	3.6	2.5	1.2	1.0	1.7
22.....	2.0		-----	-----	3.6	2.7	3.1	2.4	.7	-----	1.2
23.....	2.0		-----	-----	3.8	2.0	3.1	2.0	.6	.8	1.3
24.....	2.2		-----	-----	3.3	2.0	3.1	2.2	.6	1.2	1.3
25.....	2.7		-----	-----	3.8	1.9	3.1	1.7	.5	-----	1.3
26.....	3.1	* 1.3	-----	-----	3.6	2.0	-----	.9	.5	* 1.3	1.3
27.....	2.9		-----	-----	4.4	2.2	-----	.9	.6		1.7
28.....	2.4		-----	-----	4.4	2.4	* 3	.9	.1		1.9
29.....	2.2		2.9	-----	5.4	2.5		.8	.1		1.9
30.....	2.0	2.7	1.0	-----	4.1	2.5		.6	.8	1.4	1.9
31.....	2.0	-----	-----	-----	5.0	-----	3.1	-----	1.0	1.2	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	3.1	0.9	1.75	108
November.....	-----	-----	2.01	120
March 21–31.....	5.4	3.3	4.14	90
April.....	6.1	1.3	2.85	169
May.....	10	-----	3.79	233
June.....	2.9	.1	1.26	75
July.....	1.2	.1	1.45	28
August.....	2.4	.2	1.25	77
September.....	3.6	.8	1.69	100

* Estimated.

MORENO CREEK AT THERMA, N.MEX.

LOCATION.—Water-stage recorder in Maxwell grant, at highway bridge 1,000 feet west of Therma, Colfax County, and half a mile above high-water line of Eagle Nest Reservoir.

RECORDS AVAILABLE.—October 1930 to September 1933. Records for 1928–30 published by State engineer.

DISCHARGE.—Maximum during year, 51 second-feet May 4 (gage height, 1.28 feet); minimum, 0.1 second-foot Sept. 5, 6, and 10.

1930–33: Maximum, 126 second-feet Mar. 4, 1932; maximum gage height, 1.72 feet Mar. 20, 1931; minimum, 0.1 second-foot Aug. 4, 1932, Sept. 5, 6, and 10, 1933.

REMARKS.—Records good. No record Dec. 6–19, 21–29, Dec. 31 to Jan. 4, Jan. 6–9, Jan. 11 to Mar. 20. Diversions for irrigation above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	1.6	3.2	3.2	-----	-----	7.1	3.9	2.4	2.4	0.9	0.6
2.....	1.4	3.4	2.2	-----	-----	6.8	3.6	2.2	1.9	1.6	.6
3.....	1.3	3.6	2.2	-----	-----	7.1	3.6	1.9	1.9	2.9	.5
4.....	1.1	3.4	2.2	-----	-----	7.1	15	1.4	2.2	3.9	.2
5.....	1.1	2.9	2.4	• 1.8	-----	7.5	8.8	1.6	2.2	2.9	.1
6.....	1.3	2.9	-----	-----	-----	7.1	7.5	2.2	1.9	1.9	.2
7.....	1.3	3.4	-----	-----	-----	6.8	6.1	2.4	2.2	1.4	.4
8.....	1.3	3.4	-----	-----	-----	7.1	6.4	2.4	1.9	1.3	.2
9.....	1.4	3.4	-----	-----	-----	7.1	5.7	2.2	1.6	1.1	.4
10.....	1.4	3.2	-----	.8	-----	7.1	4.3	1.9	4.6	1.6	.1
11.....	1.4	4.6	-----	-----	-----	6.4	4.6	1.6	3.9	1.3	.2
12.....	1.6	4.6	-----	-----	-----	6.4	3.6	1.9	5.0	1.1	.6
13.....	1.6	4.6	-----	-----	-----	6.8	3.9	2.9	9.2	1.3	1.9
14.....	1.1	3.6	-----	-----	-----	5.7	4.3	2.9	6.8	1.1	1.1
15.....	1.0	2.9	-----	-----	-----	7.1	4.3	3.2	5.7	1.0	1.1
16.....	1.0	3.4	-----	-----	-----	6.4	3.6	3.6	4.6	1.6	.9
17.....	.9	2.6	-----	-----	-----	6.4	3.6	5.0	4.6	1.4	.6
18.....	1.0	2.4	-----	-----	-----	6.4	3.4	5.0	3.4	1.1	.6
19.....	1.3	3.2	-----	-----	-----	7.1	3.6	6.1	1.9	1.0	.8
20.....	2.2	2.9	1.3	-----	-----	6.8	3.6	5.7	1.4	1.0	.8
21.....	2.9	1.6	-----	-----	6.4	7.9	3.4	7.5	1.9	.9	.8
22.....	3.6	2.9	-----	-----	5.7	6.8	4.3	9.6	2.2	1.0	.9
23.....	3.9	2.4	-----	-----	4.6	6.1	3.4	7.5	1.9	1.0	.9
24.....	3.4	2.6	-----	-----	5.0	5.3	3.4	6.8	1.9	1.4	.6
25.....	3.4	2.2	-----	-----	5.0	5.0	3.4	6.1	1.9	1.4	.6
26.....	3.6	1.6	-----	-----	5.3	5.0	3.2	5.0	1.6	1.3	.5
27.....	3.4	1.4	-----	-----	6.1	4.3	2.9	4.3	1.9	1.3	.8
28.....	3.6	2.2	-----	-----	6.8	3.9	2.4	3.6	1.6	1.1	.8
29.....	2.9	3.9	-----	-----	7.5	4.3	2.2	3.2	1.4	1.0	.6
30.....	3.2	2.9	• 1.0	-----	7.1	3.6	2.2	2.6	1.1	1.0	.6
31.....	3.2	-----	-----	-----	6.4	-----	2.6	-----	1.1	.8	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	3.9	0.9	2.05	126
November.....	4.6	1.4	3.04	181
March (21–31).....	7.5	4.6	5.99	131
April.....	7.9	3.6	6.28	374
May.....	15	2.2	4.41	271
June.....	9.6	1.4	3.82	223
July.....	9.2	1.1	2.83	174
August.....	3.9	.8	1.41	86
September.....	1.9	.1	.63	33

• Estimated.

RAYADO RIVER AT SAUBLE'S RANCH, NEAR CIMARRON, N.MEX.

LOCATION.—Water-stage recorder in Maxwell grant, in T. 25 N., R. 19 E., 10 miles southwest of Cimarron.

RECORDS AVAILABLE.—October 1930 to September 1933; May 1911 to December 1914 at site 3 miles upstream. Records for 1915-30 published by State engineer.

DISCHARGE.—Maximum during year, not determined; minimum, 0.5 second-foot Dec. 8.

1930-33: Maximum, 316 second-feet May 12, 1932 (gage height, 2.95 feet); minimum, that of Dec. 8, 1932.

REMARKS.—Records fair except those estimated, which are poor. No diversions above station.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.6	2.7				4.2	9.3	10		14		4.2
2	4.4	3.0				4.2	12	16	* 35	13	* 4	3.7
3	4.8	3.0				4.2	12	13		12		3.6
4	5.1	2.9	* 2		* 40	4.2	14	7.3		19		3.3
5	5.1	2.7				3.2	9.7	15	* 50	17		3.3
6	4.8	2.8		* 2		4.6	7.3	24		14	* 10	3.0
7	4.4	3.0	1.3			4.4	9.0	21		14		3.0
8	4.2	1.7	.9			4.2	9.0	35		14		3.0
9	4.3	3.0				4.8	10	51		14		3.8
10	4.3	2.8			* 3	5.4	10	37	* 30	12		4.2
11	4.3	2.0				6.1	7.1	* 32		16	* 6	
12	4.0	2.2				6.3	7.3	* 25		23		
13	3.8	3.1				5.6	6.8	* 24		19	4.9	* 6
14	4.0	3.4				4.6	5.9	* 25		15	9.3	4.8
15	3.8	2.8	* 1			4.3	6.8	32		16	11	5.4
16	3.3	2.4		* 3		4.9	8.7	44	19	10	6.6	3.6
17	3.2	3.1				5.4	8.7			12	6.1	3.6
18	3.2	3.1				5.1	9.3			8.7	4.8	3.6
19	3.3	3.6			* 4	4.8	8.7	* 40		7.1	4.6	3.6
20	3.8	3.4				4.0	5.9	* 40		6.3	4.3	3.3
21	4.3					4.6	6.6		* 75	6.3	4.3	3.3
22	5.1					5.1	7.3	39		13	4.0	3.3
23	4.6					4.4	6.8	38		13	4.3	3.2
24	4.4					4.8	9.3	34		11	4.0	3.0
25	3.3	* 3		* 4		4.4	8.7	34	* 40	8.7	4.8	3.0
26	3.7		* 2		3.7	5.4	7.6			6.8	4.8	2.9
27	4.2				3.6	6.3	9.3			6.1	4.9	2.9
28	3.7				3.7	8.3	9.7	* 30		24	5.4	2.8
29	3.6					9.7	8.0			19	4.9	2.8
30	3.2					8.3	6.8			16	4.8	2.8
31	3.1			4.4		7.6				* 4	4.4	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5.1	3.1	4.06	250
November			2.89	172
December			1.55	96
January			3.05	187
February			3.79	210
March	9.7	3.2	5.27	324
April	14	5.9	8.59	511
May	51	7.3	30.2	1,860
June		15	35.1	2,090
July	19	4	10.7	655
August			5.98	368
September		2.8	3.76	224
The year			9.59	6,950

* Estimated.

COLMOR INTAKE CANAL NEAR OCATE, N.MEX.

LOCATION.—Water-stage recorder in SW¼ sec. 12, T. 22 N., R. 19 E., 130 feet below head gate at point of diversion from Ocate River, 5 miles southwest of Lake Charette, and 10 miles southeast of Ocate.

RECORDS AVAILABLE.—May to September 1933.

DISCHARGE.—Maximum during period, about 695 second-feet Aug. 26 (gage height, 5.14 feet); no flow during several periods.

REMARKS.—Records fair. Diversions for irrigation above station. Colmor Intake Canal delivers water to Lake Charette, which is utilized as a storage reservoir by the Colmor Irrigation District.

Discharge, in second-feet, 1933

Day	June	Aug.	Sept.	Day	June	Aug.	Sept.	Day	June	Aug.	Sept.
1-----	0	0	6.0	11-----	0	0	0	21-----	5.8	0	0.3
2-----	0	0	4.1	12-----	0	0	0	22-----	35	0	.1
3-----	0	0	2.7	13-----	0	0	.6	23-----	5.1	0	0
4-----	0	0	2.3	14-----	0	0	5.6	24-----	2.4	.1	0
5-----	0	.1	1.8	15-----	0	0	6.8	25-----	2.3	20	0
6-----	0	18	.7	16-----	0	0	2.2	26-----	1.1	269	0
7-----	0	8.2	.3	17-----	0	0	1.6	27-----	.3	95	0
8-----	0	14	.1	18-----	0	0	1.8	28-----	.1	13	0
9-----	0	3.3	.1	19-----	0	0	1.0	29-----	0	29	0
10-----	0	.3	0	20-----	.5	0	.6	30-----		74	0
								31-----		9.8	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
June-----	35	0	1.75	104
August-----	269	0	17.9	1,100
September-----	6.8	0	1.29	77
The period-----				1,280

NOTE.—No flow during May and July.

MORA RIVER AT LA CUEVA, N.MEX.

LOCATION.—Water-stage recorder in Mora grant, at highway bridge at La Cueva, a quarter of a mile below Las Vegas-Mora highway bridge and half a mile below La Cueva Dam site, below wasteway from La Cueva Canal.

RECORDS AVAILABLE.—August 1903 to July 1911; April 1931 to September 1933.

DISCHARGE.—Maximum discharge and stage during year not determined; minimum, 0.5 second-foot Mar. 30.

1931-33: Maximum, about 930 second-feet May 2, 1931 (gage height, 3.20 feet); minimum, that of Mar. 30, 1933.

REMARKS.—Records good except those estimated, which are poor. Stage-discharge relation affected by ice Dec. 12-31, Jan. 1-16, 22-24, 26-27, Feb. 2-4, 6-26. Diversions for irrigation above station.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	29	* 23	2.2	} * 7	} 8.6	13	4.3	3.2	} * 9	40	2.9	4.0
2-----	28	* 22	1.8			14	1.8	2.6		36	2.9	3.6
3-----	27	* 23	1.5	} * 7	} 8.6	13	1.5	2.2	} * 9	36	14	3.6
4-----	28	* 24	1.2			13	1.5	2.6		41	23	5.0
5-----	28	* 17	1.0	} * 7	} 8.6	11	1.5	2.6		40	22	4.6
6-----	28	* 9	1.8			12	1.2	2.6	} * 9	63	18	4.3
7-----	27	7.7	4.0	} * 8	} * 6	10	1.2	2.2		60	17	4.0
8-----	26	7.2	5.4			12	1.0	2.6	6.4	75	24	4.0
9-----	25	* 7	6.4	} * 8	} * 6	12	1.0	2.2	64	7.7	8.2	
10-----	25	* 7	5.0			11	1.5	2.2	4.6	51	5.0	4.6
11-----	* 25	* 6	5.4	} * 7	} * 8	13	} * 1	} * 2.5	4.3	38	5.0	4.6
12-----	* 24	* 6				11			9.5	4.0	8.6	40
13-----	* 23	* 6		} * 7	} * 8	9.0	} * 1	} * 2.5	14	34	3.2	9.0
14-----	* 22	6.8				11			2.2	2.2	28	3.2
15-----	* 21	6.8				3.6		46	25	3.2	4.0	
16-----	* 20	* 6		* 8	} * 10	11	1.2	5.0	49	23	4.0	4.3
17-----	20	5.9		* 8.2		9.0	1.2	5.0	56	23	4.0	4.3
18-----	20	6.4		7.2	} * 10	8.2	1.2	3.2	60	4.0	4.6	
19-----	22	5.9		* 8		4.0	1.2	2.2	91	} * 10	4.3	5.4
20-----	25	5.4		5.9	3.2	5.0	2.2	96	3.6		4.3	
21-----	28	4.6	} * 6	7.7	} * 12	2.9	2.9	2.9	201	2.6	3.6	8.2
22-----	34	4.3		} * 10		} * 12	1.8	1.5	2.6	295	4.3	4.3
23-----	31	4.6	} * 10		} * 12		1.5	1.5	3.2	* 350	2.9	4.3
24-----	29	4.3		} * 10		} * 12	1.2	1.2		* 200	6.8	3.6
25-----	28	3.2	16		1.0		1.8	} * 5	* 150	6.4	3.6	4.3
26-----	28	4.0	} * 12	} * 12	1.2	2.6	8.2		* 100	5.0	4.3	3.2
27-----	28	4.6			11	13	1.0	3.2	8.2	* 90	2.9	5.0
28-----	27	4.6		12	1.0	5.4	7.7	77	1.8	6.4	3.2	
29-----	26	3.6		9.5	8	5.4	5.9	75	1.5	4.3	3.2	
30-----	25	3.2		8.2	4.0	4.6	4.0	54	7.2	5.0	3.2	
31-----	24			10	6.8		* 13		3.6	5.0		

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October-----	34	20	25.8	1,590
November-----	24	3.2	8.30	494
December-----			5.02	309
January-----			8.51	523
February-----			9.06	503
March-----	14	.8	7.52	462
April-----	5.4		2.05	122
May-----	13		3.94	242
June-----	350	4.0	70.0	4,160
July-----	75	1.5	25.5	1,570
August-----	24	2.9	7.24	445
September-----	9.0	3.2	4.74	282
The year-----	350		14.8	10,700

* Estimated.

MORA RIVER NEAR GOLONDRINAS, N.MEX.¹

LOCATION.—Water-stage recorder in Mora grant, 2 miles east of Golondrinás, Mora County, and half a mile above mouth of Coyote Creek.

RECORDS AVAILABLE.—October 1930 to September 1933. Records for 1915-30 published by State Engineer.

DISCHARGE.—Maximum during year, not determined; no flow May 11 and 17. 1930-33: Maximum, about 585 second-feet May 2, 1931 (gage height, 5.05 feet); no flow May 11, 17, 1933.

REMARKS.—Records fair except those estimated, which are poor. Stage-discharge relation affected by ice Dec. 7 to Feb. 28. Diversions for irrigation above station.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	88	28	5			18	7	3	3	42	2	
2.....	78	28	6			19	6	2	3	34	3	
3.....	72	29	8			18	4	1	2	34	9	
4.....	67	30	6			18	4	3	1	44	26	
5.....	63	26	7			17	4	5	1	49	15	
6.....	58	16	7		a 10	17	4	4	2	54	12	
7.....	54	15	a 8			16	4	3	4	73	10	
8.....	51	14	a 10	a 8		15	3	2	2	68	18	
9.....	47	12				14	5	1	1	77	12	
10.....	43	12				14	4	1	1	60	6	a 5
11.....	41	16				14	2	0	1	45	6	
12.....	39	15				14	2	1	2	61	4	
13.....	36	15				13	5	1	4	54	4	
14.....	34	14				12	7	2	9	35	4	
15.....	32	13				14	7	1	31	50	4	
16.....	32	12				14	8	1	43	47	4	
17.....	29	12				12	8	0	58	30	3	
18.....	28	12		a 10		10	8	1	a 80	21	2	4
19.....	29	12				8	10	1	a 100	12	2	4
20.....	29	12	a 8		a 15	7	12	1	a 150	9	2	4
21.....	31	12				6	10	1	a 250	6	3	3
22.....	47	10				5	7	1	a 350	3	3	5
23.....	35	10		a 15		3		1	a 400	4		3
24.....	30	10				3		2	215	4	a 3	3
25.....	31	8		20		3	a 3	2	178	3		2
26.....	30	8				3		1	192		30	2
27.....	30	8				3	3	1	a 120	2	16	2
28.....	30	7				2	3	1	91	2		2
29.....	30	6		a 15		2	3	1	83	2	a 7	2
30.....	29	6				3	3	1	63			3
31.....	29					5		9		2		

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	88	28	42.0	2,580
November.....	30	6	14.3	849
December.....			7.8	478
January.....			11.0	674
February.....			13.2	734
March.....	19	2	10.4	639
April.....	12		5.2	307
May.....	9	0	1.8	109
June.....	400	1	81.3	4,840
July.....	77	2	30.0	1,850
August.....	30		7.6	470
September.....			4.1	246
The year.....	400	0	19.0	13,800

• Estimated.

¹ Erroneously published in 1932 as Mora River at Golondrinás, N.Mex.

MORA RIVER NEAR SHOEMAKER, N.MEX.

LOCATION.—Water-stage recorder in sec. 10, T. 18 N., R. 20 E., 5½ miles east of Shoemaker and about 23 miles above confluence with Canadian River.

DRAINAGE AREA.—1,160 square miles.

RECORDS AVAILABLE.—October 1930 to September 1933. Records for 1914–30 published by State engineer.

DISCHARGE.—Maximum during year, about 2,830 second-feet June 12 (gage height, 5.52 feet); minimum, 1 second-foot Apr. 3–12, May 6–11, 22, 23. 1930–33: Maximum, that of June 12, 1933; minimum, 1 second-foot July 31, 1931, Apr. 3–12, May 6–11, 22, 23, 1933.

REMARKS.—Records fair except those estimated, which are poor. Stage-discharge relation affected by ice Dec. 5 to Feb. 22. Diversions for irrigation above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	122	70	4	}	38	25	4	2	21	} • 60	18	18
2	116	70	5			23	2	2	7		6	14
3	114	70	6			10	1	2	5		117	18
4	112	65	7			8	1	2	4	} • 50	45	14
5	114	62				7	1	2	4		18	11
6	114	55	} • 6	} • 15	} • 30	7	1	1	3	} • 90	12	10
7	110	45				6	1	1	3		11	9
8	103	36	5			5	1	1	2		8	8
9	94	30				5	1	1	2		80	8
10	84	27				4	1	1	2		18	9
11	72	25		}	}	4	1	1	2	} • 35	18	11
12	64	23				4	1	2	290		11	10
13	58	20				5	2	2	65		10	127
14	49	20				4	2	3	29		8	48
15	41	22				4	2	3	33		7	30
16	37	22		} • 10	} • 40	4	2	2	33	466	11	17
17	34	24				4	2	2	35	193	9	12
18	33	23				4	2	2	44	• 90	5	10
19	33	19				4	2	2	228	• 40	4	9
20	34	14				4	2	2	142	• 45	4	10
21	42	12		} • 20	}	4	2	2	336	45	3	8
22	64	11				4	2	1	• 400	27	2	8
23	78	10				5	3	1	• 450	30	2	7
24	74	9				4	2	2	• 350	28	2	7
25	72	8				4	2	3		22	3	7
26	76	6			33	4	3	3	} • 200	17	200	7
27	78	5			29	4	5	2		13	149	6
28	80	5			28	4	3	2		11	40	6
29	74	5				4	2	2		103	9	5
30	76	4				4	2	2		• 80	8	5
31	74					4		103		7	22	
Month	Maximum		Minimum		Mean		Run-off in acre-feet					
October	122		33		75.0		4,610					
November	70		4		27.2		1,620					
December					8.9		545					
January					17.6		1,080					
February					35.6		1,980					
March					6.0		380					
April	25		4		1.9		115					
May	103		1		15.1		315					
June	450		2		116		6,890					
July	466		7		61.6		3,790					
August	200		2		29.1		1,790					
September	127		5		15.6		980					
The year	466		1		33.2		24,000					

* Estimated.

COYOTE CREEK NEAR GOLONDRINAS, N.MEX.

LOCATION.—Water-stage recorder in Mora grant, $1\frac{1}{4}$ miles northeast of Golondrin, three-quarters of a mile below Coyote Creek dam site, and $1\frac{1}{4}$ miles above confluence with Mora River.

RECORDS AVAILABLE.—October 1930 to September 1933. Records for 1928-30 published by State engineer.

DISCHARGE.—Maximum during year, about 685 second-feet June 20 (gage height, 4.91 feet); minimum, 0.9 second-foot July 31.

1930-33: Maximum, that of June 20, 1933; minimum, 0.4 second-foot Aug. 30, 1931.

REMARKS.—Records good except those estimated, which are poor. Diversions for irrigation above station. Stage-discharge relation affected by ice Nov. 22-30, Dec. 1, 12-31, Jan. 1-25, 27-31, Feb. 1-21.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.							
1-----	13	6.7	*5	}	}	8.0	6.1	2.4	2.2	3.2	1.1	4.7							
2-----	12	6.7	5.7			}	}	6.4	4.3	2.4	2.2	2.9	1.1	3.9					
3-----	12	7.0	6.4					}	}	5.4	4.1	2.5	1.9	2.9	2.2	3.1			
4-----	12	7.0	5.7							}	}	4.3	4.1	2.6	1.9	11	1.9	3.1	
5-----	11	7.0	5.4	}	}	4.7	3.9	2.4	1.9			7.0	1.5	3.1					
6-----	10	7.0	4.7			}	}	3.2	3.4	2.6	2.1	3.2	1.7	3.1					
7-----	9.6	7.0	3.6					}	}	5.0	3.6	2.9	1.8	5.4	8.7	2.8			
8-----	9.2	6.4	3.6							}	}	4.1	3.6	2.9	1.7	4.5	4.7	2.9	
9-----	9.2	6.7	3.9	}	}							6.1	3.6	2.8	1.8	10	3.1	16	
10-----	8.7	5.7	4.3			}	}	5.7	3.6	}	1.6	12	2.2	6.4					
11-----	8.7	5.4	4.3	}	}			8.0	3.6		}	1.5	9.6	2.2	15				
12-----	8.7	5.2	}					}	9.6			2.8	}	2.8	5.2	1.6	17		
13-----	8.4	5.7							}	}		13		2.6	}	2.8	4.3	1.8	14
14-----	8.7	5.7				}	}				12	2.8		}		2.6	5.7	1.6	12
15-----	8.0	6.1	}	}	6.1			2.8	}	3.1	2.1	17	1.6		9.6				
16-----	7.7	6.7			}	}	4.3	2.4		}	3.1	2.5	8.7	1.6	7.4				
17-----	7.4	7.4					}	}			4.3	2.4	}	3.2	1.9	5.2	1.5	7.0	
18-----	7.0	7.4							}		}	4.1		2.1	}	3.2	2.1	10	1.4
19-----	7.0	6.7	}	}						3.9		2.1		}		3.1	2.6	18	1.4
20-----	7.4	6.7			}	}	5.2	2.6	}	2.8	45	9.6	1.3		5.7				
21-----	10	}	}	}			5.2	2.5		}	3.2	45	8.0	1.5	5.4				
22-----	16						}	}			}	8.4	4.1	}	2.6	2.6	79	7.0	1.6
23-----	11								}			}	}		7.7	4.3	}	2.6	2.5
24-----	11	}	}	}	7.7	4.3	}	2.5		58	4.3			1.7	5.2				
25-----	10				}	}		}	7.4	4.1	}	2.6	40	4.5	5.7	5.0			
26-----	8.0	}	}	}			7.7		4.5	}		1.9	25	3.4	55	4.7			
27-----	7.4						}		}			}	8.0	4.5	}	1.8	19	2.2	9.2
28-----	7.4										}		}	}		8.0	4.5	}	1.8
29-----	6.7				}	}		}		4.3						4.3	}		1.7
30-----	6.7	}	}	}			5.0		2.4	}	1.9	5.7	1.0	5.7	4.1				
31-----	6.7				}	}	}	7.4	2.8		}	2.8	1.0	5.7					

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October-----	16	6.7	9.25	568
November-----	7.4		6.20	369
December-----			4.28	263
January-----			7.37	453
February-----			6.71	373
March-----	13	3.2	5.66	348
April-----	6.1	2.1	3.06	182
May-----		1.7	2.65	163
June-----	79	1.5	15	899
July-----	18	1.0	6.26	385
August-----	55	1.1	4.67	287
September-----	17	2.8	6.56	390
The year-----	79	1.0	6.45	4,670

* Estimated.

LEE CREEK NEAR VAN BUREN, ARK.

LOCATION.—Staff gage in SW¼ sec. 31, T. 10 N., R. 32 W., at Arkansas-Oklahoma State line, 6¾ miles northwest of Van Buren.

DRAINAGE AREA.—430 square miles.

RECORDS AVAILABLE.—September 1930 to September 1933.

DISCHARGE.—Maximum during year, about 32,200 second-feet May 15 (gage height, 22.3 feet); minimum, 1 second-foot Oct. 1-3, 12-30, Aug. 21-24; minimum gage height, 0.70 foot Oct. 1, 2.

1930-33: Maximum, that of May 15, 1933; no flow Sept. 1-24, 1930, Sept. 8-21, 1932.

REMARKS.—Records good.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	1	3	27	267	412	1,180	267	890	360	21	4	102
2.....	1	4	24	325	385	890	254	722	310	19	4	11,300
3.....	1	4	24	285	335	755	236	592	263	16	49	21,500
4.....	7	4	24	254	305	625	218	530	231	13	21	2,910
5.....	4	3	24	222	272	560	320	560	204	11	8	1,180
6.....	2	3	24	195	244	3,450	1,260	530	175	11	5	855
7.....	2	3	21	191	249	2,290	890	440	159	8	5	592
8.....	2	4	21	175	218	1,570	755	360	138	8	4	440
9.....	2	5	21	163	183	1,180	625	310	124	8	4	335
10.....	2	13	24	152	159	960	500	254	108	7	4	276
11.....	2	16	24	141	144	788	440	222	99	5	3	222
12.....	1	16	24	127	134	690	385	1,030	96	5	3	195
13.....	1	31	21	114	127	592	360	4,420	179	4	4	175
14.....	1	27	21	105	127	560	320	16,000	191	4	3	310
15.....	1	31	21	102	127	470	500	18,100	159	4	3	249
16.....	1	31	21	96	120	385	4,020	5,180	127	4	2	191
17.....	1	31	24	96	120	360	3,270	2,290	108	3	2	163
18.....	1	31	21	155	120	385	1,810	1,490	93	3	3	141
19.....	1	34	21	4,730	120	440	1,180	1,030	82	3	2	120
20.....	1	31	21	1,570	114	470	6,080	788	72	3	2	105
21.....	1	31	19	3,820	108	385	7,340	755	63	3	1	96
22.....	1	27	24	3,900	102	380	2,820	855	57	3	1	85
23.....	1	31	117	2,280	96	315	1,890	690	51	4	1	78
24.....	1	31	18,300	1,180	90	280	1,890	820	43	4	1	68
25.....	1	31	2,290	1,180	196	280	1,410	1,490	41	11	2	385
26.....	1	31	1,100	960	755	249	1,100	2,550	38	13	3	412
27.....	1	27	592	755	625	231	1,410	1,490	38	10	5	218
28.....	1	27	385	592	1,180	208	1,030	890	32	5	9	163
29.....	1	27	285	500	-----	204	960	755	27	4	592	141
30.....	1	27	249	440	-----	204	1,260	560	24	4	213	254
31.....	3	-----	249	412	-----	262	-----	440	-----	4	130	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	7	1	1.6	95
November.....	34	3	20.5	1,220
December.....	18,300	19	775	47,700
January.....	4,730	96	822	50,500
February.....	1,180	90	256	14,200
March.....	3,450	204	696	42,800
April.....	7,340	218	1,490	88,700
May.....	18,100	222	2,160	133,000
June.....	360	24	123	7,320
July.....	21	3	7.3	449
August.....	592	1	35.2	2,160
September.....	21,500	68	1,440	85,700
The year.....	21,500	1	655	474,000

RED RIVER BASIN

RED RIVER NEAR DENISON, TEX.

LOCATION.—Chain gage on Denison-Colbert toll bridge, half a mile below Missouri-Kansas-Texas Railroad bridge and $4\frac{1}{2}$ miles northeast of Denison. Datum of gage raised 0.22 foot Oct. 1, 1931.

DRAINAGE AREA.—39,400 square miles.

RECORDS AVAILABLE.—October 1923 to September 1933.

DISCHARGE.—Maximum during year, about 119,000 second-feet May 25 (gage height, 15.5 feet); minimum, 445 second-feet Dec. 10 (gage height, 0.85 foot). 1923-33: Maximum, about 132,000 second-feet Oct. 17, 1923 (gage height, 19.2 feet, present datum); minimum, 140 second-feet Oct. 4, 1931 (gage height, 0.56 foot). Average, 10 years (1923-33), 5,150 second-feet.

REMARKS.—Records fair. No diversions.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	2,140	840	536	7,760	1,360	1,460	3,270	2,020	11,200	1,090	3,790	13,400
2-----	2,020	760	522	7,170	1,360	1,460	2,800	1,900	9,160	1,090	2,660	6,110
3-----	2,140	800	522	5,640	1,270	1,670	3,270	1,670	7,760	1,090	7,460	3,970
4-----	2,020	760	543	3,970	1,270	1,560	3,970	1,780	6,620	1,090	17,100	4,760
5-----	2,020	760	550	3,610	1,270	2,680	3,440	1,670	5,410	1,090	22,500	6,620
6-----	2,020	800	522	3,270	1,270	14,400	3,110	1,670	3,970	1,040	17,700	7,460
7-----	2,020	760	515	4,760	1,360	29,100	2,800	1,560	2,950	1,040	11,600	6,110
8-----	2,020	760	494	4,760	1,560	25,600	2,390	1,670	2,520	1,040	6,620	4,970
9-----	2,020	760	473	3,970	1,360	18,900	3,110	2,020	2,520	1,000	6,620	4,160
10-----	2,020	760	452	3,270	1,270	12,500	3,790	2,260	2,390	960	3,970	3,610
11-----	2,020	725	466	2,660	1,140	6,360	3,270	2,140	2,140	1,140	3,440	3,110
12-----	2,020	690	466	2,390	1,040	5,190	2,950	2,520	2,140	1,900	2,800	4,550
13-----	1,780	655	473	2,140	1,040	4,550	2,680	2,390	2,020	3,440	2,800	3,790
14-----	1,560	620	508	2,020	1,000	4,160	2,140	16,400	1,900	2,800	2,950	6,110
15-----	1,460	585	543	2,140	1,090	3,610	1,900	45,000	1,900	3,610	2,950	7,760
16-----	1,270	585	585	1,900	1,180	3,440	2,660	49,300	1,780	1,900	2,520	7,760
17-----	1,140	543	550	1,900	1,090	3,110	2,520	42,400	1,670	1,670	2,260	15,400
18-----	1,000	550	529	2,020	1,140	2,800	1,900	32,000	1,670	1,900	2,260	12,040
19-----	960	585	550	1,900	1,090	2,950	1,460	16,600	1,670	1,780	2,260	8,100
20-----	880	550	585	2,800	1,040	3,110	3,610	9,160	1,670	1,670	2,140	6,110
21-----	840	536	620	2,390	1,040	2,950	3,970	7,170	1,560	1,900	1,900	4,970
22-----	760	543	690	2,020	1,140	2,660	3,270	7,760	1,560	1,900	1,560	3,110
23-----	725	585	2,260	1,900	1,140	2,390	3,440	6,620	1,460	1,900	1,670	3,110
24-----	725	550	21,700	1,900	1,040	2,140	4,160	61,000	1,460	1,560	1,900	2,800
25-----	690	494	27,300	1,670	1,180	2,020	3,790	108,000	1,360	1,460	2,140	2,520
26-----	655	487	34,100	1,560	1,180	1,900	7,460	108,000	1,360	1,360	2,390	2,140
27-----	690	480	23,200	1,560	1,140	1,900	6,110	69,900	1,360	1,360	2,390	1,900
28-----	725	508	17,100	1,460	1,270	1,900	3,440	38,600	1,270	1,270	2,020	2,260
29-----	690	550	9,160	1,460	-----	1,780	2,660	27,300	1,180	1,130	2,950	3,110
30-----	690	550	8,080	1,460	-----	1,780	2,390	14,400	1,140	1,560	4,550	2,800
31-----	760	-----	8,080	1,460	-----	3,660	-----	12,500	-----	3,970	6,110	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October-----	2,140	655	1,370	84,200
November-----	840	480	639	38,000
December-----	34,100	452	5,250	323,000
January-----	7,760	1,460	2,870	176,000
February-----	1,560	1,000	1,190	66,100
March-----	29,100	1,460	5,600	344,000
April-----	7,460	1,460	3,260	194,000
May-----	108,000	1,560	22,600	1,390,000
June-----	11,200	1,140	2,890	172,000
July-----	3,970	960	1,660	102,000
August-----	22,500	1,560	5,030	309,000
September-----	15,400	1,900	5,490	327,000
The year-----	108,000	452	4,870	3,530,000

PEASE RIVER NEAR CROWELL, TEX.

LOCATION.—Water-stage recorder and auxiliary chain gage at Quanah-Crowell highway bridge, 1 mile below mouth of Devils Creek and 8 miles north of Crowell, Foard County.

DRAINAGE AREA.—2,940 square miles, about 533 square miles of which is probably noncontributing.

RECORDS AVAILABLE.—January 1924 to September 1933.

DISCHARGE.—Maximum during year, about 21,800 second-feet July 6 (gage height, 8.50 feet); no flow at times.

1924-33: Maximum not determined; maximum gage height, 9.92 feet Oct. 3, 1926; no flow at times.

Maximum stage known, 19.6 feet June 1891.

REMARKS.—Yearly records fair. Daily and monthly records not sufficiently accurate for publication. No diversions. Total yearly run-off, 111,000 acre-feet.

LITTLE WICHITA RIVER NEAR ARCHER CITY, TEX.

LOCATION.—Water-stage recorder at Archer City-Wichita Falls highway bridge 1.5 miles below confluence of North and Middle Forks of Little Wichita River and 4.8 miles north of Archer City, Archer County.

DRAINAGE AREA.—496 square miles.

RECORDS AVAILABLE.—May 1932 to September 1933.

DISCHARGE.—Maximum during period May 30 to Sept. 30, 1932, 2,320 second-feet July 7 (gage height, 21.88 feet); no flow at times.

Maximum during year ending Sept. 30, 1933, 7,750 second-feet May 26 (gage height, 25.01 feet); no flow at times.

REMARKS.—Records good below and fair above 10 second-feet. Discharge estimated June 6, Aug. 23, 24, 1932, and Apr. 23-25, 1933. No diversions above station.

Discharge, in second-feet, 1932-33

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1932						1932					
1-----		6.1	27	0.1	19	16-----		26	1.2	0.1	0.2
2-----		2.1	16	0	666	17-----		18	.7	8.5	.1
3-----		.7	47	0	1,050	18-----		7.7	.4	13	.1
4-----		.5	62	0	880	19-----		3.6	.2	7.3	.1
5-----		.4	21	0	21	20-----		1.5	.1	3.6	.1
6-----		16	309	0	25	21-----		6.9	75	1.9	0
7-----		31	2,090	2.4	317	22-----		25	378	.7	0
8-----		20	1,860	6.8	176	23-----		19	352	.3	0
9-----		43	201	.9	33	24-----		36	37	.5	0
10-----		51	17	.2	16	25-----		62	18	0	
11-----		52	7.7	.1	8.5	26-----		18	16	0	.1
12-----		38	5.8	.1	4.4	27-----		36	9.7	0	.1
13-----		17	4.7	.1	2.5	28-----		184	1.0	0	0
14-----		8.5	2.9	0	1.3	29-----		628	.2	0	0
15-----		31	1.9	0	.4	30-----		17	.1	0	0
						31-----		14	.1	0	-----

Discharge, in second-feet, of Little Wichita River near Archer City, Tex., 1932-33—
Continued

Day	Oct.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932-33											
1-----	0	0	20	0.1	3.4	30	0.2	5.8	0.1	37	2.9
2-----	0	0	11	.1	2.3	15	.1	3.6	.1	126	1.5
3-----	0	0	7.3	.1	1.9	7.3	.1	2.5	.1	37	.7
4-----	0	0	5.4	.1	2.3	3.6	.2	1.5	.1	110	.4
5-----	5.4	0	3.9	.1	247	1.9	.1	1.0	.1	974	.2
6-----	4.7	0	2.5	.1	857	.7	.1	.6	6.8	155	.1
7-----	1.7	0	2.1	.1	135	.3	.1	.4	41	23	.1
8-----	.7	0	1.3	.1	29	.2	.1	.3	27	9.3	.1
9-----	.5	0	.9	.1	17	.2	.2	.4	6.9	3.6	.1
10-----	.2	0	.9	.1	11	.1	.2	.5	2.9	1.9	.1
11-----	.1	0	.7	0	6.9	.1	.2	.4	1.7	.7	164
12-----	.1	0	.4	0	4.2	.1	.4	.5	1.0	.2	594
13-----	.1	0	.2	0	2.7	0	181	.5	.4	.1	574
14-----	0	0	.2	0	1.3	0	570	.4	.3	.1	322
15-----	0	0	.2	0	.6	0	1,280	.1	.2	18	147
16-----	0	0	.1	0	.3	0	1,420	.1	.1	45	30
17-----	0	0	.1	0	.2	0	243	.1	.1	20	16
18-----	0	0	.1	0	.2	0	25	.1	.1	6.9	8.5
19-----	0	0	.1	0	.1	.1	14	.1	.1	15	3.6
20-----	0	0	.1	0	.1	190	8.1	.1	.1	43	1.9
21-----	0	0	.1	0	.1	597	118	.2	0	26	.9
22-----	0	0	.1	0	.1	137	864	.1	0	5.2	.5
23-----	0	1,110	.1	0	.1	25	296	.1	0	1.5	.3
24-----	0	2,970	.1	0	.1	14	826	.1	0	.6	.2
25-----	0	5,000	.1	0	.1	8.1	4,570	.1	0	.4	.2
26-----	0	2,720	.1	0	.1	4.4	7,750	.1	0	26	.2
27-----	0	714	.1	0	.1	2.3	4,160	.1	0	235	.1
28-----	0	22	.1	2.9	.1	1.9	1,870	.1	0	40	.1
29-----	0	14	.1	-----	152	1.2	116	.1	0	16	.1
30-----	0	18	.1	-----	425	.4	18	.1	0	13	.1
31-----	0	29	.1	-----	174	-----	9.7	-----	0	7.7	-----
Month						Maximum	Minimum	Mean	Run-off in acre-feet		
1932											
May 30-31-----						17	14	15.5	61		
June-----						628	.4	48.8	2,900		
July-----						2,090	.1	179	11,000		
August-----						13	0	1.50	92		
September-----						1,050	0	107	6,370		
The period-----									20,400		
1932-33											
October-----						5.4	0	.44	27		
December-----						5,000	0	406	25,000		
January-----						20	.1	1.89	116		
February-----						2.9	0	.14	7.8		
March-----						857	.1	66.9	4,110		
April-----						597	0	34.7	2,060		
May-----						7,750	.1	785	48,300		
June-----						6.8	.1	.67	40		
July-----						41	0	2.88	177		
August-----						974	.1	64.4	3,960		
September-----						594	.1	62.3	3,710		
The year-----						7,750	0	121	87,500		

NOTE.—No discharge during November 1932.

RED RIVER BASIN

111

WASHITA RIVER NEAR DURWOOD, OKLA.

LOCATION.—Chain gage in sec. 3, T. 4 S., R. 3 E., 3 miles north of Durwood and 1½ miles below Caddo Creek.

RECORDS AVAILABLE.—August 1928 to September 1933.

DISCHARGE.—Maximum during year, 23,300 second-feet May 25 (gage height, 33.92 feet); minimum, 150 second-feet July 9, 10 (gage height, 3.36 feet). 1928-33: Maximum, that of May 25, 1933; minimum, 35 second-feet Sept. 3, 1931 (gage height, 2.90 feet).

Maximum stage known, 38 feet in April and June 1927.

REMARKS.—Records good.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	304	304	244	1,400	432	595	1,010	660	1,320	190	6,100	1,240
2	280	322	244	1,160	432	730	2,260	595	1,080	190	11,000	1,010
3	268	340	244	905	400	765	1,960	530	940	190	11,000	1,820
4	268	370	232	800	400	800	1,610	498	870	190	10,400	5,130
5	256	400	232	660	400	5,580	1,320	498	800	190	8,300	5,400
6	232	370	232	660	400	14,200	1,010	695	765	170	3,620	3,520
7	232	328	232	695	370	6,470	1,470	695	695	328	1,400	2,200
8	232	286	232	765	370	5,040	2,520	1,160	628	280	765	1,470
9	232	268	232	695	340	3,820	1,240	1,160	595	155	730	1,400
10	232	268	232	660	328	2,380	940	1,010	595	185	695	1,610
11	232	256	170	595	328	1,960	695	730	562	370	595	1,610
12	232	244	170	595	322	1,750	562	730	562	695	870	1,160
13	232	232	170	562	322	1,400	562	10,400	562	695	2,500	1,540
14	232	210	170	530	328	1,240	530	17,000	562	432	2,320	3,920
15	232	220	170	530	370	940	465	19,200	498	274	1,820	4,140
16	232	244	170	562	432	870	432	20,200	465	262	1,010	4,720
17	232	244	170	695	432	800	432	6,200	432	262	1,680	3,470
18	232	244	232	905	465	1,400	432	4,190	432	268	870	2,440
19	232	244	238	940	465	835	432	2,660	432	465	628	1,960
20	232	244	244	835	432	730	2,200	1,960	432	595	530	1,820
21	220	244	244	660	432	660	1,820	1,820	400	370	530	1,540
22	190	244	244	595	465	628	1,470	1,680	400	304	530	905
23	180	244	3,570	295	432	595	1,680	1,540	340	200	370	695
24	170	244	15,000	562	400	562	1,610	15,100	304	170	1,160	628
25	165	244	9,070	530	400	530	1,400	21,600	286	170	1,080	595
26	165	244	4,760	530	432	498	1,240	20,600	280	170	1,010	562
27	175	244	3,470	530	465	498	1,010	9,000	268	160	1,010	1,610
28	200	244	2,720	498	498	498	940	3,770	244	160	4,960	2,440
29	210	244	2,380	465	-----	530	730	2,500	226	226	2,600	1,400
30	244	244	1,960	465	-----	730	660	1,890	200	220	2,140	595
31	280	-----	1,750	465	-----	1,010	-----	1,540	-----	200	1,820	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	304	165	228	14,000
November	400	210	269	16,000
December	15,000	170	1,590	97,800
January	1,400	465	679	41,800
February	498	322	408	22,400
March	14,200	498	1,900	117,000
April	2,320	432	1,150	68,400
May	21,600	498	5,550	341,000
June	1,320	200	539	32,100
July	695	155	282	17,300
August	11,000	370	2,710	167,000
September	5,400	562	2,080	124,000
The year	21,600	155	1,460	1,060,000

LITTLE RIVER NEAR HORATIO, ARK.

LOCATION.—Chain gage in E½ sec. 11, T. 10 S., R. 32 W., 2 miles south of Horatio.
RECORDS AVAILABLE.—December 1930 to September 1933.

DISCHARGE.—Maximum during year, 24,800 second-feet Jan. 1 (gage height, 27.2 feet); minimum, 26 second-feet Oct. 1-2 (gage height, 3.57 feet).

1930-33: Maximum, 35,000 second-feet Jan. 24, 1932 (gage height, 31.8 feet); minimum, 24 second-feet Sept. 23-26, 30, 1932 (gage height, 3.56 feet).

Maximum stage known, 38 feet in August 1915.

REMARKS.—Records good.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	26	53	150	23,700	2,310	18,200	14,200	6,070	1,330	160	130	3,260
2.....	26	46	140	16,200	2,700	17,100	13,600	6,800	1,060	130	120	1,610
3.....	28	42	130	8,300	3,100	14,600	10,700	4,630	810	110	120	990
4.....	42	44	120	5,170	2,940	10,600	7,100	3,180	690	102	140	2,170
5.....	34	98	120	3,740	2,620	6,250	4,900	2,620	570	88	130	3,500
6.....	32	130	120	3,020	2,310	7,100	3,740	2,460	485	78	120	3,020
7.....	32	120	130	2,940	2,380	15,400	3,020	2,240	385	74	120	2,310
8.....	32	102	130	8,400	6,800	16,600	2,620	1,890	340	70	106	1,680
9.....	30	94	130	13,800	7,600	15,700	2,170	1,540	300	62	98	1,200
10.....	30	92	150	14,600	5,350	13,300	1,820	1,260	240	58	104	870
11.....	78	210	150	12,300	4,090	8,600	1,680	1,050	225	56	149	570
12.....	76	195	150	8,700	3,340	5,170	1,400	870	210	52	160	485
13.....	68	160	140	5,530	3,020	4,450	1,470	870	210	49	180	3,820
14.....	58	140	180	3,820	2,860	3,420	1,680	1,260	435	47	170	4,360
15.....	57	130	280	3,020	2,780	2,940	1,680	4,900	460	45	170	2,030
16.....	56	120	340	2,460	2,620	2,380	1,400	16,500	320	49	160	1,400
17.....	53	114	320	2,700	2,310	2,100	1,190	18,300	260	47	340	990
18.....	48	110	260	3,260	2,240	1,890	1,540	15,600	210	44	4,630	810
19.....	46	106	260	2,940	2,170	3,500	2,310	12,100	180	48	3,100	570
20.....	44	110	300	2,940	2,100	5,890	2,170	6,430	170	58	1,680	460
21.....	40	106	340	4,810	1,890	5,980	5,840	3,260	160	52	810	340
22.....	38	102	360	13,000	1,750	5,080	11,700	3,340	150	58	485	280
23.....	34	102	600	20,700	1,610	3,820	12,800	4,630	140	140	360	225
24.....	32	106	6,500	19,300	1,470	3,100	12,200	4,090	130	150	225	195
25.....	32	102	20,900	16,300	1,540	2,940	9,400	3,020	130	130	210	180
26.....	44	96	19,900	12,000	2,780	3,020	6,610	2,780	120	225	195	180
27.....	40	98	19,200	7,000	4,900	2,540	5,530	4,540	114	225	195	320
28.....	38	160	17,500	4,720	12,500	2,100	5,170	4,810	106	225	170	7,800
29.....	38	160	13,500	3,580	-----	4,740	4,810	3,500	118	210	2,700	7,300
30.....	38	150	11,400	2,860	-----	10,700	3,910	2,380	195	195	4,000	3,740
31.....	58	-----	22,000	2,540	-----	12,700	-----	1,750	-----	160	4,900	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	78	26	42.9	2,640
November.....	210	42	113	6,720
December.....	22,000	120	4,380	269,000
January.....	23,700	2,460	8,200	504,000
February.....	12,500	1,470	3,360	187,000
March.....	18,200	1,890	7,480	460,000
April.....	14,200	1,190	5,280	314,000
May.....	18,300	870	4,800	295,000
June.....	1,330	106	341	20,300
July.....	225	44	103	6,330
August.....	4,900	98	844	52,000
September.....	7,800	180	1,890	112,000
The year.....	23,700	26	3,080	2,230,000

SULPHUR RIVER NEAR DARDEN, TEX.

LOCATION.—Staff gage on St. Louis Southwestern Railway bridge 1 mile south of Darden, Bowie County. Zero of gage is 221.7 feet above mean sea level.

DRAINAGE AREA.—2,750 square miles.

RECORDS AVAILABLE.—October 1923 to September 1933.

DISCHARGE.—Maximum during year, 15,500 second-feet Mar. 11 (gage height, 25.86 feet); minimum 0.2 second-foot Oct. 28 to Nov. 6.

1923-33: Maximum, 67,200 second-feet May 19, 1930 (gage height, 31.7 feet); no flow Sept. 2-5, 1929, and Oct. 3-5, 1930. Average, 10 years (1923-33), 1,860 second-feet.

REMARKS.—Records fair. No diversions. Gage-height record furnished by United States Weather Bureau.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	6.5	0.2	1.3	4,170	1,250	2,020	2,060	4,650	5,800	21	497	185
2.....	5.8	.2	1.3	4,350	680	2,720	2,340	6,300	6,550	16	216	178
3.....	5.8	.2	1.3	4,900	487	4,240	2,520	7,100	6,300	16	122	157
4.....	5.8	.2	1.3	5,400	549	10,700	2,550	6,550	5,100	13	92	129
5.....	5.8	.2	1.3	6,300	535	14,300	2,090	5,250	4,090	11	82	122
6.....	4.2	.2	2.1	7,100	535	13,500	1,420	4,250	2,080	8.3	82	92
7.....	4.2	1.3	2.1	6,300	511	12,700	884	3,780	1,140	6.5	192	58
8.....	4.2	1.3	2.1	5,400	499	10,700	417	3,440	457	6.5	143	39
9.....	3.0	1.3	2.1	5,250	633	10,700	262	3,170	174	6.5	115	36
10.....	3.0	1.3	2.1	4,800	1,050	13,900	206	2,560	87	5.0	150	33
11.....	2.1	1.3	2.1	5,800	1,330	15,100	171	1,860	62	5.0	122	27
12.....	2.1	1.3	2.1	8,900	1,190	13,500	143	1,330	67	3.5	97	21
13.....	2.1	1.3	3.0	13,100	926	11,500	157	990	50	3.5	136	19
14.....	2.1	.6	3.0	13,100	735	9,500	262	660	36	3.5	150	97
15.....	1.3	.6	4.2	10,700	633	7,100	289	410	36	3.5	150	567
16.....	1.3	.6	4.2	9,200	591	4,350	238	464	143	3.5	129	675
17.....	1.3	.6	5.8	7,100	647	3,020	192	1,110	487	3.5	218	511
18.....	1.3	.6	5.8	5,250	647	2,140	178	1,930	431	47	621	312
19.....	.6	.6	5.8	4,350	568	1,730	185	2,640	321	157	878	185
20.....	.6	.6	5.8	3,930	453	1,590	192	4,300	157	171	942	115
21.....	.6	.6	6.5	3,640	431	2,100	185	8,000	102	306	926	82
22.....	.6	.6	6.5	3,570	316	2,580	129	9,200	82	1,220	657	67
23.....	.6	.6	8.3	3,570	271	2,960	136	8,000	62	1,750	340	46
24.....	.6	1.3	112	3,780	230	3,000	271	6,800	50	2,160	150	36
25.....	.6	1.3	352	4,090	199	2,670	337	5,400	39	2,550	72	30
26.....	.6	1.3	403	4,350	199	2,340	997	4,650	30	2,730	62	24
27.....	.6	1.3	1,220	4,550	299	2,060	1,800	3,780	24	3,270	58	21
28.....	.2	1.3	1,720	4,800	1,100	1,730	2,290	3,000	19	3,170	42	19
29.....	.2	1.3	2,270	4,250	-----	1,320	2,670	2,790	16	2,520	236	19
30.....	.2	1.3	3,080	3,090	-----	974	3,500	3,040	30	1,820	549	19
31.....	.2	-----	4,090	2,060	-----	1,650	-----	3,930	-----	1,040	354	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	6.5	0.2	2.20	135
November.....	1.3	.2	.85	51
December.....	4,090	1.3	430	26,400
January.....	13,100	2,060	5,710	351,000
February.....	1,330	199	625	34,700
March.....	15,100	974	6,080	374,000
April.....	3,500	129	969	57,700
May.....	9,200	410	3,910	240,000
June.....	6,550	16	1,130	67,200
July.....	3,270	3.5	743	45,700
August.....	942	42	277	17,000
September.....	675	19	131	7,800
The year.....	15,100	.2	1,690	1,220,000

CYPRESS CREEK NEAR JEFFERSON, TEX.

LOCATION.—Staff gage at Farrell Bridge, on Jefferson-Harleton highway, 8 miles west of Jefferson, Marion County, and 14 miles above mouth of Black Cypress Creek.

DRAINAGE AREA.—848 square miles.

RECORDS AVAILABLE.—July 1924 to September 1933.

DISCHARGE.—Maximum during year, 3,550 second-feet Jan. 5 (gage height, 15.32 feet); minimum, 2.7 second-feet Oct. 27–29.

1924–33: Maximum, about 22,600 second-feet May 20, 1930 (gage height, 25.37 feet); no flow for several periods.

REMARKS.—Records good. No diversions.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	3.0	6.0	28	1,130	1,270	660	1,690	2,320	294	13	692	85
2.....	3.4	7.2	26	1,240	1,190	740	1,620	2,580	223	11	548	152
3.....	4.8	9.2	26	1,500	938	804	1,550	2,730	196	8.0	416	152
4.....	5.0	9.2	26	1,770	856	838	1,480	2,890	128	8.0	214	128
5.....	4.6	9.6	29	3,260	668	910	1,420	3,050	113	8.4	152	92
6.....	3.9	12	30	3,050	580	1,120	1,360	2,970	99	8.8	128	46
7.....	3.1	13	32	2,810	564	1,360	1,240	2,650	85	7.2	152	30
8.....	3.1	16	32	2,730	532	1,520	1,040	2,380	74	6.0	120	28
9.....	3.0	17	32	2,650	500	1,550	838	2,220	53	4.6	82	24
10.....	3.4	19	36	2,580	486	1,580	628	2,070	40	4.2	71	23
11.....	3.6	19	44	2,730	486	1,550	472	1,920	53	3.9	59	30
12.....	3.6	19	50	2,890	486	1,660	402	1,760	56	3.4	48	56
13.....	3.4	19	53	3,050	500	1,800	388	1,550	53	3.0	115	113
14.....	3.2	22	71	3,050	532	1,840	521	1,190	53	3.9	223	136
15.....	3.1	26	71	2,730	612	1,690	786	928	58	4.2	144	120
16.....	3.3	30	68	2,380	676	1,480	756	724	53	8.8	92	113
17.....	3.7	29	68	2,070	788	1,300	676	564	58	37	74	88
18.....	4.2	28	71	1,800	874	1,210	548	500	53	116	162	59
19.....	4.5	26	74	1,550	946	883	516	472	46	144	169	40
20.....	4.8	24	82	1,300	982	692	692	430	42	136	232	29
21.....	5.1	24	85	1,060	910	596	1,140	516	38	160	294	23
22.....	5.4	26	92	964	804	564	1,190	692	34	278	316	23
23.....	4.2	26	106	964	676	500	892	820	30	461	232	23
24.....	3.4	32	120	1,090	564	516	708	910	24	1,070	169	23
25.....	3.4	40	169	1,360	486	564	548	1,260	23	1,620	108	22
26.....	3.0	44	214	1,580	472	564	942	1,270	18	1,270	53	22
27.....	2.7	42	272	1,720	532	564	1,450	1,040	17	1,140	42	20
28.....	2.7	32	283	1,840	564	580	1,620	820	15	946	40	20
29.....	2.7	32	305	1,760	-----	644	1,620	628	14	804	32	29
30.....	3.7	29	504	1,620	-----	740	1,800	489	13	772	34	34
31.....	4.9	-----	807	1,450	-----	1,140	-----	360	-----	756	50	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	5.4	2.7	3.74	230
November.....	44	6.0	22.9	1,360
December.....	807	26	126	7,750
January.....	3,260	964	1,990	122,000
February.....	1,270	472	696	38,700
March.....	1,840	500	1,040	64,000
April.....	1,800	388	1,020	60,700
May.....	3,050	360	1,440	88,500
June.....	294	13	68.2	4,060
July.....	1,620	3.0	317	19,500
August.....	692	32	170	10,500
September.....	152	20	59.4	3,530
The year.....	3,260	2.7	581	421,000

OUACHITA RIVER AT REMMEL DAM, NEAR MALVERN, ARK.

LOCATION.—Water-stage recorder in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 36, T. 3 S., R. 18 W., 700 feet below Remmel Dam and 9 miles northwest of Malvern. Zero of gage is 247.94 feet above mean sea level.

DRAINAGE AREA.—1,540 square miles.

RECORDS AVAILABLE.—January 1925 to September 1933.

DISCHARGE.—Maximum daily during year, 74,400 second-feet Dec. 30 (gage height, 27.55 feet); minimum, 37 second-feet Dec. 5 (gage height, 1.64 feet). 1925-33: Maximum, about 138,000 second-feet Apr. 21, 1927 (gage height, 35.7 feet); minimum, 15 second-feet Sept. 12, 13, 1925 (gage height, 1.52 feet).

Maximum stage known, 36.3 feet May 16, 1923 (discharge, about 140,000 second-feet).

REMARKS.—Records good. Regulation by Remmel Dam. Discharge estimated June 10-17.

Discharge, in second-feet, 1932-33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	111	90	74	20,000	7,000	2,330	6,490	9,270	831	139	112	180
2.....	145	131	109	7,320	2,928	1,770	8,100	6,880	510	123	113	149
3.....	126	115	76	5,260	2,920	2,040	6,040	4,100	859	135	268	141
4.....	342	408	141	6,180	2,770	1,310	4,810	5,850	431	156	131	99
5.....	207	210	108	5,630	2,190	1,020	4,320	7,070	483	138	137	291
6.....	109	111	77	5,710	1,920	2,440	3,630	5,200	423	124	126	278
7.....	228	169	72	5,990	2,360	2,880	2,630	4,250	613	153	115	574
8.....	102	266	81	6,260	2,800	2,770	2,730	4,550	688	141	141	785
9.....	143	296	98	5,290	2,770	2,880	2,720	2,860	333	129	142	260
10.....	139	118	82	5,400	1,760	2,840	2,330	2,900	430	138	143	144
11.....	72	139	92	6,480	1,410	2,820	2,710	3,030	900	162	278	128
12.....	126	180	238	6,460	1,560	2,670	2,720	5,750	500	128	125	594
13.....	214	266	360	5,260	2,850	2,910	2,550	2,860	130	125	109	431
14.....	99	93	346	3,810	2,850	2,950	2,740	2,400	120	119	578	449
15.....	98	107	136	2,590	2,850	2,620	2,440	12,400	120	125	129	659
16.....	97	218	410	2,960	2,850	2,550	1,160	13,800	830	130	133	269
17.....	98	308	870	4,060	2,880	2,620	1,090	13,900	110	138	120	404
18.....	124	228	1,460	5,270	2,610	2,820	687	7,910	267	129	115	447
19.....	159	170	786	5,650	1,390	2,770	1,890	4,450	133	134	135	133
20.....	109	361	736	3,200	1,650	2,940	2,330	2,900	229	104	148	260
21.....	150	150	1,100	7,150	2,780	2,900	4,550	2,780	139	129	148	494
22.....	85	288	1,350	9,490	2,310	2,860	2,840	2,950	152	133	170	550
23.....	104	980	1,770	10,300	1,300	2,920	2,750	2,870	400	190	120	201
24.....	111	995	2,060	10,100	1,350	2,850	2,990	2,660	77	139	210	203
25.....	70	544	2,100	8,130	1,970	2,760	2,880	2,670	159	130	131	229
26.....	84	157	2,650	6,020	735	2,670	2,800	2,260	338	115	130	248
27.....	79	175	5,080	5,260	1,370	2,750	4,790	1,740	181	102	133	398
28.....	101	120	4,050	5,200	2,600	2,770	6,600	1,480	143	100	118	728
29.....	84	76	3,040	5,070	-----	2,740	5,000	682	138	68	145	485
30.....	94	83	40,500	3,500	-----	3,520	13,800	834	137	137	130	85
31.....	104	-----	49,600	3,320	-----	4,560	-----	817	-----	100	128	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	342	70	126	7,750
November.....	995	76	252	15,000
December.....	49,600	72	3,860	237,000
January.....	20,000	2,590	6,170	379,000
February.....	7,000	735	2,380	132,000
March.....	4,560	1,020	2,690	165,000
April.....	13,800	687	3,770	224,000
May.....	13,900	682	4,880	300,000
June.....	900	77	360	21,400
July.....	190	68	130	7,990
August.....	578	109	157	9,650
September.....	785	85	346	20,600
The year.....	49,600	68	2,100	1,520,000

MISCELLANEOUS DISCHARGE MEASUREMENTS

In addition to the records of stream flow obtained at gaging stations and reported in the preceding pages, measurements of flow were made at a number of other points, as shown by the following table:

Miscellaneous discharge measurements in Lower Mississippi River drainage basin during the year ending Sept. 30, 1933

Date	Stream	Tribuary to—	Locality	Gage height	Dis-charge
				Feet	Sec.-ft.
Oct. 13	Howes Mill Spring	Meramec River	SW $\frac{1}{4}$ sec. 15, T. 34 N., R. 3 W., at Howes Mill, 18 miles east of Salem, Mo.	0.84	8.1
11	Meramec Spring	do	Sec. 1, T. 37 N., R. 6 W., 6 miles southeast of St. James, Mo.		64
Dec. 1	Roaring Spring	do	Sec. 22, T. 38 N., R. 5 W., $3\frac{1}{2}$ miles southeast of Fanning, Mo.		4.1
Oct. 11	Evans Spring	do	NW $\frac{1}{4}$ sec. 2, T. 37 N., R. 4 W., 1 mile southeast of Steelville, Mo.		.4
11	Collins Spring	do	Sec. 3, T. 37 N., R. 4 W., 1 mile southeast of Steelville, Mo.		1.6
12	James Spring	Dry Creek	Sec. 36, T. 38 N., R. 3 W., 8 miles east of Steelville, Mo.		2.2
11	Westover Spring	Huzzah Creek	At Westover, Crawford County, Mo.		6.3
12	Cold Spring	Mineral Fork Creek	E $\frac{1}{2}$ SW $\frac{1}{4}$ sec. 4, T. 37 N., R. 1 E., near Floyd, Mo.		.69
30	Blue Spring	St. Francis River	Sec. 4, T. 27 N., R. 6 E., 8 miles southeast of Greenville, Mo.		49
19	Roaring River Spring	Roaring River	Sec. 27, T. 22 N., R. 27 W., 7 miles south of Cassville, Mo.		10
20	Winoka Spring	James River	Sec. 15, T. 28 N., R. 21 W., 1 mile southeast of Galloway, Mo.		.23
20	Blue Spring	do	Sec. 32, T. 28 N., R. 22 W., 3 miles southeast of Battlefield, Mo.		2.0
17	Big Spring	North Fork of White River	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 26, T. 25 N., R. 11 W., 1 mile south of Roosevelt, Mo.		3.2
17	Blue Spring	do	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 14, T. 24 N., R. 11 W., at McCabe, Mo.		9.5
17	Althea Spring	do	Sec. 25, T. 23 N., R. 12 W., at Althea, Mo.		15
17	Rockbridge Spring	Spring Creek	Sec. 5, T. 24 N., R. 13 W., at Rockbridge, Mo.		24
18	Bryant Spring	Bryant Creek	Sec. 7, T. 27 N., R. 15 W., at Bryant, Mo.		.97
17	Hodgson Mill Spring	do	Sec. 34, T. 24 N., R. 12 W., near Sycamore, Mo.		34
18	Zanoni Spring	Pine Creek	Sec. 7, T. 23 N., R. 12 W., at Zanoni, Mo.		.3
29	Markham Spring	Black River	Sec. 23, T. 27 N., R. 4 E., 3 miles west of Williamsville, Mo.		6.7
30	Lord Spring	do	SW $\frac{1}{4}$ sec. 23, T. 27 N., R. 5 E., 3 miles east of Williamsville, Mo.		.43
29	Keener Spring	do	Sec. 9, T. 26 N., R. 5 E., 1 mile southeast of Keener, Mo.		17
15	Current River	White River	NE $\frac{1}{4}$ sec. 21, T. 29 N., R. 2 W., just below Blue Spring, 12 miles east of Eminence, Mo.		484
15	do	do	Sec. 33, T. 28 N., R. 1 W., just above mouth of Rogers Creek		501
16	do	do	Sec. 12, T. 26 N., R. 1 E., 2 miles upstream from Chilton, Mo.		818
May 22	Spring River	Black River	Ravenden, Ark.	7.06	510
July 27	do	do	do	7.49	780
Sept. 21	do	do	do	6.76	304
Mar. 27	do	do	do	7.84	1,180
Oct. 13	Montauk Spring	Current River	SE $\frac{1}{4}$ sec. 22, T. 32 N., R. 7 W., half a mile north of Montauk, Mo.		46
14	Welch Spring	do	Sec. 14, T. 31 N., R. 6 W., 3 miles southeast of Cedar Grove, Mo.		77
14	Pulltight Spring	do	NE $\frac{1}{4}$ sec. 4, T. 30 N., R. 5 W., 5 miles north of Ink, Mo.		5.9
13	Highley Spring	Sinking Creek	Sec. 33, T. 32 N., R. 3 W., near Bunker, Mo.		3.5
16	Blue Spring	Jacks Fork	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 31, T. 28 N., R. 6 W., near Mountain View, Mo.		2

* Made during year ending Sept. 30, 1932.

Miscellaneous discharge measurements in Lower Mississippi River drainage basin during the year ending Sept. 30, 1933—Continued

Date	Stream	Tributary to—	Locality	Gage height	Dis-charge
				Feet	Sec.-ft.
16	McCubbens Spring.	Jacks Fork	NW¼ sec. 6, T. 27 N., R. 6 W., near Mountain View, Mo.		0.78
15	Blue Spring	Current River	NE¼ sec. 21, T. 29 N., R. 2 W., 12 miles east of Eminence, Mo.		62
25	Turners Mill	Eleven Point River.	Sec. 3, T. 24 N., R. 3 W., 10 miles northeast of Alton, Mo.		1.7
25	Boze Mill Spring	do.	Sec. 16, T. 23 N., R. 2 W., 12 miles east of Alton, Mo.		14
Sept. 14	do.	do.	do.		14
Oct. 25	Thomasson Mill Spring.	do.	Sec. 16, T. 22 N., R. 2 W., 18 miles southeast of Alton, Mo.		14
Sept. 14	do.	do.	do.		35
Oct. 25	Blue Spring	do.	Sec. 6, T. 22 N., R. 2 W., 18 miles southeast of Alton, Mo.		64
Sept. 14	do.	do.	do.		70
Aug. 26	Cow Creek Flood Bypass.	Arkansas River	Hutchinson, Kans.		1,580
26	Cow Creek	do.	do.		171
May 4	Ocate Creek	Canadian River	Lot 2, sec. 2, T. 22 N., R. 18 E., 300 feet above Naranjos Diversion, 2 miles below Ocate, N. Mex.	0.65	3.71
10 ^b	do.	do.	do.	.50	1.54
17 ^b	do.	do.	do.	.49	1.52
21 ^b	do.	do.	do.	.49	1.56
25	do.	do.	do.	.42	1.40
27 ^b	do.	do.	do.	.41	1.11
June 3 ^b	do.	do.	do.	.44	1.30
14 ^b	do.	do.	do.	.48	1.59
17 ^b	do.	do.	do.	.51	2.07
20 ^b	do.	do.	do.	.46	3.31
21 ^b	do.	do.	do.	.50	3.97
22 ^b	do.	do.	do.	1.02	24.9
24 ^b	do.	do.	do.	.68	4.34
27 ^b	do.	do.	do.	.61	2.45
27	do.	do.	do.	.60	1.18
July 1 ^b	do.	do.	do.	.54	1.05
5 ^b	do.	do.	do.	.52	.64
6 ^b	do.	do.	do.	.54	1.32
11 ^b	do.	do.	do.	.80	8.35
15 ^b	do.	do.	do.	.55	1.01
17 ^b	do.	do.	do.	.72	4.29
20	do.	do.	do.	.50	1.09
22 ^b	do.	do.	do.	.53	1.00
29 ^b	do.	do.	do.	.50	.63
Aug. 2 ^b	do.	do.	do.	1.41	31.6
5 ^b	do.	do.	do.	.58	2.18
7 ^b	do.	do.	do.	.62	5.37
8 ^b	do.	do.	do.	1.08	29.0
14	do.	do.	do.	.52	1.07
19 ^b	do.	do.	do.	.56	1.29
25 ^b	do.	do.	do.	1.36	40.2
28	do.	do.	do.	1.10	8.18
Sept. 2 ^b	do.	do.	do.	1.06	4.81
6 ^b	do.	do.	do.	1.24	2.43
14 ^b	do.	do.	do.	1.96	21.0
17	do.	do.	do.	1.80	4.30
May 7	Colmor Main Service Canal.	Diverts from Ocate Creek.	NE¼SW¼ sec. 35, T. 23 N., R. 20 E., at head, 8 miles southwest of Colmor, N. Mex.	.51	.56
24	do.	do.	do.	.49	.21
June 27	do.	do.	do.	.60	.26
July 19	do.	do.	do.	.71	.35
Aug. 14	do.	do.	do.	.73	.19
29	do.	do.	do.	.97	1.11
Sept. 17	do.	do.	do.	.95	.32

^b Furnished by State engineer of New Mexico.

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