UNITED STATES DEPARTMENT OF THE INTERIOR
Ray Lyman Wilbur, Secretary

GEOLOGICAL SURVEY
George Otis Smith, Director

WATER-SUPPLY PAPER 605

SURFACE WATER SUPPLY OF THE UNITED STATES

1925

PART V. HUDSON BAY AND UPPER MISSISSIPPI RIVER BASINS

NATHAN C. GROVER, Chief Hydraulic Engineer
W. A. LAMB, S. B. SOULÉ, J. B. SPIEGEL
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Prepared in cooperation with the
STATES OF MINNESOTA, WISCONSIN, IOWA
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ILLUSTRATION

SURFACE WATER SUPPLY OF HUDSON BAY AND UPPER MISSISSIPPI RIVER BASINS, 1925

AUTHORIZATION AND SCOPE OF WORK

This volume is one of a series of 14 reports presenting records of measurements of flow made on streams in the United States during the year ending September 30, 1925.

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 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, 1895–1926

1895	$12, 500. 00	1911–1917	$150, 000. 00
1896	24, 500. 00	1918	175, 000. 00
1897–1899	50, 000. 00	1919	148, 244. 10
1900	70, 000. 00	1920	175, 000. 00
1901–2	100, 000. 00	1921–1923	180, 000. 00
1903–1906	200, 000. 00	1924–25	170, 000. 00
1907	150, 000. 00	1926	165, 000. 00
1908–1910	100, 000. 00		

In this work many private and State organizations have cooperated, either by furnishing records 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 5,120 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1925, 1,710 gaging stations were

being maintained by the Geological Survey and the cooperating organizations. Many miscellaneous discharge measurements are 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 the 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 devided 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 section or sections of the stream channel below the gage which determine the stage-discharge relation at the gage. It should be noted that the control may not be the same section or sections at all stages.

The "point of zero flow" for a gaging station is that point on the gage—the gage height—at which water ceases to flow over the control.

EXPLANATION OF DATA

The data presented in this report cover the year beginning October 1, 1924, and ending September 30, 1925. At the beginning of January in most parts of the United States much of the precipitation in the preceeding three months is stored in the form of snow or ice, or in ponds, lakes, and swamps, as ground 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 consist of records of stage, measurements of discharge, and general information used to

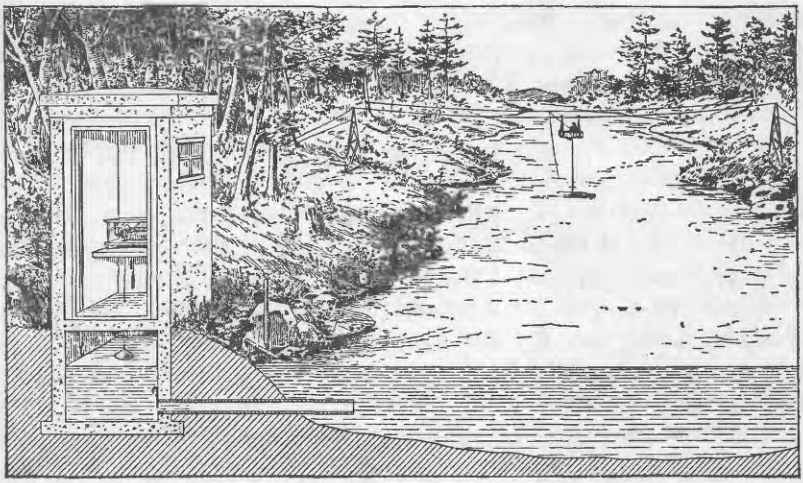

FIGURE 1.—Typical gaging station

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.

From the discharge measurements rating tables are prepared that give the discharge for any stage. The application of the daily gage height to these rating tables gives the daily discharge from which the monthly and yearly mean discharge is determined.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table giving records

of discharge measurements, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

If the base data are insufficient to determine the daily discharge, tables giving daily gage height and records of discharge measurements are published.

The description of the station gives, in addition to statements regarding location and equipment, information in regard to any condition that may affect the permanence of the stage-discharge relation, covering such subjects as the occurrence of ice, the use of the stream for log driving, shifting of control, and the cause and effect of backwater; it gives also information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded stages, and the accuracy of the records.

The table of daily discharge gives, in general, the discharge in second-feet corresponding to the mean of the gage heights read each day. At stations on streams subject to sudden or rapid diurnal fluctuation the discharge obtained from the rating table and 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 at regular intervals during the day or by using the discharge integrator, an instrument operating on the principle of the planimeter and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height, and the corresponding discharge was consequently larger than given in the maximum column. Likewise, in the column headed "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow computations recorded in the remaining columns, which are defined on page 2, are based.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

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

A paragraph in the description of the station gives information regarding the (1) permanence of the stage-discharge relation, (2) precision with which the discharge rating curve is defined, (3) refinement of gage readings, (4) frequency of gage readings, and (5) methods of applying the daily gage height to the rating table to obtain the daily discharge.

For the rating tables "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined," within 10 per cent; "poorly defined," within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The monthly mean 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. All figures representing "second-feet per square mile" and "run-off in inches" published by the Geological Survey in earlier reports should be used with caution because of possible inherent but unknown sources of error.

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 stations must first be satisfied. To give an idea of the amount of prior appropriations, a paragraph on diversions is presented in each station description. The figures given can not be considered exact but represent the best information available.

The table of monthly discharge gives only a general idea of the flow at the station and should not be used for other than preliminary estimates; the tables of daily discharge allow 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.

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 powers, 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 I. North Atlantic slope basins (St. John River to York River).
II. South Atlantic slope and eastern Gulf of Mexico basins (James River to the Mississippi).
III. Ohio River Basin.
IV. St. Lawrence River Basin.
V. Upper Mississippi River and Hudson Bay Basins.
VI. Missouri River Basin.
VII. Lower Mississippi River Basin.
VIII. Western Gulf of Mexico Basins.
IX. Colorado River Basin.
X. Great Basin.
XI. Pacific slope basins in California.
XII. North Pacific slope basins; in three volumes:
A, Pacific slope basins in Washington and upper Columbia River Basin.
B, Snake River Basin.
C, Lower Columbia River Basin and Pacific slope basins in Oregon.

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 of the United States.

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

Augusta, Me., Statehouse.
Boston, Mass., 2500 Customhouse.
Albany, N. Y., 904 Home Savings Bank Building.
Trenton, N. J., Statehouse.
Charlottesville, Va., care of University of Virginia.
Asheville, N. C., 608 City Hall.
Chattanooga, Tenn., 630 Power Building.
Tuscaloosa, Ala., Post Office Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University
Chicago, Ill., 1510 Consumers Building.
Madison, Wis., care of Railroad Commission of Wisconsin.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
Topeka, Kans., 23 Federal Building.
Helena, Mont., 45–46 Federal Building.
Denver, Colo., 403 Post Office Building.
Salt Lake City, Utah, 313 Federal Building.
Idaho Falls, Idaho, 228 Federal Building.
Boise, Idaho, Federal Building.
Tacoma, Wash., 404 Federal Building.

Portland, Oreg., 606 Post Office Building.
San Franciso, Calif., 303 Customhouse.
Los Angeles, Calif., 600 Federal Building.
Tucson, Ariz., 104 Agricultural Building, University of Arizona.
Austin, Tex., State Capitol.
Honolulu, Hawaii, Territorial Office Building.

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

Stream-flow records have been obtained at about 5,120 points in the United States, and the data obtained have been published in the reports tabulated below:

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 September, 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 to 1893)	1888 to Dec. 31, 1893.
B, 131	Descriptions, measurements, gage heights, and ratings	1893 and 1894.
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 and 1896.
W 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas.	1897.
W 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte, 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, 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.

NOTE.—No data regarding stream flow are given in the Fifteenth and Seventeenth Annual Reports.

The records at most of the stations discussed in these reports extend over a series of years, and miscellaneous measurements at many points other than regular gaging stations have been made each year. 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 1925. The data for any particular station will be found in the reports covering the years during which the station was maintained. For example, data for Machias River at Whitneyville, Me., 1903 to 1921, are published in Water-Supply Papers 97, 124, 165, 201, 241, 261, 281, 301, 321, 351, 381, 401, 431, 451, 471, 501, and 521, which contain records for the New England streams from 1903 to 1921. Results of miscellaneous measurements are published by drainage basins.

Numbers of water-supply papers containing results of stream measurements, 1899–1925

[For basins included see p. 6]

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII		
												A	B	C
1899[a]	35	[b] 35, 36	36	36	36	[c] 36, 37	37	37	[d] 37, 38	38, [e] 39	38, [f] 39	38	38	38
1900[g]	47, [h] 48	48	48, [i] 49	49	49	49, [f] 50	50	50	50	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	[k] 65, 66, 75	65, 75	[k] 65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	[b] 82, 83	83	[l] 82, 83	[k] 83, 85	84	[k] 83, 84	84	85	85	85	85	85	85
1903	97	[b] 97, 98	98	97	[k] 98, 99, [m] 100	99	[k] 98, 99	99	100	100	100	100	100	100
1904	[n] 124, [o] 125 [p] 126	[p] 126, 127	128	129	[k] 128, 130	130, [q] 131	[k] 128, 131	132	133	133, [r] 134	134	135	135	135
1905	[n] 165, [o] 166 [p] 167	[p] 167, 168	169	170	171	172	[k] 169, 173	174	175, [s] 177	176, [r] 177	177	178	178	[t] 177, 178
1906	[n] 201, [o] 202 [p] 203	[p] 203, 204	205	206	207	208	[k] 205, 209	210	211	212, [r] 213	213	214	214	214
1907–8	241	242	243	244	245	246	247	248	249	250, [r] 251	251	252	252	252
1909	261	262	263	264	265	266	267	268	269	270, [r] 271	271	272	272	272
1910	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912	321	322	323	324	325	326	327	328	329	330	331	332A	332B	332C
1913	351	352	353	354	355	356	357	358	359	360	361	362A	362B	362C
1914	381	382	383	384	385	386	387	388	389	390	391	392	393	394
1915	401	402	403	404	405	406	407	408	409	410	411	412	413	414
1916	431	432	433	434	435	436	437	438	439	440	441	442	443	444
1917	451	452	453	454	455	456	457	458	459	460	461	462	463	464
1918	471	472	473	474	475	476	477	478	479	480	481	482	483	484
1919–20	501	502	503	504	505	506	507	508	509	510	511	512	513	514
1921	521	522	523	524	525	526	527	528	529	530	531	532	533	534
1922	541	542	543	544	545	546	547	548	549	550	551	552	553	554
1923	561	562	563	564	565	566	567	568	569	570	571	572	573	574
1924	581	582	583	584	585	586	587	588	589	590	591	592	593	594
1925	601	602	603	604	605	606	607	608	609	610	611	612	613	614

[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, Part IV.
[b] James River only.
[c] Gallatin River.
[d] Green and Gunnison Rivers and Grand River above junction with Gunnison.
[e] Mohave River only.
[f] Kings and Kern Rivers and south Pacific slope 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. Tables of monthly discharge for 1900 in Twenty-second Annual Report, Part IV.
[h] Wissahickon and Schuylkill Rivers to James River.
[i] Scioto River.
[j] Loup and Platte Rivers near Columbus, Nebr., and all tributaries below junction with Platte.
[k] Tributaries of Mississippi from east.
[l] Lake Ontario and tributaries to St. Lawrence River.
[m] Hudson Bay only.
[n] New England rivers only.
[o] Hudson River to Delaware River, inclusive.
[p] Susquehanna River to Yadkin River, inclusive.
[q] Platte and Kansas Rivers.
[r] Great Basin in California except Truckee and Carson River Basins.
[s] Below junction with Gila.
[t] Rogue, Umpqua, and Siletz Rivers only.

COOPERATION

In Montana the work was carried on in cooperation with the United States Bureau of Reclamation. With the exception of the station on St. Mary River near Babb, all stations in Montana were maintained jointly with the Reclamation Service and Dominion Water Power Branch, Department of the Interior, Canada.

In Minnesota the work in the Red River Basin was done in cooperation with the Minnesota State Drainage Commission, E. V. Willard, commissioner. The following organizations cooperated in maintaining certain stations: United States Weather Bureau (Mississippi River at St. Paul and Minnesota River at Mankato), United States Engineer Corps (Mississippi River at Elk River and Minnesota River near Montevideo), Ford Motor Co. (Mississippi River at St. Paul and Minnesota River at Mankato), Minnesota Power & Light Co. (Mississippi River near Royalton and Kawishiwi River near Winton), and Prairie River Power Co. (Mississippi River above Sandy River, near Libby).

In Wisconsin the work was carried on in cooperation with the Railroad Commission of Wisconsin, C. M. Larson, chief engineer, and with the Northern States Power Co. (St. Croix River near Grantsburg, St. Croix River near Rush City, Red Cedar River near Colfax, and Red Cedar River at Menomonie).

In Iowa the work was carried on in cooperation with the Iowa Geological Survey, George F. Kay, director; Iowa Highway Commission, F. R. White, chief engineer; and Mississippi River Power Co., of Keokuk, Iowa, Albion Davis, hydraulic engineer. The United States Weather Bureau paid the salary of the gage observer for the station on Cedar River at Cedar Rapids and part of the salaries of observers for stations on Des Moines River near Boone and Tracy, and Raccoon River at Van Meter. The Interstate Power Co., of Chicago, paid the salary of the observer for the station on Upper Iowa River near Decorah.

In Illinois the work was carried on in cooperation with the Illinois Department of Purchases and Construction, division of waterways, Wm. F. Mulvihill, superintendent. The Central Illinois Public Service Co. paid the salary of the observer for station on South Fork of Sangamon River at the power plant near Taylorville.

In Missouri the work was done in cooperation with the Missouri Bureau of Geology and Mines, through H. A. Buehler, State geologist.

DIVISION OF WORK

The data for stations in the Hudson Bay Basin in Montana were collected and prepared for publication under the direction of W. A. Lamb, district engineer, assisted by A. H. Tuttle and Miss G. B. McDonough.

The data for stations in the Hudson Bay Basin in Minnesota were collected and prepared for publication under the direction of S. B. Soulé, district engineer, and by E. F. Chandler, assisted by F. E. Levi, R. B. Black, and C. F. Meyer.

The data for stations in the Mississippi River Basin in Wisconsin and Minnesota were collected and prepared for publication under the direction of S. B. Soulé, district engineer, assisted by F. C. Christopherson and J. H. Olson.

The data for stations in the upper Mississippi River Basin in Iowa were collected and prepared for publication under the direction of J. B. Spiegel, district engineer.

The data for stations in the upper Mississippi River Basin in Illinois were collected and prepared for publication under the direction of H. E. Grosbach, district engineer, assisted by A. M. Wahl.

The data for stations in the upper Mississippi River Basin in Missouri were collected and prepared for publication under the direction of H. C. Beckman, district engineer, assisted by V. L. Austin, W. S. Frame, W. A. Werner, and E. C. Biffle.

The records were reviewed and the manuscript assembled by F. C. Christopherson.

GAGING-STATION RECORDS

HUDSON BAY DRAINAGE BASIN

ST. MARY RIVER NEAR BABB, MONT.

LOCATION.—In SE. ¼ sec. 27, T. 36 N., R. 14 W., above headworks of St. Mary Canal and 1 mile east of Babb, Glacier County, on Blackfeet Indian Reservation.

DRAINAGE AREA.—278 square miles (includes area of Swiftcurrent Creek above point of diversion into St. Mary Lake; measured on topographic maps).

RECORDS AVAILABLE.—April 9, 1902, to September 30, 1925, when station was discontinued.

GAGE.—Stevens water-stage recorder on right bank 20 feet above diversion dam; referenced to staff gage which records head over crest. Recorder inspected and staff gage read by S. M. Funk.

DISCHARGE MEASUREMENTS.—Made from cable 500 feet above dam.

CHANNEL AND CONTROL.—Channel practically permanent. Banks high and not subject to overflow. Concrete diversion works for St. Mary Canal form the control.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 4,220 second-feet May 25 and 26 (includes discharge of canal); minimum stage, 0.48 foot March 18 (discharge, 179 second-feet).

1902–1925: Maximum stage estimated at 9.4 feet June 5, 1908 (discharge, 7,980 second-feet); minimum discharge, 30 second-feet April 3–7, 1904.

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—Intake for United States Bureau of Reclamation St. Mary Canal situated at left end of diversion dam. Tables of daily and monthly discharge include the discharge of this canal.

REGULATION.—Natural storage in St. Mary Lake. Swiftcurrent Creek is diverted into St. Mary Lake, the flow being regulated by gate operations at Sherburne Lake Reservoir.

ACCURACY.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 300 and 3,500 second-feet. Mean daily gage height obtained from recorder graph October 1 to November 6, May 4-24, and June 3 to September 30. Observer's readings to hundredths once daily used January 27, February 28, March 18 and 31, April 6 and 18, and May 25 to June 2. Daily discharge ascertained by applying mean daily gage height to rating table and adding flow in canal for days when the canal was in operation. Records good.

The diversion dam below the gaging station was constructed by the United States Bureau of Reclamation for the purpose of diverting water from St. Mary River into St. Mary Canal, which carries water across the divide into North Fork of Milk River. The water then flows in the channel of Milk River through Canada and is finally used for irrigation in the Milk River Valley in Montana. The present capacity of the diversion canal is about 850 second-feet. A storage reservoir is provided on Swiftcurrent Creek by a dam at the outlet of Sherburne Lake. By means of a diversion channel connecting Swiftcurrent Creek and Lower St. Mary Lake the run-off from Swiftcurrent Creek is made available for diversion through St. Mary Canal.

The following discharge measurements of flow over the diversion dam were made:

June 6, 1925: Gage height, 1.80 feet; discharge, 2,110 second-feet.

June 21, 1925: Gage height, 2.10 feet; discharge 2,900 second-feet.

Daily discharge, in second-feet, of St. Mary River near Babb, Mont., for the year ending September 30, 1925

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	298	276						3,540	2,940	1,190	815
2	298	291						3,420	2,810	1,180	675
3	306	306						3,200	2,660	1,160	590
4	313	313					932	3,240	2,480	1,150	560
5	313	321					960	3,030	2,230	1,130	540
6	321	328				276	1,020	2,610	2,090	1,160	540
7	313						1,260	2,340	1,970	1,350	530
8	313						1,500	2,100	1,860	1,340	614
9	306						1,610	2,020	1,740	1,100	745
10	298						1,690	2,120	1,600	1,070	785
11	306						1,670	2,250	1,510	1,070	829
12	306						1,650	2,410	1,410	1,060	894
13	298						1,620	2,460	1,360	1,040	872
14	284						1,590	2,520	1,310	1,040	865
15	298						1,760	2,540	1,280	1,120	865
16	298						1,930	2,590	1,320	1,130	947
17	298					1,010	2,100	2,640	1,340	1,120	926
18	291				179		2,340	2,780	1,340	1,100	875
19	284						2,610	2,910	1,370	1,080	945
20	276						2,860	2,880	1,320	1,050	1,020
21	276						2,970	3,310	1,360	1,100	936
22	269						3,480	3,510	1,350	950	871
23	261						4,030	3,760	1,370	935	862
24	269						4,150	3,780	1,270	987	851
25	269						4,220	3,680	1,260	1,080	840
26	269						4,220	3,540	1,230	1,010	848
27	269		241				3,970	3,320	1,190	995	859
28	269			190			3,760	3,100	1,170	958	877
29	284						3,740	3,030	1,180	950	879
30	291						3,800	3,030	1,200	882	875
31	284				228		3,850		1,210	830	

Monthly discharge of St. Mary River near Babb, Mont., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	321	261	291	17,900
November 1–6	328	276	306	3,640
May 4–31	4,220	932	2,550	142,000
June	3,780	2,020	2,920	174,000
July	2,940	1,770	1,600	98,400
August	1,350	830	1,070	65,800
September	1,020	530	804	47,800

ST. MARY RIVER NEAR KIMBALL, ALBERTA

LOCATION.—In SW. ¼ sec. 25, T. 1 N., R. 25 W. fourth meridian, 1 mile south and 1 mile west of Kimball, Alberta, and 5 miles north of international boundary.

DRAINAGE AREA.—472 square miles (measured on topographic maps).

RECORDS AVAILABLE.—January 1, 1913, to September 30, 1925, September 1, 1902, to December 31, 1912, records were obtained at point half a mile north of boundary line. From 1905 to 1912 records were also obtained by the Irrigation Branch, Department of Interior, Canada, at a point half a mile below present station. The discharge at the three points is practically the same.

GAGE.—Stevens continuous water-stage recorder on right bank used during open-water season. During winter a chain gage on highway bridge 3 miles below station is used.

DISCHARGE MEASUREMENTS.—Made from cable 1,200 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed of stream at gage and at control composed of boulders and sandstone ledges. Control formed by an outcropping ledge of sandstone covered with boulders near left bank. Shifts occasionally during high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.09 feet at 10 p. m. May 23 (discharge, 4,990 second-feet); minimum discharge, 148 second-feet January 15 and 16 (stage-discharge relation affected by ice).

1902–1925: Maximum stage recorded, 12.75 feet June 5, 1908 (discharge, 18,000 second-feet, estimated by comparison with record for station near Babb); minimum discharge, 46 second-feet December 1, 1919 (stage-discharge relation affected by ice).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—St. Mary Canal diverts water from St. Mary River near Babb, Mont., to North Fork of Milk River. Alberta Railway & Irrigation Co.'s canal diverts water from St. Mary River 2 miles below station.

REGULATION.—Flow of Swiftcurrent Creek regulated by gate operation at Sherburne Lake Reservoir.

ACCURACY.—Stage-discharge relation not permanent; affected by ice and by change of control. Two well-defined rating curves used for open-water periods. Mean daily gage height determined by inspection of recorder graph October 1 to November 5 and April 9 to September 30. Observer's readings to hundredths once daily used November 6 to April 8. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Maintained in cooperation with Department of the Interior, Canada.

Discharge measurements of St. Mary River near Kimball, Alberta, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 8	2.62	335	Mar. 18	[b]6.56	[a]233	July 17	3.72	937
Oct. 8	2.84	[a]23.8	Mar. 23	[b]6.63	[a]237	Aug. 10	3.19	639
Oct. 24	4.04	[a]294	Apr. 9	[b]3.09	577	Aug. 11	3.52	[a]109
Nov 12	[b]4.15	[a]319	Apr. 25	4.08	1,430	Aug. 18	3.23	[c]599
Dec. 3	[b]4.23	[a]302	May 7	4.14	1,460	Aug. 28	2.97	476
Dec. 17	[b]8.88	[a]278	May 19	5.09	2,980	Aug. 28	3.17	[a]57
Jan. 15-16	[b]6.43	[a]148	May 22	5.54	3,710	Sept. 1	3.78	1,110
Feb 11	[b]7.53	[a]247	June 8	4.63	2,010	Sept. 16	2.84	391
Feb. 16	[b]7.27	[a]249	June 25	5.52	3,820	Sept. 16	2.85	392

[a] Made at winter section and referred to chain gage.
[b] Stage-discharge relation affected by ice.
[c] Made below diversion dam of the Alberta Railway & Irrigation Co.'s canal and flow of canal added to obtain discharge at station.

Daily discharge, in second-feet, of St. Mary River near Kimball, Alberta, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	320	306	316	189	241	249	406	1,110	3,860	2,880	768	1,030
2	316	312	311	183	245	253	411	1,040	3,610	2,770	747	874
3	334	316	302	180	245	253	446	1,050	3,320	2,620	733	754
4	337	320	302	174	245	257	501	1,070	3,220	2,400	712	698
5	341	320	287	171	245	257	476	1,120	3,030	2,130	684	677
6	341	316	302	168	249	257	389	1,160	2,810	1,940	649	684
7	337	316	287	166	249	257	458	1,430	2,430	1,810	642	642
8	334	316	287	163	249	257	501	1,700	2,130	1,670	635	657
9	330	321	269	160	249	257	534	1,750	1,990	1,490	628	384
10	326	321	287	158	249	253	670	1,810	2,080	1,350	614	291
11	330	321	287	156	249	245	768	1,800	2,240	1,230	588	325
12	330	321	292	150	249	241	935	1,810	2,380	1,120	576	319
13	334	316	297	150	249	237	1,040	1,780	2,460	1,050	552	325
14	330	331	278	150	249	237	1,110	1,840	2,640	980	540	330
15	330	336	226	148	249	237	1,180	2,000	2,640	926	670	330
16	326	331	278	148	249	237	1,270	2,180	2,670	971	733	356
17	326	326	278	153	249	237	1,390	2,280	2,740	998	649	380
18	330	321	253	158	253	237	1,440	2,530	2,810	980	628	361
19	326	321	237	163	253	237	1,430	2,860	2,980	962	607	426
20	330	316	226	168	257	237	1,430	3,110	3,150	890	582	492
21	330	311	219	174	261	237	1,490	3,400	3,320	850	614	462
22	334	311	216	180	261	237	1,500	3,770	3,580	850	834	450
23	330	311	212	186	249	253	1,530	4,440	3,800	866	1,050	438
24	334	311	208	192	245	297	1,470	4,780	3,820	834	1,210	410
25	330	311	205	198	257	352	1,360	4,760	3,730	803	733	370
26	330	316	202	205	253	389	1,270	4,640	3,630	803	614	380
27	330	316	202	212	253	389	1,210	4,350	3,420	761	504	400
28	330	316	198	219	249	417	1,140	4,070	3,220	747	462	415
29	326	321	198	226	-------	406	1,120	4,090	3,070	810	450	456
30	323	321	195	233	-------	411	1,060	4,150	3,000	803	468	468
31	316	-------	192	237	-------	417	-------	4,030	-------	782	1,110	-----

NOTE.—Stage-discharge relation affected by ice Nov. 1 to Apr. 8; discharge determined from a study of gage heights and discharge measurements referred to chain gage, temperature records, and observer's notes.

Monthly discharge of St. Mary River near Kimball, Alberta, for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	341	316	330	20,300
November	336	306	318	18,900
December	316	192	253	15,600
January	237	148	178	10,900
February	261	241	250	13,900
March	417	237	282	17,300
April	1,530	389	998	59,400
May	4,780	1,040	2,640	162,000
June	3,860	1,990	2,990	178,000
July	2,880	747	1,290	79,300
August	1,210	450	677	41,600
September	1,030	291	486	28,900
The year	4,780	148	894	646,000

ST. MARY CANAL AT INTAKE, NEAR BABB, MONT.

LOCATION.—In NW. ¼ NE. ¼ sec. 27, T. 36 N., R. 14 W., 600 feet below intake of canal on Blackfeet Indian Reservation, 1 mile east of Babb, Glacier County.

RECORDS AVAILABLE.—June 1, 1918, to September 30, 1925.

GAGE.—A Gurley printing water-stage recorder on right bank. Staff gage read to hundredths once or twice daily by the ditch rider.

DISCHARGE MEASUREMENTS.—Made from cable 10 feet above gage. Current is evenly distributed throughout cross section and has a moderate velocity at all stages.

CHANNEL AND CONTROL.—Bed composed of gravel.

ACCURACY.—Stage-discharge relation fairly permanent during season. Rating curve fairly well defined between 60 and 700 second-feet. Operation of water-stage recorder unsatisfactory except May 4–11, August 22–25, August 30, and September 8–30. Staff gage readings used for remainder of period. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

COOPERATION.—Maintained in cooperation with the Department of the Interior, Canada.

Water is diverted from St. Mary River for irrigation of lands in Milk River Valley east of Havre, Mont. Water may be returned to St. Mary River at St. Mary siphon.

Discharge measurements of St. Mary Canal at intake, near Babb, Mont., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Apr. 29	1.95	66	June 6	6.54	572	July 20	6.84	618
May 4	4.30	280	June 20	6.65	564	Aug. 8	6.89	611
May 11	5.25	371	June 21	6.68	615	Sept. 15	6.94	637
May 30	6.54	553	June 24	6.61	579			

Daily discharge, in second-feet, of St. Mary Canal at intake, near Babb, Mont., for the year ending September 30, 1925

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	------	87	565	595	624	0	16	------	444	572	600	600	619
2	------	99	564	594	622	0	17	------	445	578	602	640	613
3	------	218	559	574	622	0	18	------	446	580	600	646	614
4	------	270	554	570	619	0	19	------	449	588	600	649	592
5	------	272	549	582	619	0	20	------	452	589	616	649	562
6	------	299	572	604	622	0	21	------	446	592	631	649	559
7	------	334	560	602	624	0	22	------	451	600	646	288	558
8	------	352	570	598	624	114	23	------	452	580	644	105	564
9	------	390	565	595	626	432	24	10	453	582	644	187	582
10	------	387	566	590	626	544	25	30	487	582	643	550	592
11	------	390	577	588	637	553	26	30	486	578	644	546	594
12	------	390	566	592	637	618	27	30	487	596	643	626	590
13	------	441	571	589	638	618	28	30	526	584	640	630	586
14	------	442	571	586	640	624	29	65	562	601	643	637	566
15	------	443	571	596	652	624	30	76	568	598	625	472	547
							31	----	570	------	626	0	----

NOTE.—Discharge estimated Apr. 24–28, 30, May 1, and May 14–16 on account of missing gage heights. Canal gates closed Aug. 31 to Sept. 7.

Monthly discharge of St. Mary Canal at intake, near Babb, Mont., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April 24–30	76	10	38.7	537
May	570	87	404	24,800
June	601	549	576	34,300
July	646	570	610	37,500
August	652	0	558	34,300
September	624	0	429	25,500
The period				157,000

ST. MARY CANAL AT ST. MARY CROSSING, NEAR BABB, MONT.

LOCATION.—In NE. ¼ sec. 30, T. 37 N., R. 13 W. Montana meridian, 500 feet east of outlet of St. Mary River siphon, 10 miles below intake, and 9 miles north of Babb, Glacier County.

RECORDS AVAILABLE.—July 6, 1918, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on right bank.

DISCHARGE MEASUREMENTS.—Made from cable 70 feet above gage.

CHANNEL AND CONTROL.—Control is situated at head of steel flume 50 feet below gage. Subject to shift on account of silting of canal.

ACCURACY.—Stage-discharge relation permanent during the year. Rating curve well defined between 7 and 600 second-feet. Daily gage heights determined by inspection or straight-line method from the graph of Stevens recorder. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of recorder graph except as noted in footnote to table of daily discharge. Records good.

COOPERATION.—Maintained in cooperation with Department of the Interior, Canada.

Discharge measurements of St. Mary Canal at St. Mary crossing, near Babb, Mont., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Apr. 30	2.10	99	June 7	4.71	488	Aug. 21	4.91	519
May 2	2.07	93	June 20	4.78	505	Aug. 24	1.00	23.3
May 4	3.29	251	June 22	4.79	502	Aug. 25	4.14	372
May 10	3.90	330	July 17	4.72	495	Sept. 16	4.92	528
May 28	4.58	462	Aug. 8	4.82	510			

Daily discharge, in second-feet, of St. Mary Canal at St. Mary crossing, near Babb, Mont., for the year ending September 30, 1925

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	------	97	493	498	510	0	16	------	390	491	483	510	525
2	------	106	493	495	508	0	17	------	389	493	485	498	521
3	------	193	489	485	510	0	18	------	390	496	481	498	523
4	------	240	485	478	508	0	19	------	392	498	489	523	519
5	------	246	483	485	508	0	20	------	394	502	500	525	489
6	------	262	495	496	510	0	21	------	394	506	508	506	479
7	------	297	491	496	508	0	22	------	394	506	508	317	478
8	------	302	491	496	510	33.9	23	-----	394	496	512	119	479
9	------	336	487	493	510	312	24	------	399	495	516	45	491
10	------	341	489	489	514	451	25	------	421	493	517	359	500
11	------	341	489	485	516	468	26	10	425	493	516	457	502
12	------	353	487	487	514	504	27	30	430	498	517	502	512
13	------	381	491	483	514	517	28	50	466	500	516	521	502
14	------	387	495	481	514	523	29	70	489	500	517	521	496
15	------	392	489	483	516	525	30	99	493	500	514	514	478
							31	------	495	------	510	0	------

NOTE.—Discharge estimated Apr. 26-30. Canal gates closed Aug. 31 to Sept. 7.

Monthly discharge of St. Mary Canal at St. Mary crossing, near Babb, Mont., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April 26-30	99	10	51.8	514
May	495	97	356	21,900
June	506	483	494	29,400
July	517	478	497	30,600
August	525	0	454	27,900
September	525	0	361	21,500
The period				132,000

ST. MARY CANAL AT HUDSON BAY DIVIDE, NEAR BROWNING, MONT.

LOCATION.—In sec. 5, T. 37 N., R. 11 W., 3 miles above canal outlet, 30 miles north of Browning, Glacier County, on Blackfeet Indian Reservation.

RECORDS AVAILABLE.—July 3, 1917, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on right bank, 20 feet above the first drop in canal.

DISCHARGE MEASUREMENTS.—Made from cable 500 feet above gage.

CHANNEL AND CONTROL.—Canal uniform in section. Control is a V-shaped notch in the concrete drop just below gage.

ACCURACY.—Stage-discharge relation permanent during year. Rating curev well defined between 3 and 600 second-feet. Operation of water-stage recorder unsatisfactory May 22–26, June 11 to July 15, and September 3–30. Observer's staff gage readings to hundredths once daily was used for these periods. Daily discharge ascertained by applying to rating table daily or mean daily gage height determined by inspection of recorder graph. Records good.

COOPERATION.—Maintained in cooperation with Department of the Interior, Canada.

Discharge measurements of St. Mary Canal at Hudson Bay divide, near Browning, Mont., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
May 5	4.59	236	June 22	6.22	528	Aug. 24	3.35	110
May 8	5.00	290	June 22	6.23	514	Aug. 28	6.24	511
May 27	5.82	428	July 16	6.20	497			
June 8	6.15	495	July 30	6.29	525			

Daily discharge, in second-feet, of St. Mary Canal at Hudson Bay divide, near Browning, Mont., for the year ending September 30, 1925

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-------	494	509	520	160	16	393	501	505	520	536
2	-------	494	507	518	58	17	400	501	509	518	534
3	148	494	507	520	0	18	396	494	503	520	530
4	220	492	507	516	0	19	398	500	505	522	526
5	233	490	507	516	0	20	400	505	509	520	520
6	244	490	499	511	0	21	407	507	516	526	484
7	265	494	509	511	0	22	416	509	526	471	480
8	292	492	509	516	0	23	416	507	530	302	480
9	308	494	505	516	40	24	416	503	532	144	480
10	330	494	505	518	319	25	411	505	536	142	486
11	343	503	503	518	448	26	429	503	536	378	501
12	355	503	497	522	468	27	431	501	536	460	505
13	370	505	497	526	516	28	440	509	536	505	509
14	382	507	497	530	526	29	472	511	528	518	505
15	387	501	497	528	526	30	486	511	524	516	494
						31	488	-------	522	418	-------

NOTE.—Discharge estimated June 19 and Sept. 9. Canal closed for repairs Sept. 3–8.

Monthly discharge of St. Mary Canal at Hudson Bay divide, near Browning, Mont., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
May 3-31	488	148	368	21,200
June	511	490	500	29,800
July	536	497	513	31,500
August	530	142	476	29,300
September	536	0	354	21,100
The period				133,000

SWIFTCURRENT CREEK AT MANY GLACIER, MONT.

LOCATION.—In sec. 12, T. 35 N., R. 16 W., at outlet of McDermott Lake at Many Glacier, Glacier County, in Glacier National Park, and 14 miles southwest of Babb.

DRAINAGE AREA.—31.4 square miles (measured on Glacier National Park topographic map).

RECORDS AVAILABLE.—June 6, 1912, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder; referred to staff gage in well.

DISCHARGE MEASUREMENTS.—Made from cable 1,000 feet below gage or by wading.

CHANNEL AND CONTROL.—Limestone outcrop at the outlet of the lake forms control; shifts slightly.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.76 feet at 7 p. m. May 22 (discharge, 1,040 second-feet); minimum stage, 1.63 feet at 5 a. m. October 13 (discharge, 30 second-feet).

1912–1925: Maximum discharge was 1,550 second-feet June 17, 1916; minimum stage, 1.22 feet November 6–7, 1921 (discharge, 10 second-feet).

ICE.—Stage-discharge relation affected by ice during severe winters. No records during winter.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent; affected by change in control. Two rating curves, both well defined between 37 and 900 second-feet, used during year; one applicable October 1 to June 7 and the other from June 8 to September 30. Daily discharge determined by applying to rating tables mean daily gage height determined by inspection of recorder graph, except as shown in footnote to daily-discharge table. Records good.

COOPERATION.—Maintained in cooperation with Department of the Interior, Canada.

Discharge measurements of Swiftcurrent Creek at Many Glacier, Mont., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 16	1.64	45.2	June 18	3.89	692	Aug. 21	2.30	157
May 6	2.79	352	June 21	4.23	778	Aug. 26	2.11	110
May 11	2.55	264	June 24	3.85	668	Sept. 15	2.07	100
May 29	4.30	870	July 18	2.81	330			
June 7	3.09	396	Aug. 9	2.22	140			

Daily discharge, in second-feet, of Swiftcurrent Creek at Many Glacier, Mont., for the year ending September 30, 1925

Day	Oct.	Apr.	May	June	July	Aug.	Sept.
1	31.0		183	519	560	192	97
2	44.2		268	484	519	192	90
3	73.0		285	450	439	195	85
4	80.0		281	452	426	189	84
5	73.0		291	479	439	179	85
6	62.0		341	396	413	163	82
7	51.0		396	399	374	160	88
8	42.4		358	436	332	154	93
9	40.6		301	479	326	146	93
10	40.6		265	522	354	137	92

Daily discharge, in second-feet, of Swiftcurrent Creek at Many Glacier, Mont., for the year ending September 30, 1925—Continued

Day	Oct.	Apr.	May	June	July	Aug.	Sept.
11	40.6		265	549	380	128	93
12	35.0		375	570	374	114	97
13	31.0		559	611	361	109	99
14	31.0		735	614	354	112	102
15	31.0		778	597	342	186	104
16	35.0		695	597	316	250	101
17	35.0		597	638	303	204	95
18	35.0		749	679	316	169	104
19	35.0		965	768	281	154	106
20	35.0		976	760	238	151	109
21	37.0		926	782	204	160	112
22	35.0		1,030	792	201	151	112
23	40.6		958	760	204	142	112
24	37.0		836	685	192	133	101
25	35.0		731	634	189	123	98
26	40.6		631	624	204	114	96
27	44.2		598	641	207	106	94
28	47.8		659	634	210	102	92
29	55.0		624	655	219	102	91
30	51.0	107	589	600	210	102	90
31	51.0		554		201	99	

NOTE.—Shifting-control method used June 4–7. Gage-height record missing May 29 to June 3, Aug. 22–25, and Sept. 25–30. Discharge estimated May 29 to June 3 and Sept. 25–30; interpolated Aug. 22–25.

Monthly discharge of Swiftcurrent Creek at Many Glacier, Mont., for the year ending September 30, 1925

[Drainage area, 31.4 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	80	31	43.7	1.39	1.60	2,690
May	1,030	183	574	18.3	21.10	35,300
June	792	396	594	18.9	21.09	35,300
July	560	189	313	9.97	11.49	19,200
August	250	99	149	4.75	5.48	9,160
September	112	82	96.6	3.08	3.44	5,750

SWIFTCURRENT CREEK AT SHERBURNE, MONT.

LOCATION.—In sec. 35, T. 36 N., R. 15 W., 800 feet below spillway of Sherburne Lake Dam at Sherburne, Glacier County.

DRAINAGE AREA.—64 square miles (measured on Glacier National Park topographic map).

RECORDS AVAILABLE.—July 1, 1912, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on left bank 800 feet below spillway of Sherburne Lake Dam referred to staff gage.

DISCHARGE MEASUREMENTS.—Made from cable 450 feet above gage or by wading.

CHANNEL AND CONTROL.—An outcropping limestone ledge, somewhat broken and irregular, forms the control; subject to slight shifts.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.25 feet at 2 p. m. June 18 (discharge, 1,330 second-feet); minimum stage, 0.58 foot at 10 p. m. July 14 (discharge, 1.8 second-feet).

1912–1925: Maximum stage recorded, 7.85 feet June 17, 1916 (discharge, 2,280 second-feet); no flow at various times when gates were closed.

ICE.—Not seriously affected by ice.
DIVERSIONS.—None.
REGULATION.—Flow regulated by gate operations.
ACCURACY.—Stage-discharge relation affected by change in control during period of no record. Two rating curves used during year, both well defined above 30 second-feet. Daily discharge ascertained by applying to rating tables mean daily gage height obtained by inspection of recorder graph. Records good for discharge above 30 second-feet; fair below.
COOPERATION.—Maintained in cooperation with Department of the Interior, Canada.

Discharge measurements of Swiftcurrent Creek at Sherburne, Mont., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
May 6	1.45	31.5	June 7	3.20	255	Aug. 25	4.30	514
May 8	4.80	687	June 18	6.25	1,330	Sept. 15	4.37	554
May 11	4.75	646	June 21	5.51	956			
May 29	5.48	976	Aug. 8	4.20	489			

Daily discharge, in second-feet, of Swiftcurrent Creek at Sherburne, Mont., for the year ending September 30, 1925

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	July	Aug.	Sept.
1	84	30	934	616	480	316	16	84	33.9	823	236	590	535
2	85	30	934	619	474	186	17	------	195	831	236	566	529
3	84	30	903	514	468	185	18	------	292	873	238	559	532
4	84	30	778	411	463	185	19	------	46.4	848	240	557	538
5	84	30	719	304	463	185	20	------	55	860	277	553	532
6	85	256	540	309	488	185	21	------	58	964	374	544	529
7	85	678	254	261	503	312	22	------	396	1,050	374	541	526
8	86	678	259	192	514	520	23	------	659	1,080	386	535	520
9	85	674	376	192	566	517	24	------	765	1,060	424	532	517
10	86	671	635	160	559	526	25	------	925	942	422	526	514
11	85	667	700	2.3	553	535	26	------	920	869	422	523	523
12	85	485	696	2.1	544	541	27	------	929	656	424	514	535
13	85	11.6	696	2.0	556	544	28	------	925	594	422	535	538
14	84	11.6	696	1.9	584	541	29	------	929	603	474	559	529
15	84	12	776	147	609	538	30	------	938	612	488	578	526
							31	------	938	------	485	572	------

NOTE.—Discharge estimated on account of missing gage height May 1-5 and Aug. 3 and 19.

Monthly discharge of Swiftcurrent Creek at Sherburne, Mont., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	86	84	84.7	2,690
May	938	11.6	429	26,400
June	1,080	254	752	44,700
July	619	1.9	311	19,100
August	609	463	536	33,000
September	544	185	458	27,300

CANYON CREEK NEAR MANY GLACIER, MONT.

LOCATION.—At edge of heavy timber area in Glacier National Park, half a mile above mouth and 2 miles southeast of Many Glacier, Glacier County.

DRAINAGE AREA.—7.0 square miles (measured on topographic map of Glacier National Park).

RECORDS AVAILABLE.—July 12, 1918, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on left bank.

DISCHARGE MEASUREMENTS.—Made from footbridge at gage or by wading.

CHANNEL AND CONTROL.—Bed of stream covered with heavy boulders and cobblestones. Banks high; not subject to overflow. Control is riffle 20 feet below gage; subject to shifts.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.86 feet at 10 p. m. June 21 (discharge, 136 second-feet); minimum stage, 0.68 foot October 14, 1924 (discharge, 7.8 second-feet).

1918–1925: Maximum stage, 3.34 feet May 16, 1922 (discharge estimated, 500 second-feet); minimum stage, 0.56 foot October 4, 1919 (discharge, 3.3 second-feet).

ICE.—Station not operated during winter on account of severe ice conditions.

DIVERSIONS.—None.

REGULATION.—Some natural storage in small lake at head of creek.

ACCURACY.—Stage-discharge relation permanent during period. Rating curve well defined. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of recorder graph. Records good.

COOPERATION.—Maintained in cooperation with Department of the Interior, Canada.

Discharge measurements of Canyon Creek near Many Glacier, Mont., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 16	0.68	7.5	July 18	1.35	49.2	Aug. 26	0.94	19.7
June 7	1.43	61.0	Aug. 9	.98	23.1	Sept. 15	.89	18.1
June 19	1.77	116	Aug. 19	1.03	22.7			

Daily discharge, in second-feet, of Canyon Creek near Many Glacier, Mont., for the year ending September 30, 1925

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-------	66	91	29.7	15.3	16	69	100	48.3	32.6	20.1
2	-------	62	84	29.7	15.7	17	74	104	49.4	27.6	19.3
3	-------	65	70	29.7	16.1	18	76	110	50	25.4	18.4
4	-------	75	72	28.2	16.5	19	82	121	41.2	24.3	18.0
5	51	62	73	25.4	17.3	20	88	123	34.9	24.3	17.6
6	54	56	66	24.8	18.0	21	89	127	31.2	24.8	17.6
7	53	57	61	23.7	16.5	22	89	127	31.2	24.3	17.6
8	52	64	52	22.6	16.1	23	95	115	31.2	22.3	19.3
9	47.2	66	50	21.8	16.9	24	97	104	29.7	23.8	19.7
10	42.2	72	56	21.0	23.2	25	89	97	30.4	22.3	20.1
11	49.4	76	60	20.6	28.9	26	78	97	31.9	20.5	18.4
12	53	81	59	19.3	25.4	27	81	98	31.9	20.1	16.5
13	54	86	57	19.3	21.8	28	93	100	32.6	19.3	15.3
14	60	91	56	19.3	19.3	29	104	102	33.4	17.3	14.6
15	65	95	53	28.2	17.8	30	98	93	31.2	16.1	13.9
						31	75	-------	29.7	15.3	-------

Monthly discharge of Canyon Creek near Many Glacier, Mont., for the year ending September 30, 1925

[Drainage area, 7 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
May 5-31	104	42.2	72.5	10.4	10.44	3,880
June	127	56.0	89.7	12.8	14.28	5,340
July	91	29.7	49.3	7.04	8.12	3,030
August	32.6	15.3	23.3	3.33	3.84	1,430
September	28.9	13.9	18.4	2.63	2.93	1,090
The period						14,800

RED LAKE RIVER AT THIEF RIVER FALLS, MINN.

LOCATION.—In sec. 33, T. 154 N., R. 43 W., one-third mile below dam at Thief River Falls, Pennington County, and 1 mile below mouth of Thief River.

DRAINAGE AREA.—3,430 square miles.

RECORDS AVAILABLE.—July 1, 1909, to September 30, 1918, and March 25, 1920, to September 30, 1925.

GAGE.—Inclined staff gage on right bank; read by Thomas Hastad.

DISCHARGE MEASUREMENTS.—Made from cable near gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and small boulders; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.9 feet June 9 (discharge, 3,400 second-feet); minimum stage, 2.95 feet October 2 (discharge, 8 second-feet).

1909–1918; 1920–1925: Maximum open-water stage recorded, 12.2 feet April 19–21, 1916 (discharge, 7,040 second-feet). Minimum discharge, no flow July 17 and August 27, 1911.

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—A short distance above station is a dam owned by Hanson & Barzen Milling Co. and city lighting plant. The variation in load on the turbines due to operation of lighting plant (at night) and of the mill (chiefly during the day) causes fluctuations in stage at gage.

ACCURACY.—Stage-discharge relation fairly permanent except as affected by ice. Rating curve well defined above and poorly defined below 400 second-feet. Gage read to half-tenths once daily during summer and two or three times weekly during winter, but owing to regulation the gage reading at low stages may not accurately represent the mean daily gage height. Daily discharge ascertained by applying daily gage height to rating table. Open-water records at high stages, good; at medium and low stages, poor. Winter records poor.

The following discharge measurements were made:

April 15, 1925: Gage height, 4.11 feet; discharge, 295 second-feet.

June 18, 1925: Gage height, 6.87 feet; discharge, 1,530 second-feet.

August 21, 1925: Gage height, 3.83 feet; discharge, 166 second-feet.

Daily discharge, in second-feet, of Red Lake River at Thief River Falls, Minn., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	164	75				464	285	464	615	64	192
2	8	192	191				464	425	285	845	192	252
3	87	221	12	90	40		505	353	444	705	137	301
4	192	192	19				301	464	335	615	192	252
5	137	112	12			30	353	370	370	615	318	64
6	206	112	12				370	406	750	615	285	137
7	164	64					353	335	1,110	660	301	150
8	268	29	60	80			570	406	2,370	526	112	150
9	192	44					192	370	3,400	615	192	570
10	252	135			50		236	252	2,370	570	192	505
11	206	19					252	425	2,370	548	137	388
12	29	192					192	206	2,030	425	318	388
13	252	19	70			50	164	192	2,030	570	192	252
14	192	192					318	406	1,950	548	112	505
15	192	19		60			425	406	2,110	425	192	221
16	192	64					112	370	1,640	425	137	252
17	177	44					87	318	1,170	318	137	335
18	164	44	80		40	40	318	318	1,570	388	192	221
19	164	87					137	318	1,500	318	192	206
20	137	87					252	370	1,430	370	112	164
21	192	191				20	221	353	1,230	318	192	301
22	137	19				40	318	370	1,300	236	192	252
23	183	19	25	70		60	252	444	1,110	221	112	285
24	192	221				206	318	370	895	318	64	252
25	112	221			30	206	318	548	845	301	64	221
26	87	191				1,500	192	570	845	112	64	192
27	64	19				1,640	285	660	845	318	268	164
28	284	19	50	50		1,720	318	444	845	388	64	388
29	183	19			-------	1,870	192	406	845	112	64	388
30	44	12			-------	1,640	206	388	615	192	137	505
31	124	-------	70		-------	1,170	-------	318	-------	192	169	------

NOTE.—Stage-discharge relation affected by ice Dec. 7 to Mar. 29; discharge determined from a study of gage-height records, observer's notes, and temperature records. Braced figures give mean discharge for periods indicated.

Monthly discharge of Red Lake River at Thief River Falls, Minn., for the year ending September 30, 1925

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	284	8	156	May	660	192	383
November	221	12	98.8	June	3,400	285	1,300
December	-------	-------	56.6	July	845	112	433
January	-------	-------	67.7	August	318	64	164
February	-------	-------	40.7	September	570	64	282
March	1,870	-------	349				
April	570	87	290	The year	3,400	-------	302

RED LAKE RIVER AT CROOKSTON, MINN.

LOCATION.—In sec. 30, T. 150 N., R. 46 W., at Sampson's Addition highway bridge in Crookston, Polk County, a quarter of a mile below dam and power house of Crookston Light, Water & Power Co. No tributaries enter within several miles.

DRAINAGE AREA.—5,320 square miles.

RECORDS AVAILABLE.—May 19, 1901, to September 30, 1925.

GAGE.—Chain gage attached to middle span of bridge; read by J. A. McLean. Zero of gage is 833.54 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of silt, gravel, and small boulders; control not well defined. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.5 feet June 9 (discharge, 7,550 second-feet); minimum discharge probably occurred during winter.

1901–1925: Maximum discharge recorded, 14,700 second-feet July 5, 1919; minimum discharge, 10 second-feet, by discharge measurement January 27, 1912. The flow is controlled to such an extent that the minimum discharge has no bearing on minimum natural flow.

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—Diurnal fluctuation in stage, particularly during low water, is caused by operation of power plant immediately above station and by another plant 8 miles above. As the storage at these plants is small the mean monthly flow should represent nearly the natural flow.

ACCURACY.—Stage-discharge relation not permanent; affected by ice and by shifting control. Rating curve well defined above 1,000 second-feet and poorly defined below. Gage read to tenths once daily. At low stages the mean daily gage height may be considerably in error on account of regulation. Records from July 16 to September 30 withheld from publication because recorded gage readings did not represent the mean daily gage height. Daily discharge ascertained by applying daily gage height to rating table. Open-water records fair for discharge above 1,000 second-feet; poor below. Winter records poor.

Discharge measurements of Red Lake River at Crookston, Minn., during the year ending September 30, 1925.

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 26	2.82	115	June 11	11.40	5,930	Aug. 21	2.84	159
Apr. 15	3.60	538	June 18	7.55	2,600			
June 11	11.41	5,840	Aug. 17	2.83	148			

Daily discharge, in second-feet, of Red Lake River at Crookston, Minn., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	140	115					1,260	395	630	1,260
2	140	115					1,260	800	630	1,260
3	140	140		110	70	50	1,200	670	940	1,140
4	115	115					1,090	710	800	1,090
5	115	230					1,140	710	990	1,090
6	140	115					1,140	755	2,080	990
7	115	140					890	710	3,750	845
8	140	200		100		70	470	755	5,400	845
9	140	115					510	670	7,550	845
10	230	140	90		60		510	630	6,590	845
11	360	90					395	590	5,660	800
12	230	115					470	510	4,720	800
13	170	115					510	590	4,230	710
14	90	90					430	670	3,750	710
15	115	115		90		60	395	630	3,670	710
16	170	90					430	590	3,130	----
17	140	90					360	550	2,980	----
18	115	90			50		360	510	2,760	----
19	115	90					360	470	2,620	----
20	140	90					395	710	2,550	----

Daily discharge, in second-feet, of Red Lake River at Crookston, Minn., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
21	115	115				50	395	670	2,280	
22	290	115				70	360	670	1,880	
23	140	115	100	80		100	395	990	1,440	
24	170	115				300	395	1,040	1,440	
25	170	115			50	1,320	360	1,200	1,380	
26	115	115				1,500	360	990	1,440	
27	140	115				1,720	395	990	1,500	
28	170	110	120	70		1,950	395	940	1,380	
29	290	100				1,980	360	890	1,320	
30	115	90				2,020	430	800	1,260	
31	290					1,280		670		

NOTE.—Stage-discharge relation affected by ice December 1 to March 30; discharge estimated from occasional gage readings, weather records, and comparison with records of flow in adjacent drainage basins. No gage readings Nov. 17, 19–21, 23–29, April 5, 24, 25, May 15–18, 30, June 10 and 11; discharge interpolated. Braced figures give mean discharge for periods indicated.

Monthly discharge of Red Lake River at Crookston, Minn., for the year ending September 30, 1925

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	360	90	163	March	2,020		453
November	230	90	117	April	1,260	360	581
December			97.4	May	1,200	395	725
January			89.4	June	7,550	630	2,690
February			57.1	July 1–15	1,260	710	929

ROSEAU RIVER AT CARIBOU, MINN.

LOCATION.—In sec. 34, T. 164 N., R. 45 W., at highway bridge at Caribou, Kittson County, 1 mile south of international boundary and 3 miles upstream from crossing of boundary line by river.

DRAINAGE AREA.—1,650 square miles.

RECORDS AVAILABLE.—April 1 to October 6, 1917; April 12, 1920, to September 30, 1925.

GAGE.—Chain gage fastened to downstream handrail of bridge, 60 feet from left abutment; read by James A. McKibbin.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—Channel is artificial, of trapezoidal cross section, 100 feet wide and 10 feet deep. Bed composed of hardpan with a few scattered large boulders.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.0 feet July 1–9 (discharge, 2,140 second-feet); minimum discharge, estimated 16 second-feet December 18–25 (stage-discharge relation affected by ice).

1917, 1920–1925: Maximum stage recorded, 12.5 feet May 1 and 2, 1923, (discharge, 2,980 second-feet); minimum discharge, 4 second-feet, September 10–12, 29, and 30, 1917.

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—No diversions involving storage or loss of water. A small channel 3½ miles long was dredged several years ago from a point 4 miles above station to a point 1 mile below station. At all stages above a height of about 6 feet water flows in this channel and is measured and included with all measurements of main channel.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Open-water records good; winter records poor.

The following discharge measurements were made:
April 13, 1925: Gage height, 7.77 feet; discharge 783 second-feet.
June 17, 1925: Gage height, 10.47 feet; discharge, 1,640 second-feet.
August 20, 1925: Gage height, 3.68 feet; discharge, 52 second-feet.

Daily discharge, in second-feet, of Roseau River at Caribou, Minn., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	181	154	86				1,270	1,010	305	2,140	128	31
2	181						1,230	975	461	2,140	122	31
3	181			28	49	38	1,230	975	505	2,140	122	31
4	188						1,270	975	651	2,140	115	31
5	195	181	74				1,270	910	732	2,140	85	31
6	209						1,230	878	942	2,140	91	31
7	224						1,230	817	1,010	2,140	97	31
8	255			34	48	45	1,190	760	1,190	2,140	109	32
9	255						1,190	678	1,430	2,140	109	128
10	271						1,120	651	1,430	2,090	103	195
11	288						1,120	599	1,430	2,040	85	271
12	288						1,040	550	1,470	2,040	85	288
13	288	167		40	47	40	817	505	1,510	2,040	91	255
14	288		47				732	440	1,550	2,040	91	224
15	288						673	399	1,600	1,950	91	195
16	288						599	341	1,600	1,900	85	174
17	288						550	305	1,860	1,810	74	174
18	288			46	45	45	505	271	1,860	1,770	62	167
19	271						527	255	1,860	1,770	62	160
20	255						574	255	1,860	1,680	57	154
21	224	115	16				705	239	1,860	1,640	52	148
22	209						910	224	1,950	1,470	47	148
23	181			52	43	52	942	216	1,950	1,120	47	134
24	174						975	202	1,990	788	42	134
25	167						975	202	2,040	527	42	122
26	154	97				323	975	188	2,040	360	38	122
27	141				40	599	1,010	174	2,040	239	38	115
28	134		22	50		942	1,010	161	2,040	188	38	115
29	128					1,270	1,010	147	2,040	154	34	109
30	128	88			-------	1,390	1,010	134	2,040	141	34	109
31	141	-------			-------	1,430	-------	121	-------	128	34	------

NOTE.—Stage-discharge relation affected by ice Nov. 2 to Mar. 29; discharge estimated from a few gage heights, weather records, and by a comparison with discharge in other drainage basins.

Monthly discharge of Roseau River at Caribou, Minn., for the year ending September 30, 1925

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	288	128	218	May	1,010	121	470
November	-------	-------	142	June	2,040	305	1,510
December	-------	-------	42.4	July	2,140	128	1,520
January	-------	-------	41.9	August	128	34	74.5
February	-------	-------	45.7	September	288	31	130
March	1,430	-------	228				
April	1,270	505	963	The year	2,140	-------	449

KAWISHIWI RIVER NEAR WINTON, MINN.

LOCATION.—In lot 3, section 20, T. 63 N.,[1] R. 11 W., at power plant of Minnesota Power & Light Co. just above Fall Lake and 3,000 feet below Garden Lake, near west line of Lake County, and 2½ miles east of Winton, St. Louis County.

DRAINAGE AREA.—1,200 square miles.

RECORDS AVAILABLE.—June 21, 1905, to June 30, 1907; October 14, 1912, to September 30, 1919; and September 1, 1923, to September 30, 1925.

DISCHARGE.—Discharge of turbines in second-feet corresponding to gate opening and head on wheels is determined for each hour during the day. From this data is computed the mean daily discharge through the plant. Water is seldom wasted over the dam, but when it is wasted the quantity is computed from theoretical formulas and added to the flow through the wheels.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge recorded during year ending September 30, 1924, 916 second-feet June 13; minimum discharge, no flow a number of times during year.

Maximum mean daily discharge recorded during year ending September 30, 1925, 2,430 second-feet October 16; minimum discharge, no flow a number of times during year.

1905–1907, 1912–1919, and 1923–1925: Maximum discharge recorded, 5,370 second-feet April 30 and May 7, 1916; minimum discharge, no flow a number of times in 1905, 1906, 1907, 1923, 1924, and 1925. Maximum and minimum discharge are the result of regulation.

REGULATION.—Practically the entire discharge of the stream is controlled by reservoirs in the interest of power development.

ACCURACY.—Computations of discharge through the wheels are based on a calibration made in December, 1924, by the salt-velocity method. Records good, except on rare occasions when water is wasted over the dam, for which the records are fair.

COOPERATION.—Records furnished by Minnesota Power & Light Co.

Daily discharge, in second-feet, of Kawishiwi River near Winton, Minn., for the years ending September 30, 1923–1925

Day	Sept.	Day	Sept.	Day	Sept.
1923		1923		1923	
1	278	11	310	21	415
2	206	12	325	22	395
3	152	13	330	23	380
4	300	14	315	24	390
5	275	15	310	25	247
6	242	16	335	26	88
7	290	17	360	27	213
8	255	18	390	28	0
9	245	19	395	29	0
10	272	20	400	30	0

[1] Location previously published is in error.

Daily discharge, in second-feet, of Kawishiwi River near Winton, Minn., for the years ending September 30, 1923–1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1923–24												
1	221	11	0	167	300	0	0	0	593	630	330	480
2	274	0	0	215	305	0	0	0	909	641	237	452
3	182	0	0	250	250	0	7	0	908	646	228	563
4	185	0	108	200	300	82	0	0	906	487	565	845
5	128	0	117	227	295	90	0	0	901	640	204	913
6	123	0	115	198	305	89	0	0	904	450	187	843
7	0	0	116	250	305	87	0	0	720	638	362	696
8	128	8	116	290	290	82	0	30	0	639	180	810
9	138	0	0	305	295	0	0	0	0	637	162	800
10	98	112	127	305	238	87	0	0	94	637	0	837
11	66	0	142	308	310	87	0	0	540	693	409	867
12	17	0	0	304	295	86	0	132	908	557	453	868
13	0	6	146	0	300	87	0	20	916	149	412	755
14	0	0	145	302	235	119	95	0	912	361	346	62
15	0	0	147	303	178	250	41	30	475	352	504	253
16	0	31	0	286	155	0	43	53	878	505	640	148
17	0	50	148	255	0	202	29	79	910	517	496	566
18	0	16	150	306	210	204	0	10	800	520	310	661
19	0	0	153	307	210	232	0	106	779	526	861	542
20	131	0	153	180	195	219	0	170	482	6	899	569
21	0	35	151	310	0	201	227	182	442	107	496	605
22	66	0	54	305	0	205	96	143	167	0	450	780
23	86	0	0	295	0	155	0	115	282	14	267	902
24	72	0	138	285	0	342	0	115	278	68	0	902
25	71	0	0	285	0	300	0	99	301	28	171	900
26	0	0	144	280	0	0	0	112	511	155	170	900
27	0	0	150	213	0	0	0	113	630	298	302	898
28	9	0	89	305	54	0	0	113	630	374	453	882
29	0	0	22	290	0	0	40	114	568	545	453	882
30	65	0	0	302	-------	0	0	807	630	492	177	876
31	0	-------	203	300	-------	0	-------	912	-------	204	192	-----
1924–25												
1	2,380	900	911	640	0	724	0	70	443	605	950	336
2	2,380	902	910	847	0	648	0	0	565	592	859	340
3	2,380	900	910	842	146	280	3	78	378	712	694	336
4	2,380	900	403	670	146	642	0	75	234	358	184	340
5	2,380	900	143	626	314	702	0	44	264	680	178	338
6	2,380	900	727	462	28	684	0	0	135	655	506	38
7	2,170	902	635	741	0	538	77	58	17	497	396	143
8	2,190	769	510	440	410	120	148	124	299	550	207	281
9	2,110	410	841	122	632	414	97	140	340	558	0	358
10	2,130	794	857	70	260	346	0	0	418	548	315	405
11	2,100	901	908	0	199	450	0	158	458	538	954	396
12	2,140	422	694	635	252	323	0	290	586	252	928	330
13	2,190	557	207	498	204	462	0	460	582	523	583	79
14	2,200	903	290	910	12	460	36	295	696	588	821	289
15	2,330	902	745	852	6	0	0	473	916	476	754	315
16	2,430	893	902	750	90	188	0	358	1,160	578	104	372
17	2,060	900	760	645	453	284	220	0	1,380	672	470	478
18	1,600	900	810	214	609	154	5	473	1,520	912	294	512
19	1,410	846	900	132	554	247	14	688	1,310	964	242	521
20	1,780	361	595	628	298	185	75	687	1,180	964	204	504
21	1,340	199	451	728	162	214	20	730	975	874	224	612
22	1,350	254	451	452	0	591	24	354	1,390	790	373	552
23	1,180	457	479	570	0	175	78	358	986	791	0	590
24	1,220	592	452	782	472	67	0	0	965	904	144	616
25	1,190	910	452	632	641	0	134	235	1,020	901	189	628
26	1,070	912	229	595	701	0	230	223	990	276	224	604
27	1,190	900	214	475	692	0	64	205	836	645	270	1,050
28	1,190	790	326	446	696	0	8	184	268	781	233	1,580
29	1,100	668	468	448	-------	0	64	325	644	928	168	1,750
30	902	690	672	275	-------	106	70	202	670	956	41	1,880
31	678	-------	904	246	-------	0	-------	100	-------	956	267	------

Monthly discharge of Kawishiwi River near Winton, Minn., for the years ending September 30, 1923–1925

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
1923				1924–25			
September	415	0	270	October	2,430	678	1,790
1923–24				November	912	199	741
October	274	0	66.5	December	911	143	605
November	112	0	8.97	January	910	0	528
December	203	0	91.4	February	701	0	285
January	310	0	262	March	724	0	290
February	310	0	179	April	230	0	45.5
March	342	0	103	May	730	0	238
April	227	0	19.3	June	1,520	17	721
May	912	0	111	July	964	252	678
June	916	0	599	August	954	0	380
July	693	0	404	September	1,880	38	552
August	899	0	352	The year	2,430	0	574
September	913	62	702				
The year	916	0	241				

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER ABOVE SANDY RIVER, NEAR LIBBY, MINN.

LOCATION.—In SE. ¼ sec. 2, T. 50 N., R. 24 W., just above mouth of Libby Creek, 4 miles north of Libby post office, Aitkin County, and 4 miles above mouth of Sandy River.

DRAINAGE AREA.—4,560 square miles (revised).

RECORDS AVAILABLE.—August 1 to September 30, 1925. From September 1, 1895, to September 30, 1915, records were collected by the United States Engineer Corps at a station 4 miles downstream.

GAGE.—Gurley water-stage recorder installed in a timber well and shelter on left bank; inspected by A. Buchholtz.

DISCHARGE MEASUREMENTS.—Made from boat near gage.

CHANNEL AND CONTROL.—Bed composed of sand and silt; control not well defined; banks of medium height and will seldom be overflowed.

EXTREMES OF DISCHARGE.—Maximum mean daily stage recorded, 22.13 feet September 19 (discharge, 2,170 second-feet); minimum mean daily stage recorded, 18.90 feet August 2 (discharge, 660 second-feet).

REGULATION.—The Itasca Paper Co. operates a power plant at Grand Rapids 40 miles above the station, but the effect of regulation from this plant is very slight. Flow of river is controlled by three Government reservoirs at Lake Winnibigoshish, Leech Lake, and Pokegama Lake to increase low-water open-season flow in the interests of navigation. The total capacity of these three reservoirs is 82 billion cubic feet.

ACCURACY.—Rating curve fairly well defined. Operation of water-stage recorder satisfactory during the period. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of recorder graph. Records good.

Discharge measurements of Mississippi River above Sandy River, near Libby, Minn., during the years ending September 30, 1923–1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
1923	*Feet*	*Sec.-ft.*	1924	*Feet*	*Sec.-ft.*	1924	*Feet*	*Sec.-ft.*
July 28	21.00	1,770	Apr. 16	18.90	775	Oct. 8	20.65	1,530
Aug. 8	20.50	1,500	Apr. 22	18.80	740			
Aug. 29	21.10	1,830	May 3	19.00	854			
Sept. 20	21.40	1,910	May 17	19.60	1,130			
Oct. 3	21.20	1,820	Aug. 4	19.40	1,000			

NOTE.—Measurements made by engineer of Prairie Rapids Power Co. Datum for gage heights of these measurements is not the same as was used after Aug. 1, 1925.

Daily discharge, in second-feet, of Mississippi River above Sandy River, near Libby, Minn., for the year ending September 30, 1925

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	741	1,710	11	909	1,810	21	1,180	2,060
2	660	1,760	12	952	1,860	22	1,130	1,960
3	700	1,760	13	952	1,910	23	1,130	1,910
4	824	1,760	14	952	1,910	24	1,180	1,910
5	866	1,810	15	1,080	1,910	25	1,130	1,910
6	866	1,810	16	1,130	1,960	26	1,130	1,910
7	909	1,860	17	1,180	2,010	27	1,130	1,910
8	909	1,860	18	1,130	2,110	28	1,180	1,910
9	909	1,760	19	1,130	2,170	29	1,230	1,910
10	909	1,710	20	1,230	2,110	20	1,470	2,060
						31	1,610	

Monthly discharge of Mississippi River above Sandy River, near Libby, Minn., for the year ending September 30, 1925

[Drainage area, 4,560 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
August	1,610	660	1,050	0.230	0.27
September	2,179	1,710	1,900	.417	.47

MISSISSIPPI RIVER NEAR ROYALTON, MINN.

LOCATION.—In lot 2, sec. 20, T. 39 N., R. 32 W., at power plant of Minnesota Power & Light Co., 5 miles northwest of Royalton, Morrison County, and 5 miles below mouth of Swan River. Station was moved October 1, 1924, from highway bridge 3 miles downstream from present site. Drainage area practically the same at the two sites.

DRAINAGE AREA.—11,600 square miles.

RECORDS AVAILABLE.—March 8, 1924, to September 30, 1925.

DISCHARGE.—Discharge of the turbines in second-feet corresponding to the gate opening and head on the wheels is determined for each hour during the day. From this data is computed the mean daily discharge through the plant. The waste, when any, is computed from a calibration of the discharge through the Taintor gates at various openings and is added to the discharge through the wheels.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge recorded during the year, 5,230 second-feet June 16; minimum mean daily discharge, 351 second-feet January 4.

1924–1925: Maximum discharge recorded, 7,640 second-feet August 7, 1924; minimum discharge that of 1925.

REGULATION.—Considerable diurnal fluctuation is caused by operation of the power plant at which the station is situated and that of another plant at Little Falls. The flow of the river is controlled by Government reservoirs on the upper river for the purpose of increasing the low-water open-season flow in the interests of navigation.

ACCURACY.—Computation of discharge through plant based on manufacturer's rating of wheels. Computation of waste based on calibration of Taintor gates. Records good for low and medium stages; fair for high stages.

COOPERATION.—Records of daily discharge furnished by Minnesota Power & Light Co.

Daily discharge, in second-feet, of Mississippi River near Royalton, Minn., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,820	3,240	1,670	460	635	831	3,570	3,510	2,020	3,290	2,400	2,800
2	4,450	3,670	1,860	948	820	882	4,810	3,180	2,630	3,000	2,150	3,270
3	3,960	2,190	1,720	668	708	794	4,360	3,540	2,420	3,030	1,770	2,930
4	3,790	2,940	2,080	351	728	797	3,530	3,370	2,620	1,960	1,490	3,390
5	2,990	2,670	1,720	756	1,010	753	3,540	3,270	3,080	2,140	2,210	3,270
6	4,280	2,870	1,500	651	751	803	2,500	2,980	3,310	2,600	2,380	3,660
7	3,780	3,040	1,580	1,080	863	926	2,600	3,300	3,950	3,640	2,310	3,540
8	4,140	2,540	1,550	1,250	738	1,000	2,700	2,880	3,640	3,200	2,380	3,740
9	3,920	3,000	1,230	1,140	910	931	2,440	2,560	4,660	3,340	2,700	3,310
10	3,800	2,140	1,410	916	862	957	2,310	2,620	4,280	3,050	2,470	2,850
11	4,130	3,160	1,680	689	752	923	2,140	2,330	4,870	3,170	2,400	2,640
12	4,020	3,050	1,590	704	867	1,030	2,160	2,930	4,130	3,150	2,550	2,450
13	5,130	2,500	1,720	674	837	1,130	2,310	2,500	4,460	2,980	2,690	2,460
14	4,190	2,170	1,400	917	908	1,320	2,260	2,660	4,580	3,690	2,380	2,170
15	3,570	2,100	1,400	1,260	1,120	1,420	2,280	2,070	4,230	2,940	2,470	2,810
16	4,060	1,470	1,460	1,260	931	1,410	1,710	2,350	5,230	3,300	2,340	2,920
17	3,620	1,740	1,270	1,040	918	1,640	1,980	2,260	4,300	3,010	2,420	3,400
18	4,240	1,880	1,240	843	723	1,460	2,000	2,080	3,940	3,100	2,480	3,450
19	4,110	1,900	1,260	834	877	1,320	1,660	2,180	4,430	2,780	2,640	3,260
20	3,180	2,590	1,080	1,030	927	1,510	2,240	2,250	4,180	2,030	2,500	3,280
21	3,680	2,450	1,060	969	882	1,590	2,040	2,440	4,580	2,730	2,500	3,270
22	3,580	2,200	1,110	1,200	868	1,550	2,140	2,020	3,810	2,390	2,540	3,540
23	3,190	2,470	793	1,080	1,010	1,800	2,240	2,480	4,350	2,380	2,230	3,610
24	3,090	1,570	862	811	873	1,630	2,490	3,520	3,720	2,310	2,410	3,360
25	3,160	1,400	703	1,010	834	1,790	2,460	2,770	3,250	2,420	2,480	3,720
26	2,550	1,510	882	739	740	1,760	2,550	3,010	3,300	2,380	2,430	3,260
27	2,760	1,360	836	938	874	2,090	2,530	3,250	3,390	2,050	2,240	3,410
28	3,040	1,110	841	793	798	2,810	2,740	3,030	3,530	1,990	2,350	3,050
29	2,740	1,290	876	826	-------	3,220	3,170	2,480	3,190	2,000	2,480	3,680
30	3,090	1,530	897	930	-------	3,750	3,950	2,480	3,280	1,980	2,640	3,580
31	2,970	-------	832	832	-------	3,400	-------	2,420	-------	2,100	2,440	------

Monthly discharge of Mississippi River near Royalton, Minn., for the year ending September 30, 1925

[Drainage area, 11,600 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	5,130	2,550	3,650	0.315	0.36
November	3,670	1,110	2,260	.195	.22
December	2,080	703	1,290	.111	.13
January	1,260	351	890	.077	.09
February	1,120	635	849	.073	.08
March	3,750	753	1,520	.131	.15
April	4,810	1,660	2,650	.228	.25
May	3,540	2,020	2,730	.235	.27
June	5,230	2,020	3,780	.326	.36
July	3,690	1,960	2,710	.234	.27
August	2,700	1,490	2,380	.205	.24
September	3,740	2,170	3,200	.276	.31
The year	5,230	351	2,330	.201	2.73

MISSISSIPPI RIVER AT ELK RIVER, MINN.

LOCATION.—In sec. 3, T. 121 N., R. 23 W., at highway bridge in Elk River, Sherburne County, 2,500 feet below mouth of Elk River.

DRAINAGE AREA.—14,500 square miles.

RECORDS AVAILABLE.—July 22, 1915, to September 30, 1925.

GAGE.—Chain gage bolted to handrail of bridge on downstream side near right bank; read by W. H. Ebner.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; control not well defined. Banks high and not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.56 feet at 7.25 a. m. June 14 (discharge, 6,280 second-feet); minimum discharge estimated because of ice, 867 second-feet January 3.

1915–1925: Maximum open-water stage recorded, 10.8 feet April 7, 1916 (discharge, 27,000 second-feet); minimum discharge that of January 3, 1925.

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—Nearest dam above station is at St. Cloud, 40 miles upstream. An observed systematic diurnal fluctuation at gage of about 0.1 foot is doubtless due to regulation at St. Cloud, but most of the effect of regulation is equalized before reaching station. The flow of the river is controlled by Government dams on the upper river for the purpose of increasing the low-water open-season flow in the interests of navigation.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as explained in footnote to table of daily discharge. Open-water records excellent; winter records fair.

COOPERATION.—Gage-height record furnished by United States Engineer Corps.

The following discharge measurement was made:

June 22, 1925: Gage height, 4.08 feet; discharge, 4,720 second-feet.

Daily discharge, in second-feet, of Mississippi River at Elk River, Minn., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,080	3,840	1,740	1,020	1,060	1,100	4,080	3,840	2,700	3,400	2,550	2,550
2	4,080	4,080	1,440	1,030	1,050	1,140	4,340	3,610	3,030	3,400	2,550	2,860
3	5,200	4,080	1,960	867	1,060	926	4,620	3,610	3,030	3,400	2,550	3,400
4	4,620	4,620	2,140	1,080	1,000	1,040	4,620	3,610	3,210	3,210	2,550	3,400
5	3,840	3,610	1,960	978	1,100	1,130	3,610	3,400	3,030	2,700	2,090	3,610
6	4,080	3,610	2,170	1,000	1,050	1,100	3,610	3,610	3,210	2,190	2,090	3,610
7	3,610	3,030	2,170	952	960	1,070	3,210	3,610	3,610	2,420	2,550	3,610
8	4,340	3,030	1,790	1,070	1,210	1,190	2,700	4,080	3,840	4,080	2,700	4,080
9	4,340	3,210	1,400	1,040	884	1,780	3,400	3,610	4,080	4,080	2,700	3,840
10	4,620	3,030	1,320	1,070	1,030	2,020	3,210	3,210	4,340	3,610	2,700	3,610
11	4,620	2,860	1,600	1,020	1,100	1,880	3,030	3,210	4,910	3,840	2,860	3,210
12	4,340	2,700	1,840	1,000	1,060	1,940	2,550	3,030	5,200	3,610	2,860	2,860
13	3,840	2,700	1,060	918	1,020	2,070	2,550	3,210	4,910	3,400	2,860	2,860
14	4,620	2,860	1,900	901	1,040	1,820	2,700	3,210	5,500	3,400	2,860	2,550
15	4,910	2,700	1,740	1,050	1,120	2,110	3,030	3,030	4,340	4,340	2,700	2,860
16	4,620	2,860	1,740	969	1,020	2,280	3,210	3,030	4,080	3,210	2,700	2,700
17	4,340	2,550	1,560	977	1,060	2,040	2,860	2,860	5,500	3,400	2,700	2,860
18	4,620	2,300	1,470	1,000	1,040	2,360	2,700	2,550	4,910	3,610	2,550	3,210
19	4,340	2,550	1,710	1,240	1,050	2,670	2,700	2,860	4,910	3,210	2,550	3,610
20	4,620	2,860	1,520	1,010	1,050	2,550	2,420	2,700	5,500	3,030	2,700	3,840
21	3,840	3,030	1,620	1,000	1,010	3,210	2,550	2,860	4,620	3,030	2,860	3,210
22	4,080	3,610	1,380	1,100	1,000	3,030	2,860	2,700	4,620	3,030	2,700	3,400
23	4,340	2,860	1,110	1,030	986	3,030	2,860	3,030	4,620	3,030	2,700	3,610
24	3,840	2,190	1,060	1,190	1,140	2,860	3,030	3,030	4,340	2,860	2,550	3,610
25	3,610	2,090	1,220	1,090	1,100	3,030	3,210	3,210	4,340	2,860	2,700	3,400
26	3,840	2,010	1,290	1,440	1,140	3,030	3,030	3,400	4,080	2,700	2,700	3,400
27	3,400	1,850	1,030	960	1,050	3,030	3,030	3,610	4,080	2,550	2,700	3,610
28	3,210	1,060	1,860	1,040	1,220	2,860	3,210	3,400	4,340	2,700	2,700	3,210
29	3,610	1,090	1,020	1,180	-------	3,400	3,400	3,610	3,840	2,700	2,700	3,840
30	3,610	1,460	1,120	901	-------	3,610	4,080	3,210	3,610	2,420	2,700	3,840
31	3,610	-------	1,100	1,050	-------	3,610	-------	3,030	-------	2,420	2,860	----

NOTE.—Stage-discharge relation affected by ice Nov. 24 to Mar. 19; discharge based on computed flow at Coon Rapids power plant of Northern States Power Co.

Monthly discharge of Mississippi River at Elk River, Minn., for the year ending September 30, 1925

[Drainage area, 14,500 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	5,200	3,210	4,150	0.286	0.33
November	4,620	1,060	2,810	.194	.22
December	2,170	1,020	1,550	.107	.12
January	1,440	867	1,040	.0717	.08
February	1,210	884	1,060	.0731	.08
March	3,610	926	2,220	.153	.18
April	4,620	2,420	3,210	.221	.25
May	4,080	2,550	3,260	.225	.26
June	5,500	2,700	4,210	.290	.32
July	4,340	2,190	3,160	.218	.25
August	2,860	2,090	2,650	.183	.21
September	4,080	2,550	3,340	.230	.26
The year	5,500	867	2,730	.188	2.55

MISSISSIPPI RIVER AT ST. PAUL, MINN.

LOCATION.—At Chicago Great Western Railway bridge near foot of Robert Street, St. Paul, Ramsay County, 6 miles below mouth of Minnesota River.

DRAINAGE AREA.—35,700 square miles.

RECORDS AVAILABLE.—March 22, 1887, to September 30, 1925. Observations of stage were begun in 1873 by United States Signal Service and continued by United States Weather Bureau. Many discharge measurements made prior to 1900 by United States Engineer Corps.

GAGE.—Chain gage which had previously been situated on downstream handrail of the Chicago Great Western Railway bridge was moved July 25, 1924, to handrail of temporary highway bridge at foot of Jackson Street, and set to same datum as formerly used; read by employee of United States Weather Bureau. On March 18, 1925, an Au water-stage recorder was installed in wooden well and shelter at upstream end of shear fence protecting left abutment of Chicago Great Western Railway bridge. Both gages referred to same datum.

DISCHARGE MEASUREMENTS.—Made from Wabasha Street Bridge 1,000 feet above gage.

CHANNEL AND CONTROL.—Channel fairly permanent. Control not well defined. Some backwater has been caused during the year by obstructions in the river due to construction of the new Robert Street Bridge. Banks moderately high; not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.33 feet at 1 p. m. June 20 (discharge, 16,800 second-feet); minimum stage recorded, −2.5 feet January 7 (discharge, 1,130 second-feet).

1887–1925: Maximum stage recorded, 18.0 feet April 6, 1897 (discharge, 80,800 second-feet); highest known discharge occurred July 22, 1867, and amounted to 117,000 second-feet; minimum discharge, 1,060 second-feet February 4, 1895.

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—During low water, regulation of the flow through turbines at the Government dam just above the mouth of Minnesota River causes diurnal fluctuation of stage at St. Paul. Flow is regulated by Government reservoirs on the headwaters at Lake Winnibigoshish, Leech Lake, Pokegama Lake, Sandy Lake, Pine River, and Gull Lake to increase the low-water open-season flow in the interests of navigation, but the effect of this regulation is very gradual at St. Paul.

ACCURACY.—Stage-discharge relation fairly permanent during the year. Rating curve poorly defined. Gage readings to tenths once daily used October 1 to March 17; recording-gage records used March 18 to September 30. Daily discharge ascertained by applying to rating table daily or mean daily gage height determined by inspection of recorder graph except as noted in footnote to daily-discharge table. Records prior to March 18, poor; after March 18, fair.

COOPERATION.—Gage-height record October 1, 1924, to March 17, 1925, furnished by United States Weather Bureau.

Discharge measurements of Mississippi River at St. Paul, Minn., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 6	*−1.17	2,610	June 22	5.59	15,100
Apr. 17	.57	5,200	Sept. 7	.57	5,040

* Stage-discharge relation probably slightly affected by ice.

Daily discharge, in second-feet, of Mississippi River at St. Paul, Minn., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8,080	5,240	2,510	1,570	1,460	1,790	8,270	6,440	4,290	10,200	4,760	3,500
2	8,270	5,080	2,770	1,570	1,350	1,680	8,080	6,620	4,920	9,800	4,290	3,220
3	8,460	6,090	2,770	1,460	1,910	1,680	8,080	6,440	4,290	9,410	3,990	2,900
4	8,840	5,920	2,640	1,460	1,240	1,680	8,080	6,620	5,920	8,650	5,080	3,990
5	8,650	5,920	2,510	1,460	1,790	1,680	8,270	6,260	5,410	8,270	4,140	4,920
6	7,160	4,600	2,510	1,460	2,030	2,150	7,340	6,440	5,240	8,270	3,570	5,240
7	7,160	4,760	2,390	1,130	1,790	2,390	6,980	6,260	5,580	7,340	3,220	5,080
8	6,980	3,850	2,390	1,350	1,680	2,770	6,440	6,920	5,750	9,410	4,140	4,760
9	7,340	4,600	2,270	1,790	1,790	3,030	5,240	6,260	6,620	11,800	4,140	5,240
10	7,160	4,600	2,030	1,910	1,680	3,990	6,090	5,580	6,800	11,400	3,990	4,920
11	6,980	4,290	2,270	1,680	1,460	4,440	5,750	5,410	7,160	10,800	3,850	5,080
12	6,800	3,710	2,510	1,910	1,570	4,760	5,750	5,410	9,220	10,800	4,290	4,600
13	6,440	3,710	2,900	1,350	1,790	5,240	4,920	5,080	10,200	11,200	3,990	3,990
14	6,090	4,290	2,510	1,460	1,460	5,240	5,080	5,080	10,600	11,400	3,850	3,570
15	6,980	4,440	2,390	1,460	1,350	5,240	5,410	5,080	11,200	11,200	3,990	3,570
16	7,340	3,850	2,270	1,790	1,570	5,080	5,580	5,410	11,600	11,200	3,990	3,570
17	6,980	3,430	2,270	1,680	1,570	5,240	5,240	4,760	13,100	10,200	3,710	3,710
18	6,440	3,570	2,150	1,790	1,790	5,410	4,920	4,290	15,100	9,600	3,990	3,850
19	6,090	3,430	2,150	1,570	1,460	5,920	4,760	4,440	16,200	9,030	3,710	4,140
20	6,260	3,430	2,030	1,790	1,680	5,920	4,760	4,920	16,500	8,080	3,570	4,920
21	6,800	3,710	2,030	1,350	1,910	6,090	5,080	4,290	16,500	7,700	3,710	4,920
22	5,920	3,990	2,030	1,790	1,910	5,920	5,410	4,440	15,100	7,520	3,710	4,290
23	5,580	4,600	1,910	1,910	1,790	6,980	5,580	4,600	15,100	7,160	3,570	4,600
24	6,440	3,710	1,910	1,790	1,910	8,270	5,580	4,600	14,500	6,620	3,570	4,600
25	5,750	3,570	1,790	1,910	1,910	8,460	5,580	4,440	13,800	6,090	3,430	4,760
26	5,410	3,290	1,790	1,910	1,910	9,410	6,260	5,240	13,100	5,920	3,430	4,600
27	5,240	3,030	1,680	1,910	1,910	9,410	5,920	5,080	12,700	5,920	3,360	4,920
28	5,410	2,640	1,680	1,790	1,790	8,460	5,580	5,080	11,800	5,580	3,430	4,920
29	4,600	1,460	1,680	1,790	------	8,080	5,580	4,920	11,400	5,240	3,360	4,760
30	4,760	2,270	1,680	1,790	------	8,270	6,090	5,240	10,800	4,600	3,290	4,760
31	5,240	------	1,570	1,570	------	7,890	------	4,290	------	4,600	3,290	-----

NOTE.—Stage-discharge relation affected by ice Dec. 4–9, Dec. 15 to Jan. 6, Jan. 26–29, and Feb. 25 to Mar. 3; discharge based on records of flow through turbines of the Ford power plant at the Government dam 6 miles above the gage, an allowance being made for the estimated flow of the Minnesota River which enters between the station and the power plant.

Monthly discharge of Mississippi River at St. Paul, Minn., for the year ending September 30, 1925

[Drainage area, 35,700 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	8,840	4,600	6,630	0.186	0.21
November	6,090	1,460	4,040	.113	.13
December	2,900	1,570	2,190	.061	.07
January	1,910	1,130	1,650	.046	.05
February	2,030	1,240	1,700	.048	.05
March	9,410	1,680	5,240	.147	.17
April	8,270	4,760	6,060	.170	.19
May	6,620	4,290	5,320	.149	.17
June	16,500	4,290	10,400	.291	.32
July	11,800	4,600	8,550	.239	.28
August	5,080	3,220	3,820	.107	.12
September	5,240	2,900	4,400	.123	.14
The year	16,500	1,130	5,010	.140	1.90

MINNESOTA RIVER NEAR MONTEVIDEO, MINN.

LOCATION.—In sec. 17, T. 117 N., R. 40 W., at highway bridge 1 mile south of Montevideo, Chippewa County, 500 feet below mouth of Chippewa River.

DRAINAGE AREA.—6,300 square miles.

RECORDS AVAILABLE.—July 22, 1909, to September 30, 1925.

GAGE.—Chain gage attached to upstream handrail of bridge near left bank; read by Elizabeth Hendricks.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Bed composed of heavy gravel and sand; permanent. There is a slight riffle just below gage, but control section is not well defined. Banks will be overflowed at a stage of 14 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.05 feet June 26–28 (discharge, 1,300 second-feet); minimum stage recorded, 1.76 feet at 6 p. m. August 29 (discharge, 49 second-feet).

1909–1925: Maximum stage recorded, about 18.85 feet June 25, 1919 (discharge, about 22,000 second-feet); minimum discharge, 6.8 second-feet, measured by current meter February 9, 1912.

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—No regulation on Minnesota River above station. Regulation of Chippewa River at plant of Chippewa Milling Co. in Montevideo produces a slight fluctuation in stage of Minnesota River at gage.

ACCURACY.—Stage-discharge relation permanent. Rating curve fairly well defined. Gage read to quarter-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

The following discharge measurement was made:

June 24, 1925: Gage height, 6.52 feet; discharge, 1,170 second-feet.

Daily discharge, in second-feet, of Minnesota River near Montevideo, Minn., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	138	162	138		462	294	102	1,230	216	74
2	138	146	115		488	316	112	1,200	180	62
3	146	130	111		462	316	138	1,160	162	60
4	146	138	116		436	338	146	1,130	154	63
5	112	110	138		410	338	123	1,160	130	67
6	180	146	123		338	316	130	1,060	123	71
7	130	154	130		316	294	162	1,030	138	73
8	110	110	180		338	264	254	998	123	78
9	130	88	180		316	264	294	998	138	78
10	171	138	171		316	244	294	967	130	89
11	180	154	154		316	234	254	967	110	86
12	171	171	146		294	225	514	998	96	83
13	189	112	146		274	198	566	967	94	76
14	207	130	138		284	198	592	876	103	71
15	198	123	138		274	180	731	817	81	71
16	198	130	138		264	189	817	788	73	69
17	189	138	123		254	207	967	731	76	66
18	189	138			244	162	1,030	619	70	78
19	189	138			254	162	1,160	566	73	71
20	180	138			264	154	1,160	540	71	66
21	171	154			254	154	1,160	514	70	78
22	162	207			284	130	1,130	410	116	64
23	162	154			294	123	1,130	362	58	61
24	154	216			284	180	1,160	316	56	63
25	130	162		462	264	162	1,160	274	52	64
26	154	154		619	294	154	1,300	274	58	58
27	154	198		675	274	154	1,300	274	56	56
28	146	207		566	294	171	1,300	264	54	67
29	146	189		540	436	154	1,300	234	50	65
30	146	123		540	362	130	1,270	216	60	63
31	162			514		116		234	80	

NOTE.—No record Dec. 18 to Mar. 24.

Monthly discharge of Minnesota River near Montevideo, Minn., for the year ending September 30, 1925

[Drainage area, 6,300 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	207	110	161	0.026	0.03
November	216	88	149	.024	.03
December 1-17	180	111	140	.022	.01
March 25-31	675	462	559	.089	.02
April	488	244	321	.051	.06
May	338	116	210	.033	.04
June	1,300	102	725	.115	.13
July	1,230	216	715	.113	.13
August	216	50	98.4	.016	.02
September	89	56	69.7	.011	.01

MINNESOTA RIVER AT MANKATO, MINN.

LOCATION.—In sec. 7, T. 108 N., R. 26 W., at Main Street highway bridge in Mankato, Blue Earth County, 2 miles below mouth of Blue Earth River.

DRAINAGE AREA.—14,600 square miles.

RECORDS AVAILABLE.—March 15, 1922, to September 30, 1925, at present site; May 20, 1903, to October 19, 1921, at Sibley Park 2 miles upstream. Drainage area practically the same at the two sites.

GAGE.—Chain gage on downstream side of bridge over center of left channel until November 30, 1924. On March 20, 1925, an Au water-stage recorder was installed near left abutment of bridge at same datum as chain gage. Chain gage read and recorder inspected by J. J. Pihale.

DISCHARGE MEASUREMENTS.—Made from bridge to which gage is attached.

CHANNEL AND CONTROL.—Bed composed of sand and light gravel; shifting during high stages. Banks moderately high and not subject to overflow. Control poorly defined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.1 feet at 5 a. m. June 17 (discharge, 8,640 second-feet); minimum stage, 3.3 feet at 11 p. m. September 2 (discharge, 133 second-feet).

1903–1925: Maximum stage recorded, 21.2 feet at old site at Sibley Park June 26, 1908 (discharge, 43,800 second-feet); minimum discharge, 89 second-feet August 31 to September 2, 1911.

The highest known stage of the river occurred in 1881 and is shown in Mankato by a well-marked line about 27 feet above zero of Sibley Park gage (discharge, estimated 65,000 second-feet).

ICE.—No records available during winter.

REGULATION.—Nearest dam on Minnesota River is at Minnesota Falls, 140 miles upstream. A dam on Blue Earth River at Rapidan, a few miles above mouth, controls the flow of that river, which is about 20 per cent of that at the Mankato station, and produces considerable daily fluctuation at gage, amounting at times to more than 1 foot.

ACCURACY.—Stage-discharge relation has probably been permanent during the year. Rating curve well defined between 96 and 4,620 second-feet; extended above. Chain gage read to tenths once daily during October and November, 1924. Operation of water-stage recorder satisfactory March 20 to September 30. Daily discharge ascertained by applying to rating table daily or mean daily gage height determined by inspection of recorder graph. Records for October and November, fair; March 20 to September 30, good.

COOPERATION.—Gage-height records October 1 to November 30 furnished by the United States Weather Bureau.

The following discharge measurement was made:
June 25, 1925: Gage height, 8.86 feet; discharge, 4,480 second-feet.

Daily discharge, in second-feet, of Minnesota River at Mankato, Minn., for the year ending September 30, 1925

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,030	525		1,950	903	339	2,940	624	150
2	1,950	525		1,870	940	461	2,940	624	142
3	1,710	461		1,630	940	493	3,020	590	155
4	1,550	399		1,550	1,020	657	3,110	590	150
5	1,320	461		1,470	940	760	3,020	558	181
6	1,240	461		1,390	940	1,090	3,020	461	226
7	1,160	525		1,240	903	1,550	3,020	525	264
8	1,020	525		1,240	831	1,390	3,110	525	264
9	1,090	461		1,240	831	1,240	3,200	430	237
10	1,020	399		1,160	831	1,090	3,450	381	226
11	940	399		1,240	725	940	3,720	339	221
12	940	461		1,160	795	2,680	3,810	430	226
13	940	461		1,090	760	2,770	3,810	381	191
14	867	461		1,090	691	4,080	3,720	399	176
15	867	399		1,090	624	5,850	3,450	369	176
16	795	399		1,090	691	6,240	3,200	310	226
17	725	399		1,020	725	8,240	2,770	287	226
18	725	461		940	525	7,440	2,600	276	176
19	657	525		1,020	558	6,940	2,350	287	186
20	657	590	2,030	1,020	590	6,340	2,030	264	172
21	795	590	2,350	1,160	558	5,940	1,950	237	172
22	795	590	2,270	1,160	558	5,560	1,550	221	163
23	725	590	2,680	1,160	525	5,000	1,320	221	159
24	657	590	3,280	1,160	558	4,710	1,160	216	159
25	525	399	2,860	1,090	390	4,530	1,160	201	155
26	461	339	2,680	1,090	399	4,260	1,020	186	163
27	399	226	2,600	1,020	430	4,170	867	167	176
28	525	226	2,350	1,020	461	3,900	867	163	226
29	525	281	2,110	1,020	369	3,540	760	155	237
30	525	339	2,110	940	461	3,360	760	167	381
31	525		2,030		333		691	159	

NOTE.—Stage-discharge relation affected by ice Dec. 1 to Mar. 19; no records available.

Monthly discharge of Minnesota River at Mankato, Minn., for the year ending September 30, 1925

[Drainage area, 14,600 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,030	399	925	0.063	0.07
November	590	226	449	.031	.03
March 20-31	3,280	2,030	2,450	.168	.07
April	1,950	940	1,210	.083	.09
May	1,020	333	671	.046	.05
June	8,240	339	3,520	.241	.27
July	3,810	691	2,400	.164	.19
August	624	155	347	.024	.03
September	381	142	199	.014	.02

ST. CROIX RIVER AT SWISS, WIS.

LOCATION.—In sec. 33, T. 42 N., R. 15 W., at highway bridge near Swiss, Burnett County, 2 miles above point where St. Croix River becomes boundary line between Wisconsin and Minnesota and 10 miles northeast of Danbury, Wis., on Minneapolis, St. Paul & Sault Ste. Marie Railway. Namakagon River enters 3½ miles above station.

DRAINAGE AREA.—1,550 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—March 13, 1914, to September 30, 1925.

GAGE.—Chain gage attached to downstream side of bridge; read by Capt. Richard Goldschmidt.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed composed of gravel; smooth. Aquatic plants during summer may cause a small amount of backwater. Left bank high and not subject to overflow; right bank of medium height and may be overflowed during extremely high water.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 2,970 second-feet March 20; minimum stage, 0.22 foot several times during later half of August (discharge, 518 second-feet).

1914–1925: Maximum stage recorded, 6.73 feet at 6.45 a. m. April 22, 1916 (discharge, 8,480 second-feet); minimum stage recorded, that of 1925.

ACCURACY.—Stage-discharge relation permanent except as affected by growth of grass in channel and by ice. Rating curve fairly well defined. Gage read to quarter-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as explained in footnote to table of daily discharge. Records fair.

Discharge measurements of St. Croix River at Swiss, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 29	[a] 1.67	678	Apr. 25	1.91	1,730
Jan. 27	[a] 2.11	751	Aug. 29	[b] .22	514
Mar. 3	[a] 2.32	758			

[a] Stage-discharge relation affected by ice.
[b] Stage-discharge relation affected by growth of grass in channel.

Daily discharge, in second-feet, of St. Croix River at Swiss, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,590	1,090	810	700	725	750	1,500	1,330	870	630	650	590
2	1,540	1,090	810	700	725	750	1,460	1,250	840	630	630	610
3	1,540	1,090	810	700	725	760	1,410	1,170	870	630	630	610
4	1,590	1,090	810	690	725	750	1,330	1,090	940	630	610	610
5	1,540	1,090	810	675	770	780	1,290	1,050	940	610	590	610
6	1,540	1,050	810	690	810	810	1,290	1,010	905	725	590	610
7	1,460	1,050	810	700	810	840	1,250	1,010	870	810	590	610
8	1,410	1,050	810	690	810	870	1,210	975	870	810	610	590
9	1,370	1,010	780	675	860	960	1,250	940	840	840	630	610
10	1,370	1,010	750	675	905	1,050	1,210	905	810	810	610	610
11	1,370	1,050	750	675	890	1,050	1,210	870	780	780	590	610
12	1,370	1,130	750	690	870	1,050	1,170	840	810	750	590	590
13	1,410	1,090	725	700	855	1,030	1,170	810	870	725	590	590
14	1,330	1,090	725	710	840	1,010	1,170	810	840	750	590	590
15	1,370	1,090	725	725	795	1,010	1,170	780	810	725	570	570

Daily discharge, in second-feet, of St. Croix River at Swiss, Wis., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	1,370	1,050	700	740	750	1,010	1,170	810	750	650	570	552
17	1,330	1,090	700	750	740	1,070	1,130	810	750	630	552	552
18	1,290	1,090	700	750	725	1,130	1,130	810	750	610	552	552
19	1,250	1,050	700	750	725	1,170	1,170	780	750	700	552	552
20	1,210	1,050	700	750	725	1,210	1,250	750	750	700	535	552
21	1,170	1,050	700	750	740	1,290	1,410	750	750	675	535	552
22	1,130	1,010	700	750	750	1,370	1,500	750	725	650	535	535
23	1,090	1,010	700	750	765	1,460	1,590	780	700	630	535	535
24	1,090	975	700	750	780	1,590	1,770	810	675	650	535	552
25	1,050	940	700	750	750	1,770	1,770	810	700	700	518	552
26	1,010	940	700	750	725	2,040	1,680	810	700	700	518	570
27	1,010	940	700	750	740	2,230	1,590	810	700	750	535	610
28	975	840	675	740	750	2,430	1,500	870	700	725	535	610
29	975	810	675	725	-------	1,680	1,460	840	675	700	535	610
30	940	810	675	725	-------	1,720	1,410	810	675	675	570	630
31	1,050	-------	675	725	-------	1,590	-------	840	-------	675	570	-------

NOTE.—Stage-discharge relation affected by ice Nov. 28 to Mar. 27; discharge based on gage heights corrected for ice effect by means of three discharge measurements, observer's notes, and weather records. Stage-discharge relation affected by growth of aquatic plants July 1 to Sept. 30; discharge ascertained by shifting-control method based on one discharge measurement.

Monthly discharge of St. Croix River at Swiss, Wis., for the year ending September 30, 1925

[Drainage area, 1,550 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,590	940	1,280	0.826	0.95
November	1,130	810	1,020	.658	.73
December	810	675	735	.474	.55
January	750	675	719	.464	.53
February	905	725	778	.502	.52
March	2,430	750	1,230	.794	.92
April	1,770	1,130	1,350	.871	.97
May	1,330	750	893	.576	.66
June	940	675	787	.508	.57
July	840	610	699	.451	.52
August	650	518	573	.370	.43
September	630	535	584	.377	.42
The year	2,430	518	889	.574	7.77

ST. CROIX RIVER NEAR GRANTSBURG, WIS.

LOCATION.—Near center of sec. 30, T. 40 N., R. 18 W., at Norway Point ferry, 6 miles above mouth of Kettle River and 10 miles north of Grantsburg, Burnett County. Sand Creek enters half a mile above station.

DRAINAGE AREA.—2,820 square miles.

RECORDS AVAILABLE.—April 18, 1923, to September 30, 1925.

GAGE.—Chain gage fastened to a cantilever arm supported by two trees just above the highway and ferry site on left bank; read by Charles Panser.

DISCHARGE MEASUREMENTS.—Made from ferryboat.

CHANNEL AND CONTROL.—Bed composed of sand. Control poorly defined; apparently does not shift.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.9 feet at 7 a. m. March 27 (discharge, 6,460 second-feet); minimum stage, 3.50 feet at 6 p. m. August 27 (discharge, 860 second-feet).

1923–1925: Maximum stage recorded, 8.20 feet at 6 p. m. May 13, 1924 (discharge, 7,000 second-feet); minimum discharge, estimated 800 second-feet December 31, 1924 (stage-discharge relation affected by ice).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation permanent except as affected by ice and by growth of grass in channel. Rating curve fairly well defined between 920 and 5,500 second-feet. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Open-water records good; winter records fair.

COOPERATION.—Gage-height record furnished by Northern States Power Co.

The following discharge measurements were made:

April 24, 1925: Gage height, 5.88 feet; discharge, 3,360 second-feet.

August 31, 1925: Gage height, 3.74 feet (stage-discharge relation affected by growth of grass in channel); discharge, 1,010 second-feet.

Daily discharge, in second-feet, of St. Croix River near Grantsburg, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,710	2,040					2,550	2,140	1,500	1,120	1,190	1,120
2	3,280	2,140					2,440	1,940	1,500	1,120	1,120	1,050
3	3,020	2,140					2,340	1,940	1,670	1,120	1,120	1,120
4	3,020	2,040					2,340	1,760	1,760	1,120	1,120	1,050
5	3,020	2,040					2,240	1,760	1,760	1,120	1,120	1,120
6	2,900	1,940					2,240	1,670	1,760	1,500	1,050	1,120
7	2,780	1,940					2,140	1,580	1,670	1,580	985	1,120
8	2,660	1,940					2,140	1,580	1,580	1,500	1,050	1,120
9	2,550	1,940					2,140	1,580	1,580	1,760	1,120	1,120
10	2,550	1,940					2,140	1,500	1,420	1,850	1,120	1,120
11	2,440	2,040					2,140	1,500	1,420	1,760	1,120	1,050
12	2,660	2,140					2,140	1,420	1,500	1,580	1,050	1,050
13	2,780	2,340					2,140	1,420	1,580	1,580	1,050	1,050
14	2,660	2,240				2,060	2,040	1,420	1,580	1,500	1,050	1,050
15	2,550	2,240			1,290		2,040	1,420	1,500	1,420	985	1,050
16	2,550	2,340	1,230	1,120			2,040	1,420	1,420	1,340	985	1,120
17	2,550	2,140					1,940	1,420	1,420	1,260	985	1,120
18	2,440	2,140					1,940	1,500	1,420	1,260	985	1,050
19	2,440	2,040					1,940	1,500	1,340	1,260	985	985
20	2,340	2,040					2,140	1,500	1,340	1,260	920	1,120
21	2,240	2,040					2,550	1,500	1,260	1,260	920	1,120
22	2,140	2,140					2,780	1,500	1,260	1,260	920	1,120
23	2,140	2,140					2,780	1,580	1,190	1,190	920	1,120
24	2,040	2,140					3,280	1,670	1,190	1,190	920	1,120
25	2,040	2,140					3,560	1,670	1,190	1,260	920	1,120
26	1,940	2,140					3,560	1,580	1,260	1,260	860	1,120
27	1,940	2,040				6,280	3,280	1,580	1,260	1,340	860	1,120
28	1,940	1,940				4,510	3,020	1,670	1,260	1,260	860	1,120
29	1,850	1,940			-------	3,280	2,440	1,580	1,190	1,260	860	1,120
30	1,850	1,850			-------	2,780	2,340	1,580	1,190	1,190	985	1,260
31	1,940	-------			-------	2,780	-------	1,580	-------	1,190	985	------

NOTE.—Stage-discharge relation affected by ice Dec. 1 to Mar. 26; monthly discharge estimated from a study of gage height and weather records, observer's notes, and discharge at Swiss.

Monthly discharge of St. Croix River near Grantsburg, Wis., for the year ending September 30, 1925

[Drainage area, 2,820 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,710	1,850	2,480	0.879	1.01
November	2,340	1,850	2,080	.738	.82
December			1,230	.436	.50
January			1,120	.397	.46
February			1,290	.457	.48
March	6,280		2,360	.837	.96
April	3,560	1,940	2,430	.862	.96
May	2,140	1,420	1,600	.567	.65
June	1,760	1,190	1,430	.507	.57
July	1,850	1,120	1,340	.475	.55
August	1,190	860	1,000	.355	.41
September	1,260	985	1,100	.390	.44
The year	6,280	860	1,620	.574	7.81

ST. CROIX RIVER NEAR RUSH CITY, MINN.

LOCATION.—In SW. ¼ sec. 8, T. 37 N., R. 20 W., at Northern Pacific Railway bridge, 5 miles east of Rush City, Chisago County, and 10 miles below mouth of of Snake River.

DRAINAGE AREA.—5,120 square miles.

RECORDS AVAILABLE.—April 18, 1923, to September 30, 1925.

GAGE.—Chain gage attached to downstream side of railroad bridge near right end; read by Fred Heinrich.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Bed composed of sand and silt; not permanent. Control poorly defined. Aquatic plants cause backwater during summer.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 6,590 second-feet October 1; minimum stage, 2.5 feet August 26 and 27 (discharge, 820 second-feet).

1923–1925: Maximum stage recorded, 6.3 feet May 14 and 15, 1924 (discharge, 13,700 second-feet); minimum discharge recorded that of August 26 and 27, 1925.

ACCURACY.—Stage-discharge relation not permanent. Rating curve fairly well defined between 820 and 5,020 second-feet. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage-height to rating table. Open-water records fair; winter records poor.

COOPERATION.—Gage-height record furnished by Northern States Power Co.

The following discharge measurements were made:

April 22, 1925: Gage height, 3.86 feet; discharge, 4,160 second-feet.

April 23, 1925: Gage height, 4.01 feet; discharge, 4,400 second-feet.

September 1, 1925: Gage height, 2.67 feet; discharge, 1,060 second-feet.

Daily discharge, in second-feet, of St. Croix River near Rush City, Minn., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6,590	2,270					3,890	4,180	1,800	1,380	1,800	1,000
2	5,970	2,270					3,610	3,610	2,030	1,580	1,580	1,000
3	5,360	2,270					3,610	3,610	2,270	1,380	1,580	1,190
4	5,060	2,270					3,050	3,050	2,270	1,380	1,580	1,000
5	4,760	2,270					2,780	2,780	2,520	1,580	1,380	1,190
6	4,760	2,030					3,050	3,050	2,520	1,800	1,190	1,380
7	4,180	2,030					2,780	2,520	2,520	2,270	1,380	1,190
8	3,890	2,030					2,780	2,270	2,520	2,270	1,190	1,190
9	3,610	2,030					2,780	2,520	2,030	3,050	1,190	1,380
10	3,610	2,030					2,520	2,270	2,030	3,050	1,380	1,190
11	3,330	2,030					2,520	2,030	2,030	3,050	1,190	1,190
12	3,610	2,030					2,780	2,270	1,800	2,520	1,190	1,190
13	3,610						2,520	2,030	1,800	2,270	1,380	1,000
14	3,330					3,120	2,520	1,800	2,270	2,520	1,190	1,000
15	3,330				1,560		2,780	2,030	2,030	2,270	1,190	1,190
16	3,330		1,440	1,170			2,520	1,800	1,800	2,030	1,380	1,000
17	3,330						2,270	1,800	2,030	2,030	1,190	1,000
18	3,050						2,520	2,030	1,800	1,800	1,190	1,190
19	3,050						2,520	1,800	1,800	1,800	1,380	1,000
20	2,780						2,780	1,800	1,800	2,270	1,190	1,000
21	2,780	2,030					3,610	1,800	1,580	1,800	1,190	1,190
22	2,520						4,180	1,580	1,580	1,800	1,190	1,000
23	2,520						4,180	1,580	1,800	2,030	1,000	1,000
24	2,520						5,360	2,030	1,380	1,800	1,000	1,190
25	2,270						5,970	2,030	1,380	1,800	1,190	1,000
26	2,270						5,360	2,030	1,800	2,030	820	1,000
27	2,270					4,760	5,660	2,270	1,580	1,800	820	1,190
28	2,030					5,660	5,060	2,030	1,580	1,800	1,000	1,000
29	2,030				-------	5,060	4,760	2,030	1,800	1,800	1,000	1,000
30	2,030				-------	4,180	4,470	2,270	1,380	1,580	1,000	1,380
31	2,030	-------			-------	4,180	-------	2,020	-------	1,580	1,190	-----

NOTE.—Stage-discharge relation affected by ice Nov. 13 to Mar. 26; discharge based on gage heights corrected for effect of ice by means of observer's notes and weather records.

Monthly discharge of St. Croix River near Rush City, Minn., for the year ending September 30, 1925

[Drainage area, 5,120 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	6,590	2,030	3,410	0.666	0.77
November	2,270	-------	2,070	.404	.45
December	-------	-------	1,440	.281	.32
January	-------	-------	1,170	.229	.26
February	-------	-------	1,560	.305	.32
March	5,660	-------	3,390	.662	.76
April	5,970	2,270	3,510	.686	.77
May	4,180	1,580	2,290	.447	.52
June	2,520	1,380	1,920	.375	.42
July	3,050	1,380	2,000	.391	.45
August	1,800	820	1,230	.240	.28
September	1,380	1,000	1,110	.217	.24
The year	6,590	820	2,100	.410	5.56

ST. CROIX RIVER NEAR ST. CROIX FALLS, WIS.

LOCATION.—In sec. 18, T. 34 N., R. 18 W., at power plant of Northern States Power Co., on Wisconsin side of St. Croix River near St. Croix Falls, Polk County.

DRAINAGE AREA.—5,930 square miles.

RECORDS AVAILABLE.—January 1, 1910, to September 30, 1925. Discharge measurements for 1903 published in Water-Supply Paper 98, under St. Croix River near Taylors Falls, Minn. Records from January 10, 1902, to December, 1909, published in "Report of water-resources investigation of Minnesota, 1909–1912" by Minnesota State Drainage Commission.

DISCHARGE.—Determinations of discharge based on kilowatt output of generators and exciters plus flow over spillway, considered as a weir.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge recorded during year, 6,820 second-feet October 1; minimum mean daily discharge, 472 second-feet February 8.

1902–1905; 1910–1925: Maximum discharge recorded, 35,800 second-feet March 26, 1920; minimum discharge, 75 second-feet July 17, 1910 (caused by regulation).

REGULATION.—Low-water flow controlled by operation of gates of power plant. Nevers Dam, 10 miles above station, which was for some time in such poor condition that little regulation could be effected by it, was repaired September 25, 1924, and since that time has been used to regulate the flow at the St. Croix Falls power plant.

ACCURACY.—During June and July, 1925, a test of efficiency of the wheels at this plant was made by G. E. Laughland, hydraulic engineer for the Byllesby Engineering & Management Corporation, using the salt titration method. The discharge determined by this method was 5 per cent less than that given by the old calibration curves. No revision of the calibration curves was made when the records for the year ending September 30, 1925, were prepared. Records good.

COOPERATION.—Records furnished by the Northern States Power Co.

Daily discharge, in second-feet, of St. Croix River near St. Croix Falls, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6,820	2,630	1,350	778	779	633	3,620	4,230	3,310	2,060	1,560	1,480
2	5,800	1,930	1,190	1,100	1,440	1,600	4,610	4,400	2,940	1,910	1,020	1,260
3	5,680	2,890	1,600	1,520	1,600	1,530	4,210	2,400	3,190	1,740	2,450	1,300
4	5,160	2,780	2,060	613	1,460	1,450	4,090	5,030	2,600	1,370	1,870	1,530
5	3,730	2,880	1,960	1,300	1,470	1,450	2,900	5,330	3,390	1,260	1,610	1,430
6	5,420	2,660	2,570	1,170	1,470	1,370	3,350	3,930	2,340	2,040	1,450	1,650
7	4,420	2,500	517	1,210	1,720	1,790	4,100	3,320	1,030	2,300	1,430	1,590
8	4,220	2,500	2,410	1,420	472	616	4,940	3,200	2,920	2,560	1,270	1,640
9	4,480	1,600	2,330	1,480	1,880	2,060	3,850	2,960	3,110	3,440	1,100	1,500
10	4,380	2,620	2,360	1,400	1,650	2,610	3,010	1,670	3,490	3,000	1,600	1,450
11	3,690	2,540	1,740	592	1,650	2,770	3,650	2,720	3,540	2,250	1,630	1,440
12	2,480	2,530	1,630	1,730	1,740	2,500	2,780	2,640	2,890	1,300	1,510	1,440
13	3,700	2,540	2,540	1,760	1,560	2,800	3,320	2,930	1,930	3,180	1,470	1,340
14	3,870	2,700	561	1,280	2,000	2,980	3,050	2,410	913	3,550	1,490	1,600
15	3,730	3,190	1,990	1,440	649	1,400	2,990	2,540	2,540	3,520	1,240	1,440
16	3,790	1,220	2,090	988	2,110	2,920	2,850	2,100	3,070	3,220	954	1,490
17	3,780	2,680	1,970	1,570	2,130	2,920	3,180	1,370	2,740	2,200	1,490	1,410
18	3,710	2,470	1,680	889	1,740	2,440	2,970	2,400	2,570	2,140	1,570	1,440
19	2,690	2,660	1,580	1,550	1,670	2,610	2,740	2,460	2,600	911	1,330	1,290
20	3,580	2,620	1,790	1,590	1,480	2,880	2,990	2,670	1,510	2,440	1,240	615

Daily discharge, in second-feet, of St. Croix River near St. Croix Falls, Wis., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	3,350	2,920	839	1,480	1,530	2,950	3,310	2,630	794	2,320	1,220	1,390
22	3,260	3,080	1,900	1,430	549	1,510	3,820	2,170	2,080	2,140	1,240	1,640
23	2,670	1,200	1,800	1,400	1,600	3,450	4,760	2,470	2,020	2,000	1,190	1,550
24	2,430	3,030	1,410	1,590	1,610	3,180	5,000	1,300	1,890	1,960	1,210	1,520
25	3,060	2,390	817	940	1,420	2,520	4,740	2,240	1,820	1,690	1,260	1,270
26	1,730	2,800	1,540	1,500	1,420	3,010	5,860	2,350	1,860	1,010	913	1,500
27	2,900	635	1,730	1,630	1,520	5,140	5,520	2,600	2,330	2,320	1,000	776
28	2,550	2,640	809	1,520	1,700	5,340	5,400	3,030	1,590	2,390	1,060	1,550
29	2,600	2,500	1,340	1,620	-------	5,310	4,880	2,270	2,260	1,990	1,100	1,780
30	2,620	770	1,700	1,240	-------	5,700	4,950	1,350	2,030	1,980	1,010	3,130
31	2,660	-------	1,300	1,540	-------	3,890	-------	1,460	-------	1,970	1,560	-------

Monthly discharge of St. Croix River near St. Croix Falls, Wis., for the year ending September 30, 1925

[Drainage area, 5,930 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	6,820	1,730	3,710	0.626	0.72
November	3,190	635	2,400	.405	.45
December	2,570	517	1,650	.278	.32
January	1,760	592	1,330	.224	.26
February	2,130	472	1,500	.253	.26
March	5,700	616	2,690	.454	.52
April	5,860	2,740	3,910	.659	.74
May	5,330	1,300	2,730	.460	.53
June	3,540	794	2,380	.401	.45
July	3,550	911	2,200	.371	.43
August	2,450	913	1,360	.229	.26
September	3,130	615	1,480	.250	.28
The year	6,860	472	2,280	.384	5.22

NOTE.—Computed by U. S. Geological Survey from records of daily discharge furnished by the Northern States Power Co.

NAMAKAGON RIVER AT TREGO, WIS.

LOCATION.—In sec. 35, T. 40 N., R. 12 W., at Chicago & Northwestern Railway bridge at Trego, Washburn County, 20 miles above confluence of Namakagon and Totogatic Rivers.

DRAINAGE AREA.—420 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—March 11, 1914, to September 30, 1925.

GAGE.—Staff gage fastened to retaining wall on left bank just above railroad bridge; read by Patrick Lawton.

DISCHARGE MEASUREMENTS.—Made from lower chords of railroad bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel. Banks medium high and not subject to overflow. Small island downstream, with rapids on either side, forms control; permanent except as affected by growth of aquatic plants during summer.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 768 second-feet March 26; minimum stage, 1.36 feet August 21–29 and September 18 (discharge, 238 second-feet).

1914–1925: Maximum stage recorded, 3.60 feet April 11, 1922 (discharge, 1,810 second-feet); minimum discharge, estimated 235 second-feet December 19, 1916 (stage-discharge relation affected by ice).

ICE.—Stage-discharge relation seriously affected by ice.

ACCURACY.—Stage-discharge relation permanent except as affected by ice and by growth of aquatic plants. Rating curve well defined above 350 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table except as indicated in footnote to daily-discharge table. Open-water records good above 350 second-feet and fair below. Winter records fair.

Discharge measurements of Namakagon River at Trego, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 23	[a] 2.47	293	Mar. 2	[a] 2.41	330	Apr. 26	1.84	456
Jan. 26	[a] 2.63	295	Apr. 26	1.84	453	Aug. 28	[b] 1.37	241

[a] Stage-discharge relation affected by ice. [b] Affected by backwater from aquatic plants.

Daily discharge, in second-feet, of Namakagon River at Trego, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	698	502	445	295	305	345	532	417	322	303	322	251
2	664	472	415	305	305	355	532	417	366	303	303	284
3	630	472	415	305	305	365	532	417	417	268	284	268
4	630	444	415	305	310	365	532	392	417	268	268	251
5	630	444	365	305	320	365	502	417	417	268	268	284
6	597	444	365	305	330	380	472	392	392	303	268	284
7	564	444	365	305	345	390	472	392	322	344	284	268
8	564	417	365	305	345	390	472	366	344	344	322	268
9	564	417	365	305	345	390	472	366	322	344	322	268
10	564	417	365	305	330	400	472	366	322	344	303	251
11	532	417	345	310	320	415	472	366	322	322	284	251
12	532	502	345	320	330	390	444	322	344	309	284	251
13	564	472	285	310	345	365	444	322	322	303	251	284
14	564	470	280	305	330	380	444	322	344	284	251	268
15	597	445	270	295	320	365	444	322	322	284	251	251
16	597	415	280	285	320	392	417	344	284	268	251	251
17	564	417	285	295	320	417	417	322	322	268	268	251
18	564	417	280	305	330	472	392	322	344	284	251	238
19	532	417	270	310	345	444	417	322	303	344	251	251
20	532	417	280	320	355	444	472	322	284	322	251	284
21	502	417	285	320	365	417	472	322	303	303	238	284
22	502	444	285	320	365	444	502	322	322	284	238	284
23	502	444	285	310	365	472	532	344	303	268	238	284
24	472	415	285	305	355	532	532	366	303	303	238	284
25	472	415	285	310	345	564	532	344	322	366	238	268
26	472	445	285	320	330	768	472	322	303	366	238	251
27	444	415	285	310	320	664	502	322	303	322	238	251
28	444	415	285	305	330	630	472	392	322	303	238	251
29	444	444	285	305	-------	597	444	366	366	309	238	268
30	444	444	285	305	-------	597	444	366	284	284	284	303
31	502	-------	285	305	-------	564	-------	322	-------	303	284	---

NOTE.—Stage-discharge relation affected by ice Nov. 14–16, 24–28, and Dec. 1 to Mar. 15; discharge based on gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records. Stage-discharge relation affected by growth of aquatic plants at control July 1 to Sept. 30; discharge ascertained by shifting-control method.

Monthly discharge of Namakagon River at Trego, Wis., for the year ending September 30, 1925

[Drainage area, 420 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	698	444	545	1.30	1.50
November	502	415	439	1.05	1.17
December	445	270	320	.762	.88
January	320	285	307	.731	.84
February	365	305	333	.793	.83
March	768	345	454	1.08	1.24
April	532	392	475	1.13	1.26
May	417	322	355	.845	.97
June	417	284	330	.786	.88
July	366	268	306	.729	.84
August	322	238	266	.633	.73
September	303	238	266	.633	.71
The year	768	238	367	.874	11.85

APPLE RIVER NEAR SOMERSET, WIS.

LOCATION.—In sec. 21, T. 31 N., R. 19 W., at power plant of Northern States Power Co., 3½ miles below Somerset, St. Croix County, and 2 miles above mouth.

DRAINAGE AREA.—550 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—January, 1901, to September 30, 1925.

GAGE.—Vertical staff gages are used in determining head on wheels.

DETERMINATION OF DISCHARGE.—The discharge through plant is determined from tables based on data collected in a series of tests, using a sharp-crested weir, made in September, 1920. Daily discharge of the turbines is computed from hourly observations of the kilowatt output and the number of wheels in operation. To this is added leakage through the average number of wheels idle each day, the sum giving the daily flow through power house. Water is seldom wasted over spillway of dam, but when it is wasted the quantity is computed from weir formula and added to flow through plant. Records do not include the constant leakage of 3 second-feet through gate and flashboards.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge during year, 598 second-feet March 24; minimum mean daily discharge, 25 second-feet August 27.

1904–1924: Maximum mean daily discharge recorded, 2,280 second-feet in June, 1905; minimum mean daily discharge, 20 second-feet June 26, 1921. Owing to regulation computed minimum discharge has no bearing on natural minimum flow.

REGULATION.—There are a number of power plants above station. The pondage of these plants is small, and though daily flow may be controlled to some extent, mean monthly flow probably represents nearly the natural flow.

COOPERATION.—Records furnished by the Northern States Power Co.

No discharge measurements were made at the station during year.

Daily discharge, in second-feet, of Apple River near Somerset, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	256	237	203	145	150	135	315	388	171	154	118	112
2	246	127	167	153	133	177	227	236	190	162	125	119
3	244	190	183	142	150	166	256	177	177	178	122	72
4	240	176	191	136	165	179	272	205	277	135	173	82
5	234	170	195	151	178	244	228	184	177	61	122	155
6	249	187	170	122	175	163	254	189	283	168	114	202
7	218	165	184	165	196	198	226	195	227	173	134	173
8	212	200	163	171	158	154	232	203	256	179	203	201
9	205	141	140	111	207	279	237	217	204	167	106	172
10	228	200	186	140	158	275	283	162	165	124	109	127
11	224	175	194	151	216	273	226	150	212	156	161	151
12	196	199	205	155	203	295	257	222	195	103	105	135
13	202	220	164	87	147	268	242	208	283	172	131	114
14	230	171	161	72	171	239	216	220	192	161	132	131
15	234	175	176	118	139	266	223	190	215	145	125	135
16	220	203	139	135	141	220	198	209	217	161	120	100
17	204	160	163	139	148	267	202	163	255	114	95	112
18	232	183	165	140	160	258	214	219	257	131	153	112
10	244	212	127	135	164	314	207	161	219	124	123	128
20	214	184	157	99	162	340	209	226	197	90	130	123
21	213	216	143	127	200	346	211	124	121	162	224	110
22	230	216	114	140	122	246	362	177	235	151	224	110
23	199	203	126	144	224	378	395	198	184	110	154	105
24	153	115	187	166	215	598	377	120	193	134	107	140
25	183	166	125	134	130	365	375	172	190	123	45	101
26	172	204	155	118	153	500	433	195	163	136	35	116
27	179	170	105	128	165	561	247	200	182	117	25	95
28	215	128	108	153	162	429	316	183	110	162	47	101
29	240	141	178	146	-------	343	236	185	111	124	80	143
30	186	181	134	134	-------	300	288	86	164	162	105	172
31	236	-------	124	160	-------	349	-------	101	-------	124	85	------

Monthly discharge of Apple River near Somerset, Wis., for the year ending September 30, 1925

[Drainage area, 550 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	256	153	217	0.395	0.46
November	237	115	180	.327	.36
December	205	105	159	.289	.33
January	171	72	136	.247	.28
February	224	122	168	.305	.32
March	598	135	294	.535	.62
April	433	198	265	.482	.54
May	388	86	189	.344	.40
June	283	110	201	.365	.41
July	179	61	141	.256	.30
August	224	25	120	.218	.25
September	202	72	128	.233	.26
The year	598	25	183	.333	4.53

CHIPPEWA RIVER AT BISHOPS BRIDGE, NEAR WINTER, WIS.

LOCATION.—In sec. 23, T. 39 N., R. 6 W., at highway bridge 3 miles downstream from Chippewa Reservoir dam and 4 miles by road northwest of Winter, Sawyer County.

DRAINAGE AREA.—775 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—February 23, 1912, to September 30, 1925.

GAGE.—Chain gage fastened to bridge; read by Mrs. Ludvig Larson.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel; free from vegetation; practically permanent. Control is head of rapids 1,000 feet below gage. One channel at all stages. Banks not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.20 feet February 14 (discharge, 1,680 second-feet); minimum stage, 3.25 feet April 17–20 and May 1–5 (discharge, 14 second-feet). Both maximum and minimum stages are the result of regulation.

1912–1925: Maximum stage recorded, 9.56 feet April 22, 1916 (discharge, 6,940 second-feet); minimum stage recorded, that of 1925.

ICE.—Stage-discharge relation not seriously affected by ice.

REGULATION.—In April, 1923, the Chippewa Reservoir owned by the Northern States Power Co. was put into operation. This reservoir is situated just below the confluence of East and West Forks of Chippewa River 3 miles above station and has a capacity of 10 billion cubic feet. Operation of this reservoir regulates the entire flow of the stream at the station in the interest of power developments below. There is also a reservoir 16 miles above station with a capacity of 550 million cubic feet.

ACCURACY.—Stage-discharge relation permanent; not affected by ice during year. Rating curve well defined above and fairly well defined below 200 second-feet. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records excellent, except during low stages for which they are good.

The following discharge measurements were made:

October 8, 1924: Gage height, 3.64 feet; discharge, 48.0 second-feet.

April 27, 1925: Gage height, 3.44 feet; discharge, 25.7 second-feet.

Daily discharge, in second-feet, of Chippewa River at Bishops Bridge, near Winter, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	38	44	1,150	1,350	1,350	1,350	17	14	38	38	44	750
2	42	38	1,460	1,300	1,350	1,150	17	14	52	38	38	750
3	49	44	1,460	1,250	1,350	1,250	17	14	47	38	38	750
4	44	52	1,400	1,250	1,460	960	17	14	44	38	38	710
5	52	38	1,400	1,250	1,460	790	17	14	44	38	33	710
6	44	33	1,400	1,250	1,460	960	17	16	38	44	33	710
7	44	38	1,300	1,300	1,460	470	17	28	38	44	33	710
8	36	33	1,350	1,300	1,400	420	17	28	38	38	38	710
9	33	61	1,460	1,300	1,350	445	17	28	38	52	44	710
10	33	74	1,460	1,300	1,400	445	17	33	38	42	830	710
11	38	87	1,460	1,300	1,570	470	17	33	38	38	495	710
12	38	87	1,400	1,250	1,460	830	17	33	44	38	750	710
13	44	87	1,400	1,250	1,460	470	17	33	44	33	750	710
14	44	82	1,460	1,250	1,680	710	17	33	44	33	790	710
15	52	101	1,400	1,250	1,570	495	17	33	44	33	790	710

Daily discharge, in second-feet, of Chippewa River at Bishops Bridge, near Winter, Wis., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	44	115	1,400	1,250	1,460	375	17	38	38	38	790	710
17	44	101	1,400	1,250	1,460	375	14	38	38	38	790	710
18	42	101	1,460	1,250	1,400	420	14	33	33	38	790	710
19	52	101	1,460	1,250	1,350	420	14	33	33	33	790	710
20	44	101	1,460	1,300	1,350	420	14	33	38	44	790	710
21	44	130	1,400	1,300	1,250	420	23	33	38	44	790	710
22	38	130	1,460	1,350	1,300	420	33	38	38	38	790	710
23	44	145	1,400	1,460	1,250	420	44	38	38	38	750	710
24	38	145	1,400	1,460	1,200	375	38	38	38	44	750	710
25	44	130	1,400	1,400	1,200	23	33	38	38	44	750	710
26	52	130	1,350	1,400	1,250	17	28	33	44	44	750	710
27	44	130	1,460	1,400	1,350	17	23	33	38	44	750	710
28	44	290	1,400	1,350	1,350	17	17	33	38	44	750	710
29	44	580	1,400	1,350	-------	17	17	33	38	44	750	710
30	52	1,050	1,400	1,350	-------	17	17	33	38	44	790	290
31	52	-------	1,350	1,350	-------	17	-------	33	-------	44	750	-------

Monthly discharge of Chippewa River at Bishops Bridge, near Winter, Wis., for the year ending September 30, 1925

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	52	33	43.6	May	38	14	29.9
November	1,050	33	143	June	52	33	39.8
December	1,460	1,150	1,410	July	52	33	40.3
January	1,460	1,250	1,310	August	830	33	550
February	1,680	1,200	1,390	September	750	290	700
March	1,350	17	483				
April	44	14	20.0	The year	1,680	14	509

CHIPPEWA RIVER NEAR BRUCE, WIS.

LOCATION.—In sec. 4, T. 35 N., R. 7 W., at Minneapolis, St. Paul & Sault Ste. Marie Railway bridge 1 mile east of Bruce, Rusk County. Thornapple River enters immediately above station, and Flambeau River 21 miles below.

DRAINAGE AREA.—1,600 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—December 31, 1913, to September 30, 1925.

GAGE.—Chain gage attached to downstream side of bridge; read by M. Pavlak.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed composed of sand and small gravel; free from vegetation. First and second channels from the west fairly permanent; third channel nearest east bank has a tendency to fill with sand deposited by Thornapple River. Flow except during extremely high stages is confined within the banks.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 3,520 second-feet March 28 (stage, 4.8 feet); minimum stage, 1.00 foot August 7–9 (discharge, 200 second-feet). The minimum discharge was caused by regulation.

1914–1925: Maximum stage recorded, 13.7 feet at 4.30 p. m. April 10, 1922 (discharge, 14,900 second-feet); minimum stage recorded, that of 1925.

REGULATION.—The flow at the station is quite largely controlled by reservoirs above the gaging station at Bishops Bridge. (See description of that station.)

ACCURACY.—Stage-discharge relation fairly permanent during the year except as affected by ice. Rating curve fairly well defined above 300 second-feet. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

Discharge measurements of Chippewa River near Bruce, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 4	2.11	962	Mar. 4	[a]3.86	1,020	Sept. 17	1.91	784
Dec. 30	[a]4.25	1,540	Apr. 21	2.37	1,090			
Jan. 28	[a]4.41	1,520	June 22	1.26	339			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Chippewa River near Bruce, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.
1	1,010	535	1,010	1,560	1,660	1,320	1,370	680	300	300	250	840
2	840	502	1,560	1,560	1,510	1,240	1,240	605	720	275	250	840
3	760	440	1,560	1,610	1,510	1,240	1,060	570	1,100	275	250	840
4	1,010	410	1,560	1,560	1,750	1,060	1,010	535	1,190	275	225	840
5	1,010	382	1,560	1,560	1,750	1,060	925	470	1,010	275	225	882
6	925	355	1,560	1,560	1,750	1,100	800	440	470	275	225	882
7	800	328	1,560	1,510	1,750	1,140	800	410	410	275	200	840
8	720	300	1,560	1,510	1,750	1,140	760	410	382	275	200	840
9	642	382	1,510	1,460	1,750	1,190	720	440	355	570	200	840
10	605	502	1,510	1,460	1,750	1,190	720	410	355	605	250	800
11	570	535	1,510	1,460	1,750	1,240	720	382	382	410	250	800
12	535	840	1,510	1,460	1,750	1,280	720	382	410	355	720	800
13	502	925	1,510	1,460	1,750	1,280	720	355	1,190	300	800	800
14	502	605	1,510	1,420	1,750	1,320	680	355	1,280	300	882	800
15	535	680	1,510	1,420	1,610	1,320	680	328	800	275	882	800
16	570	605	1,420	1,460	1,560	1,370	642	328	570	250	882	800
17	535	535	1,420	1,460	1,560	1,420	605	328	605	250	840	800
18	502	605	1,420	1,510	1,610	1,460	570	328	570	225	840	800
19	470	642	1,320	1,560	1,560	1,510	605	328	470	300	840	800
20	470	680	1,240	1,610	1,560	1,510	642	300	410	440	840	840
21	470	605	1,240	1,610	1,610	1,510	1,100	300	355	355	800	840
22	440	760	1,190	1,610	1,560	1,510	1,460	300	328	300	800	800
23	410	680	1,240	1,660	1,510	1,560	1,940	300	300	275	800	800
24	410	605	1,460	1,660	1,460	1,660	2,420	440	300	250	800	800
25	382	605	1,420	1,660	1,280	1,940	2,320	410	300	275	800	800
26	382	605	1,370	1,660	1,060	2,420	1,750	355	355	355	800	800
27	382	535	1,510	1,660	880	2,920	1,370	355	382	382	800	800
28	382	470	1,510	1,700	1,370	3,520	1,100	328	355	328	800	800
29	355	440	1,460	1,700	-------	2,320	882	328	300	275	800	840
30	355	570	1,560	1,700	-------	1,750	760	300	300	275	800	840
31	440	-------	1,560	1,700	-------	1,370	-------	300	-------	250	840	------

NOTE.—Stage-discharge relation affected by ice Nov. 30 to Mar. 27; discharge based on gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Chippewa River near Bruce, Wis., for the year ending September 30, 1925

[Drainage area, 1,600 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,010	355	578	0.361	0.42
November	925	300	555	.347	.39
December	1,560	1,010	1,450	.906	1.04
January	1,700	1,420	1,560	.975	1.12
February	1,750	880	1,580	.988	1.03
March	3,520	1,060	1,540	.962	1.11
April	2,420	570	1,040	.650	.73
May	680	300	390	.244	.28
June	1,280	300	540	.338	.38
July	605	225	317	.198	.23
August	882	200	609	.381	.44
September	882	800	820	.512	.57
The year	3,520	200	911	.569	7.74

CHIPPEWA RIVER AT CHIPPEWA FALLS, WIS.

LOCATION.—In SE. ¼ sec. 6, T. 28 N., R. 8 W., at highway bridge at Chippewa Falls, Chippewa County, 2,500 feet below mouth of Duncan Creek.

DRAINAGE AREA.—5,600 square miles.

RECORDS AVAILABLE.—June 22, 1888, to September 30, 1925.

GAGE.—Gurley water-stage recorder on web between caisson piers supporting first right-hand span; inspected by F. N. Leslie.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed composed of heavy gravel; fairly permanent. Banks high and are seldom overflowed.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.2 feet at 10 a. m. June 15 (discharge, 20,800 second-feet); minimum mean daily discharge, 400 second-feet September 5.

1888–1925: Maximum stage recorded, 26.03 feet December 6, 1896; September 10, 1884, a stage of 26.94 feet was reached. The extreme high stages in 1884 and 1896 were probably caused in part by backwater from log jams and the volume of discharge was probably considerably less than the stage would indicate if the channel had been unobstructed. Exclusive of these floods, the maximum stage recorded was 17.0 feet March 27, 1920 (discharge, 78,000 second-feet); minimum discharge recorded, about 40 second-feet February 4, 1917. Minimum flow was caused by regulation.

ICE.—Stage-discharge relation not seriously affected by ice.

REGULATION.—Flow past station at low and medium stages controlled to a considerable extent by operation of Wissota power plant of the Northern States Power Co. This plant also causes large diurnal fluctuation. Owing to operation of storage reservoirs on Chippewa and Flambeau Rivers the flow at the station is not natural.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined above and fairly well defined below 2,000 second-feet. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Mean daily discharge obtained by means of discharge integrator. Records at medium and high stages good; at low stages fair.

The following discharge measurements were made:

January 2, 1925: Gage height, 2.00 feet (stage-discharge relation affected by ice); discharge, 4,400 second-feet.

January 30, 1925: Gage height, 1.68 feet; discharge, 4,300 second-feet.

April 17, 1925: Gage height, 2.58 feet; discharge, 6,430 second-feet.

Daily discharge, in second-feet, of Chippewa River at Chippewa Falls, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,000	1,300	1,900	602	714	800	5,440	5,840	1,330	1,930	1,320	1,820
2	5,800	571	2,000	3,400	2,720	1,900	5,300	3,760	1,630	1,830	595	1,830
3	5,600	1,720	1,960	3,200	2,520	2,060	6,080	1,250	1,920	1,680	1,120	1,780
4	4,600	2,050	2,070	600	2,790	2,040	6,190	4,560	2,380	500	1,190	1,640
5	3,170	2,100	3,860	2,600	2,610	1,960	3,460	4,990	4,140	1,010	1,240	400
6	4,270	1,960	4,400	2,320	2,530	2,080	5,140	4,030	4,940	450	1,230	880
7	4,120	1,640	984	2,200	3,700	1,460	5,760	3,380	1,800	1,980	1,200	570
8	4,160	1,520	3,260	1,800	500	910	6,100	3,010	4,510	1,780	1,220	2,200
9	3,560	825	2,700	2,290	2,920	1,360	6,030	3,400	3,980	3,860	550	2,360
10	3,810	1,770	3,900	2,970	2,660	2,470	5,500	745	2,940	4,670	1,090	2,110
11	3,860	2,280	3,910	635	2,580	2,780	4,620	2,280	3,740	4,460	1,140	1,720
12	751	1,740	3,230	2,400	2,610	2,890	1,420	3,180	5,230	3,140	1,040	1,760
13	2,720	2,380	3,240	2,780	2,550	2,930	3,800	2,820	5,870	5,540	1,030	705
14	2,280	3,860	676	3,640	3,550	3,200	3,640	1,920	13,700	4,620	1,060	1,650
15	1,810	3,990	2,450	2,710	570	540	3,210	1,820	18,600	2,800	1,040	2,680
16	1,840	2,790	2,480	2,650	2,420	2,670	3,380	2,010	8,290	2,090	510	1,770
17	2,130	3,220	2,380	2,800	2,340	3,100	4,050	635	8,850	1,720	1,120	1,740
18	1,870	3,010	2,100	2,770	2,420	3,000	3,820	1,980	8,150	1,690	1,200	1,560
19	1,110	2,680	3,010	2,960	2,260	3,260	1,110	2,060	6,490	905	1,520	1,520
20	1,250	2,650	2,660	2,560	2,340	3,720	4,600	2,000	4,800	4,940	1,600	735
21	2,020	3,060	800	3,150	2,070	3,750	5,320	1,560	1,740	3,520	1,640	1,670
22	1,880	2,930	2,600	3,100	645	1,280	5,680	1,830	5,510	2,660	1,360	1,710
23	1,590	1,750	3,220	3,180	2,210	4,590	5,020	1,950	3,360	2,920	665	1,640
24	2,010	4,280	2,560	2,780	2,300	5,250	6,920	860	2,530	1,770	1,320	1,960
25	1,940	4,880	700	900	2,410	6,070	12,200	1,930	2,460	1,620	1,300	1,740
26	771	2,600	2,250	3,660	2,970	4,760	9,580	1,940	2,080	695	1,390	1,660
27	1,850	1,760	2,200	4,240	2,970	4,080	10,900	1,820	2,240	1,270	1,220	1,090
28	2,080	3,440	2,500	3,990	2,060	12,500	8,120	1,580	800	1,400	1,310	1,880
29	2,200	2,660	3,500	3,290	-------	9,260	6,600	1,660	2,090	1,460	1,610	2,600
30	1,970	1,100	3,400	3,430	-------	8,180	5,290	895	2,010	1,460	825	4,910
31	1,920	-------	1,600	2,590	-------	7,100	-------	464	-------	1,210	1,600	------

NOTE.—Operation of water-stage recorder unsatisfactory Nov. 8, 29, 30, Dec. 1–5, 13, 17–20, Jan. 1, 21–24, Feb. 22, 26–28, May 8, 9, 31, June 6–13, 21–27, July 5–7, and Sept. 5–7; discharge estimated from a study of the power output at Wissota power plant. Stage-discharge relation affected by ice Dec. 16 to Jan. 9; discharge based on gage heights corrected for ice effect by means of one discharge measurement, observer's notes, and weather records.

Monthly discharge of Chippewa River at Chippewa Falls, Wis., for the year ending September 30, 1925

[Drainage area, 5,600 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	7,000	751	2,770	0.495	0.57
November	4,880	571	2,420	.432	.48
December	4,400	676	2,530	.452	.52
January	4,240	600	2,650	.473	.55
February	3,700	500	2,320	.414	.43
March	12,500	540	3,610	.645	.74
April	12,200	1,110	5,480	.979	1.09
May	5,840	464	2,330	.416	.48
June	18,600	800	4,600	.821	.92
July	5,540	450	2,310	.412	.48
August	1,640	510	1,170	.209	.24
September	4,910	400	1,740	.311	.35
The year	18,600	400	2,820	.504	6.85

FLAMBEAU RIVER NEAR BUTTERNUT, WIS.

LOCATION.—In lot 10, sec. 28, T. 41 N., R. 1 E., 6 miles southeast of Butternut, Ashland County, and 7 miles upstream from Park Falls.

DRAINAGE AREA.—660 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—July 30, 1914, to September 30, 1925.

GAGE.—Chain gage supported by a built-up cantilever, attached to post set in right bank; read by Carl G. Elm.

DISCHARGE MEASUREMENTS.—Made from cable 1,500 feet downstream from gage.

CHANNEL AND CONTROL.—Bed at gage composed of mud and rock. Left bank is low and subject to overflow; right bank slopes back gradually to high-water mark. At cable site the bed is rock and banks are high. Control is at head of Schultz Rapids, 1,700 feet below gage; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.06 feet April 25 (discharge, 940 second-feet); minimum stage, 0.25 foot September 18 and 19 (discharge, 91 second-feet).

1914–1925: Maximum stage recorded, 9.0 feet April 22 and 23, 1916 (discharge, 5,430 second-feet); minimum stage recorded that of September 18 and 19, 1925.

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—Storage reservoirs, having an effective capacity of 1.15 billion cubic feet, are maintained by the Chippewa & Flambeau Improvement Co. on the headwaters of Flambeau River. A large reservoir was being constructed during the year 9 miles above the gage, and although the minimum stage of September 18 and 19 may have been caused by a temporary holding of water at the dam the greater part of the low water in July, August, and September is believed to be natural flow.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table except as indicated in footnote to table of daily discharge. Open-water records good; winter records fair.

Discharge measurements of Flambeau River near Butternut, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 9	1.98	490	Mar. 26	[a]2.87	520	Sept. 18	0.29	95
Jan. 29	[a]2.18	268	Apr. 28	2.89	836			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Flambeau River near Butternut, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	483	355	300	260	275	275	715	554	327	251	168	114
2	483	341	300	265	280	275	715	554	355	263	168	128
3	518	341	300	270	285	275	760	400	385	275	168	135
4	518	341	310	275	290	275	760	466	416	275	160	128
5	518	341	325	280	290	290	716	449	449	275	160	128
6	518	327	310	285	290	300	673	432	432	263	160	128
7	483	327	290	290	295	310	632	416	416	251	228	128
8	483	314	300	290	300	325	632	400	385	228	275	128
9	483	327	310	290	305	330	673	385	355	240	251	128
10	483	325	325	280	310	335	673	370	327	240	240	128

Daily discharge, in second-feet, of Flambeau River near Butternut, Wis., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	850	325	300	275	315	340	673	355	370	228	218	128
12	805	340	275	280	300	350	716	327	432	218	218	121
13	805	340	290	285	290	355	716	341	554	218	207	114
14	805	340	300	290	290	355	716	314	518	218	197	114
15	760	340	290	280	290	355	673	314	518	218	178	114
16	695	340	280	275	280	360	673	314	466	218	168	114
17	630	340	265	275	270	365	673	327	416	207	160	114
18	565	340	270	275	265	370	632	327	385	207	151	91
19	500	340	275	270	270	370	592	327	370	197	143	91
20	435	355	275	270	275	370	632	327	341	197	128	314
21	370	355	275	265	290	390	632	327	314	187	121	300
22	370	340	260	265	300	415	673	327	300	187	114	288
23	355	340	245	265	300	450	805	327	288	187	114	288
24	355	325	230	260	300	465	895	341	275	187	114	275
25	355	325	240	250	300	485	940	327	263	197	114	263
26	341	315	250	250	290	520	895	327	251	187	114	263
27	355	315	245	250	275	555	895	327	251	187	114	263
28	355	300	240	350	275	590	850	327	263	187	114	275
29	355	300	240	260	------	630	760	341	275	178	114	288
30	355	300	245	275	------	630	716	327	251	178	114	311
31	355	------	250	275	------	675	------	327	------	178	114	------

NOTE.—Stage-discharge relation affected by ice Nov. 10 to Apr. 4; discharge based on gage heights corrected for effect of ice by means of two discharge measurements, observer's notes, and weather records.

Monthly discharge of Flambeau River near Butternut, Wis., for the year ending September 30, 1925

[Drainage area, 660 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	850	341	508	0.770	0.89
November	355	300	332	.503	.56
December	325	230	278	.421	.49
January	290	250	272	.412	.48
February	315	265	289	.438	.46
March	675	275	400	.606	.70
April	940	592	724	1.10	1.23
May	554	314	365	.553	.64
June	554	251	365	.553	.62
July	275	178	217	.329	.38
August	275	114	162	.245	.28
September	341	91	181	.274	.31
The year	940	91	341	.517	7.04

FLAMBEAU RIVER NEAR LADYSMITH, WIS.

LOCATION.—In sec. 35, T. 36 N., R. 5 W., at Big Falls power plant of Lake Superior District Power Co., 6 miles northeast of Tony and 12 miles northeast of Ladysmith, Rusk County.

DRAINAGE AREA.—1,910 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—October 1, 1923, to September 30, 1925. From January 2, 1914, to September 30, 1923, at a station 8 miles below present site, and February 15, 1903, to December 2, 1906, at Ladysmith, 14 miles downstream.

DISCHARGE MEASUREMENTS.—Made from boat or by wading.

DETERMINATION OF DISCHARGE.—Daily discharge computed from hourly determinations of flow through each turbine based on kilowatt output, and the flow through waste gates and over spillway as computed from hourly determinations based on theoretical formulas.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge recorded during year, 3,390 second-feet April 25; minimum mean daily discharge, 176 second-feet August 30.

1903–1906; 1914–1925; Maximum discharge recorded, 19,500 second-feet April 11, 1922; minimum discharge, that of 1925. The minimum discharge was caused by regulation.

REGULATION.—Diurnal fluctuation is caused by operation of power plant at which station is situated. The Chippewa & Flambeau Improvement Co. operates storage reservoirs on the headwaters having an effective capacity of 1.15 billion cubic feet. Weekly fluctuations at station are caused by operation of power plants at Park Falls and storage reservoirs.

ACCURACY.—Computation of discharge through turbines and waste gates is based on a series of discharge measurements made by engineers of the Survey in October, 1925. Records of discharge through turbines are good. Computation of waste is poor. Records good except at high stages, for which they are fair.

COOPERATION.—Power-house data is furnished by the Lake Superior District Power Co.

Daily discharge, in second-feet, of Flambeau River near Ladysmith, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,800	900	891	638	664	672	2,040	1,760	846	655	410	260
2	1,420	848	891	664	655	664	1,880	1,490	882	698	374	264
3	1,470	1,030	882	723	646	655	1,820	1,590	1,020	706	306	306
4	1,440	819	828	591	681	629	1,670	1,290	1,310	672	306	323
5	1,430	819	927	665	681	646	1,640	1,080	1,570	646	310	379
6	1,470	819	1,000	694	629	646	1,390	1,150	1,870	612	344	392
7	1,240	810	884	677	681	664	1,410	1,110	1,280	672	604	349
8	1,800	955	942	718	655	629	1,400	1,080	1,150	681	785	353
9	1,500	556	775	792	689	723	1,370	1,030	1,100	672	810	358
10	1,260	839	802	861	664	494	1,260	954	973	706	793	289
11	1,260	786	864	777	718	689	1,270	1,080	960	732	715	298
12	1,260	1,090	975	718	752	681	1,920	860	1,340	672	646	310
13	1,120	1,190	909	660	735	672	1,570	837	1,770	681	629	272
14	1,070	1,310	875	709	792	715	1,620	810	1,870	604	595	234
15	992	1,410	865	686	752	655	1,850	864	2,250	410	401	226
16	1,060	1,120	866	669	708	706	1,330	1,210	2,000	306	578	217
17	987	1,150	839	785	691	698	1,370	679	1,930	362	380	260
18	1,010	1,060	766	571	672	715	1,410	1,010	1,870	388	319	289
19	1,100	960	803	699	638	766	1,320	864	1,390	379	323	294
20	1,100	1,210	789	646	638	766	1,250	882	1,340	362	319	298
21	946	1,260	723	670	612	810	1,640	918	918	353	332	336
22	914	1,440	723	711	655	785	1,640	873	1,030	370	349	784
23	950	937	787	681	655	819	1,950	936	802	349	251	775
24	846	941	723	706	612	983	2,830	769	855	340	314	766
25	846	874	749	681	675	1,300	3,390	912	855	353	374	732
26	837	1,090	706	681	701	1,910	3,380	882	846	587	340	732
27	900	871	664	604	612	2,440	2,830	891	846	612	281	723
28	828	698	633	698	646	1,140	2,520	855	655	638	206	723
29	766	780	689	698	-------	1,920	2,520	982	698	638	198	766
30	855	838	706	646	-------	1,890	1,900	831	723	604	176	775
31	882	-------	629	681	-------	956	-------	864	-------	578	217	------

Monthly discharge of Flambeau River near Ladysmith, Wis., for the year ending September 30, 1925

[Drainage area, 1,910 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,800	766	1,140	0.597	0.69
November	1,440	556	980	.513	.57
December	1,000	629	810	.424	.49
January	861	571	690	.361	.42
February	792	612	675	.353	.37
March	2,440	494	917	.480	.55
April	3,390	1,250	1,850	.969	1.08
May	1,760	679	1,010	.529	.61
June	2,250	655	1,230	.644	.72
July	732	306	550	.288	.33
August	810	176	419	.219	.25
September	784	217	436	.228	.25
The year	3,390	176	892	.467	6.34

JUMP RIVER AT SHELDON, WIS.

LOCATION.—In sec. 26, T. 33 N., R. 5 W., at highway bridge in Sheldon, Rusk County, 11 miles above mouth of river.

DRAINAGE AREA.—510 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—July 22, 1915, to September 30, 1925.

GAGE.—Chain gage attached to downstream handrail of bridge; read by Mrs. Elsa Clark.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of heavy gravel, clean, and free from vegetation. Right bank high and not subject to overflow; left bank may be overflowed occasionally.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.85 feet at 5 p. m. June 13 (discharge, 3,960 second-feet); minimum stage, 2.75 feet August 22 and 28 (discharge, 25 second-feet). A discharge of 25 second-feet was also estimated on December 31, January 1 and 2 (stage-discharge relation affected by ice).

1915–1925: Maximum stage recorded, 11.48 feet March 26, 1920 (discharge, 15,600 second-feet); minimum discharge estimated, 14 second-feet January 25–31, 1924 (stage-discharge relation affected by ice).

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined above 75 second-feet. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as indicated in footnote to table of daily discharge. Open-water records good except at extremely low stages, for which they are fair. Winter records fair.

Discharge measurements of Jump River at Sheldon, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 31	[a] 3.67	25.8	Mar. 5	[a] 4.05	46.3	Sept. 16	2.91	39.8
Jan. 29	[a] 3.86	49.7	Apr. 20	3.96	524			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Jump River at Sheldon, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	485	148	245	25	50	50	645	512	160	133	50	30
2	430	122	240	25	55	55	575	430	205	122	45	33
3	380	105	230	30	60	60	540	405	485	105	50	45
4	355	88	230	40	60	55	512	380	800	88	58	45
5	480	105	230	50	60	50	540	330	885	88	65	88
6	380	112	230	60	55	45	512	305	840	112	140	88
7	330	133	230	55	50	60	458	270	512	105	45	70
8	305	105	230	50	50	60	430	220	380	680	70	58
9	270	122	230	55	50	60	405	140	270	1,300	77	50
10	240	112	230	60	55	70	430	148	230	1,060	77	70
11	220	148	230	55	60	70	458	148	405	720	58	58
12	180	330	220	50	55	70	458	148	1,160	430	50	50
13	148	430	205	45	50	70	430	140	3,100	305	45	50
14	148	430	190	40	55	70	430	133	3,880	180	50	50
15	160	405	180	40	60	70	405	133	3,100	140	58	58
16	148	380	170	40	60	70	380	112	2,950	105	45	58
17	140	330	160	50	60	70	380	133	2,950	88	45	42
18	133	305	140	60	55	70	380	148	2,240	88	42	45
19	133	280	120	60	50	70	380	133	1,160	88	38	58
20	140	280	110	60	55	90	405	140	610	77	30	45
21	133	280	105	55	60	90	1,110	122	512	70	28	45
22	112	280	90	50	55	140	1,400	140	320	70	25	45
23	98	280	70	55	50	230	1,400	148	255	70	28	38
24	77	280	65	60	55	540	1,400	140	205	105	28	45
25	77	280	60	55	60	3,250	1,400	148	270	65	28	45
26	70	280	50	50	60	2,650	1,400	148	280	70	30	58
27	98	255	40	55	60	2,110	1,300	133	230	70	28	45
28	133	255	35	60	55	1,860	930	140	255	58	25	58
29	133	255	30	55	------	1,350	760	160	230	50	28	77
30	140	255	30	50	------	975	680	160	190	50	65	112
31	172	-----	25	50	------	800	-------	148	-------	58	58	------

NOTE.—Stage-discharge relation affected by ice Nov. 14 to Mar. 24; discharge based on gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Jump River at Sheldon, Wis., for the year ending September 30, 1925

[Drainage area, 510 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	485	70	206	0.404	0.47
November	430	88	239	.469	.52
December	245	25	150	.294	.34
January	60	25	49.8	.098	.11
February	60	50	55.7	.109	.11
March	3,250	45	493	.967	1.11
April	1,400	380	698	1.37	1.53
May	512	112	197	.386	.44
June	3,880	160	969	1.90	2.12
July	1,300	50	218	.427	.49
August	140	25	48.7	.095	.11
September	112	30	55.3	.108	.12
The year	3,880	25	281	.551	7.47

EAU CLAIRE RIVER NEAR AUGUSTA, WIS.

LOCATION.—In sec. 12, T. 26 N., R. 6 E., at Trouble Water Bridge, 7 miles northeast of Augusta, Eau Claire County. South Fork of Eau Claire River enters 4 miles above station.

DRAINAGE AREA.—500 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—July 16, 1914, to September 30, 1925.

GAGE.—Chain gage on downstream side of bridge; read by Albert Wagner.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed at bridge and above is sandy and shifting. A short distance below gage channel narrows, and a rock outcrop overlain with large boulders forms control. Banks high and not subject to overflow.

ICE.—Stage-discharge relation seriously affected by ice.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.92 feet June 13 (discharge, 4,460 second-feet); minimum discharge, estimated 20 second-feet February 16–18 and February 28 to March 3 (stage-discharge relation affected by ice).

1914–1925: Maximum open-water stage recorded, 12.0 feet at 9 a. m. March 27, 1920 (discharge, 8,720 second-feet); minimum discharge, 3.5 second-feet January 27, 1918, from discharge measurement made through complete ice cover.

ACCURACY.—Stage-discharge relation changed somewhat during summer. Rating curve fairly well defined. Gage read to quarter-tenths once daily. Daily discharge for the open-water periods ascertained by applying daily gage height to rating table, except from August 1 to September 30, when shifting-control method was used. Records fair.

Discharge measurements of Eau Claire River near Augusta, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Jan. 3	[a] 1.22	46	Apr. 16	1.00	265
Jan. 31	[a] 1.25	43	Aug. 26	.06	64

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Eau Claire River near Augusta, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	365	118	110	60	45	20	395	217	58	204	164	88
2	350	122	100	60	45	20	350	185	61	177	152	79
3	290	118	100	45	45	20	335	169	185	169	204	70
4	231	114	100	50	45	30	320	164	1,050	164	204	70
5	204	108	100	55	45	35	305	152	4,080	145	172	88
6	177	108	100	55	45	40	275	140	1,890	185	152	172
7	164	118	100	55	45	60	260	129	890	1,200	177	260
8	177	118	100	55	45	90	231	122	535	1,710	147	177
9	152	118	100	55	60	120	231	114	350	815	125	133
10	140	118	100	50	55	165	223	108	275	815	108	118
11	140	145	100	45	25	130	223	98	239	1,150	108	108
12	129	217	100	45	35	260	217	94	1,250	1,770	98	98
13	122	275	100	45	40	430	212	102	4,460	930	98	92
14	118	251	90	45	30	380	217	98	3,990	815	98	88
15	118	164	90	45	25	395	239	88	1,830	710	98	88

Daily discharge, in second-feet, of Eau Claire River near Augusta, Wis., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	122	169	90	45	20	430	269	94	1,050	552	92	79
17	118	145	80	45	20	430	239	102	1,010	365	88	79
18	118	152	80	45	20	710	212	118	3,020	275	88	79
19	118	118	80	45	30	1,590	482	114	1,250	535	85	85
20	114	140	70	45	35	1,470	890	98	710	2,940	79	88
21	108	204	55	45	35	1,250	1,010	83	482	2,290	79	85
22	108	380	50	45	35	1,050	1,200	83	365	1,050	74	85
23	108	430	50	45	35	1,100	1,250	79	305	605	70	79
24	108	365	45	45	40	1,120	970	75	245	365	70	79
25	102	275	50	40	45	1,650	780	70	260	305	70	70
26	108	245	60	40	35	1,530	570	61	320	260	61	70
27	102	164	50	40	25	1,150	465	61	305	231	61	88
28	102	118	45	40	20	745	335	61	305	190	61	88
29	102	110	45	40	-------	640	275	58	335	177	61	92
30	98	110	45	45	-------	552	239	58	260	164	88	350
31	108	-------	50	45	-------	448	-------	54	-------	152	92	-------

NOTE.—Stage-discharge relation affected by ice Nov. 29 to Mar. 24; daily discharge based on gage heights corrected for effect of ice by means of two discharge measurements, observer's notes, and weather records.

Monthly discharge of Eau Claire River near Augusta, Wis., for the year ending September 30, 1925

[Drainage area, 500 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	365	98	149	0.298	0.34
November	430	108	178	.356	.40
December	110	45	78.5	.157	.18
January	60	40	47.1	.094	.11
February	60	20	36.6	.073	.08
March	1,650	20	583	1.17	1.35
April	1,250	212	441	.882	.98
May	217	54	105	.210	.24
June	4,460	58	1,050	2.10	2.34
July	2,940	145	691	1.38	1.59
August	204	61	107	.214	.25
September	350	70	108	.216	.24
The year	4,460	20	298	.596	8.10

RED CEDAR RIVER NEAR COLFAX, WIS.

LOCATION.—In sec. 27, T. 30 N., R. 11 W., at highway bridge 4½ miles north of Colfax, Dunn County. Trout Creek enters 3½ miles above station and Hay River enters 11 miles below.

DRAINAGE AREA.—1,100 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911.

RECORDS AVAILABLE.—March 19, 1914, to September 30, 1925.

GAGE.—Chain gage attached to downstream side of bridge. On September 16, 1925, a Friez water-stage recorder was installed in a wooden well and shelter 150 feet above bridge. Chain gage read and recorder inspected by Gilman Loftsgaard.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed composed of rock and gravel; small amount of grass growth during summer. Left bank high and not subject to overflow; right bank medium high and may be overflowed during extremely high water. Control poorly defined.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 3,120 second-feet, at 8.30 a. m. March 20; minimum stage, 0.90 foot August 29-31 (discharge, 260 second-feet).

1914–1925: Maximum stage recorded, 6.95 feet at 8 a. m. March 26, 1920 (discharge, 7,610 second-feet); minimum open-water stage recorded, 0.61 foot December 18, 1921 (discharge, about 233 second-feet), apparently caused by temporary holding back of water by ice.

ICE.—Stage-discharge relation affected by ice.

REGULATION.—The following dams and reservoirs[2] are used to regulate the flow in Red Cedar River: Long Lake, Cedar Lake, Birch Lake, and Bear Lake; total capacity, 1,425 million cubic feet. Owing to operation of these reservoirs the flow at the station is not natural.

ACCURACY.—Stage-discharge relation slightly affected by backwater from dam at Colfax and by growth of grass in channel. Rating curve well defined above 500 second-feet and poorly defined below. Gage read to hundredths once daily until September 12; mean daily gage height obtained from recorder graph September 16–30. Daily discharge ascertained by applying daily or mean daily gage height to rating table except from July 1 to September 30, when shifting-control method was used, and as explained in footnote to daily-discharge table. Open-water records fair; winter records poor.

Discharge measurements of Red Cedar River near Colfax, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Jan. 1	[a] 3.07	424	Mar. 6	[a] 2.78	532	Aug. 27	[b] 0.97	274
Jan. 30	[a] 3.12	533	Apr. 19	1.34	534			

[a] Stage-discharge relation affected by ice.
[b] Stage-discharge relation affected by growth of grass in channel.

Daily discharge, in second-feet, of Red Cedar River near Colfax, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,350	820		420	550	420	942	380	332	422	470	284
2	1,350			420	580	420	782	339	332	422	470	290
3	1,160			445	550	445	782	382	550	422	470	278
4	1,160			445	550	470	745	332	710	422	350	278
5	1,250			445	520	495	745	325	642	422	470	318
6	1,070			445	550	530	710	318	495	400	445	360
7	1,030			445	550	550	610	400	470	314	470	445
8	985	650	580	470	580	550	580	550	470	322	495	389
9	1,030			470	710	580	610	495	445	550	522	332
10	1,120			470	745	610	550	445	550	642	495	332
11	1,070			470	675	640	522	304	522	610	495	304
12	1,070			470	710	640	522	610	1,870	745	400	297
13	985			470	675	675	522	445	1,550	642	400	350
14	985			445	580	710	495	360	1,650	642	380	350
15	942			470	520	780	495	325	1,450	610	360	350

[2] See Water-Supply Paper 585, p. 70, for location and individual capacities of these reservoirs.

Daily discharge, in second-feet, of Red Cedar River near Colfax, Wis., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	942			770	495	820	470	380	1,250	495	350	360
17	900			495	400	940	400	360	942	470	336	325
18	860			470	400	1,450	400	353	642	445	322	360
19	900			520	470	2,310	422	353	522	445	356	422
20	820			550	520	3,120	445	339	422	445	380	380
21	675			640	470	2,090	495	325	400	445	253	380
22	675			580	550	1,650	522	325	360	445	332	400
23	675	650	580	580	550	1,450	942	284	346	445	297	342
24	675			580	640	1,760	782	318	339	495	290	400
25	550			580	610	2,200	642	304	745	470	290	422
26	820			580	495	1,980	710	311	745	470	284	380
27	860			610	360	1,650	745	339	675	380	284	360
28	745			640	420	1,350	422	325	550	360	266	325
29	782			675	-------	1,070	400	318	550	380	260	400
30	860			535	-------	942	400	318	522	470	260	745
31	860	-------		520	-------	985	-------	325	-------	445	260	------

NOTE.—Stage-discharge relation affected by ice Nov. 2 to Mar. 19; discharge Nov. 2 to Jan. 10 determined from a study of power output of Colfax power plant, discharge Jan. 11 to Mar. 19, based on gage heights corrected for ice effect by means of three discharge measurements, observer's notes, and weather records. Gage not read Sept. 13–15; discharge estimated.

Monthly discharge of Red Cedar River near Colfax, Wis., for the year ending September 30, 1925

[Drainage area, 1,100 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,350	550	941	0.855	0.99
November	-------	-------	656	.596	.66
December	-------	-------	580	.527	.61
January	675	420	510	.464	.53
February	745	360	551	.501	.52
March	3,120	420	1,110	1.01	1.16
April	942	400	594	.540	.60
May	610	284	362	.329	.38
June	1,870	332	702	.638	.71
July	745	314	474	.431	.50
August	522	260	375	.341	.39
September	745	278	365	.332	.37
The year	3,120	260	602	.547	7.42

RED CEDAR RIVER AT MENOMONIE, WIS.

LOCATION.—In sec. 26, T. 28 N., R. 13 W., 900 feet below power house of Northern States Power Co., Menomonie, Dunn County, and 13 miles above mouth of river. Wilson Creek discharges into service reservoir just above station.

DRAINAGE AREA.—1,810 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—June 16, 1907, to September 3, 1908; May 9, 1913, to September 30, 1923; March 8 to September 30, 1925.

GAGE.—Gurley water-stage recorder installed March 8, 1925, on right bank in new wooden shelter and reinforced concrete well; inspected by Ed. Kausrud. This installation replaces a Barrett & Lawrence water-stage recorder at same site which was discontinued September 30, 1923. Zero of gage raised 0.42 foot March 8, 1925, and is now 780.00 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from highway bridge 1 mile below gage.

CHANNEL AND CONTROL.—Bed at gage composed of heavy gravel; left bank high and not subject to overflow; right bank of medium height and will be overflowed at flood stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.36 feet at 4 p. m. March 25 (discharge, 3,140 second-feet); minimum stage, 1.30 feet at 6 a. m. September 7 (discharge, 296 second-feet).

1907–8; 1913–1923; 1925: Maximum discharge, 14,000 second-feet March 26, 1920; minimum discharge, 100 second-feet November 8, 1907. Minimum discharge is due to regulation and does not represent the natural flow.

REGULATION.—Considerable diurnal fluctuation at gage is caused by operation of power plants of Northern States Power Co. at Menomonie and Cedar Falls. (See also "Regulation" in station description for Red Cedar River at Colfax, Wis.)

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of recorder graph. Records good.

Discharge measurements of Red Cedar River at Menomonie, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Mar. 8	1.74	750	Apr. 18	1.90	892
Apr. 18	1.70	663	Sept. 7	1.40	376

Daily discharge, in second-feet, of Red Cedar River at Menomonie, Wis., for the year ending September 30, 1925

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	910	970	627	654	699	516
2	-------	1,040	970	850	643	448	448
3	-------	1,030	683	919	767	616	336
4	-------	850	661	1,030	486	654	491
5	-------	452	1,030	1,620	638	627	566
6	-------	806	1,090	1,220	1,030	722	376
7	-------	1,090	970	566	850	672	328
8	706	970	858	676	756	676	562
9	858	910	1,630	722	910	434	751
10	1,280	790	594	676	1,090	421	751
11	1,280	790	729	767	1,150	385	751
12	1,690	583	744	1,620	506	439	699
13	2,150	627	970	1,550	687	496	594
14	1,990	910	858	1,840	790	583	683
15	1,840	850	850	1,550	850	466	740
16	1,840	740	790	1,550	970	412	599
17	1,840	798	610	1,840	722	403	610
18	1,840	850	779	1,290	744	486	632
19	1,840	654	764	1,220	486	616	643
20	1,480	798	919	1,220	594	486	376
21	1,620	1,220	588	751	970	516	706
22	1,290	1,340	850	594	790	588	699
23	1,840	1,290	910	1,100	751	546	654
24	1,550	970	970	699	744	536	665
25	2,480	1,030	970	850	706	526	627
26	2,660	744	740	654	430	556	672
27	1,990	741	751	798	448	632	531
28	1,990	1,030	798	385	486	632	858
29	1,350	970	775	751	486	546	744
30	1,290	910	516	740	706	486	1,150
31	1,290	-------	486	-------	486	506	-------

Monthly discharge of Red Cedar River at Menomonie, Wis., for the year ending September 30, 1925

[Drainage area, 1,810 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
March 8-31	2,660	706	1,670	0.923	0.82
April	1,340	452	890	.492	.55
May	1,630	486	833	.460	.53
June	1,840	385	1,020	.564	.63
July	1,150	430	720	.398	.46
August	722	385	542	.299	.34
September	1,150	328	625	.345	.38

BLACK RIVER AT NEILLSVILLE, WIS.

LOCATION.—In sec. 15, T. 24 N., R. 2 W., at lower highway bridge in Neillsville, Clark County. O'Neill Creek enters from left 1 mile above gage, and Cunningham Creek, also from left, 1½ miles below.

DRAINAGE AREA.—774 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—April 6, 1905, to March 31, 1909; December 11, 1913, to September 30, 1925.

GAGE.—Chain gage on downstream side of bridge; read by A. Bissell.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of heavy gravel and rock. Control at head of rapids, a few hundred feet below gage. Banks high and rocky; not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.45 feet at 4 a. m. June 14 (discharge, 4,220 second-feet); minimum discharge, estimated 15 second-feet January 2 (stage-discharge relation affected by ice).

1905–1909; 1913–1925: Maximum stage recorded, 19.8 feet June 6, 1905 (discharge, about 29,400 second-feet); minimum discharge, estimated 5 second-feet during month of February, 1918, when stage-discharge relation was affected by ice.

The flood of October 6, 1911, probably exceeded 29,000 second-feet, although data are not available regarding stage at gage section during this flood.

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—Several dams on Black River and tributaries upstream from Neillsville are used to create a head for developing power. Operation of these plants causes a slight diurnal fluctuation at gage, especially during winter when flow is at a minimum.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined. Gage read to quarter-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as explained in footnote to table of daily discharge. Open-water records good except at extremely low stages, for which they are fair; winter records poor.

Discharge measurements of Black River at Neillsville, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Jan. 4	[a] 3.47	27.8	Mar. 9	[a] 4.54	65.8
Jan. 31	[a] 3.97	45.2	Apr. 16	3.54	287

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Black River at Neillsville, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	235	65	155	30	45	30	580	265	72	165	78	51
2	205	72	140	15	55	30	500	235	75	138	75	38
3	178	72	155	25	45	30	460	190	82	126	63	34
4	154	78	130	25	45	30	420	178	1,430	120	62	33
5	126	78	105	30	40	35	400	163	3,680	108	53	42
6	114	81	105	30	40	35	345	142	2,260	102	53	102
7	107	87	105	30	40	45	345	138	1,430	655	65	220
8	98	81	120	30	45	45	295	126	940	1,640	63	250
9	93	78	130	35	70	40	280	119	580	1,570	56	220
10	96	74	120	35	130	190	265	114	362	3,460	51	154
11	88	98	115	35	90	280	265	105	310	3,570	47	119
12	90	120	105	35	120	345	250	105	2,460	2,460	50	98
13	84	144	100	40	115	400	250	107	3,790	1,570	50	88
14	75	178	90	30	105	440	265	98	3,790	1,080	49	75
15	72	235	60	35	100	500	280	96	2,660	740	46	65
16	68	235	75	30	80	580	295	96	1,720	460	46	60
17	67	165	60	30	55	800	295	98	2,260	320	44	51
18	72	126	60	35	45	1,080	320	102	2,860	250	42	51
19	78	126	70	35	40	1,360	580	108	1,720	1,080	42	60
20	68	132	35	40	50	1,570	1,080	104	870	540	41	60
21	67	165	35	35	45	1,800	1,570	104	540	295	44	51
22	67	250	35	40	55	2,070	1,980	84	380	220	36	53
23	70	280	30	40	50	2,260	1,720	72	280	163	30	53
24	68	250	30	40	50	2,360	1,360	76	190	138	27	60
25	63	250	30	40	40	2,460	1,010	60	205	130	26	56
26	62	190	30	40	40	2,560	800	72	205	114	27	58
27	63	180	25	35	40	2,160	605	76	310	102	30	62
28	62	190	25	40	30	1,570	500	93	345	93	30	60
29	63	180	20	40	-------	1,220	380	87	280	92	30	63
30	62	155	25	40	-------	870	310	87	205	90	34	345
31	75	-------	25	45	-------	680	-------	75	-------	82	51	-----

NOTE.—Stage-discharge relation affected by ice Nov. 27 to Mar. 25; discharge based on gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Black River at Neillsville, Wis., for the year ending September 30, 1925

[Drainage area, 774 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	235	62	93.2	0.120	0.14
November	280	65	147	.190	.21
December	155	20	75.6	.098	.11
January	45	15	34.4	.044	.05
February	130	30	60.9	.079	.08
March	2,560	30	899	1.16	1.34
April	1,980	250	600	.775	.86
May	265	60	115	.149	.17
June	3,790	72	1,210	1.56	1.74
July	3,570	82	699	.903	1.04
August	78	26	46.5	.060	.07
September	345	33	91.1	.118	.13
The year	3,790	15	340	.439	5.94

LA CROSSE RIVER NEAR WEST SALEM, WIS.

LOCATION.—In sec. 32, T. 17 N., R. 6 W., at highway bridge 2 miles west of West Salem, La Crosse County, and 10 miles above mouth of river. Dutch Creek enters from right 6 miles above station.

DRAINAGE AREA.—412 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—December 22, 1913, to September 30, 1925.

GAGE.—Chain gage attached to concrete guardrail on upstream side of bridge; read by J. R. Carlson.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of heavy gravel and rock; free from vegetation. Right bank high and not subject to overflow; left bank above the gage low and subject to overflow at flood stages. Control for low stages is a rocky riffle with a fall of 6 inches, which is apparently drowned out at a stage of about 2.2 feet, causing a reversal in the rating curve. Control is filled in with silt which leaks through dam above, causing a shifting control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.22 feet at 7 a. m. June 15 (discharge, 2,080 second-feet); minimum stage, 0.97 foot at 6 p. m. May 24 (discharge, 110 second-feet).

1913-1925; Maximum stage recorded, 8.45 feet March 16, 1919 (discharge, about 3,620 second-feet); minimum discharge, estimated 90 second-feet January 6, 1924 (stage-discharge relation affected by ice).

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—Diurnal fluctuation at gage, amounting at low stages to from 0.10 to 0.40 foot, is caused by operation of power plants, especially at Neshonoc Dam, a few miles above station.

ACCURACY.—Stage-discharge relation changed slightly during year. Rating curve well defined above 200 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except from March 12 to September 30, when shifting-control method was used. Open-water records fair; winter records poor.

Discharge measurements of La Crosse River near West Salem, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Jan. 5	*2.54	209	Apr. 15	1.34	179	Aug. 25	1.51	212
Feb. 1	*2.53	187	Do	1.54	235			

* Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of La Crosse River near West Salem, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	328	241	230	250	150	150	248	187	146	268	288	226
2	328	268	290	195	210	195	248	168	244	248	230	209
3	328	268	290	250	210	250	248	168	595	328	595	200
4	328	268	288	180	210	210	200	187	749	416	438	184
5	268	288	268	195	170	395	206	181	658	350	328	160
6	308	288	308	210	250	660	248	181	416	371	177	328
7	308	288	328	210	395	780	223	181	241	371	288	779
8	288	288	308	195	370	680	212	173	234	416	288	807
9	288	288	308	195	915	575	212	177	177	862	248	438
10	288	308	290	210	1,150	715	206	153	203	1,230	288	308
11	288	288	230	230	750	595	196	181	203	1,060	244	268
12	237	394	310	230	550	461	187	181	1,030	715	234	248
13	308	394	290	230	350	328	209	177	1,510	506	223	241
14	288	394	270	210	270	288	206	168	1,700	638	216	241
15	308	371	310	170	250	288	177	177	1,900	616	241	219
16	308	328	180	195	230	308	219	177	1,190	461	200	219
17	288	288	230	180	180	484	187	147	972	350	241	200
18	288	268	250	135	230	715	226	200	749	350	164	203
19	234	328	210	230	230	835	248	181	573	484	206	328
20	308	308	230	210	290	616	328	181	438	715	212	288
21	288	308	230	195	350	461	268	177	350	862	200	328
22	268	416	210	195	290	371	288	168	371	595	193	248
23	234	438	270	180	270	394	308	162	416	438	187	230
24	248	371	195	170	270	371	328	114	350	371	241	230
25	268	328	270	170	310	371	288	226	371	350	187	234
26	219	288	230	180	230	328	230	187	416	308	136	216
27	288	270	230	180	135	350	226	168	394	350	151	212
28	288	250	250	160	150	288	200	162	288	308	175	248
29	248	310	250	195	-------	234	190	160	328	268	212	248
30	288	195	150	195	-------	288	190	147	268	328	212	658
31	288	-------	250	210	-------	248	-------	164	-------	268	234	-------

NOTE.—Stage-discharge relation affected by ice Nov. 27 to Dec. 3 and Dec. 10 to Mar. 11; discharge based on gage heights corrected for ice effect by means of two discharge measurements, observer's notes, and weather records.

Monthly discharge of La Crosse River near West Salem, Wis., for the year ending September 30, 1925

[Drainage area, 412 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	328	219	285	0.692	0.80
November	438	195	311	.755	.84
December	328	150	257	.624	.72
January	250	135	198	.481	.55
February	1,150	135	334	.811	.84
March	835	150	427	1.04	1.20
April	328	177	232	.563	.63
May	226	114	173	.420	.48
June	1,900	146	583	1.42	1.58
July	1,230	248	490	1.19	1.37
August	595	136	241	.585	.67
September	807	160	298	.723	.81
The year	1,900	114	319	.774	10.49

UPPER IOWA RIVER NEAR DECORAH, IOWA

LOCATION.—In sec. 13, T. 98 N., R. 8 W., 500 feet above highway bridge in Freeport, 3 miles below Decorah, Winneshiek County, and 4 miles above upper power plant of Interstate Power Co. Trout Run enters 1 mile above station.

DRAINAGE AREA.—560 square miles (measured on base maps).

RECORDS AVAILABLE.—August 27, 1913, to November 21, 1914; May 12, 1919, to September 30, 1925.

GAGE.—Gurley water-stage recorder on left bank; inspected by Mrs. W. D. Gross.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Control formed by a rock ledge, subject to slight changes.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.7 feet at 1 p. m. June 12 (discharge, 10,000 second-feet). Minimum discharge occurred during winter.

1913–14; 1919–1925: Maximum discharge recorded, 14,700 second-feet February 22, 1922; minimum discharge, 21 second-feet February 15, 1923.

ICE.—Stage-discharge relation affected by ice for short periods during extremely cold weather.

REGULATION.—Several mills in Decorah may cause slight diurnal fluctuation.

ACCURACY.—Stage-discharge relation probably permanent. Rating curve well defined above 100 second-feet. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph except as explained in footnote to table of daily discharge. Records good except for estimated periods, for which they may be poor.

No discharge measurements were made at the station during the year.

Daily discharge, in second-feet, of Upper Iowa River near Decorah, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	540	184	135			130	146	125	84	93		74
2	445	184	125			120	130	118	106	84		66
3	388	184	135		50	125	125	113	406	91		64
4	360	190	141			125	130	106	187	84		64
5	330	194	149	60		288	125	99	118	84		64
6	288	184	149		70	1,020	125	95	118	133		72
7	256	172	149		770	800	108	93	102	106	80	88
8	272	175	133		1,980	650	118	91	104	91		82
9	264	172	125		2,410	656	116	91	84	84		106
10	252	154	84		1,450	638	118	93	84	82		102
11	249	187	125		770	347	106	84	133	82		90
12	242	175	123		491	292	120	84	6,270	82		74
13	234	160	135	55	342	256	118	76	1,940	80		76
14	220	157			317	197	102	72	680	108		80
15	210	160			256	160	111	72	1,060	104	84	76
16	207	157	100		197	190	111	93	602	80	84	74
17	200	154			181	342	106	91	1,090	80	84	74
18	194	149		47	166	830	106	95	508	80	86	76
19	187	166			172	430	116	86	650	80	80	80
20	187	163			157	402	123	78	304	82	80	74
21	194	163			163	330	213	113	334		80	84
22	190	172			157	260	224	106	234		84	84
23	194	166		45	154	217	383	93	187	75	74	68
24	187	166			152	204	280	102	213		76	64
25	181	125			138	197	227	95	178		80	64
26	172	181	50		106	181	187	86	152	-------	64	72
27	172	160			130	178	157	74	130	144	61	76
28	160	106			144	157	138	84	130	93	66	80
29	178	104		50	-------	160	152	86	113	74	78	94
30	175	120			-------	149	128	78	91	74	78	204
31	181	-------			-------	130	-------	72	-------	78	88	----

NOTE.—Stage-discharge relation affected by ice Dec. 14 to Feb. 6; discharge estimated from a study of gage heights and climatological data. Intake obstructed by silt July 18 to Aug. 14; discharge estimated from unaffected gage heights and weather records. No gage-height record June 6 and 27; discharge estimated.

Monthly discharge of Upper Iowa River near Decorah, Iowa, for the year ending September 30, 1925

[Drainage area, 560 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	540	160	242	0.432	0.50
November	194	104	163	.291	.32
December	149	----------	95.4	.170	.20
January	----------	----------	52.7	.094	.11
February	2,410	----------	397	.709	.74
March	1,020	120	328	.586	.68
April	383	102	148	.264	.29
May	125	72	91.7	.164	.19
June	6,270	84	546	.975	1.09
July	144	----------	87	.156	.18
August	88	61	79	.141	.16
September	204	64	80.9	.144	.16
The year	6,270	----------	190	.340	4.62

WISCONSIN RIVER AT WHIRLPOOL RAPIDS, NEAR RHINELANDER, WIS.

LOCATION.—In sec. 4, T. 35 N., R. 8 E., at head of Whirlpool Rapids, 1 mile below outlet of Crescent Lake, 3 miles below dam and power plant of Wisconsin Valley Electric Co., and 10 miles southwest of Rhinelander, Oneida County.

DRAINAGE AREA.—1,160 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—September 15, 1915, to September 30, 1925. December 1, 1905, to September 30, 1915, records were collected at a station 3 miles upstream.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by Clarence Jewell.

DISCHARGE MEASUREMENTS.—Made from cable 150 feet above gage.

CHANNEL AND CONTROL.—Bed composed of heavy gravel and rock. Banks medium high and not subject to overflow. Control is head of rapids, 100 feet below gage; well defined and permanent.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 2,720 second-feet (estimated from gage height at Hat Rapids); minimum stage 0.80 foot at 4 a. m. September 30 (discharge, 212 second-feet).

1905–1915: Maximum discharge recorded, 4,890 second-feet August 11, 1912; minimum discharge, no flow August 4 and September 15, 1907, and June 21 and July 5, 1908.

1915–1925: Maximum stage recorded, 5.61 feet at 10 p. m. April 22, 1916 (discharge, 5,250 second-feet); minimum stage, 0.65 foot at 8 p. m. July 7, 1918 (discharge, 165 second-feet).

REGULATION.—Flow is regulated by 14 reservoirs [3] and 3 power plants above the station. The aggregate capacity of reservoirs is 2.8 billion cubic feet during summer and 3.6 billion cubic feet during winter. Owing to operation of these storage reservoirs and power plants flow at the station is not natural.

ACCURACY.—Stage-discharge relation permanent except as affected by ice and by growth of grass and moss on control. Rating curve well defined. Operation of water-stage recorder satisfactory during 87 per cent of open-water periods. Daily discharge for periods when water-stage recorder was in operation ascertained by applying to rating table mean daily gage height determined by inspection of recorder graph and for days of considerable fluctuation in stage by applying a correction that will approximate the results obtained by averaging hourly discharge. Shifting-control method used August 1 to September 30. Discharge for periods of no gage-height record obtained as indicated in footnote to daily-discharge table. Records good for periods when water-stage recorder was in operation; other records poor.

Discharge measurements of Wisconsin River at Whirlpool Rapids, near Rhinelander, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 14	2.57	1,150	Feb. 17	[a] 2.08	578	May 1	2.56	1,210
Jan. 20	[a] 2.24	633	Mar. 21	[a] 2.39	935	Sept. 20	[b] 1.45	407

[a] Gage height and discharge at Hat Rapids.
[b] Stage-discharge relation affected by growth of grass and moss on control.

[3] Information concerning these reservoirs, based on maps and data furnished by W. E. Brooks, manager of the Wisconsin Valley Improvement Co., and data collected by the engineering department of the Railroad Commission of Wisconsin, is contained in U. S. Geol. Survey Water-Supply Paper 405, p. 127.

Daily discharge, in second-feet, of Wisconsin River at Whirlpool Rapids, near Rhinelander, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,120	855	465	525	525	465	1,120	1,040	1,050	750	750	574
2	1,120	508	670	405	310	310	1,040	965	1,120	785	602	512
3	1,040	750	840	405	670	465	1,120	701	1,360	828	524	829
4	1,120	965	758	310	525	670	1,120	727	1,550	457	720	793
5	667	720	758	405	525	670	667	820	1,940	393	750	762
6	694	750	690	670	525	750	809	750	1,640	525	690	793
7	1,040	690	502	840	525	840	1,040	750	1,280	1,410	720	660
8	1,040	855	690	840	525	590	1,040	750	1,440	1,280	750	602
9	1,120	529	855	525	525	405	890	697	1,540	840	668	855
10	1,040	794	785	670	670	590	890	353	1,280	1,050	557	785
11	965	965	720	525	750	590	890	549	1,160	940	785	855
12	640	965	720	405	670	525	612	574	1,410	608	785	855
13	905	820	840	840	670	525	671	549	1,620	976	690	820
14	1,040	965	840	750	670	590	965	549	1,280	1,130	750	341
15	1,040	785	465	750	590	525	890	549	1,280	1,050	720	720
16	1,040	614	1,050	670	465	405	720	524	2,440	820	602	660
17	1,040	750	840	670	670	525	690	315	2,130	820	502	549
18	965	890	840	590	465	660	690	583	1,980	750	750	467
19	583	720	940	310	525	660	524	574	1,360	574	720	731
20	630	690	840	525	670	524	864	524	1,360	855	630	574
21	965	820	840	590	670	630	965	465	917	855	640	697
22	890	1,040	750	670	670	414	855	525	965	785	602	820
23	690	630	750	525	405	524	965	525	890	720	448	697
24	820	465	940	670	590	602	1,040	353	890	750	384	602
25	750	1,050	750	465	670	630	1,280	502	785	720	555	574
26	549	940	525	310	670	873	1,200	524	785	660	507	602
27	630	940	525	670	670	1,040	1,200	525	785	720	366	478
28	720	750	670	750	590	965	1,410	405	602	785	480	602
29	630	940	525	670	-------	890	1,160	465	690	785	480	602
30	690	840	940	670	-------	965	1,050	840	750	785	310	245
31	820	-------	525	590	-------	1,120	-------	439	-------	785	310	-------

NOTE.—Water-stage recorder not operating satisfactorily Nov. 24 to Dec. 3, Dec. 13 to Mar. 17, Apr. 28-30, May 21-23, 27-30, June 9-12, 15-18, July 6-11, and Aug. 30-31; discharge ascertained by applying gage heights at Hat Rapids, 3 miles upstream, to a rating curve defined by three discharge measurements and extended by plotting discharge at Whirlpool Rapids, when available, against gage readings for the same days at Hat Rapids.

Monthly discharge of Wisconsin River at Whirlpool Rapids, near Rhinelander, Wis., for the year ending September 30, 1925

[Drainage area, 1,160 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,120	549	871	0.751	0.87
November	1,050	465	800	.690	.77
December	1,050	465	737	.635	.73
January	840	310	587	.506	.58
February	750	310	586	.505	.53
March	1,120	310	643	.554	.64
April	1,410	524	946	.816	.91
May	1,040	315	594	.512	.59
June	2,440	602	1,280	1.10	1.23
July	1,410	393	813	.701	.81
August	785	310	605	.522	.60
September	855	245	655	.565	.63
The year	2,440	245	759	.654	8.89

WISCONSIN RIVER AT MERRILL, WIS.

LOCATION.—At highway bridge at east end of Merrill, Lincoln County, 1,000 feet below power house of Merrill plant of Wisconsin Valley Electric Co. and half a mile below mouth of Prairie River.

DRAINAGE AREA.—2,630 square miles (measured on Wisconsin Geological and Natural History Survey map, edition of 1911).

RECORDS AVAILABLE.—November 16, 1902, to September 30, 1925.

GAGE.—Gurley water-stage recorder on left bank; inspected by Otto F. Lueck.

DISCHARGE MEASUREMENTS.—Made from bridge just above gage.

CHANNEL AND CONTROL.—Bed composed of heavy gravel and rock; nearly permanent. Riffles on both sides of small island below gage probably constitute control. Banks fairly high and are seldom overflowed.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.60 feet at 11 a. m. June 17 (discharge, 7,370 second-feet); minimum stage, 3.0 feet at 2 a. m. July 26 (discharge, 440 second-feet), caused by regulation.

1902–1925: Maximum stage recorded, about 17.5 feet at 5 a. m. July 24, 1912 (discharge, 45,000 second-feet); minimum stage, 2.45 feet September 26, 1908 (discharge, about 90 second-feet).

REGULATION.—Above the gaging station are 17 reservoirs,[4] which are operated by the Wisconsin Valley Improvement Co. for the purpose of regulating flow in Wisconsin River. The aggregate capacity of these reservoirs is about 6.25 billion cubic feet. In addition to the above reservoirs, there are on Wisconsin and Tomahawk Rivers above the station eight dams operated for power.

ACCURACY.—Stage-discharge relation practically permanent except as affected by ice. Rating curve well defined above 1,000 second-feet. Operation of water-stage recorder satisfactory. Daily discharge determined by means of discharge integrator. Open-water records excellent; winter records good.

Discharge measurements of Wisconsin River at Merrill, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Jan. 18	[a] 4.44	875	Mar. 20	3.94	951
Feb. 14	[a] 4.15	954	May 3	4.73	1,740

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Wisconsin River at Merrill, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,440	1,730	1,040	595	1,460	820	3,350	1,990	1,220	1,440	885	1,060
2	1,790	1,620	1,060	670	1,170	885	2,600	2,130	1,670	1,420	970	1,060
3	1,910	1,560	1,170	820	1,040	755	2,440	1,930	2,980	1,420	1,260	1,060
4	1,790	1,580	960	995	1,260	850	2,690	1,650	5,440	1,030	1,240	1,170
5	2,100	1,540	960	670	1,410	995	2,160	2,080	4,980	700	1,330	1,440
6	1,730	1,650	1,040	755	1,360	1,040	2,380	1,890	5,060	1,450	1,240	1,900
7	1,850	1,830	1,080	885	1,220	1,100	1,910	1,780	3,280	1,500	1,330	1,640
8	1,730	1,750	885	1,170	1,040	940	2,100	1,750	2,220	2,740	1,500	1,670
9	1,770	1,390	920	1,260	1,510	1,140	2,300	1,760	2,090	2,840	1,120	1,170
10	1,750	1,570	960	1,080	1,170	1,050	1,840	2,130	2,040	2,640	1,200	1,090

[4] Information concerning these reservoirs, based on maps and data furnished by the manager of Wisconsin Valley Improvement Co. and data collected by the engineering department of the Wisconsin Railroad Commission, is contained in Water-Supply Paper 405, p. 127.

Daily discharge, in second-feet, of Wisconsin River at Merrill, Wis., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	1,950	1,540	920	920	1,170	1,110	1,890	1,340	2,010	1,760	1,130	1,050
12	1,610	1,440	960	850	1,510	1,190	2,000	1,730	3,540	1,760	1,200	1,520
13	1,740	1,560	850	995	1,510	1,440	1,550	1,480	4,670	2,040	1,250	940
14	1,860	1,680	960	1,120	1,120	1,110	1,830	1,510	5,520	2,040	1,190	935
15	1,820	1,580	1,080	1,040	820	1,240	2,060	1,930	4,810	1,560	1,240	990
16	1,800	1,540	920	995	1,170	1,110	1,960	2,100	4,740	1,910	980	950
17	1,830	1,640	1,080	1,080	995	1,210	1,970	1,560	5,080	1,430	1,220	905
18	1,700	1,430	995	885	995	1,020	1,910	1,330	4,130	1,520	1,200	920
19	1,810	1,420	1,040	885	1,040	1,610	1,800	1,290	2,980	905	935	1,000
20	1,780	1,400	1,080	995	1,080	1,350	1,860	1,530	2,630	1,280	1,040	1,080
21	1,670	1,450	1,120	1,170	1,120	1,160	2,180	1,450	2,530	1,800	905	1,080
22	1,680	1,580	1,170	1,120	885	1,380	2,820	1,660	2,140	960	900	995
23	1,680	1,470	1,220	960	960	1,290	2,390	1,360	2,200	990	705	1,260
24	1,590	1,430	885	920	850	1,840	2,780	1,360	2,740	965	850	1,240
25	1,640	1,610	1,120	960	1,080	1,800	2,900	1,360	2,320	835	710	1,000
26	1,570	1,570	960	920	725	2,900	3,140	1,310	2,370	670	840	1,060
27	1,450	1,460	1,040	995	645	2,620	2,490	1,390	2,330	1,220	945	1,240
28	1,570	1,250	1,080	1,220	885	3,220	2,300	1,530	1,940	1,160	925	1,080
29	1,710	1,140	995	1,260	-------	2,930	2,750	1,380	1,440	1,100	930	1,300
30	1,670	1,160	1,040	1,120	-------	2,430	2,440	1,260	1,770	1,150	870	1,780
31	1,650	-------	850	1,220	-------	2,370	-------	1,140	-------	1,240	935	-----

NOTE.—Stage-discharge relation affected by ice Dec. 3 to Mar. 6; discharge based on gage heights corrected for ice effect by means of three discharge measurements, observer's notes, and weather records. Discharge interpolated or estimated on account of missing gage-height record Oct. 22, Apr. 8, May 24, and July 7–14.

Monthly discharge of Wisconsin River at Merrill, Wis., for the year ending September 30, 1925

[Drainage area, 2,630 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,440	1,450	1,760	0.669	0.77
November	1,830	1,140	1,520	.578	.64
December	1,220	850	1,010	.384	.44
January	1,260	595	985	.375	.43
February	1,510	645	1,110	.422	.44
March	3,220	755	1,480	.563	.65
April	3,350	1,550	2,290	.871	.97
May	2,130	1,140	1,620	.616	.71
June	5,520	1,220	3,090	1.17	1.30
July	2,840	670	1,470	.559	.64
August	1,500	705	1,060	.403	.46
September	1,900	905	1,190	.452	.50
The year	5,520	595	1,550	.589	7.95

WISCONSIN RIVER AT KNOWLTON, WIS.

LOCATION.—In N. ½ sec. 29, T. 26 N., R. 7 E., 50 feet below left end of combination railroad and highway bridge of Chicago, Milwaukee & St. Paul Railway and on State trunk highway No. 73 at Knowlton, Marathon County, 1½ miles below mouth of Big Eau Pleine River.

DRAINAGE AREA.—4,360 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—July 13, 1921, to September 30, 1925. Gage heights May 1, 1915, to July 12, 1921, published by United States Weather Bureau.

GAGE.—Gurley water-stage recorder on left bank; inspected by W. T. Guenther.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge, from boat, or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and light gravel. Control not well defined; there is, however, a decided contraction of channel at an island 2,500 feet below gage. Right bank high and is seldom overflowed; left bank of medium height and is overflowed at extreme flood stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.72 feet at 8 a. m. July 14 (discharge, about 14,100 second-feet); minimum stage, 1.25 feet at 5 p. m. August 23 (discharge, 795 second-feet).

1921–1925: Maximum stage recorded, 19.5 feet at 10 p. m. April 10, 1922 (discharge, 49,800 second-feet); minimum stage, 1.0 foot at 2 a. m. August 15, 1921 (discharge, about 670 second-feet; revised).

REGULATION.—No storage reservoirs discharge into Wisconsin River between Knowlton and Merrill. See "Regulation" in station description of Wisconsin River at Merrill (p. 73). Between Knowlton and Merrill are four dams operated for power.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 1,600 and 6,600 second-feet and fairly well defined above 6,600 second-feet. Operation of water-stage recorder satisfactory during 81 per cent of open-water period. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of recorder graph except as indicated in footnote to table of daily discharge. Open water records good except for periods when operation of water-stage recorder was unsatisfactory, for which they are fair. Winter estimates poor.

Discharge measurements of Wisconsin River at Knowlton, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
May 17	2.84	2,270	May 18	2.43	1,590
May 17	3.09	2,720	May 18	2.54	1,860

Daily discharge, in second-feet, of Wisconsin River at Knowlton, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,110	1,960					3,270	3,270	1,700	2,660	1,470	1,580
2	3,110	2,800					3,430	3,270	1,830	2,240	1,270	1,180
3	2,950	1,830					3,110	2,800	2,660	2,380	1,370	1,180
4	2,800	2,520					3,430	2,520	5,280	2,100	1,470	1,270
5	2,660	2,240					2,950	2,660	11,800	1,580	1,700	1,700
6	2,520	2,100					2,660	2,800	10,800	1,580	1,830	1,470
7	2,950	2,240					3,110	2,800	8,480	2,380	2,240	1,580
8	2,800	2,240					2,660	2,660	5,110	2,520	1,960	2,240
9	2,520	2,100					2,380	2,520	3,920	4,600	1,700	2,520
10	2,660	2,240					2,520	2,100	3,430	4,770	1,960	2,100
11	2,520	2,380	1,510	1,370	1,640	1,840	2,520	2,380	2,950	4,430	2,100	1,830
12	2,380	2,520					2,380	2,240	3,110	2,950	1,960	1,700
13	2,240	2,380					2,380	1,960	8,690	2,950	1,700	1,370
14	2,380	2,520					2,380	2,100	13,000	3,430	1,960	1,470
15	2,520	2,380					2,520	1,830	11,800	3,430	1,700	1,470
16	2,380	1,830					2,380	1,960	8,270	3,110	1,470	1,270
17	2,380	1,700					2,520	2,380	7,850	2,800	1,830	1,700
18	2,520	1,960					2,520	2,100	9,740	2,660	1,580	1,470
19	2,380	2,380					2,950	1,830	7,850	2,100	1,700	1,470
20	2,520	2,520					3,590	1,960	5,630	1,960	1,580	1,030

Daily discharge, in second-feet, of Wisconsin River at Knowlton, Wis., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	2,380	2,380				6,600	3,590	1,830	4,430	1,960	1,700	1,180
22	2,660	2,100				6,200	4,090	2,100	3,920	2,100	1,580	1,470
23	2,520	1,960				5,630	4,260	2,100	3,750	2,240	1,180	1,370
24	2,380	2,520				6,000	4,090	2,100	3,270	2,100	1,470	1,370
25	2,100	1,960			1,640	4,940	4,090	1,580	2,800	2,240	1,420	1,580
26	2,240	2,520	1,510	1,370		4,940	3,750	2,100	2,950	1,960	1,370	1,700
27	2,240	2,520				5,110	3,590	2,100	3,270	1,700	1,270	1,580
28	2,240	2,240				4,600	3,590	1,960	3,270	1,470	1,370	1,370
29	2,100	2,100				4,770	3,920	1,960	2,950	1,470	1,960	1,580
30	2,240	1,960				4,090	3,920	1,830	2,800	1,580	2,380	2,380
31	1,960					3,110		1,700		1,470	920	

NOTE.—Stage-discharge relation affected by ice Dec. 1 to Mar. 20; discharge estimates based on flow of Wisconsin River at Merrill and at Nekoosa. Operation of water-stage recorder unsatisfactory Oct. 28 to Nov. 3, Nov. 11-30, July 25-26, Aug. 26-31, Sept. 6-7, and 15-21; daily discharge obtained by applying to rating table daily gage reading made by United States Weather Bureau.

Monthly discharge of Wisconsin River at Knowlton, Wis., for the year ending September 30, 1925

[Drainage area, 4,360 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,110	1,960	2,500	0.573	0.66
November	2,800	1,700	2,240	.514	.57
December			1,510	.346	.40
January			1,370	.314	.36
February			1,640	.376	.39
March	6,600		2,990	.686	.79
April	4,260	2,380	3,150	.722	.81
May	3,270	1,580	2,240	.514	.59
June	13,000	1,700	5,580	1.28	1.43
July	4,770	1,470	2,480	.569	.66
August	2,380	920	1,650	.378	.44
September	2,520	1,030	1,570	.360	.40
The year	13,000	920	2,410	.553	7.50

WISCONSIN RIVER NEAR NEKOOSA, WIS.

LOCATION.—In sec. 15, T. 21 N., R. 5 E., 1½ miles below Nekoosa, Wood County. Tenmile Creek enters from left 4 miles below station.

DRAINAGE AREA.—5,500 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—May 21, 1914, to September 30, 1925.

GAGE.—Gurley water-stage recorder on right bank; inspected by Henry Mans.

DISCHARGE MEASUREMENTS.—Made from cable just above gage.

CHANNEL AND CONTROL.—Bed composed of gravel; clean, nearly permanent. Banks high and are seldom overflowed.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.50 feet at 8 a. m. June 15 (discharge, 19,400 second-feet); minimum stage, 0.54 foot at 6 a. m. September 7 (discharge, 1,080 second-feet).

1914–1925. Maximum stage recorded, 16.1 feet at 1 a. m. April 12, 1922 (discharge, 61,000 second-feet); minimum discharge, estimated 400 second-feet at 6 p. m. January 13, 1924 (stage-discharge relation affected by ice). Minimum flow is due to regulation.

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—No storage reservoirs discharge into Wisconsin River between Nekoosa and Merrill. See "Regulation" in station description of Wisconsin River at Merrill (p. 73). Between Nekoosa and Merrill are 12 dams operated for power.

ACCURACY.—Stage-discharge relation changed slightly during year; affected by ice. Rating curve well defined. Operation of water-stage recorder satisfactory during year. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection. Open-water records good; winter records fair.

Discharge measurements of Wisconsin River near Nekoosa, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Jan. 14	*2.42	1,320	Mar. 17	*1.50	1,790	May 7	2.21	3,490
Feb. 12	*1.99	1,540	May 7	1.72	2,740	Sept. 22	1.22	1,750

* Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Wisconsin River near Nekoosa, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,630	2,240	2,240	2,180	1,680	1,620	4,440	4,200	2,090	2,840	1,990	2,060
2	3,430	2,040	2,260	1,890	2,040	2,420	4,640	3,860	2,170	3,190	1,900	1,950
3	3,020	2,590	2,020	1,750	2,180	1,750	4,900	3,180	2,920	3,280	1,660	1,830
4	3,360	2,100	2,060	1,430	2,110	2,040	4,440	3,680	5,980	2,260	2,060	2,020
5	2,810	2,670	2,250	1,210	2,180	2,040	4,000	3,080	11,200	2,350	1,970	2,320
6	2,920	2,550	2,120	1,430	2,040	1,890	4,200	3,160	15,400	2,590	2,050	2,040
7	2,400	2,180	1,960	1,430	1,960	1,820	3,970	3,000	12,200	1,900	1,890	1,610
8	3,540	2,460	2,430	1,430	1,550	1,550	3,760	3,250	8,510	2,550	2,230	2,790
9	2,740	2,160	2,140	1,490	2,180	1,680	3,520	3,100	6,190	4,240	2,110	2,970
10	2,450	2,380	2,140	1,550	2,040	1,960	3,530	2,510	4,660	5,460	2,290	2,840
11	3,120	2,260	2,040	1,380	1,820	1,960	3,260	2,420	4,080	5,980	1,970	2,490
12	2,450	3,280	2,000	1,320	1,960	2,260	3,100	2,700	5,320	5,220	2,380	2,030
13	2,510	3,030	2,040	1,430	2,110	2,500	3,470	2,980	10,500	3,960	2,430	1,750
14	2,240	3,000	1,680	1,380	2,260	2,840	3,370	2,190	16,300	3,360	1,990	2,100
15	2,480	2,840	1,820	1,160	1,750	2,920	3,620	2,430	17,90 (	4,420	2,060	1,910
16	2,620	2,900	1,820	1,380	2,840	2,660	3,590	2,490	15,600	3,640	2,050	1,970
17	2,600	2,630	1,820	1,680	1,550	2,110	3,000	2,050	11,900	3,710	1,730	1,830
18	2,800	2,370	1,750	1,320	1,890	2,500	4,020	2,910	11,300	3,340	2,300	1,910
19	2,660	2,810	1,750	1,490	2,040	3,460	4,730	2,400	11,900	2,660	2,020	1,950
20	2,560	2,360	1,680	1,550	2,180	4,640	5,280	2,070	9,620	2,950	1,840	1,690
21	2,310	2,840	1,320	1,680	1,820	5,170	5,960	2,390	7,350	2,070	1,840	1,870
22	2,430	2,750	1,620	1,890	1,680	5,120	6,850	2,010	6,020	2,420	1,910	1,830
23	2,880	2,550	1,320	1,750	1,620	4,980	7,170	2,580	4,900	2,430	1,630	1,940
24	2,570	2,180	1,160	1,750	1,750	4,900	7,080	2,250	4,720	2,450	1,730	1,860
25	2,640	2,500	1,320	1,430	1,680	5,890	6,610	2,170	3,810	2,920	1,670	1,840
26	1,960	2,460	1,820	2,110	2,180	7,300	6,230	1,930	3,210	2,430	2,130	2,060
27	2,440	3,050	1,490	2,110	2,260	9,630	6,120	2,330	3,870	2,310	1,820	1,640
28	2,380	2,060	1,550	1,890	1,960	7,470	5,940	2,660	3,780	1,930	1,780	1,690
29	2,370	2,460	1,550	1,820	-------	7,340	4,690	2,570	4,040	1,940	1,980	1,830
30	2,740	2,130	1,960	1,820	-------	6,180	4,160	1,810	3,580	2,150	2,030	2,270
31	2,630	-------	2,040	1,960	-------	5,760	-------	1,990	--------	1,890	1,660	------

NOTE.—Stage-discharge relation affected by ice Dec. 13 to Mar. 19; discharge based on gage heights corrected for ice effect by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Wisconsin River near Nekoosa, Wis., for the year ending September 30, 1925

[Drainage area, 5,500 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,630	1,960	2,700	0.491	0.57
November	3,280	2,040	2,530	.460	.51
December	2,180	1,160	1,840	.335	.39
January	2,180	1,160	1,620	.295	.34
February	2,840	1,550	1,980	.360	.37
March	9,630	1,550	3,750	.683	.79
April	7,170	3,000	4,660	.846	.94
May	4,200	1,810	2,660	.483	.56
June	17,900	2,090	7,700	1.400	1.56
July	5,980	1,890	3,060	.556	.64
August	2,430	1,630	1,970	.358	.41
September	2,970	1,610	2,030	.369	.41
The year	17,900	1,160	3,040	.552	7.49

WISCONSIN RIVER AT MUSCODA, WIS.

LOCATION.—In sec. 1, T. 8 N., R. 1 W., at highway bridge 1 mile north of Muscoda, Grant County. Eagle Mill Creek enters from right half a mile below station, and Underwood Creek enters from left 4½ miles above.

DRAINAGE AREA.—10,300 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—December 21, 1902, to December 31, 1903; December 1, 1913, to September 30, 1925. Gage heights November 1, 1908, to December 31, 1912, published in United States Weather Bureau Daily River Stages, parts 9, 10, and 11.

GAGE.—Chain gage fastened to handrail on upstream side of bridge; read by Bud Rice. Zero of gage is about 666.2 feet above sea level.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.00 feet at 7 a. m. June 22 (discharge, 25,100 second-feet); minimum discharge, estimated 3,200 second-feet January 21 (stage-discharge relation affected by ice).

1903; 1914–1925: Maximum stage recorded, 10.60 feet at 7 a. m. April 16, 1922 (discharge, 72,100 second-feet); minimum discharge, estimated 1,600 second-feet December 20, 1921 (stage-discharge relation affected by ice).

According to records of the United States Weather Bureau,[5] on June 11, 1881, the river reached a stage of 11.1 feet, and during August, 1868, zero on gage; discharge not computed owing to changes in channel and datum of gage.

REGULATION.—Nearest power plant above station is at Prairie du Sac, 40 miles distant; considerable diurnal fluctuation has been observed at gage. Owing to regulation by storage in headwaters, the flow at this station is not natural.

ACCURACY.—Stage-discharge relation not permanent; affected by shifting control and by ice. Rating curve fairly well defined above and poorly defined below 8,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except March 12 to September 30, when shifting-control method was used. Records poor.

[5] U. S. Dept. Agr. Daily River Stages, pt. 10, p. 98.

The following discharge measurements were made:

January 10, 1925: Gage height, 2.09 feet (stage-discharge relation affected by ice); discharge, 3,660 second-feet.

April 13, 1925: Gage height, 1.42 feet; discharge, 5,160 second-feet.

August 24, 1925: Gage height, 1.21 feet; discharge, 4,350 second-feet.

Daily discharge, in second-feet, of Wisconsin River at Muscoda, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,920	5,100	4,860	3,580	4,180	4,630	10,100	8,970	3,780	9,340	5,100	3,980
2	6,960	4,630	4,180	4,400	4,400	4,400	10,500	8.610	4,180	7,590	5,340	3,980
3	7,590	4,400	6,400	3,780	4,400	4,180	10,500	8,260	5,100	6,680	3,980	3,980
4	6,680	4,860	4,180	3,780	4,860	4,630	10,100	6,120	4,630	6,120	4,860	4,860
5	6,400	5,100	4,630	4,180	4,400	4,630	9,720	7,920	4,630	5,340	4,630	3,980
6	5,850	4,630	5,340	3,580	4,860	4,400	6,680	6,960	4,400	5,100	5,100	4,860
7	7,270	6,120	3,980	4,180	4,180	4,400	9,340	6,400	4,400	6,400	4,860	6,120
8	6,680	6,400	3,780	3,580	4,630	4,630	8,970	5,850	4,860	6,960	7,590	5,590
9	7,270	4,630	4,400	3,390	5,850	4,400	8,970	5,590	11,300	7,270	6,400	4,860
10	6,960	4,400	5,100	3,780	7,590	4,630	8,260	5,590	13,900	6,960	5,590	4,630
11	6,960	4,400	4,860	3,980	7,590	4,400	8,260	4,630	11,800	6,400	4,860	4,860
12	6,120	5,100	5,100	3,580	6,960	5,340	6,680	5,850	12,200	6,400	5,100	4,400
13	5,100	5,850	4,630	3,580	6,960	5,590	4,860	5,850	10,500	5,850	5,100	3,780
14	6,680	5,100	4,860	3,780	6,680	4,860	5,850	6,120	9,340	8,610	5,340	3,580
15	4,860	6,120	4,860	3,980	4,180	5,100	5,850	5,590	10,500	8,970	5,500	4,180
16	5,850	7,590	5,590	3,980	4,180	4,630	5,850	4,400	13,900	9,340	4,180	3,980
17	5,590	4,630	3,980	3,780	4,400	4,860	5,340	5,340	17,700	8,970	4,180	3,980
18	4,860	6,680	4,180	4,180	4,180	6,120	5,850	4,180	20,800	8,970	4,860	3,980
19	4,860	5,590	3,980	3,980	3,980	6,680	5,850	4,860	21,900	9,340	5,100	3,980
20	4,180	5,340	3,390	3,980	4,630	7,270	4,860	4,400	23,800	7,920	4,860	4,180
21	5,590	5,340	3,980	3,200	3,980	8,260	6,120	5,100	23,100	8,610	5,100	3,780
22	7,920	5,100	3,980	3,980	4,180	8,260	6,960	6,400	24,400	6,400	5,100	4,180
23	5,850	5,590	3,780	4,400	4,180	5,340	8,260	4,400	18,200	5,590	5,340	4,180
24	5,590	4,860	3,780	4,180	4,180	8,610	10,500	5,340	16,200	5,590	4,630	3,980
25	5,850	6,960	3,580	4,860	4,400	9,720	10,900	3,980	14,800	6,680	4,180	3,980
26	5,850	4,860	3,580	3,980	5,590	11,800	11,300	4,400	13,000	5,590	4,180	3,980
27	4,400	5,850	3,980	3,980	3,980	10,500	11,300	5,100	10,900	5,590	3,980	4,400
28	6,120	4,400	3,780	4,180	4,630	8,970	9,340	5,340	10,900	5,850	4,630	4,180
29	6,400	5,340	3,980	4,180	------	8,970	11,800	4,400	7,920	5,100	4,630	3,980
30	6,120	5,590	3,780	3,980	------	10,100	9,720	4,400	9,720	6,120	3,980	4,630
31	6,630	------	3,980	4,180	------	13,500	------	3,980	------	5,340	3,980	------

NOTE.—Stage-discharge relation affected by ice Nov. 29 to Mar. 11; discharge based on gage heights corrected for ice effect by means of one discharge measurement, observer's notes, and weather records.

Monthly discharge of Wisconsin River at Muscoda, Wis., for the year ending September 30, 1925

[Drainage area, 10,300 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	7,920	4,180	6,160	0.598	0.69
November	7,590	4,400	5,350	.519	.58
December	6,400	3,390	4,340	.421	.49
January	4,860	3,200	3,940	.383	.44
February	7,590	3,980	4,940	.480	.50
March	13,500	4,180	6,570	.638	.74
April	11,800	4,860	8,290	.805	.90
May	8,970	3,980	5,620	.456	.63
June	24,400	3,780	12,100	1.17	1.30
July	9,340	5,100	6,940	.674	.78
August	7,590	3,980	4,910	.477	.55
September	6,120	3,580	4,300	.417	.47
The year	24,400	3,200	6,120	.594	8.07

TOMAHAWK RIVER NEAR BRADLEY, WIS.

LOCATION.—In sec. 16, T. 36 N., R. 6 E., 2 miles west of Cassion, 4 miles north of Bradley, Oneida County, 4 miles downstream from mouth of Bearskin Creek, and 8 miles above mouth of river.

DRAINAGE AREA.—422 square miles.

RECORDS AVAILABLE.—September 18, 1914, to September 30, 1925.

GAGE.—Slope gage fastened to concrete posts on right bank; read by H. F. Hemmings.

DISCHARGE MEASUREMENTS.—Made from cable half a mile below gage.

CHANNEL AND CONTROL.—Bed at gage and a short distance below, sandy and likely to shift. Control is formed by rapids 2,000 feet below gage. Bed at cable section heavy gravel. When a head of 15 feet is maintained in Rice Lake storage dam, in secs. 4 and 9, T. 35 N., R. 6 E., backwater will extend halfway up the rapids and may affect stage-discharge relation slightly. Maximum head maintained during year was considerably less than 15 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.65 feet April 25 and 26 (discharge, 697 second-feet); minimum stage, 1.09 feet August 28 (discharge, 148 second-feet).

1914–1925: Maximum stage recorded, 6.9 feet April 24, 1916 (discharge, 2,200 second-feet); minimum stage, that of August 28 1925. A better extension of the low-water part of the rating curve indicates that the minimum discharge for July 1 and August 9, 1921, is 172 second-feet, instead of 132 second-feet as previously published.

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—Squirrel and Minocqua Reservoirs,[6] having a summer capacity of 443,000,000 cubic feet and a winter capacity of 803,000,000 cubic feet, are maintained above station for the purpose of regulating the flow of Wisconsin River.

ACCURACY.—Stage-discharge relation probably permanent except as affected by ice. Rating curve fairly well defined above and extended below 220 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying mean daily gage height to rating table except as indicated in footnote to table of daily discharge. Open-water records for medium and high stages, fair; low-water and winter records, poor.

Discharge measurements of Tomahawk River near Bradley, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 13	2.22	288	Feb. 16	[a] 2.63	252	May 2	2.60	378
Jan. 19	[a] 2.66	240	Mar. 19	[a] 2.90	296	Do	2.59	382

[a] Stage-discharge relation affected by ice.

[6] For more complete information concerning these reservoirs see U. S. Geol. Survey Water-Suppl Paper 585, p. 86.

Daily discharge, in second-feet, of Tomahawk River near Bradley, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	502	275	300	225	235	250	488	434	246	211	177	155
2	474	304	300	235	235	255	460	396	254	211	190	155
3	460	308	290	240	235	255	434	370	297	204	204	155
4	421	297	280	235	235	265	421	347	396	204	197	160
5	408	302	270	240	225	270	396	336	544	197	190	160
6	384	302	280	240	240	270	336	316	530	197	177	160
7	358	308	290	250	255	280	326	316	502	211	204	160
8	332	312	280	250	250	280	326	297	421	204	254	170
9	332	324	280	250	265	280	306	278	358	211	269	195
10	322	312	255	255	255	290	306	261	297	211	239	220
11	312	354	265	255	255	290	316	261	326	206	215	240
12	302	384	265	255	255	270	326	261	297	197	194	265
13	312	421	255	250	250	255	326	258	559	190	184	290
14	302	408	255	240	250	250	316	261	619	177	190	290
15	297	384	255	250	255	265	316	254	589	165	193	285
16	293	350	250	250	250	300	306	246	488	171	193	280
17	289	330	255	250	255	300	297	254	434	159	204	275
18	293	310	250	250	255	300	292	278	421	153	184	270
19	289	330	240	250	250	300	287	261	396	153	177	270
20	278	350	240	250	255	300	297	246	396	153	165	265
21	275	360	235	240	255	310	336	246	372	159	165	255
22	269	360	235	240	265	300	358	246	336	156	165	243
23	269	350	225	235	255	320	434	246	297	153	165	232
24	268	340	235	240	265	360	619	261	269	153	159	225
25	266	330	225	235	255	420	697	269	261	180	153	211
26	266	350	225	235	250	420	697	261	246	206	153	201
27	265	330	225	235	250	445	650	254	246	225	153	218
28	261	290	225	225	240	530	589	261	232	218	148	225
29	261	310	220	225	-------	559	544	282	225	197	151	222
30	258	290	225	235	-------	589	488	287	218	180	150	246
31	258	-------	225	235	-------	634	-------	261	-------	171	155	------

NOTE.—Stage-discharge relation affected by ice Nov. 16 to Mar. 27; discharge based on gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records. Gage-height record missing Oct. 7, Apr. 16, and Aug. 30 to Sept. 21; discharge estimated from reservoir reports and precipitation records.

Monthly discharge of Tomahawk River near Bradley, Wis., for the year ending September 30, 1925

[Drainage area, 422 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	502	258	319	0.756	0.87
November	421	275	332	.787	.88
December	300	220	253	.600	.69
January	255	225	242	.573	.66
February	265	225	250	.592	.62
March	634	250	336	.796	.92
April	697	287	410	.972	1.08
May	434	246	284	.673	.78
June	619	218	369	.874	.98
July	225	153	187	.443	.51
August	269	148	184	.436	.50
September	290	155	223	.528	.59
The year	697	148	282	.668	9.08

PRAIRIE RIVER NEAR MERRILL, WIS.

LOCATION.—On line between secs. 20 and 29, T. 32 N., R. 7 E. at highway bridge 4½ miles northeast of Merrill, Lincoln County, and 5½ miles above mouth of river. Haymeadow Creek enters from left 5 miles above station.

DRAINAGE AREA.—164 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—January 17, 1914, to September 30, 1925.

GAGE.—Chain gage attached to upstream side of bridge; read by Mrs. Meta Krause.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel; clean and free from vegetation. Right bank high, not subject to overflow; left bank may be overflowed at extreme flood stages; both banks wooded. Control not well defined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.90 feet at 8 a. m. June 5 (discharge, 825 second-feet); minimum discharge, estimated 55 second-feet January 21 (stage-discharge relation affected by ice).

1914–1925: Maximum stage recorded, 6.1 feet April 22, 1916, and April 22, 1923 (discharge, 2,290 second-feet); minimum discharge, that of January 21, 1925.

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Open-water records good; winter records fair.

Discharge measurements of Prairie River near Merrill, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Jan. 17	[a]1.76	58	Mar. 20	[a]1.76	88
Feb. 15	[a]1.66	64	May 3	1.86	110

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Prairie River near Merrill, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	115	94	94	65	60	70	88	133	118	95	88	118
2	112	102	91	60	65	70	88	122	118	88	88	115
3	105	99	88	60	65	70	96	115	212	88	86	118
4	102	99	88	60	65	70	102	112	614	91	86	137
5	102	99	87	60	65	70	108	108	825	88	84	159
6	99	102	86	60	65	75	108	108	738	91	84	244
7	99	99	77	65	70	80	102	105	574	94	86	261
8	99	96	65	65	70	80	105	102	384	88	118	212
9	96	96	66	65	70	80	102	99	244	96	105	184
10	98	99	65	60	70	80	102	96	184	94	96	172
11	96	105	70	60	70	80	108	96	148	108	88	91
12	102	115	75	60	65	75	118	94	212	244	84	87
13	99	115	70	60	70	75	122	94	496	228	84	79
14	98	118	65	60	70	75	118	94	614	198	86	85
15	99	115	65	60	70	75	118	91	578	148	88	94

Daily discharge, in second-feet, of Prairie River near Merrill, Wis., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	96	115	65	60	65	75	122	91	458	118	86	88
17	96	112	65	60	65	80	126	94	421	112	84	84
18	96	108	70	60	65	90	126	99	384	105	81	86
19	95	108	70	69	70	90	129	99	313	99	77	86
20	96	108	70	60	70	90	137	96	212	94	77	88
21	96	112	70	55	70	90	198	94	172	88	77	88
22	99	112	65	60	65	90	244	94	137	86	77	86
23	99	105	65	60	70	95	313	99	129	81	77	84
24	96	99	65	60	70	159	348	108	115	81	75	86
25	94	99	65	60	70	172	366	118	115	91	75	86
26	91	102	65	60	75	184	330	115	108	94	73	88
27	91	101	60	60	70	184	278	105	105	105	73	91
28	91	96	60	60	70	159	212	105	102	102	73	88
29	91	96	60	60	------	133	184	118	96	96	73	84
30	91	94	60	60	------	129	148	129	94	94	112	118
31	94	------	60	60	------	129	------	129	------	91	126	------

NOTE.—Stage-discharge relation affected by ice Dec. 10 to Mar. 23; discharge based on gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Prairie River near Merrill, Wis., for the year ending September 30, 1925

[Drainage area, 164 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	115	91	97.8	0.596	0.69
November	118	94	104	.634	.71
December	94	60	70.5	.430	.50
January	65	55	60.5	.369	.43
February	75	60	68.0	.415	.43
March	184	70	99.2	.605	.70
April	366	88	162	.988	1.10
May	133	91	105	.640	.74
June	825	94	301	1.84	2.05
July	244	81	109	.665	.77
August	126	73	86.0	.524	.60
September	261	79	116	.707	.79
The year	825	55	115	.701	9.51

RIB RIVER AT RIB FALLS, WIS.

LOCATION.—In NW. ¼ sec. 27, T. 29 N., R. 5 E., at highway bridge in Rib Falls, Marathon County, 6 miles below mouth of Black Creek, and 15 miles above mouth of river.

DRAINAGE AREA.—309 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—May 19 to September 30, 1925.

GAGE.—Chain gage attached to downstream side of bridge; read by G. H. Baesemann.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of heavy gravel; probably permanent. Right bank high and will not be overflowed; left bank of medium height and will be overflowed at flood stages. Control at rapids 700 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period May 19 to September 30, 1925, 5.90 feet at 7 p. m. June 4 (discharge, 2,500 second-feet); minimum stage, 1.70 feet May 8 and several days in September (discharge, 32 second-feet).

REGULATION.—A dam just above gage is used to furnish power for a gristmill, but the amount of water used by the mill and the pondage are so small that there is very little fluctuation, if any, caused by the dam.

ACCURACY.—Stage-discharge relation permanent during the period. Rating curve well defined below and fairly well defined above 1,000 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

Discharge measurements of Rib River at Rib Falls, Wis., for the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
May 20	1.88	55	June 23	2.20	122	Sept. 21	1.98	62
May 20	1.89	56	Sept. 21	1.98	68			

Daily discharge, in second-feet, of Rib River at Rib Falls, Wis., for the year ending September 30, 1925

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1		49	46	57	49	16		470	180	43	51
2		43	49	75	46	17		1,600	112	43	39
3		290	51	57	57	18		1,210	75	39	36
4		2,240	34	57	57	19	57	630	75	39	39
5		1,680	43	57	112	20	54	375	97	41	51
6		1,070	43	57	310	21	49	215	97	43	61
7		520	139	57	194	22	38	150	57	39	57
8		290	187	51	122	23	32	97	43	32	51
9		180	1,920	39	97	24	64	97	50	36	43
10		150	1,140	39	75	25	75	128	46	32	36
11		122	575	43	75	26	49	122	43	32	75
12		870	575	61	49	27	57	97	49	32	71
13		2,160	250	75	57	28	49	97	43	34	97
14		1,520	270	39	68	29	43	75	43	32	97
15		935	310	49	49	30	51	57	117	49	870
						31	43		75	64	

Monthly discharge of Rib River at Rib Falls, Wis., for the year ending September 30, 1925

[Drainage area, 309 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
May 19-31	75	32	55	0.178	0.09
June	2,240	43	585	1.89	2.11
July	1,920	34	220	.712	.82
August	75	32	46	.149	.17
September	870	36	103	.333	.37

EAU CLAIRE RIVER AT KELLY, WIS.

LOCATION.—In sec. 13, T. 28 N., R. 8 E., at highway bridge, three-fourths mile northeast of Kelly, Marathon County, 1 mile above mouth of Big Sandy Creek, which enters from right, and 4½ miles above mouth of river.

DRAINAGE AREA.—326 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—January 1, 1914, to September 30, 1925.

GAGE.—Chain gage fastened to downstream side of highway bridge; read by August Krueger.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of heavy gravel and rock. Gage is in the rapids which form control. Banks medium high and not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum open-water stage recorded during year, 2.90 feet at 8.45 a. m. June 5 (discharge, 1,070 second-feet); minimum discharge, estimated 40 second-feet January 21 (stage-discharge relation affected by ice).

1914–1925: Maximum stage recorded, 7. 40 feet at 3 p. m. April 9, 1922 (discharge, 6,320 second-feet); minimum discharge, estimated 30 second-feet December 6, 1917 (stage-discharge relation affected by ice).

ICE.—Stage-discharge relation seriously affected by ice.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve well defined between 70 and 3,200 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Open-water records good; winter records fair.

Discharge measurements of Eau Claire River at Kelly, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 3	0.97	128	Feb. 13	a 2.27	53	May 5	1.08	148
Jan. 16	a 1.82	52	Mar. 18	a 3.07	350			

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Eau Claire River at Kelly, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	144	93	150	45	55	60	179	191	93	82	71	62
2	134	89	140	55	55	75	179	168	104	78	71	68
3	124	89	105	60	55	95	179	151	146	82	65	68
4	113	85	85	60	55	85	179	141	261	82	65	71
5	108	85	70	60	55	95	168	141	1,070	71	104	89
6	108	85	70	60	55	95	151	136	865	85	68	131
7	108	89	60	60	55	125	151	126	645	89	71	136
8	108	93	60	60	55	115	146	117	382	117	71	113
9	104	85	55	60	75	130	146	108	279	226	71	96
10	100	85	45	55	85	140	146	108	226	204	68	89
11	96	100	55	60	85	125	146	104	168	146	59	85
12	96	108	60	60	85	125	162	108	243	122	56	75
13	100	168	60	55	55	140	168	108	735	298	56	68
14	93	151	55	60	75	125	168	100	735	243	71	65
15	93	126	55	60	75	125	191	93	615	179	62	59

Daily discharge, in second-feet, of Eau Claire River at Kelly, Wis., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	96	117	60	55	70	85	210	93	429	157	59	56
17	93	96	60	55	70	105	191	93	360	131	56	56
18	89	85	60	45	55	350	179	100	405	113	53	56
19	93	131	55	55	60	505	360	96	360	104	53	56
20	93	117	45	45	60	430	453	93	243	93	53	71
21	89	146	45	40	70	280	478	89	185	85	50	78
22	93	173	55	45	75	430	558	96	157	82	50	78
23	85	210	55	45	75	380	586	93	131	78	50	68
24	85	162	55	55	70	225	615	93	117	75	50	62
25	85	150	55	55	85	380	558	113	122	71	45	59
26	85	150	60	45	70	360	504	104	117	75	45	56
27	89	140	55	45	60	382	382	96	104	82	45	71
28	89	105	45	45	55	298	318	93	100	82	43	78
29	85	125	55	55	-------	243	261	93	93	85	45	93
30	85	140	45	55	-------	226	226	96	85	78	71	126
31	89	-------	45	55	-------	204	-------	93	-------	71	65	------

NOTE.—Stage-discharge relation affected by ice Nov. 25 to Mar. 25; discharge based on gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Eau Claire River at Kelly, Wis., for the year ending September 30, 1925

[Drainage area, 326 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	144	85	98.5	0.302	0.35
November	210	85	119	.365	.41
December	150	45	63.7	.195	.22
January	60	40	53.7	.165	.19
February	85	55	66.1	.203	.21
March	505	60	211	.647	.75
April	615	146	278	.853	.95
May	191	89	111	.340	.39
June	1,070	85	319	.979	1.09
July	298	71	115	.353	.41
August	104	43	60.1	.184	.21
September	136	56	78.0	.239	.27
The year	1,070	40	131	.402	5.45

BIG EAU PLEINE RIVER NEAR STRATFORD, WIS.

LOCATION.—In sec. 13, T. 27 N., R. 3 E., at highway bridge at a place locally known as Weber farm, 2 miles north of Stratford, Marathon County, and 1 mile above Chicago & Northwestern Railway bridge. Dill Creek enters from right 5 miles above station.

DRAINAGE AREA.—223 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—July 24, 1914, to December 31, 1925, when station was discontinued.

GAGE.—Vertical staff gage on right bank; read by John Weber.

DISCHARGE MEASUREMENTS.—Made by wading or from highway bridge half a mile below gage.

CHANNEL AND CONTROL.—Bed composed of heavy gravel and rock. Control at head of rapids 100 feet below gage. Banks at gage are high but are overflowed at stage of 15 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period October 1, 1924, to December 31, 1925, 6.30 feet at 5 p. m. June 17 (discharge, 2,410 second-feet); minimum discharge, about 2 second-feet August 22–29.

1914–1925: Maximum stage recorded, 10.9 feet at 4.30 p. m. November 10, 1919 (discharge, 8,630 second-feet); minimum discharge, that of August 22–29, 1925. The flood of June, 1914, reached a stage of 20.7 feet as determined by levels run to high-water marks.

ACCURACY.—Stage-discharge relation practically permanent except at low stages and as affected by ice. Rating curve well defined above and poorly defined below 100 second-feet. Gage read to hundredths twice daily. Daily discharge obtained by applying mean daily gage height to rating table. Records good for high and medium stages and poor for discharge below 100 second-feet.

The following discharge measurements were made:

May 5, 1925: Gage height, 1.87 feet; discharge, 26.9 second-feet.

May 5, 1925: Gage height, 1.87 feet; discharge, 27.1 second-feet.

June 24, 1925: Gage height, 2.00 feet; discharge, 39.0 second-feet.

Daily discharge, in second-feet, of Big Eau Pleine River near Stratford, Wis., for the period October 1, 1924, to December 31, 1924

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	31	10	14	-------	153	54	8	30	9	7	1,250	22	14
2	27	11	13	-------	135	39	10	23	9	6	705	23	14
3	22	10	13	-------	129	41	41	24	8	5	380	26	15
4	19	11	12	-------	122	38	815	21	8	5	305	290	50
5	18	11	12	-------	113	32	705	17	7	68	360	1,470	88
6	15	12	13	-------	100	33	360	15	8	122	262	815	98
7	14	12	16	-------	92	31	212	44	8	96	188	380	94
8	12	13	18	-------	86	24	140	82	8	59	153	555	82
9	12	12	15	-------	82	23	100	630	7	36	129	249	88
10	12	12	14	-------	80	21	61	680	6	26	107	177	52
11	11	18	13	-------	82	18	59	420	5	18	94	142	50
12	11	28	12	-------	80	18	1,250	275	4	14	76	111	49
13	11	36	12	-------	74	16	1,710	166	5	10	68	107	47
14	11	32	12	-------	72	16	930	200	5	8	54	96	38
15	12	27	12	-------	94	16	488	155	4	8	46	88	28
16	14	22	12	-------	98	16	262	133	4	7	41	212	26
17	14	18	12	-------	88	20	1,790	72	4	6	39	49	21
18	13	11	11	-------	100	20	930	47	4	6	36	68	14
19	12	10	-------	-------	340	18	465	44	4	7	35	59	12
20	11	11	-------	-------	465	15	224	44	4	6	33	47	12
21	11	22	-------	-------	380	12	144	42	3	6	33	56	12
22	11	74	-------	-------	360	10	105	35	2	6	33	68	13
23	10	86	-------	-------	275	9	74	24	2	6	33	41	12
24	10	66	-------	1,180	236	10	52	19	2	6	31	31	13
25	9	49	-------	930	188	9	59	18	2	6	36	24	12
26	9	35	-------	761	155	8	92	15	2	7	38	21	10
27	9	27	-------	465	126	8	96	14	2	9	42	19	8.5
28	9	20	-------	262	98	8	78	11	2	10	42	15	8.0
29	8	17	-------	249	82	8	56	10	2	10	42	13	7.8
30	8	14	-------	200	66	8	41	8	6	510	41	13	7.2
31	10	-------	-------	166	-------	7	-------	8	9	-------	31	-------	6.1

NOTE.—Stage-discharge relation affected by ice Dec. 19 to Mar. 23. Observations discontinued during winter.

Monthly discharge of Big Eau Pleine River near Stratford, Wis., for the period October 1, 1924, to December 31, 1925

[Drainage area, 223 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1924–25					
October	31	8	13.1	0.059	0.07
November	86	10	24.6	.110	.12
December 1–18	18	11	13.1	.059	.04
March 24–31	1,180	166	527	2.36	.70
April	465	66	152	.682	.76
May	54	7	19.5	.087	.10
June	1,790	8	379	1.70	1.90
July	680	8	107	.480	.55
August	9	2	5.00	.022	.03
September	510	5	36.5	.164	.18
1925					
October	1,250	31	154	.691	.80
November	1,470	13	176	.789	.88
December	98	6.1	32.3	.145	.17

KICKAPOO RIVER AT GAYS MILLS, WIS.

LOCATION.—In sec. 28, T. 10 N., R. 4 W., at highway bridge immediately below Norwood Mill, in Gays Mills, Crawford County, 2 miles below mouth of Tainter Creek, and 25 miles above mouth of river.

DRAINAGE AREA.—629 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—December 25, 1913, to September 30, 1925.

GAGE.—Chain gage fastened to downstream side of bridge; read by George Atwood.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Channel composed of rock covered by a deposit of sand and silt; banks at gage section fairly high and not subject to overflow at ordinary high stages. No definite control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.02 feet at 6.20 p. m. June 15 (discharge, 2,480 second-feet); minimum stage, 1.42 feet at 5.45 p. m. June 8 (discharge, 186 second-feet).

1914–1925: Maximum stage recorded, 15.05 feet March 24, 1917 (discharge, about 6,300 second-feet); minimum discharge, about 100 second-feet during the later part of January, 1915 (stage-discharge relation affected by ice).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Mills at Gays Mills immediately above station, at Soldiers Grove 7 miles upstream, and at several points above Soldiers Grove use comparatively little storage, so that recorded flow past station represents nearly the natural flow. During low stages a small diurnal fluctuation is observed at gage.

ACCURACY.—Stage-discharge relation not permanent; affected by shifting control and by ice. Gage read to half-tenths twice daily. Standard rating curve poorly defined. Daily discharge ascertained by shifting control method except from October 1 to December 10 when mean daily gage height was applied to rating table. Open-water records fair; winter records poor.

Discharge measurements of Kickapoo River at Gays Mills, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 3	2.15	302	Apr. 14	2.07	284
Jan. 9	*2.96	235	Aug. 24	1.62	206

* Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Kickapoo River at Gays Mills, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	339	287	304	225	255	304	321	260	256	241	339	226
2	339	304	321	225	255	287	304	260	256	241	304	226
3	339	287	287	225	240	304	304	260	271	241	256	226
4	339	304	304	225	225	287	304	260	287	256	287	211
5	321	287	321	255	270	271	287	241	287	241	271	226
6	321	304	321	255	525	357	287	256	226	256	256	1,140
7	321	287	339	240	720	720	304	241	241	990	1,280	1,700
8	321	304	339	225	1,080	670	287	226	197	570	620	1,560
9	304	304	304	240	1,780	1,110	304	241	197	1,740	377	570
10	321	304	256	240	2,470	1,560	287	226	226	2,260	287	417
11	321	321	285	210	2,100	900	287	226	226	1,660	321	357
12	304	339	320	240	1,820	480	287	241	1,080	547	287	321
13	321	339	340	225	645	438	271	226	1,280	438	271	304
14	321	339	285	225	502	304	271	241	1,480	377	256	287
15	321	339	285	240	459	304	256	241	2,470	397	256	271
16	304	321	285	225	397	321	256	241	2,300	339	256	271
17	321	321	255	195	377	570	256	241	1,940	256	256	256
18	304	304	255	210	377	1,590	271	256	1,520	256	256	256
19	304	304	255	225	357	1,560	271	256	990	547	241	417
20	321	321	255	225	339	720	321	241	524	2,020	226	547
21	304	321	240	240	339	570	321	241	480	2,380	241	321
22	287	377	225	255	357	750	438	226	357	670	226	271
23	287	397	240	225	357	397	438	226	720	417	226	226
24	287	339	255	255	339	438	397	211	524	357	226	241
25	287	321	240	240	321	438	339	226	480	339	226	241
26	287	321	240	195	256	417	304	226	480	339	226	256
27	287	321	255	210	357	397	287	211	459	321	211	304
28	287	271	225	225	357	357	271	226	417	304	226	339
29	287	256	225	225	-------	339	287	226	377	271	211	271
30	287	271	225	225	-------	321	256	226	304	287	226	417
31	304	-------	255	270	-------	339	-------	226	-------	459	241	------

NOTE.—Stage-discharge relation affected by ice Dec. 11 to Feb. 9; discharge based on gage heights corrected for effect of ice by means of one discharge measurement, observer's notes, and weather records.

Monthly discharge of Kickapoo River at Gays Mills, Wis., for the year ending September 30, 1925

[Drainage area, 629 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	339	287	310	0.493	0.57
November	397	256	314	.499	.56
December	340	225	275	.437	.50
January	270	195	230	.366	.42
February	2,470	225	638	1.01	1.05
March	1,590	271	575	.914	1.05
April	438	256	302	.480	.54
May	260	211	237	.377	.43
June	2,470	197	695	1.10	1.23
July	2,380	241	646	1.03	1.19
August	1,280	211	303	.482	.56
September	1,700	211	423	.672	.75
The year	2,470	195	410	.652	8.85

TURKEY RIVER AT GARBER, IOWA

LOCATION.—In sec. 36, T. 92 N., R 4 W., at single-span highway bridge at Garber, Clayton County, 2,000 feet below mouth of Elk Creek.

DRAINAGE AREA.—1,530 square miles (measured on map issued by United States Geological Survey).

RECORDS AVAILABLE.—August 29, 1913, to November 30, 1916; May 14, 1919, to September 30, 1925.

GAGE.—Chain gage attached to downstream handrail of bridge; read by E. J. Prolow.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and mud; channel shifting. Right bank high and not subject to overflow; left bank is overflowed at stages above 13 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 24.7 feet at 3.30 a. m. June 15 (discharge, about 21,500 second-feet); minimum stage, 3.29 feet at 6 p. m. May 24 (discharge, 148 second-feet).

1913–1916; 1919–1925: Maximum stage recorded, 28.06 feet at 4.25 a. m. February 23, 1922 (discharge, about 26,600 second-feet); minimum discharge, September, 5–7, 1922 (discharge, 88 second-feet).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—An electric light plant and gristmill at Elkader probably cause a slight diurnal fluctuation.

ACCURACY.—Stage-discharge relation changed during high water in June. Rating curves fairly well defined between 200 and 11,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

The following discharge measurement was made:

May 6, 1925: Gage height, 3.49 feet; discharge, 207 second-feet.

Daily discharge, in second-feet, of Turkey River at Garber, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,030	475			270	355	290	228	720	690	305
2	895	355	320		290	355	290	255	780	455	305
3	715	290			332	290	290	578	780	510	305
4	715	355			270	310	270	400	660	540	270
5	500	310			270	240	228	500	630	430	288
6	525	270	510	3,620	310	310	180	500	480	380	288
7	355	290		1,840	310	290	190	310	720	3,640	270
8	450	290		1,920	310	310	202	332	1,200	3,550	305
9	270	270		3,620	450	310	240	310	850	1,430	322
10	355	270		2,410	290	270	270	355	600	850	340
11	310	270	370	1,760	450	290	255	2,320	660	570	360
12	400	270		1,230	605	270	240	4,120	1,060	600	405
13	355	290		715	500	270	255	6,510	720	1,750	340
14	290	310		578	355	255	228	9,040	920	780	255
15	290	290		550	578	270	240	10,500	750	660	270
16	310	378	270	550	500	270	270	1,230	720	540	255
17	310	290		605	605	228	240	9,040	540	540	240
18	355	310		605	3,320	270	215	4,270	510	540	240
19	290	450		355	1,090	290	190	2,150	570	600	225
20	355	310		355	770	290	170	1,590	750	455	340
21	355	310		355	895	240	170	1,350	660	480	270
22	500	500	220	355	770	240	180	1,270	600	380	255
23	475	355		378	715	355	170	690	430	455	210
24	378	475		332	660	355	150	4,670	570	360	210
25	400	525		355	500	270	170	1,200	540	405	225
26	378	425		400	450	578	170	990	455	360	270
27	270	228		400	425	240	190	920	570	340	288
28	1,230	290		425	332	310	190	920	920	380	288
29	425	250			332	270	180	920	600	380	255
30	400	240			500	255	170	780	690	380	1,510
31	475				500		160		920	322	

NOTE.—Discharge Nov. 29 to Dec. 25 estimated because of ice effect from weather records and by comparison with records of discharge of Upper Iowa and Maquoketa Rivers. No record Dec. 26 to Feb. 5. Braced figures give mean discharge for periods indicated.

Monthly discharge of Turkey River at Garber, Iowa, for the year ending September 30, 1925

[Drainage area, 1,530 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,230	270	465	0.304	0.35
November	525	228	331	.216	.24
December 1-25			[a]323		
February 5-28	3,620	332	1,030	.673	.58
March	3,320	270	579	.378	.44
April	578	228	295	.193	.22
May	290	150	215	.141	.16
June	10,500	228	2,270	1.48	1.65
July	1,200	430	696	.455	.52
August	3,640	322	766	.501	.58
September	1,510	210	324	.212	.24

[a] Estimated.

MAQUOKETA RIVER BELOW NORTH FORK OF MAQUOKETA RIVER, NEAR MAQUOKETA, IOWA

LOCATION.—In SW. ¼ NE. ¼ sec. 17, T. 84 N., R. 3 E., at Bridgeport Bridge, 1,200 feet above mouth of Mill Creek, 2 miles below mouth of North Fork of Maquoketa River, and 3 miles northeast of Maquoketa, Jackson County.

DRAINAGE AREA.—1,600 square miles (measured on base map of Iowa).

RECORDS AVAILABLE.—September 1, 1913, to September 30, 1925.

GAGE.—Water-stage recorder on downstream end of bridge pier; inspected by John Strodhoff.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Bed composed of sand and mud; shifting. Above 13-foot stage overflow occurs under a pile-trestle approach on left side. Control not well defined,

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.7 feet at noon June 17 (discharge, 19,100 second-feet); minimum stage, 1.26 feet at 7 a. m. November 28 (discharge, 153 second-feet).

1913–1925: Maximum stage recorded, 22.0 feet March 27, 1916 (discharge, 21,300 second-feet); minimum stage, that of November 28, 1924.

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Power plant on South Fork of Maquoketa River, 4 miles upstream from gage, causes marked diurnal fluctuation during all periods of low water.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve fairly well defined between 300 and 20,000 second-feet. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of gage-height graph except as explained in footnote to table of daily discharge. Records good.

Discharge measurements of Maquoketa River below North Fork of Maquoketa River, near Maquoketa, Iowa, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 15	2.41	621	May 5	2.39	565
Oct. 16	1.62	283	May 7	1.52	220

Daily discharge, in second-feet, of Maquoketa River below North Fork of Maquoketa River, near Maquoketa, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	702	512	372	-------	420	520	344	995	680	412
2	680	472	388	-------	448	500	492	860	620	384
3	660	512	404	-------	400	520	702	972	600	388
4	680	512	480	-------	316	496	540	1,040	512	344
5	560	448	1,910	-------	396	512	480	1,510	660	336
6	702	440	1,410	-------	520	484	480	1,080	492	300
7	680	560	1,080	-------	400	444	516	950	1,060	340
8	702	512	950	-------	504	440	540	928	1,260	420
9	620	520	680	838	500	440	408	950	905	1,020
10	640	540	540	792	472	372	416	1,510	860	660
11	580	540	428	540	468	408	328	1,410	620	604
12	580	512	480	620	404	384	368	2,310	882	528
13	640	460	520	905	396	372	660	3,360	725	320
14	660	448	480	905	468	424	660	2,110	540	432
15	540	504	480	792	480	420	3,140	1,810	544	460

Daily discharge, in second-feet, of Maquoketa River below North Fork of Maquoketa River, near Maquoketa, Iowa, for the year ending September 30, 1925—Contd.

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	600	480	512	680	504	416	14,600	1,130	560	428
17	520	496	480	1,040	484	380	18,000	928	488	432
18	520	500	472	1,860	528	400	12,000	792	472	352
19	520	432		3,600	584	416	5,150	680	472	368
20	600	456		2,060	516	420	2,210	725	448	232
21	560	480		1,310	504	440	2,010	725	328	352
22	480	480		950	492	460	2,640	702	380	420
23	452	448		905	488	460	1,810	702	500	320
24	432	448		882	580	416	1,560	540	380	316
25	512	432		770	560	416	2,360	528	420	320
26	484	408		725	560	404	3,080	600	424	360
27	516	404		580	540	428	1,910	560	428	312
28	520	392		600	504	448	1,260	620	412	372
29	440	360		540	520	244	1,220	480	324	332
30	448	340		660	520	292	995	560	276	1,410
31	440			420		308		640	372	

NOTE.—Gage not in operation Nov. 29, 30, and May 15; discharge estimated. No record Dec. 19 to Mar. 8.

Monthly discharge of Maquoketa River below North Fork of Maquoketa River, near Maquoketa, Iowa, for the year ending September 30, 1925

[Drainage area, 1,600 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	702	432	570	0.356	0.41
November	560	340	468	.292	.33
December 1-18	1,910	372	670	.419	.28
March 9-31	3,600	420	999	.625	.50
April	584	316	483	.302	.34
May	520	244	422	.264	.30
June	18,000	328	2,700	1.69	1.88
July	3,360	480	1,050	.657	.76
August	1,260	276	569	.356	.41
September	1,410	232	442	.276	.31

ROCK RIVER AT AFTON, WIS.

LOCATION.—On line between secs. 22 and 27, T. 2 N., R. 12 E., at highway bridge in Afton, Rock County, 9 miles above Illinois State line. Bass Creek enters from right three-fourths mile below station.

DRAINAGE AREA.—3,190 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—February 5, 1914, to September 30, 1925.

GAGE.—Chain gage fastened to downstream side of bridge; read by George Robb.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Banks medium high and will not be overflowed to any extent at flood stages; channel gravel and clean silt, practically permanent. Control not well defined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.04 feet at 5.10 p. m. February 23 (discharge, 4,720 second-feet); minimum stage, 0.25 foot at 6 p. m. June 10 (discharge, 314 second-feet).

1914–1925: Maximum stage recorded, 10.51 feet at noon March 26, 1918 (discharge, 12,700 second-feet); minimum stage, 0.08 foot at 6.40 a. m. December 9, 1922 (discharge, 274 second-feet; revised).

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—Operation of power plants at and above Janesville causes slight fluctuation at gage during low stages.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Open-water records good; winter records fair.

Discharge measurements of Rock River at Afton, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 21	2.52	1,320	Apr. 10	2.99	1,660	Sept. 4	0.33	333
Jan. 15	[a] 2.74	935	Aug. 21	1.14	641			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Rock River at Afton, Wis., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,560	824	1,280	640	640	1,860	2,620	2,890	557	518	557	363
2	1,160	928	1,280	640	825	2,350	2,620	2,710	557	518	557	360
3	1,040	875	1,350	640	825	1,940	2,530	2,440	518	518	557	358
4	1,040	983	1,420	640	730	1,860	2,620	2,440	639	557	481	356
5	875	1,040	1,350	685	930	1,860	2,260	2,350	518	557	597	353
6	928	928	1,280	730	1,560	1,860	2,100	2,180	398	518	518	557
7	1,100	1,220	1,160	730	1,280	1,780	1,860	2,020	368	597	597	518
8	1,350	1,100	1,280	640	1,420	1,700	1,860	1,940	481	597	983	481
9	1,420	1,100	983	730	2,350	1,780	1,860	1,940	353	728	775	518
10	1,040	928	1,220	730	2,180	1,780	1,700	1,630	340	728	683	446
11	1,220	1,160	1,280	640	2,350	1,700	1,560	1,560	446	639	683	446
12	983	1,160	1,160	730	2,530	1,630	1,420	1,560	518	557	824	639
13	1,160	1,420	1,040	825	2,710	1,780	1,420	1,490	446	597	683	518
14	1,220	1,420	1,220	730	2,800	1,940	1,350	1,490	413	518	775	481
15	1,040	1,420	1,280	825	2,990	1,700	824	1,160	557	481	683	597
16	1,160	1,350	985	825	2,990	1,700	928	683	518	557	639	557
17	1,100	1,350	1,040	930	2,990	1,940	928	639	824	683	597	481
18	1,160	1,490	1,100	730	2,890	2,350	983	824	775	597	683	413
19	928	1,420	1,040	825	2,800	2,350	1,350	824	639	518	597	413
20	983	1,350	1,040	875	2,800	2,260	1,100	683	639	597	597	368
21	1,160	1,420	930	875	2,800	2,350	1,220	824	597	597	557	481
22	1,100	1,420	1,040	825	3,390	2,620	1,350	824	597	557	557	446
23	1,160	1,420	930	730	4,300	2,890	1,860	597	639	557	446	518
24	1,100	1,490	930	775	3,290	2,890	1,700	928	597	639	446	446
25	1,100	1,420	825	640	2,990	2,890	2,100	728	728	518	446	518
26	1,040	1,280	825	825	2,350	2,890	2,800	728	597	481	446	518
72	875	1,160	775	775	2,990	2,890	2,990	683	557	518	413	518
28	1,040	1,100	685	730	2,350	2,800	2,890	597	597	446	446	518
29	1,100	1,160	640	730	-------	2,890	3,190	597	557	518	382	481
30	1,100	1,220	730	640	-------	2,890	3,090	557	557	481	368	557
31	683	-------	640	730	-------	2,800	-------	639	-------	557	366	-------

NOTE.—Stage-discharge relation affected by ice Nov. 29 to Dec. 3, Dec. 10 to Feb. 10, and Feb. 27 to Mar. 5; discharge based on gage heights corrected for effect of ice by means of one discharge measurement, observer's notes, and weather records. Gage-height record missing Aug. 29 to Sept. 4; discharge interpolated.

Monthly discharge of Rock River at Afton, Wis., for the year ending September 30, 1925

[Drainage area, 3,190 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,560	683	1,090	0.342	0.39
November	1,490	824	1,220	.382	.43
December	1,420	640	1,060	.332	.38
January	930	640	742	.233	.27
February	4,300	640	2,320	.727	.76
March	2,890	1,630	2,220	.696	.80
April	3,190	824	1,900	.596	.66
May	2,890	557	1,330	.417	.48
June	824	340	551	.173	.19
July	728	446	563	.176	.20
August	983	366	579	.182	.21
September	639	353	474	.149	.17
The year	4,300	340	1,160	.364	4.94

ROCK RIVER AT LYNDON, ILL.

LOCATION.—In sec. 21, T. 20 N., R. 5 E., at highway bridge in Lyndon, Whiteside County, 10 miles above Rock Creek.

DRAINAGE AREA.—9,010 square miles.

RECORDS AVAILABLE.—November 24, 1914, to September 30, 1925.

GAGE.—Chain gage attached to bridge; read by George Cady.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; practically permanent. Banks wooded.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17.7 feet at 5 p. m. February 24 (discharge estimated on account of backwater from ice, 39,000 second-feet); minimum stage, 4.00 feet at 5 p. m. September 2 (discharge, 790 second-feet).

1915–1925: Maximum stage recorded, 19.6 feet February 16, 1918 (discharge not determined because of backwater from ice). Maximum open-water stage recorded, 17.0 feet March 28, 1916 (discharge, 39,500 second-feet); minimum stage, 3.72 feet September 27, 1918 (discharge, 655 second-feet; revision of figure previously published).

DIVERSIONS.—Water diverted at Sterling Dam to feed Illinois & Mississippi Canal probably averages about 100 second-feet.

REGULATION.—Flow past gage is regulated by power plants at and above Sterling. Owing to such regulation mean of two daily readings of gage during low stages is probably somewhat less than true mean daily gage height.

ACCURACY.—Stage-discharge relation practically permanent except as affected by ice. Rating curve well defined. Gage read to hundredths twice daily. Diurnal fluctuation at gage rather large during low stages. Daily discharge ascertained by applying mean daily gage height to rating table, except as shown in footnote to table of daily discharge. Open-water records good except for extremely low stages, for which they are fair. Winter records and records for periods of missing gage height are poor.

The following discharge measurements were made:

April 14, 1925: Gage height, 6.09 feet; discharge, 3,560 second-feet.

September 9, 1925: Gage height, 4.17 feet; discharge, 892 second-feet.

Daily discharge, in second-feet, of Rock River at Lyndon, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,410	2,270	2,370		2,370	18,400	4,200	4,000	1,770	1,910	3,610	905
2	4,200	2,210	2,370		2,530	20,800	4,840	4,410	1,260	2,060	2,530	905
3	4,000	2,210	2,700		2,700	23,800	4,200	4,000	1,260	1,770	2,530	905
4	3,610	2,370	2,700		3,050	23,400	4,410	4,000	1,260	2,060	2,530	845
5	3,230	1,770	2,870		3,420	23,000	4,200	4,000	1,260	2,210	2,370	845
6	3,050	2,210	3,230		4,200	14,200	3,800	4,200	1,380	2,060	2,530	1,160
7	3,230		3,800		5,290	13,100	3,420	4,200	1,160	1,910	2,530	1,060
8	3,050		3,800		6,710	4,000	3,800	4,410	1,160	1,910	2,530	1,060
9	2,870		4,000		21,500	5,290	3,610	4,000	1,160	3,050	2,370	1,060
10	2,870		4,000		23,800	4,410	2,870	3,800	1,160	3,610	2,370	975
11	3,050		4,200		18,100	4,410	2,530	3,610	1,060	2,530	2,370	1,160
12	3,050		4,000		13,100	4,840	2,530	3,050	1,160	2,530	2,370	1,500
13	3,230		4,000		12,800	4,840	2,700	2,700	1,380	2,700	2,370	1,260
14	3,050				12,500	4,200	2,870	2,530	3,800	2,700	2,370	1,380
15	3,230	2,370			12,500	4,410	3,450	2,370	4,410	2,530	2,370	1,260
16	2,870		3,900	2,150	12,500	4,200	4,040	2,370	4,200	2,530	2,370	1,260
17	3,050				11,100	4,620	4,620	2,210	4,000	2,530	2,370	1,380
18	3,050				10,300	4,690	4,020	2,060	5,060	2,530	2,210	1,380
19	3,050				10,000	4,770	3,420	1,500	4,410	2,530	2,210	1,380
20	3,050				9,770	4,840	3,510	1,770	3,800	2,530	2,060	1,260
21	2,700				9,240	4,840	3,610	1,910	3,230	2,530	2,060	1,380
22	2,700				11,900	6,470	3,700	2,060	2,870	2,530	1,910	1,630
23	2,870	2,370			18,100	6,230	3,800	1,770	2,370	2,530	1,910	1,630
24	2,700	2,210			33,800	4,840	4,000	1,770	2,210	2,530	2,060	1,260
25	2,700	2,530			35,800	4,620	4,100	1,630	2,060	1,910	1,630	1,160
26	2,370	2,370	2,750		20,100	4,200	4,200	1,500	4,620	1,500	1,910	1,260
27	2,370	2,370			13,300	4,620	4,410	1,770	5,060	1,380	1,500	1,260
28	2,530	2,530			15,400	5,290	4,200	1,770	3,050	1,260	1,630	1,500
29	2,470	2,700				4,200	4,620	1,770	2,370	1,160	1,160	975
30	2,400	2,210				4,620	4,200	1,910	2,210	1,060	1,260	1,380
31	2,340	-------				4,620	-------	1,770	-------	2,370	975	-------

NOTE.—Stage-discharge relation affected by ice Dec. 14 to Feb. 8, Feb. 22-25, Feb. 28 to Mar. 5; discharge estimated from gage heights, weather records, and observer's notes. Gage not read and discharge estimated Oct. 29 to Nov. 1, Nov. 7-22, Mar. 18, 19, Apr. 15, 16, 18, 20-22, 25, June 8-13, 15-20, 22-27, 29, 30, July 7-10, July 27 to Aug. 1, Aug. 14, 15, and 17-20.

Monthly discharge of Rock River at Lyndon, Ill., for the year ending September 30, 1925

[Drainage area, 9,010 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	4,410	2,340	3,010	0.334	0.38
November	----------	----------	2,340	.260	.29
December	----------	2,370	3,280	.364	.42
January	----------	----------	2,150	.239	.28
February	35,800	2,370	12,700	1.41	1.47
March	23,800	4,200	8,090	.898	1.04
April	4,840	2,530	3,800	.422	.47
May	4,410	1,500	2,730	.303	.35
June	5,060	1,060	2,540	.282	.31
July	3,610	1,060	2,220	.246	.28
August	3,610	975	2,160	.240	.28
September	1,630	845	1,210	.134	.15
The year	35,800	845	3,800	.422	5.72

PECATONICA RIVER AT FREEPORT, ILL.

LOCATION.—In sec. 32, T. 27 N., R. 8 E., at highway bridge on Hancock Avenue, Freeport, Stephenson County, 2 miles above mouth of Yellow Creek.

DRAINAGE AREA.—1,330 square miles.

RECORDS AVAILABLE.—September 11, 1914, to September 30, 1925.

GAGE.—Chain gage attached to upstream side of bridge; read by W. C. Krueger.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Bed composed of sand and silt; somewhat shifting. Left bank of medium height and at stages above 17 feet part of flow passes over left bank and through East Freeport.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 14.28 feet at 8 a. m. February 24 (discharge, 4,180 second-feet); minimum stage, 3.40 feet at 5 p. m. May 25 (discharge, 288 second-feet).

1914–1925: Maximum stage recorded, 19.4 feet March 28, 1916 (discharge, 17,000 second-feet); minimum discharge, 200 second-feet December 14, 1917.

ICE.—Stage-discharge relation affected by ice.

REGULATION.—A dam and power plant three-fourths mile upstream regulates flow past gage. Only slight diurnal fluctuation is noticeable.

ACCURACY.—Stage-discharge relation changed materially during year, probably in February, also slightly in June. Rating curves fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating tables except for period of ice effect and February 10–20, when shifting-control method was used. Owing to uncertainty of date of shift records October 1 to March 31 may be poor. Records April 1 to September 30 are good.

The following discharge measurements were made:

April 15, 1925: Gage height, 4.41 feet; discharge, 453 second-feet.

September 10, 1925: Gage height, 4.00 feet; discharge, 348 second-feet.

Daily discharge, in second-feet, of Pecatonica River at Freeport, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	815	585	565		645	1,160	550	490	362	480	730	317
2	815	625	625		955	830	530	470	346	460	730	317
3	770	665	665		1,160	710	530	470	331	440	660	317
4	748	645	705		1,210	650	510	450	288	560	520	317
5	725	645	1,160		1,380	590	470	431	362	755	440	317
6	748	645	1,710		2,000	470	470	413	395	580	348	332
7	705	905	1,870		2,280	570	470	413	362	520	420	332
8	705	882	1,810		2,350	550	470	413	331	460	1,570	332
9	725	1,030	1,130		3,320	550	470	413	316	1,300	1,450	332
10	725	860	1,060		3,540	780	490	395	316	2,360	980	332
11	705	792	882		3,520	1,030	450	378	316	1,600	660	332
12	705	748	860		3,260	930	450	378	346	805	580	460
13	705	705	882		3,320	780	450	378	362	540	520	480
14	665	705	838		2,680	690	431	378	378	580	420	500
15	685	725	815		1,670	610	450	378	610	640	440	401
16	685	705	770	640	1,490	490	413	362	930	540	420	317
17	665	725	685		1,030	955	413	413	1,460	540	420	332
18	685	725	685		880	1,670	431	362	1,340	540	401	317
19	685	725			710	2,480	1,130	362	1,080	440	383	332
20	665	685			670	2,730	730	378	930	620	383	348
21	645	685			650	2,880	570	362	730	1,180	401	302
22	685	685	630		1,460	1,850	490	346	650	1,060	440	302
23	665	685			3,450	1,280	470	362	530	680	365	317
24	665	645			4,090	855	530	362	470	440	348	302
25	645	665			3,200	755	470	302	650	440	332	317
26	645	665			1,820	730	450	331	2,680	420	348	317
27	645	685			1,550	690	590	346	2,930	365	332	317
28	685	705	585		1,400	650	550	346	1,480	348	317	332
29	645	645			-------	610	490	346	830	348	317	317
30	625	565			-------	570	510	316	560	348	317	383
31	565	-------			-------	530	-------	331	-------	520	317	------

NOTE.—Stage-discharge relation affected by ice Dec. 19 to Feb. 5; discharge estimated from gage heights, observer's notes, and climatic record. Braced figures give mean discharge for periods indicated.

Monthly discharge of Pecatonica River at Freeport, Ill., for the year ending September 30, 1925

[Drainage area, 1,330 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	815	565	692	0.520	0.60
November	1,030	565	712	.535	.60
December	1,870	----------	827	.622	.72
January	----------	----------	640	.481	.55
February	4,090	645	1,990	1.50	1.56
March	2,880	470	988	.743	.86
April	1,130	413	514	.386	.43
May	490	302	383	.288	.33
June	2,930	288	756	.568	.63
July	2,360	348	674	.507	.58
August	1,570	317	526	.395	.46
September	500	302	342	.257	.29
The year	4,090	288	745	.560	7.61

SUGAR RIVER NEAR BRODHEAD, WIS.

LOCATION.—In sec. 26, T. 2 N., R. 9 E., at highway bridge 2 miles southwest of Brodhead, Green County, 2 miles above Jordan Creek, 4 miles below Little Jordan Creek, and 12 miles above Illinois State line.

DRAINAGE AREA.—529 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—February 7, 1914, to September 30, 1925.

GAGE.—Chain gage attached to upstream side of bridge; read by Arthur Christenson.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; not permanent. Control poorly defined. Right bank of medium height and is seldom overflowed; left bank at gage overflowed at stage of 6.8 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.40 feet at 8 a. m. February 10 (discharge, 2,150 second-feet); minimum stage, 0.75 foot at 5 p. m. September 20 (discharge, 71 second-feet).

1914–1925: Maximum stage recorded, 11.4 feet September 13, 1915 (discharge, about 13,000 second-feet); minimum discharge, about 47 second-feet August 26, 1923.

REGULATION.—A power plant at Brodhead, 2 miles above station, causes slight fluctuation of stage during low water, but the pondage is small, and it is believed that the monthly discharge represents the natural flow quite accurately. The difference between morning and evening gage readings is seldom more than 0.2 foot. There are two power plants farther upstream, but they probably have no effect on the discharge at the gage.

ACCURACY.—Stage-discharge relation not permanent; affected by ice and by shifting control. Standard rating curve fairly well defined. Gage read to quarter-tenths twice daily. Daily discharge ascertained by shifting-control method. Records fair.

Discharge measurements of Sugar River near Brodhead, Wis., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 21	1.66	272	Apr. 9	1.51	224
Jan. 14	[a] 2.11	144	Aug. 21	1.28	183

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Sugar River near Brodhead, Wis. for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	271	216	190	110	190	270	285	243	128	183	183	125
2	257	178	215	130	205	255	257	230	152	173	148	130
3	257	243	230	145	215	230	257	203	185	203	243	90
4	230	230	285	165	270	215	243	230	183	164	123	164
5	203	230	315	180	360	216	243	164	171	159	141	203
6	285	216	330	145	850	230	243	230	150	203	157	102
7	257	257	415	180	1,050	257	216	164	148	188	216	134
8	243	271	518	180	1,370	203	216	203	157	188	584	168
9	257	330	540	180	2,080	257	230	164	150	230	800	203
10	257	346	346	130	2,150	362	230	130	152	257	630	216
11	230	379	285	130	1,960	346	190	230	143	285	362	257
12	203	315	346	190	1,200	315	190	150	139	203	285	145
13	230	300	257	165	800	243	257	178	176	161	188	125
14	271	285	315	155	630	190	243	159	123	154	243	164
15	230	285	216	155	454	188	230	166	216	157	164	141
16	230	271	257	130	315	257	230	193	271	216	110	104
17	230	190	245	155	243	257	243	10	285	185	257	102
18	257	257	230	145	330	653	203	180	243	136	203	139
19	190	243	205	155	415	850	243	203	230	148	161	161
20	243	257	215	130	285	1,050	230	143	183	285	203	84
21	230	257	205	155	257	950	257	136	113	285	185	154
22	271	243	180	145	379	676	216	141	203	315	203	171
23	257	285	180	145	630	496	630	173	185	257	117	188
24	230	257	180	155	630	346	676	102	396	150	148	168
25	257	257	165	145	584	346	584	130	415	190	145	132
26	166	216	155	145	330	362	584	143	330	110	121	143
27	216	230	145	155	300	330	379	141	285	171	178	130
28	230	215	110	180	285	300	285	134	203	145	157	145
29	243	203	155	155	-------	271	243	168	190	154	180	185
30	203	166	145	165	-------	285	257	150	203	134	90	257
31	230	-------	120	165	-------	257	-------	115	-------	185	145	-------

NOTE.—Stage-discharge relation affected by ice Nov. 28, Dec. 1-2, Dec. 17 to Feb. 7, and Feb. 27 to Mar. 4; discharge based on gage heights corrected for ice effect by means of one discharge measurement, observer's notes, and weather records.

Monthly discharge of Sugar River near Brodhead, Wis., for the year ending September 30, 1925

[Drainage area, 529 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	285	166	238	0.450	0.52
November	379	166	254	.480	.54
December	540	110	248	.469	.54
January	190	110	154	.291	.34
February	2,150	190	670	1.27	1.32
March	1,050	188	370	.699	.81
April	676	190	293	.554	.62
May	243	102	166	.314	.36
June	415	113	204	.386	.43
July	315	110	193	.365	.42
August	800	90	228	.431	.50
September	257	84	154	.291	.32
The year	2,150	84	261	.493	6.72

SOUTH BRANCH OF KISHWAUKEE RIVER AT DE KALB, ILL.

LOCATION.—In sec. 22, T. 40 N., R. 4 E., at Lincoln Way highway bridge in De Kalb, De Kalb County.

DRAINAGE AREA.—70 square miles (measured on United States Geological Survey map.)

RECORDS AVAILABLE.—July 17 to September 30, 1925.

GAGE.—Chain gage on downstream handrail of bridge; read by Robert Russel.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of earth and gravel; fairly permanent. Banks wooded.

EXTREMES OF DISCHARGE.—Maximum stage during period July 17 to September 30, 0.73 foot July 21 (discharge, 1.0 second-foot); minimum stage, 0.50 foot September 28 and 29 (discharge, 0.1 second-foot.)

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good, except for period August 23 to September 7, when gage was not read and discharge was estimated.

The following discharge measurements were made:

June 9, 1925: Gage height, 0.75 foot; discharge, 1.32 second-feet.

July 17, 1925: Gage height, 0.70 foot; discharge, 0.67 second-foot.

September 8, 1925: Gage height, 0.62 foot; discharge, 0.23 second-foot.

Daily discharge, in second-feet, of South Branch of Kishwaukee River at De Kalb, Ill., for the year ending September 30, 1925

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1		0.7		11		0.6	0.5	21	1.0	0.3	0.2
2		.6		12		.6	.4	22	.9	.3	.2
3		.3		13		.6	.4	23	.7		.2
4		.3	0.3	14		.6	.6	24	.7		.2
5		.4		15		.3	.3	25	.6		.2
6		.4		16		.3	.3	26	.6	.3	.2
7		.6		17	0.7	.3	.2	27	.6		.2
8		.6	.3	18	.7	.3	.2	28	.5		.1
9		.6	.2	19	.7	.4	.3	29	.5		.1
10		.6	.3	20	.9	.4	.2	30	.4		.4
								31	.7		

Monthly discharge of South Branch of Kishwaukee River at De Kalb, Ill., for the year ending September 30, 1925

[Drainage area, 70 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
July 17–31	1.0	0.4	0.68	0.010	0.01
August	.7	.3	.41	.006	.01
September	.6	.1	.28	.004	.00

IOWA RIVER AT MARSHALLTOWN, IOWA

LOCATION.—In sec. 23, T. 84 N., R. 18 W., at Third Avenue Bridge, 1 mile north of Marshalltown, Marshall County. Asher Creek, 1 mile above station, and Burnett Creek, 1 mile below, enter from left.

DRAINAGE AREA.—1,380 square miles (measured on base map of Iowa).

RECORDS AVAILABLE.—May 21, 1915, to September 30, 1925. February 23, 1903, to August 8, 1903, at old dam site 1 mile above present station.

GAGE.—Chain gage attached to downstream handrail of bridge 60 feet from right pier; read by B. S. Beehrle.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Gravel bar forms control at extremely low water. Bottom composed of mud and sand, subject to change. Banks subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.55 feet at 6.10 p. m. June 18 (discharge, 2,480 second-feet); minimum stage, 1.20 feet at 5.15 p. m. September 11 (discharge, 35 second-feet).

1915–1925: Maximum stage recorded, 17.74 feet June 4, 1918 (discharge, 42,000 second-feet); minimum discharge, about 2 second-feet, November 24, 1917.

ICE.—Stage-discharge relation affected by ice; observations discontinued during winter.

REGULATION.—Operation of a power plant at Eldora causes slight diurnal fluctuation during low water.

ACCURACY.—Stage-discharge relation changed during winter. Rating curves fairly well defined throughout. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Iowa River at Marshalltown, Iowa, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
May 4	1.96	138	Aug. 10	1.78	120
June 26	3.08	492	Sept. 19	1.39	57

Daily discharge, in second-feet, of Iowa River at Marshalltown, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	500	210	468	330	192	88	398	72	60
2	535	210	415	315	205	155	380	65	50
3	555	222	398	300	192	680	362	60	50
4	518	235	380	285	145	800	380	50	45
5	465	250	345	285	135	880	345	50	45
6	518	265	315	285	145	760	315	45	50
7	575	235	285	285	145	760	285	380	45
8	575	222	270	300	145	800	255	540	50
9	500	235	285	315	135	760	230	230	45
10	395	250	330	300	125	760	218	95	40
11	395	265	345	315	125	720	218	88	35
12	342	235	362	330	135	540	218	300	145
13	360	235	380	330	145	398	205	242	135
14	310	265	415	300	205	380	218	168	125
15	555	280	485	285	205	502	205	415	115
16	395	280	560	270	145	1,240	145	135	105
17	360	265	640	255	145	2,090	135	135	88
18	342	250	620	242	135	2,340	145	145	72
19	378	280	640	230	125	2,440	180	205	50
20	575	265	680	218	105	2,440	192	205	50
21	795	250	720	205	95	2,180	155	135	55
22	775	235	720	192	88	2,140	135	125	50
23	695	222	720	205	80	2,090	125	105	55
24	310	197	680	218	88	1,860	95	88	45
25	265	210	640	230	95	1,190	95	80	72
26	295	222	600	230	95	450	88	72	80
27	310	235	560	218	105	520	105	65	88
28	295	210	415	205	88	560	95	60	95
29	280	197	398	192	88	600	88	65	115
30	265	190	380	180	72	640	80	65	800
31	250	-------	362	-------	80	-------	72	60	-------

Monthly discharge of Iowa River at Marshalltown, Iowa, for the year ending September 30, 1925

[Drainage area, 1,380 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	795	250	441	0.320	0.37
November	280	190	237	.172	.19
March	720	270	478	.346	.40
April	330	180	262	.190	.21
May	205	72	129	.093	.11
June	2,440	88	1,060	.768	.86
July	398	72	199	.144	.17
August	540	45	147	.106	.12
September	800	35	95.2	.069	.08

IOWA RIVER AT IOWA CITY, IOWA

LOCATION.—In sec. 15, T. 79 N., R. 6 W., 200 feet below highway bridge in Iowa City, Johnson County, and 100 feet below Iowa State University hydraulic laboratory.

DRAINAGE AREA.—3,140 square miles (measured on base map of Iowa).

RECORDS AVAILABLE.—November 19, 1921, to September 30, 1925, at present site; from October 30, 1913, to November 18, 1921, at highway bridge 500 feet below Chicago, Rock Island & Pacific Railroad; June 1, 1903, to July 21, 1906, at highway bridge 200 feet above present site.

GAGE.—Gurley 7-day water-stage recorder installed November 19, 1921; inspected by Floyd A. Nagler.

DISCHARGE MEASUREMENTS.—Made from cable 75 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand. Control at Chicago, Rock Island & Pacific Railroad bridge is fairly well defined. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.47 feet at 11 a. m. March 21 (discharge, 1,590 second-feet); minimum stage, −0.05 foot at 5 p. m. September 3 (practically no discharge).

1903–1906; 1913–1925: Maximum stage recorded, 19.45 feet June 7, 1918 (discharge, 36,200 second-feet); minimum discharge, that of September 3, 1925, as given above. Stage refers to chain-gage station.

REGULATION.—Considerable diurnal fluctuation occurs at low stages, owing to operation of power plant above station.

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined above 100 second-feet. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph except as explained in footnote to table of daily discharge. Records excellent.

The following discharge measurements were made:

October 17, 1924: Gage height 2.08 feet; discharge, 806 second-feet.

March 30, 1925: [7] Gage height, 2.18 feet; discharge, 846 second-feet.

April 3, 1925: [7] Gage height, 1.88 feet; discharge, 707 second-feet.

Daily discharge, in second-feet, of Iowa River at Iowa City, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	970	598	338	415	436	525	765	454	290	665	218	134
2	1,050	575	366	349	253	538	715	458	338	665	222	113
3	1,140	620	378	366	309	517	740	366	1,330	642	154	110
4	1,110	620	570	449	362	529	690	466	865	510	150	110
5	970	620	1,110	415	436	502	642	342	557	510	140	122
6	970	620	970	374	428	522	575	410	330	530	175	222
7	970	665	1,020	419	445	665	598	358	366	598	206	77
8	1,020	620	1,190	473	428	715	690	410	506	765	182	434
9	1,140	510	815	419	1,090	690	598	270	374	815	282	442
10	970	575	620	386	755	715	620	398	330	575	147	310
11	932	620	403	466	732	715	665	354	210	464	290	342
12	890	620	341	366	577	620	620	338	370	450	458	218
13	865	575	521	333	474	890	598	314	422	314	516	250
14	840	530	563	399	555	1,020	620	306	378	518	450	150
15	815	575	440	345	499	765	620	278	506	302	378	206
16	740	575	547	436	499	840	544	314	398	362	370	214
17	740	575	581	305	530	915	566	326	498	266	406	203
18	665	620	525	411	483	815	518	290	490	290	294	246
19	740	620	949	305	517	815	430	314	330	310	378	154
20	740	665	621	383	529	1,140	486	314	815	330	242	210
21	690	620	487	419	790	1,510	494	262	1,190	306	330	77
22	665	620	445	432	765	1,450	482	270	1,190	270	278	113
23	665	526	407	419	998	1,360	518	290	1,080	290	322	125
24	642	557	399	453	998	1,220	598	370	1,140	294	290	131
25	597	530	383	474	765	1,160	562	290	1,160	222	147	134
26	510	534	399	407	737	1,080	566	210	998	258	110	147
27	575	498	428	362	395	1,020	510	250	765	246	134	48
28	575	514	453	345	517	970	530	270	715	186	210	65
29	575	358	449	399	-------	890	482	310	690	172	154	125
30	598	294	436	395	-------	865	486	178	665	182	186	462
31	598	-------	407	366	-------	840	-------	250	-------	274	122	-------

NOTE.—Stage-discharge relation affected by ice Dec. 11 to Feb. 20 and Feb. 26 to Mar. 4; discharge estimated from records of operation for power plant just above the gaging station.

[7] Measurement made by graduate students in hydraulics of University of Iowa.

Monthly discharge of Iowa River at Iowa City, Iowa, for the year ending September 30, 1925

[Drainage area, 3,140 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,140	510	805	0.256	0.30
November	665	294	568	.181	.20
December	1,190	338	566	.180	.21
January	474	305	396	.126	.15
February	1,090	253	582	.186	.19
March	1,510	502	865	.275	.32
April	765	430	584	.186	.21
May	466	178	324	.103	.12
June	1,330	210	627	.200	.22
July	815	172	406	.129	.15
August	516	110	256	.082	.09
September	442	48	190	.060	.07
The year	1,510	48	514	.164	2.23

IOWA RIVER AT WAPELLO, IOWA

LOCATION.—In sec. 27, T. 74 N., R. 3 W., at highway bridge half a mile from railroad station at Wapello, Louisa County, and 20 miles from mouth of river. No important tributaries enter near station.

DRAINAGE AREA.—12,480 square miles (measured on base map of Iowa).

RECORDS AVAILABLE.—February 26, 1915, to September 30, 1925.

GAGE.—Chain gage near center of first span from right abutment; read by C. W. Warren.

DISCHARGE MEASUREMENTS.—Made from bridge to which gage is attached.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; subject to shift. Right bank high and will not be overflowed. Levee along left bank; broke during flood of June, 1918.

EXTREMES OF DISCHARGE.—Maximum open-water stage recorded during year, 5.10 feet at 6 p. m. June 21 (discharge, 12,500 second-feet); minimum stage recorded −0.65 foot September 3 (discharge, 700 second-feet).

1915–1925: Maximum stage recorded, 14.94 feet at 6 p. m. June 8, 1918 (discharge, 63,100 second-feet); minimum discharge recorded, about 400 second-feet December 15–17, 1916.

The flood of June, 1892, was probably much higher than the flood of 1918.

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve fairly well defined. Gage read to half-tenths once daily. Daily discharge obtained by applying daily gage height to rating table. Open-water records good; winter records fair.

The following discharge measurements were made:

April 17, 1925: Gage height, 1.13 feet; discharge, 2,330 second-feet.

September 4, 1925: Gage height, −0.44 foot; discharge, 912 second-feet.

Daily discharge, in second-feet, of Iowa River at Wapello, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,590	3,340	2,840			3,170	4,040	3,000	1,240	4,400	1,420	940
2	4,400	3,340	2,380			2,840	3,680	3,000	2,460	4,040	1,240	940
3	5,600	3,340	2,230			2,840	3,680	2,840	6,040	4,040	1,190	700
4	5,600	3,340	3,000			3,680	3,510	2,680	8,540	3,170	1,140	820
5	5,390	3,340				4,040	3,510	2,380	5,600	3,170	1,090	780
6	5,180	3,340		2,100	2,400	4,400	3,340	2,380	3,680	3,000	1,090	780
7	4,980	3,680	4,400			3,680	3,340	2,080	3,000	4,040	1,240	780
8	5,180	4,040				3,680	3,170	2,080	3,000	4,220	1,360	780
9	5,180	3,860				3,680	3,170	2,080	2,680	3,510	1,800	1,300
10	5,390	3,680				3,860	3,340	2,080	2,080	3,340	1,420	2,380
11	4,980	3,680	3,000			3,860	3,170	1,800	1,800	3,000	1,420	2,380
12	4,780	3,680	3,680			3,860	3,000	1,800	1,800	2,680	1,480	2,380
13	4,590	3,510	3,860			4,040	3,000	1,800	2,230	2,680	3,680	2,080
14	4,220	3,510	3,000			5,180	3,000	1,670	2,380	2,380	3,170	1,670
15	4,220	3,340	2,840			4,980	2,840	1,670	2,080	2,380	2,680	1,670
16	4,040	3,170	2,840	1,900	5,200	4,780	2,680	1,940	2,680	2,380	1,940	2,080
17	4,040	3,170	2,680			4,980	2,680	2,080	3,170	2,080	1,670	1,540
18	3,860	3,340	2,680			5,180	2,530	1,800	6,980	1,940	1,540	1,360
19	3,860	3,170	2,680			5,180	3,340	1,800	10,300	1,800	1,540	1,360
20	3,860	3,170				5,180	2,680	1,670	11,500	1,670	1,480	1,240
21	3,680	3,170				5,600	2,680	1,670	12,500	1,600	1,670	1,090
22	3,680	3,170				6,500	2,680	1,480	10,300	1,600	1,800	900
23	3,510	3,340				6,500	2,530	1,480	7,480	1,540	1,480	900
24	3,340	3,340				6,270	3,170	1,480	6,500	1,420	1,360	1,090
25	3,340	3,340	2,700		4,400	5,820	4,220	1,480	6,740	1,420	1,140	1,090
26	3,340	3,340		2,000		5,600	4,040	1,420	6,270	1,420	1,140	1,190
27	3,340	3,170				5,390	3,510	1,360	5,600	1,420	1,090	1,190
28	3,340	3,170				4,980	3,170	1,240	5,600	1,540	990	1,190
29	3,340	3,170				4,780	3,340	1,240	5,600	1,540	990	1,090
30	3,170	3,170				4,590	3,000	1,240	4,780	1,540	940	1,240
31	3,340	-------				4,400	-------	1,240	-------	1,540	940	------

NOTE.—Stage-discharge relation affected by ice Dec. 5-10 and Dec. 20 to Feb. 28; discharge estimated from a study of gage heights, weather records, and discharge of Cedar River at Cedar Rapids and Iowa River at Iowa City. Braced figures give mean discharge for periods indicated.

Monthly discharge of Iowa River at Wapello, Iowa, for the year ending September 30, 1925

[Drainage area, 12,480 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	5,600	3,170	4,240	0.339	0.39
November	4,040	3,170	3,380	.271	.30
December	3,860	----------	3,110	.249	.29
January	----------	----------	2,000	.160	.18
February	----------	----------	3,970	.318	.33
March	6,500	2,840	4,630	.370	.43
April	4,200	2,530	3,200	.256	.29
May	3,000	1,240	1,870	.150	.17
June	12,500	1,240	5,150	.412	.46
July	4,400	1,420	2,470	.198	.23
August	3,680	940	1,520	.122	.14
September	2,380	700	1,300	.104	.12
The year	12,500	700	3,060	.245	3.33

CEDAR RIVER AT JANESVILLE, IOWA

LOCATION.—In sec. 35, T. 91 N., R. 14 W., at highway bridge in Janesville, Bremer County, and 3 miles above junction with Shellrock River.

DRAINAGE AREA.—1,660 square miles (measured on base map of Iowa).

RECORDS AVAILABLE.—April 27, 1905, to September 30, 1906; May 28, 1915, to September 30, 1925.

GAGE.—Chain gage attached to downstream handrail of middle span of highway bridge; read by Mrs. Emma Cameron.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. The remains of an old milldam forms control; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.60 feet at 6 p. m. June 15 (discharge, 8,970 second-feet); minimum stage, 1.30 feet at 5 p. m. September 6 and 15 (discharge, 47 second-feet).

1905–1906; 1915–1925: Maximum discharge, estimated 27,000 second-feet May 29, 1921; minimum discharge, 28 second-feet October 21, 1922.

ICE.—Stage-discharge relation seriously affected by ice. Observation discontinued during winter.

REGULATION.—There is slight diurnal fluctuation of stage during low-water periods, owing to operation of power plant at Waverly, 9 miles above station.

ACCURACY.—Stage-discharge relation probably permanent during year. Rating curve well defined between 100 and 5,000 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

The following discharge measurements were made:

October 14, 1924: Gage height, 2.12 feet; discharge, 435 second-feet.

June 3, 1925: Gage height, 2.15 feet; discharge, 481 second-feet.

Daily discharge, in second-feet, of Cedar River at Janesville, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,260	300	-------	414	300	168	103	168	145
2	1,210	420	-------	360	270	190	122	168	168
3	970	390	-------	414	240	360	103	145	103
4	970	420	-------	390	215	190	168	122	88
5	925	354	-------	390	240	186	145	140	72
6	360	414	-------	360	168	122	103	145	47
7	560	354	790	414	145	72	360	300	100
8	630	360	835	390	168	88	354	190	145
9	455	354	790	330	168	100	330	168	122
10	420	240	560	330	186	103	294	186	100
11	455	330	925	240	190	145	240	122	72
12	490	455	925	186	145	168	294	145	70
13	455	240	710	168	145	6,840	270	168	70
14	455	215	560	330	145	8,670	190	140	60
15	270	215	925	354	186	8,970	240	122	47
16	300	190	1,860	330	190	3,630	168	145	72
17	270	420	790	300	294	2,530	215	72	103
18	235	240	835	270	215	2,160	240	300	240
19	190	190	710	270	168	1,810	190	235	360
20	215	240	750	240	168	2,040	235	103	300
21	190	215	750	525	168	1,810	240	215	294
22	186	240	710	490	145	1,370	360	145	240
23	270	300	630	525	186	1,370	330	72	190
24	300	270	710	595	145	3,060	455	60	145
25	360	240	750	490	186	1,700	354	72	103
26	330	168	420	455	168	790	240	60	88
27	300	190	525	330	140	790	270	103	145
28	330	215	490	300	72	560	145	140	122
29	354	240	420	330	88	630	168	122	103
30	300	168	455	300	103	490	122	140	630
31	330	-------	490	-------	145	-------	145	145	-------

NOTE.—No record Dec. 1 to Mar. 6.

Monthly discharge of Cedar River at Janesville, Iowa, for the year ending September 30, 1925

[Drainage area, 1,660 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,260	186	463	0.279	0.32
November	455	168	286	.172	.19
March 7-31	1,860	420	733	.442	.41
April	595	168	361	.217	.24
May	300	72	177	.107	.12
June	8,970	72	1,704	1.02	1.14
July	455	103	232	.140	.16
August	300	60	147	.088	.10
September	630	47	151	.090	.10

CEDAR RIVER AT CEDAR RAPIDS, IOWA

LOCATION.—In sec. 28, T. 83 N., R. 7 W., in central part of Cedar Rapids, Linn County, 1,000 feet above Eighth Avenue Bridge and half a mile below dam.

DRAINAGE AREA.—6,640 square miles (measured on base map of Iowa).

RECORDS AVAILABLE.—February 14, 1903, to September 30, 1925.

GAGE.—Gurley water-stage recorder; inspected by R. S. Toogood. Elevation of zero of gage, from Northwestern Railroad levels, 723.03 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from upstream side of Eighth Avenue Bridge.

CHANNEL AND CONTROL.—Bed composed of rock and gravel, free from vegetation and practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.00 feet at 9 a. m. June 18 (discharge, 12,800 second-feet); minimum stage, 2.44 feet at 3 p. m. September 12 (discharge, 522 second-feet).

1903–1925: Maximum stage recorded, 17.2 feet April 1, 1912, and March 26, 1917 (discharge, 54,100 second-feet); minimum discharge, 190 second-feet September 9, 1921.

Greatest known flood probably occurred in June, 1851, when the maximum stage was about 20 feet (discharge, about 65,000 second-feet).

ICE.—Stage-discharge relation affected by ice during extremely cold weather. The swift current and proximity to power plant keeps the river open at other times.

REGULATION.—Power plant half a mile above gage causes marked diurnal fluctuation during all periods of low water.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined above 800 second-feet. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph except as explained in footnote to table of daily discharge. Records good, except for periods when stage-discharge relation was affected by ice, for which they are fair.

The following discharge measurement was made:

May 8, 1925: Gage height, 3.31 feet; discharge, 1,570 second-feet.

Daily discharge, in second-feet, of Cedar River at Cedar Rapids, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,430	1,710	850		1,050	1,570	2,280	1,620	930	2,610	954	760
2	3,430	1,750	1,060		1,120	1,570	2,370	1,440	1,080	2,370	1,030	782
3	3,290	1,750	1,110		1,160	1,490	2,110	1,610	1,430	2,170	990	760
4	3,150	1,660	1,440		1,160	1,410	1,950	1,550	1,250	2,190	966	760
5	2,870	1,750	1,910	1,070	1,190	1,410	1,850	1,540	1,400	1,990	990	793
6	2,740	1,770	1,950		1,260	1,570	1,950	1,440	1,290	1,830	966	760
7	2,590	1,790	1,950		1,190	1,750	1,850	1,340	1,120	1,890	1,000	815
8	2,540	1,540	1,970		1,410	2,370	1,810	1,260	1,090	1,830	1,130	1,000
9	2,560	1,520	1,700		1,950	2,370	1,810	1,160	1,120	1,710	1,180	1,250
10	2,350	1,620	1,120		2,150	2,370	1,810	1,260	1,090	1,710	1,180	1,020
11	2,300	1,680	990		3,430	2,740	1,890	1,230	1,090	1,680	1,190	1,060
12	2,150	1,640	954		3,710	3,150	1,750	1,220	1,080	1,640	1,990	966
13	2,300	1,700	1,260		4,000	3,010	1,700	1,250	1,200	1,610	1,590	882
14	1,950	1,750	1,770		4,290	2,740	1,810	1,190	1,290	1,590	1,290	782
15	1,950	2,150	1,870		4,000	2,590	1,610	1,190	3,320	1,440	1,160	793
16	1,910	1,770	1,540		3,430	2,220	1,610	1,260	6,440	1,430	1,080	730
17	1,910	1,570	1,340		3,150	2,240	1,640	1,150	11,100	1,300	1,030	760
18	1,890	1,430	1,200	1,000	2,610	2,390	1,740	1,120	12,200	1,360	966	760
19	1,850	1,770	1,080		2,370	3,260	1,850	1,120	9,720	1,380	930	680
20	1,790	1,520	1,000		1,950	3,860	1,660	1,110	7,240	1,400	918	804
21	1,810	1,570			1,950	4,140	1,700	1,040	5,810	1,260	918	771
22	1,770	1,610			1,950	4,000	1,750	1,030	5,500	1,250	954	1,080
23	1,750	1,610			1,950	3,570	1,770	1,030	4,890	1,230	1,020	966
24	1,710	1,510			1,850	3,290	2,190	1,000	4,440	1,290	1,020	990
25	1,660	1,570			1,850	3,090	2,150	918	4,000	1,120	942	942
26	1,710	1,570	950		1,950	2,980	1,950	906	4,590	1,130	930	848
27	1,590	1,540			1,950	2,900	1,850	918	4,290	1,230	882	894
28	1,470	1,410			1,750	2,700	1,750	906	3,710	1,190	760	894
29	1,750	1,120		940	-------	2,610	1,660	930	3,290	990	815	894
30	1,770	730			-------	2,370	1,640	882	2,870	1,060	760	1,230
31	1,750	-------			-------	2,330	------	918	--------	1,040	760	------

NOTE.—Stage-discharge relation affected by ice Dec. 17 to Feb. 4; discharge based on a study of gage heights, weather records, and observer's notes. Braced figures give mean discharge for periods indicated Discharge interpolated Mar. 28, Apr. 18, and May 6.

Monthly discharge of Cedar River at Cedar Rapids, Iowa, for the year ending September 30, 1925

[Drainage area, 6,640 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,430	1,590	2,180	0.328	0.38
November	2,150	730	1,600	.241	.27
December	1,970	----------	1,240	.187	.22
January	----------	----------	1,010	.152	.18
February	4,290	1,050	2,210	.333	.35
March	4,140	1,410	2,580	.389	.45
April	2,370	1,610	1,850	.279	.31
May	1,620	882	1,180	.178	.21
June	12,200	930	3,660	.551	.61
July	2,610	990	1,550	.233	.27
August	1,990	760	1,040	.157	.18
September	1,250	680	881	.133	.15
The year	12,200	----------	1,740	.262	3.58

SHELLROCK RIVER NEAR CLARKSVILLE, IOWA

LOCATION.—In T. 92 W., R. 16 W., at highway bridge 1¼ miles northwest of Clarksville, Butler County, and 25 miles above junction with Cedar River.

DRAINAGE AREA.—1,660 square miles (measured on base map of Iowa).

RECORDS AVAILABLE.—May 28, 1915, to September 30, 1925.

GAGE.—Chain gage attached to handrail of upstream side of bridge, 75 feet from right abutment; read by Mrs. H. H. Sherburne.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of rock and sand; fairly permanent. Right bank high; left bank will probably be overflowed at extremely high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.6 feet at 10.50 a. m. June 13 (discharge, 8,240 second-feet); minimum stage, 0.40 foot at 7.30 a. m. September 3 (discharge, 43 second-feet).

1915–1925: Maximum discharge recorded, 12,200 second-feet June 2, 1916; minimum stage, that of September 3, 1925, as given above.

In April, 1907, a stage of about 16.5 feet was reached (discharge, about 19,000 second-feet).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Slight diurnal fluctuation of stage may occur during low water, owing to operation of power plant at Greene, 10 miles upstream.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined between 70 and 10,000 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

The following discharge measurements were made:

October 14, 1924: Gage height, 1.08 feet; discharge, 164 second-feet.

June 4, 1925: Gage height, 0.62 foot; discharge, 72 second-feet.

Daily discharge, in second-feet, of Shellrock River near Clarksville, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	401	218		315	200	70	565	168	83
2	379	236		315	218	74	516	86	78
3	336	200		274	218	71	469	106	43
4	336	218		294	200	74	446	130	81
5	294	218		294	197	64	357	116	49
6	274	236		255	184	540	357	110	81
7	274	194		255	194	401	401	218	71
8	255	218		255	162	255	424	174	80
9	294	218		255	140	187	379	200	78
10	274	218		255	157	168	357	97	86
11	274	236		274	143	138	336	151	85
12	315	218		255	218	2,210	336	135	78
13	274	236		255	236	7,280	315	133	78
14	162	200		236	128	5,500	274	108	81
15	236	200		218	126	4,200	218	140	95
16	181	218		255	218	3,460	218	200	86
17	255	218		236	143	3,060	236	67	81
18	236	218	1,050	236	128	2,660	218	83	86
19	274	190	925	274	197	1,970	255	97	165
20	187	200	805	274	294	1,730	200	255	154

Daily discharge, in second-feet, of Shellrock River near Clarksville, Iowa, for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	236	218	750	357	197	1,340	218	236	151
22	218	197	640	379	140	1,190	197	157	140
23	218	204	590	401	178	1,190	200	130	128
24	218	218	640	336	200	1,120	174	106	138
25	236	218	695	315	90	1,120	165	165	110
26	236	200	615	274	168	1,120	160	88	95
27	200	184	469	255	106	925	160	88	81
28	162	-------	401	236	83	805	151	86	78
29	157	-------	379	218	80	750	148	95	106
30	236	-------	357	236	71	640	197	80	187
31	165	-------	315	-------	77	-------	184	78	-------

NOTE.—No record Nov. 28 to Mar. 17.

Monthly discharge of Shellrock River near Clarksville, Iowa, for the year ending September 30, 1925

[Drainage area, 1,660 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	401	157	251	0.151	0.17
November 1–27	236	184	213	.128	.13
March 18–31	1,050	315	616	.372	.19
April	401	218	276	.166	.19
May	294	71	164	.099	.11
June	7,280	64	1,480	.892	1.00
July	565	148	285	.172	.20
August	255	67	132	.079	.09
September	187	43	98	.059	.07

SKUNK RIVER NEAR AMES, IOWA

LOCATION.—In sec. 23, T. 84 N., R. 24 W., at site of old county bridge, 2½ miles north of Ames, Story County, 3½ miles below Keigley Branch and 5 miles above mouth of Squaw Creek.

DRAINAGE AREA.—320 square miles (measured on topographic map and on post-route map).

RECORDS AVAILABLE.—July 28, 1920, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder installed August 25, 1921; inspected by district engineer.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—A rock ledge forms control. Right bank is overflowed during extremely high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.49 feet at 4 a. m. July 14 (discharge, 641 second-feet); minimum stage, 1.77 feet September 6 (discharge, 2 second-feet).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation probably permanent during year. Rating curve well defined above 30 second-feet and poorly defined below. Operation of water-stage recorder satisfactory. Mean daily discharge ascertained by applying to rating table mean daily gage height ascertained by inspection of recorder graph. Records good for medium and high stages and fair for low stages. Winter records fair.

Discharge measurements of Skunk River near Ames, Iowa, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 24	2.39	40.4	Mar. 12	2.52	58.3	Aug. 3	1.80	2.2
Dec. 30	*2.45	11.6	Apr. 13	2.49	55.2	Sept. 18	1.79	1.1
Feb. 5	*2.30	9.6	May 11	2.07	13.4			

*Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Skunk River near Ames, Iowafor the year ending, September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	150	36	85			20	65	18	6	8	2	2
2	135	36	80			19	63	18	6	8	2	2
3	113	33	90		7	19	63	17	10	30	2	2
4	105	33	94			20	62	18	6	150	2	2
5	94	33	119	16		19	59	16	5	125	2	2
6	90	35	115		43	26	57	15	4	100	5	2
7	87	35	107		119	35	54	14	3	82	194	2
8	85	33	88		150	35	54	14	5	37	46	3
9	85	31	59		105	35	67	14	4	21	100	6
10	82	31	63		73	39	88	13	3	11	43	7
11	75	36	70		60	46	88	12	3	8	21	5
12	73	70	73		46	70	75	11	3	6	16	4
13	70	96	88		53	62	57	9	4	5	54	3
14	65	75	98		43	38	49	8	5	207	32	3
15	60	75	94	10	31	25	39	8	23	54	17	3
16	57	71	90		29	31	35	11	115	33	10	3
17	57	68	57		26	59	35	11	283	21	7	2
18	56	67	43		25	289	33	11	309	13	6	2
19	54	57	31		26	370	31	11	140	11	6	2
20	53	59	21		26	239	28	11	76	9	6	2
21	49	56			27	162	26	10	51	7	5	2
22	46	53			27	119	25	8	42	6	5	3
23	44	51			27	100	26	7	36	5	5	3
24	43	60			26	96	24	7	43	4	4	3
25	42	83			24	96	23	7	36	4	4	2
26	41	113	12	7	26	90	20	7	29	3	3	4
27	39	115			21	82	18	6	22	5	3	7
28	38	87			21	73	17	6	15	5	2	5
29	37	75			-------	68	19	6	12	4	3	4
30	36	98			-------	65	20	6	8	3	3	57
31	38	-------			-------	65	-------	6	-------	2	3	-------

NOTE.—Stage-discharge relation affected by ice Dec. 18 to Feb. 7; discharge estimated from gage heights, weather records, observer's notes, and results of two discharge measurements. Braced figures give mean discharge for periods indicated. Gage not in operation June 25–27 and July 1–6; discharge estimated.

Monthly discharge of Skunk River near Ames, Iowa, for the year ending September 30, 1925

[Drainage area, 320 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	150	36	67.7	0.212	0.24
November	115	31	60.0	.188	.21
December	119	----------	54.2	.171	.20
January	----------	----------	10.9	.034	.04
February	150	----------	38.9	.122	.13
March	370	19	81.0	.253	.29
April	88	17	44.0	.138	.15
May	18	6	10.8	.034	.04
June	309	3	43.6	.136	.15
July	207	2	31.8	.099	.11
August	194	2	19.8	.062	.07
September	57	2	4.97	.015	.02
The year	370	2	39.0	.122	1.65

SKUNK RIVER AT COPPOCK, IOWA

LOCATION.—In sec. 1, T. 73 N., R. 8 W., at highway bridge one-eighth mile above Chicago, Burlington & Quincy Railroad bridge at Coppock, Henry County, and one-fourth mile above junction with Crooked Creek.

DRAINAGE AREA.—2,890 square miles (measured on base map of Iowa).

RECORDS AVAILABLE.—October 21, 1913, to September 30, 1925.

GAGE.—Chain gage attached to downstream side of bridge; read by J. W. Ricks.

DISCHARGE MEASUREMENTS.—Made from bridge to which gage is attached or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and sand; channel shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.15 feet at 7 p. m. June 4 (discharge, 4,940 second-feet); minimum stage, 2.48 feet September 8 and 10 (discharge, 79 second-feet).

1913–1925: Maximum stage recorded, 19.7 feet June 9, 1918 (discharge, 19,600 second-feet); minimum stage, 2.10 feet August 15, 18, and 25–27, 1914 (discharge, 33 second-feet).

A stage of about 22 feet occurred on or about May 31, 1903 (discharge, about 25,000 second-feet).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation changed during June owing to accumulation of débris on bridge pier. Standard rating curve fairly well defined. Gage read to hundredths once daily and oftener on days of rapidly changing stage. Daily discharge ascertained by applying daily gage height to rating table, except from June 3 to September 30 when shifting-control method was used. Records fair.

The following discharge measurements were made:

February 6, 1925: Gage height, 5.54 feet (stage-discharge relation affected by ice); discharge, 471 second-feet.

April 18, 1925: Gage height, 3.44 feet; discharge, 360 second-feet.

September 29, 1925: Gage height, 2.59 feet; discharge, 98 second-feet.

Daily discharge, in second-feet, of Skunk River at Coppock, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	719	395	200				543	395	168	203	146	105
2	870	378	220				503	346	346	191	135	105
3	768	378	260	210	230	600	503	330	1,270	180	125	96
4	672	378	460				465	314	4,360	168	125	87
5	584	378					465	299	3,040	146	115	87
6	584	362	1,160			429	447	284	1,040	146	115	96
7	543	503			580	447	447	284	627	378	157	96
8	584	412		180		447	447	269	503	1,330	168	79
9	2,120	378				465	429	269	412	1,840	429	87
10	1,270	395			2,800	465	465	269	346	1,450	346	79
11	768	395				465	503	255	269	719	484	228
12	672	378	550			503	465	241	255	503	465	203
13	584	378				672	447	241	362	346	395	719
14	584	362				1,210	447	228	269	299	346	465
15	543	362			1,300	1,090	429	241	627	269	314	314
16	503	362		120		870	412	269	979	241	269	299
17	503	429				719	378	299	870	215	255	203
18	465	412	300			719	362	269	584	543	330	146
19	465	395				979	362	228	429	465	818	135
20	447	412			900	979	362	228	330	412	1,040	125
21	447	395				424	346	228	269	346	672	125
22	429	395	200			979	346	228	543	284	346	125
23	412	378		130		1,090	330	215	503	255	269	115
24	395	378			2,600	979	1,150	215	447	215	191	96
25	395	362				818	1,040	203	429	203	168	87
26	378	362				768	627	180	395	191	157	96
27	378	346			800	719	543	168	330	180	146	96
28	378	260	230			672	465	157	284	241	135	96
29	378	200		150	-------	627	447	168	255	228	125	96
30	378	180			-------	584	429	168	203	191	115	125
31	395	-------			-------	584	-------	180	-------	168	105	------

NOTE.—Stage-discharge relation affected by ice Nov. 28 to Mar. 5; discharge estimated from a study of gage heights, weather records, one discharge measurement, observer's notes, and comparison with discharge at Augusta. Braced figures give estimated mean discharge for periods indicated.

Monthly discharge of Skunk River at Coppock, Iowa, for the year ending September 30, 1925

[Drainage area, 2,890 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,120	378	601	0.208	0.24
November	503	----------	370	.128	.14
December	----------	----------	440	.152	.18
January	----------	----------	150	.052	.06
February	----------	----------	1,270	.439	.46
March	1,210	429	716	.248	.29
April	1,150	330	487	.169	.19
May	395	168	247	.086	.10
June	4,360	168	691	.239	.27
July	1,840	146	405	.140	.16
August	1,040	105	291	.101	.12
September	719	79	160	.055	.06
The year	4,360	79	480	.166	2.27

SKUNK RIVER AT AUGUSTA, IOWA

LOCATION.—In sec. 26, T. 69 N., R. 4 W., at highway bridge one-third mile from Augusta post office, Des Moines County, and 12.2 miles above mouth.

DRAINAGE AREA.—4,290 square miles (measured on base map of Iowa).

RECORDS AVAILABLE.—September 30 to November 15, 1913; May 27, 1915, to September 30, 1925.

GAGE.—Chain gage attached to downstream handrail of bridge about 95 feet from left abutment; read by J. A. Schroder. Zero of gage is at elevation 528.55 feet, Memphis datum.

DISCHARGE MEASUREMENTS.—Made from bridge to which gage is attached or by wading.

CHANNEL AND CONTROL.—Bed of stream sandy and subject to change. Right bank high and will not be overflowed; left bank will be overflowed only at extremely high stages. Remains of old milldam 600 feet below gage forms control; practically permanent. Riffle at dam causes a drop of about 3 feet at medium low stages. Backwater from Mississippi River probably will not occ r oftener than once in 50 years.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, estimated 12,000 second-feet February 24 (stage-discharge relation affected by ice); minimum stage recorded, 1.45 feet 9 a. m. September 10 (discharge, 62 second-feet).

1913; 1915–1925: Maximum stage recorded, 18.0 feet March 28, 1916 (discharge, 30,800 second-feet); minimum stage, 1.29 feet September 8, 1919 (discharge, 26 second-feet by current-meter measurement).

A stage of about 21 feet (discharge, 45,000 second-feet) was reached on or about June 1, 1903.

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Natural discharge at extremely low stages is affected by operation of power plant at Oakland Mills, 26 miles upstream.

ACCURACY.—Stage-discharge relation permanent during the year. Rating curve well defined. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Open-water records good; winter records fair.

The following discharge measurements were made:

October 24, 1924: Gage height, 2.38 feet; discharge, 437 second-feet.

February 5, 1925: Gage height, 3.50 feet (stage-discharge relation affected by ice); discharge, 1,240 second-feet.

Daily discharge, in second-feet, of Skunk River at Augusta, Iowa, for the year ending September 30, 1925

Date	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	582	470	210		550	900	713	811	252	470	349	105
2	713	406	260		700	1,100	668	713	668	438	252	105
3	915	406	320		600	1,300	668	668	1,430	378	252	105
4	915	406	380		550	850	623	623	2,840	349	210	105
5	811	406	1,430		1,250	750	582	542	5,780	324	210	105
6	668	406	3,120	230	1,700	623	542	506	3,960	298	137	137
7	623	470	2,300		2,200	623	542	438	2,570	438	210	172
8	713	438	2,030		3,000	623	506	406	1,430	2,300	252	90
9	1,020	506	1,760		5,000	623	542	406	970	2,440	210	90
10	1,370	582	1,370		7,000	668	623	406	713	2,570	668	62
11	1,760	506	1,030		6,000	623	668	378	623	2,030	506	406
12	1,430	623	810		4,500	623	668	349	506	1,250	970	2,840
13	970	542	710	190	3,000	915	668	349	470	811	762	3,400
14	863	470	620		2,000	1,430	623	349	863	582	623	2,030
15	713	470	580		1,600	2,440	542	324	7,320	1,020	506	1,430

Daily discharge, in second-feet, of Skunk River at Augusta, Iowa, for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	668	470	580		1,400	2,300	542	349	9,320	378	506	1,020
17	582	470	460		1,100	1,560	542	406	7,320	406	506	970
18	542	438			1,050	1,490	506	406	4,800	324	506	811
19	542	470			1,000	1,430	713	378	4,680	438	1,140	506
20	506	470		190	950	1,900	762	349	2,030	668	2,030	438
21	506	438	340		900	1,760	713	324	1,760	623	1,500	378
22	470	438			950	1,560	524	324	10,500	506	1,250	324
23	470	438			10,000	1,760	470	298	5,080	406	668	298
24	438	438			12,000	1,560	542	298	3,120	378	470	298
25	438	406		170	7,000	1,370	6,200	275	2,030	378	349	275
26	438	378			4,800	1,140	3,960	210	1,140	349	275	324
27	406	320		190	1,300	1,080	2,300	210	915	324	231	378
28	406	280		230	700	970	1,250	231	762	470	210	298
29	406	260	285	280	-------	863	1,020	231	623	298	210	324
30	406	230		350	-------	811	970	210	542	349	154	1,080
31	406	-------		400	-------	762	-------	231	--------	349	121	------

NOTE.—Stage-discharge relation affected by ice Nov. 27 to Dec. 3 and Dec. 17 to Mar. 5; discharge estimated. Braced figures give estimated mean discharge for periods indicated.

Monthly discharge of Skunk River at Augusta, Iowa, for the year ending September 30, 1925

[Drainage area, 4,290 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,760	406	700	0.163	0.19
November	623	230	435	.101	.11
December	3,120	----------	723	.168	.19
January	----------	----------	216	.050	.06
February	12,000	550	2,920	.681	.71
March	2,440	623	1,170	.274	.32
April	6,200	470	1,010	.235	.26
May	811	210	387	.090	.10
June	10,500	252	2,800	.653	.73
July	2,570	298	721	.168	.19
August	2,030	121	524	.122	.14
September	3,400	62	630	.147	.16
The year	12,000	62	1,000	.234	3.16

SQUAW CREEK AT AMES, IOWA

LOCATION.—In sec. 3, T. 83 N., R. 24 W., on Lincoln Way bridge in Ames, Story County, 2 miles above junction with Skunk River.

DRAINAGE AREA.—210 square miles (measured on topographic maps and on post-route map).

RECORDS AVAILABLE.—May 24, 1919, to September 30, 1925.

GAGE.—Chain gage attached to downstream girder on Lincoln Way bridge. Prior to March 10, 1925, at former location, 1,700 feet above Chicago & Northwestern Railway bridge in Ames. Read by Stanley Collins and John A. Dale.

DISCHARGE MEASUREMENTS.—Made from footbridge or by wading. Extreme high stages measured from Chicago & Northwestern Railway bridge.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; shifting. Left bank high; right bank subject to overflow at stages above 11 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.65 feet a 7 a. m. August 7 (discharge, 695 second-feet); minimum discharge, no flow July 31 to August 5.

1919–1925: Maximum stage recorded, 10.4 feet July 17, 1922 (discharge, 3,920 second-feet); minimum discharge, no flow August 26 to September 17, 1919, and July 31 to August 5, 1925.

Maximum stage in recent years, approximately 14.5 feet June 4, 1918 (discharge, about 6,900 second-feet).

ICE.—Stage-discharge relation affected by ice. Observations discontinued during ice period.

ACCURACY.—Stage-discharge relation changed during high water in August; shifting during low stages. Rating curves poorly defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except October 4 to November 28, March 11 to April 20, May 1–31, and August 9 to September 30 when shifting-control method was used and October 1–3 and November 29 and 30 when discharge was estimated. Records fair.

Discharge measurements of Squaw Creek at Ames, Iowa, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 24	1.06	28.6	June 18	3.00	203	Aug. 18	1.15	5.6
Mar. 11	2.04	32.9	July 14	3.87	431	Sept. 18	.93	.9
Apr. 13	1.80	39.8	July 24	1.15	[a] 2.5			
May 11	1.46	8.9	Aug. 7	3.20	318			

[a] Discharge estimated.

Daily discharge, in second-feet, of Squaw Creek at Ames, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	110	32	------	37	12	2	3	0	2
2	90	28	------	36	11	3	2	0	1
3	70	28	------	34	10	4	9	0	1
4	49	28	------	34	10	3	129	0	1
5	55	26	------	32	10	2	36	0	1
6	55	24	------	30	10	4	21	1	1
7	49	24	------	28	10	3	12	490	1
8	49	24	------	29	10	1	8	133	2
9	49	24	------	44	10	2	6	133	9
10	49	24	------	60	9	1	4	54	3
11	43	110	38	47	9	1	3	28	2
12	43	110	20	39	8	2	2	26	2
13	43	89	28	38	8	2	1	18	1
14	43	82	12	34	8	5	354	12	1
15	38	75	18	32	8	79	129	10	1
16	38	62	15	29	10	113	62	9	1
17	38	55	48	28	10	173	26	7	1
18	38	49	173	28	8	275	12	5	1
19	38	49	173	28	7	99	9	6	1
20	32	49	154	26	8	58	7	5	1
21	32	43	85	21	9	36	5	4	1
22	32	38	73	20	9	33	3	4	2
23	32	38	63	21	8	27	2	3	2
24	28	32	68	18	7	20	2	3	1
25	28	32	68	17	7	16	1	2	1
26	28	32	60	16	7	10	1	2	4
27	28	32	49	14	7	7	2	2	3
28	24	32	46	13	3	6	2	2	3
29	24	30	42	.19	2	5	1	1	2
30	24	20	38	15	2	4	1	1	43
31	38	------	36	------	3	------	0	1	------

NOTE.—No record Dec. 1 to Mar. 10.

Monthly discharge of Squaw Creek at Ames, Iowa, for the year ending September 30, 1925

[Drainage area, 210 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	110	24	43.1	0.205	0.24
November	110	20	44.0	.210	.23
March 11-31	173	12	62.0	.295	.23
April	60	13	28.9	.138	.15
May	12	2	8.06	.038	.04
June	275	1	33.2	.158	.18
July	354	0	27.6	.131	.15
August	490	0	31.0	.148	.17
September	43	1	3.20	.015	.02

DES MOINES RIVER AT KALO, IOWA

LOCATION.—In sec. 17, T. 88 N., R. 28 W., near highway bridge at Kalo, Webster County, 1½ miles east of Otho, a station on Minneapolis & St. Louis Railroad and 1½ miles above mouth of Holiday Creek, which enters from left.

DRAINAGE AREA.—4,170 square miles (measured on base maps of Iowa and Minnesota).

RECORDS AVAILABLE.—October 18, 1913, to September 30, 1925.

GAGE.—Gurley water-stage recorder on right bank 300 feet downstream from highway bridge; inspected by S. C. Fuller.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel consists of gravel and is fairly permanent. No well-defined control. Point of zero flow estimated to be at gage height −0.40 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.6 feet at 10 p. m. March 9 (discharge, 7,500 second-feet); minimum stage, 0.13 foot at 8 p. m. September 13 (discharge, 14 second-feet).

1913–1925: Maximum stage recorded, 14.0 feet May 30, 1915 (discharge, 18,500 second-feet); minimum discharge recorded, 14 second-feet October 9–15, 1922, and September 13, 1925.

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Operation of city power plant at Fort Dodge, 7 miles upstream, causes diurnal fluctuation during periods of low water.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve fairly well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph except as explained in footnote to table of daily discharge. Records fair.

Discharge measurements of Des Moines River at Kalo, Iowa, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec-ft.*		*Feet*	*Sec-ft.*		*Feet*	*Sec-ft.*
Oct. 8	1.55	610	Apr. 23	0.98	293	Sept. 10	0.33	58
Apr. 2	1.93	922	June 19	2.83	1,730	Sept. 16	.20	46.3
Apr. 22	1.34	497	July 22	1.07	374			

Daily discharge, in second-feet, of Des Moines River at Kalo, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,380	302	800	710	340	158	1,020	188	
2	1,320	325	750	798	288	252	948	196	
3	1,230	244	750	689		320	844	239	50
4	1,100	239	650	640		425	760	124	
5	844	266	600	605		1,670	626	209	
6	844	293	950	675	290	2,630	724	244	42
7	798	257	1,500	469		1,960	828	180	63
8	703	234	1,700	516		1,540	647	230	59
9	664	248	2,000	480		1,230	1,810	196	70
10	619	248	2,300	425	288	1,140	1,140	213	80
11	605	188	2,000	592	275	703	844	91	83
12	534	252	1,960	592	252	420	775	161	68
13	540	222	1,960	661	188	510	782	158	63
14	469	257	1,190	540	188	661	790	88	76
15	469	188	932	510	188	1,360	1,020	154	57
16	480	230	1,230	516	222	1,400	884	114	61
17	392	222	1,490	504	262	2,340	675	120	
18	425	234	1,440	522	248	1,960	566	38	
19	480	230	1,670	469	239	1,860	553		75
20	311	239	1,910	619	205	1,760	425		
21	345	234	1,860	560	209	1,910	376	50	
22	386	234	1,860	498	230	1,960	381		86
23	392	257	1,720	572	209	1,490	370		88
24	311	280	1,670	492	230	1,360	360		83
25	330	188	1,400	498	196	1,230	320		78
26	436	180	1,400	534	68	1,190	293	75	83
27	330	161	1,320	510	124	1,190	311		340
28	298		1,270	392	124	1,270	275		130
29	330	120	980	381	124	1,190	230	83	88
30	330		948	381	127	1,100	222	75	284
31	320	-------	940	-------	117	-------	270	60	-------

NOTE.—Stage-discharge relation affected by ice Nov. 28–30 and Mar. 1–11. Gage not read May 3–9, Aug. 19–28, Aug. 30 to Sept. 5, and Sept. 17–21. Discharge for these periods estimated by comparison with record for Des Moines River near Boone. No record Dec. 1 to Feb. 28.

Monthly discharge of Des Moines River at Kalo, Iowa, for the year ending September 30, 1925

[Drainage area, 4,170 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,380	298	581	0.139	0.16
November	325	120	227	.054	.06
March	2,300	600	1,390	.334	.39
April	798	381	545	.155	.17
May	340	68	225	.054	.06
June	2,630	158	1,270	.305	.34
July	1,140	222	647	.155	.18
August	244	----------	123	.030	.03
September	340	----------	86.9	.021	.02

DES MOINES RIVER NEAR BOONE, IOWA

LOCATION.—In sec. 13, T. 84 N., R. 27 W., at highway bridge near the Boone waterworks, 2 miles northwest of Boone, Boone County, and 2 miles above Bluff Creek.

DRAINAGE AREA.—5,490 square miles at site used since October 9, 1924 (measured on base maps of Iowa and Minnesota).

RECORDS AVAILABLE.—April 1, 1920, to September 30, 1925. At site of old gage 3½ miles downstream at Chicago & Northwestern Railway crossing, scattered records of stage have been maintained by the United States Weather Bureau from 1905 to 1917.

GAGE.—Chain gage attached to upstream side of concrete bridge 200 feet from left end. Read by employee of Boone waterworks plant. Gage was moved from Centerville bridge in September, 1924, and placed in present location, nearly 1 mile farther downstream, on October 9, 1924.

DISCHARGE MEASUREMENTS.—Made from bridge to which gage is attached or by wading.

CHANNEL AND CONTROL.—Control not well defined. Bed consists of gravel and sand and is fairly permanent. An island divides the stream below bridge at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.72 feet at 7 a. m. June 18 (discharge, 4,280 second-feet); minimum stage, 2.48 feet at 3.30 p. m. September 6 (discharge, 43 second-feet).

1920–1925: Maximum stage recorded, 13.39 feet at 6.30 a. m. July 11, 1920 (discharge, 16,900 second-feet); minimum discharge that of September 6, 1925, as given above.

Highest stage since 1907, 20.54 feet probably occurred on June 6, 1918 (discharge, about 32,000 second-feet). The above stages refer to datum of gage at site 1 mile upstream.

ICE.—Stage-discharge relation affected by ice. Observations discontinued during winter.

REGULATION.—The city power plant at Fort Dodge causes some diurnal fluctuation during periods of extremely low water.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined between 50 and 11,000 second-feet. Gage read to hundredths twice daily and frequently during days of rapidly changing stage. Daily discharge ascertained by applying daily gage height to rating table, except as indicated in footnote to daily-discharge table. Records good.

Discharge measurements of Des Moines River near Boone, Iowa, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Mar. 30	4.98	1,180	June 15	6.98	2,640	Sept. 17	2.79	93
May 13	3.75	413	Aug. 6	3.44	257			

Daily discharge, in second-feet, of Des Moines River near Boone, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,900	400	150		980	610	144	1,390	400	53
2	1,850	400	170		790	580	204	1,250	450	108
3	1,750	400	190		915	580	226	1,250	230	62
4	1,600	400	201	980	850	580	730	1,110	375	48
5	1,450	290	226	850	850	550	2,650	1,040	300	48
6	1,300	340	210	760	700	475	3,360	850	250	44
7	1,100	340	238	1,250	760	450	3,000	1,040	300	45
8	900	350	214	1,980	760	450	2,820	1,180	450	78
9	850	345	200	2,280	850	475	2,280	1,250	400	168
10	850	335	180	2,200	850	450	1,750	3,270	500	275
11	790	475	200	2,350	915	400	1,530	2,280	325	135
12	790	340	250	2,120	850	400	1,110	1,820	325	102
13	760	350	260	1,900	850	375	1,110	1,320	250	97
14	730	340	265	1,750	850	335	1,180	1,600	230	97
15	700	330		1,180	760	320	2,280	1,600	180	104
16	670	320		980	760	350	2,910	1,530	165	97
17	670	275		1,180	700	250	3,550	1,250	165	83
18	525	315		1,600	640	310	4,150	915	165	86
19	580	340		1,820	640	246	3,650	850	180	88
20	670	375		2,050	640	242	3,000	915	129	96
21	525	330		2,120	730	260	2,650	670	147	100
22	500	345		1,900	730	285	2,820	610	97	94
23	500	345		1,900	760	290	3,850	610	94	70
24	500	300		1,680	790	246	2,820	580	79	132
25	475	315		1,600	730	250	2,350	550	198	98
26	475	310		1,530	790	270	2,200	500	70	102
27	850	204		1,460	730	204	1,980	500	52	135
28	450	144		1,390	640	129	1,820	500	76	156
29	375	100		1,390	550	180	1,750	400	86	126
30	290	130		1,180	580	168	1,530	325	82	189
31	375			980		165		230	54	

NOTE.—Discharge interpolated or estimated Oct. 1-9, Nov. 29 to Dec. 3, and Dec. 9-13. No record Dec. 15 to Mar. 3.

Monthly discharge of Des Moines River near Boone, Iowa, for the year ending September 30, 1925

[Drainage area, 5,480 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,900	290	831	0.152	0.18
November	475	100	319	.058	.06
December 1-14	265	150	211	.039	.02
March 4-31	2,350	760	1,580	.288	.30
April	980	550	765	.140	.16
May	610	129	351	.064	.07
June	4,150	144	2,180	.397	.44
July	3,270	230	1,070	.195	.22
August	500	52	220	.040	.05
September	275	44	104	.019	.02

DES MOINES RIVER AT DES MOINES, IOWA

LOCATION.—In sec. 2, T. 78 N., R. 24 W., at Walnut Street Bridge in Des Moines, Polk County, one-fourth mile below dam of Des Moines Electric Co. and one-third mile above mouth of Raccoon River.

DRAINAGE AREA.—6,180 square miles (measured on base maps of Iowa and Minnesota).

RECORDS AVAILABLE.—October 1, 1902, to August 3, 1903; October 1, 1914, to September 30, 1925, at Walnut Street Bridge. May 27, 1905, to July 20, 1906, at Interurban Bridge near Highland Park 5 miles upstream. The United States Weather Bureau has maintained a station at or near the present site since July 1, 1897.

GAGE.—Friez water-stage recorder at second pier from east abutment of Walnut Street Bridge; installed January, 1912. Zero of gage is 774.74 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from one of several bridges near gage.

CHANNEL AND CONTROL.—The back fill around the piers of Court Street Bridge, one block downstream, forms control for extremely low stages. The remains of a low timber dam one-quarter mile below gage form the control during medium stages. Both may be drowned out during high stages in Raccoon River.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.31 feet at 9 p. m. June 18 (discharge, 4,920 second-feet); minimum stage, 0.50 foot at 6 p. m. September 19 (discharge, 95 second-feet).

1915–1925: Maximum discharge, about 41,500 second-feet, June 7, 1918; brief periods of zero flow have occurred since construction of dam abov; gage.

ICE.—Stage-discharge relation occasionally affected by ice or by ice jams at bridges below gage.

REGULATION.—Considerable diurnal fluctuation during low water is caused by operation of power plant at dam one-fourth mile above gage.

ACCURACY.—Stage-discharge relation probably permanent during year. Rating curve fairly well defined. Operation of water-stage recorder satisfactory. Mean daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph. Records fair.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

The following discharge measurements were made:

June 17, 1925: Gage height, 4.96 feet; discharge, 3,720 second-feet.

September 15, 1925: Gage height, 0.66 foot; discharge, 122 second-feet.

Daily discharge, in second-feet, of Des Moines River at Des Moines, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,880	578	162	-------	113	724	1,300	648	240	1,800	408	134
2	1,820	540	243	-------	113	850	1,450	648	224	1,680	408	116
3	1,700	502	324	-------	113	724	1,090	610	257	1,570	408	116
4	1,640	479	372	-------	105	763	1,090	578	316	1,750	334	142
5	1,470	545	423	135	113	850	1,040	597	362	1,520	312	116
6	1,410	479	479	-------	130	943	992	564	2,420	1,410	408	108
7	1,240	479	512	-------	148	1,300	943	564	2,930	1,220	763	102
8	1,130	479	479	-------	240	1,570	943	499	3,060	1,060	2,350	215
9	1,080	479	423	-------	597	2,100	992	532	2,800	1,110	1,750	142
10	1,020	451	423	-------	1,350	2,290	1,090	499	2,420	2,420	485	152

Daily discharge, in second-feet, of Des Moines River at Des Moines, Iowa, for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	975	479	423	------	1,460	2,290	1,250	468	1,900	2,820	512	174
12	925	610	423	------	1,140	2,350	1,200	462	1,680	2,160	521	152
13	875	578	396	------	992	2,220	1,140	462	1,300	1,680	423	142
14	830	502	396	------	850	2,100	1,140	462	1,920	1,570	423	134
15	785	502	396	------	850	1,570	1,040	408	2,740	1,750	372	116
16	742	479	------	------	992	1,410	992	434	3,460	1,750	338	102
17	700	502	------	------	896	1,300	943	408	4,200	1,750	303	108
18	700	479	------	------	806	1,300	850	408	4,360	1,460	303	108
19	660	479	------	127	763	1,750	850	413	4,360	1,140	372	102
20	665	479	------	------	763	2,100	763	413	3,750	992	362	162
21	690	479	------	------	724	2,290	763	413	3,190	992	250	116
22	650	479	------	------	578	2,350	763	387	3,320	806	243	116
23	560	479	------	------	648	2,220	806	362	2,930	578	237	134
24	570	479	------	------	685	2,100	806	338	3,460	685	207	125
25	585	479	------	------	685	1,980	850	338	2,930	648	193	125
26	550	479	------	130	545	1,980	806	316	2,610	610	185	162
27	520	479	------	130	610	1,800	763	316	2,610	578	190	152
28	545	348	------	122	610	1,680	850	338	2,350	492	158	152
29	578	286	------	122	------	1,630	724	276	2,160	492	142	162
30	578	224	------	122	------	1,630	685	240	1,980	462	152	230
31	545	------	------	113	------	1,350	------	253	------	434	152	-----

NOTE.—Discharge Oct. 20-27 based on auxiliary gage readings above the dam. Float frozen in well Dec. 16 to Jan. 26; daily discharge not estimated.

Monthly discharge of Des Moines River at Des Moines, Iowa, for the year ending September 30, 1925

[Drainage area, 6,180 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,880	520	923	0.149	0.17
November	610	224	477	.077	.09
December 1–15	512	162	392	.063	.04
January			[a] 130		
February	1,460	105	629	.102	.11
March	2,350	724	1,660	.269	.31
April	1,450	685	964	.156	.17
May	648	240	440	.071	.08
June	4,360	224	2,410	.390	.44
July	2,800	434	1,270	.206	.24
August	2,350	142	440	.071	.08
September	230	102	137	.022	.02

[a] Estimated.

DES MOINES RIVER NEAR TRACY, IOWA

LOCATION.—In sec. 19, T. 75 N., R. 17 W., at highway bridge in Bellefontaine, Mahaska County, near Tracy, Marion County, 3 miles above mouth of Cedar Creek and 6 miles below mouth of English Creek.

DRAINAGE AREA.—12,400 square miles (measured on base maps of Iowa and Minnesota).

RECORDS AVAILABLE.—March 1, 1920, to September 30, 1925. From about April 22 to December 31, 1910, the United States Engineer Corps maintained daily readings at same site.

GAGE.—Chain gage attached to downstream side of bridge near right end of second span from right end of bridge; read by D. M. Coleman. Sea-level elevation of the zero of gage is 671.78 feet.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Solid rock bottom overlain in places with sand and gravel. Right bank high; left bank subject to overflow at high stages. Low-water control well defined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.7 feet at 7 p. m. June 23 (discharge, 11,500 second-feet); minimum stage, 2.34 feet several days during September (discharge, 430 second-feet).

1920–1925: Maximum stage recorded, 14.74 feet May 14, 1920 (discharge, 31,900 second-feet).

Maximum stage since 1851 about 25 feet May 31, 1903 (discharge, estimated 100,000 second-feet).

ICE.—Stage-discharge relation affected by ice during periods of extremely cold weather.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined between 400 and 40,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

The following discharge measurement was made:

September 23, 1925: Gage height, 2.40 feet; discharge, 433 second-feet.

Daily discharge, in second-feet, of Des Moines River near Tracy, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,980	1,080	950	1,130	1,760	1,130	630	2,980	830	510
2	2,680	1,080	950	1,130	1,640	950	710	2,680	750	510
3	2,540	1,040	950	1,760	1,640	950	1,130	2,400	750	510
4	2,400	995	950	1,640	1,530	950	1,880	2,260	750	470
5	2,260	950	1,080	1,640	1,420	950	2,680	2,400	750	470
6	2,130	995	1,270	2,000	1,420	910	1,880	3,290	710	470
7	2,000	995	1,130	1,530	1,420	870	1,760	6,960	910	470
8	2,000	995	1,130	1,760	1,320	870	3,790	3,620	870	435
9	1,880	995	1,130	1,760	1,320	870	3,790	3,790	5,480	470
10	1,760	995	1,130	2,260	1,420	870	3,620	2,260	3,130	590
11	1,640	995	1,130	2,540	1,530	870	3,450	1,880	1,880	590
12	1,640	995	1,130	2,680	1,760	870	3,130	2,400	1,530	550
13	1,530	995	1,320	2,680	1,760	830	2,540	2,680	1,420	510
14	1,420	995	1,320	2,680	1,640	790	2,260	2,680	1,220	510
15	1,420	1,040	1,220	2,540	1,530	790	3,620	2,400	1,130	510
16	1,420	995	-------	2,260	1,530	790	7,880	2,130	950	470
17	1,320	995	-------	2,000	1,420	790	7,420	1,880	910	435
18	1,320	995	-------	1,880	1,320	790	8,600	1,880	830	435
19	1,320	950	-------	1,760	1,320	790	7,880	1,880	910	435
20	1,220	950	-------	2,000	1,220	790	6,960	1,760	1,420	435
21	1,220	950	-------	2,260	1,130	750	6,100	1,420	1,640	435
22	1,220	950	-------	2,540	1,130	750	5,680	1,320	1,220	470
23	1,220	950	-------	2,980	1,130	710	11,000	1,220	950	470
24	1,220	950	-------	2,980	1,130	710	10,000	1,130	870	470
25	1,130	950	-------	2,830	1,130	710	6,960	1,080	750	435
26	1,130	950	-------	2,540	1,130	710	5,280	1,040	670	435
27	1,130	950	-------	2,400	1,130	710	4,520	995	670	470
28	1,130	950	-------	2,260	1,130	630	4,710	950	670	510
29	1,130	950	-------	2,130	1.130	630	3,790	910	630	510
30	1,130	950	-------	2,000	1,130	710	3,450	870	590	550
31	1,130	-------	-------	1,880	-------	710	-------	870	590	-------

NOTE.—No record Dec. 16 to Feb. 28.

Monthly discharge of Des Moines River near Tracy, Iowa, for the year ending September 30, 1925

[Drainage area, 12,400 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,980	1,130	1,600	0.129	0.15
November	1,080	950	984	.079	.09
December 1-15	1,320	950	1,120	.090	.05
March	2,980	1,130	2,140	.173	.20
April	1,760	1,130	1,370	.111	.12
May	1,130	630	811	.065	.07
June	11,000	630	4,570	.369	.41
July	6,960	870	2,130	.172	.20
August	5,480	590	1,170	.094	.11
September	590	435	485	.039	.04

DES MOINES RIVER AT OTTUMWA, IOWA

LOCATION.—At Market Street Bridge, Ottumwa, Wapello County. No large tributary within several miles.

DRAINAGE AREA.—13,200 square miles (measured on base maps of Iowa and Minnesota).

RECORDS AVAILABLE.—March 28, 1917, to September 30, 1925.

GAGE.—Chain gage attached to downstream handrail of bridge.

DISCHARGE MEASUREMENTS.—Made from Vine Street Bridge, 1,500 feet below gage.

CHANNEL AND CONTROL.—Channel fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 6.7 feet at 7 a. m. June 16 (discharge, 13,900 second-feet); minimum discharge probably occurred during winter.

1917–1925: Maximum stage recorded, 16.5 feet June 11, 1917 (discharge, 58,700 second-feet). Minimum discharge estimated less than 350 second-feet several days during December, 1917.

Maximum discharge since 1850, and probably in the last century, occurred on May 31, 1903, and is estimated at 100,000 second-feet.

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Power plant short distance above gage probably produces some diurnal fluctuation at low stages.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table except as explained in footnote to table of daily discharge. Open-water records good except for extremely low stages for which they are fair. Winter records fair.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

The following discharge measurement was made:

September 24, 1925: Gage height, 1.30 feet; discharge, 458 second-feet.

Daily discharge, in second-feet, of Des Moines River at Ottumwa, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,670	1,330	550			880	2,180	1,490	755	3,670	880	550
2	3,440	1,170	470			880	2,180	1,170	1,330	3,440	880	470
3	2,990	1,170	470	450	450	880	2,180	1,330	1,330	2,990	880	470
4	2,990	1,020	470			1,170	2,000	1,170	8,260	2,780	755	470
5	2,780	1,020	1,330			1,490	1,830	1,170	4,400	2,570	755	470
6	2,780	1,020	1,490			2,370	1,830	1,170	3,440	2,570	755	470
7	2,570	1,170	1,490		550	2,570	1,830	1,020	2,570	3,910	880	470
8	2,570	1,170	1,330	425		2,000	1,490	880	2,570	7,970	1,020	470
9	2,370	1,170	1,330		1,330	2,180	1,490	1,170	4,660	3,910	1,020	470
10	2,180	1,170	1,170		1,490	2,180	1,660	1,330	4,400	4,150	5,980	470
11	2,000	1,020	755		1,660	2,780	1,830	1,020	4,150	2,780	3,440	550
12	1,830	1,020	470		2,000	3,210	1,830	1,020	3,910	2,180	2,180	755
13	1,830	1,020	470	350	2,570	3,440	2,000	1,020	4,660	3,210	1,330	755
14	1,830	1,020	600		2,570	4,150	2,180	1,020	3,440	3,210	1,660	755
15	1,660	1,020	700		2,570	3,670	2,000	1,020	10,300	2,780	1,490	880
16	1,660	1,170			2,180	3,210	2,000	880	13,900	2,570	1,330	645
17	1,660	1,020			2,180	2,780	1,830	1,020	10,000	2,370	1,330	550
18	1,490	1,020	500	400	2,000	2,570	1,830	880	8,840	2,180	1,170	550
19	1,490	1,020			2,000	2,780	1,660	880	9,130	2,000	1,170	470
20	1,490	1,020			1,660	2,570	1,660	880	8,260	2,000	2,780	470
21	1,490	1,020			1,830	2,780	1,490	880	7,390	1,830	1,830	470
22	1,490	1,020			1,830	2,990	1,490	880	6,810	1,660	1,830	400
23	1,490	880	450	400	3,210	3,440	1,490	880	6,250	1,330	1,390	470
24	1,330	880			2,370	3,910	1,660	880	12,200	1,330	1,330	470
25	1,330	880			2,990	3,440	1,660	755	9,730	1,330	880	470
26	1,170	880			2,370	3,440	1,660	755	7,390	1,170	880	470
27	1,170	880			2,000	2,990	1,660	755	5,710	1,170	755	470
28	1,020	880	550	350	1,170	2,990	1,490	755	4,920	1,020	755	470
29	1,020	645			------	2,570	1,490	755	5,180	880	550	470
30	1,020	645			------	2,370	1,490	755	4,150	880	550	550
31	1,020	------			------	2,370	------	755	------	880	550	------

NOTE.—Stage-discharge relation affected by ice Dec. 14 to Feb. 8; discharge estimated from a study of gage height and weather records, observer's notes, and by comparison with records of discharge for Des Moines River at Keosauqua. Braced figures give estimated discharge for periods indicated.

Monthly discharge of Des Moines River at Ottumwa, Iowa, for the year ending September 30, 1925

[Drainage area, 13,200 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,670	1,020	1,900	0.144	0.17
November	1,330	645	1,010	.077	.09
December	1,490	------	682	.052	.06
January	------	------	394	.030	.03
February	3,210	------	1,640	.124	.13
March	4,150	880	2,610	.198	.23
April	2,180	1,490	1,770	.134	.15
May	1,490	755	979	.074	.09
June	13,900	755	6,000	.455	.51
July	7,970	880	2,470	.187	.22
August	5,980	550	1,390	.105	.12
September	880	400	529	.040	.04
The year	13,900	------	1,780	.135	1.84

DES MOINES RIVER AT KEOSAUQUA, IOWA

LOCATION.—In sec. 36, T. 69 N., R. 10 W., at county bridge in Keosauqua, Van Buren County, one-fourth mile above old dam site and Government locks. No important tributary enters Des Moines River for several miles up or down stream.

DRAINAGE AREA.—At gaging station, 13,900 square miles; at mouth, 14,300 square miles (measured on base maps of Iowa and Minnesota).

RECORDS AVAILABLE.—May 29, 1903, to July 21, 1906; April 5 to December 31, 1910 (United States Engineer Corps); August 3, 1911, to September 30, 1925.

GAGE.—Chain gage attached to upstream handrail of bridge; read by Frank Schreckengast.

DISCHARGE MEASUREMENTS.—Made from bridge to which gage is attached.

CHANNEL AND CONTROL.—Channel shifts considerably at flood stages. Control is a gravel riffle one-fourth mile below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.3 feet at 7 a. m. June 16 (discharge, 19,800 second-feet); minimum stage, 0.05 foot, September 5–9 and 24 (discharge, 335 second-feet).

1903–1906; 1910–1925: Maximum stage recorded, 27.85 feet June 1, 1903 (discharge, about 97,000 second-feet); minimum discharge, 160 second-feet August 28 to September 6, 1911.

Flood of June 1, 1851, reached a stage of about 24 feet (discharge, about 80,000 second-feet).

ICE.—Stage-discharge relation seriously affected by ice.

ACCURACY.—Stage-discharge relation fairly permanent during year. Rating curve fairly well defined above 700 second-feet. Gage read to half-tenths once daily except Sundays. Daily discharge ascertained by applying daily gage height to rating table. Records fair, except for extremely low stages, for which they are poor.

The following discharge measurements were made:

October 23, 1924: Gage height, 0.82 foot; discharge, 1,460 second-feet.

January 6, 1925: Gage height, 0.71 foot (stage-discharge relation affected by ice); discharge, 443 second-feet.

Daily discharge, in second-feet, of Des Moines River at Keosauqua, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,650	1,260	835			1,030	2,500	1,440	760	4,130	760	562
2	3,650	1,300	562			625	2,500	1,440	692	3,660	760	500
3	3,180	1,350	692	475	500	442	2,170	1,350	1,440	3,180	760	442
4	3,180	1,160	692			1,500	2,060	1,260	11,900	2,840	760	388
5	3,010	1,080				1,960	1,900	1,260	6,750	2,720	692	335
6	2,840	992				2,280	1,750	1,160	4,130	2,610	692	335
7	2,840	1,160	1,500		600	3,180	1,850	1,080	3,200	15,300	760	335
8	2,840	1,260		450		2,730	1,750	1,080	2,280	9,850	798	335
9	2,950	1,130				2,280	1,640	992	3,180	5,930	835	335
10	2,390	992				2,500	1,960	992	4,130	4,620	1,080	385
11	2,280	1,160			1,800	2,720	2,060	992	4,620	3,650	5,140	500
12	2,120	1,160				3,180	2,060	992	4,130	2,860	5,140	1,160
13	1,960	1,260	800	425		3,650	2,060	992	4,130	2,060	2,950	992
14	1,960	1,160				5,660	2,280	992	4,200	2,950	1,850	625
15	1,850	1,080			3,000	4,900	2,280	790	8,140	3,180	1,640	835

Daily discharge, in second-feet, of Des Moines River at Keosauqua, Iowa, for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	1,850	1,080				4,130	2,170	1,080	19,800	2,840	1,590	835
17	1,850	1,080				3,650	2,060	958	12,500	2,720	1,540	692
18	1,750	1,080	500	475		3,180	1,960	835	9,280	2,390	1,540	567
19	1,700	1,160				3,890	1,860	760	9,560	2,280	1,350	442
20	1,640	1,080			2,200	3,180	1,750	835	8,990	2,170	1,080	414
21	1,640	1,080				3,180	1,750	880	8,140	2,010	2,170	385
22	1,440	992				3,180	1,750	760	7,300	1,850	1,850	442
23	1,440	1,040	500	450	2,500	3,180	1,640	692	8,420	1,640	1,640	442
24	1,350	1,080			3,000	3,650	6,200	627	11,300	1,350	1,440	335
25	1,440	1,080			3,650	3,890	7,860	562	11,600	1,260	1,160	385
26	1,300	992			2,950	3,650	3,420	625	8,420	1,260	835	442
27	1,160	910			2,060	3,650	2,060	562	6,750	1,260	835	442
28	1,260	992	550	425	1,440	3,180	1,960	692	6,080	1,080	692	442
29	1,160	835			-------	2,950	1,850	562	5,400	992	692	442
30	1,160	835			-------	2,720	1,640	625	5,140	835	658	3,650
31	1,160	-------			-------	2,720	-------	692	--------	760	625	------

NOTE.—Gage not read on Sundays; discharge interpolated. Stage-discharge relation affected by ice Dec. 5 to Feb. 24; discharge based on a study of gage heights, weather records, observer's notes, and comparison with records of discharge for Des Moines River at Ottumwa.

Monthly discharge of Des Moines River at Keosauqua, Iowa, for the year ending September 30, 1925

[Drainage area, 13,900 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,650	1,160	2,060	0.148	0.17
November	1,350	835	1,090	.078	.09
December	----------	----------	777	.056	.06
January	----------	----------	449	.032	.04
February	----------	----------	1,750	.126	.13
March	5,660	442	2,990	.215	.25
April	7,860	1,640	2,360	.170	.19
May	1,440	562	921	.066	.08
June	19,800	692	6,750	.486	.54
July	15,300	760	3,100	.223	.26
August	5,140	625	1,430	.103	.12
September	3,650	335	614	.044	.05
The year	19,800	335	2,020	.145	1.98

RACCOON RIVER AT VAN METER, IOWA

LOCATION.—In SW. ¼ sec. 22, T. 78 N., R. 27 W., at highway bridge one-third mile from railroad station, Van Meter, Dallas County, 1 mile below junction of North and South Raccoon Rivers, and 30 miles above junction of Raccoon and Des Moines Rivers.

DRAINAGE AREA.—3,410 square miles (measured on base map of Iowa).

RECORDS AVAILABLE.—April 25, 1915, to September 30, 1925.

GAGE.—Gurley 7-day water-stage recorder; inspected by Cal Smith.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; subject to change. River divided into two channels at low and medium stages by an island. Right bank high; left bank subject to overflow at a stage of 13 feet. At extremely high stage this overflow will extend several hundred feet beyond left end of bridge.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.45 feet at 7 a. m. June 17 (discharge, 6,000 second-feet); minimum stage, 1.85 feet at 4 p. m. September 18 (discharge, 90 second-feet).

1915–1923: Maximum stage recorded, 17.5 feet June 7, 1917 (discharge, 31,800 second-feet); minimum stage, 1.56 feet, October 22, 1918 (discharge, estimated 28 second-feet).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve fairly well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily discharge obtained by inspection of recorder graph. Records good.

Discharge measurements of Raccoon River at Van Meter, Iowa, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 23	2.98	435	May 12	2.59	288	July 23	2.50	235
Mar. 31	3.23	646	June 16	7.96	5,330	Sept. 14	2.10	147

Daily discharge, in second-feet, of Raccoon River at Van Meter, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,020	396	-------	560	302	208	880	182	120
2	985	378	-------	538	285	202	740	190	120
3	845	378	-------	527	282	218	620	188	120
4	740	378	-------	316	285	215	810	190	120
5	692	378	-------	500	288	1,170	810	182	120
6	644	378	880	475	288	3,380	740	210	130
7	602	405	880	455	292	2,610	880	4,070	132
8	590	387	880	455	285	2,230	620	5,640	215
9	590	382	950	632	285	2,130	455	1,730	208
10	578	387	852	698	285	2,080	455	1,210	175
11	560	387	803	698	282	1,500	455	810	165
12	490	455	740	686	264	1,130	560	620	182
13	532	405	740	650	257	915	740	505	148
14	527	378	880	584	247	845	560	392	145
15	527	328	620	527	235	1,170	455	320	130
16	527	320	740	470	250	5,030	405	285	130
17	522	328	620	445	241	5,520	455	250	118
18	505	336	560	405	232	3,950	505	250	116
19	500	344	560	405	229	3,160	405	250	135
20	500	352	810	405	229	3,050	405	740	235
21	495	360	1,370	405	244	2,280	320	505	192
22	475	360	1,290	405	226	2,830	285	320	140
23	440	360	1,370	395	205	2,940	232	195	160
24	415	360	950	400	208	2,340	241	250	130
25	415	415	852	405	202	1,930	220	250	110
26	415	324	789	387	202	3,050	208	250	100
27	405	320	728	364	200	2,340	202	195	145
28	425	-------	704	336	205	1,730	200	195	145
29	420	-------	668	324	205	1,330	195	145	120
30	410	-------	644	313	215	1,020	192	120	120
31	415	-------	584	-------	205	-------	192	120	-------

NOTE.—No record Nov. 28 to Mar. 5.

Monthly discharge of Raccoon River at Van Meter, Iowa, for the year ending September 30, 1925

[Drainage area, 3,410 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,020	405	555	0.163	0.19
November	455	320	370	.108	.11
March 6-31	1,370	560	826	.242	.23
April	698	313	472	.138	.15
May	302	200	247	.072	.08
June	5,520	202	2,083	.611	.68
July	880	192	466	.137	.16
August	5,640	120	670	.196	.23
September	235	100	144	.042	.05

SUGAR CREEK NEAR KEOKUK, IOWA

LOCATION.—In sec. 7, T. 65 N., R. 5 W., at single-span highway bridge 3½ miles above mouth of creek and 6 miles northwest of Keokuk, Lee County, on road to Argyle.

DRAINAGE AREA.—113 square miles (measured on county topographic map).

RECORDS AVAILABLE.—March 29, 1922, to September 30, 1925.

GAGE.—Gurley 7-day water-stage recorder attached to right abutment of bridge; inspected by Mrs. J. B. Williams and C. F. Johnson.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand; channel shifting. Left bank is overflowed at high stages. An artificial control of heavy timber and riprap construction 100 feet below gage forms a fairly permanent low-water control. There is slight leakage through the control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.30 feet at 8 a. m. July 7 (discharge, 2,180 second-feet). Creek dry during parts of October, November, and December.

1922–1925: Maximum stage recorded, 9.81 feet at 11 a. m. August 7, 1924 (discharge, 2,400 second-feet); creek dry at various times.

Maximum known stage about 20.6 feet June 9, 1905 (discharge, about 15,000 second-feet).

ACCURACY.—Stage-discharge relation changed during July; affected by ice during winter. Rating curves well defined. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph or daily chain gage readings made by observer. Records good.

Discharge measurements of Sugar Creek near Keokuk, Iowa, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 10	1.16	0.66	June 17	2.02	67.5	Sept. 24	1.63	9.31
May 28	1.27	1.67	Aug. 10	2.03	53.3			

Daily discharge, in second-feet, of Sugar Creek near Keokuk, Iowa, for the year ending September 30, 1925

Day	Oct.	Nov.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8	1.1			10	15	1.8	9.2	2.4	0.8
2	.7	.9			9.6	15	7.1	7.5	2.4	.6
3	.9	.8			8.7	13	49	5.8	2.4	.5
4	5.5	.7			8.7	11	54	49	2.1	.5
5	2.2	.8			7.1	10	33	15	1.5	.5
6	1.3	.8	275	16	5.8	8.4	11	45	1.2	.4
7	3.5	1.0	192	18	5.8	7.1	5.3	1,880	9.2	.3
8	30	1.0	692	20	5.8	6.6	3.7	790	30	.4
9	18	1.0	794	18	17	7.5	2.3	88	14	.9
10	14	1.0	498	20	67	6.6	1.7	42	48	4.7
11	7.5	2.3	114	16	60	5.8	1.3	29	14	101
12	4.6	1.2	176	14	29	5.1	1.4	22	750	138
13	2.8	1.0	110	51	20	4.0	2.6	20	138	1,010
14	1.7	1.0	67	54	15	4.2	377	114	34	176
15	1.5	1.0	24	99	12	4.4	337	109	18	49
16	1.4	1.0		54	10	86	277	30	11	46
17	1.1	.9		42	12	39	67	15	13	22
18	1.0	.8		86	14	17	36	13	22	18
19	.8	.8		152	37	13	19	12	38	14
20	.8	.8	18	106	104	9.6	12	9.2	26	
21	.8	.8	133	60	124	6.6	8.3	7.4	16	14
22	.6	.9	133	40	58	4.6	350	5.7	8.7	
23	.6	.9	593	32	30	3.7	617	4.7	5.4	
24	.5	.9	1,170	26	82	3.0	186	4.5	4.5	11
25	.6	.8	204	24	222	2.2	51	4.0	3.4	9.2
26	.8	.8	72	20	97	2.0	29	3.2	2.7	66
27	.8	.8		16	233	2.3	19	3.2	2.4	24
28	.8	.8		14	27	2.0	19	9.8	2.1	17
29	.8	.5		14	23	2.0	27	4.7	1.8	11
30	.7	.5		12	20	2.2	13	3.2	1.2	217
31	1.5			11		1.6		2.7	1.0	

NOTE.—Gage-height record missing Nov. 9, Feb. 14, May 3, 24, and Sept. 20-23; discharge estimated. No record Dec. 1 to Feb. 5, Feb. 16-19, and Feb. 27 to Mar. 5. Braced figure gives mean discharge for period indicated.

Monthly discharge of Sugar Creek near Keokuk, Iowa, for the year ending September 30, 1925

[Drainage area, 113 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	30	0.5	3.50	0.031	0.04
November	2.3	.5	.92	.008	.01
March 6-31	152	11	39.8	.352	
April	233	5.8	45.8	.405	.45
May	86	1.6	10.3	.090	.10
June	617	1.3	87.2	.772	.86
July	1,880	2.7	108	.956	1.10
August	750	1.0	39.6	.350	.40
September	1,010	.3	66.5	.588	.66

FOX RIVER NEAR WAYLAND, MO.

LOCATION.—In NE. ¼ sec. 25, T. 65 N., R. 7 W., at highway bridge 1 mile above Chicago, Burlington & Quincy Railroad bridge, 2½ miles northwest of Wayland, Clark County, and 3 miles below Brush Creek.

DRAINAGE AREA.—392 square miles (measured on base map of Iowa and on topographic maps).

RECORDS AVAILABLE.—February 22, 1922, to September 30, 1925.

GAGE.—Chain gage bolted to handrail on upstream side of bridge; read by Loren Smith.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of clean sand; shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 14.90 feet April 26 and June 17 (discharge, 3,760 second-feet); minimum discharge, estimated 1 second-foot December 24 to January 2.

1922–1925: Maximum stage recorded, that of April 26 and June 17, 1925; minimum stage, 1.98 feet at 7 a. m. November 7, 1923 (discharge, 0.6 second-foot).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation changed probably during high water in February; seriously affected by ice during winter. Rating curve used until February 24 fairly well defined; curve used after that date fairly well defined between 50 and 3,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table; shifting-control method used October 1 to February 24. Records fair except those for period of ice effect and for discharge below 20 second-feet during May to September, which are poor.

Discharge measurements of Fox River near Wayland, Mo., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 17	2.37	11	Mar. 23	3.48	126	June 23	8.16	1,240
Dec. 12	a 2.80	29	Apr. 28	4.34	265	Sept. 22	3.20	88
Jan. 9	a 2.69	3.5	June 23	9.26	1,600			

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Fox River near Wayland, Mo., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9	4	4	1	197	195	44	145	115	49	14	5
2	8	4	4	1	213	186	43	130	76	39	10	5
3	8	4	4	2	230	130	42	186	84	41	12	5
4	7	5	35	2	247	101	40	94	740	28	9	3
5	34	6	582	2	358	72	36	74	320	23	8	3
6	18	6	638	2	526	48	33	66	170	20	9	3
7	11	4	498	2	638	44	33	58	67	1,520	12	3
8	29	4	100	2	840	82	33	55	48	865	10	3
9	80	4	75	2	1,080	101	48	48	36	284	18	3
10	73	50	57	2	1,230	94	153	52	32	115	12	39
11	48	28	46	5	810	94	195	49	28	84	12	1,010
12	19	20	25	5	694	84	115	41	29	38	360	1,730
13	22	20	25	5	638	360	87	39	32	18	204	1,040
14	13	29	16	5	582	1,220	63	37	25	221	153	178
15	10	18	16	5	554	640	48	36	590	115	94	94
16	11	16	9	5	498	230	43	108	2,400	62	10	60
17	12	12	9	9	470	204	39	130	3,720	41	27	43
18	8	12	5	9	442	248	33	108	890	39	27	25
19	7	8	5	9	442	690	67	67	248	51	27	34
20	5	7	5	9	470	865	440	48	138	35	22	54

Daily discharge, in second-feet, of Fox River near Wayland, Mo., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	4	6	2	16	526	490	440	43	84	24	19	115
22	5	7	2	16	666	153	790	35	515	20	16	72
23	6	7	2	25	1,840	108	340	30	1,420	18	13	49
24	4	7	1	25	2,700	108	465	24	248	13	11	40
25	4	5	1	35	1,760	101	2,720	20	186	12	10	35
26	4	5	1	46	320	86	2,800	23	130	13	9	33
27	4	5	1	57	320	74	515	19	83	54	8	78
28	3	4	1	80	248	67	284	16	68	56	8	87
29	3	4	1	107	-------	60	204	11	74	27	7	58
30	3	4	1	165	-------	52	178	11	60	18	8	890
31	3	-------	1	197	-------	48	-------	640	-------	37	7	------

NOTE.—Stage-discharge relation affected by ice Dec. 10 to Feb. 22; discharge ascertained by applying to rating table daily gage height corrected for ice effect by means of two discharge measurements, observer's notes, and weather records.

Monthly discharge of Fox River near Wayland, Mo., for the year ending September 30, 1925

[Drainage area, 392 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	80	3	15.3	0.039	0.04
November	50	4	10.5	.027	.03
December	638	1	70.1	.179	.21
January	197	1	27.5	.070	.08
February	2,700	197	698	1.78	1.85
March	1,220	44	227	.579	.67
April	2,800	33	346	.883	.99
May	640	11	78.8	.201	.23
June	3,720	25	422	1.08	1.20
July	1,520	12	128	.327	.38
August	360	7	37.6	.096	.11
September	1,730	3	193	.492	.55
The year	3,720	1	183	.467	6.34

WYACONDA RIVER NEAR CANTON, MO.

LOCATION.—In SE. ¼ SW. ¼ sec. 33, T. 62 N., R. 6 W., at highway bridge three-fourths mile below Sugar Creek, 3 miles southwest of Canton, Lewis County, and 15 miles above mouth of river.

DRAINAGE AREA.—447 square miles (measured on base maps of Iowa and Missouri and on topographic maps).

RECORDS AVAILABLE.—February 20, 1922, to September 30, 1925.

GAGE.—Chain gage attached to wooden beam between vertical members on upstream side of bridge; read by Fred Schroeder.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and mud; free from vegetation; shifting. No well-defined control. Banks wooded near edge and cultivated beyond; left bank subject to overflow at extremely high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.18 feet at 6 p. m. April 26 (discharge, 2,670 second-feet); minimum discharge, 2 second-feet September 2 and 4–9.

1922–1925: Maximum stage recorded, 12.26 feet June 27, 1924 (discharge, 3,520 second-feet); minimum discharge, estimated 0.5 second-foot January 8–9 and 19–23, 1924.

ACCURACY.—Stage-discharge relation permanent during the year except as affected by ice. Rating curve well defined above 20 second-feet and fairly well defined below. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by applying daily gage height to rating table except as explained in footnote to table of daily discharge. Records fair except during estimated periods, for which they are poor.

Discharge measurements of Wyaconda River near Canton, Mo., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 18	0.93	5.0	Jan. 8	0.83	3.4	June 24	2.78	256
Dec. 11	1.30	31	Mar. 22	2.39	190	Sept. 21	2.62	245

Daily discharge, in second-feet, of Wyaconda River near Canton, Mo., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5	4	4	3	188	220	35	106	5	56	4	3
2	6	4	4	3	188	204	35	98	4	48	4	2
3	6	4	5	3	188	87	27	87	5	48	3	3
4	6	6	30	3	212	63	27	76	5	38	3	2
5	7	5	540	3	980	59	26	51	276	30	3	2
6	8	5	710	3	980	76	22	38	113	35	3	2
7	7	5	565	3	830	81	20	25	51	1,270	17	2
8	11	5	173	3	680	81	22	22	27	1,340	7	2
9	14	6	92	3	1,480	81	22	21	15	220	6	2
10	43	6	46	3	1,130	80	188	15	7	128	3	3
11	98	6	42	3	950	78	173	15	7	98	4	390
12	70	6	40	3	830	77	128	12	8	98	650	296
13	43	7	40	3	440	128	90	11	7	106	106	1,010
14	34	7	11	3	220	1,480	84	11	7	113	64	256
15	24	6	12	3	204	540	38	12	64	98	56	143
16	14	6	9	3	204	515	35	14	1,270	17	12	98
17	5	6	9	3	196	540	36	180	2,110	9	11	38
18	5	6	9	3	204	540	38	188	2,270	9	8	22
19	4	5	6	3	204	1,070	38	128	1,480	6	20	9
20	4	5	6	3	220	830	390	38	70	7	106	11
21	4	6	4	3	340	510	204	35	67	6	17	256
22	4	6	4	3	830	190	800	15	318	5	14	98
23	4	6	4	6	1,410	100	680	13	980	5	8	11
24	3	6	3	27	1,940	75	650	8	318	5	6	4
25	4	6	3	27	2,390	60	1,660	8	256	3	5	4
26	4	7	3	51	680	45	2,550	5	98	3	4	98
27	4	6	3	40	340	38	1,520	5	70	3	4	56
28	4	6	3	84	296	38	212	5	40	3	3	256
29	4	6	3	128	-------	38	166	5	35	3	3	166
30	4	5	3	143	-------	38	143	4	22	3	3	113
31	5	-------	3	136	-------	35	-------	5	-------	3	3	-----

NOTE.—Gage not read Oct. 14-16 and Jan. 28; discharge interpolated. Discharge estimated Mar. 21-26 because of missing and erroneous gage heights. Stage-discharge relation slightly affected by ice Dec. 19 to Jan. 4; discharge estimated from gage heights, observer's notes, and weather records.

Monthly discharge of Wyaconda River near Canton, Mo., for the year ending September 30, 1925

[Drainage area, 447 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	98	3	14.8	0.033	0.04
November	7	4	5.67	.013	.01
December	710	3	77.1	.172	.20
January	143	3	22.8	.051	.06
February	2,390	188	670	1.50	1.56
March	1,480	35	258	.577	.67
April	2,550	20	335	.749	.84
May	188	4	40.5	.091	.10
June	2,270	4	334	.747	.83
July	1,340	3	123	.275	.32
August	650	3	37.4	.084	.10
September	1,010	2	112	.251	.28
The year	2,550	2	165	.369	5.01

NORTH FABIUS RIVER AT MONTICELLO, MO.

LOCATION.—In SE. ¼ sec. 6, T. 61 N., R. 7 W., at highway bridge 1 mile south of Monticello, Lewis County, and 22 miles above junction with Middle Fabius River.

DRAINAGE AREA.—452 square miles (measured on base map of Iowa and on topographic maps).

RECORDS AVAILABLE.—February 18, 1922, to September 30, 1925.

GAGE.—Chain gage fastened to downstream side of bridge; read by Floyd Nelson.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of rock, sand, and silt. Control is a coarse gravel bar 1½ miles below gage; clean and fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 18.18 feet at 3 p. m. April 25 (discharge, 4,370 second-feet); minimum discharge, 2 second-feet December 22 to January 1 and September 2–7.

1922–1925: Maximum stage determined from floodmarks, 22.9 feet June 26, 1924 (discharge, 6,370 second-feet); minimum stage, 0.52 foot July 9, 1922 (discharge, 1 second-foot).

ACCURACY.—Stage-discharge relation changed probably during high water in April; affected by ice during winter. Rating curves fairly well defined above 16 second-feet. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by applying daily gage height to rating table except as described in footnote to table of daily discharge. Records fair, except those for periods of ice effect and for extremely low stages which are poor.

Discharge measurements of North Fabius River at Monticello, Mo., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 18	0.96	9.6	Jan. 8	0.81	5.1	June 24	2.39	153
Dec. 11	1.44	48	Mar. 22	2.54	205	Sept. 21	4.58	573

Daily discharge, in second-feet, of North Fabius River at Monticello, Mo., for the year ending September 30, 1925

Day	Oct	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	14	5	2	163	164	30	95	6	16	6	4
2	6	13	7	3	223	89	26	71	8	11	4	2
3	5	12	8	3	283	79	26	55	260	10	4	2
4	15	14	45	3	343	69	22	46	608	9	4	2
5	14	13	1,450	5	396	82	22	33	155	8	4	2
6	16	12	435	4	806	96	25	29	52	8	3	2
7	11	12	208	4	806	133	26	22	27	1,110	26	2
8	223	14	96	4	828	104	30	21	17	420	24	3
9	178	16	27	5	1,450	75	55	23	12	134	12	3
10	53	19	14	4	806	75	67	21	10	54	11	21
11	25	16	44	4	435	75	73	19	9	33	38	500
12	22	20	40	4	178	82	110	14	8	27	162	340
13	14	25	39	3	208	89	69	16	8	24	155	108
14	11	22	37	4	163	1,390	53	14	52	21	120	83
15	10	19	14	5	118	535	38	13	1,140	18	95	53
16	6	17	30	4	103	238	30	12	3,430	15	26	20
17	10	15	11	4	86	253	41	114	1,370	12	22	16
18	14	17	6	5	52	298	32	83	480	11	21	12
19	9	14	5	5	43	1,480	69	37	148	8	17	9
20	8	11	3	5	148	555	133	25	71	7	83	7
21	7	12	3	5	253	268	2,260	20	52	6	83	500
22	6	14	2	8	343	208	515	15	184	5	77	108
23	9	15	2	11	2,970	140	268	11	184	5	77	89
24	10	12	2	23	2,940	110	2,640	9	134	5	73	62
25	10	11	2	41	740	89	4,250	8	83	5	66	33
26	9	10	2	52	378	75	2,230	8	47	4	64	58
27	7	10	2	63	118	58	380	7	39	4	51	83
28	6	9	2	89	238	44	127	8	35	4	38	114
29	9	10	2	103	------	41	148	8	40	7	24	95
30	8	7	2	118	------	38	114	8	26	10	10	89
31	8	------	2	133	------	35	------	7	------	9	7	------

NOTE.—Gage not read and daily discharge interpolated Nov. 27, Jan. 8, 10, 12, 14, 16, Mar. 1, 3, 5, 8, July 13-16, Aug. 28 and 29; estimated Sept. 18-20. Discharge estimated Jan. 18-24, on account of incorrect gage readings. Stage-discharge relation affected by ice Dec. 19 to Jan. 6 and Jan. 25 to Feb. 4; discharge estimated from gage heights, observer's notes, and weather records.

Monthly discharge of North Fabius River at Monticello, Mo., for the year ending September 30, 1925

[Drainage area, 452 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	223	5	24.9	0.055	0.06
November	25	7	14.2	.031	.03
December	1,450	2	82.2	.182	.21
January	133	2	23.4	.052	.06
February	2,970	43	558	1.23	1.28
March	1,480	35	228	.504	.58
April	4,250	22	464	1.03	1.15
May	114	7	28.1	.062	.07
June	3,430	6	290	.642	.72
July	1,110	4	65.2	.144	.17
August	162	3	45.4	.100	.12
September	500	2	80.7	.179	.20
The year	4,250	2	155	.343	4.65

SALT RIVER NEAR NEW LONDON, MO.

LOCATION.—In NE. ¼ NW. ¼ sec. 36, T. 56 N., R. 5 W., at bridge on State highway No. 8, 1¼ miles below Turkey Creek and 2 miles north of New London, Ralls County.

DRAINAGE AREA.—2,480 square miles (measured on topographic and soil survey maps).

RECORDS AVAILABLE.—February 16, 1922, to September 30, 1925.

GAGE.—Chain gage bolted to handrail on upstream side of bridge; read by C. V. Lemon and Wade Thornberry.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and silt; clean and fairly permanent. Control is a gravel bar 200 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 14.70 feet at 4.15 p. m. March 19 (discharge, 14,500 second-feet); minimum stage, 1.66 feet at 7 a. m. December 2 (discharge, 18 second-feet).

1922–1925: Maximum stage recorded, 24.15 feet at 5 p. m. March 16, 1922 (discharge, 39,800 second-feet); minimum discharge estimated, 12 second-feet August 20, 1922.

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation not permanent; affected by ice and by shifting control. Rating curve used until March 19 fairly well defined above 50 second-feet; curve used after that date fairly well defined above 70 second-feet. Gage read to hundredths twice daily; readings rather unreliable prior to April 15. Daily discharge ascertained by applying mean daily gage height to rating table except as described in footnote to table of daily discharge. Records prior to April 15 fair for medium and high stages and poor for low stages; records after that date good except for very low stages, for which they are fair.

Discharge measurements of Salt River near New London, Mo., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 18	2.10	59	Jan. 8	1.89	26	June 25	11.95	9,680
Dec. 11	2.54	240	Mar. 2	6.34	3,200	Sept. 20	2.24	138

Daily discharge, in second-feet, of Salt River near New London, Mo., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	26	30	22	2,720	630	206	310	84	5,420	67	74
2	32	26	18	22	3,890	482	172	188	102	1,370	52	69
3	32	26	25	22	3,590	436	157	188	91	630	51	49
4	65	26	44	26	2,540	385	157	172	80	430	49	48
5	93	26	74	26	4,960	334	157	157	62	310	51	41
6	191	26	840	26	11,000	298	125	144	62	264	57	39
7	274	26	720	26	8,870	286	106	130	62	5,900	65	37
8	1,610	26	600	26	8,730	262	106	130	182	4,960	65	37
9	1,530	26	480	26	8,450	268	123	84	163	2,540	65	37
10	1,370	26	360	26	8,870	274	140	118	113	1,530	65	37
11	424	26	224	26	4,740	274	157	111	102	770	118	37
12	258	26	168	26	3,390	262	630	106	102	495	74	37
13	211	26	130	26	2,120	3,940	630	106	102	321	65	223
14	124	33	106	26	1,700	7,610	398	84	80	495	172	365
15	106	45	100	26	910	6,660	287	99	80	735	188	875

Daily discharge, in second-feet, of Salt River near New London, Mo., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	86	76	93	26	985	3,690	223	130	80	296	179	462
17	68	106	100	26	1,060	1,950	223	8,450	152	169	157	264
18	59	118	76	26	948	1,860	223	6,920	3,090	182	118	152
19	59	124	57	26	910	13,700	223	3,090	2,720	157	84	146
20	56	109	57	26	1,060	10,000	244	840	1,950	149	206	125
21	52	93	57	26	2,460	5,180	264	595	770	91	840	80
22	35	127	57	26	4,740	3,120	223	398	417	264	1,780	65
23	31	78	42	31	8,310	1,060	256	264	1,950	326	805	65
24	28	68	42	31	6,920	770	223	212	10,400	206	462	188
25	21	66	42	985	5,660	595	495	188	10,900	144	172	495
26	22	61	31	1,860	3,690	462	528	144	6,400	106	144	462
27	23	50	31	3,590	2,200	354	1,530	130	2,380	106	130	65
28	26	36	31	3,490	910	310	1,210	118	1,700	104	123	57
29	26	34	31	2,460	------	264	770	106	5,180	95	99	95
30	26	32	22	1,450	------	244	430	118	11,800	86	84	770
31	26	------	22	1,700	------	188	------	91	------	78	82	------

NOTE.—Discharge estimated Oct. 1, Nov. 29, 30, Dec. 7–10, 12, Mar. 4, 12, Apr. 4, 9, and 10, because gage was not read, and Oct. 17, 19, 20, Mar. 21 and 22, on account of unreliable gage readings. Stage-discharge relation affected by ice Dec. 18 to Jan. 24; discharge ascertained by applying to rating table gage heights corrected for ice effect by means of one discharge measurement, observer's notes, and weather records.

Monthly discharge of Salt River near New London, Mo., for the year ending September 30, 1925

[Drainage area, 2,480 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,610	21	226	0.091	0.1
November	124	26	53.1	.021	.02
December	840	18	152	.061	.07
January	3,590	22	521	.210	.24
February	11,000	910	4,150	1.67	1.74
March	13,700	188	2,130	.859	.99
April	1,530	106	354	.143	.16
May	8,450	84	772	.311	.36
June	11,800	62	2,050	.827	.92
July	5,900	78	927	.374	.43
August	1,780	49	215	.087	.10
September	875	37	183	.074	.08
The year	13,700	18	955	.385	5.21

CUIVRE RIVER NEAR TROY, MO.

LOCATION.—In SW. ¼ sec. 18, T. 49 N., R. 1 E., at Frenchman Bluff highway bridge, 1½ miles above Sugar Creek, 3 miles northeast of Troy, Lincoln County, and 4 miles below West Fork.

DRAINAGE AREA.—908 square miles (measured on topographic maps).

RECORDS AVAILABLE.—February 15, 1922, to September 30, 1925.

GAGE.—Chain gage on upstream side of bridge; read by Hester Kolb and C. H. Kolb.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of silt, sand, and gravel; clean except for drift. Left bank high and rocky; right bank wooded; subject to overflow at extremely high stages. Control is a coarse gravel bar 300 feet below gage; clean except for brush growing on exposed part; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 20.24 feet at 8 a. m. March 19 (discharge, 18,600 second-feet); minimum discharge, 4 second-feet September 9–25.

1922–1925: Maximum stage recorded, 23.90 feet March 14, 1922 (discharge, 24,900 second-feet); minimum discharge, 4 second-feet September 9–25, 1925.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined above 20 second-feet and fairly well defined below. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table except as described in footnote to table of daily discharge. Records good except during ice-affected period and for days when discharge was interpolated, for which they are poor.

Discharge measurements of Cuivre River near Troy, Mo., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 19	1.88	27	Jan. 7	[a]2.10	46	June 26	4.12	555
Dec. 10	2.36	82	Mar. 21	6.24	1,520	Sept. 19	1.22	4.2

[a] Stage-discharge relation slightly affected by ice.

Daily discharge, in second-feet, of Cuivre River near Troy, Mo., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	14	24	60	4,320	237	129	90	[a]22	545	20	7
2	11	12	21	59	2,620	200	120	77	27	308	16	7
3	10	11	39	58	2,270	178	120	69	[a]24	99	14	7
4	37	11	61	54	2,060	158	111	59	21	82	14	6
5	71	11	158	49	5,410	168	102	54	[a]19	57	13	6
6	43	11	138	50	2,620	200	93	52	17	46	11	5
7	5,410	12	158	50	2,550	224	87	50	[a]14	6,180	11	[a]5
8	2,860	11	138	44	2,940	189	[a]108	46	12	960	10	5
9	510	12	87	47	6,290	189	129	57	[a]11	323	[a]9	[a]4
10	224	14	74	49	1,680	158	158	54	10	212	8	4
11	129	20	61	51	880	138	178	52	[a]10	158	[a]11	[a]4
12	93	800	54	49	720	120	212	[a]49	9	93	14	4
13	69	1,040	41	29	720	138	158	46	[a]11	69	129	4
14	52	1,040	39	73	650	13,200	138	[a]44	13	960	77	4
15	48	323	39	78	615	2,270	120	43	[a]12	99	50	4
16	41	158	37	83	960	800	120	[a]43	11	93	32	[a]4
17	37	111	1,440	178	800	545	1,140	43	[a]550	64	[a]26	[a]4
18	32	87	4,510	200	510	5,410	800	[a]82	1,090	39	20	[a]4
19	28	69	1,390	74	580	17,400	440	120	354	34	[a]84	4
20	22	59	960	87	545	3,260	308	[a]90	82	50	148	[a]4
21	20	52	760	102	545	1,800	178	61	64	54	920	[a]4
22	18	41	338	308	1,000	960	148	[a]52	37	35	237	4
23	17	39	275	880	4,810	510	148	43	1,040	24	189	4
24	15	37	212	1,090	2,340	440	120	[a]38	1,680	24	82	4
25	14	34	180	1,090	720	338	102	32	1,390	28	66	4
26	14	30	148	1,000	800	278	580	[a]28	440	24	46	6
27	15	24	118	920	510	237	338	24	158	27	37	11
28	15	18	88	840	278	212	178	[a]22	93	17	21	111
29	14	25	79	720	-------	168	120	20	800	20	17	99
30	15	22	70	615	-------	158	96	[a]18	1,240	18	14	84
31	14	-------	65	510	-------	148	-------	17	-------	22	11	-------

[a] Gage not read; discharge interpolated.

NOTE.—Stage-discharge relation affected by ice Dec. 22 to Feb. 3; discharge ascertained by applying to rating table daily gage heights corrected for ice affect by means of one discharge measurement, observer's notes, and weather records.

Monthly discharge of Cuivre River near Troy, Mo., for the year ending September 30, 1925

[Drainage area, 908 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	5,410	10	320	0.352	0.41
November	1,040	11	138	.152	.17
December	4,510	21	381	.420	.48
January	1,090	29	306	.337	.39
February	6,290	278	1,810	1.99	2.07
March	17,400	120	1,630	1.80	2.07
April	1,140	87	226	.249	.28
May	120	17	50.8	.056	.06
June	1,680	9	309	.340	.38
July	6,180	17	347	.382	.44
August	920	8	76.0	.084	.10
September	111	4	14.2	.016	.02
The year	17,400	4	459	.506	6.87

DES PLAINES RIVER AT LEMONT, ILL.

LOCATION.—In sec. 20, T. 37 N., R. 11 E., at concrete highway bridge on Stephens Street, a quarter of a mile north of main section of Lemont, Cook County, and 8 miles above junction of Des Plaines River and the Chicago Drainage Canal.

DRAINAGE AREA.—705 square miles.

RECORDS AVAILABLE.—November 4, 1914, to September 30, 1925.

GAGE.—Staff gage attached to bridge; read by William Weck, jr. Zero of gage is 584.10 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Concrete dam 500 feet below gage forms control for low and medium stages; permanent except for slight repairs in August, 1920.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.0 feet February 28 (discharge, 4,270 second-feet); minimum stage, 2.40 feet September 8 (discharge, no flow).

1915–1925: Maximum discharge recorded, 5,520 second-feet March 18, 1919; minimum discharge, no flow September 7, 8, 14–21, and 24–27, 1919, July 25–31, 1921, and September 8, 1925.

DIVERSIONS.—During extremely high water part of flow spills over into the Chicago Drainage Canal at Willow Springs 7 miles above station. Estimates of this overflow in previous years were published in Water-Supply Papers 505, 565, and 585. Estimates for 1925 are given below:

Date	Overflow in second-feet	Date	Overflow in second-feet
Feb. 25	30	Feb. 28	2,280
Feb. 26	60	Mar. 1	1,460
Feb. 27	1,170	Mar. 2	10

ICE.—Stage-discharge relation not seriously affected by ice.

ACCURACY.—Stage-discharge relation permanent at low and medium stages; affected by vegetation in overflow area at high stages. Rating curve well defined above 50 second-feet and fairly well defined below. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table except as explained in footnote to daily-discharge table. Records good except for very low stages, for which they are fair.

The following discharge measurements were made:

July 6, 1925: Gage height, 2.45 feet; discharge estimated, 0.7 second-foot

September 4, 1925: Gage height, 2.51 feet; discharge, 6.6 second-feet.

Daily discharge, in second-feet, of Des Plaines River at Lemont, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	385	31	31	48	48	3,750	460	315	48	68	120	18
2	350	48	31	48	48	2,170	460	245	48	48	93	6
3	315	68	48	44	48	1,670	422	212	48	48	60	6
4	315	68	93	40	114	1,350	350	212	31	31	31	6
5	245	48	120	44	180	245	245	180	31	18	31	6
6	212	48	120	48	230	540	212	315	48	1.6	25	1.6
7	212	31	120	48	280	460	212	385	48	68	18	1.6
8	212	31	150	48	315	460	180	422	31	68	31	0.0
9	180	31	150	40	1,110	480	120	385	31	48	48	6
10	150	48	180	31	1,900	500	180	350	31	40	48	31
11	120	68	180	40	1,960	520	150	315	18	40	31	48
12	120	68	180	48	2,030	540	212	245	18	48	31	68
13	93	93	150	44	1,460	580	212	212	31	48	48	31
14	93	120	150	40	880	620	212	212	48	48	93	48
15	93	120	114	36	710	660	180	180	68	31	120	68
16	93	120	110	31	540	600	150	212	93	31	93	93
17	93	93	106	31	462	540	120	315	120	18	68	120
18	93	93	102	31	385	500	120	245	93	18	48	120
19	93	68	98	31	350	460	93	212	93	31	31	93
20	68	68	93	31	315	500	68	180	68	68	25	93
21	68	93	106	31	508	540	68	180	68	120	31	93
22	48	93	120	31	700	692	120	150	93	93	31	68
23	48	93	106	31	1,300	745	120	150	120	31	31	48
24	48	93	93	31	1,900	722	150	150	180	18	31	48
25	31	68	80	31	2,120	700	180	120	212	6	31	31
26	31	68	68	31	2,330	680	180	120	245	18	25	48
27	48	68	61	31	3,300	660	180	120	245	31	25	68
28	48	48	55	31	4,270	600	212	93	180	31	18	93
29	48	48	48	31	-------	540	245	93	150	48	18	93
30	48	31	48	31	-------	500	315	68	93	48	18	68
31	31	-------	48	31	-------	460	-------	68	-------	68	31	------

NOTE.—Gage read every other day Dec. 20 to Feb. 28 and Mar. 8–31; discharge interpolated for days when gage was not read. Gage readings to top of ice Dec. 15–19; discharge estimated.

Monthly discharge of Des Plaines River at Lemont, Ill., for the year ending September 30, 1925

[Drainage area, 705 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	385	31	130	0.184	0.21
November	120	31	68.9	.098	.11
December	180	31	102	.145	.17
January	48	31	36.9	.052	.06
February	4,270	48	1,060	1.50	1.56
March	3,750	245	774	1.10	1.27
April	460	68	204	.289	.32
May	422	68	215	.305	.35
June	245	18	87.7	.124	.14
July	120	1.6	43.0	.060	.07
August	120	18	44.6	.063	.07
September	120	0	50.7	.072	.08
The year	4,270	0	230	.326	4.41

DES PLAINES RIVER AT JOLIET, ILL.

LOCATION.—In NE. ¼ sec. 9, T. 35 N., R. 10 E., at Jackson Street Bridge, Joliet, Will County, 1,200 feet upstream from Cass Street Bridge.

DRAINAGE AREA.—Indeterminate.

RECORDS AVAILABLE.—December 3, 1914, to September 30, 1925; at Cass Street Bridge September 5 to December 19, 1914.

GAGE.—Gurley 7-day water-stage recorder; inspected by H. A. McCann.

DISCHARGE MEASUREMENTS.—Made from Cass Street Bridge.

CHANNEL AND CONTROL.—Channel excavated in solid rock, with a concrete wall on either side; permanent.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge during days of record for year, estimated 9,850 second-feet October 1; minimum mean daily discharge, 6,850 second-feet December 26.

1914–1925: Maximum mean daily discharge during days of record, 18,400 second-feet March 18, 1919; minimum mean daily discharge, 5,420 second-feet April 25, 1915.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Water is diverted to Illinois & Michigan Canal at Dam No. 1 100 feet above gage.

REGULATION.—Flow past gage is largely regulated by operation of power plant of Chicago Sanitary District at Lockport, which utilizes flow of Chicago Drainage Canal and, to a lesser extent, by operation of Economy Light & Power Co.'s plant, 100 feet above gage.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve well defined. Operation of water-stage recorder satisfactory except as noted in table of daily discharge. Daily discharge ascertained by use of discharge integrator. Records excellent, except for a few short periods when recording gage was not operating, for which they are fair.

The following discharge measurements of the Illinois & Michigan Canal were made:

June 4, 1925: Discharge, 217 second-feet.

September 4, 1925: Discharge, 316 second-feet.

Daily discharge, in second-feet, of Des Plaines River at Joliet, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a9,850	8,250	9,160	-------	7,780	9,240	8,820	9,270	8,320	8,410	8,520	8,020
2	a9,750	8,550	8,120	-------	8,110	8,840	8,530	a9,000	8,490	8,330	8,000	7,960
3	9,380	8,590	7,390	-------	7,380	8,040	8,590	8,660	8,220	8,720	7,940	7,760
4	9,650	8,420	8,860	-------	7,580	8,500	8,670	9,400	7,950	8,410	8,080	8,020
5	9,160	8,680	9,370	-------	7,760	8,310	8,350	8,840	8,300	8,590	7,840	7,990
6	9,480	8,520	9,020	-------	7,840	8,500	8,680	8,720	8,640	8,460	7,930	8,170
7	9,680	8,960	8,980	-------	8,020	8,720	8,340	8,520	8,080	8,680	a7,800	8,360
8	9,610	9,180	8,830	-------	a7,850	8,640	8,450	9,000	8,660	8,740	a7,900	8,200
9	9,620	8,760	8,060	-------		8,980	8,520	a8,850	8,000	8,740	7,790	8,200
10	9,580	8,570	8,300	-------	b8,000	8,650	8,720	9,030	8,440	8,700	7,680	7,920
11	9,560	8,540	8,360	-------		8,300	8,580	8,750	8,270	a8,700	7,700	a8,200
12	9,380	8,490	8,460	-------		8,380	8,220	8,830	8,600	8,600	7,790	a8,300
13	9,440	8,730	8,540	-------	a8,250	9,300	8,160	8,510	8,710	8,760	8,150	8,230
14	9,180	8,840	7,850	-------	8,240	9,780	8,540	9,110	7,960	8,840	b8,000	
15	9,310	8,480	8,100	-------	8,510	9,160	8,300	8,730	9,040	8,490	a8,000	
16	9,100	8,740	8,460	a7,750	8,700	8,300	8,090	8,700	8,680	8,640	8,240	b8,250
17	9,380	8,960	8,620	7,550	8,180	8,940	8,440	8,200	9,020	8,930	8,320	
18	9,130	8,890	8,900	7,810	7,960	8,980	8,470	9,120	8,420	8,540	8,360	
19	9,080	8,280	a8,580	-------	7,920	9,640	8,860	a9,000	8,530	8,150	8,230	a8,000
20	9,430	7,300	a8,320	-------	8,080	9,150	8,740	b8,750	a8,400	8,560	8,180	7,180
21	9,680	8,650	8,050	-------	8,340	8,950	8,740	b8,750	8,360	8,580	8,760	7,870
22	9,150	8,980	7,560	-------	8,660	9,160	8,390	b8,750	8,630	8,310	8,320	8,890
23	8,930	8,790	7,320	-------	9,090	9,300	8,380	a8,750	8,770	8,160	8,280	8,280
24	8,770	8,780	7,600	a7,750	a9,200	9,120	8,620	8,860	9,170	8,130	8,200	8,000
25	8,880	8,500	7,880	7,730		8,860	a8,500	9,260	9,410	8,370	8,240	8,380
26	8,590	7,990	6,850	8,320	b9,250	8,750	8,490	8,780	8,680	8,630	8,280	8,460
27	8,990	8,430	7,560	8,140		9,070	8,890	8,520	8,580	8,550	8,490	8,280
28	8,980	8,520	a7,460	7,460	a9,200	8,840	8,850	8,540	8,440	8,680	8,500	8,260
29	8,990	8,540		7,730	-------	8,580	9,160	8,540	8,720	8,390	8,340	8,340
30	8,960	8,380	b7,750	a7,750	-------	9,450	9,580	8,200	8,560	8,290	8,060	8,420
31	8,560	-------		a7,250	-------	9,000	-------	7,940	-------	9,000	8,160	-------

a Discharge partly estimated because of incomplete gage record.
b No record, discharge estimated; braced figures give mean discharge for period indicated.

NOTE.—Daily discharge does not include flow in Illinois & Michigan Canal (see "Diversions" in station description).

Monthly discharge of Des Plaines River at Joliet, Ill., for the year ending September 30, 1925

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	9,850	8,560	9,270	May	9,400	7,940	8,770
November	9,180	7,300	8,580	June	9,410	7,950	8,540
December	9,370	6,850	8,190	July	9,000	8,130	8,550
February		7,580	8,300	August	8,760	7,680	8,130
March	9,780	8,040	8,880	September	8,890	7,180	8,160
April	9,580	8,090	8,590				

ILLINOIS RIVER AT MORRIS, ILL.

LOCATION.—In sec. 9, T. 33 N., R. 7 E. third principal meridian, at highway bridge in Morris, Grundy County, 7 miles below station formerly maintained near Minooka and 10 miles below mouth of Kankakee River.

DRAINAGE AREA.—Indeterminate.

RECORDS AVAILABLE.—October 1, 1919, to September 30, 1925; January 1, 1903, to December 13, 1904, for station near Minooka. Daily readings were obtained at present site by United States Engineer Corps December 10, 1899, to November 30, 1900, and April 20, 1903, to December 11, 1904.

GAGE.—Chain gage attached to bridge; read by employee of United States Weather Bureau.

DISCHARGE MEASUREMENTS.—Made from highway bridge.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. Right bank high; left bank is overflowed at extremely high stages. Control probably a few miles below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.7 feet March 22 (discharge, 23,600 second-feet); minimum stage, 5.3 feet September 21 (discharge, 7,800 second-feet).

1919–1925: Maximum stage recorded, 20.1 feet April 12, 1922 (discharge, 60,600 second-feet); minimum stage, 5.2 feet August 9, 1920 (discharge, 7,600 second-feet).

A discharge of 67,800 second-feet occurred at 8 a. m. March 26, 1904, at station near Minooka.

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Flow at this station includes the flow from Chicago Drainage Canal. Operation of power plants at Lockport and Joliet above gage causes a considerable diurnal fluctuation at low and medium stages.

ACCURACY.—Stage-discharge relation probably permanent during year. Rating curve well defined. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good for medium and high stages; fair for low stages.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

No discharge measurements were made at this station during the year.

Daily discharge, in second-feet, of Illinois River at Morris, Ill., for the year ending September 30, 1925

Date	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12,900	10,500	10,100		9,420	15,600	13,600	11,700	9,000	9,640	9,860	9,000
2	11,900	10,300	10,300		9,420	15,400	12,900	11,400	9,420	9,420	9,420	8,800
3	11,700	10,300	9,860	12,600	9,420	12,600	12,600	11,400	9,420	9,640	9,420	8,800
4	11,700	10,300	9,860		9,420	12,900	12,600	11,400	9,420	10,100	8,800	9,000
5	11,900	10,500	11,000	10,800	9,860	12,900	12,400	11,400	9,420	9,420	8,800	9,000
6	11,700	10,300	11,200	10,300	11,200	12,900	11,900	11,200	9,860	9,420	8,600	8,600
7	11,900	10,500	11,200	9,860	14,400	12,400	11,700	11,000	9,420	9,640	8,600	9,000
8	12,200	10,800	10,800	10,100	16,900	12,400	11,700	11,000	9,200	9,640	9,000	9,000
9	11,700	10,800	10,800	10,100	19,000	12,400	11,400	11,000	9,420	9,860	8,600	9,200
10	11,700	10,100	10,300	10,100	20,400	12,900	11,700	10,800	9,200	9,860	8,600	9,420
11	11,400	10,100	11,200	10,300	19,500	13,100	11,900	10,500	9,000	9,640	8,400	9,200
12	11,400	10,300	11,700	10,100	17,400	13,100	11,900	10,500	9,200	9,420	8,600	9,860
13	11,400	10,300	11,700	10,100	17,700	12,600	11,200	10,300	9,640	10,100	8,600	10,100
14	11,400	10,500	11,000	10,100	15,600	12,900	11,200	10,300	9,640	10,500	9,000	9,860
15	11,200	10,500	10,300	10,300	14,600	16,900	11,700	10,800	9,000	10,300	9,640	10,100
16	11,200	10,500	11,000	10,100	13,800	18,000	11,200	10,500	9.640	10,100	9,640	10,300
17	11,200	10,500	11,000	9,420	13,400	19,000	11,400	10,300	10,100	9,860	9,200	9,860
18	11,400	10,500	11,200	9,860	12,200	19,300	11,400	10,100	11,000	10,100	9,200	9,640
19	11,200	10,500	11,400	9,860	12,200	19,300	11,900	10,300	10,500	9,420	9,200	9,640
20	11,200	9,860	11,700	9,860	11,900	21,700	11,700	10,100	10,300	9,420	9,420	9,420
21	11,400	10,100	14,100	9,860	11,900	23,300	11,400	9,860	10,100	9,860	9,200	7,800
22	11,400	10,300	14,100	9,860	12,600	23,600	11,400	10,100	9,860	9,860	9,200	9,200
23	11,400	10,800	14,100	9,860	14,100	22,200	11,200	10,100	9,860	9,420	9,000	9,420
24	11,000	10,100	13,800	9,860	18,200	21,200	11,400	10,300	10,100	9,200	9,000	8,800
25	11,000	10,500	13,400	9,640	19,500	20,600	11,900	10,100	10,500	9,420	9,000	9,000
26	10,800	10,100		9,640	19,500	18,000	11,200	10,100	10,500	9,200	9,000	9,200
27	10,800	10,300		10,100	16,100	17,200	11,200	9,860	9,860	9,200	9,200	9,200
28	10,800	10,300	13,300	10,300	16,100	16,100	11,200	9,640	9,640	9,640	9,200	9,000
29	10,800	9,860		10,300	------	15,400	11,200	9,860	9,640	9,420	9,420	9,000
30	11,000	10,500		9,860	-------	14,600	11,900	9,860	9,860	9,200	8,800	9,000
31	11,000	------		9,420	-------	14,400	-------	9,000	-------	9,420	8,800	-----

NOTE.—Discharge estimated on account of ice Dec. 26 to Jan. 4 from records for Des Plaines River at Joliet and Kankakee River at Custer Park. Braced figures give mean discharge for periods indicated.

Monthly discharge of Illinois River at Morris, Ill., for the year ending September 30, 1925

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	12,900	10,800	11,400	May	11,700	9,000	10,500
November	10,800	9,860	10,400	June	11,000	9,000	9,720
December	-------	9,860	11,800	July	10,500	9,200	9,660
January	-------	9,420	10,300	August	9,860	8,400	9,050
February	20,400	9,420	14,500	September	10,300	7,800	9,250
March	23,600	12,400	16,300				
April	13,600	11,200	11,700	The year	23,600	7,800	11,200

ILLINOIS RIVER AT PEORIA, ILL.

LOCATION.—In sec. 2, T. 8 N., R. 8 E., at foot of Grant Street, Peoria, Peoria County, 3½ miles above station formerly maintained at Peoria and Pekin Union Railroad bridge, and 4½ miles above mouth of Kickapoo Creek.

DRAINAGE AREA.—Indeterminate.

RECORDS AVAILABLE.—March 8, 1910, to September 30, 1925; March 10, 1903, to July 21, 1906, for station at Peoria and Pekin Union Railroad bridge.

GAGE.—Vertical staff gage attached to wooden pile; read by employee of United States Engineer Corps. Zero of gage is 428.92 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from downstream side of Lower Free Bridge, 2 miles below gage.

CHANNEL AND CONTROL.—Bed of river, which forms control for medium and high stages, is composed of mud and may shift. Dam at Copperas Creek probably forms control for lowest stages; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 16.5 feet March 26 (discharge, 24,000 second-feet); minimum stage, 9.5 feet September 5, 6, and 9 (discharge, 9,300 second-feet).

1903–1906: Maximum discharge recorded, 57,600 second-feet March 28 and 29, 1904; minimum discharge recorded, 6,170 second-feet July 18–20, 1906.

1910–1925: Maximum stage recorded, 24.80 feet April 15–17, 1922 (discharge, 56,700 second-feet); minimum discharge, somewhat less than 7,250 second-feet occurred during period December 11, 1916, to January 10, 1917.

The highest known flood occurred in 1844, when a stage of about 26.6 feet on the present gage was reached.

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Flow at this station includes water diverted from Lake Michigan through the Chicago Drainage Canal. No diurnal fluctuation is noticeable.

ACCURACY.—Stage-discharge relation practically permanent during year, except as slightly affected by ice. Rating curve well defined. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Open-water records good; records for ice-affected period fair.

COOPERATION.—Gage-height record furnished by United States Engineer Corps.

No discharge measurements were made at station during the year.

Daily discharge, in second-feet, of Illinois River at Peoria, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16,500	12,100	11,600		13,900	21,500	22,000	14,100	11,000	10,800	10,000	9,580
2	16,100	12,100	11,200		13,700	21,200	21,500	14,100	10,900	10,800	10,000	9,440
3	15,900	12,100	11,400		13,700	21,000	21,000	13,700	11,000	10,600	10,000	9,440
4	16,100	12,300	11,600		13,700	20,800	20,800	14,100	10,800	10,800	9,860	9,440
5	15,700	12,100	11,600		13,700	20,800	20,000	14,100	10,900	10,800	9,860	9,300
6	15,700	11,800	11,600		14,300	20,500	19,200	13,900	11,000	10,400	9,720	9,300
7	15,700	11,800	12,000		14,900	20,500	18,800	13,700	10,900	10,400	9,720	9,440
8	15,500	12,100	11,800		15,900	20,500	18,500	13,700	10,800	10,600	9,860	9,440
9	15,300	11,800	11,800		17,200	20,000	18,000	13,700	10,600	10,400	9,720	9,300
10	15,300	11,500	12,100		19,000	19,500	18,000	13,500	10,900	10,900	9,720	9,440
11	15,100	11,500	12,100		20,500	19,500	17,000	13,700	10,600	10,800	9,720	9,440
12	14,900	12,000	12,100		21,200	18,800	16,800	13,300	10,200	10,900	9,440	9,720
13	14,700	12,100	12,100		21,500	19,200	16,500	13,100	10,400	10,900	9,720	9,720
14	14,500	12,000	12,100		21,800	19,500	16,300	13,300	10,400	10,600	9,720	9,720
15	14,500	11,800	12,100		21,800	18,800	16,100	12,900	10,600	10,600	9,720	9,720
16	14,100	11,800	12,100	13,700	21,800	18,200	15,700	12,500	10,800	10,800	9,720	9,860
17	14,100	11,600	12,300		21,500	19,000	15,700	13,100	10,800	10,800	9,720	9,720
18	13,700	11,800	12,300		21,000	19,800	15,300	12,700	11,200	10,600	9,720	9,860
19	13,700	11,500	12,100		20,500	20,500	15,100	12,500	11,400	10,600	9,860	10,000
20	13,700	11,500	12,300		20,000	20,500	15,100	12,300	11,500	10,600	10,000	10,000
21	13,700	11,500	12,300		19,800	21,000	14,900	12,300	11,500	10,400	9,720	10,400
22	13,300	11,800	12,300		19,500	22,000	14,900	12,100	11,500	10,400	9,720	10,200
23	13,300	11,800	12,500		19,500	22,500	14,500	11,800	11,500	10,300	9,720	10,000
24	13,100	11,800	12,900		19,500	23,100	14,500	12,100	11,400	10,200	9,720	9,860
25	12,900	11,500	13,300		20,200	23,700	14,500	12,000	11,200	10,209	9,720	10,000
26	12,900	11,400			21,500	24,000	14,500	11,800	10,900	10,200	9,720	10,000
27	12,700	11,500			21,500	23,700	14,700	11,400	11,200	10,000	9,720	9,720
28	12,500	11,800	13,500		21,800	23,400	14,500	11,200	11,200	10,000	9,720	10,000
29	12,500	11,600			-------	23,100	14,100	11,500	11,200	10,000	9,720	10,000
30	12,100	11,600			-------	22,500	14,500	11,400	11,000	9,860	9,440	10,000
31	12,000	-------			-------	22,500	-------	11,200	-------	10,000	9,720	-------

NOTE.—Discharge estimated on account of ice Dec. 26 to Jan. 31, from records for Illinois River at Morris, Ill. Braced figures give mean discharge for periods indicated.

Monthly discharge of Illinois River at Peoria, Ill., for the year ending September 30, 1925

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	16,500	12,000	14,300	May	14,100	11,200	12,800
November	12,300	11,400	11,800	June	11,500	10,200	11,000
December			12,300	July	10,900	9,860	10,500
January			13,700	August	10,000	9,440	9,760
February	21,800	13,700	18,700	September	10,400	9,300	9,740
March	24,000	18,200	21,000				
April	22,000	14,100	16,800	The year	24,000	9,300	13,500

ILLINOIS RIVER AT HAVANA, ILL.

LOCATION.—In sec. 1, T. 21 N., R. 9 W., at highway bridge in Havana, Mason County, half a mile below mouth of Spoon River.

DRAINAGE AREA.—17,200 square miles (since January 17, 1900, flow has been increased by diversion from Lake Michigan through the Chicago Drainage Canal).

RECORDS AVAILABLE.—October 1, 1921, to September 30, 1925. Gage readings October, 1878, to May, 1881, and January, 1896, to December, 1904, published in House Document 263, Fifty-ninth Congress; gage readings since December, 1904, in files of United States Engineer Corps.

GAGE.—Vertical staff gage attached to pile 30 feet downstream from draw pier of bridge; read by employee of United States Engineer Corps. Zero of gage is 424.76 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Channel sandy and somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 14.0 feet March 27–30 (discharge, 28,300 second-feet); minimum stage, 7.1 feet September 7–10 (discharge, 9,560 second-feet).

1921–1925: Maximum stage recorded, 22.4 feet April 20, 1922 (discharge, 65,000 second-feet); minimum stage occurred in 1925. Maximum stage recorded since 1844 occurred in 1922.

ICE.—Stage-discharge relation slightly affected by ice.

REGULATION.—Flow at this station includes the flow of the Chicago Drainage Canal.

ACCURACY.—Stage-discharge relation practically permanent during year except as affected by ice. Rating curve well defined. Gage read to tenths once daily. Daily discharge determined by applying daily gage height to rating table. Records for open water, good; for ice period, fair.

COOPERATION.—Gage-height record furnished by United States Engineer Corps.

No discharge measurements were made at this station during the year.

Daily discharge, in second-feet, of Illinois River at Havana, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19,600	13,700	12,300			25,200	27,300	16,600	12,500	12,300	10,600	10,000
2	19,300	13,700	12,100		17,200	25,200	26,600	16,400	12,500	11,900	10,400	9,880
3	19,000	13,700	12,300			25,600	26,200	16,100	12,300	11,900	10,400	9,880
4	18,700	13,500	12,300			25,200	25,900	15,800	12,100	11,700	10,400	8,720
5	18,400	13,500	12,500		19,000	25,200	25,200	15,800	12,100	11,700	10,600	9,720
6	18,100	13,500	13,000		19,900	24,600	24,900	15,600	11,900	11,300	10,600	9,720
7	18,100	13,200	13,200		21,100	24,600	24,300	15,600	11,900	11,100	10,600	9,560
8	18,100	13,200	13,500		21,700	24,300	23,600	15,600	11,900	11,500	10,600	9,560
9	18,100	13,200	13,500		24,600	24,300	23,000	15,300	11,700	11,500	10,600	9,560
10	17,800	13,000	13,500		26,200	23,900	22,700	15,300	11,700	12,300	10,400	9,560
11	17,800	13,000	13,200		27,300	23,600	22,000	15,000	11,700	12,800	10,400	9,720
12	17,500	12,800	13,200		27,600	23,600	21,400	15,000	11,500	12,800	10,600	9,720
13	17,200	13,000	13,200		26,900	23,300	20,800	15,000	11,300	12,800	10,900	10,400
14	16,900	13,200	13,500		26,900	23,300	20,500	15,000	11,300	12,500	10,900	10,400
15	16,600	13,500	13,500		26,600	23,300	20,500	15,000	12,300	12,300	10,900	10,600
16	16,600	13,500	13,700	16,000	26,600	23,000	20,200	14,700	13,200	12,300	10,900	10,400
17	16,400	13,000	13,700		26,200	23,000	19,300	14,700	13,000	12,300	10,700	10,400
18	16,100	13,200	14,000		25,900	23,000	19,300	14,700	12,500	12,100	10,600	10,400
19	15,800	13,000	14,200		25,600	24,300	18,400	14,700	12,100	11,900	10,700	10,400
20	15,800	13,000	14,200		25,200	24,900	18,400	14,500	12,300	11,700	11,300	10,400
21	15,600	12,800	14,200		24,900	25,200	18,400	14,200	12,500	11,500	11,500	10,400
22	15,300	12,800	14,500		24,600	25,600	18,100	14,200	12,800	11,300	11,500	10,400
23	15,000	12,800	14,500		24,900	26,600	17,800	14,200	12,800	11,300	11,100	10,400
24	15,000	12,500	14,500		24,900	27,300	17,500	14,000	13,000	11,100	11,100	10,400
25	14,700	12,300	14,500		24,600	27,600	17,500	14,000	13,200	10,900	10,900	10,400
26	14,500	12,300	14,700		24,600	28,000	17,500	13,500	13,200	10,900	10,700	10,200
27	14,500	12,300	15,000		24,600	28,300	17,500	13,200	13,200	10,900	10,600	10,400
28	14,200	12,300	15,300		25,200	28,300	17,500	13,200	13,000	10,700	10,200	10,400
29	14,200	11,700	15,600		-------	28,300	17,200	13,000	12,800	10,700	10,200	10,400
30	14,000	12,100	15,800		-------	28,300	16,900	13,000	12,500	10,600	10,000	10,600
31	13,700	-------	15,800		-------	28,000	-------	12,800	-------	10,600	10,000	-------

NOTE.—Discharge estimated on account of ice Jan. 1 to Feb. 4, from records for Illinois River at Peoria and for Spoon River at Seville. Braced figures give mean discharge for periods indicated.

Monthly discharge of Illinois River at Havana, Ill., for the year ending September 30, 1925

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	19,600	13,700	16,500	May	16,600	12,800	14,700
November	13,700	11,700	13,000	June	13,200	11,300	12,400
December	15,800	12,100	13,800	July	12,800	10,600	11,700
January	-------	-------	16,000	August	11,500	10,000	10,700
February	27,600	-------	23,700	September	10,600	9,560	10,100
March	28,300	23,000	25,300				
April	27,300	16,900	20,900	The year	28,300	9,560	15,700

ILLINOIS RIVER AT BEARDSTOWN, ILL.

LOCATION.—In sec. 15, T. 18 N., R. 12 W., at highway bridge on State Street Beardstown, Cass County, 9½ miles below mouth of Sangamon River.

DRAINAGE AREA.—23,445 square miles (since January 17, 1900, the natural runoff has been increased by diversion from Lake Michigan through the Chicago Drainage Canal).

RECORDS AVAILABLE.—October 1, 1920, to September 30, 1925.

GAGE.—Vertical staff gage attached to pile on inside of cribbing about 40 feet above center span of bridge.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed composed of sand and mud; except at very high stages, control is formed by LaGrange Dam, 11 miles downstream; probably permanent. The stage at Beardstown is slightly affected in occasional seasons of high water by backwater from Mississippi River, and occasionally by backwater from Crooked Creek, which enters 5 miles below Beardstown.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 15.4 feet March 28 and 29 (discharge, 38,600 second-feet); minimum stage, 7.7 feet September 10–12 (discharge, 9,620 second-feet).

1920–1925: Maximum stage recorded, 25.1 feet April 20, 1922 (discharge, 93,100 second-feet; revision of figure previously published); minimum stage, 7.7 feet December 19–22, 1922, and September 10–12, 1925 (discharge, 9,620 second-feet).

Maximum stage since 1844 occurred in 1922. On April 4, 1904, discharge was determined by United States Engineer Corps as 115,000 second-feet (gage height, 20.0 feet).

ICE.—Stage-discharge relation slightly affected by ice in some years.

REGULATION.—The flow at this station includes the flow of the Chicago Drainage Canal.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined. Gage read to tenths once daily. Daily discharge determined by applying daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

No discharge measurements were made during the year.

Daily discharge, in second-feet, of Illinois River at Beardstown, Ill., for the years ending September 30, 1922 and 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1921-22												
1	15,800	15,400	29,200	31,500	17,600	22,000	53,800	67,800	30,800	16,200	12,900	11,100
2	15,800	15,400	30,000	31,500	19,100	21,700	55,600	64,700	30,800	16,200	12,500	11,100
3	15,800	15,000	31,500	31,100	19,100	22,000	58,500	64,600	30,600	15,800	12,500	10,700
4	15,400	15,000	32,200	30,000	18,700	21,200	60,000	60,400	31,300	15,800	12,500	10,700
5	15,400	15,000	32,600	32,600	20,200	20,600	63,900	57,100	30,600	15,400	12,500	10,700
6	15,400	14,700	33,000	32,600	21,000	18,600	67,200	57,500	30,300	15,000	12,500	10,700
7	15,400	14,700	33,000	33,000	21,300	19,400	74,300	56,000	30,000	14,700	12,100	10,700
8	15,800	14,300	33,000	33,000	21,300	19,100	74,100	52,800	29,100	14,300	11,800	10,700
9	16,200	14,300	33,000	33,000	21,300	21,500	70,000	51,400	27,700	14,300	11,400	10,700
10	16,200	14,300	33,000	33,000	21,300	24,400	70,700	49,800	27,100	13,900	11,100	10,700
11	15,400	15,000	33,000	32,600	21,300	22,000	66,100	48,400	26,600	13,900	11,100	11,100
12	15,000	15,400	32,600	32,200	21,300	22,300	70,300	47,100	26,700	14,300	11,400	11,800
13	15,000	15,000	32,200	31,900	21,000	22,800	73,500	44,400	25,700	14,300	11,400	11,800
14	14,700	15,000	31,900	31,100	19,800	24,900	81,800	43,000	25,100	15,000	11,400	13,200
15	14,700	14,700	31,500	30,300	19,500	25,800	85,300	42,600	24,200	15,400	11,400	12,500
16	14,300	14,700	31,100	29,600	19,100	26,800	86,100	40,300	24,200	15,800	11,400	12,100
17	14,300	14,700	30,700	29,600	18,400	28,900	77,100	37,900	23,600	16,900	11,100	11,800
18	15,400	14,300	30,700	28,100	17,600	31,700	77,100	37,000	22,800	16,500	11,100	11,400
19	15,800	16,500	30,300	27,300	18,000	34,600	83,700	35,200	22,800	15,800	11,100	11,400
20	15,800	17,300	30,300	26,200	18,000	39,700	93,100	34,700	21,700	15,400	11,100	11,400
21	15,400	18,000	30,300	24,300	18,000	43,200	87,200	34,600	21,200	15,000	11,100	11,400
22	15,000	19,100	30,000	22,400	19,500	45,500	86,800	32,500	20,700	14,700	11,100	11,400
23	14,700	19,800	30,700	21,700	19,800	47,500	86,100	31,500	19,400	14,300	11,400	11,400
24	14,700	21,300	31,500	21,000	22,100	48,300	84,800	30,600	19,500	14,300	11,400	11,400
25	14,300	22,800	31,500	19,800	23,200	49,900	82,500	30,100	19,000	13,900	11,400	11,400
26	14,300	23,900	31,500	18,000	23,200	53,600	79,000	29,100	18,500	13,600	11,400	11,400
27	14,300	25,400	31,900	16,200	23,200	53,000	78,200	29,500	17,400	13,600	11,400	11,400
28	14,300	26,500	32,200	16,900	22,400	52,400	76,200	30,200	16,900	13,200	11,400	11,400
29	14,700	27,700	32,600	17,600	-------	52,800	72,400	30,600	17,100	13,200	11,400	11,400
30	15,000	28,400	32,200	17,600	-------	53,700	70,100	31,000	16,300	13,200	11,100	11,100
31	15,000	-------	31,900	17,600	-------	54,500	-------	31,500	-------	12,900	11,100	-------

Daily discharge, in second-feet, of Illinois River at Beardstown, Ill., for the years ending September 30, 1922 and 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1924-25												
1	21,000	14,700	13,200		21,300	31,800	36,900	19,100	13,200	12,500	11,100	10,300
2	20,600	14,300	13,200		21,300	31,800	35,700	18,700	13,200	12,500	10,700	10,300
3	20,200	13,900	13,200		21,300	31,000	34,900	18,400	13,200	12,500	10,700	10,300
4	20,200	13,900	13,200		22,100	31,000	33,700	18,000	13,200	12,500	10,700	10,300
5	19,800	13,600	13,600		23,200	30,600	32,500	18,000	13,200	12,500	10,700	9,980
				22,500								
6	19,500	13,600	14,300		24,300	30,200	31,800	17,600	12,900	12,500	10,700	9,980
7	19,800	13,600	14,700		25,400	29,900	30,600	17,600	12,900	13,200	10,700	9,980
8	19,800	13,200	14,700		27,200	29,500	29,500	17,600	12,500	13,200	11,800	9,980
9	19,800	13,200	14,300		29,100	29,100	28,700	17,300	12,500	13,200	11,100	9,980
10	19,500	13,200	13,900		30,200	28,700	28,400	16,900	12,500	14,300	11,100	9,620
11	19,500	13,200	13,900		32,500	28,400	27,600	16,900	12,500	14,300	11,100	9,620
12	19,500	13,200	13,600		33,300	28,000	26,900	16,900	12,500	13,900	12,500	9,620
13	19,500	13,600	13,600	20,000	34,100	27,200	26,100	16,500	12,100	13,900	15,400	10,700
14	19,100	13,600	13,600		34,100	27,600	25,400	16,500	11,800	13,600	14,700	11,800
15	18,700	13,900	13,600		34,100	28,000	24,700	16,200	13,600	15,000	13,600	12,100
16	18,400	13,900	14,300		34,100	28,000	23,900	16,200	14,700	14,300	12,500	11,800
17	18,000	13,900	14,700		33,700	28,400	23,200	16,200	15,400	13,600	12,100	11,800
18	17,600	13,600	14,700		33,300	28,700	22,800	16,200	15,400	13,200	11,800	11,800
19	17,300	13,600	14,700	18,800	32,900	30,600	22,100	16,200	14,700	12,900	11,800	11,800
20	17,300	13,600			32,100	31,800	21,700	15,800	13,900	12,900	12,100	11,400
21	16,900	13,600			31,800	32,900	21,300	15,400	13,600	12,500	12,100	11,400
22	16,500	13,600	14,000	18,000	31,800	33,700	22,400	15,400	13,600	12,500	12,500	11,400
23	16,200	13,600		18,000	31,800	34,500	22,100	15,400	13,200	11,800	12,100	11,400
24	15,800	13,200		18,000	31,400	35,700	21,300	15,400	15,800	11,800	11,800	11,100
25	15,400	13,200		18,000	31,000	36,900	21,000	15,000	16,200	11,800	11,400	11,100
26	15,400	13,200		20,200	31,400	37,700	20,600	15,000	15,400	11,800	11,100	11,100
27	15,400	13,200		21,000	31,400	38,200	20,200	14,700	14,700	12,100	10,700	11,400
28	15,400	13,200		21,300	31,400	38,600	19,800	14,700	13,900	12,500	10,700	11,400
29	15,000	13,200	19,500	21,300	-------	38,600	19,500	14,300	12,500	11,400	10,700	11,400
30	15,000	13,200		21,300	-------	38,200	19,100	13,900	12,500	11,400	10,300	11,400
31	14,700	-------		21,300	-------	37,700	-------	13,600	-------	11,400	10,300	-------

NOTE.—Stage-discharge relation affected by backwater from Crooked Creek Feb. 22–26, Mar. 14–17 Mar. 26 to Apr. 14, Apr. 17, 18, July 13–17, and Sept. 11–13, 1922; discharge estimated from records of stage of Crooked Creek at Ripley and stages at Beardstown. The record for the year ending Sept. 30, 1922, published herewith supersedes that published in Water-Supply Paper 545. Stage-discharge relation affected by ice Dec. 20, 1924, to Jan. 21, 1925; discharge estimated from gage heights and weather records.

Monthly discharge of Illinois River at Beardstown, Ill., for the years ending September 30, 1922 and 1925

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
1921-22				1924-25			
October	16,200	14,300	15,100	October	21,000	14,700	18,000
November	28,400	14,300	17,800	November	14,700	13,200	13,500
December	33,000	29,200	31,600	December	--------	13,200	15,000
January	33,000	16,200	26,900	January	--------	--------	20,500
February	23,200	17,600	20,200	February	34,100	21,300	29,700
March	54,500	18,600	33,700	March	38,600	27,200	32,000
April	93,100	53,800	74,800	April	36,900	19,100	25,800
May	67,800	29,100	43,000	May	19,100	13,600	16,300
June	31,300	16,300	24,300	June	16,200	11,800	13,600
July	16,900	12,900	14,700	July	15,000	11,400	12,800
August	12,900	11,100	11,600	August	15,400	10,300	11,600
September	13,200	10,700	11,300	September	12,100	9,620	10,900
The year	93,100	10,700	27,100	The year	38,600	9,620	18,300

NOTE.—The monthly discharge for the year ending Sept. 30, 1922, as given above, supersedes that published in Water-Supply Paper 545.

SPRING CREEK AT JOLIET, ILL.

LOCATION.—In sec. 11, T. 35 N., R. 10 E., at Benton Street Bridge in Joliet, Will County, half a mile above mouth.

DRAINAGE AREA.—19.7 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 15 to September 30, 1925.

GAGE.—Vertical staff; read by Lulu Skoien.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Artificial channel with concrete walls; bed of loose rocks and earth.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 0.50 foot August 7, 13, and 19 (discharge, 7.0 second-feet); minimum stage, 0.29 foot July 28–30 (discharge, 2.4 second-feet).

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during the period. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

The following discharge measurements were made:

June 4, 1925: Gage height, 0.25 foot; estimated discharge, 2.5 second-feet.

July 15, 1925: Gage height, 0.31 foot; discharge, 2.81 second-feet.

September 4, 1925: Gage height, 0.30 foot; discharge, 2.39 second-feet.

Daily discharge, in second-feet, of Spring Creek at Joliet, Ill., for the year ending September 30, 1925

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1	-------	2.5	3.5	11	-------	2.5	3.5	21	2.5	4.3	3.5
2	-------	2.5	3.5	12	-------	3.5	2.5	22	2.5	3.5	3.5
3	-------	2.5	3.5	13	-------	5.0	3.5	23	2.5	2.5	4.3
4	-------	2.5	3.5	14	-------	4.5	3.5	24	2.7	3.5	4.3
5	-------	2.5	2.5	15	2.5	4.5	4.5	25	2.5	3.5	4.5
6	-------	2.5	2.5	16	2.5	2.5	4.5	26	2.5	3.5	4.5
7	-------	4.5	2.7	17	2.5	3.5	4.5	27	2.5	3.5	4.3
8	-------	2.5	2.5	18	2.5	2.5	4.5	28	2.4	2.5	4.5
9	-------	2.5	3.5	19	3.5	7.0	4.5	29	2.4	2.5	4.3
10	-------	2.5	3.5	20	4.5	4.5	3.5	30	2.4	2.5	4.5
								31	2.5	4.3	-------

Monthly discharge of Spring Creek at Joliet, Ill., for the year ending September 30, 1925

[Drainage area, 19.7 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
July 15–31	4.5	2.4	2.67	0.014	0.01
August	7.0	2.5	3.33	.017	.02
September	4.5	2.5	3.75	.019	.02

WEST BRANCH OF DU PAGE RIVER AT WINFIELD, ILL.

LOCATION.—In sec. 12, T. 39 N., R. 9 E., at highway bridge at Winfield, Du Page County, 60 feet above Chicago & Northwestern Railway bridge.

DRAINAGE AREA.—44 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 2 to September 30, 1925.

GAGE.—Staff gage near right end of bridge; read by William Zeier.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge or by wading.

CHANNEL AND CONTROL.—Channel composed of gravel and rock. Banks are overflowed at medium stages. Railroad bridge below gage forms permanent control for high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of record, 1.75 feet June 18 (discharge, 8.5 second-feet); minimum stage, 1.24 feet September 2–11 (discharge, 0.5 second-foot).

ACCURACY.—Stage-discharge relation permanent during period. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

The following discharge measurements were made:

June 2, 1925: Gage height, 1.33 feet; discharge, 0.93 second-foot.
June 18, 1925: Gage height, 1.75 feet; discharge, 8.42 second-feet.
June 25, 1925: Gage height, 1.46 feet; discharge, 2.00 second-feet.

Daily discharge, in second-feet, of West Branch of Du Page River at Winfield, Ill., for the year ending September 30, 1925

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	------	1.2	3.8	0.6	16	2.0	0.9	1.5	1.0
2	0.9	1.0	3.1	.5	17	3.4	.7	1.3	1.0
3	1.3	1.0	2.5	.5	18	8.2	.6	1.3	1.0
4	1.5	1.2	1.5	.5	19	5.5	.7	1.3	1.0
5	1.2	1.2	1.3	.5	20	2.7	1.5	1.3	1.0
6	1.1	1.2	1.2	.5	21	2.0	1.5	1.2	.9
7	1.2	2.0	1.3	.5	22	1.5	1.3	1.0	.7
8	1.3	1.7	1.5	.5	23	1.5	1.2	1.0	.6
9	1.0	1.5	1.5	.5	24	2.5	1.0	.9	.6
10	.9	1.5	1.5	.5	25	2.2	.9	.9	.6
11	.9	1.3	1.3	.5	26	2.0	.9	.7	.6
12	.9	1.3	1.3	.6	27	1.5	.9	.6	.6
13	1.5	1.3	7.0	.6	28	1.3	.9	.6	.6
14	1.5	1.2	4.5	.7	29	1.2	.9	.6	.7
15	2.0	1.2	1.5	.9	30	1.2	.9	.6	.7
					31	------	3.1	.6	------

Monthly discharge of West Branch of Du Page River at Winfield, Ill., for the year ending September 30, 1925

[Drainage area, 44 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
June 2-30	8.2	0.9	1.93	0.044	0.05
July	3.1	.6	1.22	.028	.03
August	7.0	.6	1.62	.037	.04
September	1.0	.5	.67	.015	.02
The period	8.2	.5	1.35	.031	.14

KANKAKEE RIVER AT MOMENCE, ILL.

LOCATION.—In sec. 24, T. 31 N., R. 13 E., at highway bridge in Momence, Kankakee County, half a mile below Chicago & Eastern Illinois Railroad bridge, and 1½ miles above Tower Creek.

DRAINAGE AREA.—2,340 square miles.

RECORDS AVAILABLE.—February 24, 1905, to July 20, 1906; December 3, 1914, to September 30, 1925.

GAGE.—Chain gage attached to bridge over left channel; read by Henry Hanson to May 31 and by Earl Clark thereafter.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel; somewhat shifting. River at gage divided into two channels by an island. Aquatic plants sometimes grow in bed of river during summer.

EXTREMES OF DISCHARGE.—Maximum open-water stage recorded during year, 3.74 feet March 20 (discharge, 4,430 second-feet); minimum stage, 1.60 feet September 4 and 5 (discharge, 396 second-feet).

1905–6; 1915–1925: Maximum open-water stage recorded, 6.4 feet January 22, 1916 (discharge, estimated from extension of rating curve, 12,600 second-feet); minimum stage, 1.37 feet September 1, 16, and 17, 1919 (discharge, 306 second-feet).

ICE.—Stage-discharge relation seriously affected by ice.

ACCURACY.—Stage-discharge relation affected by vegetation in channel during greater part of year. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by shifting-channel method. Records good for open-water periods and poor for ice-affected periods.

Discharge measurements of Kankakee River at Momence, Ill., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 1	2.13	920	Mar. 27	3.38	3,360	Aug. 27	1.64	426
Feb. 5	• 3.12	846	June. 12	1.82	670			

• Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Kankakee River at Momence, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	960	905	1,080			2,200	2,100	1,280	850	620	540	414
2	905	960	960			2,010	2,010	1,280	795	600	560	405
3	905	905	795		720	1,660	1,920	1,210	850	600	560	405
4	905	960	1,020			1,660	1,830	1,210	795	600	540	396
5	850	960	960			1,830	1,740	1,210	795	610	531	396
6	850	960	960	1,750		1,660	1,660	1,210	795	600	522	405
7	850	960	960		2,100	1,580	1,580	1,140	795	590	513	423
8	850	960	1,080			1,660	1,580	1,140	795	600	522	441
9	850	960	1,210		2,850	1,660	1,500	1,140	740	690	522	450
10	850	960	1,350		2,400	1,660	1,500	1,140	740	795	513	459
11	850	960	1,500		2,100	1,830	1,500	1,080	690	740	504	450
12	850	1,020	1,420		2,010	1,920	1,500	1,080	690	795	540	522
13	850	1,020	1,350		2,010	2,010	1,420	1,080	740	740	570	550
14	850	1,020	1,280		1,830	2,740	1,420	1,020	740	690	580	580
15	850	1,020	1,210	1,100	1,660	2,740	1,420	1,020	740	640	570	740
16	850	1,020	1,210		1,580	2,850	1,350	1,080	690	610	540	850
17	850	1,020	1,210		1,420	2,850	1,420	1,080	740	600	513	850
18	850	960	1,280		1,350	2,850	1,350	1,020	740	590	495	795
19	850	960	1,420		1,280	3,600	1,350	1,080	740	570	486	740
20	850	960	1,740		1,280	4,430	1,350	1,020	740	590	477	640
21	905	1,020			1,280	4,150	1,350	1,020	690	580	459	640
22	850	1,020			1,350	4,150	1,350	960	690	570	450	640
23	850	1,020			1,830	3,870	1,350	960	690	550	450	640
24	850	1,020			2,200	3,870	1,350	960	640	550	450	610
25	905	960			2,400	3,870	1,350	960	690	531	441	590
26	905	960	2,200	730	2,400	3,870	1,280	905	640	513	432	580
27	905	960			2,620	3,340	1,210	905	640	504	423	620
28	905	960			2,620	3,090	1,210	905	640	531	423	640
29	905	1,020			-------	2,740	1,140	905	640	540	423	640
30	905	1,080			-------	2,510	1,280	850	630	531	414	640
31	905	-------			-------	2,300	-------	850	-------	550	432	-------

NOTE.—Discharge Dec. 21 to Feb. 8 estimated because of ice, from gage heights, weather records, one discharge measurement, observer's notes, and gage heights on Kankakee River at Custer Park. Braced figures show mean discharge for periods indicated.

Monthly discharge of Kankakee River at Momence, Ill., for the year ending September 30, 1925

[Drainage area, 2,340 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	960	850	873	0.373	0.43
November	1,080	905	982	.420	.47
December	----------	795	1,550	.662	.76
January	----------	----------	1,180	.504	.58
February	----------	----------	1,730	.739	.77
March	4,430	1,580	2,680	1.15	1.33
April	2,100	1,140	1,480	.632	.71
May	1,280	850	1,050	.449	.52
June	850	630	726	.310	.35
July	795	504	607	.259	.30
August	580	414	496	.212	.24
September	850	396	572	.244	.27
The year	4,430	396	1,160	.496	6.73

KANKAKEE RIVER AT CUSTER PARK, ILL.

LOCATION.—In sec. 19., T. 32 N., R. 10 E., at Wabash Railroad bridge in Custer Park, Will County, one-quarter mile above Horse Creek and 18 miles below dam and power plant at Kankakee.

DRAINAGE AREA.—4,870 square miles.

RECORDS AVAILABLE.—November 6, 1914, to September 30, 1925.

GAGE.—Chain gage attached to bridge; read by J. H. Swords to November 30 and by F. A. Anderson thereafter.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Solid rock strewn with boulders and gravel; right half of channel deep with fissures in bed; left half shallow; affected by vegetation during summer.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.45 feet March 21 (discharge, 13,800 second-feet); minimum stage, 5.00 feet at 4 p. m. September 19 (discharge, 385 second-feet).

1914–1925: Maximum stage recorded, 15.05 feet April 11, 1922 (discharge, 31,200 second-feet); minimum stage, 4.09 feet November 15, 1914 (discharge, 250 second-feet).

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—Operation of power plant at Kankakee causes slight fluctuation at gage.

ACCURACY.—Stage-discharge relation changed during year by growth of vegetation in channel. Rating curves fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating tables, except for periods October 16–25, May 6–15, and June 15 to September 30, when indirect method for shifting control was used. Records good except for ice period for which they are poor.

The following discharge measurements were made:

April 7, 1925: Gage height, 6.55 feet; discharge, 2,820 second-feet.

August 28, 1925: Gage height, 5.29 feet (stage-discharge relation affected by growth of grass in channel); discharge, 494 second-feet.

Daily discharge, in second-feet, of Kankakee River at Custer Park, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,410	1,140	1,140			5,910	3,990	1,980	1,000	770	625	500
2	1,270	1,080	1,080			7,000	3,770	1,980	940	770	625	500
3	1,480	1,010	1,210		1,350	6,720	3,560	1,890	940	720	625	492
4	1,340	950	1,210			5,910	3,350	1,890	880	770	670	492
5	1,200	1,080	1,210			3,560	2,950	1,810	940	770	670	476
				2,600								
6	1,200	1,140	1,280			3,350	2,950	1,650	940	720	670	476
7	1,410	1,080	1,210			3,150	2,950	1,570	940	770	625	476
8	720	1,010	1,350			3,150	2,950	1,650	880	770	625	500
9	1,270	950	1,730			3,350	2,580	1,570	880	770	670	670
10	1,200	1,080	2,950			3,350	2,400	1,500	825	825	670	670
					7,700							
11	1,200	1,080	2,950			3,770	2,580	1,420	825	880	625	670
12	1,060	1,010	1,980			3,770	2,580	1,420	770	1,200	625	670
13	1,200	1,010	2,230			3,770	2,580	1,420	880	1,410	625	770
14	1,060	1,010	2,760			5,980	2,580	1,350	880	1,480	670	880
15	1,200	1,080	3,150			8,180	2,580	1,280	880	1,340	625	940
				1,800								
16	1,010	1,080	1,980			9,720	2,400	1,270	880	1,130	580	940
17	1,010	1,140	2,060			10,000	2,400	1,270	880	1,130	625	880
18	1,010	1,080	1,890		3,900	9,720	2,400	1,270	1,000	1,130	625	940
19	1,010	1,080	3,150			10,700	2,230	1,200	1,000	880	625	476
20	1,010	1,080			3,150	13,300	2,230	1,270	1,000	880	580	825
21	1,140	1,010			2,950	13,600	2,230	1,270	1,060	770	540	825
22	1,080	1,080			3,350	13,000	2,230	1,200	1,060	720	540	720
23	1,080	1,080			3,990	11,600	2,230	1,060	1,000	670	540	670
24	1,080	1,080			6,170	10,400	2,230	1,130	940	670	540	720
25	1,080	1,010			7,000	10,000	2,230	1,130	880	720	500	670
				1,250								
26	1,140	1,010			6,720	7,880	2,230	1,130	825	625	540	720
27	1,140	890			6,440	7,000	2,060	1,060	825	670	492	670
28	1,140	950			5,650	6,440	2,060	1,060	825	625	484	670
29	1,140	1,010			-------	5,400	1,980	1,060	770	625	500	720
30	1,140	1,080			-------	4,910	1,890	1,060	770	625	420	720
31	1,080	-------			-------	4,440	-------	1,060	-------	670	484	------
			4,870									
			3,500									

NOTE.—Stage-discharge relation affected by ice Dec. 20 to Feb. 19; discharge estimated from gage heights, observer's notes, and climatic record. Braced figures give mean discharge for period indicated.

Monthly discharge of Kankakee River at Custer Park, Ill., for the year ending September 30, 1925

[Drainage area, 4,870 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,480	720	1,150	0.236	0.27
November	1,140	890	1,050	.216	.24
December	----------	1,080	2,800	.575	.66
January	----------	----------	1,860	.382	.44
February	----------	----------	5,170	1.06	1.10
March	13,600	3,150	7,070	1.45	1.67
April	3,990	1,890	2,580	.530	.59
May	1,980	1,060	1,380	.283	.33
June	1,060	770	904	.186	.21
July	1,480	625	855	.176	.20
August	670	420	589	.121	.14
September	940	476	678	.139	.16
The year	13,600	420	2,160	.444	6.01

IROQUOIS RIVER NEAR CHEBANSE, ILL.

LOCATION.—In sec. 16, T. 29 N., R. 13 W., at highway bridge 4½ miles east of Chebanse, Kankakee County, 3 miles below Beaver Creek and 6 miles above junction with Kankakee River.

DRAINAGE AREA.—2,120 square miles.

RECORDS AVAILABLE.—April 13, 1923, to September 30, 1925.

GAGE.—Chain gage attached to bridge; read by Charles Haselow.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; fairly permanent. Banks low and wooded. Aquatic vegetation sometimes grows in channel during summer.

EXTREMES OF DISCHARGE.—Maximum open-water stage recorded during year, 8.63 feet March 20 (discharge, 7,540 second-feet); minimum stage, 0.60 foot September 4 (discharge, 12 second-feet).

1923–1925: Maximum stage recorded, 10.58 feet March 31, 1924 (discharge, 10,400 second-feet); minimum stage occurred September 4, 1925.

In the spring of 1913 a stage of about 19.6 feet was reached.

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined. Gage read to hundredths once daily. Daily discharge determined by applying daily gage height to rating table. Records good except for ice period, for which they are fair.

Discharge measurements of Iroquois River near Chebanse, Ill., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 1	1.26	201	June 12	0.96	99.1
Mar. 27	4.82	2770	Aug 27	.67	22.1

Daily discharge, in second-feet, of Iroquois River near Chebanse, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	194	68	93			1,570	1,270	408	125	86	50	18
2	180	68	93			1,420	1,130	385	119	62	56	24
3	166	62	99		460	1,270	935	385	112	68	50	18
4	159	74	99			1,130	875	362	106	86	45	12
5	159	86	132			1,060	815	340	99	93	41	21
6	145	93	115			1,000	755	340	93	99	45	18
7	152	93	173			1,000	695	318	86	112	41	24
8	152	99	295	460	4,800	1,000	668	318	80	119	36	36
9	166	93	455			1,060	640	318	86	138	32	62
10	159	93	505			1,130	695	275	93	125	27	93
11	159	86	530		6,420	1,130	725	275	99	173	27	119
12	152	86	585		4,800	1,130	755	255	106	408	36	152
13	138	106	480		3,170	1,130	725	275	90	530	45	132
14	132	112	455		2,780	2,510	695	219	68	505	62	112
15	119	112	385		2,400	5,360	695	204	68	408	56	106
16	112	125	318		1,800	6,140	640	198	50	275	50	93
17	112	125	318		1,200	6,280	585	190	80	215	45	99
18	112	125	1,060		1,130	5,360	585	190	152	152	36	93
19	112	119	2,100		1,030	6,420	530	190	275	132	27	86
20	106	112			935	7,540	530	184	231	99	27	86
21	106	106			935	7,120	530	152	247	86	27	41
22	106	99	3,250		1,270	6,700	505	166	208	56	32	50
23	99	106			2,160	6,280	558	152	166	41	27	41
24	99	99		260	3,060	5,750	558	152	145	24	32	32
25	99	99			1,910	4,710	558	152	119	36	24	36
26	99	119			1,730	2,950	530	145	99	56	18	41
27	99	86			1,650	2,730	505	145	93	41	21	41
28	93	80	1,550		1,570	2,000	480	132	106	27	18	36
29	93	80			-------	1,730	455	119	99	32	21	32
30	80	86			-------	1,490	408	106	86	41	18	45
31	80	-------			-------	1,340	-------	132	-------	45	15	------

NOTE.—Stage-discharge relation affected by ice Dec. 20 to Feb. 9; discharge estimated from gage heights, observer's notes, and weather records. Gage height missing Feb. 10, 12, 14, 16, 19, 23, 27, and Mar. 21; discharge interpolated. Braced figures give mean discharge for periods indicated.

Monthly discharge of Iroquois River near Chebanse, Ill., for the year ending September 30, 1925

[Drainage area, 2,120 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	194	80	127	0.060	0.07
November	125	62	96.6	.046	.05
December	----------	93	1,200	.566	.65
January	----------	----------	357	.168	.19
February	----------	----------	2,370	1.12	1.17
March	7,540	1,000	3,140	1.48	1.71
April	1,270	408	668	.315	.35
May	408	106	232	.109	.13
June	275	50	119	.056	.06
July	505	24	141	.067	.08
August	62	15	35.1	.017	.02
September	152	12	60.0	.028	.03
The year	7,540	12	703	.332	4.51

FOX RIVER AT ALGONQUIN, ILL.

LOCATION.—In NW. ¼ sec. 34, T. 43 N., R. 8 E. third principal meridian, at Chicago Street Bridge in Algonquin, McHenry County, 100 feet above Public Service Co.'s dam and 300 feet above Crystal Lake outlet.

RECORDS AVAILABLE.— October 1, 1915, to July 31, 1925.

DRAINAGE AREA.—1,340 square miles.

GAGE.—Staff gage attached to concrete abutment of bridge; read by Edward Pedersen. Zero of gage is 729.75 feet above mean sea level.

CHANNEL AND CONTROL.—Control is a concrete dam 100 feet below gage; permanent since August, 1919.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge or by wading.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.44 feet February 26 (discharge, 1,880 second-feet); minimum stage, 0.84 foot June 27 and 28 (discharge, 115 second-feet.)

1916–1925: Maximum stage recorded, 5.3 feet March 31, 1916 (discharge, 7,120 second-feet); minimum stage, 0.59 foot August 31, 1918 (discharge, 67 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Gristmill at dam runs on average about 4 hours a day except Sundays during September to March, inclusive, and one day a week during remainder of year. Effect of operation of mill on gage height is appreciable only at low stages and gage is usually read when mill is not running.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as explained in footnote to table of daily discharge. Records good except for estimated period July 11–31, for which they are poor.

The following discharge measurement was made:

July 10, 1925: Gage height, 1.14 feet; discharge, 284 second-feet.

Daily discharge, in second-feet, of Fox River at Algonquin, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	806	316	482	346	200	1,500	1,220	1,150	254	145
2	782	302	482	330	212	1,430	1,150	1,220	248	156
3	746	288	482	330	212	1,500	1,080	1,220	242	167
4	699	274	500	316	224	1,500	950	1,150	236	178
5	688	260	520	316	236	1,500	890	1,080	230	189
6	699	248	540	309	288	1,580	806	1,020	224	200
7	710	248	560	302	378	1,580	710	1,020	218	224
8	688	267	580	302	600	1,650	622	950	212	254
9	666	295	600	295	1,020	1,650	540	890	206	295
10	655	316	580	302	1,150	1,650	464	830	200	288
11	644	338	560	302	1,150	1,580	394	746	194	
12	622	370	540	309	1,150	1,500	354	633	189	
13	600	410	520	302	1,080	1,430	330	590	184	
14	590	473	500	288	1,080	1,360	330	560	178	
15	580	455	482	274	1,020	1,220	346	540	178	
16	580	428	455	260	1,020	1,150	370	520	167	
17	560	410	419	248	1,020	1,150	402	500	156	
18	530	394	386	236	1,020	1,220	437	482	150	
19	491	378	354	230	1,080	1,290	473	464	145	
20	464	362	323	230	1,150	1,360	500	446	140	
21	446	346	295	224	1,290	1,430	530	428	135	275
22	428	370	267	224	1,430	1,430	570	410	135	
23	419	402	248	224	1,500	1,500	611	386	130	
24	410	437	260	218	1,580	1,500	655	362	125	
25	410	473	274	218	1,800	1,500	699	346	125	
26	402	491	288	212	1,800	1,500	830	330	120	
27	394	500	302	212	1,650	1,500	950	316	115	
28	378	510	316	212	1,580	1,500	1,020	302	115	
29	362	500	330	206	--------	1,430	1,080	288	125	
30	346	491	338	200	--------	1,360	1,080	274	135	
31	330	--------	346	200	--------	1,290	--------	260	--------	

NOTE.—Gage readings in error July 11–31; discharge estimated by comparison with records for Fox River at Dayton and adjacent streams. Braced figure shows mean discharge for period indicated.

Monthly discharge of Fox River at Algonquin, Ill., for the year ending September 30, 1925

[Drainage area, 1,340 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	806	330	552	0.412	0.48
November	510	248	378	.282	.31
December	600	248	427	.319	.37
January	346	200	264	.197	.23
February	1,800	200	997	.744	.77
March	1,650	1,150	1,440	1.07	1.23
April	1,220	330	680	.507	.57
May	1,220	160	636	.475	.55
June	254	115	174	.130	.14
July	--------	145	254	.190	.22

FOX RIVER AT WEDRON, ILL.

LOCATION.—In sec. 9, T. 34 N., R. 4 E., at highway bridge in Wedron, La Salle County, 1,000 feet above Buck Creek.

DRAINAGE AREA.—2,500 square miles.

RECORDS AVAILABLE.—November 5, 1914, to February 8, 1925, when station was discontinued.

GAGE.—Chain gage attached to bridge; read by Charles Davis.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Control 1,000 feet downstream composed of coarse gravel and large boulders; practically permanent; affected at times by growth of aquatic plants.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during period October 1, 1924, to February 8, 1925, estimated 3,800 second-feet for period February 6–8 (stage-discharge relation affected by ice); minimum stage, 5.97 feet November 2 (discharge, 365 second-feet).

1915–1925: Maximum stage recorded, 17.22 feet January 22, 1916 (discharge not determined because of backwater from ice). Maximum open-water stage recorded, 14.2 feet March 26, 1920 (discharge, 17,900 second-feet). Minimum discharge recorded, 105 second-feet, November 20, 1914 (measured by current meter).

REGULATION.—Slight diurnal fluctuation is caused by operation of power plants at and above Aurora.

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation affected by vegetation in channel during fall and summer. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good during open water; fair for period of ice effect.

The following discharge measurement was made:

November 21, 1924: Gage height, 6.48 feet; discharge, 673 second-feet.

Daily discharge, in second-feet, of Fox River at Wedron, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	1,160	585	750			16	750	472	860		
2	1,070	418	860			17	750	555	785		
3	980	528	750		440	18	715	615	785	465	
4	940	528	860			19	750	680	615		
5	900	555	785			20	648	648			
6	860	585	785			21	680	680			
7	1,020	500	785		3,800	22	555	615			
8	980	472	820	465		23	555	648			
9	980	500	820			24	585	680			
10	860	585	1,020			25	615	750	460		
11	860	680	715			26	585	680		365	
12	860	648	750			27	528	680			
13	785	680	860			28	585	528			
14	860	648	680			29	648	715			
15	820	555	750			30	555	750			
						31	615				

NOTE.—Discharge Dec. 20 to Feb. 8, estimated because of ice from gage heights, observer's notes, and weather records. Braced figures give mean discharge for periods indicated.

Monthly discharge of Fox River at Wedron, Ill., for the year ending September 30, 1925

[Drainage area, 2,500 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,160	528	776	0.310	0.36
November	770	418	605	.242	.27
December	1,020	----------	663	.265	.31
January	----------	----------	430	.172	.20

FOX RIVER AT DAYTON, ILL.

LOCATION.—In sec. 29, T. 34 N., R. 4 E., at plant of North Counties Hydroelectric Co. in Dayton, La Salle County, 3 miles below station formerly maintained at Wedron, and 6 miles above mouth of river.

DRAINAGE AREA.—2,570 square miles.

RECORDS AVAILABLE.—April 13 to September 30, 1925. From November 5, 1914, to February 8, 1925, records were obtained at a station at Wedron, having a drainage area of 2,500 square miles.

GAGE.—Float gages in head and tail races are used for determining head on wheels and flow over spillway.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge for period 1,480 second-feet May 5; minimum mean daily discharge, 168 second-feet June 22.

ACCURACY.—Gages read to tenths hourly. Except during flood periods entire flow passes through wheels. Daily discharge through plant is computed from mean head, electrical output, and curve of plant efficiency based on manufacturer's ratings. To the discharge through plant is added daily discharge over dam as computed from mean daily head on dam crest, using weir coefficients estimated from data in Water-Supply Paper 200. Records fair.

COOPERATION.—Power-house data furnished by North Counties Hydroelectric Company.

Daily discharge, in second-feet, of Fox River at Dayton, Ill., for the year ending September 30, 1925

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	------	1,370	212	238	346	278	16	482	754	234	334	301	533
2	------	1,460	257	348	280	302	17	475	610	454	316	278	417
3	------	1,290	406	317	278	306	18	642	588	624	364	332	445
4	------	1,360	450	303	234	316	19	478	672	397	278	389	430
5	------	1,480	334	316	302	392	20	720	596	306	299	390	377
6	------	1,250	316	193	299	280	21	779	485	193	316	334	429
7	------	1,260	257	212	334	212	22	655	497	168	316	364	334
8	------	1,160	304	302	364	280	23	610	510	182	314	317	456
9	------	1,050	236	389	301	255	24	570	496	180	300	299	448
10	------	945	300	336	280	370	25	815	472	798	336	316	417
11	------	980	254	317	254	390	26	745	399	672	256	334	408
12	------	1,010	209	339	332	417	27	950	600	480	256	344	490
13	642	678	332	209	390	418	28	1,190	439	348	234	344	403
14	555	678	380	344	360	434	29	1,250	423	317	301	379	377
15	781	696	232	406	362	484	30	1,350	397	286	278	278	456
							31	------	338	------	334	257	-----

Monthly discharge of Fox River at Dayton, Ill., for the year ending September 30, 1925

[Drainage area 2,570 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
April 13-30	1,350	475	760	0.296	0.20
May	1,480	338	801	.312	.36
June	798	168	337	.131	.15
July	406	193	303	.118	.14
August	390	234	322	.125	.14
September	533	212	385	.150	.17

VERMILION RIVER NEAR STREATOR, ILL.

LOCATION.—In sec. 1, T. 30 N., R. 3 E. third principal meridian, at highway bridge known as Bridge No. 3, 1½ miles south of Streator, La Salle County, and 100 feet below the Santa Fe Railway bridge.

DRAINAGE AREA.—1,080 square miles.

RECORDS AVAILABLE.—July 27, 1914, to September 30, 1925.

GAGE.—Chain gage attached to highway bridge; read by Andrew Gall. Bridge used since 1914 was torn down September 15, 1925; gage replaced on new bridge 300 feet downstream September 24, 1925.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel composed of gravel and rocks. Brush and timber growing on banks above low-water stages. Control at low stages composed of loose rocks; shifts occasionally.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.1 feet February 9 (discharge, 2,710 second-feet); minimum stage, 0.84 foot September 2–4 (discharge, 2.3 second-feet).

1914–1925: Maximum stage recorded, 22.9 feet April 20, 1920 (discharge, 16,500 second-feet); minimum discharge, no flow August 25–28, September 16–30, 1920, and August 24–27 and September 3 and 4, 1923.

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation permanent during period October 1 to September 15. Rating curves well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating tables except as explained in footnote to daily-discharge table. Records good except for ice-affected and estimated periods, for which they are poor.

The following discharge measurements were made:

November 21, 1924: Gage height, 1.59 feet; discharge, 43.3 second-feet.

July 3, 1925: Gage height, 1.24 feet; discharge, 11.3 second-feet.

September 24, 1925: Gage height, 1.33 feet[8]; discharge, 4.04 second-feet.

Daily discharge, in second-feet, of Vermilion River near Streator, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb	Mar.	Apr.	May	June	July	Aug.	Sept.
1	130	71	32			1,090	850		57	18	5.4	2.5
2	113	68	37		120	930	507	170	47	14	5.0	2.3
3	99	60	34			639	409		39	12	4.2	2.3
4	96	54	32			573	346	150	32	11	6.0	2.3
5	86	52	74		1,090	507	301	140	28	10	8.8	3.0
6	83	54	113		2,280	474	301	120	22	8.8	7.6	3.4
7	92	37	109		2,370	441	286	116	22	10	7.0	4.2
8	89	26	102		2,460	441	301	113	19	11	6.6	12
9	96	32	99		2,710	507	316	113	15	182	7.0	8.2
10	99	42	96		2,280	507	316	109	14	740	5.8	7.0
11	102	47	92	45	1,560	672	301	106	14	672	5.0	6.2
12	96	63	86		1,260	850	286	99	15	672	5.4	5.8
13	86	74	89		1,170	1,130	286	96	16	606	5.8	5.8
14	77	71	92		1,050	1,460	301	89	16	606	5.4	32
15	71	68	99		1,010	1,560	286	86	15	573	5.4	63
16	57	68	96		890	1,560	301	86	18	573	5.4	
17	49	65	74		850	1,980	286	89	21	540	5.4	
18	32	57	83		672	2,100	316	92	346	507	5.0	15
19	34	63	92		540	2,340	258	89	231	346	4.6	
20	54	60	89		507	2,640	258	86	150	120	5.0	

[8] Referred to gage on new bridge 300 feet downstream.

Daily discharge, in second-feet, of Vermilion River near Streator, Ill., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	49	57			409	2,640	244	80	120	74	5.0	
22	44	52			672	2,580		83	102	65	4.6	15
23	49	52	60		1,090	2,100		86	83	63	3.8	
24	60	49			1,810	1,710		89	65	54	3.8	4.0
25	57	44			1,660	1,510		86	65	37	3.4	3.4
26	65	42			1,510	1,360	210	86	57	24	3.4	4.2
27	60	37			1,460	1,360		83	52	16	3.0	4.2
28	57	34			1,410	1,170		80	42	12	3.0	3.8
29	54	32	25		-------	1,010		80	32	8.8	2.8	3.4
30	64	30			-------	705		74	24	6.6	2.8	3.8
31	57	-------			-------	970	-------	68	-------	6.0	2.5	------

NOTE.—Discharge Dec. 21 to Feb. 4 estimated, because of ice, from gage heights and weather records. Gage not read Dec. 18, Feb. 7, Apr. 22 to May 3, and Sept. 16-23; discharge interpolated Dec. 18 and Feb. 7; estimated Apr. 22, to May 3 and Sept. 16-23. Braced figures give mean discharge for periods indicated.

Monthly discharge of Vermilion River near Streator, Ill., for the year ending September 30, 1925

[Drainage area, 1,080 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	130	32	72.8	0.067	0.08
November	74	26	52.0	.048	.05
December	109	-------	66.8	.062	.07
January	-------	-------	45.0	.042	.05
February	2,710	-------	1,190	1.10	1.14
March	2,640	441	1,270	1.18	1.36
April	850	-------	298	.276	.31
May	-------	68	103	.095	.11
June	346	14	59.3	.055	.06
July	740	6	213	.197	.23
August	8.8	2.5	4.96	.005	.01
September	63	2.3	10.2	.009	.01
The year	2,710	2.3	277	.256	3.48

MACKINAW RIVER NEAR GREEN VALLEY, ILL.

LOCATION.—In sec. 15, T. 23 N., R. 5 W., at Chicago & Northwestern Railway bridge 3 miles north of Green Valley, Tazewell County.

DRAINAGE AREA.—1,100 square miles.

RECORDS AVAILABLE.—March 9, 1921, to September 30, 1925.

GAGE.—Chain gage on downstream side of bridge; read by John Eggena.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel is sandy and somewhat shifting. Banks are overflowed during extremely high water. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.65 feet February 9 (discharge, 3,800 second-feet); minimum stage, 0.78 foot September 6–8 (discharge, 49 second-feet).

1921–1925: Maximum stage recorded 13.3 feet August 22, 1924 (discharge, 18,500 second-feet); minimum discharge, 30 second-feet September 28 to October 5, October 13 and 14, 1922.

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation changed probably in March. Rating curves well defined above 2,000 second-feet and fairly well defined below. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good for open-water periods; fair for ice periods.

The following discharge measurement was made:
December 2, 1924: Gage height, 1.75 feet; discharge, 118 second-feet.

Daily discharge, in second-feet, of Mackinaw River near Green Valley, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	420	142	125	180	575	855	745	318	134	86	60	53
2	355	134	118	180	620	755	700	318	134	80	60	53
3	210	125	134	190	665	710	655	305	134	80	58	51
4	370	118	160	200	855	665	615	279	127	80	58	51
5	385	134	210	200	1,230	665	575	267	127	80	56	51
6	370	180	295	210	2,610	620	575	255	127	80	56	49
7	355	170	295	220	2,790	575	535	244	120	91	70	49
8	370	160	270	220	3,420	575	535	232	127	141	65	49
9	420	160	245	220	3,800	535	495	232	120	108	56	108
10	370	160	200	232	3,240	495	535	232	114	900	65	156
11	355	170	170	220	2,000	455	535	232	108	495	65	114
12	340	200	210	220	1,370	420	535	222	108	360	65	91
13	325	245	258	220	1,030	495	535	211	164	232	75	91
14	310	232	258	220	970	2,000	495	211	575	134	70	332
15	295	210	245	220	855	2,000	442	201	408	127	60	232
16	282	190	232	220	710	2,000	425	211	141	108	58	156
17	270	180	665	232	665	1,840	390	222	127	91	55	127
18	258	180	665	245	575	1,520	390	232	108	80	305	114
19	258	180	535	232	575	2,000	408	211	102	75	173	96
20	245	170	420	210	535	2,520	390	201	102	70	1,300	80
21	232	170	355	160	620	3,060	375	191	102	70	305	70
22	232	160	325	170	665	3,060	390	182	96	65	244	70
23	220	160	295	180	1,440	2,970	375	173	96	70	191	65
24	210	160	270	200	1,840	2,520	375	164	114	65	114	65
25	210	151	245	220	1,680	1,690	360	156	114	65	102	60
26	190	151	220	245	1,600	1,360	375	148	102	60	86	58
27	180	151	200	270	1,370	1,180	360	148	96	60	70	70
28	170	151	180	295	1,030	1,060	332	141	91	60	60	91
29	160	142	180	232	-------	955	332	141	91	60	55	86
30	151	134	180	190	-------	900	318	141	86	58	55	102
31	160	-------	180	258	-------	845	-------	134	-------	60	53	------

NOTE.—Discharge Dec. 20 to Feb. 2 estimated on account of ice from observer's notes, gage readings, and weather records.

Monthly discharge of Mackinaw River near Green Valley, Ill., for the year ending September 30, 1925

[Drainage area, 1,100 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	420	151	280	0.255	0.29
November	245	118	166	.151	.17
December	665	118	269	.245	.28
January	295	160	216	.196	.23
February	3,800	535	1,400	1.27	1.32
March	3,060	420	1,330	1.21	1.40
April	745	318	470	.427	.48
May	318	134	211	.192	.22
June	575	86	140	.127	.14
July	900	58	135	.123	.14
August	1,300	53	134	.122	.14
September	332	49	94.7	.086	.10
The year	3,800	49	398	.362	4.91

SPOON RIVER AT SEVILLE, ILL.

LOCATION.—In sec. 24, T. 6 N., R. 1 E. fourth principal meridian, at Toledo, Peoria & Western Railway bridge a quarter of a mile east of railway station at Seville, Fulton County.

DRAINAGE AREA.—1,600 square miles.

RECORDS AVAILABLE.—July 24, 1914, to September 30, 1925.

GAGE.—Chain gage attached to bridge; read by R. M. Boales to March 31, by E. Bebard thereafter.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—A loose rock and timber dam 1½ miles below gage probably forms control at medium stages. At low and high stages control is clay and sand; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 16.4 feet February 9 (discharge estimated because of backwater from ice, 6,560 second-feet); minimum stage, 3.09 feet September 9 (discharge, 43 second-feet).

1914–1925: Maximum stage recorded, 30.5 feet August 22, 1924 (discharge, 28,900 second-feet); minimum stage, 1.35 feet July 31 and August 27–29, 1914 (discharge, 3.8 second-feet).

High water of September, 1911, reached a height of about 25.8 feet on present gage; flood of 1883, when there was backwater from ice, reached a stage of about 33.0 feet on the present gage.

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation changed probably in February. Rating curves fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except during period of ice effect, for which they are poor.

The following discharge measurement was made:

December 3, 1924: Gage height, 3.96 feet (stage-discharge relation affected by ice); discharge, 169 second-feet.

Daily discharge, in second-feet, of Spoon River at Seville, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	418	270				595	335	555	170	170	119	62
2	400	256				555	320	475	170	159	110	55
3	315	242	200		900	555	320	440	148	148	110	53
4	435	242				870	305	388	148	148	108	49
5	435	242	550			820	305	352	138	170	102	47
6	418	242	1,100			640	305	352	159	148	92	46
7	400	256	715			595	305	335	159	275	88	49
8	590	242	510	100	5,000	555	305	320	138	1,580	92	46
9	418	215	365			555	305	305	119	370	595	43
10	470	215				515	422	320	128	305	245	60
11	418	242	250			475	370	305	103	245	232	61
12	382	400			2,180	440	335	275	87	440	352	920
13	348	630	330		1,020	422	352	245	110	275	730	515
14	330	510	270		970	595	320	218	107	245	440	335
15	315	382	256		920	640	275	218	6,180	245	232	245

Daily discharge, in second-feet, of Spoon River at Seville, Ill., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	300	330			775	595	275	515	3,040	730	182	206
17	300	285			595	640	260	555	970	640	159	159
18	285	256			595	555	290	440	335	305	193	108
19	285	242			475	685	440	422	730	193	159	95
20	285	242			388	685	422	305	775	148	970	88
			160									
21	270	228			870	595	458	290	458	148	458	82
22	256	242			3,240	595	370	275	335	138	206	72
23	256	256			2,660	555	370	260	440	128	128	64
24	256	242		180	2,720	515	335	218	1,070	110	110	74
25	242	215			2,000	475	730	206	440	193	95	53
26	256	215			1,400	515	920	206	335	440	82	60
27	256	215			870	458	640	193	275	440	77	69
28	256	215	85		685	405	515	206	245	260	62	260
29	270	202			-------	388	475	193	245	182	53	218
30	270	190			-------	352	475	182	218	170	69	138
31	256	-------			-------	352	-------	182	-------	138	66	-----

Note.—Discharge Dec. 1-4, 10-12, and Dec. 16 to Feb. 11 estimated because of ice from gage heights observer's notes, and weather records. Braced figures give mean discharge for periods indicated.

Monthly discharge of Spoon River at Seville, Ill., for the year ending September 30, 1925

[Drainage area, 1,600 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	590	242	334	0.209	0.24
November	630	190	272	.170	.19
December	1,100	----------	250	.156	.18
January	----------	----------	141	.088	.10
February	----------	388	2,180	1.36	1.42
March	870	352	555	.347	.40
April	920	260	395	.247	.28
May	555	182	315	.197	.23
June	6,180	87	599	.374	.42
July	1,580	110	299	.187	.22
August	730	53	217	.136	.16
September	920	43	144	.090	.10
The year	6,180	43	462	.289	3.94

SANGAMON RIVER AT MONTICELLO, ILL.

LOCATION.—In sec. 12, T. 18 N., R. 5 E. third principal meridian, at Illinois Central Railroad bridge half a mile west of Monticello, Piatt County.

DRAINAGE AREA.—550 square miles.

RECORDS AVAILABLE.—February 4, 1908, to December 31, 1912; June 23, 1914, to September 30, 1925.

GAGE.—Chain gage attached to downstream side of bridge; read by Malon Taylor.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge and wooden trestle approach or by wading.

CHANNEL AND CONTROL.—Control consists of fine gravel; likely to shift.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.9 feet March 19 (discharge, 2,060 second-feet); minimum discharge estimated, 10 second-feet September 3–10.

1908–1912; 1914–1925: Maximum stage recorded, 15.2 feet May 14, 1908 (discharge, 9,280 second-feet); minimum stage, 1.5 feet July 31 to August 3, 1914 (discharge, 1 second-foot).

Maximum stage during flood of March and April, 1913, 17.7 feet March 25 (discharge not known).

ICE.—Stage-discharge relation slightly affected by ice.

ACCURACY—Stage-discharge relation changed slightly during March and September. Rating curves fairly well defined above and poorly defined below 80 second-feet. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table except September 16–20, when shifting-control method was used. Records fair except for extremely low stages, for which they are poor.

The following discharge measurement was made:

April 25, 1925: Gage height, 4.43 feet; discharge, 200 second-feet.

Daily discharge, in second-feet, of Sangamon River at Monticello, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	41	25	459	264	562	487	153	41	25	11	11
2	67	41	25	427	354	544	471	142	35	25	11	11
3	60	41	25	397	475	492	440	137	35	25	11	10
4	53	41	35	382	459	427	410	132	35	25	21	10
5	50	35	67	368	686	397	381	122	30	30	17	10
6	47	35	92	354	980	368	352	112	30	35	13	10
7	101	35	196	326	1,170	354	338	103	28	30	13	10
8	187	35	300	300	1,570	347	324	103	25	30	13	10
9	142	35	526	287	1,970	340	311	94	25	25	13	10
10	121	35	475	261	1,890	326	324	94	25	25	13	10
11	111	35	340	223	1,630	313	338	94	25	21	13	17
12	102	53	287	211	1,520	287	305	94	25	21	13	17
13	92	67	248	199	1,290	562	272	85	21	21	35	144
14	83	60	242	175	1,020	1,330	298	85	21	69	21	272
15	75	53	235	164	940	1,480	285	85	21	41	17	440
16	67	50	153	153	860	1,630	259	94	30	25	15	412
17	60	47	326	153	580	1,520	234	90	61	21	13	326
18	53	41	920	153	709	1,630	246	85	85	21	13	199
19	50	41	1,170	142	580	2,060	234	77	103	19	13	111
20	47	41	1,090	153	459	1,970	222	77	69	17	47	76
21	47	41	1,110	164	459	1,890	234	77	62	17	30	41
22	41	41	1,130	175	534	1,760	210	69	54	13	25	35
23	35	41	1,170	199	709	1,630	198	69	41	13	23	30
24	35	41	1,090	211	830	1,330	186	62	54	13	21	25
25	35	35	980	223	1,020	1,130	186	54	69	13	17	21
26	35	35	920	235	920	900	175	54	85	13	13	17
27	35	30	860	300	830	845	164	47	54	13	13	17
28	35	30	755	287	580	795	186	47	48	13	12	17
29	35	30	686	274	-------	700	175	47	41	12	12	17
30	35	28	640	223	-------	606	164	47	35	12	11	17
31	41	-------	620	175	-------	519	-------	44	-------	11	11	------

NOTE.—Gage not read Sundays; discharge interpolated. Discharge Dec. 25 to Jan. 24 estimated on account of ice from weather records, gage heights, and observer's notes. Discharge estimated because of missing gage heights July 29 to Aug. 3 and Aug. 28 to Sept. 10, by comparison with records on Embarrass, Vermilion, Mackinaw, and South Fork of Sangamon Rivers.

Monthly discharge of Sangamon River at Monticello, Ill., for the year ending September 30, 1925

[Drainage area, 550 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	187	35	66.2	0.120	0.14
November	67	28	40.5	.074	.08
December	1,170	25	540	.982	1.13
January	459	142	250	.455	.52
February	1,970	264	903	1.64	1.71
March	2,060	287	937	1.70	1.96
April	487	164	280	.509	.57
May	153	44	86.3	.157	.18
June	103	21	43.8	.080	.09
July	69	11	22.4	.041	.05
August	47	11	16.9	.031	.04
September	440	10	78.4	.143	.16
The year	2,060	10	269	.489	6.63

SANGAMON RIVER AT RIVERTON, ILL.

LOCATION.—In SE. ¼ SW. ¼ sec. 9, T. 16 N., R. 4 W. third principal meridian, at Wabash Railroad bridge a quarter of a mile west of Riverton, Sangamon County, and 2½ miles below mouth of South Fork.

DRAINAGE AREA.—2,560 square miles.

RECORDS AVAILABLE.—February 13, 1908, to December 31, 1912; August 7, 1914, to September 30, 1925.

GAGE.—Chain gage attached to bridge; read by J. J. Washburn.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge, from highway bridge one-fourth mile upstream, or by wading.

CHANNEL AND CONTROL.—Control consists of fine gravel; shifts slightly. Banks overflowed at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 23.31 feet March 20 (discharge, 10,200 second-feet); minimum stage, 7.53 feet September 9 (discharge, 35 second-feet).

1908–1912; 1914–1925: Maximum stage recorded, 28.22 feet April 11, 1922 (discharge, 22,700 second-feet); minimum stage, 6.9 feet October 3–15, 1915 (discharge, 3 second-feet).

High water of 1883 reached a height of about 32 feet on present gage, and that of 1875 is said to have been half a foot lower (discharge not determined).

ICE.—Stage-discharge relation not seriously affected by ice.

REGULATION.—The flow during low-water periods is affected by storage at the municipal reservoir at Decatur.

ACCURACY.—Stage-discharge relation changed probably during March. Rating curves fairly well defined above and poorly defined below 250 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating tables, except from March 21 to April 10 when shifting-control method was used. Records good except at low stages for which they are fair.

The following discharge measurement was made:

December 6, 1924: Gage height, 9.10 feet; discharge, 286 second-feet.

Daily discharge, in second-feet, of Sangamon River at Riverton, Ill., for the year ending September 30, 1925

Date	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	204	139	122	2,700	965	2,480	2,380	736	238	798	127	62
2	176	122	113	2,220	930	2,680	2,130	706	227	736	110	60
3	157	122	105	1,940	965	1,980	1,880	706	216	676	102	56
4	797	105	130	1,860	1,040	1,820	1,730	676	205	515	86	52
5	500	86	224	1,460	1,070	1,740	1,610	647	174	368	82	45
6	306	72	200	1,240	1,240	1,680	1,490	676	164	308	72	41
7	500	90	176	1,240	1,500	1,580	1,370	515	164	320	72	39
8	896	87	264	1,240	1,780	1,460	1,290	515	145	344	102	36
9	896	97	398	1,070	2,780	1,420	1,290	490	136	344	110	35
10	733	95	797	1,000	3,030	1,350	1,370	490	136	706	102	36
11	641	105	797	896	3,660	1,280	1,370	490	118	706	216	40
12	500	139	797	863	4,040	1,210	1,330	490	136	647	1,210	66
13	448	148	765	1,000	4,320	1,320	1,250	440	164	440	1,290	216
14	398	224	671	671	4,110	2,730	1,290	440	174	490	830	344
15	351	351	641	671	4,040	3,540	1,140	440	205	392	767	344
16	285	306	641	765	3,420	5,020	1,100	440	392	296	767	194
17	264	285	765	1,210	3,030	5,900	1,030	440	440	227	296	238
18	264	254	2,220	1,540	2,580	6,900	1,030	368	440	194	205	284
19	214	234	2,680	1,420	2,300	8,500	1,030	368	416	184	174	320
20	204	194	5,200	1,240	2,060	10,200	927	344	392	174	154	344
21	194	166	6,300	1,070	2,020	10,200	1,060	344	392	164	136	344
22	194	148	6,400	1,320	2,020	9,800	1,170	344	392	127	127	216
23	194	148	6,900	1,210	2,220	9,280	927	320	416	136	110	194
24	139	148	8,100	1,280	2,830	8,620	894	284	515	136	94	127
25	157	285	8,200	1,420	3,180	8,010	862	262	647	164	76	110
26	148	166	8,200	1,660	3,180	7,060	830	273	706	174	76	118
27	148	139	7,500	1,700	2,780	6,220	798	262	706	184	84	284
28	139	113	5,800	1,350	2,680	5,070	767	238	647	238	79	273
29	139	130	5,110	1,240	-------	3,860	706	227	830	238	66	184
30	130	122	3,970	1,070	-------	3,060	736	250	798	216	56	194
31	148	-------	3,080	863	-------	2,680	-------	250	-------	194	58	------

NOTE.—Stage-discharge relation affected by ice Dec. 26–30 and Jan. 14 and 15; discharge estimated from gage heights, observer's notes, and weather records. Gage not read Jan. 1 and 2; discharge interpolated.

Monthly discharge of Sangamon River at Riverton, Ill., for the year ending September 30, 1925

[Drainage area, 2,560 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	896	130	338	0.132	0.15
November	351	72	161	.063	.07
December	8,200	105	2,820	1.10	1.27
January	2,700	671	1,300	.508	.59
February	4,320	930	2,490	.973	1.01
March	10,200	1,210	4,470	1.74	2.01
April	2,380	706	1,230	.480	.54
May	736	227	435	.170	.20
June	830	118	358	.140	.16
July	798	127	350	.137	.16
August	1,290	56	253	.099	.11
September	344	35	163	.064	.07
The year	10,200	35	1,190	.465	6.34

SOUTH FORK OF SANGAMON RIVER AT POWER PLANT NEAR TAYLORVILLE, ILL.

LOCATION.—In sec. 14, T. 13 N., R. 3 W., at Chicago & Illinois Midland Railroad bridge 6 miles northwest of Taylorville, Christian County, 500 feet east of power plant of Central Illinois Public Service Co., 5 miles below mouth of Bear Creek, and 8 miles below station formerly maintained at Wabash Railroad bridge.

DRAINAGE AREA.—510 square miles.

RECORDS AVAILABLE.—May 18, 1917, to September 30, 1925.

GAGE.—Chain gage attached to bridge; read by H. Hendricks.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of clay, mud, and coal-mine waste; shifting. Banks wooded and are overflowed above medium stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17.15 feet March 17 (discharge, 3,410 second-feet); minimum discharge, 0.9 foot December 1 and 2.

1917–1925: Maximum discharge recorded, 11,800 second-feet March 15, 1922; minimum discharge, no flow, August 29 and October 6–23, 1922.

A stage of about 27.3 feet on present gage is said to have been reached January 31, 1916 (discharge, 11,300 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—An average of about 0.5 second-foot is used for boiler feed and other purposes at power plant just above gage.

ACCURACY.—Stage-discharge relation changed probably during March. Rating curves fairly well defined. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating tables Records good for medium and high stages; poor for low stages.

The following discharge measurement was made:

April 24, 1925: Gage height, 6.47 feet; discharge, 99.1 second-feet.

Daily discharge, in second-feet, of South Fork of Sangamon River at power plant near Taylorville, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.6	1.8	0.9	175	68	356	270	78	44	470	19	2.7
2	8.6	1.4	.9	145	91	295	270	74	42	306	17	2.4
3	6.7	1.8	2.6	117	117	205	248	78	42	118	12	2.2
4	6.7	1.8	3.1	117	91	212	237	74	34	81	10	3.8
5	6.7	1.6	5.2	110	113	220	184	64	34	62	22	4.3
6	6.7	1.4	7.4	104	135	227	174	55	34	44	34	4.8
7	5.8	1.4	8.4	95	205	205	174	49	21	88	34	.8
8	6.7	1.2	50	91	331	195	164	46	19	61	5.0	3.8
9	47	1.2	356	87	435	195	164	44	39	74	10	4.3
10	64	1.2	307	75	491	185	226	42	34	81	8.0	4.8
11	47	1.4	72	75	580	165	226	39	23	95	8.0	.8
12	41	6.5	19	72	850	155	204	34	19	270	29	4.8
13	15	19	24	68	825	135	174	44	21	184	64	4.3
14	11	34	11	64	687	800	174	44	25	81	174	4.3
15	8.6	34	8.4	72	548	1,680	154	39	29	61	318	4.8
16	6.7	31	15	83	408	2,970	164	42	144	49	174	20
17	6.7	28	13	343	343	3,410	174	44	379	34	49	28
18	5	19	356	491	307	2,970	144	44	366	27	21	46
19	4	11	640	520	283	2,970	135	42	154	25	13	18
20	3	10	1,060	384	266	2,900	135	44	149	21	13	14
21	1.9	9.6	1,480	249	249	2,830	135	42	144	17	13	9.6
22	1.9	8.4	1,730	145	302	2,830	118	39	61	52	13	6
23	2.7	5.6	1,930	145	356	2,310	102	40	34	118	9.0	3.8
24	1.9	2.6	2,180	135	491	1,680	102	42	88	88	8.0	4.3
25	1.9	3.7	2,430	135	625	1,360	95	42	259	61	6.2	4.8
26	1.2	3.1	2,080	145	670	940	81	39	318	34	5.6	4.3
27	1.2	2.6	1,600	319	610	725	74	36	354	88	5.0	9.6
28	1.9	2.2	1,030	175	421	595	78	34	215	67	5.0	7.6
29	2.3	1.8	382	104	-------	510	74	34	194	32	4.0	6
30	2.7	1.4	249	87	-------	431	78	39	566	25	3.6	7.6
31	1.9	-------	185	68	-------	330	-------	42	-------	21	3.2	------

NOTE.—Gage not read; discharge interpolated Oct. 5, 20, Nov. 5, 9, 20, Dec. 5, 20, 24, Jan. 5, 20, Feb. 5, 15, 20, 22, Mar. 4, 5, 20, Apr. 20, May 5, 23, June 20, July 5, 20, Aug. 5, 20, and Sept. 5, 20.

Monthly discharge of South Fork of Sangamon River at power plant near Taylorville Ill., for the year ending September 30, 1925

[Drainage area, 510 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	64	1.2	10.8	0.021	0.02
November	34	1.2	8.32	.016	.02
December	2,430	.9	588	1.15	1.33
January	520	64	161	.316	.36
February	850	68	389	.763	.79
March	3,410	135	1,130	2.22	2.56
April	270	74	158	.310	.35
May	78	34	46.7	.092	.11
June	566	19	130	.255	.28
July	470	17	91.5	.179	.21
August	318	3.2	35.8	.070	.08
September	46	2.2	8.32	.016	.02
The year	3,410	.9	230	.451	6.13

CROOKED CREEK AT RIPLEY, ILL.

LOCATION.—In sec. 33, T. 1 N., R. 2 W., at highway bridge one-fourth mile east of Ripley, Brown County.

DRAINAGE AREA.—1,310 square miles (measured on base map of Illinois).

RECORDS AVAILABLE.—March 12, 1921, to September 30, 1925.

GAGE.—Chain gage attached to downstream side of bridge; read by Mrs. John Hess.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed composed of soft mud and clay. Banks high and are wooded above medium stage. Control poorly defined; somewhat shifting. Illinois River, when at high stage, causes backwater at the station.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 16.7 feet August 12 (discharge, 5,470 second-feet); minimum stage, 2.54 feet September 7 (discharge, 18 second-feet).

1921–1925: Maximum stage recorded, 25.0 feet July 25, 1924 (discharge, 12,500 second-feet); minimum discharge, 9 second-feet September 8 and 9, 1922. Old high-water mark, date unknown, is at a stage of about 26.0 feet on gage.

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation changed probably during August. Rating curves fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating tables. Records fair except during ice periods for which they are poor.

The following discharge measurement was made:

December 4, 1924: Gage height, 2.93 feet; discharge, 60.3 second-feet.

Daily discharge, in second-feet, of Crooked Creek at Ripley, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	105	43	63		1,360	360	270	510	73	220	230	27
2	105	42	62		1,840	435	270	510	70	210	220	25
3	113	41	61		1,960	685	270	510	67	210	200	23
4	140	39	65		2,000	635	270	510	63	210	190	22
5	170	39	710		2,240	585	270	485	61	200	170	20
6	200	38	635		3,180	460	270	460	57	200	140	20
7	210	37	485		4,220	410	250	410	54	1,500	1,290	18
8	200	35	410		4,990	410	250	360	50	1,220	635	19
9	190	34	290		4,220	385	1,260	270	47	1,800	240	20
10	180	39	270	60	3,040	385	830	230	45	1,160	635	23
11	180	1,500	230		2,860	385	800	190	43	560	535	118
12	170	890	220		2,280	360	710	180	41	435	5,470	390
13	150	830	190		635	510	685	180	41	230	4,810	490
14	130	770	180		585	1,460	660	170	40	220	4,070	590
15	122	685	140		560	1,260	240	170	1,160	220	1,570	415
16	113	635	105		560	770	240	585	2,280	210	1,290	165
17	97	560	105		535	585	290	585	3,220	170	860	100
18	90	335			485	510	660	585	2,280	130	515	65
19	86	200			435	1,160	800	560	1,570	90	390	44
20	81	92			435	1,880	685	560	1,100	85	302	43
21	72	90	65		410	1,640	1,260	535	685	82	540	53
22	68	85			2,730	1,130	2,640	485	385	78	465	100
23	65	81		420	2,000	685	1,500	435	1,960	76	415	165
24	62	76			1,500	460	1,130	270	2,910	76	390	225
25	59	73			1,220	435	2,550	200	1,720	685	340	315
26	56	72		1,540	610	410	2,680	105	1,290	335	290	390
27	53	69		1,290	410	410	2,460	97	685	310	155	440
28	52	68	35	1,190	360	385	1,600	92	250	290	102	415
29	49	65		1,100	-------	335	1,010	84	240	290	62	365
30	48	63		1,070	-------	310	800	79	230	270	31	1,260
31	45	-------		1,190	-------	290	-------	76	-------	250	30	-------

NOTE.—Discharge estimated because of ice Dec. 18 to Feb. 8, from gage heights, observer's notes, weather records, and records on Spoon River at Seville. Discharge interpolated July 17 and 18 because of missing gage heights. Braced figures show mean discharge for periods indicated.

Monthly discharge of Crooked Creek at Ripley, Ill., for the year ending September 30, 1925

[Drainage area, 1,310 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	210	45	112	0.086	0.10
November	1,500	34	254	.194	.22
December	710	----------	160	.122	.14
January	1,540	----------	344	.263	.30
February	4,990	360	1,700	1.30	1.35
March	1,880	290	649	.495	.57
April	2,680	240	920	.702	.78
May	585	76	338	.258	.30
June	3,220	40	757	.578	.64
July	1,800	76	388	.296	.34
August	5,470	30	857	.654	.75
September	1,260	18	212	.162	.18
The year	5,470	18	549	.419	5.67

MACOUPIN CREEK NEAR KANE, ILL.

LOCATION.—In sec. 7, T. 9 N., R. 11 W., at Chicago & Alton Railway bridge 3 miles northwest of Kane, Greene County.

DRAINAGE AREA.—865 square miles (measured on base map of Illinois).

RECORDS AVAILABLE.—March 11, 1921, to September 30, 1925.

GAGE.—Vertical staff; lower section on old piling between piers, intermediate section on left pier, high-water section on left abutment; read by Claude Linn. On July 29, 1926, the datum of gage was lowered 3.00 feet. Gage heights for 1925 were referred to new datum.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading; during high water also at bridges over flood channels one-fourth mile south and one-eighth mile north of main channel.

CHANNEL AND CONTROL.—New channel dredged in summer of 1923 decreased the length and increased the slope of the stream. Bed composed of heavy clay in dredged channel.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17.0 feet, March 19 (discharge, 6,350 second-feet); minimum stage, 2.54 feet September 20 and 24 (discharge, 20 second-feet).

1921–1925: Maximum stage recorded, 24.6 feet March 15, 1922 (discharge, 15,000 second-feet); minimum discharge, 1 second-foot September 29, October 3, 5, and 15, 1922. High water of 1915 reached a stage of 29.5 feet on present gage.

ICE.—Stage-discharge relation generally affected by ice.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined between 40 and 300 second-feet and fairly well defined beyond these limits. Gage read to half-tenths once daily October 1 to April 20 and to hundredths after April 20. Daily discharge ascertained by applying daily gage height to rating table except as explained in footnote to daily-discharge table. Records good except for estimated periods, for which they are poor.

The following discharge measurements were made:

December 5, 1924: Gage height, 4.94 feet; discharge, 212 second-feet.

April 20, 1925: Gage height, 3.74 feet; discharge, 92 second-feet.

Daily discharge, in second-feet, of Macoupin Creek near Kane, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50	44	53	76	250	163	141	84	38	152	44	31
2	44	47	50	92	236	141	141	80	38	113	41	31
3	41	44	56	84	198	100	131	73	80	66	41	28
4	597	44	100	84	152	174	131	66	59	59	38	28
5	388	41	236	100	122	163	100	62	47	53	36	21
6	281	41	210	92	236	186	108	59	47	53	38	21
7	597	44	174	88	281	163	104	59	41	552	38	21
8	350	44	122	92	467	152	113	56	38	388	36	21
9	281	47	152	92	1,450	141	131	66	38	88	53	23
10	141	47	122	152	1,520	152	152	73	38	141	59	23
11	104	44	100	174	1,350	141	131	70	36	388	66	25
12	76	44	92	174	910	122	131	62	36	350	53	25
13	59	670	100	163	670	314	113	59	36	122	73	32
14	66	620	96	141	552	1,000	108	59	131	76	59	59
15	50	427	100	152	447	3,500	104	53	50	113	53	36
16	53	281	122	745	552	2,500	100	56	53	113	47	32
17	44	236	236	1,480	509	2,000	96	53	84	53	44	28
18	56	152	1,830	1,260	350	3,750	104	53	47	73	41	23
19	53	100	3,050	855	297	6,350	88	53	50	113	38	21
20	50	80	2,440	552	265	5,370	80	47	53	113	447	20
21	50	73	1.750	447	236	4,540	88	44	47	992	163	21
22	47	53	910	910	855	3,750	84	47	41	1,260	88	21
23	50	59	467	828	800	2,500	80	44	141	350	53	21
24	47	66	281	645	695	1,500	76	41	122	73	47	20
25	47	66	236	745	645	750	76	41	131	96	41	21
26	47	59	152	720	530	332	76	38	92	131	38	25
27	44	59	163	670	210	297	73	38	66	113	36	186
28	47	59	186	574	186	236	73	38	41	113	34	152
29	44	56	210	427	-------	210	76	38	1,290	108	34	113
30	41	53	152	314	-------	198	84	44	938	141	34	66
31	47	-------	100	210	-------	152	-------	41	-------	88	31	-------

NOTE.—Gage heights missing Mar. 14–18, 22–25, May 25 to June 2, June 7–13, 22, 28, Aug. 2–8, 19, and Aug. 25 to Sept. 3; discharge estimated from weather records and by comparison with records for South Fork of Sangamon River near Taylorville.

Monthly discharge of Macoupin Creek near Kane, Ill., for the year ending September 30, 1925

[Drainage area, 865 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	597	41	126	0.146	0.17
November	670	41	123	.142	.16
December	3,050	50	453	.524	.60
January	1,480	76	424	.490	.56
February	1,520	122	535	.618	.64
March	6,350	100	1,320	1.53	1.76
April	152	73	103	.119	.13
May	84	38	54.7	.063	.07
June	1,290	36	132	.153	.17
July	1,260	53	214	.247	.28
August	447	31	62.7	.072	.08
September	186	20	39.8	.046	.05
The year	6,350	20	299	.346	4.67

KASKASKIA RIVER AT VANDALIA, ILL.

LOCATION.—In sec. 16, T. 6 N., R. 1. E. third principal meridian, at highway bridge at east end of Main Street, Vandalia, Fayette County, 3½ miles above Hickory Creek.

DRAINAGE AREA.—1,980 square miles.

RECORDS AVAILABLE.—February 26, 1908, to December 31, 1912; August 11, 1914, to September 30, 1925.

GAGE.—Chain gage attached to bridge; read by Wilson Haley.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Measuring section is at a pool; control slightly shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.25 feet March 15 (discharge, 9,500 second-feet); minimum stage, 0.76 foot September 7, (discharge, 35 second-feet).

1908–1912; 1914–1925: Maximum discharge recorded, 18,000 second-feet April 18, 1922; minimum discharge, 3.5 second-feet August 22, 1911.

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation changed probably in March. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating tables. Records good except for ice period, for which they are fair.

The following discharge measurement was made:

April 24, 1925: Gage height, 3.69 feet; discharge, 488 second-feet.

Daily discharge, in second-feet, of Kaskaskia River at Vandalia, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	127	78	67			1,330	1,680	400	154	565	72	67
2	120	78	67			1,330	1,610	379	146	358	72	67
3	107	72	83			1,140	1,400	379	146	317	67	52
4	107	72	89		1,000	1,080	1,230	358	132	242	62	44
5	101	72	114			1,080	1,110	337	126	184	58	42
6	95	72	245	1,750		1,050	1,020	317	119	337	58	39
7	101	67	198		1,260	960	960	297	113	317	57	35
8	101	67	730		1,960	905	840	297	107	422	55	38
9	101	62	1,140		4,290	855	810	297	102	615	52	36
10	101	62	780		5,350	805	810	297	102	444	50	36

Daily discharge, in second-feet, of Kaskaskia River at Vandalia, Ill., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	95	57	705		4,710	805	780	297	91	840	53	35
12	95	107	605		3,290	805	780	260	86	515	161	35
13	89	275	605		2,760	1,140	750	260	102	444	358	37
14	95	2,000	605		2,680	5,490	720	242	107	317	590	41
15	95	755	605		2,640	9,500	690	242	146	176	278	42
16	95	455	530	1,000	2,600	9,180	750	242	132	161	184	39
17	95	235	730		2,200	7,560	690	225	225	139	168	36
18	95	189	1,200		1,860	6,460	640	242	960	126	146	45
19	107	156	5,490		1,580	6,770	615	225	490	119	126	62
20	101	141	6,360		1,440	8,190	565	225	358	107	107	55
21	95	134	7,560		1,300	7,560	540	225	260	91	126	49
22	95	120	8,060		1,230	6,460	515	216	242	91	107	46
23	95	114	7,210		2,800	5,930	490	208	184	86	91	54
24	89	114	6,990		2,440	5,490	490	208	690	86	76	56
25	89	101	5,700		1,780	4,890	467	200	690	86	67	51
26	89	95	4,950	900	1,610	4,140	444	168	422	358	67	49
27	83	95	4,470		1,470	3,390	422	168	565	161	67	47
28	83	89	3,940		1,330	2,720	400	161	400	119	67	44
29	83	83	3,340		-------	2,200	400	161	1,200	86	62	42
30	83	83	2,760		-------	1,890	400	161	1,300	81	62	39
31	83	-------	2,680		-------	1,750	-------	161	-------	76	62	------

NOTE.—Discharge estimated Dec. 25 to Feb. 6 on account of ice, from gage readings, observer's notes, and weather records. Braced figures give mean discharge for periods indicated.

Monthly discharge of Kaskaskia River at Vandalia, Ill., for the year ending September 30, 1925

[Drainage area, 1,980 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	127	83	96.5	0.049	0.06
November	2,000	57	203	.103	.11
December	8,060	67	2,540	1.28	1.48
January	----------	----------	1,210	.611	.70
February	5,350	----------	2,090	1.06	1.10
March	9,500	805	3,640	1.84	2.12
April	1,680	400	767	.387	.43
May	400	161	253	.128	.15
June	1,300	86	330	.167	.19
July	840	76	260	.131	.15
August	590	50	117	.059	.07
September	67	35	45.3	.023	.03
The year	9,500	35	960	.485	6.59

BIG MUDDY RIVER AT PLUMFIELD, ILL.

LOCATION.—In W. ½ sec. 20, T. 7 S., R. 2 E., at highway bridge at Plumfield, Franklin County, 6 miles west of West Frankfort, 1½ miles below mouth of Middle Fork, and 2 miles below station formerly maintained at Chicago, Burlington & Quincy Railroad bridge.

DRAINAGE AREA.—753 square miles.

RECORDS AVAILABLE.—August 18, 1914, to September 30, 1925. From June 16, 1908, to December 31, 1912, records were obtained at Chicago, Burlington & Quincy Railroad bridge.

GAGE.—Chain gage attached to bridge; read by Louis Robertson.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Practically permanent at low stages. Banks wooded above medium stage. Right bank is overflowed at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.55 feet March 21 (discharge, 1,670 second-feet); minimum stage, 0.69 foot September 9 (discharge, 0.6 second-foot).

1914–1925: Maximum stage recorded, 30.2 feet February 1, 1916 (discharge, 16,300 second-feet); minimum discharge, no flow August 18–26, 1914.

ICE.—Stage-discharge relation usually not affected by ice.

ACCURACY.—Stage-discharge relation practically permanent during year; slightly affected by ice for a short period. Rating curve fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except for ice period and for very low stages, for which they are fair.

The following discharge measurement was made:

April 21, 1925: Gage height, 5.32 feet (stage-discharge relation affected by backwater from drift); discharge, 220 second-feet.

Daily discharge, in second-feet, of Big Muddy River at Plumfield, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.0	4.4	6.4		14	186	112	37	10	48	5.9	1.0
2	8.0	4.3	6.1		21	125	86	30	9.0	90	4.3	1.0
3	7.4	4.4	6.1		34	98	57	26	8.6	94	3.3	1.0
4	7.0	4.4	6.3		37	82	45	21	8.2	78	2.7	.9
5	6.3	4.6	6.8		28	78	37	17	7.4	57	2.4	.9
6	5.6	4.6	7.6		26	70	32	14	6.6	32	2.2	.9
7	5.2	4.6	7.8		26	64	27	13	6.4	22	2.4	.8
8	4.4	4.6	94	9.0	28	54	25	12	5.9	16	2.9	.8
9	4.2	4.6	51		34	45	24	17	5.6	11	3.0	.6
10	3.7	4.4	57		34	42	26	23	16	11	3.2	2.3
11	3.7	4.4	107		48	51	27	27	27	18	2.5	3.6
12	3.5	5.9	78		57	112	28	21	17	22	25	8.8
13	3.5	9.3	48		86	78	30	32	40	20	17	5.7
14	3.5	7.8	34		112	351	70	24	60	22	9.3	4.9
15	3.3	11	25	9.3	112	583	70	26	45	18	6.6	9.6
16	3.3	11	19	11	116	538	60	21	29	6.6	4.8	12
17	3.3	11	16	21	135	377	86	16	30	5.9	3.7	8.8
18	3.5	11	14	18	135	768	135	15	26	4.4	3.1	5.9
19	3.7	11	16	18	102	1,160	175	14	48	4.0	2.6	4.8
20	3.7	8.0	19	17	78	1,520	265	14	155	3.8	2.4	4.8
21	3.8	7.8	16	19	120	1,670	219	12	90	3.7	2.0	70
22	3.8	6.8	13	22	208	1,460	125	60	45	3.5	1.8	145
23	4.6	8.6	11	28	674	906	78	125	34	3.0	1.4	219
24	4.8	6.8	11	24	976	463	54	145	34	3.1	1.4	135
25	4.6	8.8		23	1,180	265	40	67	34	4.6	1.3	45
26	4.3	7.0		21	1,180	230	30	34	107	5.2	1.2	24
27	4.3	7.2	10	21	821	219	27	25	230	5.1	1.2	155
28	4.3	6.8		15	364	219	34	21	155	5.4	1.2	165
29	4.6	6.8		14	-------	230	48	17	74	5.4	1.0	78
30	4.6	6.6		14	-------	208	48	14	45	6.8	1.0	45
31	4.5	-------		14	-------	165	-------	12	-------	7.0	1.1	------

NOTE.—Stage-discharge relation affected by ice Dec. 25 to Jan. 14; discharge estimated from gage heights, observer's notes, and weather records. Stage-discharge relation affected by backwater from drift Apr. 20-23; discharge estimated from result of discharge measurement. Discharge interpolated Oct. 31, Dec. 16, Mar. 18, and June 10 because of missing gage heights. Braced figures give mean discharge for periods indicated.

Monthly discharge of Big Muddy River at Plumfield, Ill., for the year ending September 30, 1925

[Drainage area, 753 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	9.0	3.3	4.65	0.006	0.01
November	11	4.3	6.95	.009	.01
December	107	6.1	24.1	.032	.04
January	28	----------	14.0	.019	.02
February	1,180	14	242	.321	.33
March	1,670	42	401	.533	.61
April	265	24	70.7	.094	.10
May	145	12	30.7	.041	.05
June	230	5.6	47.0	.062	.07
July	94	3.0	20.5	.027	.03
August	25	1.0	4.00	.005	.01
September	219	.6	38.7	.051	.06
The year	1,670	.6	74.4	.099	1.34

BIG MUDDY RIVER AT MURPHYSBORO, ILL.

LOCATION.—In SW. ¼ sec. 8, T. 9 S., R. 2 W., at lower highway bridge on South Twentieth Street, Murphysboro, Jackson County, a quarter of a mile below mouth of Louis Creek and Mobile & Ohio Railway bridge.

DRAINAGE AREA.—2,170 square miles (measured on base map of Illinois).

RECORDS AVAILABLE.—December 6, 1916, to September 30, 1925.

GAGE.—Chain gage attached to bridge; read by Clarence Jacobs.

CHANNEL AND CONTROL.—Bed composed of heavy clay; likely to shift.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.10 feet February 25 (backwater from Mississippi River); minimum stage, 1.57 feet September 3, 4, and 6 (discharge, 1.7 second-feet).

1917–1925: Maximum discharge determined, 15,600 second-feet January 10, 1917, minimum discharge, 1.0 second-foot August 1, 1921.

Highest known stage, 39.6 feet on present gage occurred about February 2, 1916 (discharge, ascertained from extension of rating curve, 28,000 second-feet).

ICE.—Stage-discharge relation affected by ice during some winters.

ACCURACY.—Stage-discharge relation probably fairly permanent during year; affected by ice and also by backwater from Mississippi River whenever height on gage of United States Weather Bureau at Chester, Ill., is above about 10 feet. Rating curve fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table; not determined for periods of backwater. Records fair.

The following discharge measurement was made:

April 21, 1925: Gage height, 6.13 feet; (stage-discharge relation probably affected by backwater from Mississippi River); discharge, 527 second-feet.

Daily gage height, in feet, of Big Muddy River at Murphysboro, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.70	2.22	2.54	-------	3.40	9.54	-------	4.64	2.78	8.13	2.70	1.69
2	2.60	2.20	2.54	-------	3.74	8.09	-------	4.24	2.68	7.88	2.72	1.59
3	2.40	2.30	2.60	-------	4.69	6.49	-------	3.94	2.68	7.58	2.68	1.57
4	2.32	2.44	2.56	-------	5.19	5.59	-------	3.49	2.54	7.08	2.48	1.57
5	2.40	2.52	2.90	-------	4.29	4.49	3.69	3.19	2.58	6.78	2.28	1.61
6	2.32	2.54	3.04	2.88	4.24	4.49	3.64	3.13	2.53	6.48	2.08	1.57
7	2.30	2.60	2.94	3.00	4.09	4.39	3.69	3.03	2.52	5.08	2.08	1.67
8	2.20	2.60	4.15	2.98	3.89	4.19	3.74	3.14	4.78	5.13	2.08	1.69
9	2.15	2.65	6.95	2.96	4.04	3.99	4.79	3.29	5.48	5.33	2.04	1.67
10	2.10	2.65	6.50	2.98	4.99	4.34	6.69	3.59	5.38	5.68	2.02	1.79
11	2.08	2.70	5.00	3.10	5.19	4.29	6.84	3.49	4.68	5.63	1.92	1.87
12	2.10	2.70	4.35	3.18	5.09	6.19	6.89	3.39	3.32	5.53	1.92	2.89
13	2.08	2.70	4.20	3.20	4.89	6.49	6.74	3.19	4.38	4.48	1.88	2.92
14	2.04	3.05	4.15	3.22	4.94	8.09	6.69	3.14	4.78	4.48	1.93	5.22
15	2.00	2.94	3.80	3.24	5.14	9.94	6.14	3.14	5.18	4.58	2.03	4.42
16	2.04	2.88	3.60	3.40	5.24	9.49	5.64	3.13	6.48	4.43	2.08	3.87
17	2.00	2.98	3.55	3.60	5.19	9.39	7.39	3.09	6.18	4.48	2.88	3.57
18	2.06	3.00	3.40	3.85	4.89	-------	7.64	3.03	6.58	5.03	3.38	3.21
19	2.06	2.90	3.40	3.95	4.74	-------	7.94	2.89	6.63	5.13	2.90	3.42
20	1.90	2.88	3.65	4.10	4.54	-------	6.24	2.79	8.08	4.88	2.48	3.47
21	2.08	2.84	3.65	4.15	5.24	-------	5.99	2.73	9.63	4.93	2.38	4.57
22	2.10	2.70	3.70	3.95	8.59	-------	5.74	2.65	9.88	-------	2.42	8.87
23	2.10	2.72	3.70	3.75	10.40	-------	5.39	2.49	10.20	-------	2.32	7.97
24	2.15	2.60	3.75	3.65	12.60	-------	4.64	4.19	10.65	-------	2.18	7.87
25	2.15	2.64	3.65	3.65	13.10	-------	3.84	3.94	10.90	-------	2.08	6.37
26	2.18	2.50	3.70	3.75	12.80	-------	3.19	3.89	10.30	2.93	2.04	5.42
27	2.20	2.54	3.65	-------	12.54	-------	3.39	3.79	9.88	2.83	2.02	5.47
28	2.20	2.60	-------	-------	10.60	-------	3.84	3.59	8.83	2.78	1.94	5.57
29	2.18	2.58	-------	-------	-------	-------	5.34	3.49	8.88	2.68	1.92	6.27
30	2.18	2.44	-------	-------	-------	-------	4.89	3.49	8.48	2.63	1.86	6.12
31	2.20	-------	-------	-------	-------	-------	-------	3.59	-------	2.68	1.72	------

NOTE.—Gage not read on days for which no heights are given.

Daily discharge, in second-feet, of Big Muddy River at Murphysboro, Ill., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	May	June	July	Aug.	Sept.
1	31	15	25		71	-------	-------	35	-------	31	2.9
2	27	14	25		102	-------	-------	31	-------	31	1.9
3	20	17	27	55	241	-------	-------	31	-------	31	1.7
4	18	21	25		340	-------	-------	25	-------	22	1.7
5	20	24	40		172	-------	-------	26	-------	16	2.1
6	18	25	48	40	164	-------	-------	24	-------	11	1.7
7	17	27	42	45	143	188	48	-------	-------	11	2.7
8	14	27	150	45	118	157	54	-------	-------	11	2.9
9	12	29	795	42	136	130	64	-------	-------	9.8	2.7
10	11	29	645	45	-------	180	88	-------	-------	9.4	4.8
11	11	31	300	51	-------	172	79	-------	-------	7.4	6.4
12	11	31	180	57	-------	570	71	-------	-------	7.4	40
13	11	31	157	57	-------	-------	57	-------	-------	6.6	40
14	9.8	48	150	57	-------	-------	54	-------	-------	7.6	340
15	9.0	42	107	60	-------	-------	54	-------	-------	9.6	188
16	9.8	40	88	71	-------	-------	54	-------	-------	11	112
17	9.0	45	84	88	-------	-------	51	-------	-------	40	84
18	10	45	71	112	-------	-------	48	-------	-------	71	57
19	10	40	71	124	-------	-------	-------	-------	-------	40	71
20	7.0	40	92	143	-------	-------	-------	-------	-------	22	75

Daily discharge, in second-feet, of Big Muddy River at Murphysboro, Ill., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	May	June	July	Aug.	Sept.
21	11	38	92	150						19	214
22	11	31	97	124						21	1,400
23	11	31	97	102			23			18	1,100
24	12	27	102	92			157			13	1,060
25	12	29	92	92			124			11	620
26	13	23	97	102			118			9.8	382
27	14	25	92				107			9.4	404
28	14	27					88		35	7.8	426
29	13	26	75	85			79		31	7.4	595
30	13	21					79		29	6.2	545
31	14						88		31	3.4	

NOTE.—Stage-discharge relation affected by backwater from the Mississippi River Feb. 10 to Mar. 6, Mar. 13 to May 6, May 19–22, and June 7 to July 27; discharge not determined. Gage not read Dec. 28 to Jan. 5 and Jan. 27–31 because of ice; discharge estimated from weather records. Braced figures give mean discharge for periods indicated.

Monthly discharge of Big Muddy River at Murphysboro, Ill., for the year ending September 30, 1925

[Drainage area, 2,170 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	31	7	13.7	0.006	0.01
November	48	14	30.0	.014	.02
December	795	25	132	.061	.07
January	150		77.4	.036	.04
August	71	3.4	17.2	.008	.01
September	1,400	1.7	259	.119	.13

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