

UNITED STATES DEPARTMENT OF THE INTERIOR
RAY LYMAN WILBUR, Secretary
GEOLOGICAL SURVEY
W. C. MENDENHALL, Director

Water-Supply Paper 700

SURFACE WATER SUPPLY *of the* UNITED STATES 1930

PART 5 HUDSON BAY AND UPPER MISSISSIPPI RIVER BASIN

NATHAN C. GROVER, Chief Hydraulic Engineer
W. A. LAMB, C. L. BATCHELDER, S. B. SOULÉ, H. E. GROSBACH
J. H. MORGAN, and H. C. BECKMAN
District Engineers

Prepared in cooperation with the States of
MINNESOTA, NORTH DAKOTA, WISCONSIN
ILLINOIS, and MISSOURI



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1932

CONTENTS

	Page
Authorization and scope of work.....	1
Definition of terms.....	2
Explanation of data.....	2
Accuracy of field data and computed results.....	4
Publications.....	5
Cooperation.....	10
Division of work.....	10
Gaging-station records.....	12
Hudson Bay drainage basins.....	12
St. Mary River Basin.....	12
Upper St. Mary Lake at St. Mary Chalet, Mont.....	12
Lower St. Mary Lake near Babb, Mont.....	13
St. Mary River near Babb, Mont.....	14
St. Mary River near Kimball, Alberta.....	15
St. Mary Canal at intake, near Babb, Mont.....	16
St. Mary Canal at St. Mary crossing, near Babb, Mont.....	17
St. Mary Canal at Hudson Bay divide, near Browning, Mont.....	18
Swiftcurrent Creek at Many Glacier, Mont.....	19
Sherburne Lake Reservoir near Babb, Mont.....	20
Swiftcurrent Creek at Sherburne, Mont.....	21
Canyon Creek near Many Glacier, Mont.....	22
Red River Basin.....	23
Red River at Fargo, N. Dak.....	23
Red River at Grand Forks, N. Dak.....	24
Red River at Emerson, Manitoba.....	25
Bois des Sioux River near Tenney, Minn.....	26
Sheyenne River at Sheyenne, N. Dak.....	27
Sheyenne River at West Fargo, N. Dak.....	28
Wild Rice River at Twin Valley, Minn.....	29
Red Lake at Waskish, Minn.....	29
Red Lake at Redby, Minn.....	30
Red Lake River at Kratka, Minn.....	31
Red Lake River at Thief River Falls, Minn.....	32
Red Lake River at Crookston, Minn.....	33
Thief River near Thief River Falls, Minn.....	34
South Fork of Two Rivers at Pelan, Minn.....	35
South Fork of Two Rivers at Bronson, Minn.....	36
Two Rivers at Hallock, Minn.....	37
North Fork of Two Rivers near Lancaster, Minn.....	38
State ditch No. 85 near Lancaster, Minn.....	39
Pembina River near Manitou, Manitoba.....	40
Pembina River at Neche, N. Dak.....	41
Roseau River at Malung, Minn.....	42
Roseau River at Ross, Minn.....	43
Roseau River at Caribou, Minn.....	44
Roseau River below cut-off ditch, near Caribou, Minn.....	45
South Fork of Roseau River near Malung, Minn.....	46
Mud Creek near Sprague, Manitoba.....	47

Gaging-station records—Continued.

Hudson Bay drainage basins—Continued.

Red River Basin—Continued.

Pine Creek near Pine Creek, Minn.....	Page 48
---------------------------------------	---------

Badger Creek near Badger, Minn.....	49
-------------------------------------	----

Souris (Mouse) River at Minot, N. Dak.....	50
--	----

Souris (Mouse) River near Westhope, N. Dak.....	51
---	----

Rainy River Basin.....	52
------------------------	----

Kawishiwi River near Winton, Minn.....	52
--	----

Upper Mississippi River Basin.....	53
------------------------------------	----

Mississippi River near Royalton, Minn.....	53
--	----

Mississippi River at Elk River, Minn.....	54
---	----

Mississippi River at St. Paul, Minn.....	55
--	----

Mississippi River at Prescott, Wis.....	56
---	----

Mississippi River at Alma, Wis.....	57
-------------------------------------	----

Mississippi River near Fountain City, Wis.....	58
--	----

Mississippi River at Winona, Minn.....	59
--	----

Mississippi River at Lamoille, Minn.....	60
--	----

Mississippi River at La Crosse, Wis.....	61
--	----

Mississippi River at Genoa, Wis.....	62
--------------------------------------	----

Mississippi River at Clayton, Iowa.....	63
---	----

Sand Lake outlet near Dorset, Minn.....	64
---	----

Platte River at Royalton, Minn.....	65
-------------------------------------	----

Sauk River near St. Cloud, Minn.....	66
--------------------------------------	----

Crow River at Rockford, Minn.....	67
-----------------------------------	----

Rum River near St. Francis, Minn.....	68
---------------------------------------	----

Minnesota River near Montevideo, Minn.....	69
--	----

Minnesota River at Mankato, Minn.....	70
---------------------------------------	----

St. Croix River at Swiss, Wis.....	71
------------------------------------	----

St. Croix River near Grantsburg, Wis.....	72
---	----

St. Croix River near Rush City, Minn.....	73
---	----

St. Croix River near St. Croix Falls, Wis.....	74
--	----

Namakagon River near Trego, Wis.....	75
--------------------------------------	----

Apple River near Somerset, Wis.....	76
-------------------------------------	----

Chippewa River at Bishops Bridge, near Winter, Wis.....	77
---	----

Chippewa River near Bruce, Wis.....	78
-------------------------------------	----

Chippewa River at Chippewa Falls, Wis.....	79
--	----

Chippewa River at Durand, Wis.....	80
------------------------------------	----

Flambeau River at Flambeau Reservoir, Wis.....	81
--	----

Flambeau River near Butternut, Wis.....	82
---	----

Flambeau River at Babbs Island, near Winter, Wis.....	83
---	----

Flambeau River near Ladysmith, Wis.....	84
---	----

Jump River at Sheldon, Wis.....	85
---------------------------------	----

Red Cedar River near Colfax, Wis.....	86
---------------------------------------	----

Red Cedar River at Menomonie, Wis.....	87
--	----

Zumbro River at Zumbro Falls, Minn.....	88
---	----

Black River at Neillsville, Wis.....	89
--------------------------------------	----

La Crosse River near West Salem, Wis.....	90
---	----

Root River near Houston, Minn.....	91
------------------------------------	----

Wisconsin River at Whirlpool Rapids, near Rhinelander, Wis.....	92
---	----

Wisconsin River at Merrill, Wis.....	93
--------------------------------------	----

Wisconsin River at Knowlton, Wis.....	94
---------------------------------------	----

Wisconsin River near Nekoosa, Wis.....	95
--	----

Wisconsin River at Muscoda, Wis.....	96
--------------------------------------	----

Tomahawk River at Tomahawk, Wis.....	97
--------------------------------------	----

Gaging-station records—Continued.

Upper Mississippi River Basin—Continued.	Page
Prairie River near Merrill, Wis.....	98
Rib River at Rib Falls, Wis.....	99
Yellow River at Sprague, Wis.....	100
Kickapoo River at Gays Mills, Wis.....	101
Maquoketa River below North Fork of Maquoketa River, near Maquoketa, Iowa.....	102
Rock River at Afton, Wis.....	105
Rock River at Lyndon, Ill.....	106
Pecatonica River at Freeport, Ill.....	107
Sugar River near Brodhead, Wis.....	108
South Branch of Kishwaukee River at De Kalb, Ill.....	109
Iowa River at Iowa City, Iowa.....	110
Des Moines River at Ottumwa, Iowa.....	111
Fox River at Wayland, Mo.....	112
Wyaconda River near Canton, Mo.....	113
North Fabius River at Monticello, Mo.....	114
North Fabius River at Taylor, Mo.....	115
Middle Fabius River near Baring, Mo.....	116
Salt River near Hunnewell, Mo.....	116
Salt River near New London, Mo.....	117
Cuivre River near Troy, Mo.....	118
Des Plaines River at Lemont, Ill.....	119
Des Plaines River at Joliet, Ill.....	120
Illinois River at Morris, Ill.....	121
Illinois River at Peoria, Ill.....	122
Illinois River at Beardstown, Ill.....	123
Spring Creek at Joliet, Ill.....	124
Kankakee River at Momence, Ill.....	125
Kankakee River at Custer Park, Ill.....	126
Iroquois River near Chebanse, Ill.....	127
Fox River near Mukwonago, Wis.....	128
Fox River at Algonquin, Ill.....	129
Fox River at Dayton, Ill.....	130
Vermilion River at Streator, Ill.....	131
Mackinaw River near Green Valley, Ill.....	132
Spoon River at Seville, Ill.....	133
Sangamon River at Monticello, Ill.....	134
Sangamon River at Riverton, Ill.....	135
Sangamon River near Oakford, Ill.....	136
South Fork of Sangamon River at Kincaid, Ill.....	137
Crooked Creek at Ripley, Ill.....	138
Macoupin Creek near Kane, Ill.....	139
Kaskaskia River at Vandalia, Ill.....	140
Big Muddy River at Plumfield, Ill.....	141
Big Muddy River at Murphysboro, Ill.....	143
Miscellaneous discharge measurements.....	145
Index.....	147

ILLUSTRATION

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

SURFACE WATER SUPPLY OF HUDSON BAY AND UPPER MISSISSIPPI RIVER BASINS, 1930

AUTHORIZATION AND SCOPE OF WORK

This volume is one of a series of 14 reports presenting results of measurements of flow made on streams in the United States during the year ending September 30, 1930.

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, 1895-1931

1895.....	\$12, 500. 00	1919.....	\$148, 244. 10
1896.....	24, 500. 00	1920.....	175, 000. 00
1897-1899.....	50, 000. 00	1921-1923.....	180, 000. 00
1900.....	70, 000. 00	1924-1925.....	170, 000. 00
1901-1902.....	100, 000. 00	1926.....	165, 000. 00
1903-1906.....	200, 000. 00	1927.....	151, 000. 00
1907.....	150, 000. 00	1928.....	147, 000. 00
1908-1910.....	100, 000. 00	1929.....	270, 500. 00
1911-1917.....	150, 000. 00	1930.....	275, 000. 00
1918.....	175, 000. 00	1931.....	565, 000. 00

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

Measurements of stream flow have been made at about 6,070 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1930, 2,430 gaging stations were being maintained by the Geological Survey and the cooperating organizations. Many miscellaneous discharge measurements were made

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

DEFINITION OF TERMS

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

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

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

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

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

The following terms not in common use are here defined:

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

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

EXPLANATION OF DATA

The data presented in this report cover the year beginning October 1, 1929, and ending September 30, 1930. At the beginning of January in most parts of the United States much of the precipitation in the preceding three months is stored in the form of snow or ice, or in ponds, lakes, and swamps, or as underground water, and this

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

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

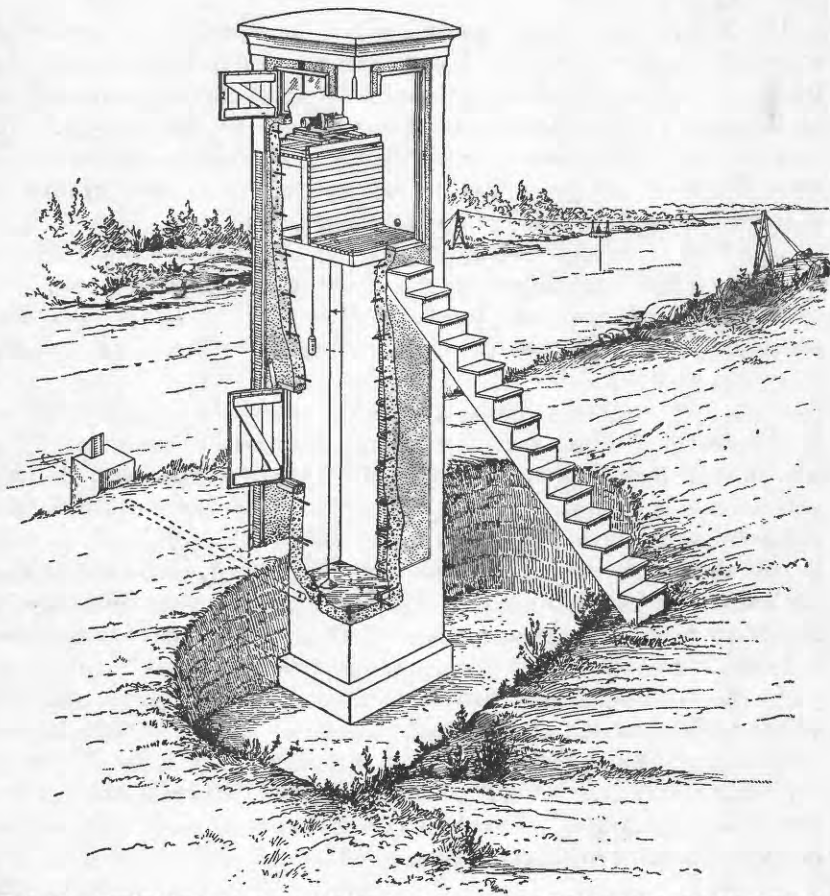


FIGURE 1.—Typical river-measurement station showing concrete well and house for water-stage recorder and staff gages, cable, and car

supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings on a staff gage, 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 showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

The description of the station gives, in addition to statements regarding location and type of gage, 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 maximum discharge given under "Extremes" does not represent the crest discharge unless a water-stage recorder was in operation or a nonrecording gage was read at the time of the crest.

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

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

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

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

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

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

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

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

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

PUBLICATIONS

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

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

- Part 1. North Atlantic slope basins (St. John River to York River).
2. South Atlantic slope and eastern Gulf of Mexico basins (James River to Mississippi River).
3. Ohio River Basin.
4. St. Lawrence River Basin.
5. Hudson Bay and upper Mississippi River Basins.
6. Missouri River Basin.
7. Lower Mississippi River Basin.
8. Western Gulf of Mexico basins.
9. Colorado River Basin.
10. The Great Basin.

Part 11. Pacific slope basins in California.**12. North Pacific slope drainage basins, in three parts:**

- A, Pacific slope basins in Washington and upper Columbia River Basin.
- B, Snake River Basin.
- C, Pacific slope basins in Oregon and lower Columbia River Basin.

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

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

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

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

Augusta, Me., Statehouse.
 Boston, Mass., 2500 Customhouse.
 Hartford, Conn., 318 State Office Building.
 Albany, N. Y., 603 State Public Works Building.
 Trenton, N. J., 710 Trenton Trust Building.
 Harrisburg, Pa., Claster Building.
 Charlottesville, Va., Brooks Museum, University of Virginia.
 South Charleston, W. Va., Naval Ordnance Plant.
 Asheville, N. C., 220 Post Office Building.
 Columbia, S. C., 801 National Loan & Exchange Bank Building.
 Ocala, Fla., Post Office Building.
 Tuscaloosa, Ala., Post Office Building.
 Chattanooga, Tenn., 630 Power Building.
 Columbus, Ohio, Engineering Experiment Station, Ohio State University.
 Indianapolis, Ind., 319 Federal Building.
 Urbana, Ill., 302 University New Agricultural Building.
 Madison, Wis., 337N State Capitol.
 St. Paul, Minn., 202 Old State Capitol.
 Topeka, Kans., 23 Federal Building.
 Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
 Fort Smith, Ark., Post Office Building.
 Austin, Tex., State Capitol.
 Santa Fe, N. Mex., State Capitol.
 Tucson, Ariz., 210 Post Office Building.
 Denver, Colo., 403 Post Office Building.
 Salt Lake City, Utah, 313 Federal Building.
 Idaho Falls, Idaho, 228 Federal Building.
 Boise, Idaho, Federal Building.
 Helena, Mont., 416 Power Block.
 Tacoma, Wash., 406 Federal Building.
 Portland, Oreg., 606 Post Office Building.
 San Francisco, Calif., 303 Customhouse.
 Los Angeles, Calif., 751 South Figueroa Street, room 510.
 Honolulu, Hawaii, Territorial Office Building.

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

Stream-flow records have been obtained at about 6,070 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 Sept., 1890.
12th A, pt. 2.....	do.....	1884 to June 30, 1891.
13th A, pt. 3.....	Mean discharge in second-feet.....	1884 to Dec. 31, 1892.
14th A, pt. 2.....	Monthly discharge (long-time records, 1871 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 River.....	1897.
W 16.....	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte Rivers, and western United States.....	1897.
19th A, pt. 4.....	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).....	1897.
W 27.....	Measurements, ratings, and gage heights, eastern United States, eastern Mississippi River, and Missouri River.....	1898.
W 28.....	Measurements, ratings, and gage heights, Arkansas River and western United States.....	1898.
20th A, pt. 4.....	Monthly discharge (also for many earlier years).....	1898.
W 35 to 39.....	Descriptions, measurements, gage heights, and ratings.....	1899.
21st A, pt. 4.....	Monthly discharge.....	1899.
W 47 to 52.....	Descriptions, measurements, gage heights, and ratings.....	1900.
22d A, pt. 4.....	Monthly discharge.....	1900.
W 65, 66.....	Descriptions, measurements, gage heights, and ratings.....	1901.
W 75.....	Monthly discharge.....	1901.
W 82 to 85.....	Complete data.....	1902.
W 97 to 100.....	do.....	1903.
W 124 to 135.....	do.....	1904.
W 165 to 178.....	do.....	1905.
W 201 to 214.....	do.....	1906.
W 241 to 252.....	do.....	1907 and 1908.
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 and 1920.
W 521 to 534.....	do.....	1921.
W 541 to 554.....	do.....	1922.
W 561 to 574.....	do.....	1923.
W 581 to 594.....	do.....	1924.
W 601 to 614.....	do.....	1925.
W 621 to 634.....	do.....	1926.
W 641 to 654.....	do.....	1927.
W 661 to 674.....	do.....	1928.
W 681 to 694.....	do.....	1929.
W 696 to 709.....	do.....	1930.

The records at most of the stations discussed in these reports extend over a series of years. Miscellaneous measurements at many points other than regular gaging stations have been made each year

and are published under "Miscellaneous discharge measurements" at the end of each report in the same relative order as the regular gaging stations. An index of the reports containing records obtained prior to 1904 has been published in Water-Supply Paper 119.

The following table gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1930. The data for any particular station will as a rule be found in the reports covering the years during which the station was maintained. For example, data from 1910 to 1920 for any station in the area covered by Part 3 are published in Water-Supply Papers 283, 303, 323, 353, 383, 403, 433, 453, 473, and 503, which contain records for the Ohio River Basin for those years.

[For basins included see p. 5]

Year	1	2	3	4	5	6	7	8	9	10	11	12-A	12-B	12-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 ^e	47, h 48	48	48, i 49	48	49	49	50	50	50	50	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	65, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	82	82	82	82	82	82	82	82	82	82	82	82	82
1903	87	87	87	87	87	87	87	87	87	87	87	87	87	87
1904	124, o 125	p 126, 127	128	129	129	130, e 131	128, 131	132	133	133, r 134	134	135	135	135
1905		p 167, 168	169	170	171	172	169, 173	174	175, s 177	176, r 177	177	178	178	177, 178
1906		p 203, 204	205	206	207	208	t 205, 209	210	211, s 213	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	281	282	283	284	285	286	287	288	289	290, r 291	291	292	292	292
1910	281	282	283	284	285	286	287	288	289	290, r 291	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	332-A	332-B	332-C
1913	361	362	363	364	365	366	367	368	369	370	371	372-A	372-B	372-C
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
1926	621	622	623	624	625	626	627	628	629	630	631	632	633	634
1927	641	642	643	644	645	646	647	648	649	650	651	652	653	654
1928	661	662	663	664	665	666	667	668	669	670	671	672	673	674
1929	681	682	683	684	685	686	687	688	689	690	691	692	693	694
1930	696	697	698	699	700	701	702	703	704	705	706	707	708	709

^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 4.

^b James River only.

^c Gallatin River.

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

^e Mohave River only.

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

^g Rating tables and index to Water-Supply Papers 47-62 and data on precipitation, wells, and irrigation in California and Utah contained in Water-Supply Paper 52.

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

ⁱ Wissahickon and Schuylkill Rivers to James River.

^j Scioto River.

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

^l Tributaries of Mississippi River from east.

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

ⁿ Hudson Bay only.

^o New England rivers only.

^p Hudson River to Delaware River, inclusive.

^q Susquehanna River to Yadkin River, inclusive.

^r Platte and Kansas Rivers.

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

^t Below junction with Gila River.

^u Rogue, Umpqua, and Siletz Rivers only.

COOPERATION

The work was carried on under cooperative agreements with the several States as follows: In Minnesota with the Minnesota Department of Drainage and Waters, E. V. Willard, commissioner; in North Dakota with the office of the State engineer, Robert E. Kennedy; in Wisconsin with the Railroad Commission of Wisconsin, C. B. Hayden, chief engineer; in Illinois with the Illinois Department of Purchases and Construction, division of waterways, William F. Mulvihill, supervisor; and in Missouri with the Missouri Bureau of Geology and Mines, H. A. Buehler, State geologist, and the State highway department, T. H. Cutler, chief highway engineer.

Several stations in Montana, North Dakota, and Minnesota were maintained from funds appropriated by the Department of State of the United States.

Acknowledgment is due also to the Corps of Engineers, United States Army, for financial assistance in collecting the records published herein.

Assistance in collecting the records was also rendered by the following cities, organizations, corporations, and individuals: In Minnesota by the Ford Motor Co. and the Minnesota Power & Light Co.; in Wisconsin by the Northern States Power Co., Wisconsin Power & Light Co., and the Inter-County Park Association; in Illinois by the Central Illinois Public Service Co.; and in Iowa by the city of Ottumwa.

DIVISION OF WORK

Data for stations in Montana were collected and prepared for publication under the direction of W. A. Lamb, district engineer, assisted by A. H. Tuttle, C. S. Heidel, G. C. Sanders, W. J. Parsons, E. H. Bekkedahl, Edward Post, H. C. Smith, and Mrs. G. Thompson.

The data for stations in the Hudson Bay Basin in Minnesota and North Dakota were collected and prepared for publication under the direction of C. L. Batchelder, district engineer, assisted by E. F. Chandler, K. B. Nelson, Frank Stermitz, G. L. Oakland, and C. E. Putz.

The data for stations in the Mississippi River Basin in Minnesota (except the St. Croix River near Rush City, Minn.), and for the station on the Mississippi River at Clayton, Iowa, were collected under the direction of S. B. Soulé and C. L. Batchelder, district engineers, assisted by A. H. Frazier and S. H. Crowell, and prepared for publication under the direction of C. L. Batchelder, district engineer, assisted by A. H. Frazier, G. L. Oakland, and C. E. Putz.

The data for stations in Wisconsin and St. Croix River near Rush City, Minn., were collected and prepared for publication under the direction of S. B. Soulé, district engineer, assisted by A. H. Frazier, C. C. Yonker, Jacob Schmidt, and L. R. Miller.

The data for stations in Illinois and for the station on Des Moines River at Ottumwa, Iowa, were collected under the direction of H. E. Grosbach, district engineer, assisted by F. L. LeMert, E. F. Rutkowski, and L. C. Crawford. They were prepared for publication under the direction of J. H. Morgan, district engineer, assisted by C. L. Muntz and L. C. Crawford.

Data for stations in Missouri were collected and prepared for publication under the direction of H. C. Beckman, district engineer, assisted by H. C. Bolon, R. D. Schmickle, C. J. Eyberg, and C. H. Jennings.

The records were reviewed and manuscript assembled by P. R. Speer.

GAGING-STATION RECORDS

HUDSON BAY DRAINAGE BASINS

ST. MARY RIVER BASIN

UPPER ST. MARY LAKE AT ST. MARY CHALET, MONT.

LOCATION.—Staff gage in NE. $\frac{1}{4}$ sec. 4, T. 34 N., R. 14 W., at St. Mary Chalet, half a mile above lake outlet.

RECORDS AVAILABLE.—May, 1929, to September, 1930.

EXTREMES.—Maximum stage during year, 4.90 feet June 11; minimum, 0.02 foot

Dec. 16, 29, 30, 1929, Jan. 1, 1930,

1929-30: Maximum stage, that of June 11, 1930; minimum, that of Dec. 16, 29, 30, 1929, Jan. 1, 1930.

Daily gage height, in feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Apr.	May	June	July	Aug.	Sept.
1.....	0.80	0.68	0.06	0.02	-----	4.00	4.30	3.65	2.31	1.42
2.....	.78	.66	.10	-----	-----	3.80	4.00	3.70	2.29	1.38
3.....	.78	.62	.10	-----	-----	3.86	4.20	3.68	2.26	1.34
4.....	.80	.60	.08	-----	0.08	3.92	4.32	3.66	2.21	1.32
5.....	1.00	.56	.06	-----	.20	4.10	4.08	3.65	2.18	1.32
6.....	1.10	.56	.08	-----	.44	4.20	4.02	3.63	2.16	1.31
7.....	1.20	.54	.10	-----	.90	4.12	4.18	3.55	2.15	1.30
8.....	1.22	.50	.10	-----	1.30	4.00	4.30	3.46	2.14	1.30
9.....	1.26	.46	.10	-----	1.48	3.80	4.45	3.38	2.12	1.30
10.....	1.30	.44	.10	-----	1.60	3.63	4.60	3.40	2.11	1.30
11.....	1.33	.44	.10	-----	2.00	3.61	4.90	3.40	2.10	1.30
12.....	1.30	.40	.10	-----	2.10	3.48	4.80	3.39	2.10	1.37
13.....	1.28	.38	.08	-----	2.20	3.28	4.45	3.30	2.09	1.45
14.....	1.22	.36	.06	-----	2.44	3.19	4.20	3.25	2.07	1.49
15.....	1.20	.34	.04	-----	2.70	3.17	3.95	3.22	2.05	1.54
16.....	1.16	.30	.02	-----	2.96	3.18	4.00	3.19	2.02	-----
17.....	1.10	.30	-----	-----	3.04	3.25	3.98	3.20	1.99	-----
18.....	1.08	.30	-----	-----	-----	3.38	3.95	3.04	1.95	-----
19.....	1.06	.30	-----	-----	-----	3.48	3.90	2.98	1.91	-----
20.....	.96	.30	-----	-----	3.06	3.60	3.95	3.00	1.87	-----
21.....	.92	.30	-----	-----	3.10	4.20	3.97	2.92	1.83	-----
22.....	.90	.26	-----	-----	3.16	4.30	4.09	2.86	1.79	-----
23.....	.90	.22	-----	-----	3.20	4.28	4.12	2.80	1.75	-----
24.....	.88	-----	-----	-----	3.40	4.00	4.09	2.75	1.71	-----
25.....	.86	.18	-----	-----	3.50	3.85	3.96	2.71	1.69	-----
26.....	.80	.14	-----	-----	3.72	3.71	3.90	2.66	1.66	-----
27.....	.80	.12	-----	-----	3.92	3.61	3.88	2.57	1.63	-----
28.....	.78	.10	-----	-----	4.06	3.65	3.88	2.49	1.58	-----
29.....	.76	.10	.02	-----	4.12	3.80	3.83	2.46	1.54	-----
30.....	.72	.06	.02	-----	4.08	3.90	3.75	2.39	1.50	-----
31.....	.70	-----	-----	-----	-----	4.00	-----	2.35	1.46	-----

LOWER ST. MARY LAKE NEAR BABE, MONT.

LOCATION.—Water-stage recorder in NE. $\frac{1}{4}$ sec. 3, T. 35 N., R. 14 W., half a mile above lake outlet and 3 miles from Babb.

RECORDS AVAILABLE.—May, 1929, to September, 1930.

EXTREMES.—Maximum stage during year, 3.72 feet June 13; minimum, 0.04 foot Oct. 24, 25.

1929-30: Maximum stage, 4.10 feet May 26, 1929; minimum, that of Oct. 24, 25, 1929.

REMARKS.—Records excellent. No diversions.

Daily gage height, in feet, 1929-30

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	July	Aug.	Sept.
1-----	0.47	-----	2.67	2.30	1.40	1.02	16-----	0.45	1.77	3.02	1.70	1.25	0.29
2-----	.43	-----	2.81	2.22	1.40	.99	17-----	.29	1.70	2.81	1.69	1.23	.21
3-----	.41	2.66	3.00	2.18	1.39	.96	18-----	.15	1.70	2.65	1.67	1.23	.16
4-----	.40	2.81	3.13	2.10	1.38	.95	19-----	.10	1.71	2.45	1.71	1.22	.14
5-----	.40	2.80	3.09	2.06	1.36	.93	20-----	.10	1.77	2.34	1.70	1.19	.11
6-----	.40	2.74	2.98	2.01	1.36	.93	21-----	.07	2.05	2.31	1.68	1.17	.10
7-----	.41	2.59	2.88	1.96	1.34	.92	22-----	.08	2.24	2.38	1.63	1.17	.12
8-----	.44	2.48	2.95	1.92	1.33	.90	23-----	.06	2.32	2.48	1.61	1.14	.21
9-----	.45	2.37	3.08	1.90	1.32	.88	24-----	.04	2.48	2.30	1.59	1.11	.24
10-----	.49	2.28	3.20	1.88	1.33	.89	25-----	.04	2.47	2.25	1.57	1.10	.25
11-----	.48	2.15	3.38	1.87	1.32	.90	26-----	.06	2.30	2.28	1.54	1.10	.24
12-----	.47	2.12	3.58	1.83	1.31	.88	27-----	.08	2.17	2.28	1.50	1.10	.23
13-----	.47	2.02	3.62	1.80	1.30	.70	28-----	.10	2.06	2.32	1.49	1.08	.21
14-----	.46	1.92	3.48	1.77	1.30	.64	29-----	.10	2.08	2.35	1.47	1.06	.20
15-----	.45	1.81	3.26	1.73	1.28	.38	30-----	.10	2.16	2.38	1.44	1.03	.22
							31-----	.10	2.38	-----	1.42	1.05	-----

ST. MARY RIVER NEAR BABB, MONT.

LOCATION.—Water-stage recorder in SE. $\frac{1}{4}$ sec. 27, T. 36 N., R. 14 W., just above headworks of St. Mary Canal on Blackfeet Indian Reservation and 1 mile east of Babb prior to July 15. Subsequent to that date gage was located 600 feet below diversion dam.

DRAINAGE AREA.—278 square miles (including area of Swiftcurrent Creek above point of diversion into St. Mary Lake).

RECORDS AVAILABLE.—April, 1902, to September, 1925; May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 2,470 second-feet June 12 (gage height, 1.94 feet); minimum, 57 second-feet Nov. 30 (gage height, 0.02 foot).

1902-1925, 1929-30: Maximum discharge, 7,980 second-feet June 5, 1908 (gage height, estimated, 9.4 feet); minimum, 30 second-feet Apr. 3-7, 1904.

REMARKS.—Records good except those for estimated period, Aug. 14 to Sept. 13, which are poor. Storage in Sherburne Reservoir on Swiftcurrent Creek. Intake for St. Mary Canal at left end of dam. Records show only water passing over crest; flow of canal not included.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	May	June	July	Aug.	Sept.
1	172	196	-----	1,890	1,090	359	165
2	167	191	-----	2,010	987	371	157
3	163	172	1,910	2,180	939	367	149
4	158	177	2,010	2,260	875	354	141
5	163	172	2,030	2,100	846	346	133
6	177	167	1,950	1,930	788	338	125
7	191	163	1,830	1,810	774	325	125
8	200	172	1,690	1,850	759	333	
9	210	177	1,670	1,970	717	329	
10	235	168	1,580	2,100	704	321	
11	279	154	1,480	2,240	691	321	229
12	267	149	1,420	2,440	691	329	
13	245	164	1,310	2,440	665	359	
14	220	149	1,220	2,220	639	347	
15	210	132	1,140	2,030	640	336	367
16	200	128	1,100	1,810	628	325	329
17	191	124	1,100	1,630	610	314	306
18	191	124	1,100	1,480	594	303	279
19	205	119	1,140	1,300	594	292	282
20	210	115	1,220	1,120	572	281	279
21	220	119	1,440	1,100	545	270	276
22	210	115	1,590	1,140	515	259	282
23	205	115	1,670	1,170	491	248	306
24	196	115	1,810	1,100	467	237	321
25	186	115	1,770	1,050	452	226	325
26	182	115	1,670	1,050	439	217	333
27	186	111	1,540	1,020	389	208	309
28	191	96	1,440	1,070	367	199	302
29	215	85	1,440	1,090	342	190	292
30	210	64	1,560	1,100	338	181	286
31	205	-----	1,690	-----	342	173	---

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	279	158	202	12,400
November	196	64	138	8,210
May 3-31	2,030	1,100	1,540	88,600
June	2,440	1,020	1,660	98,800
July	1,090	338	629	38,700
August	371	173	292	18,000
September	439	125	246	14,600

ST. MARY RIVER NEAR KIMBALL, ALBERTA

LOCATION.—Water-stage recorder in SW. $\frac{1}{4}$ sec. 25, T. 1 N., R. 25 W. fourth meridian, 1.4 miles southwest of Kimball, Alberta, and 5 miles north of international boundary. During winter a chain gage on highway bridge 3 miles downstream is used.

DRAINAGE AREA.—497 square miles.

RECORDS AVAILABLE.—January, 1913, to September, 1930. September, 1902, to December, 1912, comparable record at point half a mile north of international boundary.

EXTREMES.—Maximum discharge during year, 3,160 second-feet June 12 (gage height, 5.18 feet); minimum, 52 second-feet Dec. 10–21.

1902–1930: Maximum discharge (estimated), 18,000 second-feet June 5, 1908; minimum, 46 second-feet Dec. 1, 1919.

REMARKS.—Records good. St. Mary Canal diverts water near Babb, Mont., to North Fork of Milk River. Alberta Railway & Irrigation Co.'s canal diverts 2 miles below station. Regulation on tributary above station. Station maintained jointly with the Dominion Water Power and Hydro-metric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	207	189	90	122	90	148	795	2,390	2,510	1,320	494	257
2	196	183	101	120	97	137	834	2,360	2,560	1,260	494	247
3	191	170	112	117	137	145	795	2,420	2,800	1,210	494	235
4	183	174	120	112	196	154	834	2,620	2,900	1,140	483	224
5	191	189	130	110	218	165	834	2,540	2,660	1,090	472	216
6	220	185	110	110	236	165	795	2,440	2,520	1,060	456	213
7	234	178	90	108	302	168	834	2,310	2,440	1,010	445	205
8	242	176	70	108	278	172	818	2,160	2,540	994	440	230
9	255	176	60	108	270	175	795	2,090	2,610	949	434	230
10	284	174	52	105	236	179	872	2,000	2,670	931	424	238
11	327	168	52	101	199	179	795	1,980	2,870	922	429	298
12	319	168	52	94	165	172	834	2,000	3,050	904	429	403
13	284	168	52	88	137	165	850	1,870	3,050	859	434	610
14	245	166	52	84	127	159	1,060	1,730	2,760	842	478	517
15	231	151	52	80	127	154	1,200	1,590	2,570	794	461	434
16	225	137	52	76	199	151	1,300	1,540	2,360	770	440	393
17	214	112	52	76	236	159	1,340	1,550	2,090	741	419	364
18	209	90	52	76	302	172	1,410	1,560	1,910	727	398	341
19	225	80	52	76	342	179	1,500	1,560	1,680	802	388	336
20	217	80	52	76	326	185	1,510	1,690	1,500	756	384	323
21	239	90	52	76	302	192	1,480	2,130	1,420	712	374	318
22	228	101	56	76	278	196	1,480	2,200	1,500	678	355	336
23	223	112	76	76	257	203	1,440	2,160	1,570	650	336	398
24	207	124	101	76	236	210	1,630	2,240	1,410	630	323	384
25	201	124	122	76	199	218	1,810	2,280	1,350	610	310	379
26	191	137	124	76	185	236	1,950	2,100	1,330	598	298	379
27	204	135	127	76	172	270	2,090	1,950	1,320	559	283	369
28	207	124	130	76	159	617	2,210	1,970	1,330	535	280	355
29	214	112	132	76	-----	795	2,460	1,980	1,360	517	269	346
30	214	101	127	80	-----	857	2,520	2,100	1,370	494	254	341
31	201	-----	124	90	-----	795	-----	2,320	-----	488	263	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	327	183	227	14,000
November	189	80	142	8,450
December	132	52	84.7	5,210
January	122	76	90.4	5,560
February	342	90	215	11,900
March	857	137	254	15,600
April	2,520	795	1,300	77,400
May	2,620	1,540	2,060	127,000
June	3,050	1,320	2,130	127,000
July	1,320	488	824	50,700
August	494	254	395	24,300
September	610	205	331	19,700
The year	3,050	52	672	487,000

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

LOCATION.—Water-stage recorder in NW. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 27, T. 36 N., R. 14 W., 600 feet below intake of canal on Blackfeet Indian Reservation and 1 mile east of Babb.

RECORDS AVAILABLE.—Irrigation seasons, 1918–1930.

REMARKS.—Records good. Canal diverts from west bank of St. Mary River near Babb and discharges into North Fork of Milk River. Water then flows in natural channel of Milk River through Canada and is finally used for irrigation in Milk River Valley, east of Havre, Mont. Water may be returned to St. Mary River at St. Mary crossing. Station maintained jointly with Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	June	July	Aug.	Sept.	Day	Oct.	Nov.	June	July	Aug.	Sept.
1-----	136	60	0	625	632	548	16-----	138	0	337	641	563	8.7
2-----	135	60	0	633	630	544	17-----	139	0	333	643	560	8.6
3-----	134	55	0	638	630	539	18-----	132	0	406	643	558	6.6
4-----	138	47	34	640	628	530	19-----	111	0	462	643	556	4.6
5-----	139	0	184	640	628	524	20-----	91	0	531	641	552	0
6-----	140	0	219	641	630	524	21-----	69	0	538	640	548	0
7-----	140	0	268	641	630	521	22-----	68	0	554	638	545	0
8-----	142	0	304	641	630	514	23-----	63	0	574	638	544	0
9-----	140	0	306	643	632	492	24-----	62	0	579	638	544	0
10-----	101	0	304	643	632	470	25-----	60	0	593	638	544	0
11-----	69	0	321	643	633	440	26-----	62	0	614	636	545	0
12-----	89	0	357	641	633	139	27-----	62	0	622	635	546	0
13-----	116	0	357	640	609	9.6	28-----	62	0	614	635	548	0
14-----	140	0	357	638	569	7.6	29-----	62	0	614	633	548	0
15-----	139	0	357	640	566	7.4	30-----	61	0	619	633	548	0
							31-----	61	-----	-----	633	548	-----
Month						Maximum	Minimum	Mean	Run-off in acre-feet				
October-----						142	60	103	6,330				
November 1-4-----						60	47	55.5	440				
June 4-30-----						622	34	423	22,700				
July-----						643	625	639	39,300				
August-----						633	544	584	35,900				
September 1-20-----						548	0	292	11,600				
The year-----									116,000				

NOTE.—No flow, except for small amount of seepage, during months for which no discharge is shown.

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

LOCATION.—Water-stage recorder in NE. $\frac{1}{4}$ 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.

RECORDS AVAILABLE.—Irrigation seasons, 1918–1930.

REMARKS.—Records excellent. Station maintained jointly with Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	June	July	Aug.	Sept.	Day	Oct.	Nov.	June	July	Aug.	Sept.
1-----	119	48.0	0	531	520	442	16-----	124	0	283	524	454	0
2-----	116	45.6	0	531	524	442	17-----	124	0	313	522	454	0
3-----	119	37.2	0	533	524	438	18-----	122	0	316	520	454	0
4-----	120	28.0	0	531	524	436	19-----	102	0	347	524	454	0
5-----	121	0	106	529	524	434	20-----	94	0	398	520	448	0
6-----	122	0	146	531	520	434	21-----	66	0	444	520	446	0
7-----	122	0	192	533	516	428	22-----	64	0	456	520	446	0
8-----	122	0	244	531	514	408	23-----	62	0	476	518	444	0
9-----	123	0	242	533	516	408	24-----	57	0	482	518	446	0
10-----	109	0	244	531	512	400	25-----	50	0	484	520	446	0
11-----	68	0	246	529	512	364	26-----	47.4	0	510	524	442	0
12-----	71	0	288	531	514	247	27-----	48.6	0	520	520	442	0
13-----	100	0	288	529	508	8	28-----	49.8	0	531	518	442	0
14-----	123	0	288	529	462	0	29-----	49.8	0	533	518	444	0
15-----	125	0	285	526	456	0	30-----	48.0	0	535	518	440	0
							31-----	47.4			518	444	
Month						Maximum	Minimum	Mean	Run-off in acre-feet				
October-----						125	47.4	91.5	5,630				
November 1-4-----						48.0	28.0	39.7	315				
June 5-30-----						535	106	354	18,300				
July-----						533	518	525	32,300				
August-----						524	440	477	29,300				
September 1-13-----						442	8.0	376	9,700				
The year-----									95,500				

NOTE.—No flow during months for which no discharge is shown.

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

LOCATION.—Water-stage recorder in sec. 5, T. 37 N., R. 11 W., on Blackfeet Indian Reservation, 3 miles above canal outlet and 30 miles north of Browning.

RECORDS AVAILABLE.—Irrigation seasons, 1917–1930.

REMARKS.—Records good. Station maintained jointly with Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	June	July	Aug.	Sept.	Day	Oct.	Nov.	June	July	Aug.	Sept.
1	120	40.5	0	511	500	430	16	124	0	282	500	444	0
2	118	35.5	0	513	498	428	17	124	0	285	498	440	0
3	122	27.0	0	515	500	428	18	124	0	294	494	438	0
4	118	25.2	0	511	503	422	19	124	0	309	509	438	0
5	119	0	0	507	500	422	20	104	0	349	500	436	0
6	121	0	42	509	496	420	21	90	0	402	498	430	0
7	121	0	116	505	498	412	22	72	0	434	498	426	0
8	123	0	208	507	496	400	23	57	0	456	496	430	0
9	125	0	231	505	496	393	24	57	0	469	496	430	0
10	124	0	239	507	496	391	25	51	0	473	496	426	0
11	102	0	240	505	494	368	26	39	0	477	500	424	0
12	70	0	253	503	496	348	27	37	0	468	494	424	0
13	76	0	278	503	498	154	28	37	0	511	496	424	0
14	108	0	270	503	469	24.3	29	35.5	0	511	496	430	0
15	116	0	274	500	440	1.1	30	38	0	515	498	424	0
							31	48	0		500	428	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	125	35.5	91.8	5,640
November 1–4	40.5	25.2	32.0	254
June 6–30	515	42	337	16,700
July	515	494	502	30,900
August	503	424	460	28,300
September 1–15	430	1.1	336	10,000
The year				91,800

NOTE.—No flow during months for which no discharge is shown.

SWIFTCURRENT CREEK AT MANY GLACIER, MONT.

LOCATION.—Water-stage recorder in sec. 12, T. 35 N., R. 16 W., at outlet of McDermott Lake at Many Glacier, Glacier National Park, 14 miles southwest of Babb.

DRAINAGE AREA.—31.4 square miles.

RECORDS AVAILABLE.—June, 1912, to September, 1930.

EXTREMES.—Maximum discharge during year, 885 second-feet May 20 (gage height, 4.44 feet); minimum, 25.7 second-feet Oct. 4, 26, 30, 31 (gage height, 1.54 feet).

1912-1930: Maximum discharge, 1,550 second-feet June 17, 1916; minimum, 10 second-feet Nov. 6, 7, 1921 (gage height, 1.22 feet).

REMARKS.—Records May 28 to Sept. 30 excellent; prior to May 28 good. Observations discontinued during winter. No diversions or regulation. Station maintained jointly with Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	Jul.	Aug.	Sept.
1	30.9		507	257	127	53	16	39.5	270	241	216	91	95
2	30.9		431	297	124	45.8	17	36.5	287	330	19 ³	87	91
3	30.9		427	297	120	44.6	18	36.5	336	310	177	89	84
4	25.7		392	241	112	45.8	19	30.9	442	274	19 ²	82	75
5	36.5		360	232	107	48.5	20	30.9	885	251	219	82	66
6	107	336	385	238	110	52	21	30.9	607	357	19 ³	76	58
7	103	287	478	254	114	58	22	30.9	420	417	180	69	59
8	89	254	559	235	117	58	23	30.9	368	371	175	67	67
9	81	201	559	238	120	54	24	30.9	343	323	172	71	60
10	70	201	552	241	120	54	25	30.9	280	303	163	73	58
11	66	228	603	267	122	62	26	25.7	235	313	14 ⁷	71	52
12	56	207	507	267	120	67	27	28.3	307	313	122	69	50
13	45.5	172	368	238	117	67	28	28.3	310	320	110	66	52
14	45.5	177	264	222	112	76	29	28.3	471	297	10 ⁷	62	52
15	39.5	222	222	222	100	91	30	25.7	467	260	112	60	52
							31	25.7	540		12 ¹	62	

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	107	25.7	43.5	1.39	1.60	2,670
May 6-31	885	172	340	10.8	10.44	17,500
June	603	222	376	12.0	13.39	22,400
July	297	107	205	6.53	7.53	12,600
August	127	60	94.2	3.00	3.46	5,790
September	95	44.6	61.6	1.96	2.1 ⁹	3,670

SHERBURNE LAKE RESERVOIR NEAR BABB, MONT.

LOCATION.—Staff gage on gatehouse in sec. 35, T. 36 N., R. 15 W., at Sherburne Dam, 6 miles southwest of Babb. Zero of gage 4,700.0 feet above mean sea level.

DRAINAGE AREA.—64 square miles.

RECORDS AVAILABLE.—May to June, 1915; May, 1917, to September, 1930.

EXTREMES.—Maximum contents during year, 52,840 acre-feet June 29 (gage height, 79.9 feet).

1915, 1917–1930: Maximum contents, 60,420 acre-feet June 20, 1925 (gage height, 84.6 feet).

REMARKS.—Records good. Complete records furnished by United States Bureau of Reclamation.

Daily contents, in acre-feet, 1930

Day	Apr.	May	June	July	Aug.	Sept.
1.....		28, 770	50, 500	52, 200	45, 780	24, 030
2.....		29, 100	51, 400	52, 200	45, 050	23, 260
3.....		29, 460	51, 560	52, 200	44, 300	22, 300
4.....		30, 300	51, 400	52, 360	43, 720	21, 700
5.....		30, 520	51, 250	52, 200	42, 740	21, 000
6.....		31, 070	51, 100	52, 200	41, 950	20, 400
7.....	19, 420	31, 880	51, 400	52, 200	41, 170	19, 700
8.....		32, 000	51, 720	52, 040	40, 520	19, 060
9.....		32, 480	51, 880	52, 040	39, 870	18, 500
10.....		33, 150	51, 880	52, 040	39, 090	17, 610
11.....	22, 300	33, 480	52, 200	52, 040	38, 440	16, 800
12.....		33, 820	51, 880	52, 200	37, 660	16, 100
13.....		34, 300	51, 880	52, 200	36, 920	16, 300
14.....	22, 370	34, 780	51, 560	52, 040	36, 200	16, 400
15.....		35, 420	50, 800	51, 880	35, 260	16, 500
16.....	24, 580	36, 200	50, 800	51, 880	34, 900	16, 700
17.....	24, 900	37, 040	50, 800	51, 720	34, 180	16, 890
18.....	24, 900	37, 660	50, 350	51, 400	33, 480	17, 070
19.....		38, 440	49, 900	51, 100	32, 820	17, 160
20.....	24, 900	39, 480	49, 600	50, 800	32, 120	17, 250
21.....		40, 260	50, 500	50, 650	31, 400	17, 250
22.....		41, 430	50, 800	50, 500	30, 850	17, 250
23.....	25, 700	44, 600	52, 040	50, 350	30, 180	17, 250
24.....		45, 200	52, 360	50, 050	29, 340	17, 340
25.....	26, 570	46, 200	52, 520	49, 600	28, 660	17, 430
26.....		46, 480	52, 360	49, 150	27, 890	17, 520
27.....	27, 230	46, 900	52, 520	48, 700	27, 120	17, 610
28.....	27, 450	47, 800	52, 680	48, 250	26, 460	17, 700
29.....		48, 400	52, 840	47, 800	25, 800	17, 800
30.....		49, 000	52, 360	47, 050	25, 200	17, 800
31.....		50, 350		46, 340	24, 690	-----

SWIFTCURRENT CREEK AT SHERBURNE, MONT.

LOCATION.—Water-stage recorder in sec. 35, T. 36 N., R. 15 W., 800 feet below spillway of Sherburne Lake Dam at Sherburne.

DRAINAGE AREA.—64 square miles.

RECORDS AVAILABLE.—July, 1912, to September, 1930.

EXTREMES.—Maximum discharge during year, 937 second-feet June 12 (gage height, 5.64 feet); minimum, 4.8 second-feet Oct. 24 (gage height, 0.68 foot).

1912-1930: Maximum discharge, 2,280 second-feet June 17, 1916 (gage height, 7.85 feet); no flow at various times when gates in dam were closed.

REMARKS.—Records good. Observations discontinued during winter. No diversions. Flow regulated by gate operations at dam. Station maintained jointly with Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	July	Aug.	Sept.
1-----	136	442	471	442	523	448	16-----	107	9.2	609	343	468	9.0
2-----	127	442	558	397	523	445	17-----	95	9.2	483	360	471	8.9
3-----	119	456	677	346	520	439	18-----	90	8.9	262	365	474	8.9
4-----	116	353	741	346	516	439	19-----	88	8.9	197	373	468	8.8
5-----	116	281	654	350	513	434	20-----	73	9.2	202	360	471	41.2
6-----	116	229	495	348	516	431	21-----	57	9.6	202	360	468	65
7-----	116	211	486	348	523	425	22-----	50	9.0	373	365	468	65
8-----	116	162	570	320	520	420	23-----	14.5	209	511	378	462	66
9-----	115	127	644	324	510	406	24-----	4.9	398	6	406	459	66
10-----	117	120	710	324	513	394	25-----	20.0	191	336	408	456	64
11-----	118	120	856	324	516	389	26-----	59	71	400	414	456	56
12-----	115	108	921	324	507	180	27-----	59	109	336	417	451	54
13-----	113	9.4	925	324	507	9.8	28-----	60	73	564	434	445	54
14-----	112	9.4	921	324	486	9.4	29-----	50	71	532	451	448	54
15-----	112	9.2	791	327	465	9.0	30-----	39.2	68	644	477	459	55
							31-----	40.0	301	-----	501	454	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October-----	136	4.9	86.1	5,290
May-----	456	8.9	149	9,160
June-----	925	6.0	536	31,900
July-----	501	320	374	23,000
August-----	523	445	485	29,800
September-----	448	8.8	185	11,000

CANYON CREEK NEAR MANY GLACIER, MONT.

LOCATION.—Water-stage recorder at edge of heavy timber area, Glacier National Park, half a mile above mouth and 2 miles southeast of Many Glacier, Glacier County.

DRAINAGE AREA.—7.0 square miles.

RECORDS AVAILABLE.—July, 1918, to September, 1930.

EXTREMES.—Maximum discharge during year, 135 second-feet May 24 (gage height, 1.92 feet; minimum, 3.2 second-feet Oct. 26 (gage height, 0.35 foot). 1918-1930: Maximum discharge (estimated), 500 second-feet May 16, 1922 (gage height, 3.34 feet); minimum, that of Oct. 26, 1922.

REMARKS.—Records good except those for estimated periods, Oct. 5-14, 31, May 5, 6, June 6-14, which are fair. Observations discontinued during winter. No diversions. Station maintained jointly with Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	July	Aug.	Sept.
1	4.6	-----	87	49.0	21.8	9.4	16	9.6	38.3	58	41.1	15.9	36.5
2	4.8	-----	72	57	21.2	8.3	17	9.0	43.0	71	35.0	14.9	26.8
3	4.6	-----	74	53	20.1	8.7	18	8.7	55	57	31.1	14.0	21.8
4	4.6	86	67	49.0	18.4	8.7	19	8.1	49.0	50	38.3	14.0	17.9
5	17.5	70	76	47.9	17.4	8.7	20	7.2	85	46.9	38.3	14.0	15.4
6	17.0	56	93	49.0	17.9	11.0	21	6.6	116	67	35.8	12.7	12.7
7	16.0	42.1	110	47.9	19.0	13.0	22	6.4	68	60	32.6	11.8	16.4
8	15.5	39.2	123	44.0	17.9	14.0	23	6.1	41.1	60	31.1	11.8	26.2
9	15.0	35.0	100	45.0	18.4	13.0	24	5.9	41.1	50	31.1	11.4	26.2
10	14.0	31.1	104	45.9	19.0	13.0	25	5.1	45.0	49.0	28.9	11.4	23.6
11	13.0	26.2	119	49.0	19.0	15.0	26	3.7	41.1	52	26.8	11.0	21.2
12	12.0	26.2	94	45.0	19.0	20.0	27	6.9	41.1	51	23.0	11.0	21.2
13	11.5	26.8	66	42.1	18.4	20.0	28	6.4	58	57	21.2	10.6	21.2
14	11.0	35.0	49.0	42.1	17.4	35.0	29	5.9	90	52	20.1	10.2	20.1
15	10.3	42.1	47.9	43.0	16.9	43.0	30	5.3	100	46.9	20.6	10.2	19.0
							31	5.0	102	-----	21.2	10.6	-----

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	17.5	3.7	8.95	1.28	1.48	550
May 4-31	116	26.2	54.6	7.80	8.12	3,030
June	123	46.9	70.3	10.0	11.16	4,180
July	57	20.1	38.2	5.46	6.30	2,350
August	21.8	10.2	15.4	2.20	2.54	947
September	43.0	8.3	18.9	2.70	3.01	1,120

RED RIVER BASIN

RED RIVER AT FARGO, N. DAK.

LOCATION.—Staff gage in sec. 7, T. 139 N., R. 48 W., just above Island Park Dam at Fargo and 10 miles above mouth of Sheyenne River. Zero of gage 870.00 feet above mean sea level.

DRAINAGE AREA.—6,420 square miles.

RECORDS AVAILABLE.—May, 1901, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,340 second-feet Mar. 17, 18 (gage height, 10.0 feet); minimum, 6.5 second-feet Sept. 26 (gage height, 7.35 feet).

1901-1930: Maximum discharge, 7,740 second-feet July 11, 1916 (gage height, 17.34 feet); minimum, 6.5 second-feet Sept. 3, 1924, Sept. 26, 1930.

REMARKS.—Records fair. Discharge estimated Feb. 20 to Mar. 6, Mar. 12 to Apr. 5, Aug. 15-24, owing to construction work on dam that forms control.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	48	60	38	35	38	570	560	360	410	265	60	19
2.....	48	60	38	38	38	330	560	360	410	265	60	11
3.....	48	60	38	38	38	330	670	310	360	265	75	11
4.....	48	60	38	38	41	288	725	310	360	245	90	11
5.....	48	74	38	38	43	288	780	310	265	225	60	22
6.....	43	90	36	38	45	330	615	310	310	225	35	22
7.....	38	90	34	38	48	310	560	360	310	225	20	22
8.....	38	74	32	38	48	310	460	410	288	150	35	22
9.....	38	60	30	38	48	265	460	410	265	120	35	22
10.....	48	70	33	38	48	265	360	510	265	150	35	22
11.....	54	80	35	30	48	360	360	645	225	185	35	11
12.....	60	90	38	34	48	560	360	780	225	185	35	11
13.....	67	90	38	38	48	780	310	835	225	185	35	22
14.....	74	108	38	38	48	947	310	947	310	185	35	22
15.....	74	108	38	38	48	1,120	360	1,000	310	185		22
16.....	60	90	38	38	48	1,280	360	1,120	310	120		22
17.....	60	75	36	36	48	1,340	310	1,060	310	90		22
18.....	74	60	34	34	52	1,340	310	1,000	310	90		11
19.....	74	60	32	32	56	1,280	310	947	265	60	35	11
20.....	56	48	30	30	60	1,230	310	780	225	75		11
21.....	38	38	30	32	74	1,120	310	725	225	90		16
22.....	38	30	30	34	152	1,060	310	615	245	90		22
23.....	48	30	30	36	241	891	265	560	265	90		22
24.....	60	34	30	38	330	835	265	510	265	120		11
25.....	60	38	30	38	570	780	265	485	265	120	35	11
26.....	48	38	30	38	620	725	265	460	310	90	35	11
27.....	48	38	30	38	620	670	288	460	310	75	20	11
28.....	48	38	30	38	620	670	310	410	310	60	20	11
29.....	60	38	30	38	-----	615	310	460	288	90	20	11
30.....	60	38	30	38	-----	588	310	435	265	90	35	11
31.....	60	-----	33	38	-----	560	-----	410	-----	90	27	-----
Month	Maximum					Minimum			Mean		Run-off in acre-feet	
October.....	74					38			53.7		3,300	
November.....	108					30			62.2		3,700	
December.....	38					30			35.7		2,070	
January.....	38					30			36.5		2,240	
February.....	620					38			149		8,280	
March.....	1,340					265			711		43,700	
April.....	780					265			398		23,700	
May.....	1,120					310			590		36,300	
June.....	410					225			290		17,300	
July.....	265					60			145		8,620	
August.....	90					20			38.3		2,360	
September.....	22					11			16.2		964	
The year.....	1,340					11			211		153,000	

• Interpolated.

RED RIVER AT GRAND FORKS, N. DAK.

LOCATION.—Staff gage in NW. $\frac{1}{4}$ sec. 34, T. 152 N., R. 50 W., at Grand Forks, 2 miles below mouth of Red Lake River.

DRAINAGE AREA.—25,500 square miles.

RECORDS AVAILABLE.—May, 1901, to September, 1930.

EXTREMES.—Maximum discharge during year, 9,610 second-feet Apr. 7 (gage height, 18.9 feet); minimum, 131 second-feet Sept. 10 (gage height, 1.9 feet).

1901-1930: Maximum discharge, 32,900 second-feet Apr. 27, 1904 (gage height, 40.6 feet); minimum, about 100 second-feet during ice-affected period in early part of February, 1912.

Maximum known stage, 50.2 feet Apr. 27, 1897 (discharge, 43,000 second-feet).

REMARKS.—Records fair for October to March, good for April to September. Discharge estimated Oct. 1-12. Ice effect Nov. 20 to Apr. 5.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	321	365	385	255	143	731	5,580	1,580	2,090	806	296	143
2	331	365	380	255	143	731	5,580	1,580	1,880	806	296	143
3	342	365	375	255	143	731	5,580	1,580	1,730	806	296	143
4	349	365	370	248	143	750	6,090	1,630	1,630	768	275	156
5	352	365	365	240	143	768	7,050	1,630	1,540	768	255	156
6	349	365	360	233	143	885	8,480	1,880	1,440	768	255	156
7	345	375	355	225	143	926	9,610	2,040	1,400	768	255	143
8	342	385	351	218	143	966	8,400	2,140	1,310	731	236	143
9	349	396	346	218	143	966	7,340	2,140	1,260	695	236	143
10	359	406	341	218	143	1,140	6,430	2,140	1,220	695	218	131
11	349	416	336	218	143	1,310	5,700	2,140	1,220	695	218	143
12	345	416	332	218	143	1,980	5,090	2,640	1,180	660	218	143
13	593	416	327	218	143	2,920	4,310	3,100	1,090	660	201	143
14	593	416	323	212	139	3,850	3,500	3,730	1,050	660	201	156
15	500	416	318	205	135	4,440	2,980	4,260	966	626	201	156
16	471	416	309	198	131	4,950	2,640	4,730	925	626	185	156
17	471	416	301	191	170	5,450	2,420	5,090	925	626	185	170
18	443	416	292	185	185	5,960	2,040	6,430	925	626	185	170
19	443	416	284	179	416	6,360	2,040	5,330	925	626	185	170
20	443	416	275	173	434	6,770	1,580	5,030	925	593	170	170
21	443	411	271	168	453	6,630	1,830	4,730	925	561	170	170
22	471	406	267	162	471	6,360	1,400	4,440	925	500	170	170
23	416	400	263	156	561	6,630	1,400	4,140	925	471	170	143
24	365	395	259	153	660	6,630	1,440	3,560	925	443	156	143
25	365	390	255	151	626	6,560	1,440	3,270	925	390	156	143
26	365	390	255	148	660	6,490	1,490	3,100	885	341	156	143
27	365	390	255	146	660	6,360	1,490	2,870	885	341	156	143
28	365	390	255	143	660	6,430	1,540	2,640	845	341	143	143
29	365	390	255	143	---	5,960	1,540	2,420	845	318	143	143
30	365	390	255	143	---	5,770	1,540	2,250	845	318	143	143
31	365	---	255	143	---	5,640	---	2,200	---	296	143	---

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	593	321	398	24,500
November	416	365	395	23,500
December	385	255	309	19,000
January	255	143	194	11,900
February	660	131	294	16,300
March	6,770	731	3,940	242,000
April	9,610	1,400	3,920	233,000
May	6,430	1,580	3,110	191,000
June	2,090	845	1,150	68,400
July	806	296	591	36,300
August	296	143	202	12,400
September	170	131	151	8,980
The year	9,610	131	1,230	887,000

• Interpolated.

RED RIVER AT EMERSON, MANITOBA

LOCATION.—Chain gage on Canadian National Railway bridge at Emerson.

DRAINAGE AREA.—34,600 square miles.

RECORDS AVAILABLE.—March to November, 1902; October, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 20,800 second-feet Apr. 10; minimum, 169 second-feet Feb. 10–16.

Maximum known discharge, 46,200 second-feet Apr. 24, 1916 (gage height, 785.16 feet).

REMARKS.—Stage-discharge relation affected by ice Nov. 7 to Apr. 8. Record furnished by Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	361	522	236	240	172	300	5,320	2,430	3,340	1,340	560	215
2	371	529	250	239	171	450	5,650	2,350	3,230	1,360	543	200
3	382	539	263	238	171	700	6,100	2,350	3,090	1,380	525	170
4	389	557	281	234	171	1,050	8,000	2,350	2,950	1,360	508	185
5	392	574	292	230	170	1,350	10,000	2,390	2,760	1,310	508	185
6	389	592	300	226	170	1,500	13,000	2,460	2,590	1,290	490	185
7	385	580	309	220	170	1,520	16,000	2,540	2,510	1,270	473	188
8	382	575	320	218	170	1,510	18,500	2,730	2,350	1,220	455	191
9	389	570	328	212	170	1,500	20,400	2,840	2,210	1,200	438	200
10	399	565	336	210	169	1,480	20,800	2,950	2,110	1,180	420	215
11	389	560	340	209	169	1,430	19,700	3,140	2,010	1,140	413	245
12	399	555	342	206	169	1,380	18,300	3,370	1,960	1,120	403	263
13	417	550	342	203	169	1,340	16,500	3,820	1,860	1,100	368	298
14	434	540	338	200	169	1,350	14,400	5,490	1,810	1,080	350	287
15	445	535	333	199	169	1,400	11,700	6,950	1,720	1,080	340	280
16	452	525	328	196	169	1,510	9,780	8,260	1,650	1,090	333	273
17	469	510	320	192	170	1,750	7,770	9,460	1,580	1,100	322	263
18	487	500	313	190	182	2,000	6,480	9,960	1,540	1,070	350	230
19	494	490	306	189	189	2,300	5,480	10,000	1,520	1,080	298	200
20	504	480	300	188	190	2,550	4,730	9,750	1,470	1,080	298	179
21	511	465	293	186	191	3,000	4,050	9,220	1,430	1,080	298	185
22	522	450	288	182	194	3,350	3,690	8,500	1,420	1,020	280	200
23	539	423	283	180	195	3,750	3,390	7,660	1,400	955	263	209
24	539	400	279	179	195	4,300	3,220	6,810	1,370	915	263	215
25	529	378	273	179	196	4,800	3,030	6,070	1,340	843	263	209
26	522	350	268	178	198	4,950	2,950	5,390	1,310	795	263	200
27	515	310	262	178	199	5,000	2,810	4,810	1,290	787	252	191
28	504	280	256	177	200	5,020	2,730	4,510	1,280	775	252	200
29	511	245	250	176	-----	5,050	2,640	4,120	1,290	695	245	200
30	515	235	247	175	-----	5,150	2,480	3,850	1,310	635	245	200
31	522	-----	242	175	-----	5,280	-----	3,560	-----	595	230	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	539	361	453	27,900
November	592	235	479	28,500
December	342	236	294	18,100
January	240	175	200	12,300
February	200	169	179	9,940
March	5,280	300	2,530	155,000
April	20,800	2,480	8,990	535,000
May	10,000	2,350	5,160	317,000
June	3,540	1,280	1,930	114,000
July	1,880	595	1,079	65,200
August	560	230	333	22,300
September	298	170	275	12,800
The year	20,800	169	1,830	1,320,000

BOIS DES SIOUX RIVER NEAR TENNEY, MINN.

LOCATION.—Staff gage near center of sec. 22, T. 130 N., R. 47 W., at Soo Line bridge 5 miles west of Tenney.

DRAINAGE AREA.—1,460 square miles.

RECORDS AVAILABLE.—April, 1919, to September, 1930.

EXTREMES.—Maximum discharge during year, 64 second-feet Mar. 5-15 (gage height, 3.9 feet); no flow for several months.

1919-1930: Maximum discharge, 390 second-feet Apr. 22, 1922 (gage height, 5.7 feet); no flow during several periods.

REMARKS.—Records poor.

Daily and monthly discharge, in second-feet, 1929-37

Day	Oct.	Nov.	Feb.	Mar.	Apr.	May	June	July
1.....	2	2	0	40	20	9	15	7
2.....	2	2	0	46	9	9	14	7
3.....	2	2	0	52	9	9	13	7
4.....	2	2	0	58	9	10	13	7
5.....	2	2	0	64	9	11	13	7
6.....	2	2	0	64	9	12	13	7
7.....	2	2	0	64	9	13	13	7
8.....	2	2	0	64	10	18	12	6
9.....	2	2	0	64	10	23	10	6
10.....	2	2	0	64	11	28	9	5
11.....	2	1	0	64	11	28	9	5
12.....	2	1	0	64	11	27	9	4
13.....	2	1	0	64	10	27	9	4
14.....	2	1	0	64	9	26	9	4
15.....	2	1	0	64	8	25	9	3
16.....	2	1	0	63	7	25	8	3
17.....	2	1	0	61	8	24	8	2
18.....	2	1	0	60	8	24	9	2
19.....	2	1	0	58	9	23	8	2
20.....	2	1	0	56	9	22	8	1
21.....	2	0	14	54	9	22	7	1
22.....	2	0	28	53	9	21	7	1
23.....	2	0	29	53	9	20	7	1
24.....	2	0	31	53	9	20	7	0
25.....	2	0	32	53	9	19	7	0
26.....	2	0	34	53	9	19	7	0
27.....	2	0	36	53	9	19	7	0
28.....	2	0	38	53	9	18	7	0
29.....	2	0	53	53	9	17	7	0
30.....	2	0	42	9	9	16	7	0
31.....	2	0	31	16	16	16	7	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....			2.0	123
November.....		0	1.0	60
February.....	38	0	8.6	478
March.....	64	31	56.4	3,470
April.....	20	7	9.5	565
May.....	28	9	19.4	1,110
June.....	15	7	9.4	559
July.....	7	0	3.2	197
The year.....	64	0	9.2	6,640

* Interpolated.

NOTE.—No flow during months for which no discharge is shown.

SHEYENNE RIVER AT SHEYENNE, N. DAK.

LOCATION.—Wire gage in T. 150 N., R. 66 W., 1 mile north of Sheyenne.

RECORDS AVAILABLE.—April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 990 second-feet Feb. 24 (gage height, 8.79 feet); no flow for several weeks.

1929-30: Maximum discharge, that of Feb. 24, 1930; no flow for long periods.

REMARKS.—Records fair for February to May; poor for other periods. Stage-discharge relation affected by ice Nov. 18 to Apr. 5. Gage-height record and current-meter measurements furnished by R. E. Kennedy, State engineer.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May	June	July	Aug
1.....	0	1.6		0	331	114	17	7.0		
2.....	0	3.8		0	272	114	13	6.0		
3.....	0	5.0		0	238	108	13	4.4		
4.....	0	5.5		0	190	102	11	4.3		
5.....	0	5.5		0	168	102	10	4.1		
6.....	0	5.0		0	154	96	11	4.0		
7.....	0	5.0		0	140	80	13	3.6		
8.....	0	4.6		0	126	70	15	2.6		
9.....	0	4.6		0	147	65	16	1.4		
10.....		4.6		0	238	55	17			
11.....		4.2		0	331	46	19			
12.....		4.2		0	405	43	25			
13.....		3.8		0	425	40	36			
14.....		3.8		0	425	36	36			
15.....		3.8		0	425	33	30			
16.....		3.8	0.5	0	425	30	38			0
17.....	0	3.8		0	405	27	46			0
18.....	0			2	425	26	46			0
19.....	0			45	385	23	56			0
20.....	0			140	331	30	46	.5		0
21.....	0			405	272	28	53			0
22.....	0			780	218	26	46			0
23.....	0			955	190	22	38			0
24.....	0	2.0		990	154	20	30			0
25.....	0			955	126	20	24			0
26.....	0			780	120	20	20			0
27.....	0			630	120	15	18			0
28.....	0			405	120	13	15			0
29.....	0				114	13	14			0
30.....	0				120	13	11			0
31.....	0				114		9			0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....			0.113	6.9
November.....	5.5		3.29	196
December.....			.60	30.7
February.....	990	0	217	12,100
March.....	425	114	247	15,200
April.....	114	13	47.7	2,840
May.....	56	9	25.5	1,570
June.....	7		1.60	95.2
July.....			.20	12.3
August.....		0	.05	3.07
The year.....	990	0	44.2	32,100

NOTE.—No flow during months for which no discharge is shown.

SHEYENNE RIVER AT WEST FARGO, N. DAK.

LOCATION.—Chain gage in sec. 6, T. 139 N., R. 49 W., half a mile north of West Fargo.

RECORDS AVAILABLE.—September, 1929, to September, 1930. At station one-fourth mile upstream, March, 1902, to June, 1907, and March to August, 1919.

EXTREMES.—Maximum discharge during current period, 1,780 second-feet Apr. 5 (gage height, 14.90 feet); minimum, 7 second-feet Sept. 21, 1929 (gage height, 2.08 feet).

1902-1907, 1919, 1929-30: Maximum discharge, 2,030 second-feet Apr. 9-11, 1902 (gage height, 18.0 feet); minimum, that of Sept. 21, 1929.

REMARKS.—Records good except those for period of ice effect, Nov. 17 to Apr. 5, which are fair. Gage-height record and current-meter measurements for September, 1929, to April, 1930, furnished by R. E. Kennedy, State engineer.

Daily and monthly discharge, in second-feet, 1929-30

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		26	32	• 15	• 27	14	540	1,000	• 222	251	60	32	24
2		26	32	• 16	• 26	• 14	510	1,020	• 220	242	60	32	26
3		26	34	• 16	• 25	• 14	480	1,400	• 217	233	56	34	26
4		26	34	• 17	• 24	• 14	480	1,550	215	224	56	32	24
5		26	36	• 17	• 23	• 14	412	1,780	215	197	56	28	24
6		26	38	• 18	• 22	• 14	400	1,400	197	170	56	28	24
7		26	40	• 18	• 22	• 14	340	1,320	206	153	56	30	24
8		24	44	• 18	• 21	14	352	1,190	224	145	56	28	26
9		26	44	• 18	• 20	• 14	330	960	233	137	52	28	26
10		28	44	• 18	• 19	• 14	364	840	242	116	48	26	28
11		30	44	• 18	18	• 13	412	734	270	116	48	24	26
12		34	44	• 18	• 17	• 13	510	632	300	109	48	22	28
13		38	44	• 18	• 17	• 12	510	600	310	109	48	24	28
14		44	46	18	• 16	• 12	649	510	320	109	48	24	26
15		46	46	• 18	• 16	11	821	510	310	109	48	24	26
16		44	46	• 18	• 15	• 17	900	480	290	109	46	22	26
17	18	44	44	• 18	• 15	• 23	1,170	451	300	102	46	24	24
18	18	44	40	• 17	14	• 29	1,040	437	310	96	46	23	23
19	18	40	36	• 17	• 14	• 35	1,080	437	300	96	48	26	23
20	18	38	34	• 17	• 14	• 40	1,350	400	300	96	48	24	24
21	7	36	30	17	• 14	• 46	1,440	340	300	90	48	24	22
22	12	34	28	• 19	• 14	52	1,470	310	300	90	48	26	21
23	19	32	20	• 21	• 14	• 60	1,440	280	290	84	46	28	21
24	20	32	17	• 23	• 14	69	1,440	270	290	84	44	28	22
25	21	32	19	• 24	14	• 151	1,420	280	290	84	44	30	21
26	22	30	19	• 26	• 14	233	1,280	242	2 0	79	40	30	20
27	22	30	18	• 28	• 14	• 335	1,190	233	290	79	38	28	20
28	24	32	16	30	• 14	• 438	980	233	280	74	36	28	20
29	24	32	16	• 29	• 14	-----	940	224	270	69	36	26	19
30	24	32	15	• 28	• 14	-----	800	224	270	64	36	24	18
31	-----	32	-----	• 28	• 14	-----	880	-----	270	-----	36	26	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1929				
September 17-30	24	7	19.1	530
1929-30				
October	46	24	32.8	2,020
November	46	15	33.3	1,980
December	30	15	20.0	1,230
January	27	14	17.4	1,070
February	438	11	61.8	3,430
March	1,470	330	838	51,500
April	1,780	224	676	40,200
May	320	197	269	16,500
June	251	64	124	7,380
July	60	36	47.8	2,940
August	34	22	26.9	1,650
September	28	18	23.7	1,410
The year	1,780	11	181	131,000

•Interpolated.

WILD RICE RIVER AT TWIN VALLEY, MINN.

LOCATION.—Chain gage in SE. ¼ sec. 22, T. 144 N., R. 44 W., at highway bridge three-fourths mile northeast of Twin Valley and 2 miles above a small tributary entering from the right at Heiberg.

DRAINAGE AREA.—805 square miles.

RECORDS AVAILABLE.—July to September, 1930. June, 1909, to September, 1917, at a station one-fourth mile downstream.

EXTREMES.—Maximum discharge during year, 52 second-feet July 25 (gage height, 1.48 feet); minimum, 4.4 second-feet Aug. 23, 24 (gage height, 0.62 foot). 1909-1917, 1930: Maximum discharge, 9,200 second-feet July 22, 1909; minimum, that of Aug. 23, 24, 1930.

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1.....		17	10	11.....		10	13	21.....		5.2	12
2.....		15	11	12.....		9.8	13	22.....		4.8	10
3.....		15	10	13.....		9.8	13	23.....	36	4.4	10
4.....		8.6	11	14.....		14	13	24.....	41	4.4	10
5.....		13	12	15.....		14	13	25.....	52	5.2	9.5
6.....		14	12	16.....		13	12	26.....	25	4.8	9.8
7.....		14	5.6	17.....		12	10	27.....	25	7.0	10
8.....		13	7.4	18.....		10	10	28.....	20	9.2	11
9.....		10	12	19.....		11	9.8	29.....	16	7.4	12
10.....		10	15	20.....		7.6	9.5	30.....	15	11	12
								31.....	16	10	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
July 23-31.....			27.7	488
August.....	17	4.4	10.1	621
September.....	13	5.6	11.0	655
The period.....				1,760

RED LAKE AT WASKISH, MINN.

LOCATION.—On line between secs. 8 and 9, T. 154 N., R. 30 W., on highway bridge across Tamarack River in village of Waskish one-fourth mile from lake. Elevation of zero of gage 1,100.00 feet above mean sea level.

DRAINAGE AREA.—1,950 square miles above outlet of lower Red Lake. Area of lake, 440 square miles.

RECORDS AVAILABLE.—April to September, 1930.

EXTREMES.—Maximum stage recorded during period, 74.85 feet June 2; minimum, 73.40 feet Sept. 30.

REMARKS.—Lake surface subject to fluctuation caused by direction and velocity of wind.

Daily gage height, in feet, 1930

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1.....		74.28	74.80	74.45	74.50	74.00	16.....	74.23	74.58	74.40	74.45	73.95	74.50
2.....		74.30	74.85	74.40	74.45	74.00	17.....	74.24	74.60	74.38	74.55	73.93	74.00
3.....		74.30	74.60	74.40	74.50	73.95	18.....	74.26	74.55	74.40	74.65	73.90	73.75
4.....		74.35	74.50	74.42	74.45	73.98	19.....	74.26	74.52	74.50	74.60	73.90	74.30
5.....		74.40	74.48	74.45	74.48	74.00	20.....	74.30	74.50	74.48	74.45	73.93	73.80
6.....		74.35	74.40	74.40	74.45	74.00	21.....	74.31	74.48	74.50	74.50	73.90	74.70
7.....		74.38	74.50	74.38	74.45	73.85	22.....	74.30	74.48	74.60	74.48	73.85	73.60
8.....		74.40	74.55	74.45	74.50	73.80	23.....	74.30	74.50	74.58	74.52	73.90	73.85
9.....		74.38	74.60	74.40	74.45	73.90	24.....	74.28	74.48	74.65	74.50	73.95	74.00
10.....		74.40	74.50	74.42	74.40	73.80	25.....	74.27	74.46	74.60	74.50	74.00	73.70
11.....		74.45	74.58	74.45	74.35	74.00	26.....	74.26	74.44	74.55	74.52	74.20	74.00
12.....		74.50	74.40	74.45	74.25	73.80	27.....	74.25	74.45	74.50	74.55	74.00	73.90
13.....	74.19	74.55	74.60	74.45	74.30	74.30	28.....	74.24	74.46	74.55	74.65	74.00	73.85
14.....	74.20	74.56	-----	74.50	74.28	74.30	29.....	74.25	74.48	74.53	74.60	73.98	73.80
15.....	74.20	74.55	74.70	74.55	74.10	74.30	30.....	74.26	74.58	74.48	74.62	74.10	73.40
							31.....	-----	74.75	-----	74.60	73.90	-----

RED LAKE AT REDBY, MINN.

LOCATION.—Staff gage in sec. 20, T. 151 N., R. 33 W., at mouth of Mud River, one-fourth mile east of Redby. Elevation of zero of gage 1,100.00 feet above mean sea level.

DRAINAGE AREA.—1,950 square miles above outlet of lower Red Lake. Area of lake, 440 square miles.

RECORDS AVAILABLE.—June to September, 1930.

EXTREMES.—Maximum stage recorded during year, 74.71 feet June 5, 6; minimum, 73.51 feet Sept. 30.

REMARKS.—Lake surface subject to fluctuation caused by direction and velocity of wind.

Daily gage height, in feet, 1930

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1		74.36	74.16	73.81	16	74.41	74.31	74.11	73.61
2		74.41	74.16	73.76	17	74.36	74.46	74.06	73.61
3		74.41	74.21	73.76	18	74.36	74.41	74.01	73.61
4	74.46	74.41	74.21	73.81	19	74.36	74.41	73.96	73.71
5	74.71	74.46	74.16	73.71	20	74.31	74.41	73.96	73.66
6	74.71	74.41	74.16	73.66	21	74.36	74.46	73.96	73.61
7	74.41	74.41	74.21	73.81	22	74.36	74.41	73.86	73.61
8	74.41	74.41	74.81	73.71	23	74.51	74.31	73.81	73.61
9	74.41	74.41	74.31	73.71	24	74.41	74.41	73.81	73.56
10	74.41	74.46	74.16	73.66	25	74.66	74.31	73.81	73.56
11	74.46	74.46	74.06	73.81	26	74.51	74.41	73.81	73.61
12	74.41	74.46	74.06	74.81	27	74.41	74.36	73.91	73.66
13	74.56	74.51	74.01	73.76	28	74.41	74.31	73.91	73.61
14	74.41	74.41	74.01	73.71	29	74.31	74.31	73.81	73.51
15	74.31	74.31	74.01	73.61	30	74.41	74.26	73.76	73.51
					31		74.21	73.76	

RED LAKE RIVER AT KRATKA, MINN.

LOCATION.—Staff gage on line between secs. 20 and 21, T. 153 N., R. 41 W., at Kratka Bridge, about 12 miles southwest of Goodridge.

RECORDS AVAILABLE.—September, 1929, to September, 1930.

EXTREMES.—Maximum discharge during period, 912 second-feet Apr. 5 (gage height, 4.08 feet); minimum, 55 second-feet Sept. 22, 1930 (gage height, -0.23 foot).

REMARKS.—Records good. Stage-discharge relation affected by aquatic growth Sept. 17 to Nov. 13, May 15 to Sept. 30, and by ice Nov. 15 to Apr. 5.

Daily and monthly discharge, in second-feet, 1929-30

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		240	304	• 183	240	115	• 148	304	472	443	291	158	100
2		240	304	• 178	• 236	• 114	• 159	• 478	532	415	304	148	98
3		240	266	• 174	• 232	• 114	• 170	652	532	415	318	148	96
4		228	240	169	228	113	• 181	• 782	• 532	415	331	148	98
5		253	240	• 174	• 198	• 116	192	912	532	• 415	318	148	100
6		253	203	180	169	• 118	• 204	• 846	• 542	• 415	278	148	98
7		240	203	192	• 169	121	216	• 780	• 552	415	253	148	100
8		228	253	203	169	• 121	• 216	• 714	562	415	253	148	102
9		216	• 253	192	• 165	• 121	216	• 648	562	• 415	240	137	104
10		253	253	• 200	• 162	• 121	• 228	• 582	• 684	415	228	135	109
11		278	• 270	• 208	158	• 121	240	• 516	806	• 415	228	135	115
12		291	• 287	216	• 154	• 120	• 246	• 451	806	• 415	240	129	119
13		278	304	216	• 151	• 120	253	387	• 729	• 415	240	129	117
14		278	228	• 216	148	• 120	• 240	387	652	415	240	127	113
15		278	• 228	• 216	• 145	• 120	228	387	622	415	228	123	98
16		266	• 228	216	• 141	• 119	266	• 387	562	• 406	216	119	89
17	228	266	228	• 222	• 137	• 119	• 270	387	532	• 397	203	119	85
18	228	253	203	228	• 137	• 119	• 274	• 387	532	387	216	119	80
19	228	253	216	• 222	• 137	119	278	387	532	• 387	203	119	70
20	228	240	216	216	137	119	• 256	387	• 517	387	203	119	61
21	228	240	216	203	• 135	• 116	• 234	• 387	502	359	203	119	58
22	228	253	216	• 205	• 133	• 113	• 213	387	502	359	203	115	55
23	228	253	216	• 207	• 131	• 109	192	• 387	• 514	• 359	203	115	61
24	253	266	216	• 210	129	106	278	387	• 526	359	192	117	61
25	253	266	• 211	• 212	• 128	• 114	• 287	415	• 538	• 352	192	117	72
26	240	240	• 206	• 214	• 126	• 122	• 296	387	• 550	345	192	104	78
27	278	216	• 202	216	125	• 130	304	387	562	• 340	180	104	82
28	266	• 228	• 197	228	• 123	137	• 291	387	562	• 335	180	104	61
29	278	240	• 192	216	• 121	-----	278	359	562	331	180	106	61
30	266	266	• 188	228	• 119	-----	• 284	359	472	291	169	100	57
31		304	-----	240	• 117	-----	291	-----	472	-----	158	102	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
September 17-30	278	228	245	6,800
October	304	216	253	15,600
November	304	188	233	13,900
December	240	169	206	12,700
January	240	117	155	9,530
February	137	106	118	6,550
March	304	148	240	14,800
April	912	304	487	29,000
May	806	472	566	34,800
June	443	291	388	23,100
July	331	158	228	14,000
August	158	100	126	7,750
September	119	55	86.6	5,150
The year	912	55	258	187,000

• Interpolated.

RED LAKE RIVER AT THIEF RIVER FALLS, MINN.

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

DRAINAGE AREA.—3,430 square miles.

RECORDS AVAILABLE.—July, 1909, to September, 1918; March, 1920, to September, 1930 (discontinued).

EXTREMES.—Maximum discharge during year, 1,840 second-feet May 12; maximum gage height, 8.23 feet Apr. 4; minimum discharge, 6.1 second-feet (regulated) Sept. 30 (gage height, 2.55 feet).

1909–1918, 1920–1930: Maximum discharge, 8,000 second-feet Apr. 16, 1916 (gage height, 15.0 feet); no flow July 17, Aug. 27, 1911.

REMARKS.—Records poor. Flow regulated by operation of power plant just above station. Stage-discharge relation affected by ice Nov. 26–30, Mar. 16 to Apr. 7. Discharge estimated Mar. 16–31, Sept. 1–30.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	173	211		492	492	594	342	126	
2	306	339		552	492	434	307	117	
3	339	211		1,070	552	434	324	131	
4	187	339		1,180	* 552	* 428	187	106	
5	159	339		1,180	* 552	* 421	214	111	
6	159	444		1,480	552	415	228	126	
7	173	187		1,180	* 595	552	415	150	
8	159	187		* 1,180	638	378	396	150	
9	159	187		1,180	638	434	378	150	
10	211	173		1,300	728	434	324	174	
11	211	339		1,070	1,660	434	258	174	
12	339	187		* 956	1,720	360	378	174	
13	187	391		* 842	1,360	396	174	131	
14	273	187		728	1,020	378	290	131	
15	409	306		396	* 946	* 360	307	162	
16	273	374		472	870	342	274	187	90
17	339	187		396	870	360	228	162	
18	187	374		378	682	453	228	162	
19	339	187		378	594	324	162	187	
20	242	187		415	552	360	187	131	
21	374	187		415	* 552	415	214	131	
22	159	306		453	552	* 396	214	131	
23	339	187		453	552	378	162	174	
24	339	* 187	270	378	* 574	492	174	18	
25	339	* 187		307	* 595	552	228	131	
26	306	187		307	* 616	* 447	243	150	
27	187	* 170		378	638	342	70	117	
28	306	* 154		342	* 616	415	243	143	
29	306	* 138		415	594	* 396	162	117	
30	339	122		378	594	378	162	117	
31	187				638		131	56	
Month				Maximum	Minimum	Mean	Run-off in acre-feet		
October				409	159	258	15,900		
November				444	122	239	14,200		
March 16–31						270	8,570		
April				1,480	307	688	40,900		
May				1,720	492	729	44,800		
June				594	342	417	24,800		
July				415	70	245	15,100		
August				187	18	136	8,360		
September						90	5,360		

* Interpolated.

RED LAKE RIVER AT CROOKSTON, MINN.

LOCATION.—Chain gage in sec. 30, T. 150 N., R. 46 W., at highway bridge in Crookston, one-fourth mile below dam and power house of Crookston Light, Water & Power Co.

DRAINAGE AREA.—5,320 square miles.

RECORDS AVAILABLE.—May, 1901, to September, 1930.

EXTREMES.—Maximum discharge during year, 4,370 second-feet May 12 (gage height, 9.8 feet); minimum, 90 second-feet several days during March, August, and September.

1901-1930: Maximum discharge, 14,700 second-feet July 5, 1919; minimum 5 second-feet Aug. 6-8, 1925, caused by regulation.

REMARKS.—Records for October to March poor, April and May good, June to September fair. Discharge estimated Nov. 16, 21-23, Nov. 27 to Dec. 3. Stage-discharge relation affected by ice Nov. 18 to Apr. 19. Flow regulated by operation of power plant just above station.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	270	230	200	* 257	* 120	155	310	945	1,180	350	350	120
2	270	270	200	* 243	120	* 122	310	900	1,040	310	230	120
3	155	270	200	230	* 120	90	512	1,040	990	390	230	120
4	155	310	190	* 192	120	* 100	1,810	990	945	* 451	230	120
5	190	310	* 190	155	* 120	* 110	3,210	590	856	512	230	120
6	190	310	* 190	* 192	* 120	120	3,350	990	812	512	120	90
7	155	310	190	230	120	* 155	3,490	1,080	* 779	390	120	90
8	155	270	* 190	* 230	* 120	190	3,350	1,040	* 746	390	90	90
9	270	270	190	* 230	120	190	3,070	945	* 713	430	90	90
10	270	* 283	* 190	230	* 120	* 256	2,720	1,280	680	470	90	90
11	270	* 296	* 190	* 210	120	* 323	2,510	1,330	638	470	120	120
12	310	310	190	190	* 120	390	2,720	4,370	680	390	155	120
13	270	310	* 172	* 155	* 120	* 377	* 1,980	4,210	680	350	120	120
14	270	270	155	120	120	* 363	1,230	3,420	638	270	120	120
15	310	270	155	* 129	* 120	350	1,130	3,000	596	190	120	120
16	270	* 270	* 155	* 138	120	350	1,130	2,720	596	350	120	90
17	310	270	* 155	* 146	* 120	* 350	856	2,300	596	350	120	120
18	350	270	155	155	120	350	856	2,090	554	350	120	120
19	350	270	* 155	* 155	* 170	* 301	900	1,880	430	230	120	90
20	270	190	* 155	* 155	* 220	* 253	900	1,480	430	350	155	90
21	270	200	155	155	270	* 204	900	1,530	390	350	155	90
22	230	200	* 194	* 144	* 212	155	945	1,380	390	350	155	90
23	230	200	* 232	* 132	155	* 220	856	1,380	554	350	155	90
24	230	270	270	120	* 138	* 285	812	1,380	470	350	155	90
25	270	270	* 270	* 120	120	350	768	1,330	470	350	155	90
26	270	270	* 270	120	* 129	* 452	812	1,280	470	120	120	90
27	270	200	* 270	* 120	* 138	554	812	1,330	470	155	120	90
28	310	200	270	120	* 146	* 512	856	1,380	430	230	120	90
29	230	200	* 270	* 120	-----	470	856	1,280	* 404	350	120	* 90
30	270	200	* 270	* 120	-----	430	856	* 1,360	* 377	350	120	* 90
31	270	-----	270	120	-----	* 370	-----	1,430	-----	350	120	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	350	155	255	15,700
November	310	190	259	15,400
December	270	155	203	12,500
January	257	120	166	10,200
February	270	120	158	7,660
March	554	90	287	17,600
April	3,490	310	1,450	88,700
May	4,370	900	1,680	103,000
June	1,180	377	633	37,700
July	512	120	349	21,500
August	350	90	147	9,040
September	120	90	102	6,070
The year	4,370	90	477	345,000

* Interpolated.

THIEF RIVER NEAR THIEF RIVER FALLS, MINN.

LOCATION.—Chain gage in sec. 3, T. 154 N., R. 43 W., 5 miles north of Thief River Falls.

DRAINAGE AREA.—1,010 square miles.

RECORDS AVAILABLE.—July, 1909, to September, 1917; April, 1920, to September, 1921; October, 1922, to September, 1924; October, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 776 second-feet May 12 (gage height, 7.26 feet); no flow for several months.

1909–1917, 1920–21, 1922–1924, 1928–1930: Maximum discharge, 4,080 second-feet Apr. 23, 1916 (gage height, 14.5 feet); no flow in fall and winter of several years.

Maximum stage known, 16.3 feet in July, 1919 (discharge, about 4,900 second-feet).

REMARKS.—Records fair. Discharge estimated because of ice effect Apr. 1–6.

Daily and monthly discharge, in second-feet, 1929–30

Day	Apr.	May	June	July	Aug.	Day	Apr.	May	June	July	Aug.
1.....	0	23	111	3.4	0.1	16.....	37	278	3.4	5.2	0
2.....	0	37	90	2.1	.3	17.....	29	218	3.4	2.1	0
3.....	6	45	90	8.4	.4	18.....	23	218	2.1	2.1	0
4.....	79	45	73	5.2	.2	19.....	17	162	2.1	1.3	0
5.....	743	45	57	3.4	.2	20.....	17	135	1.3	.7	0
6.....	743	45	57	12	.2	21.....	23	90	1.3	.7	0
7.....	677	45	45	2.1	0	22.....	12	73	.7	.3	0
8.....	546	57	45	2.1	0	23.....	12	57	.7	.3	0
9.....	482	45	45	1.3	0	24.....	12	45	2.1	1.6	0
10.....	325	57	37	1.3	0	25.....	12	45	2.1	1.0	0
11.....	248	644	29	.7	0	26.....	12	57	3.4	.7	0
12.....	176	776	29	12	0	27.....	12	45	2.1	.4	0
13.....	90	644	17	17	0	28.....	12	37	2.1	.3	0
14.....	65	450	8.4	8.4	0	29.....	12	135	5.2	.3	0
15.....	45	310	5.2	6.4	0	30.....	12	135	3.4	.1	0
						31.....		111		.1	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April.....	743	0	149	8,870
May.....	776	23	165	10,100
June.....	111	.7	25.8	1,540
July.....	17	.1	3.32	204
August.....	.4	0	.05	3
The year.....				20,700

NOTE.—No flow during months for which no discharge is shown.

SOUTH FORK OF TWO RIVERS AT PELAN, MINN.

LOCATION.—Chain gage in SW. $\frac{1}{4}$ sec. 30, T. 160 N., R. 44 W., one-fourth mile west of Pelan.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,810 second-feet May 13 (gage height, 10.18 feet); no flow for several months.

1928-1930: Maximum discharge, that of May 13, 1930; no flow for several months each year.

REMARKS.—Records good except those for extremely low stages, which are fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Apr.	May	June	July	Aug.	Day	Apr.	May	June	July	Aug.
1-----	1.0	8.4	11	30	0.1	16-----	20	752	4.3	3.9	0
2-----	1.0	36	12	15	.1	17-----	14	592	4.3	2.7	0
3-----	25	60	6.8	12	.1	18-----	11	430	3.6	2.4	0
4-----	60	42	6.8	11	.1	19-----	9.2	250	2.7	2.0	0
5-----	350	43	6.8	10	.1	20-----	6.8	150	2.7	1.6	0
6-----	332	35	5.6	7.6	.1	21-----	6.0	114	2.4	1.3	0
7-----	314	30	4.7	9.2	.1	22-----	5.2	88	3.9	1.1	0
8-----	296	38	4.3	11	0	23-----	5.2	56	3.6	.5	0
9-----	205	88	3.6	8.4	0	24-----	5.2	46	3.9	.4	0
10-----	126	98	3.0	5.6	0	25-----	5.2	28	29	.4	0
11-----	68	370	2.2	3.9	0	26-----	3.9	24	26	.5	0
12-----	46	680	3.6	4.7	0	27-----	4.7	19	24	.6	0
13-----	39	1,760	4.3	9.2	0	28-----	3.6	16	22	.5	0
14-----	32	1,580	12	11	0	29-----	4.7	15	22	.3	0
15-----	27	1,140	3.9	6.0	0	30-----	4.3	12	35	.1	0
						31-----		10	-----	.2	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April-----	350	1.0	67.7	4,030
May-----	1,760	8.4	278	17,100
June-----	35	2.2	9.33	555
July-----	30	.1	5.58	343
August-----	.1	0	.023	1
The year-----	1,760	0	60.6	22,000

NOTE.—No flow during months for which no discharge is shown.

SOUTH FORK OF TWO RIVERS AT BRONSON, MINN.

LOCATION.—Chain gage in SW. $\frac{1}{4}$ sec. 30, T. 161 N., R. 46 W., one-fourth mile west of village of Bronson.

RECORDS AVAILABLE.—September, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,820 second-feet May 15 (gage height, 8.90 feet); minimum, 2.4 second-feet Sept. 29, 30.

1928-1930: Maximum and minimum discharges, those of 1930.

REMARKS.—Records good except those for extremely low stages, which are fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1.....	4.4	6.4	2	24	31	47	4.4	3.6
2.....	4.4	7.2	2	31	28	40	4.0	3.6
3.....	4.8	7.2	79	102	27	31	4.0	3.6
4.....	4.8	7.2	81	96	23	28	4.0	3.6
5.....	5.2	5.8	362	86	20	25	3.8	3.6
6.....	5.6	5.8	536	64	18	23	3.8	3.6
7.....	5.6	5.4	614	66	17	18	3.6	3.6
8.....	5.6	5.4	510	74	16	16	3.6	3.6
9.....	5.2	5.4	536	116	15	14	3.6	3.6
10.....	6.0	5.4	410	151	14	16	3.6	3.6
11.....	6.8	5.4	300	260	13	15	3.6	3.8
12.....	7.6	5.0	242	940	13	17	3.6	4.0
13.....	7.6	5.0	215	1,240	16	15	3.6	4.4
14.....	6.8	5.0	174	1,560	15	12	3.6	4.4
15.....	6.4	5.4	151	1,820	16	14	3.6	3.9
16.....	5.8	5.4	116	1,620	16	13	3.6	3.9
17.....	5.8	5.4	89	1,420	15	12	3.6	3.8
18.....	5.4	4.6	69	1,170	15	11	3.6	3.6
19.....	5.0	4.0	47	790	14	9.0	3.6	3.4
20.....	5.0	-----	38	536	13	8.4	3.6	3.2
21.....	5.0	-----	33	410	12	7.2	3.6	3.0
22.....	5.0	-----	30	280	13	6.6	3.6	3.0
23.....	5.0	-----	25	190	15	6.0	3.6	2.8
24.....	5.0	-----	22	144	13	5.6	3.6	2.8
25.....	5.0	-----	18	116	12	6.0	3.6	2.6
26.....	5.0	-----	18	89	25	5.6	3.6	2.6
27.....	5.0	-----	17	76	45	5.6	4.0	2.6
28.....	5.0	-----	16	59	33	5.2	4.4	2.6
29.....	5.4	-----	17	50	40	5.2	3.8	2.4
30.....	5.4	-----	19	42	45	4.8	3.6	2.4
31.....	5.8	-----	-----	35	-----	4.4	3.6	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	7.6	4.4	5.50	338
November.....	7.2	4.0	5.60	211
April.....	614	-----	160	9,520
May.....	1,820	24	441	27,100
June.....	45	12	20.3	1,210
July.....	47	4.4	14.4	885
August.....	4.4	3.6	3.72	229
September.....	4.4	2.4	3.37	201

TWO RIVERS AT HALLOCK, MINN.¹

LOCATION.—Chain gage in NE. ¼ sec. 13, T. 161 N., R. 49 W., half a mile below mouth of Middle Fork and half a mile east of Hallock.

DRAINAGE AREA.—776 square miles.

RECORDS AVAILABLE.—April, 1911, to September, 1914; April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,840 second-feet May 16 (gage height, 17.44 feet); minimum, probably less than 0.1 second-foot during estimated period Sept. 20–30.

1911–1914, 1929–30: Maximum and minimum discharges, those of 1930.

REMARKS.—Records good except those for September, which are poor.

Daily and monthly discharge, in second-feet, 1930

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1.	-----	6	60	38	3.5	0.7	16.	180	1,830	24	13	0.8	6.0
2.	-----	16	52	38	3.0	.7	17.	148	1,830	24	13	.8	4.6
3.	-----	37	48	38	2.7	.6	18.	116	1,560	24	13	.8	2.0
4.	-----	72	42	37	2.5	.6	19.	92	1,280	24	12	.7	1.0
5.	-----	92	38	31	2.1	.6	20.	72	970	24	11	.7	
6.	-----	80	35	26	1.7	.6	21.	60	692	20	10	.7	
7.	-----	68	32	24	1.5	.6	22.	45	462	17	9.2	.7	
8.	-----	72	31	23	1.4	.6	23.	39	340	16	8.2	.7	
9.	808	68	31	20	1.4	.6	24.	34	244	14	6.8	.7	
10.	844	100	29	18	1.1	.6	25.	32	196	12	6.5	.7	.1
11.	637	180	28	15	1.1	.6	26.	29	156	14	6.1	.7	
12.	412	320	28	21	.9	.6	27.	29	132	42	5.8	.7	
13.	302	808	28	18	.8	.6	28.	26	108	48	5.3	.7	
14.	257	1,320	28	16	.8	.6	29.	24	92	45	4.7	.7	
15.	221	1,640	25	14	.8	4.6	30.	13	84	42	4.3	.7	
							31.	-----	72	-----	3.8	.7	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April.	844	13	201	8,770
May.	1,830	6	482	29,600
June.	60	12	30.8	1,830
July.	38	3.8	16.4	1,010
August.	3.5	.7	1.16	73
September.	6.0	-----	.95	55
The period.				41,300

¹ Published 1911–1914 as South Fork of Two Rivers at Hallock, Minn.

SURFACE WATER SUPPLY, 1930, PART 5

NORTH FORK OF TWO RIVERS NEAR LANCASTER, MINN.

LOCATION.—Staff gage in NW. $\frac{1}{4}$ sec. 6, T. 162 N., R. 47 W., 8 miles northeast of Lancaster.

RECORDS AVAILABLE.—April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 212 second-feet May 12 (gage height, 3.00 feet); no flow for several months.

1929-30: Maximum discharge, that of May 12, 1930; no flow for several months during period of record.

REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Apr.	May	June	July	Day	Apr.	May	June	July
1	0	0.6	0.6	0.5	16	3.8	71	0.4	0
2	0	.8	.4		17	2.0	58	.3	0
3	0	1.1	.3		18	1.7	55	.2	0
4	0	1.0	.3		19	1.4	52	.2	0
5	10	.9	.2		20	1.1	49	.2	0
6	15	.8	.2	0	21	.9	37	.1	0
7	19	2.2	.1	0	22	.6	19	.1	0
8	24	3.7	.1	0	23	.4	16	.2	0
9	42	5.2	.1	0	24	.4	12	.2	0
10	29	7.0	.1	0	25	.3	8.5	.2	0
11	16	109	.1	0	26	.3	5.0	.1	0
12	14	212	1.0	0	27	.3	1.5	.2	0
13	11	184	.7	0	28	.3	1.4	.3	0
14	9.0	152	.6	0	29	.3	1.1	.4	0
15	6.0	111	.5	0	30	.3	.9	.6	0
					31		.8		0
Month					Maximum	Minimum	Mean	Run-off in acre-feet	
April					42		6.97	415	
May					212	0.6	38.0	2,340	
June					1.0	.1	.30	18	
July							.081	5	
The year					212	0	3.84	2,780	

* Estimated or interpolated.

NOTE.—No flow during months for which no discharge is given.

STATE DITCH NO. 85 NEAR LANCASTER, MINN.

LOCATION.—Staff gage in southwest corner sec. 6, T. 162 N., R. 46 W., 7 miles northeast of Lancaster.

RECORDS AVAILABLE.—April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 160 second-feet May 14 (gage height, 4.23 feet); no flow for several months.

1929-30: Maximum discharge, that of May 14, 1913; no flow for several months during period of record.

REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Apr.	May	June	July	Day	Apr.	May	June	July
1		* 4.0	* 10		16	69	148	* 2.5	
2		* 12	6.0		17	49	154	2.6	
3		12	* 5.2		18	37	* 157	2.2	
4		* 10	* 4.5		19	24	160	2.0	
5		* 9.0	3.7		20	* 18	148	* 1.8	
6	* 1.0	6.7	* 3.5		21	* 11	136	1.5	
7	* 5.0	* 12	3.3		22	4.8	100	* 1.6	
8	80	* 17	* 3.0	5.0	23	3.9	* 88	* 1.7	
9	100	* 22	2.6		24	* 2.8	* 76	1.8	
10	112	27	* 2.6		25	1.7	* 63	2.2	
11	79	* 38	* 2.6		26	* 1.7	51	2.0	
12	* 77	* 150	* 10		27	* 1.8	39	* 2.0	
13	* 75	* 150	* 4.0		28	* 1.9	31	* 6.0	
14	* 73	* 149	2.4		29	* 2.0	23	* 10	
15	* 71	* 148	* 2.5		30	2.0	* 19	24	
					31		* 14		
Month					Maximum	Minimum	Mean	Run-off in acre-feet	
April					112	0	30.1	1,790	
May					160	4.0	71.7	4,410	
June					24	1.5	4.33	258	
July							2.70	166	
The year					160	0	9.15	6,620	

* Estimated or interpolated.

NOTE.—No flow during months for which no discharge is shown.

PEMBINA RIVER NEAR MANITOU, MANITOBA

LOCATION.—Chain gage on bridge near Lea's farm 9 miles south of Manitou.

DRAINAGE AREA.—2,340 square miles.

RECORDS AVAILABLE.—October, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 581 second-feet Apr. 10; minimum, 1.2 second-feet Oct. 16 and Nov. 13.

REMARKS.—Records furnished by Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1				437		41.0		
2	2.5	1.8			204			14.5
3						41.0	18.1	
4		2.1		405	187			
5	4.0					38.3		
6						34.5		13.7
7	4.0			377	169		16.8	
8		1.8						13.7
9	4.0					31.9		
10		1.8	581	388	160			
11			560	366			16.8	
12	5.0		550			45.4		14.5
13		1.2	546		172			
14	4.0		539	339		34.5		
15			525		160		15.9	16.8
16	1.2	1.5	522	333				
17			512	306	117	29.2	16.8	16.8
18	2.5		512		114	24.0		19.0
19			509					
20	2.5			300	77			
21				290			14.5	20.0
22			486		66			
23				295			18.1	
24	3.2					16.8		
25			466	267	53			21.5
26	2.5		457			20.0		22.5
27					49.4			
28			434	240			16.8	
29	2.5				46.5			24.0
30				218		26.6		
31								

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5.0	1.2	3.2	197
April			* 524	31,200
May	437	218	329	20,200
June	204	46.5	121	7,200
July	45.4	16.8	31.9	1,960
August	18.1	14.5	16.7	1,030
September	24.0	13.7	17.9	1,070

* Estimated.

PEMBINA RIVER AT NECHE, N. DAK.

LOCATION.—Staff gage in sec. 36, T. 164 N., R. 54 W., two-thirds mile north of Neche.

DRAINAGE AREA.—2,960 square miles.

RECORDS AVAILABLE.—May, 1903, to September, 1915; April, 1919, to September, 1930.

EXTREMES.—Maximum discharge during year, 2,900 second-feet Apr. 8 (gage height, 19.0 feet); minimum probably occurred during winter.

1903-1915; 1919-1930: Maximum discharge, 3,870 second-feet May 2, 1904 (gage height, 20.9 feet); minimum, 1.0 second-foot several days in September, 1911, and July, 1929.

REMARKS.—Records fair. Stage-discharge relation affected by ice Nov. 7-12, 19-23, Apr. 1-23. Discharge estimated Nov. 24-30, Aug. 1-5, 7-17.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	8.5	47	1	510	294	294	30	2.5
2	8.5	47	36	490	276	330		2.5
3	5.5	47	30	490	276	294		2.5
4	5.5	47	312	470	258	240		2.5
5	2.5	47	918	470	258	168		2.5
6	2.5	63	1,950	470	258	168	36	8.5
7	2.5	63	2,740	490	258	168	30	2.5
8	5.5	63	2,900	490	258	132		2.5
9	5.5	63	2,370	510	258	132		2.5
10	8.5	63	1,930	510	240	150		2.5
11	8.5	63	1,750	530	240	114	20	2.5
12	8.5	63	1,490	530	240	97		5.5
13	8.5	63	1,090	530	222	63		8.5
14	12	63	710	510	222	36		8.5
15	16	63	730	510	222	25		11
16	16	63	710	490	204	16	10	11
17	16	63	690	490	204	12		14
18	20	63	644	470	204	8.5		14
19	20	47	630	470	186	5.5		14
20	25	36	610	470	186	5.5	5.5	16
21	36	36	590	470	168	8.5	5.5	16
22	36	30	590	450	168	12	5.5	18
23	30	30	590	407	168	12	5.5	20
24	30		590	450	180	16	5.5	20
25	30		570	450	168	20	5.5	20
26	30		550	430	168	20	2.5	22
27	36	20	550	390	168	25	2.5	25
28	36		530	350	168	25	2.5	25
29	36		530	312	168	20	2.5	28
30	36		510	294	186	20	2.5	28
31	47			294		20	2.5	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	47	25	19.0	1,170
November	63		45.8	2,730
April	2,900	1	928	55,200
May	530	294	458	28,200
June	294	168	216	12,900
July	330	5.5	85.7	5,270
August		2.5	15.9	978
September	28	2.5	11.9	708

ROSEAU RIVER AT MALUNG, MINN.

LOCATION.—Staff gage in sec. 18, T. 161 N., R. 39 W., half a mile north of Malung post office.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 316 second-feet Apr. 5 (gage height, 9.68 feet, affected by ice); minimum, 0.4 second-foot Sept. 24, 25 (gage height, 1.08 feet).

1928-1930: Maximum discharge, 348 second-feet Apr. 6, 1929 (gage height, 7.06 feet); minimum, 0.1 second-foot Aug. 31, 1929 (gage height, 1.02 feet).

REMARKS.—Records good except those for periods affected by ice, Nov. 21-30, Apr. 1-16, which are fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1.....	3.3	11	5	24	42	72	11	0.8
2.....	3.3	11	5	32	36	75	9.5	.9
3.....	3.3	11	6	58	32	80	8.2	1.1
4.....	3.6	11	171	58	30	80	7.7	.6
5.....	3.6	11	316	55	28	65	7.3	.6
6.....	3.9	11	284	52	27	60	6.9	.6
7.....	3.9	11	228	50	26	58	6.5	.6
8.....	3.9	11	178	52	22	52	3.9	.6
9.....	3.9	11	120	75	22	48	3.6	.6
10.....	4.3	11	102	80	20	40	3.6	.8
11.....	4.3	11	90	120	19	40	3.6	1.2
12.....	4.3	11	85	178	18	40	3.3	1.4
13.....	4.3	12	80	192	22	19	3.3	1.4
14.....	4.6	12	65	206	21	25	3.0	1.4
15.....	5.3	13	65	185	20	20	2.7	1.2
16.....	5.7	13	75	164	19	18	2.4	1.2
17.....	5.7	12	58	144	18	12	2.2	1.4
18.....	6.1	12	42	132	17	5.3	1.9	1.4
19.....	6.1	12	36	120	15	4.3	1.7	1.2
20.....	6.1	11	32	108	16	36	1.7	.9
21.....	5.3	8.6	30	96	19	32	1.4	.9
22.....	5.3	6.5	28	85	16	28	1.2	.8
23.....	4.6	4.6	27	80	12	27	1.2	.8
24.....	3.9	3.0	25	75	10	20	1.1	.4
25.....	3.9	2.2	22	65	11	18	.9	.4
26.....	5.3	2.2	21	62	13	15	.9	.5
27.....	5.3	1.7	21	55	14	13	.9	.5
28.....	5.7	1.7	21	55	20	14	.9	.6
29.....	6.1	1.7	23	50	65	15	.8	.9
30.....	7.7	1.7	22	45	70	12	.6	.6
31.....	10			42		11	.6	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	10	3.3	4.92	303
November.....	13	1.7	8.76	521
April.....	316	5	76.1	4,550
May.....	206	24	90.2	5,550
June.....	70	10	24.0	1,430
July.....	80	4.3	34.0	2,090
August.....	11	.6	3.37	207
September.....	1.4	.4	.88	52

ROSEAU RIVER AT ROSS, MINN.

LOCATION.—Water-stage recorder in SW. $\frac{1}{4}$ sec. 27, T. 163 N., R. 41 W., one-fourth mile north of Ross. Zero of gage 1,018.44 feet above mean sea level.

DRAINAGE AREA.—1,030 square miles.

RECORDS AVAILABLE.—July, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,460 second-feet May 17 (gage height, 10.74 feet); minimum, 6 second-feet Jan. 23, 24.

1928-1930: Maximum discharge, that of May 17, 1930; minimum, that of Jan. 23, 24, 1930.

REMARKS.—Record excellent except those for periods affected by ice, Nov. 18 to Apr. 9, and aquatic growth, July 1 to Sept. 30, which are good.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	45	14	12		11	19	267	475	772	46	11
2	20	61	14	12		11	20	501	426	812	41	11
3	20	68	14	13		11	22	608	354	792	36	11
4	20	65	13	13		11	33	622	277	792	33	10
5	20	60	13	14		11	366	608	234	752	30	9
6	20	55	14	14		11	772	594	211	716	27	9
7	22	50	14	12		11	872	580	194	650	25	9
8	23	54	12	13		12	952	594	178	580	23	9
9	21	58	12	13		12	1,010	650	162	527	21	8
10	22	46	12	13	7	12	1,110	698	142	450	19	9
11	27	42	13	12		12	1,060	872	126	378	17	9
12	35	40	14	12		13	1,010	1,010	114	390	17	11
13	40	38	13	11		14	972	1,140	134	501	16	13
14	42	46	13	10		14	892	1,250	170	527	15	15
15	37	40	13	8		14	832	1,370	190	501	14	15
16	34	40	14	8		14	734	1,430	206	426	14	15
17	33	33	14	8		14	650	1,460	216	331	13	14
18	31	34	14	7		15	594	1,430	198	257	12	13
19	30	34	14	8		15	527	1,370	174	211	11	13
20	31	31	14	8		16	462	1,310	154	182	11	12
21	31	28	14	7	7	16	426	1,250	134	170	10	11
22	29	23	13	7	8	17	378	1,190	126	178	10	10
23	27	21	13	6	8	18	309	1,110	122	178	13	10
24	26	17	13	6	9	19	257	1,060	126	150	13	10
25	26	17	13	7	10	19	229	992	126	126	12	9
26	26	16	13	7	10	18	202	932	142	106	11	10
27	25	16	14	7	10	18	186	852	174	96	11	9
28	23	16	14	7	10	17	178	752	194	83	11	9
29	24	15	14	7		17	178	682	414	73	11	9
30	26	14	12	7		18	194	608	682	62	11	9
31	29		12	7		18		540		53	10	
Month	Maximum					Minimum			Mean		Run-off in acre-feet	
October	42					20			27.1		1,670	
November	68					14			37.4		2,230	
December	14					12			13.3		818	
January	14					6			9.55		587	
February	10								7.57		420	
March	19					11			14.5		892	
April	1,110					19			515		30,600	
May	1,460					267			914		56,200	
June	683					114			219		13,000	
July	812					53			381		23,400	
August	46					10			18.2		1,120	
September	15					8			10.7		637	
The year	1,460					6			182		132,000	

ROSEAU RIVER AT CARIBOU, MINN.

LOCATION.—Chain gage in sec. 34, T. 164 N., R. 45 W., at highway bridge in Caribou, 1 mile south of international boundary.

DRAINAGE AREA.—1,650 square miles.

RECORDS AVAILABLE.—April to October, 1917; April, 1920, to September, 1930 (discontinued).

EXTREMES.—Maximum discharge during year, 1,380 second-feet May 19-21 (gage height, 9.2 feet); minimum discharge occurred during winter; minimum gage height, 3.25 feet Sept. 26-30.

1917, 1920-1930: Maximum discharge, 3,160 second-feet May 24, 1927 (gage height, 12.8 feet); minimum, 4 second-feet Sept. 10-12, 29, 30, 1917 (gage height, 3.15 feet).

REMARKS.—Records good except those for periods of ice effect, Nov. 15 to Apr. 10, which are fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	22	33	13				20	217	656	740	69	9
2.....	22	38						308	524	906	56	9
3.....	22	50						454	476	872	56	9
4.....	17	68						600	412	840	44	9
5.....	17	72					133	628	324	808	44	9
6.....	17	33					153	656	278	776	38	9
7.....	17	88					524	686	232	761	38	9
8.....	22	85					600	686	202	746	38	9
9.....	28	68					574	656	195	716	32	9
10.....	28	50					940	1,010	174	628	32	9
11.....	28	41	10		8	15	1,260	1,080	146	548	32	9
12.....	28	62					1,260	1,180	140	524	32	11
13.....	33	44					1,260	1,220	133	524	26	11
14.....	33	54					1,220	1,220	146	524	26	11
15.....	38	52					1,180	1,220	181	524	20	11
16.....	38	50					1,110	1,260	202	524	20	11
17.....	33	48					1,010	1,300	217	454	20	11
18.....	33	28					808	1,340	217	356	16	11
19.....	33	28					716	1,380	210	292	16	11
20.....	33	28					600	1,380	187	247	16	11
21.....	28	25	12				500	1,380	163	202	12	11
22.....	28	22					454	1,340	140	181	12	11
23.....	28	22					524	1,300	126	188	12	11
24.....	28	22					412	1,300	126	188	12	11
25.....	28	22					277	1,300	126	195	12	11
26.....	28	12					412	1,300	133	133	12	9
27.....	28						217	1,260	140	107	12	9
28.....	28						195	1,180	181	100	12	9
29.....	28	12					188	1,040	356	94	12	9
30.....	28						195	872	574	82	12	9
31.....	28							746		82	12	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	38	17	27.4	1,680
November.....	88		39.8	2,370
December.....			12.5	769
January.....			10.0	615
February.....			8.0	444
March.....			15.0	922
April.....	1,260		560	33,300
May.....	1,380	217	1,020	62,700
June.....	656	126	244	14,500
July.....	906	82	447	27,500
August.....	69	12	25.9	1,590
September.....	11	9	9.93	591
The year.....	1,380		203	147,000

ROSEAU RIVER BELOW CUT-OFF DITCH, NEAR CARIBOU, MINN.

LOCATION.—Water-stage recorder in SW. $\frac{1}{4}$ sec. 34, T. 164 N., R. 45 W., 1 mile west of Caribou and about 200 yards below mouth of State Ditch No. 51, locally known as Caribou cut-off ditch.

RECORDS AVAILABLE.—April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,380 second-feet May 20, 21 (gage height, 6.9 feet); minimum, 6 second-feet Sept. 25 (gage height, 1.40 feet). 1929-30: Maximum discharge, that of May 21, 1930; minimum, that of Sept. 25, 1930.

REMARKS.—Records excellent except those for period affected by ice, Nov. 18 to Apr. 10, and for period affected by aquatic growth, Aug. 23 to Sept. 30, which are fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	33	13					221	658	770	68	12
2	22	34	13					307	544	860	59	10
3	2	47	13				20	484	4.6	890	53	10
4	23	64	13					606	424	920	49	10
5	23	64	13				130	632	340	920	43	10
6												
7	25	53	13				152	658	281	890	40	10
8	24	43	13				520	658	241	860	36	10
9	25	47	13				606	658	210	800	34	10
10	26	63	13				606	658	188	710	32	9
11	28	63	13				920	710	168	632	29	9
12												
13	27	57	13				1,300	950	146	568	27	10
14	28	35	13				1,300	1,180	134	508	26	12
15	31	34	13				1,300	1,220	128	484	24	12
16	32	46	13				1,250	1,220	137	520	23	12
17	35	32			8	15	1,220	1,260	172	556	22	14
18				10								
19	36	49					1,140	1,260	200	544	21	16
20	32	42					980	1,300	217	496	21	16
21	30	34					860	1,340	226	412	20	17
22	30	18					740	1,340	210	331	18	16
23	29	29					632	1,380	184	263	18	12
24												
25	28	24					556	1,380	162	215	18	10
26	29	22					496	1,340	141	192	18	12
27	29	20	12				436	1,300	128	194	18	12
28	27	16					376	1,300	126	188	18	10
29	27	14					309	1,300	128	168	16	6
30												
31	27	13					261	1,300	128	141	16	7
	26	12					223	1,220	134	119	18	9
	27	12					200	1,140	176	106	16	8
	27	12					192	1,020	388	93	14	8
	25	12					192	890	632	85	13	8
	29							770		76	13	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	36	22	27.5	1,690
November	64	12	34.8	2,070
December			12.5	769
January			10	615
February			8	444
March			15	922
April	1,300		566	33,700
May	1,380	221	1,000	61,500
June	658	126	243	14,800
July	920	76	468	28,800
August	68	13	27.1	1,670
September	17	6	10.9	649
The year	1,380	6	204	148,000

SOUTH FORK OF ROSEAU RIVER NEAR MALUNG, MINN.

LOCATION.—Staff gage in center of sec. 7, T. 161 N., R. 39 W., 1 mile northwest of Malung.

DRAINAGE AREA.—265 square miles.

RECORDS AVAILABLE.—May, 1911, to September, 1914; July, 1923, to September, 1930.

EXTREMES.—Maximum discharge during year, 475 second-feet Apr. 5 (gage height, 10.30 feet, affected by ice); no flow at various times 1911-1914, 1928-1930: Maximum discharge, 1,040 second-feet Oct. 1, 1912 (gage height, 10.3 feet, present datum); no flow occasionally.

REMARKS.—Records good. Stage-discharge relation affected by ice Nov. 17-30, Apr. 3-10, and by aquatic growth July 2 to Aug. 12. Discharge estimated Apr. 1, 2.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Apr.	May	June	July	Aug.
1.....	0	0.3	2.0	10	7.2	16	0.8
2.....	0	.3	2.0	12	4.5	13	.7
3.....	0	.3	2.0	13	4.5	7.8	.5
4.....	0	.3	292	20	4.5	3.2	.4
5.....	0	.3	391	22	4.5	2.9	.3
6.....	0	.3	352	20	4.5	4.5	.2
7.....	0	.3	328	16	3.5	4.5	.2
8.....	0	.3	268	18	3.5	3.5	.2
9.....	0	.3	170	21	3.2	2.9	.2
10.....	0	.3	88	23	3.2	2.9	.2
11.....	0	.3	63	78	2.9	2.9	.2
12.....	0	.3	36	268	2.9	7.2	.2
13.....	0	.4	26	352	2.2	9.6	.2
14.....	0	.4	26	377	3.5	9.0	.2
15.....	0	.5	18	244	3.5	13	.1
16.....	0	.5	13	170	3.5	10	.1
17.....	0	.5	12	54	3.5	6.0	0
18.....	0	.5	11	54	4.0	4.0	0
19.....	0	.5	10	49	4.5	3.2	0
20.....	0	.5	9.6	44	6.0	2.9	0
21.....	0	.5	7.2	32	6.0	2.5	0
22.....	0	.5	6.6	34	8.5	1.9	0
23.....	0	.5	6.0	30	11	1.7	0
24.....	0	.5	5.0	20	10	1.4	0
25.....	0	.5	4.5	17	10	.9	0
26.....	0	.5	4.0	13	13	.8	0
27.....	0	.5	4.0	11	13	.7	0
28.....	0	.4	3.5	10	14	.9	0
29.....	.1	.4	4.0	6.0	16	.7	0
30.....	.2	.4	5.0	9.0	18	1.9	0
31.....	.3	-----	-----	7.2	-----	1.5	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	0.3	0	0.02	1.2
November.....	.5	.3	.40	24
April.....	391	2	72.3	4,300
May.....	377	6	66.3	4,080
June.....	18	2.2	6.64	395
July.....	16	.7	4.64	285
August.....	.8	0	.15	9.2

NOTE.—No flow during September.

MUD CREEK NEAR SPRAGUE, MANITOBA

LOCATION.—Water-stage recorder in NE. $\frac{1}{4}$ sec. 34, T. 164 N., R. 38 W., $\frac{3}{4}$ miles south of Sprague, Manitoba, 14 miles northeast of Roseru, Minn., and half a mile south of international boundary.

DRAINAGE AREA.—162 square miles.

RECORDS AVAILABLE.—September, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,040 second-feet May 13 (gage height, 12.34 feet); minimum, 0.6 second-foot Sept. 9 (gage height, 0.68 foot).

1928-1930: Maximum discharge, that of May 13, 1930; minimum, 0.4 second-foot Sept. 20, 1929 (gage height, 0.64 foot).

REMARKS.—Records excellent except those for August, which are fair. Stage-discharge relation affected by ice Nov. 19-26, Apr. 3-10. Discharge estimated Nov. 27-30, Apr. 1-2; interpolated Aug. 5-28.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1.	2.3	6.7	0	98	110	946	19	2.2
2.	2.2	11.0	0	308	98	830	18	2.1
3.	2.1	11.8	0	319	84	698	17	1.8
4.	2.0	14.2	12	276	76	580	16	1.6
5.	2.7	8.9	68	266	71	448	15	1.4
6.	5.5	8.8	110	246	68	319	15	1.4
7.	2.7	11.0	118	229	67	237	14	1.2
8.	2.2	10.2	138	276	62	190	14	1.1
9.	2.0	9.4	165	330	54	155	13	1.0
10.	2.5	6.7	134	366	46	122	13	1.2
11.	3.1	6.6	126	565	40	94	12	1.4
12.	4.9	8.1	126	806	40	175	12	1.5
13.	8.1	9.9	130	1,020	62	276	11	1.8
14.	3.6	7.3	126	946	84	237	11	2.0
15.	3.4	7.5	122	760	106	190	10	1.6
16.	3.2	7.8	114	628	126	160	10	1.8
17.	3.1	8.1	110	535	118	122	9.0	2.0
18.	2.9	7.2	106	448	96	90	9.0	2.0
19.	2.9	5.0	94	378	76	72	8.0	1.9
20.	2.9	4.1	86	354	64	62	8.0	1.7
21.	2.8	2.7	84	330	54	71	7.0	1.4
22.	2.8	2.0	78	286	48	100	7.0	1.1
23.	2.7	1.5	68	237	46	76	6.0	1.2
24.	2.6	1.2	60	207	47	59	6.0	1.2
25.	2.6	1.2	56	190	44	48	5.0	.9
26.	2.5	1.2	50	170	74	44	5.0	1.2
27.	2.5	1.0	48	160	76	37	4.0	1.6
28.	2.7	1.0	48	155	62	33	3.0	1.4
29.	2.6	1.0	50	142	237	29	1.9	1.7
30.	2.3	1.0	56	134	760	25	1.7	1.6
31.	3.2			122		22	1.8	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	8.1	2.0	3.02	186
November	14.2	1.0	6.14	365
April	165	0	82.8	4,930
May	1,020	98	364	22,400
June	760	40	99.9	5,940
July	946	22	211	13,000
August	19	1.7	9.75	600
September	2.2	.9	1.53	91

PINE CREEK NEAR PINE CREEK, MINN.

LOCATION.—Water-stage recorder in NW. $\frac{1}{4}$ sec. 35, T. 164 N., R. 41 W., 2 miles northeast of Pine Creek post office and half a mile south of international boundary. Zero of gage 1,046.27 feet above mean sea level.

DRAINAGE AREA.—76 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 449 second-feet May 12, 13, 1930 (gage height, 8.83 feet); minimum, 3.6 second-feet Aug. 17, 18, 20, 1930 (gage height, 1.20 feet).

1928-1930: Maximum discharge, that of May 12, 13, 1930; minimum, that of Aug. 17, 18, 20, 1930.

REMARKS.—Records excellent. Stage-discharge relation affected by ice Nov. 20-27, Apr. 2-8. Discharge estimated Nov. 28-30, Apr. 1.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	13	28	5.0	63	19	185	7.5	5.3
2	12	35	6.0	108	18	169	7.5	5.3
3	12	31	6.0	118	16	165	7.5	4.6
4	11	27	31	114	16	146	7.0	4.8
5	11	24	104	97	20	111	6.3	4.8
6	12	22	173	80	20	76	6.3	5.0
7	15	23	265	80	17	50	5.8	5.0
8	14	34	284	111	15	40	5.3	5.0
9	13	24	217	132	13	31	4.8	5.3
10	14	19	161	142	12	25	4.8	5.3
11	20	18	132	224	12	22	4.8	6.3
12	23	18	118	365	14	104	5.0	8.0
13	22	29	114	449	32	142	5.0	13
14	19	24	97	284	40	146	4.8	12
15	17	22	83	181	38	104	4.8	10
16	16	20	71	139	31	58	4.6	9.2
17	14	23	63	104	26	35	4.3	9.0
18	14	18	57	85	21	27	4.3	8.5
19	14	20	49	71	18	23	4.1	7.6
20	14	22	46	71	17	20	4.1	6.8
21	13	20	47	66	16	33	4.3	6.5
22	13	16	46	57	18	34	4.8	6.5
23	12	16	42	46	19	23	5.3	6.2
24	12	13	40	40	20	18	4.8	5.8
25	12	13	37	34	19	15	4.6	9.0
26	12	10	34	31	29	15	4.6	5.3
27	12	10	32	31	30	13	4.6	6.2
28	12	9.0	30	30	48	11	5.0	6.5
29	12	9.0	33	26	417	10	5.0	6.8
30	13	9.0	37	23	284	9	4.8	6.8
31	14			21		8	4.8	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	23	11	14.1	867
November	35	9	20.2	1,200
April	284	5	82.0	4,880
May	449	21	110	6,760
June	417	12	43.8	2,610
July	185	8	60.3	3,710
August	7.5	4.1	5.20	320
September	13	4.6	6.88	408

BADGER CREEK NEAR BADGER, MINN.

LOCATION.—Staff gage in NE. $\frac{1}{4}$ sec. 2, T. 161 N., R. 42 W., 1 mile northwest of Badger. Zero of gage 1,047.5 feet above mean sea level.

RECORDS AVAILABLE.—April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 146 second-feet May 11, 1930 (gage height, 4.88 feet); no flow for large part of year.

1929-30: Maximum discharge, that of May 11, 1930; no flow during greater part of each year.

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1929-30

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1.....	0	2.2	0.2	11.....	13	146	0	21.....	0.3	6.5	0
2.....	0	9.4	.1	12.....	7.8	116	0	22.....	.3	4.4	.1
3.....	0	5.7	.1	13.....	4.9	122	.1	23.....	.2	3.0	.2
4.....	0	4.4	.2	14.....	3.7	92	.1	24.....	.2	2.2	.1
5.....	10	2.6	.1	15.....	1.4	72	.1	25.....	.1	2.0	.1
6.....	67	2.0	.1	16.....	1.2	51	.1	26.....	.1	1.2	0
7.....	63	3.0	.1	17.....	.9	37	0	27.....	.1	1.0	0
8.....	42	4.6	0	18.....	.6	28	0	28.....	.1	.8	0
9.....	37	6.8	0	19.....	.5	18	0	29.....	.2	.5	.2
10.....	22	10	0	20.....	.4	13	0	30.....	.2	.4	.2
								31.....		.3	
Month				Maximum		Minimum		Mean		Run-off in acre-feet	
April.....				67		0.1		8.91		530	
May.....				146		.3		24.8		1,530	
June.....				.2		0		.07		4	
The year.....				146		0				2,060	

NOTE.—No flow during months for which no discharge is shown.

SOURIS (MOUSE) RIVER AT MINOT, N. DAK.

LOCATION.—At Ann Street footbridge, northeast of Great Northern Railway roundhouse at Minot, Ward County.

DRAINAGE AREA.—10,270 square miles.

RECORDS AVAILABLE.—May, 1903, to March, 1924; April, 1927, to September, 1928; October, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 920 second-feet Apr. 14, 15, 16 (gage height, 9.40 feet); no flow at times during February.

1903-1924, 1927-28, 1929-30: Maximum discharge, 12,000 second-feet Apr. 20, 1904 (gage height, 21.9 feet); no flow at times during February, 1930.

REMARKS.—Records good except those for estimated periods, Dec. 1 to Feb. 18, May 20-22, July 1 to Sept. 19, which are poor. Stage-discharge relation affected by ice Nov. 6 to Apr. 4.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4	8			0	21	400	202	57			
2	4	8			0	21	436	202	57			
3	4	9			0	21	472	187	52			
4	4	10			0	26	620	172	52			
5	4	12			0	26	760	157	48			
6	4	12			0	37	760	150	48			
7	4	12			0	50	720	143	48			0.2
8	3	12			0	134	700	129	48			
9	3	9			0	188	680	115	48			
10	4	9			0	261	720	108	48			
11	4	6			0	295	760	115	44			
12	4	6			0	329	800	129	44			
13	4	4			0	329	860	143	44			
14	4	4			0	278	920	143	40			
15	4	4			0	295	920	129	40			
16	4	4	1.0	0.5	0	295	920	122	40	18	0.5	
17	4	4			0	220	880	115	40			.1
18	4	3			0	172	800	115	44			
19	4	2			180	127	640	115	44			.1
20	4	2			188	107	520	105	44			
21	4	1			228	107	412	96	44			.1
22	4	1			295	142	376	87	40			.1
23	5	1			196	164	340	77	40			.1
24	5	1			228	164	304	77	40			.1
25	5	1			84	172	286	67	40			.1
26	5	1			37	212	268	67	36			.1
27	5	1			31	261	250	67	36			.1
28	6	1			26	164	234	67	36			.1
29	6	1				364	218	62	36			.1
30	6	1				364	202	62	36			.1
31	6					382		57				

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	6	3	4.4	271
November	12	1	5.0	298
December			1.0	61.5
January			.5	30.7
February	295	0	53.3	2,960
March	382	21	185	11,400
April	920	202	573	34,100
May	202	57	116	7,130
June	57	36	43.8	2,610
July			18	1,110
August			.5	30.7
September			.15	8.9
The year	920	0	82.8	60,000

SOURIS (MOUSE) RIVER NEAR WESTHOPE, N. DAK.

LOCATION.—Chain gage in T. 163 N., R. 79 W., $2\frac{1}{2}$ miles east of Westhope. Zero of gage 1,404.72 feet above mean sea level.

RECORDS AVAILABLE.—July, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,130 second-feet Mar. 31 to Apr. 2 (gage height, 6.98 feet); minimum, 2 second-feet several days in August and September (gage height, 0.34 foot).

1929-30: Maximum and minimum discharges, those of 1930.

REMARKS.—Records good except those for extreme low discharges in August and September, which are fair. Discharge estimated Nov. 2-16.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	16	-----	1,130	726	138	84	14	2
2	14	-----	-----	1,130	700	138	79	14	2
3	14	-----	-----	1,090	651	138	70	12	3
4	14	-----	-----	1,060	604	128	66	11	3
5	4	-----	-----	1,030	560	128	70	12	10
6	3	-----	-----	1,030	540	123	70	12	14
7	4	-----	-----	1,030	520	113	61	7	12
8	4	-----	-----	1,060	482	103	52	5	10
9	5	-----	-----	1,030	446	98	52	5	11
10	6	20	-----	992	412	98	52	5	10
11	6	-----	-----	992	412	98	49	5	10
12	5	-----	-----	960	412	79	44	4	11
13	5	-----	-----	960	412	93	42	3	8
14	5	-----	-----	960	396	103	39	3	5
15	5	-----	-----	960	396	108	33	5	6
16	5	-----	-----	930	380	103	38	5	10
17	4	33	-----	900	365	108	35	4	11
18	4	-----	-----	870	350	108	35	3	10
19	4	-----	-----	870	335	108	35	3	5
20	3	-----	-----	840	335	108	28	3	5
21	5	-----	-----	810	305	98	29	3	8
22	7	-----	-----	810	277	98	26	3	14
23	8	-----	992	810	291	88	21	3	14
24	8	-----	992	810	305	84	28	4	14
25	10	-----	992	781	252	74	22	4	11
26	12	-----	1,030	781	228	76	26	3	10
27	14	-----	1,030	781	228	79	11	3	10
28	17	-----	1,030	753	216	74	22	3	9
29	19	-----	1,060	753	192	66	15	2	7
30	14	-----	1,090	753	148	79	18	2	5
31	15	-----	1,130	-----	138	-----	18	3	-----
Month				Maximum	Minimum	Mean	Run-off in acre-feet		
October				19	3	8.3	510		
November 1-17				33	16	20.5	691		
Mar. 23-31				1,130	992	1,040	18,600		
April				1,130	753	922	54,900		
May				726	138	388	23,900		
June				138	66	101	6,010		
July				84	11	41.0	2,520		
August				14	2	5.4	332		
September				14	2	8.7	518		

RAINY RIVER BASIN

KAWISHIWI RIVER NEAR WINTON, MINN.

LOCATION.—In lot 3, sec. 20, T. 63 N., R. 11 W., at power plant of Minnesota Power & Light Co., just above Fall Lake and 2½ miles east of Winton.

DRAINAGE AREA.—1,200 square miles.

RECORDS AVAILABLE.—June, 1905, to June, 1907; October, 1912, to September, 1919; September, 1923, to September, 1930.

EXTREMES.—Maximum daily mean discharge during year, 3,861 second-feet May 17; minimum, 95 second-feet Dec. 16.

1905–1907, 1912–1919, 1923–1930: Maximum daily mean discharge, 6,030 second-feet Apr. 26, 1927; no flow at times 1905–1907 and 1923–1928.

REMARKS.—Records good except those for periods of high water, which are fair. Flow entirely regulated by several reservoirs. Discharge obtained from power-house records furnished by Minnesota Power & Light Co.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	466	474	478	351	306	286	433	419	2,580	2,020	1,170	530
2.....	402	512	327	347	270	194	389	755	2,620	2,080	1,080	464
3.....	424	480	452	428	345	289	394	1,020	2,360	2,120	994	479
4.....	434	452	494	397	356	254	394	1,080	1,980	2,120	910	392
5.....	434	448	364	428	324	252	270	957	1,840	2,080	952	415
6.....	446	480	428	396	356	291	395	1,280	1,930	2,080	920	447
7.....	455	480	461	396	356	254	288	1,390	1,680	2,060	920	159
8.....	585	545	461	396	324	222	300	1,280	1,900	2,200	887	373
9.....	512	480	380	396	317	236	365	1,690	1,760	2,050	887	350
10.....	372	467	461	396	290	263	365	2,530	1,770	2,120	714	350
11.....	332	441	380	396	324	318	397	2,180	1,660	2,020	825	487
12.....	548	523	477	396	356	270	365	2,400	1,580	2,410	984	641
13.....	503	476	430	396	282	270	365	2,620	1,430	2,200	759	590
14.....	540	496	430	364	315	246	332	2,940	1,400	2,600	855	343
15.....	452	570	494	364	254	334	365	3,500	1,440	2,760	920	278
16.....	446	517	95	396	185	270	300	3,540	1,650	2,830	855	348
17.....	478	461	421	364	375	407	332	3,860	1,560	2,680	662	283
18.....	478	396	462	396	484	366	332	3,790	1,580	3,080	656	348
19.....	544	434	430	266	338	331	332	3,630	1,500	3,050	823	251
20.....	448	480	462	360	314	318	300	3,550	1,380	3,030	791	348
21.....	512	601	430	350	254	318	300	3,600	1,390	3,150	791	281
22.....	359	629	462	350	383	318	300	3,240	1,320	3,000	804	348
23.....	428	523	367	350	184	255	300	3,540	1,400	2,640	681	363
24.....	461	486	430	350	240	418	332	3,310	1,540	2,430	675	316
25.....	396	326	407	273	254	502	292	2,870	1,990	2,260	624	251
26.....	428	463	355	289	319	502	379	2,540	1,480	1,940	756	380
27.....	385	536	412	296	254	453	446	2,510	1,810	1,720	713	380
28.....	359	446	461	324	286	396	336	2,440	1,940	1,870	788	348
29.....	511	478	351	356	-----	331	288	2,510	1,970	1,410	723	251
30.....	461	494	388	324	-----	321	408	2,540	2,000	1,450	745	348
31.....	461	-----	430	356	-----	370	-----	2,550	-----	1,310	444	-----

Month	Maximum	Minimum	Mean	Month	Maximum	Minimum	Mean
October.....	585	332	450	May.....	3,860	419	2,450
November.....	629	326	486	June.....	2,620	1,320	1,750
December.....	494	95	415	July.....	3,150	1,310	2,280
January.....	428	266	363	August.....	1,170	444	816
February.....	484	184	309	September.....	641	159	369
March.....	502	194	318	The year.....	3,860	95	869
April.....	446	270	346				

UPPER MISSISSIPPI RIVER BASIN

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 and 5 miles below mouth of Swan River.

DRAINAGE AREA.—11,600 square miles.

RECORDS AVAILABLE.—March, 1924, to September, 1930.

EXTREMES.—Maximum mean daily discharge during year, 9,610 second-feet May 15; minimum, 809 second-feet Nov. 22.

1924-1930: Maximum mean daily discharge, 12,600 second-feet Apr. 22, 1927; minimum, 351 second-feet Jan. 4, 1925.

REMARKS.—Records good except those for periods of high water, which are fair. Flow largely regulated by Government reservoirs on headwaters. Discharge obtained from power house records furnished by Minnesota Power & Light Co.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	3,470	3,750	1,150	1,080	1,040	1,950	2,100	2,750	3,390	3,070	2,730	3,290
2.....	3,660	4,080	1,120	1,100	996	1,700	2,220	2,800	2,610	2,800	3,000	3,070
3.....	3,450	4,070	923	1,140	1,030	1,750	2,510	2,590	3,300	2,720	3,060	3,120
4.....	3,340	3,460	1,150	1,170	1,020	1,700	2,520	2,650	3,400	2,320	2,920	3,200
5.....	3,420	3,870	1,140	1,250	1,050	1,660	2,460	2,990	3,800	2,120	3,280	2,980
6.....	3,540	3,970	1,100	1,090	1,150	1,800	2,670	3,140	3,500	2,080	3,300	3,120
7.....	3,140	3,710	1,080	1,200	1,130	1,760	2,790	3,480	3,230	2,190	3,090	3,240
8.....	3,300	3,870	1,140	1,180	1,050	1,740	3,420	3,620	3,270	2,520	3,140	2,630
9.....	3,140	3,040	1,090	1,140	1,060	1,840	3,270	3,580	2,590	2,430	3,080	2,850
10.....	3,740	2,920	1,110	1,110	1,000	1,700	3,520	4,500	2,740	2,070	3,180	3,110
11.....	3,390	2,320	1,160	1,130	1,050	1,830	3,740	5,520	2,890	1,850	2,660	2,880
12.....	3,620	1,990	1,180	998	1,100	2,320	3,410	7,120	2,820	1,630	3,080	3,030
13.....	3,620	2,040	1,210	958	1,050	2,340	3,200	8,440	2,720	1,980	3,160	3,170
14.....	3,300	1,950	1,150	1,070	1,090	2,620	3,120	9,210	2,540	1,760	3,190	3,030
15.....	3,520	1,830	1,280	1,150	1,040	2,680	3,350	9,610	2,510	1,960	3,390	2,880
16.....	3,860	1,830	1,160	1,170	1,060	2,880	3,100	9,270	2,490	1,750	3,290	3,090
17.....	3,790	1,820	1,240	1,220	1,010	2,820	3,080	9,410	2,520	1,770	3,400	3,060
18.....	3,700	1,830	1,150	1,220	1,210	2,750	3,110	9,180	2,530	1,950	2,930	2,900
19.....	3,430	1,810	1,260	1,110	1,140	2,490	2,810	9,040	2,510	2,040	2,790	2,950
20.....	3,870	1,570	1,250	932	1,070	2,640	3,070	8,450	2,350	2,080	2,800	3,060
21.....	3,160	986	1,210	1,070	1,360	2,690	2,590	7,960	2,200	2,230	2,790	2,990
22.....	3,520	809	963	1,010	1,660	2,760	3,350	7,810	2,240	2,240	2,850	2,600
23.....	3,310	1,150	1,280	1,180	1,800	2,550	3,280	6,790	2,200	2,320	2,800	2,850
24.....	3,360	1,210	1,250	1,100	2,120	2,400	2,930	6,470	2,540	2,550	3,210	3,090
25.....	3,510	1,180	1,200	1,090	2,130	2,350	2,420	5,980	2,830	2,530	2,910	3,000
26.....	3,690	1,120	1,180	1,020	2,050	2,400	2,560	6,290	2,920	2,620	3,180	2,860
27.....	3,470	1,300	1,200	1,030	2,180	2,060	2,400	5,190	3,040	3,270	3,060	2,900
28.....	3,180	1,300	1,270	1,030	2,100	2,350	2,430	4,380	2,400	2,940	3,220	2,820
29.....	3,120	1,400	1,180	1,060	-----	2,160	2,430	4,280	2,500	2,910	3,000	2,700
30.....	3,500	1,190	1,220	1,020	-----	2,020	2,550	4,070	2,810	2,900	3,020	2,680
31.....	3,690	-----	1,220	1,030	-----	2,050	-----	3,910	-----	2,850	3,080	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	3,870	3,120	3,480	0.300	0.35
November.....	4,080	809	2,250	.194	.22
December.....	1,280	923	1,170	.101	.12
January.....	1,250	958	1,100	.095	.11
February.....	2,180	996	1,310	.113	.12
March.....	2,880	1,660	2,220	.191	.22
April.....	3,740	2,100	2,880	.248	.28
May.....	9,610	2,590	5,820	.502	.58
June.....	3,800	2,200	2,790	.241	.27
July.....	3,270	1,630	2,340	.202	.23
August.....	3,400	2,660	3,050	.263	.30
September.....	3,290	2,600	2,970	.256	.29
The year.....	9,610	809	2,620	.226	3.09

MISSISSIPPI RIVER AT ELK RIVER, MINN.

LOCATION.—Chain gage in sec. 10,² T. 121 N., R. 23 W., at highway bridge in Elk River 2,500 feet below mouth of Elk River.

DRAINAGE AREA.—14,500 square miles.

RECORDS AVAILABLE.—July, 1915, to September, 1930.

EXTREMES.—Maximum discharge during year, 14,300 second-feet May 16 (gage height, 7.13 feet); minimum, 947 second-feet Nov. 21 (gage height, 2.99 feet).

1915-1930: Maximum discharge, 27,000 second-feet Apr. 7, 1916 (gage height, 10.8 feet); minimum, 633 second-feet Feb. 10, 1926.

REMARKS.—Records good. Discharge estimated Nov. 20 to Mar. 14, because of ice. Flow partly regulated by Government reservoirs on headwaters.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.	4,080	4,340	1,480	1,540	1,200	3,070	2,690	3,020	4,340	2,850	3,020	3,400
2.	3,840	4,620	1,540	1,550	1,250	2,860	2,690	3,020	4,080	2,850	3,200	3,400
3.	4,080	4,910	1,620	1,310	1,260	2,780	3,020	3,400	3,400	2,850	3,400	3,200
4.	4,080	5,200	1,520	1,280	1,210	3,000	3,200	3,400	3,840	3,020	3,400	3,200
5.	3,840	4,620	1,600	1,400	1,280	2,990	3,020	3,400	4,340	3,020	3,200	3,610
6.	3,840	4,340	1,400	1,440	1,230	3,030	3,200	3,400	4,910	2,850	3,200	3,610
7.	4,080	4,340	1,350	1,230	1,360	2,890	3,200	4,080	4,620	2,690	3,610	3,400
8.	3,840	4,620	1,300	1,320	1,320	2,800	3,200	4,340	4,340	2,270	3,400	3,610
9.	3,840	4,340	1,270	1,250	1,300	3,050	4,080	4,620	3,840	2,540	3,400	3,400
10.	3,840	4,080	1,270	1,240	1,260	3,040	4,080	5,500	3,020	2,690	3,400	3,200
11.	4,080	3,610	1,390	1,230	1,310	3,150	4,080	7,310	3,200	2,540	3,400	3,610
12.	4,340	3,020	1,470	1,390	1,280	3,330	4,080	8,560	3,020	2,270	3,610	3,200
13.	3,840	2,690	1,420	1,270	1,380	3,710	4,080	10,200	3,020	2,270	2,850	3,400
14.	3,610	2,540	1,330	1,160	1,410	4,250	4,080	12,400	3,200	2,270	3,200	3,610
15.	4,080	2,850	1,390	1,170	1,220	5,500	3,610	14,000	2,850	2,040	3,610	3,400
16.	3,840	2,400	1,320	1,260	1,230	5,200	3,840	14,300	2,540	2,040	3,610	3,200
17.	4,080	2,270	1,250	1,330	1,250	4,620	3,840	13,700	2,690	2,150	3,610	3,400
18.	4,340	2,400	1,150	1,300	1,320	4,620	3,610	13,400	2,850	2,040	3,610	3,200
19.	4,340	2,040	1,190	1,300	1,490	4,620	3,610	13,000	2,850	2,040	3,200	3,400
20.	4,620	1,110	1,310	1,340	1,760	4,080	3,200	13,000	2,690	2,150	2,850	3,400
21.	4,080	947	1,250	1,240	2,400	4,080	3,840	12,400	2,540	2,400	3,020	3,400
22.	4,080	1,030	1,300	1,120	2,720	4,080	3,610	11,800	2,540	2,400	3,200	3,400
23.	4,080	1,420	1,240	1,140	3,720	4,080	3,610	10,800	2,690	2,400	3,020	3,020
24.	4,080	1,810	1,250	1,300	3,960	3,840	3,610	9,520	2,400	2,540	2,850	3,020
25.	3,840	2,140	1,380	1,230	4,130	3,610	3,200	8,560	3,020	2,690	3,020	3,610
26.	3,840	2,070	1,350	1,220	3,950	3,020	3,200	8,240	2,690	3,020	3,200	3,400
27.	4,080	1,540	1,400	1,240	3,590	3,020	3,200	8,560	2,850	3,200	3,200	3,400
28.	4,080	1,610	1,340	1,180	3,450	2,850	3,200	7,330	3,020	3,610	3,400	3,200
29.	3,840	1,240	1,410	1,250	-----	2,850	2,540	6,100	2,850	3,400	3,400	3,020
30.	3,610	1,620	1,450	1,290	-----	3,020	2,690	4,910	2,850	3,200	3,610	3,020
31.	3,840	-----	1,610	1,240	-----	3,020	-----	4,910	-----	3,020	3,400	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	4,620	3,610	4,000	0.276	0.32
November	5,200	947	2,860	.197	.22
December	1,620	1,150	1,370	.094	.11
January	1,550	1,120	1,280	.088	.10
February	4,130	1,200	1,940	.134	.14
March	5,500	2,780	3,550	.245	.28
April	4,080	2,540	3,440	.237	.26
May	14,300	3,020	8,120	.560	.65
June	4,910	2,400	3,240	.223	.25
July	3,610	2,040	2,620	.181	.21
August	3,610	2,850	3,270	.226	.26
September	3,610	3,020	3,340	.230	.26
The year	14,300	947	3,260	.225	3.06

² Previously published incorrectly as in sec. 3.

MISSISSIPPI RIVER AT ST. PAUL, MINN.

LOCATION.—Water-stage recorder 300 feet above Robert Street Bridge, at St. Paul, 6 miles below mouth of Minnesota River. Zero of gage 684.16 feet above mean sea level.

DRAINAGE AREA.—35,700 square miles.

RECORDS AVAILABLE.—March, 1887, to September, 1930.

EXTREMES.—Maximum discharge during year, 22,000 second-feet May 19 (gage height, 8.80 feet); minimum occurred during estimated period.

1887–1930: Maximum discharge, 80,800 second-feet Apr. 6, 1897 (gage height, 18.0 feet); minimum, 1,060 second-feet Feb. 4, 1895.

Maximum known discharge, 117,000 second-feet July 22, 1867.

REMARKS.—Records good except those for period of ice effect, Nov. 21 to Feb. 21.

Flow partly regulated by Government reservoirs on headwaters to increase low-water open-season flow in interests of navigation.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,570	5,430				10,100	5,360	4,730	8,170	4,400	4,200	3,900
2	5,430	5,850				8,280	5,100	5,360	7,530	4,970	4,300	4,100
3	5,290	5,990				7,180	5,230	5,490	7,530	5,100	4,300	4,100
4	5,290	5,850				6,430	5,490	5,490	6,920	5,490	4,300	4,000
5	5,430	5,990				6,280	5,490	5,490	7,370	5,620	4,400	4,510
6	5,150	5,710				6,280	5,490	5,620	7,690	5,490	4,200	4,400
7	5,290	5,570				6,580	5,620	6,180	7,850	4,970	4,400	4,100
8	5,290	5,850				6,580	5,620	6,920	7,690	5,100	4,510	3,900
9	5,020	5,710				6,880	5,620	7,220	7,530	5,100	4,510	4,100
10	5,290	5,570				6,880	6,180	7,530	7,850	5,760	4,300	4,000
11	5,570	5,290			1,880	6,730	6,320	9,000	7,530	5,900	4,300	3,800
12	5,570	4,890				6,280	6,180	11,100	7,370	5,900	4,000	4,000
13	5,590	4,510				6,280	6,320	12,900	7,370	5,230	3,800	4,300
14	5,620	4,040				6,880	6,040	15,200	7,220	4,730	4,200	4,200
15	5,640	4,040				7,030	5,900	17,700	6,620	4,970	4,200	4,400
16	5,660	3,930	2,000	1,870		7,330	5,620	19,700	6,320	4,510	4,200	4,620
17	5,690	3,710				7,960	5,900	21,000	5,760	4,300	4,400	4,510
18	5,710	3,320				8,280	5,900	21,800	5,900	4,300	4,400	4,400
19	5,710	3,710				7,800	5,760	22,000	6,040	4,100	4,200	4,200
20	5,570	3,610				6,880	5,620	21,800	6,040	3,700	4,000	4,200
21	5,570				3,610	7,800	5,490	20,700	5,760	4,100	3,900	4,100
22	5,150				5,150	6,730	5,900	19,500	6,620	3,900	3,800	4,100
23	5,150				7,030	7,180	5,360	17,500	5,490	4,000	3,700	4,300
24	5,430				10,100	7,330	5,620	16,300	4,970	4,100	3,700	4,000
25	5,290				12,400	7,030	5,620	14,700	5,490	3,700	3,800	4,000
26	4,760	2,280			12,800	6,580	5,360	13,400	5,360	4,300	3,600	5,620
27	5,020				12,600	6,130	4,850	12,700	5,620	4,200	3,700	5,100
28	5,020				12,400	6,180	4,850	12,500	5,620	4,400	4,100	4,510
29	5,150					5,900	4,730	11,800	5,620	4,850	4,200	4,200
30	4,760					5,900	4,730	10,000	5,230	4,400	4,000	3,900
31	5,020					5,760		8,830		4,400	4,000	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	5,710	4,760	5,350	0.150	0.17
November	5,990		4,050	.113	.13
December			2,000	.056	.06
January			1,870	.052	.06
February	12,800		4,060	.114	.12
March	10,100	5,760	6,950	.195	.22
April	6,320	4,730	5,580	.156	.18
May	22,000	4,730	12,600	.353	.41
June	8,170	4,970	6,600	.185	.21
July	5,900	3,700	4,710	.132	.15
August	4,510	3,600	4,120	.115	.13
September	5,620	3,800	4,250	.119	.13
The year	22,000		5,190	.145	1.97

MISSISSIPPI RIVER AT PRESCOTT, WIS.

LOCATION.—Staff gage in lot 4 in SE. ¼ sec. 9, T. 26 N., R. 27 W., on Chicago-Burlington & Quincy Railroad bridge over St. Croix River. Zero of gage 667.68 feet above mean sea level.

DRAINAGE AREA.—45,000 square miles (revised).

RECORDS AVAILABLE.—June, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 33,700 second-feet May 12 (gage height, 11.54 feet); minimum, 3,680 second-feet Jan. 14, 21.

1928-1930: Maximum discharge, 49,600 second-feet Mar. 25, 1929 (gage height, 12.3 feet); minimum, that of Jan. 14, 21, 1930.

REMARKS.—Records good except those for period of ice effect, Nov. 28 to Mar. 31, which are fair. Flow partly regulated by reservoirs and power plants.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun ³	July	Aug.	Sept
1.....	7,780	7,940	5,500	4,050	4,150	15,400	9,120	8,610	14,600	8,610	6,620	5,580
2.....	8,100	8,100	5,500	4,150	4,250	14,400	8,950	8,780	13,600	8,270	6,500	5,580
3.....	8,270	8,270	5,290	3,950	4,250	13,900	8,950	8,950	12,900	8,270	6,500	5,670
4.....	8,100	8,270	5,290	3,950	4,050	13,200	8,780	9,300	12,400	8,610	6,380	5,580
5.....	7,940	8,270	5,400	4,050	4,150	12,200	8,780	9,500	12,200	8,610	6,380	5,670
6.....	7,940	8,610	5,400	3,950	4,350	11,700	8,780	9,900	12,600	8,440	6,270	5,760
7.....	7,780	8,950	5,400	3,770	4,250	11,100	8,440	10,700	12,900	7,940	6,180	5,850
8.....	7,780	8,950	5,400	3,860	4,450	10,700	8,440	11,300	13,200	7,780	6,180	5,760
9.....	7,780	9,120	5,290	4,050	4,450	10,700	8,440	12,200	13,400	7,940	6,270	5,760
10.....	7,940	9,120	5,080	4,050	4,560	10,300	8,780	13,200	13,600	7,940	6,160	5,760
11.....	8,100	8,950	5,080	3,950	4,350	9,900	9,120	13,900	13,900	7,940	6,050	5,580
12.....	8,270	8,780	5,080	3,950	4,560	9,900	9,500	15,200	13,600	7,940	5,950	5,580
13.....	8,440	8,780	5,190	3,860	4,560	10,100	9,700	17,400	13,600	7,940	5,670	5,670
14.....	8,440	8,440	5,190	3,680	4,660	10,300	9,700	20,500	13,600	7,460	5,580	5,760
15.....	8,270	8,270	5,190	3,860	4,560	10,500	9,700	24,000	13,200	7,160	5,670	5,760
16.....	8,270	8,100	5,080	3,860	4,660	10,700	9,700	27,700	11,900	7,020	5,760	5,950
17.....	8,100	7,940	4,870	3,860	4,870	10,700	9,900	31,700	11,700	6,750	5,760	6,050
18.....	8,100	7,620	4,770	3,860	4,660	10,900	9,900	33,200	11,900	6,620	5,760	6,050
19.....	8,270	7,310	4,770	3,860	4,870	11,300	9,700	33,700	11,900	6,500	5,760	6,160
20.....	8,270	7,310	4,660	3,860	5,500	11,500	9,700	33,200	11,900	6,270	5,760	5,950
21.....	8,270	7,310	4,660	3,680	6,050	11,900	9,500	32,200	11,900	6,050	5,760	5,950
22.....	8,270	6,750	4,450	3,770	6,620	11,700	9,120	31,700	11,900	6,050	5,670	5,950
23.....	8,270	6,270	4,450	3,860	7,160	11,700	9,300	30,200	11,700	5,950	5,580	5,850
24.....	8,270	5,940	4,150	3,860	8,270	11,300	9,300	27,700	10,900	5,950	5,490	6,050
25.....	8,440	5,610	4,250	3,950	10,100	10,900	9,300	26,000	10,700	5,950	5,490	6,050
26.....	8,270	5,500	4,250	3,860	12,900	10,900	9,500	23,300	10,500	5,950	5,490	6,500
27.....	8,270	5,720	4,050	3,950	13,900	10,500	9,300	22,000	9,500	6,050	5,400	6,620
28.....	7,940	5,830	4,150	3,860	15,200	10,100	8,780	20,800	9,500	6,160	5,490	6,750
29.....	7,940	5,500	4,250	3,860	-----	10,100	8,610	19,900	9,500	6,160	5,490	6,620
30.....	7,940	5,400	4,250	3,950	-----	9,900	8,610	18,200	8,950	6,380	5,580	6,500
31.....	7,940	-----	4,050	4,150	-----	9,300	-----	16,400	-----	6,750	5,580	-----
Month	Maximum					Minimum		Mean		Per square mile		Run-off in inches
October.....	8,440					7,780		8,120		0.180		0.21
November.....	9,120					5,400		7,560		.168		.19
December.....	5,500					4,050		4,850		.108		.12
January.....	4,150					3,680		3,910		.087		.10
February.....	15,200					4,050		6,080		.135		.14
March.....	15,400					9,300		11,200		.249		.29
April.....	9,900					8,440		9,180		.204		.23
May.....	33,700					8,610		20,000		.444		.51
June.....	14,600					8,950		12,100		.269		.30
July.....	8,610					5,950		7,140		.159		.18
August.....	6,620					5,400		5,880		.131		.15
September.....	6,750					5,580		5,940		.132		.15
The year.....	33,700					3,680		8,520		.189		2.57

MISSISSIPPI RIVER AT ALMA, WIS.

LOCATION.—Staff gage in sec. 11, T. 21 N., R. 13 W., at Alma. Zero of gage 654.90 feet above mean sea level.

DRAINAGE AREA.—57,100 square miles.

RECORDS AVAILABLE.—April to September, 1930.

EXTREMES.—Maximum discharge during period, 38,500 second-feet May 22, 23 (gage height, 8.4 feet); minimum, 8,800 second-feet Aug. 27, 30, 31, Sept. 4 (gage height, 0.9 foot).

REMARKS.—Records good. Flow partly regulated by reservoirs and power plants.

Daily and monthly discharge, in second-feet, 1930

Day	Apr.	May	June	July	Aug.	Sept.
1.....		15,000	26,200	20,500	11,000	9,000
2.....		17,400	24,700	18,900	11,000	9,000
3.....		18,100	23,200	18,100	11,000	9,000
4.....	14,700	18,500	23,700	18,100	11,300	8,800
5.....	14,400	18,900	24,200	17,400	11,300	9,000
6.....		14,400	18,900	25,200	17,100	11,000
7.....		14,100	19,700	25,200	16,500	11,000
8.....		13,600	20,900	24,200	15,300	11,000
9.....		13,600	20,900	23,200	15,600	11,000
10.....		13,300	21,300	22,700	15,300	10,800
11.....		13,300	22,200	22,700	15,000	10,600
12.....		13,300	24,200	22,700	14,700	10,300
13.....		13,600	25,200	24,700	14,700	10,000
14.....		13,600	26,700	26,200	14,400	10,000
15.....		13,300	27,700	27,700	14,100	9,800
16.....		13,300	29,700	31,300	13,800	9,800
17.....		13,800	31,300	33,100	13,600	9,600
18.....		14,700	33,100	36,100	13,300	9,400
19.....		14,400	35,500	37,900	13,300	9,400
20.....		15,000	36,700	35,500	13,000	9,200
21.....		15,300	37,300	33,100	13,000	9,200
22.....		15,000	38,500	33,700	12,300	9,200
23.....		15,000	38,500	31,300	12,000	9,200
24.....		15,000	37,900	28,200	11,600	9,200
25.....		15,000	36,700	26,200	11,600	9,000
26.....		15,000	35,500	25,200	11,600	9,000
27.....		15,000	33,700	24,700	11,300	8,800
28.....		15,000	32,500	21,700	11,300	9,000
29.....		15,000	31,300	22,200	11,300	9,000
30.....		15,000	29,700	21,300	11,000	8,800
31.....			28,200		11,000	8,800

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
April 4-30.....	15,300	13,300	14,300	0.250	0.25
May.....	38,500	15,000	27,800	.487	.56
June.....	37,900	21,300	26,900	.471	.53
July.....	20,500	11,000	14,200	.249	.29
August.....	11,300	8,800	9,930	.174	.20
September.....	10,300	8,800	9,290	.163	.18

MISSISSIPPI RIVER NEAR FOUNTAIN CITY, WIS.

LOCATION.—Staff gage in sec. 7, T. 108 N., R. 8 W., at Chimney Rock, half a mile above Whitman and $6\frac{1}{2}$ miles upstream from Fountain City. Zero of gage 647.56 feet above mean sea level.

DRAINAGE AREA.—58,800 square miles.

RECORDS AVAILABLE.—March to September, 1930.

EXTREMES.—Maximum discharge during period, 39,900 second-feet May 22–24 (gage height, 7.24 feet); minimum, 8,060 second-feet Aug. 31, Sept. 4, 5, 18, 19 (gage height, -0.75 foot).

REMARKS.—Records good. Flow partly regulated by reservoirs and power plants.

Daily and monthly discharge, in second-feet, 1930

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....		16,900	15,700	28,300	21,700	11,300	8,700
2.....		16,300	17,500	25,900	19,900	11,500	9,020
3.....		16,000	19,500	24,700	19,100	11,500	8,700
4.....		15,700	19,100	24,700	18,700	11,500	8,060
5.....		15,400	19,500	25,900	18,300	11,500	8,060
6.....			15,100	19,500	25,900	17,900	8,860
7.....			15,100	20,300	25,900	17,500	10,100
8.....			14,500	21,200	25,300	16,900	9,540
9.....			14,000	21,700	24,700	16,600	9,540
10.....			13,800	21,700	23,700	16,300	9,360
11.....			14,000	22,700	23,700	15,700	9,180
12.....			14,000	24,200	23,700	15,100	9,020
13.....			14,000	25,900	25,900	15,100	8,860
14.....			14,300	27,100	29,600	15,100	9,020
15.....		19,900	14,300	28,300	32,400	14,800	9,360
16.....	20,300	14,300	29,600	33,100	14,500	10,100	9,020
17.....	20,300	14,500	31,000	34,500	14,000	10,100	8,700
18.....	20,300	15,100	33,800	36,700	14,000	9,900	8,380
19.....	19,900	15,400	35,200	39,100	13,800	9,900	8,380
20.....	20,300	15,700	36,700	38,300	13,500	9,720	9,360
21.....	20,300	15,700	38,300	35,900	13,300	9,720	9,360
22.....	20,700	15,700	39,900	34,500	13,000	9,720	9,180
23.....	21,200	15,700	39,900	33,800	12,300	9,720	8,860
24.....	21,700	15,700	39,900	31,000	12,100	9,540	8,860
25.....	21,700	15,400	39,100	28,300	11,900	9,720	9,360
26.....	20,700	15,400	38,300	26,500	12,100	9,720	9,720
27.....	20,300	15,700	36,700	25,300	11,900	9,720	10,500
28.....	19,500	15,700	35,200	24,700	11,700	9,540	10,500
29.....	18,700	15,700	33,800	23,700	11,700	9,180	10,500
30.....	17,900	15,700	32,400	22,700	11,500	8,700	10,500
31.....	17,500		30,300		11,300	8,060	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
March 15–31.....	21,700	17,500	20,100	0.342	0.22
April.....	16,900	13,800	15,200	.259	.29
May.....	39,900	15,700	28,800	.490	.56
June.....	39,100	22,700	28,600	.486	.54
July.....	21,700	11,300	14,900	.253	.29
August.....	11,500	8,060	10,300	.175	.20
September.....	10,500	8,060	9,220	.157	.18

MISSISSIPPI RIVER AT WINONA, MINN.

LOCATION.—Staff gage in lot 1, sec. 23, T. 107 N., R. 7 W., in crib connected with pivot pier of Chicago & Northwestern Railway bridge at Winona. Datum of gage was lowered 0.3 foot Oct. 1, 1929. Zero of gage 640.00 feet above mean sea level.

DRAINAGE AREA.—59,200 square miles (revised).

RECORDS AVAILABLE.—June, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 41,100 second-feet May 24 (gage height, 7.08 feet); minimum, 8,400 second-feet Feb. 14, 15.

1928–1930: Maximum discharge, 78,300 second-feet Apr. 3, 4, 1929 (gage height, 11.50 feet); minimum, that of Feb. 14, 15, 1930.

REMARKS.—Records excellent except those for period of ice effect, Nov. 24 to Mar. 7, which are fair. Flow partly regulated by reservoirs and power plants.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	13,500	13,500	9,320	10,800	9,320	23,900	18,900	17,200	30,400	23,500	11,400	9,640
2.....	13,500	13,500	10,200	11,000	9,320	25,400	18,100	17,800	28,200	22,000	11,400	9,640
3.....	13,500	13,500	10,000	11,200	9,320	26,900	17,500	20,500	26,500	20,600	11,700	9,640
4.....	13,500	13,200	10,000	10,400	9,320	26,900	17,200	20,900	26,500	19,800	11,700	9,480
5.....	13,500	13,200	10,000	10,400	9,640	25,900	16,900	20,900	27,100	19,400	11,700	9,640
6.....	13,500	13,200	10,200	10,800	9,480	25,400	16,600	21,300	27,600	19,400	11,700	9,640
7.....	13,500	13,200	10,200	9,640	9,480	25,400	16,600	21,700	27,600	18,600	11,400	9,820
8.....	13,200	13,200	10,200	9,160	9,480	25,400	16,300	22,500	27,100	17,800	11,400	9,820
9.....	13,200	13,500	10,200	9,480	9,320	24,900	15,700	22,900	26,500	17,400	11,400	9,820
10.....	12,900	13,800	10,200	9,480	9,160	23,900	15,400	23,400	26,000	17,100	11,400	9,820
11.....	12,900	13,800	10,200	9,480	9,320	23,400	15,400	23,900	25,000	16,400	11,200	9,820
12.....	13,200	14,100	10,200	9,480	9,640	22,500	15,400	25,400	25,000	15,700	11,000	9,640
13.....	13,500	14,400	10,000	9,640	9,320	21,700	15,400	26,400	26,500	15,700	10,800	9,640
14.....	13,500	14,400	10,000	9,640	8,400	21,700	15,400	27,900	30,400	15,700	10,800	9,640
15.....	13,500	14,400	10,000	9,820	8,400	21,300	15,700	28,400	33,100	15,300	10,600	9,640
16.....	13,500	14,400	10,000	9,640	8,700	21,300	15,700	29,900	33,700	15,000	10,400	9,820
17.....	13,500	14,400	10,000	9,480	9,160	22,100	15,700	31,400	36,200	14,400	10,400	9,640
18.....	13,500	14,100	10,000	9,000	9,640	22,100	16,600	32,600	36,900	14,400	10,200	9,640
19.....	13,200	13,800	10,400	9,480	10,400	21,700	16,900	34,300	39,000	14,100	10,200	9,640
20.....	13,500	13,800	10,000	9,640	11,400	21,700	16,900	36,200	39,700	13,800	10,000	9,640
21.....	13,500	13,500	9,640	9,640	14,400	21,700	16,900	38,300	39,000	13,500	10,000	9,820
22.....	13,500	13,200	9,820	9,640	19,000	22,100	17,200	39,700	36,900	13,200	9,820	9,820
23.....	13,500	12,700	10,000	9,640	24,000	22,500	16,900	40,400	35,600	12,900	9,820	9,640
24.....	13,500	12,400	10,000	9,640	16,300	22,900	16,900	41,100	33,700	12,400	9,820	9,640
25.....	13,500	12,400	10,400	9,640	16,600	23,400	16,900	40,400	30,900	12,200	9,820	9,820
26.....	13,500	12,200	10,400	9,640	17,500	22,500	16,900	39,700	28,700	12,200	9,820	10,400
27.....	13,500	11,400	10,400	9,640	20,100	22,500	16,900	38,300	27,100	12,200	9,640	10,800
28.....	13,500	10,800	10,800	9,480	22,100	21,700	16,900	36,900	26,000	12,200	9,640	10,800
29.....	13,500	10,600	10,800	9,480	-----	20,900	16,900	35,600	25,000	11,900	9,640	10,800
30.....	13,200	10,600	10,800	9,480	-----	19,700	17,200	33,700	24,500	11,700	9,640	10,800
31.....	13,200	-----	10,800	9,320	-----	19,300	-----	32,000	-----	11,700	9,480	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	13,500	12,900	13,400	0.226	0.26
November.....	14,400	10,600	13,200	.223	.25
December.....	10,800	9,320	10,200	.172	.20
January.....	11,200	9,000	9,770	.165	.19
February.....	24,000	8,400	12,100	.204	.21
March.....	26,900	19,300	23,000	.380	.45
April.....	18,900	15,400	16,600	.280	.31
May.....	41,100	17,200	29,700	.502	.58
June.....	39,700	24,500	30,200	.510	.67
July.....	23,500	11,700	15,600	.264	.30
August.....	11,700	9,480	10,600	.179	.21
September.....	10,800	9,480	9,870	.167	.19
The year.....	41,100	8,400	16,200	.274	3.72

MISSISSIPPI RIVER AT LAMOILLE, MINN.

LOCATION.—Staff gage in sec. 7, T. 106 N., R. 5 W., at down stream edge of village of Lamoille. Zero of gage 634.61 feet above mean sea level.

DRAINAGE AREA.—60,000 square miles.

RECORDS AVAILABLE.—March to September, 1930.

EXTREMES.—Maximum discharge during period, 46,300 second-feet June 17 (gage height, 7.67 feet); minimum, 9,900 second-feet Sept. 19 (gage height, -0.14 foot).

REMARKS.—Records good. Flow partly regulated by reservoirs and power plants.

Daily and monthly discharge, in second-feet, 1930

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1		19,400	17,500	30,100	22,700	12,000	9,900
2		19,400	17,800	28,200	21,800	11,800	9,900
3		18,200	20,200	26,400	20,600	12,200	9,900
4		17,800	21,000	26,400	20,200	11,800	9,900
5		17,500	21,000	27,600	19,800	12,000	9,900
6		16,800	21,400	27,600	19,400	11,800	9,900
7		16,800	21,800	28,200	18,600	11,800	10,000
8		16,400	22,200	27,600	18,200	11,600	10,000
9		16,100	23,200	27,000	17,800	11,600	10,100
10		15,500	23,200	25,800	17,500	11,600	10,000
11		15,500	23,700	25,200	16,800	11,400	10,000
12		15,500	24,700	24,700	16,400	11,400	10,000
13		15,500	26,400	26,400	16,100	11,200	9,900
14		15,500	27,600	30,800	15,800	11,000	10,000
15		15,800	28,800	34,300	15,500	10,800	10,000
16		15,800	29,400	41,500	15,500	10,600	9,900
17		15,800	31,500	45,500	14,900	10,600	9,900
18	22,700	16,400	32,900	44,700	14,600	10,400	9,900
19	22,200	17,100	35,100	43,900	14,600	10,200	9,900
20	21,800	17,100	36,700	43,100	14,300	10,200	9,900
21	21,800	17,100	39,100	40,700	13,700	10,100	9,900
22	22,200	17,500	40,700	39,100	13,400	10,100	10,000
23	22,700	17,500	41,500	36,700	13,100	10,000	10,000
24	23,200	17,100	41,500	34,300	12,800	10,000	10,000
25	23,200	17,100	41,500	31,500	12,600	10,000	10,200
26	22,700	17,100	40,700	28,800	12,600	10,000	10,800
27	22,200	17,100	39,900	27,600	12,400	9,900	11,400
28	21,800	17,100	37,500	26,400	12,400	9,900	11,400
29	21,000	17,100	35,900	24,700	12,400	9,900	11,400
30	20,200	17,100	34,300	23,700	12,200	9,900	11,200
31	19,800		32,200		12,000	9,900	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
March 18-31	23,200	19,800	22,000	0.367	0.19
April	19,400	15,500	16,900	.282	.31
May	41,500	17,500	30,000	.500	.58
June	45,500	23,700	31,600	.527	.59
July	22,700	12,000	15,800	.263	.30
August	12,200	9,900	10,800	.180	.21
September	11,400	9,900	10,200	.170	.19

MISSISSIPPI RIVER AT LA CROSSE, WIS.

LOCATION.—Staff gage in sec. 31, T. 16 N., R. 7 W., on left pier of wagon bridge in city of La Crosse. Zero of gage 626.43 feet above mean sea level.

DRAINAGE AREA.—62,800 square miles.

RECORDS AVAILABLE.—June, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 52,300 second-feet June 18 (gage height, 8.60 feet); minimum, 10,600 second-feet several days in August and September (gage height, -0.60 foot).

1929-30: Maximum and minimum discharges, those of 1930. Maximum known gage height, 16.2 feet June 19, 1880.

REMARKS.—Records good. Stage-discharge relation affected by ice Nov. 25-30. Flow partly regulated by reservoirs and power plants.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15,300	15,600		33,700	21,100	18,700	33,700	28,000	12,600	10,600
2	15,300	15,600		33,700	20,700	19,500	32,000	26,500	12,800	10,600
3	15,300	15,600		34,300	20,300	20,300	30,500	25,000	13,000	10,600
4	15,300	15,600		32,600	19,500	22,000	30,000	24,000	13,000	10,600
5	15,300	15,600		31,500	19,100	23,000	31,000	23,500	13,000	10,600
6	15,300	15,600		31,000	18,700	24,000	31,500	23,000	12,000	10,600
7	15,300	15,300		30,000	17,900	24,500	31,000	22,000	12,000	10,700
8	15,300	15,300		29,000	17,500	25,000	31,500	21,100	12,800	10,900
9	15,000	15,300		28,000	17,500	25,500	31,500	20,700	12,600	11,100
10	15,000	15,600		27,500	17,100	26,500	31,000	20,300	12,600	10,900
11	15,000	15,600		26,500	16,800	25,500	31,000	19,500	12,300	10,900
12	14,700	15,900		26,000	16,800	27,500	30,000	18,700	12,300	10,900
13	15,000	16,200		25,000	17,100	28,500	31,000	17,900	12,100	10,700
14	15,300	16,200		24,500	16,800	30,000	34,300	17,900	12,100	10,700
15	15,300	16,500		24,000	17,100	30,000	37,900	17,500	11,900	10,700
16	15,300	16,500		24,000	17,100	31,000	42,100	17,100	11,700	10,700
17	15,300	16,500		24,500	17,500	31,500	49,900	16,800	11,500	10,700
18	15,300	16,500		25,000	17,900	32,600	52,300	16,500	11,300	10,600
19	15,300	16,500		25,000	18,700	34,300	51,100	16,500	11,300	10,600
20	15,300	16,500		24,500	18,700	35,500	49,900	16,200	11,100	10,600
21	15,300	16,200		24,500	18,700	37,300	47,500	15,900	11,100	10,600
22	15,300	16,200		25,500	18,700	38,500	45,100	15,300	10,900	10,700
23	15,300	15,600		26,000	18,700	40,300	42,700	15,000	10,900	10,700
24	15,300	14,700	33,700	26,000	18,700	40,900	40,900	14,700	10,900	10,700
25	15,300	14,700	31,000	25,500	18,700	40,900	37,900	14,100	10,900	10,900
26	15,300	14,700	30,500	25,000	18,300	40,300	35,500	14,100	10,700	11,300
27	15,300	14,700	31,000	25,000	18,300	40,300	33,700	14,100	10,600	12,100
28	15,300	14,700	30,500	24,500	18,300	39,100	32,600	14,100	10,600	12,300
29	15,300	14,700		24,000	18,300	37,900	31,000	14,100	10,600	12,100
30	15,300	14,700		23,000	18,700	36,700	29,500	13,600	10,600	12,100
31	15,300			22,000		35,500		13,000	10,600	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	15,300	14,700	15,200	0.242	0.28
November	16,500	14,700	15,600	.248	.28
February 24-28	33,700	30,500	31,300	.498	.09
March	34,300	22,000	26,800	.427	.49
April	21,100	16,800	18,300	.291	.32
May	40,900	18,700	31,100	.495	.57
June	52,300	29,500	36,700	.584	.65
July	28,000	13,000	18,300	.291	.34
August	13,000	10,600	11,800	.188	.22
September	12,300	10,600	10,900	.174	.19

MISSISSIPPI RIVER AT GENOA, WIS.

LOCATION.—Staff gage in T. 13 N., R. 7 W., 1 mile below Genoa. Zero of gage 615.95 feet above mean sea level.

DRAINAGE AREA.—64,700 square miles.

RECORDS AVAILABLE.—March to September, 1930.

EXTREMES.—Maximum discharge during period, 50,500 second-feet June 19, 20 (gage height, 9.78 feet); minimum, 10,600 second-feet on several days during August and September (gage height, 1.3 feet).

REMARKS.—Records good. Flow partly regulated by reservoirs and power plants.

Daily and monthly discharge, in second-feet, 1930

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....		23, 000	19, 800	36, 500	30, 500	13, 600	10, 600
2.....		22, 500	20, 200	34, 800	28, 500	13, 600	10, 600
3.....		22, 000	20, 600	33, 200	27, 000	13, 600	10, 800
4.....		21, 000	22, 000	32, 100	26, 000	13, 600	10, 800
5.....		20, 200	23, 000	33, 200	25, 000	13, 600	10, 600
6.....		19, 400	24, 000	33, 200	24, 000	13, 600	10, 600
7.....		18, 600	25, 000	32, 600	23, 000	13, 600	10, 800
8.....		18, 200	26, 000	32, 600	22, 500	13, 300	11, 200
9.....		17, 800	26, 000	32, 600	22, 000	13, 300	11, 500
10.....		17, 800	27, 000	32, 600	21, 000	13, 000	11, 200
11.....		17, 000	27, 500	32, 100	20, 200	13, 000	11, 000
12.....		16, 600	28, 000	32, 100	19, 400	12, 700	10, 800
13.....		16, 600	29, 000	33, 200	19, 000	12, 700	10, 800
14.....		16, 600	30, 000	34, 800	18, 600	12, 400	10, 800
15.....		17, 000	30, 500	37, 000	18, 200	12, 100	10, 800
16.....		19, 000	31, 000	39, 200	17, 800	12, 100	10, 800
17.....		19, 000	31, 500	43, 300	17, 800	11, 800	10, 600
18.....		19, 400	32, 600	47, 500	17, 400	11, 500	10, 600
19.....		19, 800	33, 700	49, 900	17, 400	11, 500	10, 800
20.....		20, 200	34, 800	50, 500	17, 000	11, 200	10, 600
21.....		20, 200	35, 900	49, 900	16, 600	11, 200	10, 600
22.....		20, 200	37, 600	48, 700	15, 200	11, 000	10, 800
23.....		20, 200	38, 700	46, 900	15, 800	11, 000	10, 800
24.....	28, 000	20, 200	39, 800	45, 100	15, 400	10, 800	10, 800
25.....	27, 500	20, 200	40, 300	42, 700	15, 100	10, 800	10, 800
26.....	27, 000	19, 800	40, 900	40, 300	15, 100	10, 800	11, 500
27.....	27, 000	19, 800	40, 900	38, 100	14, 800	10, 800	12, 400
28.....	26, 500	19, 800	40, 300	35, 900	14, 800	10, 600	12, 700
29.....	26, 000	19, 800	39, 800	34, 300	14, 500	10, 600	12, 700
30.....	25, 000	19, 800	38, 700	32, 600	14, 200	10, 600	12, 700
31.....	24, 000	---	37, 600	---	13, 900	10, 600	---
Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches		
March 24-31.....	28, 000	24, 000	26, 400	0. 408	0. 12		
April.....	23, 000	16, 600	19, 400	. 300	. 33		
May.....	40, 900	19, 800	31, 400	. 485	. 56		
June.....	50, 500	32, 100	38, 200	. 590	. 66		
July.....	30, 500	13, 900	19, 300	. 298	. 34		
August.....	13, 600	10, 600	12, 100	. 187	. 22		
September.....	12, 700	10, 600	11, 100	. 172	. 19		

MISSISSIPPI RIVER AT CLAYTON, IOWA

LOCATION.—Staff gage in sec. 35, T. 94 N., R. 3 W., in Wyalusing Slough 200 feet above its junction with main channel and one-fourth mile from railroad station in Clayton. Zero of gage 602.63 feet above mean sea level.

DRAINAGE AREA.—79,200 square miles.

RECORDS AVAILABLE.—April to September, 1930.

EXTREMES.—Maximum discharge during period, 79,000 second-feet June 25 (gage height, 10.90 feet); minimum, 13,200 second-feet Sept. 21–23 (gage height, 1.0 foot).

REMARKS.—Records good. Flow partly regulated by reservoirs and power plants.

Daily and monthly discharge, in second-feet, 1930

Day	Apr.	May	June	July	Aug.	Sept.
1.....		31,000	49,900	53,300	18,900	13,800
2.....		31,600	48,300	49,900	18,100	14,500
3.....		32,300	46,700	45,900	17,700	14,800
4.....		31,600	45,100	43,500	17,300	14,800
5.....		31,600	44,300	42,100	17,700	14,200
6.....		31,600	44,300	39,300	18,100	14,000
7.....		32,300	43,500	36,500	18,100	13,800
8.....		35,100	42,800	35,100	18,100	13,800
9.....		35,800	42,800	35,100	17,700	14,200
10.....		36,500	42,800	35,100	17,700	14,500
11.....		37,900	42,800	33,700	17,300	14,200
12.....		37,900	42,800	32,300	16,900	14,000
13.....		39,300	45,900	31,600	16,900	14,000
14.....		40,700	48,300	29,800	16,900	14,000
15.....	26,200	40,700	49,100	28,600	16,900	13,800
16.....	27,400	41,400	49,900	28,000	16,600	13,600
17.....	28,000	42,100	51,500	27,400	16,300	13,600
18.....	29,200	43,500	54,200	25,600	16,000	13,400
19.....	29,800	43,500	56,900	25,000	15,700	13,600
20.....	31,000	43,500	60,500	24,000	15,400	13,400
21.....	31,000	43,500	64,100	23,500	15,100	13,200
22.....	29,800	45,100	69,000	22,500	14,500	13,200
23.....	29,800	48,300	72,000	22,000	14,500	13,200
24.....	29,800	49,100	77,000	22,000	14,500	13,400
25.....	30,400	49,900	79,000	21,500	14,200	13,600
26.....	32,300	50,700	75,000	21,000	14,200	14,200
27.....	33,000	50,700	68,000	21,000	14,000	14,800
28.....	31,600	50,700	62,300	21,000	14,200	15,100
29.....	31,000	50,700	58,700	20,100	14,000	15,400
30.....	31,000	51,500	56,900	19,700	13,800	15,100
31.....		51,500	-----	19,300	13,800	-----
Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches	
April 15-30.....	33,000	26,200	30,100	0.380	0.23	
May.....	51,500	31,000	41,300	.521	.60	
June.....	79,000	42,800	54,500	.688	.77	
July.....	53,300	19,300	30,200	.381	.44	
August.....	18,900	13,800	16,200	.205	.24	
September.....	15,400	13,200	14,000	.177	.20	

SURFACE WATER SUPPLY, 1930, PART 5

SAND LAKE OUTLET NEAR DORSET, MINN.

LOCATION.—Staff gage in NE. $\frac{1}{4}$ sec. 36, T. 141 N., R. 34 W., 2 miles northeast of Dorset.

RECORDS AVAILABLE.—July to September, 1930.

EXTREMES.—Maximum discharge during period, 13 second-feet July 13 (gage height, 4.89 feet); minimum, 0.1 second-foot Sept. 30 (gage height, 3.74 feet).

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1-----		8.7	2.0	11-----		5.6	1.0	21-----		2.8	0.3
2-----		8.6	1.9	12-----		5.3	1.0	22-----		2.6	.3
3-----		8.4	1.6	13-----		5.0	1.0	23-----		2.4	.2
4-----		8.2	1.4	14-----		5.0	1.0	24-----	12	2.3	.2
5-----		7.9	1.4	15-----	13	4.7	1.0	25-----		2.1	.2
6-----		7.7	1.2	16-----		4.4	.8	26-----		1.9	.2
7-----		7.5	1.2	17-----		3.9	.6	27-----	11	1.9	.2
8-----		7.2	1.0	18-----	12	3.6	.6	28-----	11	1.8	.2
9-----		6.7	1.0	19-----		3.3	.5	29-----	10	1.7	.2
10-----		6.2	1.0	20-----		3.1	.4	30-----	9.6	2.1	.1
								31-----	9.3	2.0	-----
Month								Maximum	Minimum	Mean	
July 15-31-----								13	9.3	11.5	
August-----								8.7	1.7	4.66	
September-----								2.0	.1	.79	

PLATTE RIVER AT ROYALTON, MINN.

LOCATION.—Chain gage in sec. 35, T. 39 N., R. 32 W., at highway bridge at east edge of Royalton, 6 miles above junction with the Mississippi River.

DRAINAGE AREA.—338 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,280 second-feet May 14 (gage height, 5.75 feet); minimum, 3 second-feet Sept. 19–21 (gage height, 1.20 feet).

1929–30: Maximum and minimum discharges, those of 1930.

REMARKS.—Records good. Stage-discharge relation affected by ice Nov. 21–30.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1.....	44	41	104	55	82	33	27	9
2.....	43	55	95	55	72	30	28	8
3.....	42	63	100	55	77	30	27	7
4.....	41	64	101	59	73	34	25	6
5.....	39	61	96	65	79	35	24	6
6.....	36	59	96	66	79	34	24	7
7.....	33	57	94	74	78	33	21	7
8.....	33	55	92	75	77	34	21	6
9.....	33	53	88	89	77	36	22	5
10.....	33	50	85	186	77	35	21	5
11.....	35	50	79	258	73	35	20	5
12.....	39	50	74	405	70	32	20	6
13.....	39	48	69	862	70	33	18	7
14.....	41	48	66	1,230	65	31	17	6
15.....	41	45	66	1,230	60	32	17	7
16.....	41	43	65	1,080	59	31	16	5
17.....	41	43	63	949	55	30	14	4
18.....	41	45	60	820	53	30	13	4
19.....	41	43	53	662	59	30	14	3
20.....	39	41	50	524	57	34	14	3
21.....	37	37	50	433	51	33	14	3
22.....	36	37	52	378	44	34	13	4
23.....	38	33	54	303	44	31	11	4
24.....	37	31	49	269	42	29	11	6
25.....	35	31	41	226	40	28	10	7
26.....	33	28	40	195	39	32	9	8
27.....	31	28	38	158	38	41	9	9
28.....	34	28	45	132	36	37	8	9
29.....	35	28	49	115	37	33	8	7
30.....	37	28	51	96	35	29	8	6
31.....	40			85		26	8	
Month	Maximum		Minimum		Mean		Per square mile	Run-off in inches
October.....	44		31		37.7		0.112	0.13
November.....	64		28		44.1		.130	.14
April.....	104		38		68.8		.204	.23
May.....	1,230		55		361		1.07	1.23
June.....	82		35		59.9		.177	.20
July.....	41		26		32.4		.096	.11
August.....	28		8		16.5		.059	.06
September.....	9		3		5.97		.058	.02

SAUK RIVER NEAR ST. CLOUD, MINN.

LOCATION.—Chain gage in sec. 8, T. 124 N., R. 28 W., on county bridge 3 miles west of St. Cloud and 4 miles above junction with Mississippi River.

DRAINAGE AREA.—816 square miles.

RECORDS AVAILABLE.—July, 1909, to December, 1913; May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 914 second-feet May 15, 16 (gage height, 4.3 feet); minimum, 11 second-feet July 17 (gage height, 1.50 feet). 1909-1913; 1929-30: Maximum discharge, 1,620 second-feet May 11, 1912; minimum, 5 second-feet Sept. 5, 1912.

REMARKS.—Records good except those for period of ice effect, Nov. 20-30, Mar. 5-23, which are fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	20	78	-----	40	116	99	66	51	60
2.....	22	70	-----	97	176	101	92	60	58
3.....	21	42	-----	92	176	350	39	73	37
4.....	26	46	-----	108	118	368	60	54	50
5.....	38	63	40	120	43	333	50	47	48
6.....	40	63	40	105	130	316	34	58	51
7.....	22	61	61	40	200	333	29	67	50
8.....	30	55	110	137	139	188	90	67	55
9.....	42	58	164	141	200	64	124	55	46
10.....	47	43	61	139	226	188	124	57	50
11.....	71	42	84	87	200	200	62	57	50
12.....	76	58	120	103	114	114	37	48	62
13.....	69	58	92	70	546	130	28	66	58
14.....	46	55	110	57	724	128	18	64	64
15.....	76	53	176	122	770	114	16	60	42
16.....	58	53	84	120	914	53	15	70	40
17.....	65	44	47	137	914	137	14	66	50
18.....	65	46	226	122	724	148	24	54	67
19.....	69	60	152	213	770	90	27	46	53
20.....	57	47	316	164	818	54	32	72	46
21.....	43	40	240	47	770	53	29	61	40
22.....	57	47	200	200	678	55	27	68	44
23.....	46	40	141	112	588	50	33	68	35
24.....	46	34	105	103	504	58	35	64	64
25.....	51	28	316	105	333	61	43	48	67
26.....	48	40	254	38	300	46	54	46	57
27.....	35	34	284	34	139	128	54	66	44
28.....	30	34	213	33	386	81	37	70	46
29.....	51	34	141	30	368	66	34	60	28
30.....	65	34	187	152	226	32	43	61	43
31.....	78	-----	48	-----	108	-----	44	60	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	78	20	48.7	0.060	0.07
November.....	78	28	48.7	.060	.07
March 5-31.....	316	40	149	.183	.18
April.....	213	30	102	.125	.14
May.....	914	43	401	.491	.57
June.....	368	32	138	.169	.19
July.....	124	14	45.6	.056	.06
August.....	73	46	60.1	.074	.09
September.....	67	28	50.2	.062	.07

CROW RIVER AT ROCKFORD, MINN.

LOCATION.—Chain gage in sec. 29, T. 119 N., R. 24 W., at Rockford, 1 mile below junction of North and South Forks.

DRAINAGE AREA.—2,520 square miles.

RECORDS AVAILABLE.—June, 1909, to September, 1917; April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,120 second-feet Mar. 4 (gage height, 3.2 feet); minimum, 21 second-feet Sept. 23, 24 (gage height, 0.74 foot).

1909-1917, 1929-30: Maximum discharge, 10,600 second-feet Apr. 2, 3, 1916 (gage height, 15.9 feet, former datum; relation to present datum unknown); minimum, that of Sept. 23, 24, 1930.

REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	140	140	-----	249	176	267	212	110	47
2	131	145	-----	235	176	253	190	127	47
3	122	158	-----	235	176	258	190	131	47
4	114	185	1, 120	231	181	280	217	131	43
5	110	176	1, 020	235	208	308	240	122	45
6	102	172	828	231	212	331	298	114	39
7	98	167	636	231	208	354	331	90	45
8	102	163	612	226	212	400	354	82	41
9	94	149	565	222	231	354	377	52	41
10	102	145	494	222	294	308	447	55	24
11	106	145	518	217	331	289	471	90	24
12	122	136	471	212	331	280	424	90	31
13	122	136	424	212	471	267	377	74	35
14	127	136	400	212	684	285	331	58	37
15	131	136	400	208	780	271	308	58	33
16	136	136	400	208	732	267	262	61	35
17	127	136	424	208	684	258	244	64	35
18	127	136	424	203	684	235	226	64	35
19	127	127	354	199	636	226	212	52	35
20	122	114	331	199	588	217	212	47	35
21	122	114	331	203	565	212	212	43	31
22	131	114	294	208	565	354	199	58	33
23	136	114	289	199	541	354	199	61	21
24	131	114	280	194	541	308	199	37	21
25	127	114	280	181	518	280	190	47	29
26	131	114	271	176	518	294	172	61	41
27	127	114	271	176	471	267	172	61	52
28	127	114	271	176	377	240	167	61	55
29	127	114	262	172	331	222	154	45	55
30	131	114	253	167	308	222	140	47	45
31	140	-----	253	-----	298	-----	136	47	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	140	94	122	0.048	0.06
November	185	114	136	.054	.06
March 4-31	1, 120	253	446	.177	.18
April	249	167	208	.083	.09
May	780	176	420	.167	.19
June	400	212	282	.112	.12
July	471	136	254	.101	.12
August	131	37	72.3	.029	.03
September	55	21	37.9	.015	.02

RUM RIVER NEAR ST. FRANCIS, MINN.

LOCATION.—Chain gage on bridge between secs. 19 and 30, T. 33 N., R. 24 W., 5 miles south of St. Francis and 15¼ miles above mouth.

DRAINAGE AREA.—1,360 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 3,760 second-feet May 18 (gage height, 6.53 feet); minimum, 79 second-feet Sept. 2 (gage height, 2.28 feet).

1929-30: Maximum discharge, that of May 18, 1930; minimum, 67 second-feet July 30, 31, 1929 (gage height, 2.27 feet).

REMARKS.—Records fair. Stage-discharge relation affected by ice Nov. 20-30 and Mar. 5-13.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	166	254	-----	242	242	560	152	95	82
2	166	263	-----	246	250	520	152	106	79
3	170	259	-----	250	272	480	159	118	84
4	170	254	-----	250	280	440	166	112	84
5	170	245	176	258	303	400	159	106	84
6	178	241	156	258	322	360	152	101	84
7	186	236	145	250	346	320	145	95	84
8	194	228	127	250	396	280	133	90	90
9	202	219	136	250	423	272	133	95	101
10	210	219	136	254	755	267	127	82	106
11	219	214	169	258	1,090	272	118	84	115
12	228	210	180	250	1,420	280	109	84	130
13	236	206	214	250	1,800	280	106	84	136
14	236	206	317	254	2,180	285	104	82	124
15	245	202	508	250	2,560	272	104	84	136
16	254	202	450	258	2,930	258	98	84	130
17	254	178	568	258	3,610	250	104	84	124
18	259	178	508	250	3,610	226	104	84	112
19	263	178	450	254	3,470	195	98	82	95
20	245	178	423	250	3,190	173	98	84	101
21	241	178	396	242	2,810	152	98	84	95
22	236	178	346	250	2,340	145	112	84	95
23	228	178	327	258	1,820	145	118	82	101
24	228	170	294	258	1,520	152	124	82	106
25	228	156	276	234	1,320	159	118	82	112
26	228	163	254	210	1,320	159	115	82	112
27	228	152	250	210	1,320	159	115	84	112
28	232	148	246	218	1,230	166	112	87	118
29	236	152	246	226	1,140	159	106	84	118
30	236	134	242	234	1,060	156	101	84	118
31	245	-----	246	-----	600	-----	101	82	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	263	166	220	0.162	0.19
November	263	134	199	.146	.16
March 5-31	568	127	288	.212	.21
April	258	210	246	.181	.20
May	3,610	242	1,480	1.09	1.26
June	560	145	265	.195	.22
July	166	98	121	.089	.10
August	118	82	88.8	.065	.07
September	136	79	106	.078	.09

MINNESOTA RIVER NEAR MONTEVIDEO, MINN.

LOCATION.—Chain gage in sec. 19, T. 117 N., R. 40 W., at highway bridge 500 feet below mouth of Chippewa River and 1 mile south of Montevideo.

DRAINAGE AREA.—6,300 square miles.

RECORDS AVAILABLE.—July, 1909, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,200 second-feet May 16 (gage height, 6.72 feet); minimum, 20 second-feet in January and February.

1909-1930: Maximum discharge, about 22,000 second-feet June 25, 1919 (gage height, 18.8 feet); minimum, 6.8 second-feet Feb. 9, 1912.

REMARKS.—Records good except those for period of ice effect, Nov. 21 to Mar. 14, which are poor.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	153	139	120	45	* 20	* 310	518	219	324	146	73	29
2	132	139	114	* 44	* 20	* 353	493	290	290	146	68	33
3	126	120	93	42	20	395	468	290	268	146	64	34
4	120	160	88	* 40	22	* 407	443	258	324	219	61	27
5	114	160	83	* 38	21	419	419	238	324	258	60	48
6	108	210	* 83	36	* 22	* 456	419	279	371	248	56	43
7	126	210	83	* 36	22	493	419	324	395	248	52	45
8	126	160	* 83	35	* 22	* 536	419	371	324	324	48	37
9	114	153	83	* 34	* 21	* 578	290	371	301	347	45	43
10	88	184	* 80	33	21	621	301	468	301	301	40	48
11	83	219	78	* 32	* 20	* 648	210	543	279	279	40	49
12	73	219	* 78	30	20	675	248	731	238	258	40	48
13	126	201	78	* 30	* 20	621	301	967	248	258	43	114
14	103	184	* 78	* 30	20	621	279	1,100	228	228	44	49
15	103	168	* 78	30	* 21	675	258	1,130	219	228	38	88
16	103	184	78	* 30	* 21	675	238	1,200	228	210	36	78
17	114	184	* 73	30	22	731	258	1,100	228	160	34	98
18	126	201	68	* 27	* 23	731	301	876	168	146	36	68
19	114	219	* 70	* 24	24	788	238	1,100	153	120	37	53
20	114	219	73	21	518	876	279	1,100	153	114	41	53
21	114	210	* 68	* 22	759	788	258	998	153	108	43	68
22	120	184	* 63	24	759	759	238	967	146	108	38	45
23	120	160	58	* 24	* 745	788	279	906	120	103	34	40
24	139	160	* 52	24	731	846	268	703	120	98	30	41
25	93	126	46	* 24	* 663	846	248	648	168	98	29	68
26	73	139	* 46	* 24	595	703	238	675	184	103	30	45
27	73	146	46	24	* 432	595	228	675	168	98	27	43
28	83	160	* 46	* 23	268	569	210	595	139	98	27	45
29	83	132	* 47	22	-----	543	201	518	126	98	28	41
30	83	132	47	* 21	-----	518	210	468	132	88	29	48
31	83	-----	* 46	20	-----	569	-----	395	-----	83	30	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	153	73	107	0.017	0.02
November	219	120	173	.027	.03
December	120	46	71.8	.011	.01
January	45	20	29.6	.005	.01
February	759	20	210	.033	.03
March	876	310	617	.098	.11
April	518	201	303	.048	.05
May	1,200	219	661	.105	.12
June	395	120	227	.036	.04
July	347	83	176	.028	.03
August	73	27	42.0	.007	.01
September	114	27	52.1	.008	.01
The year	1,200	20	223	.035	.47

* Interpolated.

MINNESOTA RIVER AT MANKATO, MINN.

LOCATION.—Water-stage recorder in sec. 7, T. 108 N., R. 26 W., at Main Street Highway Bridge in Mankato, 2 miles below mouth of Blue Earth River.

DRAINAGE AREA.—14,600 square miles.

RECORDS AVAILABLE.—March, 1922, to September, 1930. From May, 1903, to October, 1921, comparable record at Sibley Park.

EXTREMES.—Maximum discharge during year, 7,440 second-feet Feb. 22 (gage height, 9.95 feet); minimum, 130 second-feet Feb. 10.

1903-1930: Maximum discharge, 43,800 second-feet June 26, 1908 (gage height, 21.2 feet at old site); minimum, 89 second-feet Aug. 31, Sept. 2, 1911.

A discharge of about 65,000 second-feet occurred in 1871 (gage height, about 27 feet at old site).

REMARKS.—Records good except those for periods of ice effect, Nov. 28 to Dec. 5, Dec. 19 to Mar. 2, and for July, which are fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	186	234	200		134	2,050	1,100	540	1,650	850	280	202
2.....	186	231	200		134	1,950	1,050	580	1,450	850	260	212
3.....	186	225	200		134	1,850	1,050	580	1,450	850	260	215
4.....	186	240	200		134	2,670	1,000	620	1,550	1,000	260	240
5.....	186	286	200		134	2,780	950	620	1,450	800	260	233
6.....	186	324	203		134	2,250	1,000	660	1,550	1,200	260	172
7.....	191	324	191		134	2,150	950	850	1,950	1,450	240	240
8.....	186	330	186		134	2,050	950	1,000	2,450	1,650	240	240
9.....	184	335	180		134	1,950	900	1,100	2,780	1,650	222	260
10.....	186	335	178		130	1,850	850	1,250	2,780	1,750	202	280
11.....	196	313	180	150	134	1,950	800	1,550	2,670	1,950	205	320
12.....	210	347	182		134	1,950	750	2,550	2,450	1,850	215	430
13.....	210	359	180		134	1,950	750	3,550	2,250	1,750	202	900
14.....	205	353	178		134	1,950	705	4,340	2,150	1,450	187	705
15.....	203	335	176		134	1,850	660	4,460	1,950	1,350	181	620
16.....	213	324	168		134	1,850	620	4,580	1,850	1,250	168	500
17.....	216	318	166		131	1,750	620	4,460	2,150	1,100	165	430
18.....	213	302	168		156	1,850	620	4,460	2,350	950	168	370
19.....	205	296			755	1,850	660	4,220	2,150	850	178	345
20.....	200	308			3,720	1,850	660	4,100	1,950	850	175	320
21.....	196	191			6,000	1,750	660	3,880	1,750	660	148	280
22.....	193	193		134	7,440	1,750	620	3,660	1,650	580	145	260
23.....	193	193		134	6,780	1,750	620	3,440	1,550	540	140	240
24.....	196	198		134	7,040	1,750	620	3,220	1,550	500	144	240
25.....	193	198	160	146	5,090	1,750	620	2,780	1,350	430	145	240
26.....	191	205		149	3,990	1,750	660	2,450	1,200	400	172	370
27.....	191	213		149	3,100	1,750	660	2,350	1,150	400	168	430
28.....	188	200		134	2,670	1,650	580	2,150	1,050	370	144	345
29.....	188	200		136	-----	1,650	540	1,950	1,000	345	140	280
30.....	198	200		134	-----	1,650	540	1,850	900	320	143	260
31.....	213	-----		134	-----	1,250	-----	1,650	-----	320	150	-----

Month	Maximum	Minimum	Mean	Pe- square mile	Run-off in inches
October.....	216	184	196	0.013	0.01
November.....	359	191	270	.018	.02
December.....	203	-----	175	.012	.01
January.....	-----	134	146	.010	.01
February.....	7,440	130	1,750	.120	.12
March.....	2,780	1,250	1,900	.130	.15
April.....	1,100	540	759	.052	.06
May.....	4,580	540	2,420	.166	.19
June.....	2,780	900	1,800	.123	.14
July.....	1,950	320	976	.067	.03
August.....	280	140	192	.013	.01
September.....	900	172	339	.023	.03
The year.....	7,440	130	905	.062	.83

ST. CROIX RIVER AT SWISS, WIS.

LOCATION.—Chain gage in sec. 33, T. 42 N., R. 15 W., at highway bridge near Swiss, $3\frac{1}{2}$ miles below Namakagon River and 10 miles northeast of Danbury.

DRAINAGE AREA.—1,550 square miles.

RECORDS AVAILABLE.—March, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 3,130 second-feet May 14 (gage height, 3.28 feet); minimum, 500 second-feet Aug. 18 (gage height, 0.08 foot).

1914–1930: Maximum discharge, 8,480 second-feet Apr. 22, 1916 (gage height, 6.73 feet); minimum, that of Aug. 18, 1930.

REMARKS.—Records fair except those for period of ice effect, Nov. 20 to Mar. 23, which are poor.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,010	1,230	1,080	940	975	1,010	1,010	1,490	1,080	1,080	875	541
2	1,010	1,400	1,150	940	1,010	875	1,150	1,670	1,080	1,080	875	614
3	1,010	1,230	1,150	940	1,010	1,140	1,150	1,670	1,080	1,080	810	693
4	1,010	1,080	1,150	940	1,010	1,400	1,150	1,760	1,230	1,080	639	693
5	1,010	1,010	1,150	940	975	1,490	1,150	1,760	1,670	1,010	750	693
6	1,010	940	1,080	975	940	1,580	1,150	1,760	1,940	1,010	810	693
7	940	940	1,150	1,010	940	1,620	1,150	1,940	1,850	1,010	810	614
8	940	940	1,080	975	940	1,670	1,230	2,120	1,670	940	810	614
9	875	875	1,150	940	907	1,540	1,230	2,220	1,490	940	750	693
10	940	875	1,080	907	825	1,400	1,230	2,420	1,310	940	693	693
11	1,150	940	1,080	875	875	1,360	1,230	2,620	1,230	875	693	639
12	1,150	1,010	1,150	842	875	1,310	1,230	2,920	1,150	875	810	693
13	1,150	1,150	1,080	810	875	1,360	1,230	3,020	1,400	810	810	750
14	1,080	1,230	1,080	810	875	1,400	1,010	3,020	1,490	693	750	639
15	1,010	1,150	1,080	810	875	1,360	1,080	2,820	1,400	875	750	565
16	1,010	1,150	1,010	842	875	1,310	1,150	2,620	1,310	875	693	588
17	1,010	1,150	1,010	875	943	1,310	1,150	2,420	1,310	810	614	565
18	940	1,150	1,010	875	1,010	1,310	1,230	2,120	1,310	750	500	588
19	1,010	1,150	1,010	875	1,010	1,230	1,230	1,940	1,310	693	541	639
20	1,010	1,080	940	875	1,010	1,150	1,150	1,850	1,230	750	588	614
21	1,010	1,010	940	875	1,300	1,040	1,230	1,670	1,150	639	565	639
22	1,010	1,150	940	875	1,580	940	1,150	1,670	1,150	639	541	639
23	1,080	1,150	940	875	1,620	875	1,150	1,580	1,150	639	614	693
24	1,080	1,150	940	842	1,670	1,010	1,150	1,490	1,230	639	614	693
25	1,080	1,080	940	810	1,620	1,150	1,150	1,400	1,310	693	500	810
26	1,010	1,010	940	842	1,580	1,080	1,080	1,150	1,310	810	541	875
27	1,010	1,080	975	875	1,360	1,080	1,010	1,080	1,310	875	639	940
28	940	1,080	1,010	875	1,150	1,080	1,010	1,150	1,230	750	693	940
29	940	1,080	1,010	875	1,010	1,010	1,010	1,150	1,150	810	639	940
30	1,080	1,150	1,010	907	940	1,150	1,150	1,150	875	875	693	940
31	1,150	-----	975	940	-----	875	-----	1,150	-----	875	639	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,150	875	1,020	0.658	0.76
November	1,400	875	1,090	.703	.78
December	1,150	940	1,040	.671	.77
January	1,010	810	890	.574	.66
February	1,670	875	1,100	.710	.74
March	1,670	875	1,220	.787	.91
April	1,230	1,010	1,150	.742	.83
May	3,020	1,080	1,900	1.23	1.42
June	1,940	875	1,310	.845	.94
July	1,080	639	852	.550	.63
August	875	500	685	.442	.51
September	940	541	698	.450	.50
The year	3,020	500	1,080	.697	9.45

ST. CROIX RIVER NEAR GRANTSBURG, WIS.

LOCATION.—Chain gage near center of sec. 30, T. 40 N., R. 18 W., at Norway Point Ferry, half a mile below Sand Creek and 10 miles north of Grantsburg.

DRAINAGE AREA.—2,820 square miles.

RECORDS AVAILABLE.—April, 1923, to September, 1930.

EXTREMES.—Maximum discharge during year, 5,850 second-feet June 7 (gage height, 7.70 feet); minimum, 735 second-feet Aug. 19, 26 (gage height, 3.4 feet).

1923-1930: Maximum discharge, 13,300 second-feet Mar. 18, 1927 (gage height, 11.4 feet); minimum (estimated), 695 second-feet Dec. 6, 1925.

REMARKS.—Records fair except those for period of ice effect, Nov. 23 to Mar. 20, which are poor.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	2,150	2,150	1,480	1,320	1,170	2,610	1,750	2,580	1,750	1,660	1,170	945
2.....	2,200	2,490	1,570	1,320	1,170	2,490	1,990	2,890	1,660	1,480	1,170	800
3.....	2,150	2,490	1,570	1,320	1,170	2,370	1,990	2,890	1,660	1,480	1,170	870
4.....	2,050	2,490	1,570	1,320	1,090	2,260	1,990	3,040	1,850	1,570	1,090	870
5.....	2,050	2,370	1,570	1,480	1,170	2,150	1,990	3,040	2,730	1,570	1,020	870
6.....	2,050	2,490	1,570	1,320	1,240	2,260	1,990	3,040	4,730	1,480	1,020	945
7.....	1,850	2,370	1,480	1,240	1,170	2,260	1,990	3,860	5,850	1,480	1,020	945
8.....	1,750	2,260	1,480	1,320	1,170	2,260	2,130	3,670	4,730	1,320	1,020	945
9.....	1,850	2,260	1,480	1,240	1,170	2,050	2,130	3,840	3,810	1,400	1,020	800
10.....	1,850	2,260	1,320	1,320	1,170	2,150	2,130	4,190	2,850	1,320	945	945
11.....	1,850	2,260	1,320	1,320	1,570	2,050	2,130	4,530	2,610	1,320	945	945
12.....	2,050	2,050	1,480	1,320	1,090	2,730	2,130	5,050	2,260	1,320	800	1,020
13.....	2,050	2,150	1,480	1,400	1,170	2,150	2,130	5,220	2,260	1,240	945	1,020
14.....	1,950	2,150	1,480	1,240	1,170	2,260	1,750	5,220	2,490	1,400	945	1,020
15.....	1,950	2,150	1,400	1,400	1,170	2,370	1,870	4,880	2,490	1,090	945	1,090
16.....	2,050	2,150	1,400	1,320	1,170	2,370	1,990	4,530	2,370	1,170	945	1,020
17.....	2,050	2,150	1,320	1,320	1,170	2,370	1,990	4,190	2,150	1,170	870	1,020
18.....	1,950	2,050	1,320	1,320	1,170	2,370	2,130	4,570	2,150	1,170	870	1,090
19.....	1,950	1,850	1,320	1,320	1,170	2,370	2,130	4,110	2,150	1,170	735	1,020
20.....	2,050	2,050	1,320	1,320	1,320	2,490	1,990	3,530	2,050	1,170	870	1,090
21.....	2,050	1,950	1,320	1,090	1,400	1,800	2,130	3,390	1,850	1,170	870	1,020
22.....	1,850	1,750	1,320	1,240	1,570	1,630	1,990	2,980	1,750	1,090	870	1,020
23.....	1,850	1,750	1,240	1,240	1,750	1,510	1,990	2,730	1,850	1,170	870	1,090
24.....	1,850	1,750	1,170	1,240	2,050	1,750	1,990	2,490	1,850	1,170	870	1,170
25.....	1,950	1,660	1,170	1,170	2,490	1,990	1,990	2,370	2,050	1,170	870	1,240
26.....	1,850	1,570	1,170	1,240	2,610	1,870	1,870	2,260	2,050	1,170	735	1,320
27.....	1,850	1,660	1,240	1,170	2,490	1,870	1,750	1,950	2,050	1,170	870	1,480
28.....	1,850	1,660	1,320	1,020	2,490	1,870	1,750	2,050	2,050	1,170	870	1,480
29.....	1,660	1,480	1,320	1,020	-----	1,750	1,750	2,050	1,850	1,090	870	1,480
30.....	1,850	1,480	1,320	1,170	-----	1,630	1,990	1,850	1,850	1,170	870	1,480
31.....	1,950	-----	1,240	1,170	-----	1,510	-----	1,850	-----	1,170	870	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	2,260	1,660	1,950	0.691	0.80
November.....	2,490	1,480	2,040	.723	.81
December.....	1,570	1,170	1,380	.489	.56
January.....	1,480	1,020	1,270	.450	.52
February.....	2,610	1,090	1,450	.514	.54
March.....	2,730	1,510	2,120	.752	.87
April.....	2,130	1,750	1,980	.702	.78
May.....	5,220	1,850	3,370	1.20	1.38
June.....	5,850	1,660	2,460	.872	.97
July.....	1,660	1,090	1,280	.454	.52
August.....	1,170	735	934	.331	.38
September.....	1,480	800	1,070	.379	.42
The year.....	5,850	735	1,780	.631	8.55

ST. CROIX RIVER NEAR RUSH CITY, MINN.

LOCATION.—Chain gage in SW. $\frac{1}{4}$ sec. 8, T. 37 N., R. 20 W., at Northern Pacific Railway bridge 5 miles east of Rush City and 10 miles below mouth of Snake River.

DRAINAGE AREA.—5,120 square miles.

RECORDS AVAILABLE.—April, 1923, to September, 1930.

EXTREMES.—Maximum discharge during year, 15,900 second-feet May 15 (gage height, 8.36 feet); minimum, 800 second-feet Aug. 28, 29 (gage height, 2.40 feet).

1923-1930: Maximum discharge, 26,700 second-feet Mar. 18, 1927 (gage height, 10.2 feet); minimum, that of Aug. 28, 29, 1930.

REMARKS.—Records good except those for period of ice effect, Nov. 23 to Mar. 10, which are poor.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	2,260	2,160	1,640	1,270	1,540	3,630	1,740	2,370	2,480	2,160	1,270	875
2.....	2,260	2,480	1,640	1,270	1,540	3,390	1,740	3,160	2,480	2,050	1,270	875
3.....	2,260	2,700	1,640	1,450	1,450	3,160	1,940	3,870	2,480	2,050	1,270	980
4.....	2,160	2,700	1,640	1,450	1,450	3,160	2,160	4,350	2,590	2,050	1,270	980
5.....	2,050	2,480	1,640	1,450	1,450	2,930	2,260	4,600	3,330	1,840	1,270	980
6.....	2,050	2,480	1,640	1,450	1,450	2,820	2,370	4,350	5,600	1,840	1,270	980
7.....	2,050	2,480	1,640	1,270	1,540	2,590	2,590	4,600	6,120	1,940	1,270	980
8.....	1,940	2,370	1,540	1,270	1,640	2,590	2,590	5,350	6,900	1,640	1,190	980
9.....	1,840	2,260	1,540	1,270	1,640	2,590	2,700	6,120	6,120	1,640	1,110	980
10.....	1,840	2,260	1,450	1,270	1,540	2,480	2,820	7,160	4,850	1,640	1,070	980
11.....	1,840	2,260	1,450	1,190	1,540	2,260	2,590	9,030	3,870	1,640	980	980
12.....	2,050	2,260	1,450	1,190	1,540	2,590	2,590	11,000	3,390	1,640	980	1,110
13.....	2,050	2,260	1,540	1,360	1,540	2,700	2,700	13,200	3,160	1,450	980	1,110
14.....	2,050	2,260	1,540	1,360	1,540	2,590	2,820	14,700	3,160	1,190	980	1,070
15.....	2,050	2,260	1,540	1,360	1,540	2,820	2,820	15,600	3,390	1,110	980	980
16.....	2,050	2,260	1,540	1,270	1,540	2,820	2,590	15,000	3,390	1,110	980	980
17.....	2,050	2,160	1,450	1,270	1,540	3,160	2,590	13,500	2,930	1,270	980	980
18.....	2,050	2,050	1,450	1,270	1,540	2,930	2,590	11,800	2,930	1,270	980	980
19.....	2,050	2,050	1,450	1,450	1,540	2,930	2,590	10,100	2,820	1,190	875	980
20.....	2,050	1,840	1,540	1,450	1,740	2,820	2,820	9,030	2,480	1,110	875	980
21.....	2,050	1,840	1,540	1,450	2,050	2,700	2,820	7,950	2,480	1,110	875	980
22.....	2,050	1,940	1,450	1,450	2,700	3,390	2,930	6,900	2,480	1,110	875	980
23.....	1,940	1,840	1,450	1,450	2,590	3,160	2,930	5,860	2,480	1,110	875	980
24.....	1,840	1,640	1,360	1,450	2,480	2,820	2,590	4,850	2,480	1,270	875	1,110
25.....	1,840	1,740	1,270	1,450	2,590	2,700	2,590	4,600	2,590	1,270	875	1,110
26.....	1,840	1,740	1,270	1,360	3,390	2,370	2,590	4,110	2,700	1,270	875	1,190
27.....	1,840	1,640	1,270	1,360	3,630	2,160	2,370	3,390	2,700	1,270	875	1,450
28.....	1,840	1,540	1,270	1,360	3,630	2,160	2,370	3,160	2,480	1,270	800	1,640
29.....	1,840	1,640	1,270	1,360	-----	2,160	2,160	2,820	2,480	1,270	800	1,640
30.....	1,840	1,640	1,270	1,360	-----	1,840	2,160	2,820	2,260	1,270	822	1,640
31.....	1,940	-----	1,270	1,360	-----	1,740	-----	2,590	-----	1,270	875	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	2,260	1,840	2,000	0.391	0.45
November.....	2,700	1,540	2,110	.412	.46
December.....	1,640	1,270	1,460	.285	.33
January.....	1,450	1,190	1,350	.264	.30
February.....	3,630	1,450	1,920	.375	.39
March.....	3,630	1,740	2,710	.529	.61
April.....	2,930	1,740	2,500	.488	.54
May.....	15,600	2,370	7,030	1.37	1.58
June.....	6,900	2,260	3,330	.656	.73
July.....	2,160	1,110	1,460	.285	.33
August.....	1,270	800	1,010	.197	.23
September.....	1,640	875	1,080	.211	.24
The year.....	15,600	800	2,340	.457	6.19

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., near St. Croix Falls.

DRAINAGE AREA.—5,930 square miles.

RECORDS AVAILABLE.—January, 1910, to September, 1930.

EXTREMES.—Maximum mean daily discharge during year, 17,500 second-feet May 16; minimum, 404 second-feet Jan. 12.

1910-1930: Maximum mean daily discharge, 35,800 second-feet Mar. 26, 1920; no flow Sept. 30, 1929.

REMARKS.—Records good. Flow computed from power-house records. Low-water flow controlled by operation of gates of power plant and by operations at Never's Dam, 10 miles upstream. Daily discharge records furnished by Northern States Power Co.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	3,420	2,240	673	741	1,640	3,490	2,790	3,150	2,100	2,930	1,600	1,140
2.....	2,400	2,550	1,770	2,320	509	2,030	2,700	3,920	3,200	3,150	1,610	1,160
3.....	2,610	1,050	2,170	2,220	1,760	2,920	2,670	3,360	3,100	3,070	1,600	1,100
4.....	2,370	2,970	2,300	2,140	1,830	3,160	2,590	3,260	3,470	1,820	1,610	1,060
5.....	2,510	3,300	1,870	649	1,730	3,720	2,400	5,060	5,520	1,860	1,600	1,190
6.....	2,220	3,120	2,080	2,410	1,830	3,240	2,000	5,010	5,380	1,840	1,600	1,140
7.....	2,290	2,940	2,000	2,400	1,830	3,520	2,820	5,740	5,540	2,810	1,370	1,170
8.....	3,040	3,030	651	2,140	1,880	2,670	2,970	6,520	6,220	2,580	1,320	1,160
9.....	2,580	2,880	2,190	2,010	524	1,240	3,470	7,200	6,010	2,270	1,300	1,140
10.....	2,660	1,990	2,410	1,850	2,000	3,430	3,940	7,010	6,180	2,240	1,300	1,160
11.....	2,740	3,450	2,160	1,660	1,950	3,200	3,830	8,060	5,210	2,110	1,260	1,140
12.....	2,610	3,050	2,080	404	1,870	3,330	4,140	10,000	4,720	1,710	1,150	1,320
13.....	1,990	3,000	2,030	2,100	1,820	3,510	2,460	12,700	5,310	1,610	1,140	1,480
14.....	2,330	2,840	1,950	1,890	1,860	3,200	3,960	14,600	3,360	1,630	1,120	1,400
15.....	2,470	2,850	607	1,940	1,860	3,100	3,860	16,600	1,590	1,610	1,220	1,410
16.....	2,590	2,610	2,280	1,720	426	1,100	3,860	17,500	4,340	1,600	1,200	1,400
17.....	2,520	1,840	2,320	1,560	1,960	3,710	3,290	16,500	4,280	1,600	1,160	1,290
18.....	2,580	3,080	2,160	1,430	2,050	4,350	3,820	15,600	3,860	1,600	1,160	1,310
19.....	2,660	2,980	1,990	676	1,860	4,300	3,800	10,400	3,860	1,600	1,120	1,480
20.....	2,010	2,850	1,930	1,890	1,920	4,480	2,100	9,190	4,230	1,610	1,100	1,320
21.....	3,140	2,710	1,940	1,910	2,550	4,720	3,230	7,890	4,200	1,480	1,030	1,320
22.....	3,420	1,320	452	1,850	3,260	3,640	3,920	7,420	1,970	1,510	1,050	1,280
23.....	3,520	1,110	2,360	1,670	2,460	632	3,700	7,290	3,760	1,440	1,080	1,200
24.....	2,210	533	2,110	1,640	3,870	3,880	3,710	7,050	3,610	1,520	1,080	1,390
25.....	2,430	1,960	552	1,750	4,120	3,340	3,640	3,880	3,810	1,660	1,110	1,410
26.....	2,400	1,980	2,250	683	4,760	2,900	3,470	5,020	3,410	1,600	1,060	1,630
27.....	1,700	2,040	2,310	1,840	4,460	3,340	2,120	5,930	3,120	1,750	1,030	1,630
28.....	2,120	1,130	2,280	1,860	4,360	3,060	3,310	4,510	2,400	1,830	1,030	1,640
29.....	2,160	2,470	427	1,780	-----	2,130	3,290	3,800	1,840	1,600	1,100	1,630
30.....	2,620	2,450	2,460	1,610	-----	940	3,510	2,510	2,930	1,600	1,120	1,640
31.....	2,370	-----	2,460	1,670	-----	2,520	-----	2,610	-----	1,600	1,100	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	3,520	1,700	2,540	0.428	0.49
November.....	3,450	533	2,410	.406	.45
December.....	2,460	427	1,850	.312	.36
January.....	2,410	404	1,690	.235	.33
February.....	4,760	426	2,250	.379	.59
March.....	4,720	632	3,060	.516	.59
April.....	4,140	2,000	3,250	.548	.61
May.....	17,500	2,510	7,720	1.30	1.50
June.....	6,220	1,590	3,950	.666	.74
July.....	3,150	1,440	1,900	.320	.37
August.....	1,610	1,030	1,230	.207	.24
September.....	1,640	1,060	1,320	.223	.25
The year.....	17,500	404	2,770	.467	6.32

NAMAKAGON RIVER NEAR TREGO, WIS.

LOCATION.—In SW. $\frac{1}{4}$ sec. 17, T. 40 N., R. 12 W., at power house of Wisconsin Hydro-Electric Co., 5 miles northwest of Trego.

DRAINAGE AREA.—476 square miles.

RECORDS AVAILABLE.—October, 1927, to September, 1930. At Trego, 5 miles upstream, from March, 1914, to September, 1927.

EXTREMES.—Maximum mean daily discharge during year, 844 second-feet Feb. 24; minimum, 113 second-feet Aug. 17, Sept. 7.

1927-1930: Maximum mean daily discharge, 1,360 second-feet Sept. 14, 1928; minimum, that of Aug. 17, Sept. 7, 1930.

REMARKS.—Records good. Discharge computed from hourly record of load and head on power plant.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	710	543	210	209	380	518	411	532	350	399	367	323
2	551	650	446	430	161	266	406	642	558	370	369	280
3	519	281	438	445	393	485	402	644	547	390	140	281
4	548	583	432	474	365	483	399	544	540	364	348	282
5	572	582	440	174	360	618	419	560	561	415	344	284
6	251	570	426	478	370	357	224	639	617	193	331	290
7	529	567	423	444	369	368	501	681	579	438	305	113
8	473	783	177	436	377	431	418	669	257	362	306	281
9	400	724	436	400	163	172	473	674	538	396	304	274
10	410	211	400	383	380	514	473	610	540	359	119	276
11	406	570	392	408	377	494	456	725	554	344	298	276
12	477	570	388	171	370	512	518	669	581	366	299	286
13	221	570	394	431	373	481	213	665	567	143	299	319
14	416	570	403	388	369	484	505	821	551	339	301	123
15	538	574	193	383	388	433	486	785	399	322	303	312
16	511	622	408	383	158	277	507	565	641	321	301	344
17	497	245	422	410	381	508	508	590	646	305	113	313
18	518	579	380	371	369	505	459	527	569	307	278	380
19	568	583	405	174	371	494	498	706	571	327	302	282
20	247	561	404	414	384	547	433	417	570	133	288	353
21	513	443	430	383	458	437	428	478	545	337	267	246
22	469	373	194	375	553	409	489	515	213	325	262	296
23	494	361	445	376	584	258	420	550	401	331	264	275
24	503	168	420	370	844	482	418	574	451	343	131	375
25	492	458	211	405	705	490	454	295	530	397	268	331
26	559	446	408	173	618	407	471	464	438	381	271	369
27	186	468	357	389	527	417	379	429	441	211	271	325
28	467	292	465	366	513	363	512	428	402	406	270	336
29	450	375	185	366	-----	410	511	453	205	401	287	331
30	437	519	483	363	-----	208	507	441	424	376	330	421
31	514	-----	484	362	-----	434	-----	456	-----	354	130	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	710	186	466	0.979	1.13
November	783	168	495	1.04	1.16
December	484	177	377	.792	.91
January	478	171	366	.769	.89
February	844	158	416	.874	.91
March	618	172	428	.899	1.04
April	518	213	443	.931	1.04
May	821	295	573	1.20	1.38
June	646	205	493	1.04	1.16
July	438	133	337	.708	.82
August	369	113	273	.574	.66
September	421	113	299	.628	.70
The year	844	113	414	.870	11.80

APPLE RIVER NEAR SOMERSET, WIS.

LOCATION.—In sec. 21, T. 31 N., R. 19 W., at power plant of Northern States Power Co., $3\frac{1}{2}$ miles below Somerset.

DRAINAGE AREA.—550 square miles.

RECORDS AVAILABLE.—January, 1901, to September, 1930.

EXTREMES.—Maximum mean daily discharge during year, 919 second-feet Feb. 26; minimum, 60 second-feet Aug. 24.

1904-1930: Maximum mean daily discharge, 2,280 second-feet in June, 1905; no flow Sept. 30, 1929.

REMARKS.—Records fair. Discharge computed from power-house records by engineers of Northern States Power Co.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	138	201	133	120	154	419	204	225	126	132	103	158
2	190	290	158	207	150	218	212	313	184	115	174	97
3	149	116	126	178	172	323	191	272	178	155	254	106
4	160	202	178	154	157	380	212	280	195	158	147	104
5	138	231	132	149	158	358	237	321	195	132	127	126
6	199	274	172	178	165	255	122	284	207	115	138	90
7	201	260	138	144	170	232	222	314	246	144	166	105
8	166	246	160	150	169	258	220	419	173	138	178	132
9	154	185	166	160	175	322	218	350	176	155	170	97
10	166	151	144	153	210	367	187	287	166	144	144	87
11	202	181	166	146	204	299	164	339	144	138	138	80
12	345	174	166	132	193	290	198	411	156	109	135	130
13	184	201	172	155	166	302	120	445	204	120	126	103
14	231	215	154	172	161	301	205	411	155	126	136	174
15	207	256	127	160	147	204	195	399	296	109	128	130
16	202	263	167	149	205	206	184	437	252	115	138	159
17	167	207	178	184	166	331	230	345	88	106	150	125
18	190	213	161	144	222	330	178	249	166	115	135	133
19	155	190	144	125	218	266	201	321	206	90	91	123
20	201	201	161	178	240	244	190	138	206	90	123	121
21	213	171	153	150	275	216	225	315	178	126	103	97
22	184	107	138	178	394	233	213	198	154	110	94	116
23	157	132	146	172	406	240	201	272	201	66	77	112
24	179	207	172	143	661	285	190	224	166	97	60	129
25	144	227	160	152	738	238	195	220	195	106	133	202
26	233	195	187	160	919	206	184	160	172	144	100	188
27	91	207	150	172	665	231	219	160	154	172	96	350
28	160	78	155	126	540	211	212	193	103	152	100	266
29	172	117	150	160	-----	218	178	184	82	174	103	171
30	166	107	154	154	-----	208	213	150	144	143	118	114
31	201	-----	190	178	-----	236	-----	172	-----	127	114	-----
Month	Maximum			Minimum			Mean			Per square mile		Run-off in inches
October	345			91			182			0.331		0.38
November	290			78			194			.353		.39
December	190			126			157			.285		.33
January	207			120			158			.287		.33
February	919			147			298			.533		.56
March	419			204			272			.495		.57
April	237			120			197			.358		.40
May	445			138			284			.516		.59
June	290			82			174			.316		.35
July	174			66			127			.231		.27
August	254			60			129			.235		.27
September	350			80			138			.251		.28
The year	919			60			191			.347		4.72

CHIPPEWA RIVER AT BISHOPS BRIDGE, NEAR WINTER, WIS.

LOCATION.—Chain gage in sec. 23, T. 39 N., R. 6 W., at highway bridge 3 miles downstream from Chippewa Reservoir Dam and 4 miles northwest of Winter.

DRAINAGE AREA.—775 square miles.

RECORDS AVAILABLE.—February, 1912, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,760 second-feet Nov. 29 (gage height, 6.30 feet); minimum, 80 second-feet Feb. 25–27, Mar. 7 (gage height, 3.80 feet).

1912–1930: Maximum discharge, 6,940 second-feet Apr. 22, 1916 (gage height, 9.56 feet); minimum, 14 second-feet Apr. 17–20, May 1–5, 1925 (gage height, 3.25 feet).

REMARKS.—Records excellent. Discharge regulated by storage at Chippewa Reservoir; monthly table shows correction for this storage.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	495	495	1,000	915	870	92	120	104	92	92	470	309
2.....	495	495	1,050	960	870	120	120	104	256	92	470	309
3.....	495	495	1,050	960	870	170	120	104	470	92	470	309
4.....	495	495	1,050	960	870	208	120	104	92	120	470	309
5.....	495	495	1,050	915	870	208	120	104	120	120	470	309
6.....	520	495	1,050	915	870	208	120	104	92	92	470	309
7.....	495	495	1,000	915	830	80	120	104	92	470	288	309
8.....	495	495	1,000	915	830	189	120	104	92	470	288	309
9.....	495	495	1,000	915	830	135	120	92	92	470	309	309
10.....	495	495	1,000	960	830	104	120	92	92	495	309	309
11.....	495	495	1,000	960	830	170	120	92	92	470	309	309
12.....	495	268	960	960	830	248	104	92	92	470	309	309
13.....	495	268	915	960	830	228	104	92	92	470	309	309
14.....	495	268	915	960	960	208	104	92	120	470	309	309
15.....	495	268	915	960	1,100	135	104	92	120	470	309	309
16.....	495	268	915	960	1,050	129	104	92	120	470	309	309
17.....	495	268	915	960	1,050	120	104	92	120	470	309	309
18.....	495	268	915	960	1,050	120	104	92	104	470	309	309
19.....	495	550	915	960	915	120	104	92	92	470	309	309
20.....	495	790	915	960	790	163	104	92	92	470	309	309
21.....	495	790	915	960	750	163	104	92	92	470	309	309
22.....	495	1,450	915	960	710	120	104	92	92	470	309	309
23.....	495	1,650	915	960	470	120	104	92	92	470	309	309
24.....	495	1,450	915	960	238	120	104	92	92	470	309	309
25.....	495	1,250	915	960	80	120	104	92	92	470	309	309
26.....	495	1,000	915	960	80	120	104	92	92	470	309	309
27.....	495	1,250	915	960	80	120	104	92	92	470	309	309
28.....	495	1,450	915	960	104	120	104	92	92	470	309	104
29.....	495	1,550	915	960	-----	120	104	92	92	470	309	104
30.....	495	1,250	915	915	-----	120	104	92	92	470	309	104
31.....	495	-----	915	915	-----	120	-----	92	-----	470	309	-----

Month	Observed			Gain or loss in storage (millions of cubic feet)	Corrected for storage		
	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October.....	520	495	496	+126	543	0.701	0.81
November.....	1,650	268	725	-102	686	.885	.99
December.....	1,050	915	955	-1,770	294	.379	.44
January.....	960	915	948	-1,878	247	.319	.37
February.....	1,100	80	732	-647	465	.600	.62
March.....	248	80	146	+1,203	595	.768	.89
April.....	120	104	110	+1,469	677	.874	.98
May.....	104	92	95.1	+2,435	1,000	1.29	1.49
June.....	470	92	115	+1,788	805	1.04	1.16
July.....	495	92	399	-462	227	.293	.34
August.....	470	288	339	-718	71	.092	.11
September.....	309	104	288	-155	228	.294	.33
The year.....	1,650	80	445	+1,289	486	.627	8.53

CHIPPEWA RIVER NEAR BRUCE, WIS.

LOCATION.—Chain gage in sec. 4, T. 35 N., R. 7 W., just below mouth of Thornapple River and 1 mile east of Bruce.

DRAINAGE AREA.—1,600 square miles.

RECORDS AVAILABLE.—December, 1913, to September, 1930.

EXTREMES.—Maximum discharge during year, 3,280 second-feet June 14 (gage height, 4.75 feet); minimum, 402 second-feet July 3 (gage height, 1.35 feet).
1913-1930: Maximum discharge, 14,900 second-feet Apr. 10, 1922 (gage height, 13.7 feet); minimum, 200 second-feet Aug. 7-9, 1925 (gage height, 1.00 foot).

REMARKS.—Records excellent except those for period of ice effect, Nov. 22 to Mar. 30, which are poor. Flow regulated to some extent by storage at Chippewa Reservoir; monthly table shows correction for this storage.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	434	951	1,690	1,360	1,030	718	467	951	434	434	680	467
2.....	718	951	1,770	1,280	1,030	643	500	1,280	434	434	680	467
3.....	718	912	1,770	1,190	1,110	606	535	1,360	570	402	643	467
4.....	718	873	1,770	1,190	1,030	535	535	1,190	834	434	643	467
5.....	718	834	1,860	1,190	1,030	500	570	1,030	795	467	643	467
6.....	718	795	1,940	1,190	1,030	467	570	990	643	467	643	467
7.....	680	795	1,860	1,110	1,030	467	606	1,190	643	434	570	467
8.....	680	795	1,860	1,030	1,110	434	606	1,600	606	606	500	467
9.....	718	756	1,690	1,030	1,030	434	606	1,600	535	718	500	467
10.....	718	795	1,690	1,110	1,030	434	606	1,280	500	718	467	467
11.....	718	873	1,690	1,190	1,030	434	643	1,360	467	680	467	467
12.....	795	795	1,690	1,190	1,110	467	643	1,520	434	680	467	500
13.....	795	643	1,690	1,190	1,030	467	643	1,690	1,860	680	467	500
14.....	795	643	1,690	1,280	1,030	467	643	1,940	3,280	680	467	500
15.....	795	606	1,600	1,280	990	500	606	1,860	3,190	680	467	500
16.....	756	570	1,520	1,190	990	500	606	1,520	2,300	680	467	500
17.....	756	570	1,520	1,190	990	570	643	1,360	1,690	680	467	467
18.....	756	535	1,520	1,190	1,110	1,030	795	1,110	1,360	680	467	467
19.....	756	570	1,520	1,190	1,190	912	1,190	912	1,030	680	467	467
20.....	756	756	1,520	1,190	1,190	570	1,030	795	834	643	467	467
21.....	756	500	1,440	1,190	1,190	535	951	718	756	606	467	467
22.....	718	1,360	1,360	1,190	1,360	570	834	643	718	606	467	467
23.....	718	1,600	1,360	1,190	1,360	434	756	643	912	643	467	467
24.....	718	1,690	1,360	1,190	1,360	434	680	606	990	680	467	500
25.....	718	1,690	1,360	1,110	1,360	500	643	570	795	680	467	570
26.....	718	1,690	1,360	1,030	1,190	606	606	500	680	718	467	718
27.....	718	1,690	1,360	1,110	873	570	570	500	570	756	467	873
28.....	718	1,690	1,360	1,110	795	535	535	500	500	795	467	680
29.....	718	1,600	1,360	1,110	-----	402	535	467	500	756	467	467
30.....	718	1,690	1,360	1,110	-----	434	643	467	467	718	467	467
31.....	795	-----	1,360	1,110	-----	467	-----	467	-----	718	467	-----

Month	Observed			Gain or loss in storage (millions of cubic feet)	Corrected for storage		
	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October.....	795	434	726	+126	773	0.483	0.56
November.....	1,690	535	1,010	-102	971	.607	.68
December.....	1,940	1,360	1,580	-1,770	919	.574	.66
January.....	1,360	1,030	1,170	-1,878	469	.293	.34
February.....	1,360	795	1,090	-647	823	.514	.54
March.....	1,030	402	537	+1,203	986	.616	.71
April.....	1,190	467	660	+1,469	1,230	.769	.86
May.....	1,940	467	1,050	+2,435	1,960	1.22	1.41
June.....	3,280	434	978	+1,788	1,670	1.04	1.16
July.....	795	402	631	-462	459	.287	.33
August.....	680	467	509	-718	241	.151	.17
September.....	873	467	506	-155	446	.279	.31
The year.....	3,280	402	869	+1,289	910	.569	7.73

CHIPPEWA RIVER AT CHIPPEWA FALLS, WIS.

LOCATION.—Water-stage recorder in SE. ¼ sec. 6, T. 28 N., R. 8 W., at Chippewa Falls, 2,500 feet below mouth of Duncan Creek.

DRAINAGE AREA.—5,600 square miles.

RECORDS AVAILABLE.—June, 1888, to September, 1930.

EXTREMES.—Maximum discharge during year, 40,200 second-feet June 15 (gauge height, 11.6 feet); minimum, 82 second-feet Sept. 5 (gauge height, -0.80 foot). 1888-1930: Maximum discharge, 78,000 second-feet Mar. 27, 1920 (gauge height, 17.0 feet); minimum, 23 second-feet Sept. 22, 1929.

Maximum stage known, 26.94 feet Sept. 10, 1884.

REMARKS.—Records good except those for period of ice effect, Nov. 23 to Mar. 8 and for estimated periods, which are fair. Flow regulated by power plants and by two large storage reservoirs above station; monthly table shows correction for this storage.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,170	2,710	687	1,510	2,170	5,960	2,290	5,100	1,100	4,320	2,290	710
2	950	2,489	2,380	2,850	701	793	2,570	7,040	2,650	3,860	1,680	1,520
3	353	1,800	2,070	2,880	2,690	4,450	2,400	7,790	2,650	3,000	972	1,900
4	580	2,380	2,100	2,860	2,700	4,840	2,620	6,390	4,280	875	2,290	1,640
5	491	2,920	2,140	1,050	2,320	5,420	2,830	14,400	4,550	*2,240	2,590	1,450
6	209	3,150	2,870	3,140	2,230	5,410	652	8,340	*5,800	1,100	2,590	1,420
7	348	3,150	2,660	2,880	2,210	5,490	2,410	8,070	*4,570	2,330	2,040	788
8	524	3,080	736	2,340	1,870	5,350	2,320	7,950	1,330	2,590	1,780	1,520
9	1,410	2,990	2,950	2,470	1,140	1,640	2,610	9,940	7,520	2,850	1,540	1,780
10	1,360	1,160	3,420	2,290	2,740	5,700	2,570	10,100	4,880	2,590	865	1,780
11	690	3,750	2,850	2,240	2,830	6,200	3,110	8,420	4,320	3,320	1,800	1,780
12	*1,740	3,830	2,780	1,030	2,770	5,530	3,320	10,800	5,150	1,580	1,820	*1,900
13	1,160	3,260	2,780	2,630	2,820	1,170	1,600	7,670	6,260	1,270	2,080	*1,330
14	1,740	2,750	2,460	2,780	2,860	*5,190	3,320	7,950	*15,300	2,850	1,640	865
15	2,790	2,780	738	2,750	1,920	*4,890	3,520	7,950	35,000	3,060	1,520	1,520
16	3,080	2,610	3,120	2,720	338	2,660	3,520	8,280	29,800	2,590	*1,340	1,520
17	3,050	1,240	3,320	2,340	4,400	6,260	3,590	*6,940	18,600	2,800	*797	1,520
18	3,060	2,950	2,890	1,960	4,480	7,310	4,550	*5,430	14,400	2,350	*1,480	1,520
19	2,080	2,440	2,950	862	4,050	8,070	3,860	*5,790	12,600	2,040	*1,690	2,020
20	605	3,020	2,560	2,670	4,310	8,070	865	*4,890	9,840	1,450	*1,660	1,900
21	2,140	2,920	2,170	2,770	4,480	8,340	5,930	*5,040	*5,380	2,290	*1,480	1,070
22	1,770	2,530	728	2,740	4,740	7,520	4,830	*4,960	3,410	2,290	*1,560	1,640
23	2,320	2,060	2,800	2,460	2,120	4,320	4,550	*5,050	6,320	2,290	*1,260	1,750
24	2,910	381	2,740	2,680	5,850	5,150	4,280	*4,370	9,650	2,160	*797	1,750
25	3,080	1,730	946	2,050	6,100	3,150	5,750	1,340	8,510	1,910	*1,580	1,750
26	1,850	1,960	2,690	893	6,330	3,360	8,990	4,130	8,990	2,040	*1,630	3,250
27	813	2,690	3,270	2,760	6,850	3,080	1,830	3,590	6,200	1,100	*1,540	2,590
28	800	732	2,290	2,730	6,640	3,200	4,280	3,590	4,880	2,290	*1,450	1,180
29	1,020	2,780	946	2,750	-----	*3,700	4,830	3,590	1,220	2,330	*1,570	1,640
30	2,790	2,450	3,300	2,770	-----	*1,310	4,550	1,100	4,880	2,590	*1,380	2,040
31	2,800	-----	2,980	2,520	-----	2,500	-----	2,160	-----	2,590	710	-----

Month	Observed			Gain or loss in storage (millions of cubic feet)	Corrected for storage		
	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	3,080	209	1,600	-184	1,530	0.273	0.31
November	3,830	180	2,440	-319	2,320	.414	.46
December	3,420	687	2,380	-2,194	1,560	.279	.32
January	3,140	862	2,370	-2,636	1,390	.248	.29
February	6,850	338	3,360	-638	3,100	.554	.58
March	8,340	793	4,710	+1,315	5,200	.929	1.07
April	8,990	652	3,480	+2,319	4,380	.782	.87
May	14,400	1,100	6,390	+3,772	7,800	1.39	1.60
June	35,600	1,100	8,400	+3,369	9,700	1.73	1.93
July	4,320	875	2,350	-890	2,020	.361	.42
August	2,590	710	1,590	-2,118	799	.143	.16
September	3,250	710	1,630	-1,017	1,240	.221	.25
The year	35,600	180	3,390	+779	3,420	.611	8.26

* Estimated.

CHIPPEWA RIVER AT DURAND, WIS.

LOCATION.—Chain gage in SW. ¼ sec. 21, T. 25 N., R. 13 W., at Durand.

DRAINAGE AREA.—9,010 square miles.

RECORDS AVAILABLE.—July, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 37,700 second-feet June 17 (gage height, 10.55 feet); minimum (estimated), 646 second-feet Feb. 10.

1928-1930: Maximum discharge, 38,200 second-feet Mar. 22, 1929 (gage height, 11.2 feet); minimum, that of Feb. 10, 1930.

REMARKS.—Records fair except those for period of ice effect, Dec. 1 to Feb. 25, which are poor. Considerable diurnal fluctuation, owing to operation of power plants. Flow somewhat affected by regulation at Chippewa and Flambeau Reservoirs; monthly table shows correction for this storage.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	4,300	4,530	862	2,470	2,280	12,500	4,790	6,830	4,070	6,830	3,850	2,260
2-----	4,080	4,300	1,900	1,340	2,180	10,500	4,300	8,560	2,800	6,830	3,850	2,100
3-----	4,530	4,760	1,510	2,090	737	5,900	4,070	10,500	4,070	6,510	3,420	2,260
4-----	3,870	2,470	2,660	2,180	1,170	7,500	3,850	12,100	5,050	5,610	2,610	2,800
5-----	3,250	3,870	2,660	2,470	1,810	8,560	4,070	9,700	7,160	3,850	3,210	3,210
6-----	3,050	4,530	2,660	1,010	1,990	8,930	4,070	16,500	7,500	3,630	3,630	4,070
7-----	1,900	5,000	2,380	2,380	1,990	8,560	2,610	11,300	8,930	3,420	3,630	3,420
8-----	3,460	5,000	2,470	2,380	1,720	8,560	3,420	10,900	7,850	4,070	3,210	2,260
9-----	4,530	4,760	1,390	2,180	1,630	7,850	4,070	11,300	4,540	4,300	3,000	2,100
10-----	4,760	5,240	1,400	1,900	646	4,540	4,070	13,000	9,310	4,300	2,800	2,100
11-----	4,300	3,050	2,380	2,090	1,150	8,200	3,850	13,800	7,850	4,300	2,430	2,260
12-----	4,300	5,000	2,660	2,280	1,900	8,560	4,070	11,700	7,850	4,790	2,610	2,610
13-----	4,530	5,740	2,470	965	2,180	8,200	4,540	13,400	8,930	3,750	2,800	3,000
14-----	2,850	5,240	1,900	1,460	2,090	8,200	3,000	12,100	13,000	3,000	2,800	2,610
15-----	3,660	4,530	2,090	2,280	2,090	7,850	4,790	11,700	29,700	3,850	2,800	2,020
16-----	4,080	4,530	698	2,280	1,900	7,850	4,790	13,400	34,700	4,540	2,610	2,430
17-----	4,080	4,760	1,460	2,380	698	6,200	5,050	12,100	36,700	4,300	2,430	2,610
18-----	3,870	3,050	2,380	2,280	1,630	8,200	5,900	10,900	24,800	4,070	2,020	2,610
19-----	4,080	4,760	1,810	1,810	2,850	10,500	6,510	8,560	20,600	3,850	2,260	2,610
20-----	4,080	5,000	1,810	1,340	4,080	10,900	5,900	8,560	16,900	3,210	2,430	2,800
21-----	2,660	4,080	1,720	1,540	4,080	11,300	4,070	7,500	14,700	3,210	2,610	2,430
22-----	3,870	5,000	1,810	1,900	5,740	10,900	6,200	7,500	10,500	3,000	2,610	2,100
23-----	4,300	5,000	834	2,090	7,880	10,100	5,900	7,850	7,500	3,210	2,610	2,610
24-----	4,080	5,000	1,420	2,280	7,600	6,200	5,610	7,500	9,310	3,420	2,430	2,800
25-----	4,530	2,850	2,470	1,900	11,400	7,850	5,610	6,200	13,400	3,420	2,100	2,800
26-----	4,530	3,870	1,020	1,900	16,900	6,200	6,510	4,070	12,500	3,630	2,430	3,630
27-----	4,300	3,250	1,900	764	17,800	4,790	6,200	5,330	13,000	3,210	2,430	5,050
28-----	2,660	3,660	2,280	1,300	15,600	5,330	3,850	5,900	10,100	2,610	2,610	4,070
29-----	4,080	1,630	2,470	1,990	-----	5,050	4,790	5,610	8,560	3,210	2,430	3,000
30-----	4,530	3,660	950	2,090	-----	5,050	6,200	5,330	5,050	3,850	2,610	3,420
31-----	4,080	-----	1,810	2,090	-----	3,850	-----	3,420	-----	3,850	2,260	-----

Month	Observed			Gain or loss in storage (millions of cubic feet)	Corrected for storage		
	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October-----	4,760	1,900	3,910	-184	3,840	0.457	0.53
November-----	5,740	1,630	4,270	-319	4,150	.494	.55
December-----	2,660	698	1,880	-2,194	1,060	.126	.15
January-----	2,470	764	1,920	-2,636	936	.112	.13
February-----	17,800	646	4,420	-638	4,160	.495	.52
March-----	12,500	3,850	7,890	+1,315	8,380	.996	1.15
April-----	6,510	2,610	4,760	+2,319	5,660	.673	.75
May-----	16,500	3,420	9,460	+3,772	10,900	1.30	1.50
June-----	36,700	2,800	12,200	+3,369	13,500	1.61	1.80
July-----	6,830	2,610	4,060	-890	3,730	.444	.51
August-----	3,850	2,020	2,760	-2,118	1,970	.234	.27
September-----	5,050	2,020	2,800	-1,017	2,410	.287	.32
The year-----	36,700	646	5,020	+779	5,040	.600	8.18

FLAMBEAU RIVER AT FLAMBEAU RESERVOIR, WIS.

LOCATION.—Chain gage near north line of sec. 3, T. 41 N., R. 2 E., one-fourth mile below dam of Flambeau Reservoir.

DRAINAGE AREA.—620 square miles.

RECORDS AVAILABLE.—September, 1927, to September, 1930.

EXTREMES.—Maximum discharge during year, 714 second-feet Aug. 14-31 (gage height, 4.75 feet); minimum, 11 second-feet June 15 (gage height, 2.52 feet).

1927-1930: Maximum discharge, 2,140 second-feet Oct. 21, 1928 (gage height, 6.76 feet); minimum, that of June 15, 1930.

REMARKS.—Records excellent. Flow regulated by storage in Flambeau Reservoir; monthly table shows correction for this storage.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	556	606	556	606	556	376	556	376	315	355	632	686
2.....	632	606	556	606	556	396	556	296	315	355	632	686
3.....	632	606	580	606	531	439	531	232	315	376	632	686
4.....	632	606	580	606	531	531	556	296	315	376	632	659
5.....	632	580	580	606	508	531	556	376	335	376	632	659
6.....	632	580	580	606	508	531	556	376	335	462	632	659
7.....	632	580	580	606	484	531	556	376	335	556	632	659
8.....	632	580	580	606	484	556	556	228	335	556	632	659
9.....	632	580	580	606	484	531	556	228	335	556	632	659
10.....	632	580	580	632	462	531	531	228	335	556	632	659
11.....	632	580	556	632	462	531	439	232	335	531	632	659
12.....	632	580	556	632	462	531	376	232	335	531	632	659
13.....	632	580	556	632	462	606	376	236	335	531	686	659
14.....	632	580	556	632	508	556	376	236	12	531	714	659
15.....	606	580	556	632	556	556	376	228	11	531	714	659
16.....	606	580	556	606	484	508	376	228	232	531	714	659
17.....	606	580	556	606	439	531	376	232	228	556	714	632
18.....	606	580	556	606	439	531	296	232	232	606	714	632
19.....	606	580	556	606	418	531	222	236	232	659	714	632
20.....	606	580	556	606	418	531	236	236	355	659	714	632
21.....	606	580	556	580	418	556	236	232	355	659	714	632
22.....	606	580	556	580	418	556	232	236	376	659	714	632
23.....	606	580	556	580	462	556	296	236	376	659	714	376
24.....	606	580	556	580	462	556	376	236	376	659	714	376
25.....	606	580	580	580	418	556	376	236	376	659	714	484
26.....	606	580	606	580	439	556	376	276	376	659	714	484
27.....	606	580	606	580	418	556	376	315	376	659	714	376
28.....	606	556	606	580	462	556	376	315	376	659	714	376
29.....	606	556	606	556	-----	556	376	315	376	659	714	376
30.....	606	556	606	556	-----	556	376	315	376	659	714	376
31.....	606	-----	606	556	-----	556	-----	315	-----	659	714	-----

Month	Observed			Gain or loss in storage (millions of cubic feet)	Corrected for storage		
	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October.....	632	556	615	-310	499	0.805	0.93
November.....	606	556	581	-217	497	.802	.89
December.....	606	556	573	-424	415	.669	.77
January.....	632	556	599	-758	316	.510	.59
February.....	556	418	473	+9	477	.769	.80
March.....	606	376	532	+112	574	.926	1.07
April.....	556	222	412	+850	740	1.19	1.33
May.....	376	228	270	+1,337	769	1.24	1.43
June.....	376	11	311	+1,581	921	1.49	1.66
July.....	659	355	563	-428	403	.650	.75
August.....	714	632	681	-1,400	158	.255	.29
September.....	686	376	588	-862	255	.411	.46
The year.....	714	11	517	-510	501	.808	10.97

FLAMBEAU RIVER NEAR BUTTERNUT, WIS.

LOCATION.—Chain gage in lot 10, sec. 28, T. 41 N., R. 1 E., 6 miles southeast of Butternut.

DRAINAGE AREA.—660 square miles.

RECORDS AVAILABLE.—July, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 808 second-feet Nov. 2 (gage height, 2.68 feet); minimum, 253 second-feet May 25, 26 (gage height, 1.22 feet).

1914-1930: Maximum discharge, 5,430 second-feet Apr. 22, 23, 1916 (gage height, 9.0 feet); minimum, 91 second-feet Sept. 18, 19, 1925 (gage height, 0.25 foot).

REMARKS.—Records good except those for period of ice effect, Nov. 22 to Mar. 31, which are fair. Flow regulated by storage in Flambeau Reservoir; monthly table shows correction for this storage.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1.....	628	762	576	621	571	396	672	486	363	366	717	717
2.....	672	808	576	621	571	416	672	468	363	366	717	717
3.....	672	762	600	621	546	459	628	415	350	350	717	717
4.....	672	762	600	621	546	551	585	382	393	398	672	717
5.....	672	717	600	621	523	551	628	486	450	415	672	717
6.....	672	672	600	621	523	551	717	505	463	544	672	717
7.....	672	672	600	621	499	551	717	585	433	585	672	672
8.....	672	672	600	621	499	576	717	450	393	585	672	672
9.....	672	672	600	621	499	551	717	415	363	585	672	672
10.....	672	672	600	647	477	551	762	398	350	585	672	672
11.....	672	672	576	647	477	556	762	350	350	585	672	672
12.....	672	672	576	647	477	556	585	320	350	585	672	672
13.....	672	672	576	647	477	631	628	335	433	585	672	672
14.....	672	672	576	647	523	581	585	382	450	585	762	672
15.....	672	672	576	647	571	581	585	432	350	544	762	672
16.....	672	672	571	621	499	538	544	415	415	544	672	672
17.....	672	672	571	621	454	561	544	415	433	585	762	672
18.....	672	672	571	621	454	561	672	398	363	672	762	672
19.....	672	672	571	621	433	561	544	350	335	717	762	672
20.....	672	628	571	621	433	561	544	320	350	672	762	672
21.....	672	628	571	595	433	596	505	306	415	672	762	628
22.....	672	605	571	595	433	596	432	292	433	672	762	672
23.....	672	605	571	595	477	596	366	279	433	717	762	350
24.....	672	605	571	595	477	596	382	266	505	717	717	266
25.....	672	605	595	595	433	596	468	253	450	717	717	585
26.....	628	605	621	595	454	601	450	253	433	717	717	585
27.....	628	605	621	595	433	601	450	432	393	717	717	450
28.....	628	581	621	595	477	601	450	486	366	717	762	432
29.....	672	581	621	571	-----	601	432	450	366	717	762	415
30.....	717	581	621	571	-----	601	450	432	366	717	717	398
31.....	717	-----	621	571	-----	601	-----	382	-----	717	717	-----

Month	Observed			Gain or loss in storage (millions of cubic feet)	Corrected for storage		
	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October.....	717	628	669	-310	553	0.838	0.97
November.....	808	581	662	-217	578	.876	.98
December.....	621	571	590	-424	432	.655	.76
January.....	647	571	614	-758	331	.502	.58
February.....	571	433	488	+9	462	.745	.78
March.....	631	396	562	+112	604	.915	1.05
April.....	762	366	573	+850	901	1.37	1.53
May.....	585	253	392	+1,337	861	1.35	1.56
June.....	505	335	398	+1,681	1,012	1.53	1.71
July.....	717	350	602	-428	442	.670	.77
August.....	762	672	717	-1,400	164	.294	.34
September.....	717	266	616	-862	253	.429	.48
The year.....	808	253	574	-510	553	.845	11.51

FLAMBEAU RIVER AT BABBS ISLAND, NEAR WINTER, WIS.

LOCATION.—Water-stage recorder on west line of sec. 16, T. 38 N., R. 3 W., 10 miles east of Winter and 12 miles above mouth of South Fork.

DRAINAGE AREA.—964 square miles.

RECORDS AVAILABLE.—August, 1929, to September, 1930.

EXTREMES.—Maximum discharge during period, 2,010 second-feet Apr. 9 (gage height, 12.4 feet); minimum, 218 second-feet July 9 (gage height, 9.73 feet).

REMARKS.—Records fair. Flow from 64 per cent of drainage completely regulated by storage in Flambeau Reservoir; monthly table shows correction for this storage.

Daily and monthly discharge, in second-feet, 1929-30

Day	Aug.	Sept.	Oct.	Apr.	May	June	July	Aug.	Sept.
1		890	664		717	772	439	772	955
2		590	717		664	614	480	830	955
3		772	772	1,850	717	567	480	830	664
4		830	772	1,700	717	614	501	830	890
5		955	717	1,700	717	590	439	890	890
6			890	1,620	614	664	501	772	830
7		830		1,700	544	1,020	664	890	955
8		522		1,780	830	975	522	772	890
9		382		2,010	830	931	218	717	890
10		439		1,850	772	886	772	830	830
11		439		1,550	772	842	664	772	772
12		420		1,390	664	797	717	830	830
13		400		1,240	614	753	717	830	717
14		614		890	830	708	567	830	772
15		590		890	1,020	664	664	890	772
16			522	830	1,090	664	614	955	772
17			522	717	890	664	544	890	717
18			614	772	1,090	664	544	830	772
19		590		1,020	830	501	772	830	772
20	1,020	590		890	717	522	614	890	772
21	955	590		614	664	522	717	955	830
22	955	567		544	614	772	717	890	890
23	1,240	544		567	664	717	717	830	1,020
24	1,620	567		501	664	614	830	830	772
25	1,400	614		400	664	590	830	890	717
26	1,180	664		420	664	717	772	890	830
27	955	717		383	664	664	890	830	1,170
28	890	664		346	717	522	955	890	1,130
29	830	614		328	955	501	772	955	1,090
30	772	664		420	717	501	890	955	1,090
31	955				717		830	890	

Month	Observed			Gain or loss in storage at Flambeau Reservoir (millions of cubic feet)	Corrected for storage		
	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
1929							
August 20-31-----	1, 620	772	1, 060				
September-----	955	382	620	-306	502	0. 521	0. 58
1930							
April 3-30-----	2, 010	328	1, 030	+850	1, 380	1. 43	1. 49
May-----	1, 090	544	753	+1, 337	1, 350	1. 40	1. 61
June-----	1, 020	501	684	+1, 581	1, 290	1. 34	1. 50
July-----	955	218	657	-428	497	. 516	. 59
August-----	955	717	854	-1, 400	331	. 343	. 40
September-----	1, 170	664	865	-862	529	. 549	. 61

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., 14 miles above Ladysmith.

DRAINAGE AREA.—1,910 square miles.

RECORDS AVAILABLE.—October, 1923, to September, 1930, January, 1914, to September, 1923, at station 8 miles below present site. From February, 1903, to December, 1906, at Ladysmith, 14 miles below present site.

EXTREMES.—Maximum mean daily discharge during year, 5,710 second-feet June 15; minimum, 337 second-feet Nov. 22.

1903-1906, 1914-1930: Maximum discharge, 19,500 second-feet Apr. 11, 1922; minimum, 176 second-feet Aug. 30, 1925.

REMARKS.—Records good. Discharge computed from power-house records. Regulation caused by operation of power plants and storage in Flambeau Reservoir above station; monthly table shows correction for this storage. Daily discharge records furnished by Lake Superior District Power Co.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	999	1,260	496	770	997	1,320	951	1,940	1,320	1,130	955	794
2	1,150	1,350	873	911	529	619	856	2,650	1,230	954	1,400	931
3	807	1,040	861	905	749	1,080	1,020	2,910	811	1,290	901	671
4	1,170	1,440	916	1,170	709	1,020	1,160	2,440	1,100	555	790	803
5	1,180	1,200	949	546	790	952	1,230	2,270	1,560	987	949	862
6	533	1,160	930	891	760	1,090	484	2,210	2,000	1,150	928	907
7	903	1,140	1,160	868	747	1,220	852	2,270	2,440	1,290	809	794
8	900	1,290	604	917	917	1,280	1,220	3,360	1,970	1,250	791	823
9	902	1,290	929	786	555	555	1,390	2,960	1,950	995	811	871
10	862	516	878	802	736	1,280	1,280	2,570	1,840	981	777	800
11	974	1,250	889	1,120	671	839	1,310	2,590	1,340	1,440	614	819
12	1,220	1,070	921	598	673	914	1,430	2,070	1,710	1,570	507	832
13	664	1,250	904	973	700	1,040	1,680	1,970	2,170	605	567	946
14	977	1,180	1,160	869	670	1,120	1,420	1,880	4,590	931	938	713
15	1,050	1,310	573	896	734	1,270	1,270	2,480	5,710	1,030	777	760
16	1,020	1,210	918	863	579	529	1,360	2,370	5,480	982	1,120	871
17	1,020	741	883	891	652	1,450	1,640	4,870	930	768	750	750
18	933	1,250	887	1,120	640	1,330	1,630	2,050	4,340	759	765	773
19	1,240	956	839	557	680	1,360	2,360	1,810	3,280	1,080	850	808
20	581	924	838	808	737	1,310	1,620	1,410	2,520	782	880	884
21	901	1,020	1,030	832	805	1,240	1,580	1,470	2,010	883	909	703
22	981	337	577	819	1,150	1,290	1,330	1,630	977	927	716	716
23	900	789	908	841	1,170	759	1,610	1,260	1,770	855	992	841
24	1,000	489	1,020	824	1,410	1,400	1,530	1,280	1,700	1,090	693	665
25	986	968	666	983	1,560	902	1,470	1,370	1,740	1,060	838	580
26	1,120	991	647	634	1,480	995	1,400	1,500	1,700	1,360	911	979
27	542	1,330	815	864	1,610	928	1,360	1,050	1,560	696	873	1,060
28	937	530	1,200	779	1,400	1,040	1,330	1,260	1,300	1,210	849	599
29	1,050	772	604	763	-----	1,190	1,000	1,310	1,250	1,050	887	1,100
30	780	945	1,010	830	-----	386	1,060	1,230	1,440	899	962	567
31	929	-----	1,040	779	-----	1,050	-----	1,200	-----	1,020	810	-----

Month	Observed			Gain or loss in storage (millions of cubic feet)	Corrected for storage		
	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	1,240	533	942	-310	826	0.450	0.52
November	1,440	337	1,030	-217	946	.495	.55
December	1,200	496	869	-424	711	.372	.43
January	1,170	546	845	-758	562	.294	.34
February	1,610	529	886	+9	890	.466	.49
March	1,450	386	1,060	+112	1,100	.576	.66
April	2,360	484	1,340	+850	1,670	.874	.98
May	3,360	1,050	1,960	+1,337	2,460	1.29	1.49
June	5,710	811	2,280	+1,581	2,890	1.51	1.68
July	1,570	555	1,030	-428	870	.455	.52
August	1,400	507	856	-1,400	333	.174	.20
September	1,100	567	808	-862	475	.249	.28
The year	5,710	337	1,160	-510	1,140	.597	8.14

JUMP RIVER AT SHELDON, WIS.

LOCATION.—Chain gage in sec. 26, T. 33 N., R. 5 W., at highway bridge in Sheldon, 11 miles above mouth.

DRAINAGE AREA.—510 square miles.

RECORDS AVAILABLE.—July, 1915, to September, 1930.

EXTREMES.—Maximum discharge during year, 9,000 second-feet June 14 (gage height, 9.20 feet); minimum, 17 second-feet Aug. 15, 24, 28 (gage height, 2.70 feet).

1915-1930: Maximum discharge, 15,600 second-feet Mar. 26, 1920 (gage height, 11.48 feet); minimum (estimated), 14 second-feet Jan. 25-31, 1924.

REMARKS.—Records good except those for period of ice effect, Nov. 21 to Mar. 16, which are poor, and those for extremely low water, which are fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	90	128	75	95	60	1,500	208	186	194	230	69	20
2.....	62	260	70	95	70	1,320	230	979	185	230	80	20
3.....	69	221	65	70	75	1,130	221	1,440	164	194	90	27
4.....	69	212	70	50	75	1,130	230	1,140	164	151	54	27
5.....	84	203	75	60	75	1,130	280	2,040	820	177	40	27
6.....	77	177	75	65	80	905	355	1,500	1,600	230	45	24
7.....	57	136	75	50	90	680	435	1,310	1,600	240	34	34
8.....	57	128	70	40	90	600	435	2,700	1,220	208	40	30
9.....	57	110	65	45	90	520	380	2,840	820	185	30	30
10.....	62	93	60	50	80	550	330	2,160	680	151	34	27
11.....	62	147	50	55	75	580	435	1,400	550	136	30	30
12.....	62	235	60	60	70	600	550	1,130	490	151	34	40
13.....	62	270	65	55	60	615	615	930	4,190	208	34	45
14.....	84	270	65	50	70	600	615	930	9,000	164	24	45
15.....	110	250	65	55	75	580	550	1,050	7,720	113	17	49
16.....	90	212	70	60	75	1,250	490	970	6,510	113	24	49
17.....	84	168	75	55	75	1,020	435	785	2,840	100	27	40
18.....	84	168	60	50	80	1,600	715	490	1,600	80	20	45
19.....	69	147	50	55	90	1,310	1,310	490	970	74	20	40
20.....	69	121	50	60	110	1,130	1,050	435	680	90	24	45
21.....	56	70	50	60	125	750	970	380	380	62	20	45
22.....	69	65	50	60	390	490	750	355	270	62	24	30
23.....	69	65	50	60	650	435	615	280	221	54	20	34
24.....	69	65	60	60	790	305	490	330	330	54	17	45
25.....	69	65	65	50	930	270	408	490	305	49	24	40
26.....	80	65	70	40	1,120	305	330	380	270	62	24	45
27.....	64	65	75	30	1,310	280	330	330	208	80	24	62
28.....	64	70	75	25	1,400	221	260	305	164	106	17	90
29.....	64	75	75	40	-----	185	211	280	151	74	24	106
30.....	64	75	85	50	-----	151	232	240	143	54	24	80
31.....	87	-----	95	55	-----	194	-----	208	-----	54	20	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	110	56	71.5	0.140	0.16
November.....	270	65	145	.284	.32
December.....	95	50	66.5	.130	.15
January.....	95	25	55.0	.108	.12
February.....	1,400	60	206	.580	.60
March.....	1,920	151	750	1.47	1.70
April.....	1,310	208	482	.945	1.05
May.....	2,840	186	919	1.80	2.08
June.....	9,000	143	1,480	2.90	3.24
July.....	240	49	127	.249	.29
August.....	90	17	32.5	.064	.07
September.....	106	20	42.4	.083	.09
The year.....	9,000	17	371	.727	9.87

RED CEDAR RIVER NEAR COLFAX, WIS.

LOCATION.—Water-stage recorder in sec. 27, T. 30 N., R. 11 W., at highway bridge $4\frac{1}{2}$ miles north of Colfax and $3\frac{1}{2}$ miles below Trout Creek.

DRAINAGE AREA.—1,100 square miles.

RECORDS AVAILABLE.—March, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,280 second-feet Feb. 23 (gage height, 6.40 feet); minimum, 169 second-feet Aug. 21 (gage height, 0.81 foot).

1914-1930: Maximum discharge, 7,610 second-feet Mar. 26, 1920 (gage height, 6.95 feet); minimum discharge, that of Aug. 21, 1930; (minimum gage height, 0.55 foot Nov. 23, 1925).

REMARKS.—Records fair except those for period of ice effect, Nov. 21 to Feb. 20, which are poor, and for estimated periods, Oct. 6, 7, Oct. 19 to Nov. 16, Apr. 1-5, which are fair. Flow regulated by four storage reservoirs upstream.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	654	739	716	815	510	1,270	592	594	388	538	388	325
2.....	623	789	684	815	565	1,190	577	594	325	484	388	458
3.....	654	760	684	815	623	1,360	449	510	366	410	434	366
4.....	654	437	684	748	748	1,270	561	484	538	388	325	287
5.....	748	725	748	623	654	1,270	525	366	565	565	287	287
6.....	705	697	716	623	716	1,190	434	484	410	565	252	306
7.....	493	644	716	565	654	885	410	623	434	458	252	306
8.....	815	643	716	410	623	815	538	654	325	434	252	306
9.....	623	675	748	484	538	885	538	623	270	458	287	388
10.....	594	702	684	484	458	885	510	565	287	410	325	287
11.....	716	535	684	434	458	885	484	748	306	366	346	270
12.....	782	629	654	458	484	956	410	748	366	366	325	325
13.....	850	694	654	484	458	885	434	1,030	956	270	306	410
14.....	484	772	684	458	565	885	346	1,360	2,040	306	325	410
15.....	716	751	654	484	565	850	410	1,030	1,540	388	325	410
16.....	623	664	654	510	748	885	434	815	885	287	366	434
17.....	716	748	654	623	885	815	410	594	782	270	366	410
18.....	623	510	623	565	956	815	538	594	594	236	325	434
19.....	754	748	654	594	1,360	815	484	623	434	252	366	388
20.....	697	654	458	538	1,940	748	458	565	484	270	287	434
21.....	478	748	565	510	2,950	815	388	510	510	236	236	458
22.....	648	748	565	458	3,840	956	484	510	565	270	252	410
23.....	680	748	654	458	6,280	1,030	434	510	458	236	252	366
24.....	583	748	654	410	5,300	956	434	458	956	270	270	366
25.....	544	684	654	410	4,400	956	458	434	1,360	287	252	484
26.....	565	782	623	388	3,980	885	434	306	1,030	306	325	594
27.....	638	815	654	388	2,950	815	458	434	716	410	346	748
28.....	427	684	654	346	2,040	782	346	434	654	538	325	716
29.....	717	716	782	410	-----	815	458	434	623	594	306	684
30.....	678	684	684	458	-----	782	594	654	388	594	306	654
31.....	678	-----	654	538	-----	748	-----	325	-----	484	325	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	850	427	650	0.591	0.68
November.....	815	437	696	.633	.71
December.....	782	458	665	.605	.70
January.....	815	346	526	.478	.55
February.....	6,280	458	1,650	1.50	1.56
March.....	1,360	748	939	.854	.98
April.....	594	346	468	.425	.47
May.....	1,360	306	600	.545	.63
June.....	2,040	270	652	.593	.66
July.....	594	236	385	.350	.40
August.....	434	236	314	.285	.33
September.....	748	270	424	.385	.43
The year.....	6,280	236	657	.597	8.10

RED CEDAR RIVER AT MENOMONIE, WIS.

LOCATION.—Water-stage recorder in sec. 26, T. 28 N., R. 13 W., at Menomonie, 900 feet below power house of Northern States Power Co. and 1,000 feet below mouth of Wilson Creek.

DRAINAGE AREA.—1,810 square miles.

RECORDS AVAILABLE.—June, 1907, to September, 1908; May, 1913, to September, 1923; March, 1925, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,050 second-feet Feb. 24 (gage height, 4.50 feet); minimum, 178 second-feet Dec. 1 (gage height, 1.12 feet). 1907-8, 1913-1923, 1925-1930: Maximum discharge, 14,000 second-feet Mar. 26, 1920 (gage height, 8.0 feet); minimum, 21 second-feet Dec. 9, 1929 (gage height, 0.65 foot).

REMARKS.—Records excellent. Considerable diurnal fluctuation caused by operation of power plants at Menomonie and Cedar Falls. Flow also regulated by storage in four reservoirs upstream.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	621	733	280	780	724	2,260	980	1,310	364	748	709	412
2	850	850	461	798	616	1,900	782	1,170	748	713	798	572
3	850	733	494	546	526	1,030	496	919	806	667	643	572
4	767	733	471	867	638	1,160	661	481	867	348	683	546
5	676	733	685	566	748	1,740	526	795	1,040	764	806	521
6	368	733	612	867	867	970	491	646	1,030	496	672	521
7	676	733	594	594	610	970	690	634	980	806	632	471
8	676	376	567	516	627	1,230	486	1,090	364	633	683	638
9	910	687	712	466	566	910	605	919	398	511	643	605
10	850	599	501	1,030	771	1,120	496	1,310	407	466	621	594
11	733	767	562	910	516	1,120	496	1,030	471	466	683	572
12	733	676	667	466	782	1,250	780	980	690	466	621	572
13	850	699	376	676	683	1,180	486	1,470	1,650	486	621	506
14	850	546	617	790	506	1,110	867	1,550	2,330	572	683	471
15	376	850	376	621	806	1,120	661	1,900	2,320	496	621	594
16	448	710	777	599	627	919	627	1,400	2,820	486	521	594
17	687	496	867	599	748	1,310	736	1,030	1,550	425	430	551
18	687	699	867	672	556	1,310	690	398	1,330	425	491	594
19	687	621	806	616	919	980	970	798	1,050	434	605	594
20	448	621	526	672	867	1,040	594	798	1,250	289	572	572
21	733	506	798	638	1,240	980	806	782	919	443	521	526
22	546	385	521	536	3,010	850	572	867	421	398	511	683
23	710	376	496	616	3,610	850	516	867	501	344	462	616
24	710	385	633	627	5,800	790	638	541	736	376	421	627
25	654	344	724	661	4,300	790	867	425	858	394	541	683
26	360	403	884	556	3,830	594	806	806	1,330	645	572	1,040
27	516	687	658	706	3,610	605	425	748	970	501	551	1,300
28	699	466	494	536	3,390	970	649	748	910	562	481	1,300
29	621	654	731	605	-----	867	536	690	557	858	541	1,300
30	566	546	876	729	-----	867	980	296	858	759	491	919
31	767	-----	605	713	-----	1,030	-----	798	-----	621	421	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	910	360	665	0.367	0.42
November	850	344	612	.338	.38
December	884	280	621	.343	.40
January	1,030	466	664	.367	.42
February	5,800	506	1,520	.840	.87
March	2,260	594	1,090	.602	.69
April	980	425	664	.367	.41
May	1,900	296	910	.503	.58
June	2,820	364	1,030	.569	.63
July	558	289	535	.296	.34
August	806	421	589	.325	.37
September	1,300	412	669	.370	.41
The year	5,800	280	792	.438	5.92

ZUMBRO RIVER AT ZUMBRO FALLS, MINN.

LOCATION.—Chain gage near east line of sec. 36, T. 110 N., R. 14 W., at Zumbro Falls, about 1,500 feet below mouth of Spring Creek.

DRAINAGE AREA.—1,120 square miles.

RECORDS AVAILABLE.—June, 1909, to September, 1917; April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 5,880 second-feet June 15 (gage height, 13.26 feet); minimum, 84 second-feet Nov. 21.

1909–1917, 1929–30: Maximum discharge, about 14,800 second-feet Mar. 25, 1917 (gage height, 19.04 feet); minimum, 80 second-feet Sept. 21, 1929 (gage height, 4.90 feet).

Maximum known stages, 26.7 feet in June, 1908, and 27.7 feet in April, 1888.

REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	173	126	-----	143	1,070	368	202	114	150
2.....	150	138	-----	136	1,220	202	163	126	114
3.....	136	368	-----	133	433	202	176	336	114
4.....	128	128	552	126	518	1,220	176	138	114
5.....	124	109	518	124	552	1,270	176	126	114
6.....	320	124	518	336	552	1,440	368	126	114
7.....	450	121	518	320	588	2,150	433	126	320
8.....	153	119	216	140	702	1,170	320	138	126
9.....	136	114	433	126	624	1,020	202	138	114
10.....	136	400	384	124	588	828	176	320	102
11.....	133	126	176	116	1,020	662	163	138	114
12.....	119	124	176	116	1,070	662	189	138	114
13.....	352	119	158	336	702	2,360	368	138	138
14.....	352	114	158	320	702	4,510	320	138	305
15.....	143	109	189	140	662	4,400	176	126	114
16.....	138	116	368	131	624	1,740	163	138	102
17.....	138	352	416	133	588	1,220	176	290	102
18.....	128	119	216	160	518	828	163	126	102
19.....	126	124	168	121	588	624	202	114	102
20.....	352	102	153	368	552	552	400	114	102
21.....	143	84	148	320	518	518	189	114	216
22.....	133	116	148	136	384	702	163	114	126
23.....	128	140	368	124	320	552	150	114	114
24.....	126	450	484	116	230	552	189	202	126
25.....	128	136	450	109	400	552	150	91	126
26.....	121	112	450	102	518	552	163	102	126
27.....	290	140	176	336	216	400	400	114	114
28.....	114	116	202	320	202	202	176	126	245
29.....	131	166	158	126	202	416	163	114	114
30.....	121	173	368	119	189	230	138	114	114
31.....	171	-----	155	-----	173	-----	138	230	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acres-feet
October.....	450	119	177	0.158	0.18	10,900
November.....	450	84	160	.143	.16	9,520
March 4–31.....	552	148	301	.269	.28	16,700
April.....	368	102	182	.162	.18	10,800
May.....	1,220	173	556	.496	.57	34,200
June.....	4,510	202	1,070	.955	1.07	63,700
July.....	433	138	217	.194	.22	13,300
August.....	336	91	148	.132	.15	9,100
September.....	320	102	137	.122	.14	8,150

BLACK RIVER AT NEILLSVILLE, WIS.

LOCATION.—Chain gage in sec. 15, T. 24 N., R. 2 W., at Neillsville, 1 mile below O'Neill Creek and 1½ miles above Cunningham Creek.

DRAINAGE AREA.—774 square miles.

RECORDS AVAILABLE.—April, 1905, to March, 1909; December, 1912, to September, 1930.

EXTREMES.—Maximum discharge during year, 15,400 second-feet June 14 (gage height, 15.5 feet); minimum (estimated), 6 second-feet Jan. 11.

1905-1909, 1913-1930: Maximum discharge, 37,100 second-feet June 6, 1905 (gage height, 22.4 feet); minimum, 5 second-feet during month of February, 1918.

REMARKS.—Records good except those for period of ice effect, Nov. 19 to Feb. 23, which are poor.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	91	115	55	78	36	1,200	214	186	96	715	84	8
2	73	153	48	87	48	594	229	979	87	570	78	10
3	66	200	48	78	70	381	244	1,440	75	362	125	11
4	58	173	42	78	78	362	244	1,140	420	292	96	8
5	51	148	62	62	78	344	260	925	548	244	73	8
6	51	130	55	70	78	362	292	715	766	400	55	8
7	41	136	48	62	78	381	344	1,380	1,030	260	45	11
8	38	105	42	36	78	309	362	1,580	925	186	42	11
9	38	125	55	20	55	344	344	1,880	570	146	36	11
10	45	125	55	8	55	440	309	1,510	504	594	30	11
11	45	153	62	6	55	482	309	1,200	420	665	30	16
12	58	148	55	20	70	400	344	818	292	229	25	16
13	58	200	78	48	55	420	440	617	1,200	123	22	16
14	54	244	70	87	48	362	440	525	13,100	103	22	16
15	58	244	55	105	36	344	440	482	8,340	98	22	16
16	60	214	55	96	36	344	362	461	3,840	68	20	18
17	62	173	78	42	30	548	344	400	2,790	61	20	20
18	62	148	55	36	25	1,720	186	326	1,650	58	18	25
19	54	105	36	36	30	1,650	925	260	1,030	50	16	30
20	45	96	25	30	87	1,510	925	229	665	37	16	28
21	58	70	25	36	482	979	766	200	504	35	16	25
22	62	82	25	55	1,380	617	570	141	420	45	16	18
23	58	96	42	70	1,510	482	440	166	1,030	35	13	16
24	62	105	36	78	1,800	420	362	186	5,150	45	11	18
25	58	45	42	78	3,620	244	292	244	2,310	35	11	32
26	54	36	42	70	3,950	141	229	244	1,030	41	10	36
27	58	58	70	42	1,800	119	229	214	548	117	8	32
28	70	55	55	6	1,720	200	186	173	362	170	8	48
29	73	45	78	20	-----	244	150	141	260	123	8	70
30	78	58	55	25	-----	214	163	141	420	115	8	105
31	84	-----	55	25	-----	200	-----	105	-----	96	8	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	91	38	58.8	0.076	0.09
November	244	36	126	.163	.18
December	105	25	51.7	.067	.08
January	105	6	51.3	.066	.08
February	3,950	25	621	.802	.84
March	1,720	119	528	.682	.79
April	925	150	365	.472	.53
May	1,880	105	613	.792	.91
June	13,100	75	1,680	2.17	2.42
July	715	35	197	.255	.29
August	125	8	32.0	.041	.05
September	105	8	23.3	.030	.03
The year	13,100	6	358	.463	6.29

LA CROSSE RIVER NEAR WEST SALEM, WIS.

LOCATION.—Chain gage in sec. 32, T. 17 N., R. 6 W., at highway bridge 2 miles west of West Salem and 6 miles below mouth of Dutch Creek.

DRAINAGE AREA.—412 square miles.

RECORDS AVAILABLE.—December, 1913, to September, 1930.

EXTREMES.—Maximum discharge during year (estimated), 2,990 second-feet Feb. 21; minimum, 96 second-feet Aug. 27 (gage height, 1.10 feet).

1913-1930: Maximum discharge, 4,780 second-feet Sept. 15, 1928 (gage height, 9.8 feet); minimum, 56 second-feet Feb. 20, 1927 (gage height, 2.40 feet).

REMARKS.—Records poor. Stage-discharge relation affected by ice Nov. 23 to Feb. 1. Slight diurnal fluctuation caused by operation of power plants a few miles above station.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	289	302	280	315	245	300	278	223	175	340	208	158
2	266	314	215	265	205	266	289	289	234	266	213	213
3	255	289	265	290	225	289	289	289	273	234	213	194
4	266	289	300	235	225	340	255	223	398	213	213	208
5	255	278	265	225	235	461	278	244	491	289	150	208
6	244	266	235	265	245	340	203	244	578	266	234	184
7	255	278	290	255	235	302	255	266	491	278	203	166
8	255	266	290	140	235	289	234	266	491	255	203	213
9	244	266	300	165	245	278	244	278	429	244	166	208
10	255	266	265	225	245	266	234	244	340	234	203	234
11	266	266	280	245	235	278	244	234	398	234	203	208
12	266	289	265	235	245	289	255	266	398	244	203	194
13	289	302	255	265	255	278	289	244	491	194	203	208
14	278	289	265	255	255	278	266	213	634	244	203	194
15	266	289	290	265	245	266	266	278	747	223	203	194
16	266	213	280	280	235	314	302	255	779	213	175	213
17	255	278	290	315	245	368	340	255	578	223	166	184
18	244	266	300	280	280	429	398	213	340	203	203	208
19	244	255	185	265	530	314	368	234	374	223	223	158
20	244	255	195	290	1,230	266	302	223	279	203	203	175
21	244	255	195	280	2,990	289	289	234	372	213	203	150
22	255	194	195	280	1,730	278	266	234	274	213	166	150
23	266	225	205	280	945	244	244	244	279	194	223	203
24	278	265	280	265	565	289	223	266	276	223	223	150
25	278	255	225	225	400	278	255	223	276	194	223	244
26	289	225	265	215	370	255	234	234	276	244	213	278
27	278	225	245	225	315	255	213	223	276	255	121	368
28	266	205	245	245	300	244	234	223	214	302	203	289
29	278	195	205	215	-----	244	234	223	223	213	203	266
30	278	235	280	265	-----	244	223	255	278	184	166	244
31	289	-----	290	245	-----	266	-----	213	-----	194	175	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	289	244	265	0.643	0.74
November	314	194	260	.631	.70
December	300	185	256	.621	.72
January	315	140	252	.612	.71
February	2,990	205	490	1.19	1.24
March	461	244	293	.711	.82
April	398	203	267	.648	.72
May	289	213	244	.592	.68
June	747	175	369	.896	1.00
July	340	184	234	.568	.65
August	234	121	197	.478	.55
September	368	150	208	.506	.56
The year	2,990	121	276	.670	9.09

ROOT RIVER NEAR HOUSTON, MINN.

LOCATION.—Chain gage in sec. 32, T. 104 N., R. 6 W., 1 mile west of Houston, and 2½ miles above mouth of South Fork of Root River.

DRAINAGE AREA.—1,550 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1930. At site 1½ miles downstream from May, 1909, to September, 1917.

EXTREMES.—Maximum discharge during year, 5,100 second-feet June 4 (gage height, 8.29 feet); minimum, 212 second-feet July 24 (gage height, 2.26 feet). 1909-1917, 1929-30: Maximum discharge, 17,000 second-feet Mar. 24, 1917; minimum, that of July 24, 1930.

REMARKS.—Records good. Stage-discharge relation affected by ice Nov. 23-30.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	382	360		350	275	335	395	225	262
2	318	339		335	335	305	365	225	275
3	318	339		335	305	290	350	225	262
4	360	339		305	365	3,260	365	275	275
5	339	339		320	365	1,530	350	237	275
6	339	339		305	350	1,020	380	262	262
7	318	318		305	425	685	350	250	262
8	360	297	460	305	460	640	320	250	970
9	318	318	395	320	530	565	365	335	565
10	360	318	395	320	460	495	335	262	395
11	339	318	410	290	530	495	335	262	350
12	360	318	365	320	920	495	290	250	335
13	318	339	380	320	820	2,710	275	237	320
14	318	318	395	320	730	2,620	250	237	305
15	360	339	365	320	600	2,440	250	250	305
16	297	297	380	365	530	1,590	250	262	275
17	318	318	395	380	495	1,020	250	262	275
18	339	339	395	395	442	820	250	250	275
19	297	382	410	380	425	640	262	250	262
20	297	339	410	395	365	600	237	250	262
21	318	318	395	380	330	565	262	262	250
22	318	255	380	395	365	530	225	262	262
23	339	255	380	350	365	600	225	262	262
24	318	297	350	335	380	460	212	237	262
25	318	276	380	335	380	442	225	237	275
26	339	297	365	320	365	442	290	250	305
27	297	234	350	320	365	410	275	250	320
28	318	234	335	305	350	380	250	262	305
29	318	255	335	290	320	380	275	262	290
30	339	234	320	275	320	530	225	262	275
31	382		320		335		225	250	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	382	297	331	0.214	0.25
November	382	234	309	.199	.22
March 8-31	460	320	378	.244	.22
April	395	275	333	.215	.24
May	920	275	440	.284	.33
June	3,260	290	910	.587	.65
July	395	212	288	.186	.21
August	335	225	253	.163	.19
September	970	250	319	.206	.23

WISCONSIN RIVER AT WHIRLPOOL RAPIDS, NEAR RHINELAND^WR, WIS.

LOCATION.—Water-stage recorder in sec. 4, T. 35 N., R. 8 E., at head of Whirlpool Rapids, 1 mile below outlet of Crescent Lake and 10 miles southwest of Rhinelander.

DRAINAGE AREA.—1,160 square miles.

RECORDS AVAILABLE.—September, 1915, to September, 1930. December, 1905, to September, 1915, at a station 3 miles upstream.

EXTREMES.—Maximum discharge during year, 2,970 second-feet June 21 (gage height, 4.15 feet); minimum, 205 second-feet Sept. 28 (gage height, 0.92 foot).
1915–1930: Maximum discharge, 5,410 second-feet Apr. 10, 1929 (gage height, 5.70 feet); minimum, 165 second-feet July 7, 1918 (gage height, 0.65 foot).

REMARKS.—Records excellent except those for period of ice effect, Nov. 20 to Mar. 8, which are poor. Flow regulated by 14 reservoirs and 3 power plants above station.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	860	900	642	788	779	1,300	1,070	900	645	1,420	860	348
2	942	985	666	736	873	1,150	1,070	1,510	750	1,160	645	330
3	1,070	680	689	788	963	1,090	1,160	1,240	820	1,240	820	330
4	1,160	1,240	736	642	935	1,460	1,330	1,070	985	942	985	322
5	1,070	1,070	736	736	902	1,300	1,420	1,070	1,070	1,240	942	310
6	715	942	736	736	902	1,220	860	1,070	1,240	1,070	900	314
7	750	942	736	736	864	1,090	1,420	1,420	1,330	985	715	272
8	750	900	689	689	826	1,090	1,510	1,600	750	1,070	750	280
9	610	900	788	552	788	1,070	1,240	1,600	900	985	942	330
10	680	750	788	510	845	645	1,420	1,700	942	985	575	290
11	820	942	788	642	845	750	1,420	1,160	942	985	610	249
12	900	1,070	736	689	902	750	1,800	1,510	900	985	715	330
13	750	1,160	788	736	902	785	942	1,700	942	785	715	554
14	785	1,120	736	689	821	785	1,240	1,600	2,120	942	715	425
15	1,240	1,070	736	689	736	785	1,330	1,330	1,700	680	715	528
16	1,070	860	788	689	642	942	985	1,600	2,010	575	715	589
17	860	750	689	736	845	1,420	1,160	1,240	2,460	610	575	610
18	900	1,070	736	689	902	2,010	1,420	985	2,460	610	645	554
19	860	942	736	642	902	1,600	1,700	1,070	2,340	610	540	575
20	785	736	788	736	845	1,600	1,240	942	2,460	510	540	528
21	785	689	736	736	552	1,240	1,420	860	2,830	860	554	352
22	942	788	736	736	401	1,240	1,600	750	1,600	942	540	234
23	985	595	736	689	470	985	1,600	1,070	1,800	645	575	231
24	785	736	736	689	1,370	1,600	1,160	985	1,800	860	400	231
25	785	736	736	642	1,790	1,070	1,160	575	1,420	645	231	231
26	680	552	845	642	1,560	1,160	1,070	750	1,240	985	240	225
27	680	552	788	642	1,190	900	820	900	1,420	715	294	225
28	785	788	736	595	1,380	942	985	1,240	1,600	1,070	425	249
29	680	845	736	642	-----	1,070	820	1,070	1,070	900	344	820
30	680	689	788	666	-----	680	985	860	1,240	820	330	900
31	750	-----	736	689	-----	1,330	-----	860	-----	900	339	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,240	610	842	0.726	0.84
November	1,240	552	867	.747	.83
December	845	642	743	.641	.74
January	788	510	684	.590	.68
February	1,790	401	919	.792	.82
March	2,010	645	1,130	.974	1.12
April	1,800	820	1,250	1.08	1.20
May	1,700	575	1,170	1.01	1.16
June	2,830	645	1,460	1.26	1.41
July	1,420	510	895	.772	.89
August	985	231	609	.525	.61
September	900	225	392	.338	.38
The year	2,830	225	912	.786	10.68

WISCONSIN RIVER AT MERRILL, WIS.

LOCATION.—Water-stage recorder on line between secs. 12 and 13, T. 31 N., R. 6 E., at highway bridge at east end of Merrill, half a mile below mouth of Prairie River.

DRAINAGE AREA.—2,630 square miles.

RECORDS AVAILABLE.—November, 1902, to September, 1930.

EXTREMES.—Maximum discharge during year, 8,430 second-feet June 14 (gage height, 8.05 feet); minimum, 440 second-feet June 23 (gage height, 3.00 feet).

1902-1930: Maximum discharge, 45,000 second-feet July 24, 1912 (gage height, 17.5 feet); minimum, about 90 second-feet Sept. 26, 1908 (gage height, 2.45 feet).

REMARKS.—Records good except those for period of ice effect, Jan. 12 to Feb. 18, which are fair, and for periods Oct. 23 to Nov. 12, Dec. 3, Feb. 25-28, and Mar. 11-17, which were estimated. Flow regulated by 17 reservoirs and 8 power plants above station.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	2,170	1,690	1,460	1,560	1,460	2,920	2,040	2,590	1,670	2,590	1,790	1,170
2.....	1,910	1,720	1,360	1,670	1,650	2,750	2,440	3,290	1,660	2,590	1,670	1,080
3.....	1,670	1,920	1,410	1,560	1,850	2,440	1,790	3,680	1,670	2,300	1,560	1,080
4.....	1,560	1,680	1,460	1,670	2,040	2,300	2,040	3,290	1,560	2,920	1,790	1,080
5.....	1,790	2,160	1,560	1,360	1,980	3,100	2,300	2,920	2,440	2,590	1,670	1,170
6.....	1,790	1,890	1,560	1,560	1,910	2,750	3,100	2,590	2,440	2,590	1,910	995
7.....	1,460	1,720	1,560	1,560	1,910	2,590	2,590	3,680	2,300	2,170	1,560	1,080
8.....	1,560	1,620	1,560	1,560	1,830	2,300	2,300	4,080	2,040	1,790	1,670	1,080
9.....	1,360	1,620	1,460	1,460	1,750	2,300	2,590	4,920	2,040	2,300	1,360	995
10.....	1,360	1,780	1,670	1,170	1,670	2,040	2,920	4,950	1,460	2,440	1,560	995
11.....	1,460	1,690	1,670	1,080	1,790	2,430	2,300	3,680	1,910	2,040	1,460	995
12.....	1,670	1,940	1,670	1,360	1,790	2,820	3,100	2,590	1,670	2,170	1,260	1,080
13.....	1,670	2,170	1,560	1,460	1,910	3,220	2,920	2,920	2,170	1,560	1,460	995
14.....	1,460	2,170	1,670	1,560	1,910	3,610	2,590	2,750	6,610	2,300	1,360	995
15.....	1,560	2,040	1,560	1,460	1,740	4,000	2,440	3,100	6,860	1,790	1,460	1,170
16.....	1,460	1,910	1,560	1,460	1,560	4,390	2,750	2,300	7,370	1,790	1,460	1,080
17.....	1,790	1,790	1,670	1,460	1,360	4,780	2,300	2,590	6,860	1,790	1,260	1,080
18.....	1,560	1,790	1,460	1,560	1,790	5,180	4,080	2,040	5,640	1,560	1,360	1,080
19.....	1,560	2,040	1,560	1,460	1,910	4,290	4,510	2,040	3,480	1,790	1,260	1,460
20.....	1,560	1,560	1,560	1,360	1,910	3,680	4,080	1,790	2,040	1,460	1,460	1,360
21.....	1,560	1,560	1,670	1,560	1,790	2,920	3,100	2,040	2,040	1,790	1,360	1,080
22.....	1,790	1,460	1,560	1,560	1,170	2,590	3,290	2,300	1,790	1,790	1,080	1,170
23.....	1,630	1,670	1,560	1,560	850	2,170	2,590	2,300	1,790	1,790	1,360	1,170
24.....	1,620	1,260	1,560	1,460	995	1,910	2,590	2,590	3,290	1,560	1,560	1,260
25.....	1,440	1,560	1,560	1,460	2,900	2,440	2,300	2,040	2,590	1,910	1,170	1,170
26.....	1,340	1,560	1,560	1,360	3,800	2,590	2,170	1,670	2,440	1,910	1,170	1,360
27.....	1,380	1,170	1,790	1,360	3,300	2,040	1,790	2,170	2,440	1,790	1,080	1,790
28.....	1,380	1,170	1,670	1,360	2,530	2,040	2,040	2,300	2,300	1,910	1,170	1,670
29.....	1,480	1,670	1,560	1,260	-----	2,040	1,910	2,300	2,590	1,910	1,080	1,360
30.....	1,380	1,790	1,560	1,360	-----	1,790	2,040	2,300	3,680	2,040	1,170	1,560
31.....	1,440	-----	1,670	1,410	-----	1,670	-----	1,910	-----	1,460	1,080	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	2,170	1,340	1,570	0.597	0.69
November.....	2,170	1,170	1,730	.658	.73
December.....	1,790	1,360	1,570	.597	.69
January.....	1,670	1,080	1,450	.551	.64
February.....	3,800	850	1,890	.719	.75
March.....	5,180	1,670	2,840	1.08	1.24
April.....	4,510	1,790	2,630	1.00	1.12
May.....	4,950	1,670	2,760	1.05	1.21
June.....	7,370	1,460	2,960	1.13	1.26
July.....	2,920	1,460	2,010	.764	.88
August.....	1,910	1,080	1,410	.536	.62
September.....	1,790	995	1,190	.452	.50
The year.....	7,370	850	2,000	.760	10.33

WISCONSIN RIVER AT KNOWLTON, WIS.

LOCATION.—Water-stage recorder 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 & Pacific Railroad at Knowlton and 1½ miles below mouth of Big Eau Pleine River.

DRAINAGE AREA.—4,360 square miles.

RECORDS AVAILABLE.—July, 1921, to September, 1930.

EXTREMES.—Maximum discharge during year, 37,200 second-feet June 15 (gage height, 15.80 feet); minimum, 1,230 second-feet Sept. 10 (gage height, 1.95 feet).

1921–1930: Maximum discharge, 49,800 second-feet Apr. 10, 1922 (gage height, 19.5 feet); minimum, 670 second-feet Aug. 15, 1921 (gage height, 1.0 foot).

REMARKS.—Records excellent except those for period of ice effect, Nov. 25 to Mar. 15, which are fair. Flow regulated by many storage reservoirs and power plants above station.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	2,970	2,340	2,050	2,050	1,650	5,720	3,480	3,140	2,490	6,290	2,490	1,420
2.....	2,340	2,340	2,190	1,650	1,650	5,720	3,140	3,480	2,490	5,130	2,490	1,650
3.....	2,490	2,810	2,190	1,650	1,780	4,700	3,140	6,500	2,970	3,830	2,650	1,820
4.....	2,650	2,490	2,190	2,190	1,780	4,010	3,310	6,500	2,650	3,480	2,650	1,820
5.....	2,190	2,810	2,050	1,650	1,780	4,560	3,310	4,560	2,810	4,560	2,970	1,420
6.....	2,190	2,970	1,910	1,780	1,530	4,560	3,480	4,560	2,970	4,190	2,810	1,650
7.....	2,190	2,810	2,340	2,050	1,780	4,940	4,560	4,190	4,370	3,830	2,810	1,420
8.....	2,490	2,490	2,190	2,050	1,650	4,370	4,190	5,320	4,940	3,310	2,810	1,420
9.....	2,190	2,340	1,780	1,530	1,910	3,830	3,830	6,930	3,830	3,140	2,810	1,530
10.....	2,190	2,050	2,050	1,650	1,650	3,830	3,480	7,150	4,190	2,970	2,190	1,230
11.....	1,910	2,190	1,910	1,530	1,650	4,940	3,830	6,500	3,310	3,140	2,190	1,420
12.....	2,190	2,650	1,910	1,230	1,580	4,370	4,010	5,130	3,140	4,480	2,650	1,530
13.....	1,910	2,810	1,780	1,420	1,790	4,560	4,010	4,370	3,140	3,140	2,050	1,910
14.....	2,190	2,970	2,340	1,780	1,790	4,370	4,190	4,190	14,400	2,190	1,910	1,420
15.....	2,970	2,970	1,780	1,530	1,580	3,830	4,190	4,190	34,700	3,140	1,780	1,650
16.....	2,190	2,650	1,780	1,780	1,900	3,830	3,830	4,190	30,300	2,810	1,650	1,650
17.....	1,910	2,650	2,050	1,650	1,900	4,560	3,830	3,650	18,100	2,650	1,910	1,530
18.....	2,340	2,490	2,050	1,780	1,780	7,380	4,940	3,310	12,700	2,650	1,780	1,530
19.....	2,490	2,190	2,190	1,910	1,420	8,090	9,340	3,310	9,340	2,490	1,780	1,650
20.....	2,190	2,340	1,780	2,150	1,910	6,500	8,840	3,480	8,090	2,050	1,780	2,050
21.....	2,190	2,490	2,490	2,050	1,910	5,130	6,710	3,310	6,290	1,910	1,780	1,910
22.....	2,490	2,340	2,190	1,900	2,490	4,560	5,510	3,140	6,090	2,810	1,780	1,650
23.....	2,650	2,190	1,910	1,500	6,710	4,010	5,130	2,970	6,090	2,490	1,650	2,050
24.....	2,190	1,650	2,810	1,580	8,590	3,830	4,560	2,970	6,500	2,490	1,530	1,650
25.....	2,050	2,190	2,050	1,580	9,340	3,650	4,010	3,310	7,150	2,490	1,780	1,780
26.....	2,050	2,650	2,190	1,580	9,850	3,310	3,650	3,310	5,890	2,650	1,910	2,050
27.....	1,780	2,050	2,340	1,680	8,550	3,480	2,970	3,480	4,190	2,490	1,650	1,650
28.....	2,190	1,780	2,190	1,320	6,570	3,310	2,810	3,140	3,480	3,140	1,530	2,340
29.....	2,190	1,420	1,910	1,900	-----	3,480	3,310	2,970	2,970	3,480	1,530	2,340
30.....	2,190	1,780	1,780	1,500	-----	2,810	3,140	2,650	4,190	2,810	1,530	2,490
31.....	2,190	-----	2,190	1,680	-----	3,140	-----	2,650	-----	2,810	1,530	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	2,970	1,780	2,270	0.521	0.60
November.....	2,970	1,420	2,400	.550	.61
December.....	2,810	1,780	2,080	.477	.55
January.....	2,190	1,230	1,720	.394	.45
February.....	9,850	1,420	3,160	.725	.76
March.....	8,090	2,810	4,500	1.03	1.19
April.....	9,340	2,810	4,290	.984	1.10
May.....	7,150	2,650	4,150	.952	1.10
June.....	34,700	2,490	7,460	1.71	1.91
July.....	6,290	1,910	3,160	.725	.84
August.....	2,970	1,530	2,080	.477	.55
September.....	2,490	1,230	1,690	.388	.43
• The year.....	34,700	1,230	3,240	.743	10.09

WISCONSIN RIVER NEAR NEKOOSA, WIS.

LOCATION.—Water-stage recorder in sec. 15, T. 21 N., R. 5 E., 1½ miles below Nekoosa and 4 miles above Tenmile Creek.

DRAINAGE AREA.—5,500 square miles.

RECORDS AVAILABLE.—May, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 40,600 second-feet June 16 (gage height, 13.4 feet); minimum (estimated), 700 second-feet Jan. 13

1914–1930: Maximum discharge, 61,000 second-feet Apr. 12, 1922 (gage height, 16.1 feet); minimum (estimated), 400 second-feet Jan. 13, 1924.

REMARKS.—Records excellent except those for period of ice effect, Nov. 27 to Mar. 2, which are poor. Flow regulated by many storage reservoirs and power plants above station.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,500	2,640	1,910	2,160	1,910	7,460	3,280	3,460	2,500	5,340	2,500	1,290
2	3,100	2,640	2,160	2,160	1,510	6,500	4,050	3,650	2,640	6,740	2,640	1,400
3	2,790	2,500	2,440	2,160	1,700	6,500	3,460	4,680	2,370	6,030	2,370	2,110
4	2,790	2,790	2,440	1,700	1,700	5,340	3,280	6,980	3,650	4,260	2,370	2,240
5	2,940	2,940	2,300	1,700	2,030	4,900	3,850	6,740	3,460	4,060	2,240	1,630
6	2,500	3,280	2,160	1,910	2,030	4,680	4,900	5,570	3,280	5,340	2,790	1,630
7	2,500	3,280	2,030	1,910	1,800	4,470	3,460	5,340	4,680	4,470	2,370	1,510
8	2,640	3,100	1,910	2,160	1,700	4,470	5,120	4,680	5,800	4,060	2,500	1,870
9	2,790	2,500	2,300	2,440	1,510	4,260	4,470	6,500	5,800	4,060	2,500	1,870
10	2,940	2,240	2,160	1,910	2,030	3,850	4,050	7,700	5,120	3,850	2,240	1,870
11	3,100	2,790	2,300	1,910	1,910	3,850	4,050	7,700	4,900	2,940	1,990	1,750
12	2,640	2,640	2,440	1,910	2,030	4,470	4,470	6,740	4,260	3,100	1,990	1,510
13	1,750	3,100	2,030	1,360	1,800	4,260	3,850	5,570	4,050	3,650	2,790	1,870
14	1,990	2,940	1,910	1,910	2,030	4,260	4,680	5,120	6,980	2,640	2,240	1,870
15	2,370	3,100	1,800	2,750	2,030	4,260	4,680	4,260	20,400	2,790	1,990	1,750
16	2,790	3,100	1,800	2,160	1,800	3,850	4,470	4,260	36,500	3,100	1,990	1,750
17	2,790	2,640	1,800	2,160	2,160	4,900	4,260	4,680	31,200	3,100	1,870	1,750
18	2,640	2,940	2,030	2,440	2,160	7,220	4,680	3,460	18,700	3,100	1,990	1,870
19	2,370	2,940	2,160	1,910	2,160	8,950	7,950	3,650	14,300	3,100	1,990	1,750
20	2,370	2,790	2,920	1,700	1,700	8,950	10,200	3,280	11,500	2,110	1,990	1,750
21	2,240	2,370	2,920	2,440	1,800	6,740	9,450	3,650	9,950	2,110	1,870	2,110
22	2,640	2,500	2,160	2,300	2,590	5,800	7,220	3,460	6,740	2,500	1,990	1,750
23	2,940	1,990	3,100	2,160	3,460	5,340	6,030	3,650	7,950	2,640	1,990	1,990
24	2,500	1,750	2,160	1,700	7,460	4,680	5,570	3,460	7,460	2,640	1,750	2,240
25	2,790	2,110	2,300	1,800	8,450	4,260	5,120	2,790	8,450	2,500	1,870	1,870
26	2,500	1,870	2,300	1,800	8,700	3,650	4,260	3,280	8,700	2,370	2,110	2,240
27	1,750	2,590	2,440	1,800	11,200	3,280	3,280	3,460	6,500	2,240	2,110	1,870
28	2,500	2,160	2,750	1,910	9,700	3,460	3,650	3,650	5,120	2,500	1,750	1,630
29	2,370	2,160	2,300	2,160	-----	3,460	3,280	3,280	4,050	3,100	1,870	2,240
30	2,370	1,910	2,300	2,160	-----	3,460	3,460	2,500	3,650	3,460	1,870	2,790
31	2,370	-----	2,300	1,700	-----	3,100	-----	3,280	-----	2,500	1,750	-----
Month	Maximum			Minimum			Mean			Per square mile		Run-off in inches
October	3,100			1,750			2,560			0.465		0.54
November	3,280			1,750			2,610			.475		.53
December	3,100			1,800			2,260			.411		.47
January	2,750			1,360			2,010			.365		.42
February	11,200			1,510			3,250			.591		.62
March	8,950			3,100			4,990			.907		1.05
April	10,200			3,280			4,820			.873		.98
May	7,700			2,500			4,630			.824		.95
June	36,500			2,370			8,690			1.58		1.76
July	6,740			2,110			3,430			.624		.72
August	2,790			1,750			2,140			.389		.45
September	2,790			1,290			1,860			.333		.38
The year	36,500			1,290			3,590			.653		8.87

WISCONSIN RIVER AT MUSCODA, WIS.

LOCATION.—Chain gage in sec. 1, T. 8 N., R. 1 W., at highway bridge 1 mile north of Muscoda and half a mile above Eagle Mill Creek. Zero of gage 664.3 feet above mean sea level.

DRAINAGE AREA.—10,300 square miles.

RECORDS AVAILABLE.—December, 1902, to December, 1903; December, 1913, to September, 1930.

EXTREMES.—Maximum discharge during year, 38,400 second-feet June 22 (gage height, 7.60 feet); minimum, 3,510 second-feet Sept. 24, 25, 29 (gage height, 0.62 foot).

1902-3, 1913-1930: Maximum discharge, 72,100 second-feet Apr. 16, 1922 (gage height, 10.60 feet); minimum (estimated), 1,600 second-feet Dec. 20, 1921.

Maximum stage known, 11.1 feet during August, 1868.

REMARKS.—Records fair except those for period of ice effect. Nov. 23 to Feb. 23, which are poor. Flow regulated by many storage reservoirs and power plants above station.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	5,990	5,730	5,000	4,330	4,120	16,500	11,700	10,100	7,390	11,300	5,240	4,770
2.....	5,730	5,480	5,000	4,120	3,910	17,600	11,300	9,770	7,390	9,770	5,240	5,240
3.....	5,990	5,240	5,000	4,770	3,510	15,000	11,300	9,400	7,090	9,400	5,240	5,000
4.....	5,990	4,770	5,000	4,120	3,910	13,500	10,100	8,020	6,250	9,400	5,240	4,770
5.....	5,730	5,730	5,000	4,770	3,710	11,300	9,040	7,090	6,250	7,700	5,730	4,550
6.....	5,240	5,990	5,000	4,770	3,710	10,500	8,350	8,020	6,520	8,020	5,730	4,330
7.....	5,480	5,990	5,000	5,240	3,710	10,500	8,020	8,350	6,800	8,020	5,480	4,330
8.....	5,990	5,730	4,770	4,330	3,710	10,900	8,690	8,690	7,390	10,100	5,480	4,330
9.....	5,990	6,520	4,550	4,330	3,710	13,500	8,690	9,040	6,800	9,400	5,480	4,550
10.....	6,250	6,250	5,000	3,910	3,910	10,500	8,350	9,400	8,020	9,400	5,240	4,330
11.....	6,250	5,990	4,770	4,330	4,120	10,500	8,350	8,350	8,690	9,400	5,240	4,330
12.....	5,990	6,800	4,770	4,550	3,910	10,500	8,350	9,770	8,690	9,770	5,480	4,330
13.....	5,480	7,090	4,770	4,330	4,330	10,100	8,020	10,100	8,690	8,350	5,730	4,330
14.....	4,770	6,800	4,550	4,550	4,120	10,100	6,800	9,400	9,400	8,020	5,480	4,330
15.....	5,730	6,800	4,550	4,330	4,330	9,770	8,690	9,400	9,770	8,690	5,240	4,330
16.....	5,480	6,520	4,550	4,330	4,550	9,400	9,040	10,100	13,100	8,020	5,240	4,330
17.....	5,480	5,990	4,770	3,910	4,770	8,020	9,770	10,900	11,700	6,800	5,240	4,330
18.....	5,730	5,730	4,770	3,710	5,240	9,770	10,100	8,350	12,600	6,800	5,000	4,550
19.....	5,730	6,520	4,120	3,710	6,520	9,770	10,900	7,390	16,000	6,800	5,240	4,550
20.....	5,730	6,520	4,330	3,710	9,400	10,100	9,400	8,350	21,200	6,800	5,770	4,550
21.....	5,000	6,520	4,770	3,910	12,200	10,100	8,020	8,350	28,000	6,250	4,770	4,120
22.....	5,730	6,250	4,330	3,910	12,600	10,100	9,040	9,040	38,400	5,480	5,000	3,710
23.....	6,250	6,250	4,120	3,910	11,300	9,040	9,770	9,400	33,100	6,520	4,770	3,710
24.....	5,990	5,990	4,330	3,910	8,350	8,690	9,770	8,690	18,800	6,520	4,770	3,510
25.....	5,730	5,730	4,120	3,910	10,100	9,770	13,500	8,020	16,000	6,250	4,770	3,510
26.....	5,480	5,730	4,330	4,120	11,300	11,700	11,700	6,800	15,600	5,990	5,000	3,910
27.....	5,480	5,480	4,550	3,910	11,300	10,900	9,400	8,020	15,200	5,860	4,770	4,120
28.....	4,770	5,240	4,120	4,120	15,000	9,770	10,100	8,690	14,900	5,730	4,550	3,910
29.....	5,480	5,240	4,120	4,120	-----	9,770	10,900	8,350	14,500	5,240	4,330	3,510
30.....	5,730	5,240	4,120	4,330	-----	10,100	9,770	8,690	12,600	5,240	4,330	4,330
31.....	5,730	-----	3,910	4,120	-----	10,100	-----	7,700	-----	5,240	4,330	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	6,250	4,770	5,680	0.551	0.64
November.....	7,090	4,770	6,000	.583	.65
December.....	5,000	3,910	4,580	.445	.51
January.....	5,240	3,710	4,210	.409	.47
February.....	15,000	3,510	6,480	.623	.66
March.....	17,600	8,020	10,900	1.06	1.22
April.....	13,500	6,800	9,560	.928	1.04
May.....	10,900	6,800	8,750	.850	.98
June.....	38,400	6,250	13,200	1.28	1.43
July.....	11,300	5,240	7,620	.740	.85
August.....	5,730	4,330	5,110	.496	.57
September.....	5,240	3,510	4,280	.416	.46
The year.....	38,400	3,510	7,190	.698	9.48

TOMAHAWK RIVER AT TOMAHAWK, WIS.

LOCATION.—In sec. 28, T. 35 N., R. 6 E., at Jersey power plant of Wisconsin Valley Electric Co., 1 mile north of Tomahawk.

DRAINAGE AREA.—547 square miles.

RECORDS AVAILABLE.—January to September, 1930.

EXTREMES.—Maximum mean daily discharge during period, 1,220 second-feet Sept. 13; minimum, 133 second-feet June 2.

REMARKS.—Records good. Discharge computed from power-house records. Flow completely regulated by four storage reservoirs operated by Wisconsin Valley Improvement Co. in the interest of power development on Tomahawk and Wisconsin Rivers. Monthly table shows correction for storage in all four reservoirs.

Daily and monthly discharge, in second-feet, 1930

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	612	553	282	377	443	146	803	690	744
2.....	612	553	323	388	513	133	757	738	616
3.....	612	554	282	408	458	238	806	628	650
4.....	612	556	287	399	428	347	727	697	643
5.....	612	556	299	418	414	318	777	721	622
6.....	612	556	301	370	417	348	683	681	600
7.....	612	556	287	441	417	336	720	683	859
8.....	445	554	307	377	364	255	701	749	546
9.....	292	554	328	377	259	266	782	587	508
10.....	336	551	310	375	198	320	702	763	160
11.....	468	535	361	375	156	332	703	773	186
12.....	497	554	342	220	156	464	707	708	660
13.....	560	534	329	225	162	548	961	743	1,220
14.....	527	526	342	343	172	544	1,010	734	1,080
15.....	457	532	408	381	173	655	730	737	983
16.....	483	578	299	372	174	892	752	751	840
17.....	426	514	392	372	174	933	747	748	658
18.....	426	514	409	372	167	747	749	760	909
19.....	426	501	324	269	154	743	746	751	755
20.....	426	531	247	197	153	743	809	729	706
21.....	426	539	230	155	154	717	767	711	655
22.....	426	560	207	156	158	389	755	706	655
23.....	434	532	207	155	194	587	780	749	661
24.....	491	680	217	145	202	447	759	737	549
25.....	543	499	349	134	175	700	763	704	186
26.....	539	236	419	142	155	887	741	825	732
27.....	544	228	400	278	173	895	741	607	701
28.....	546	239	377	432	177	895	698	520	663
29.....	547	-----	391	444	177	924	744	610	693
30.....	547	-----	350	431	177	812	745	630	672
31.....	551	-----	427	-----	165	-----	745	619	-----

Month	Observed			Gain or loss in storage (millions of cubic feet)	Corrected for storage		
	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
January.....	612	292	505	-463	332	0.677	0.70
February.....	680	228	513	+77	545	.9 ⁹⁶	1.04
March.....	427	207	324	+141	377	.6 ⁹⁹	.70
April.....	444	134	317	+1,197	779	1.43	1.58
May.....	513	153	241	+1,134	665	1.22	1.41
June.....	933	133	552	+1,000	933	1.7 ⁷	1.91
July.....	1,010	683	762	-1,306	274	.5 ⁷¹	.58
August.....	825	520	703	-1,508	140	.2 ⁵³	.30
September.....	1,220	160	670	-828	351	.6 ⁹²	.72

PRAIRIE RIVER NEAR MERRILL, WIS.

LOCATION.—Chain gage on line between secs. 20 and 29, T. 32 N., R. 7 E., at highway bridge $4\frac{1}{2}$ miles northeast of Merrill.

DRAINAGE AREA.—164 square miles.

RECORDS AVAILABLE.—January, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,060 second-feet June 15 (gage height, 4.40 feet); minimum, 78 second-feet several days during August and September (gage height, 1.60 feet).

1914-1930: Maximum discharge, 3,580 second-feet Aug. 21, 1926 (gage height, 7.4 feet); minimum (estimated), 55 second-feet Jan. 21, 1925.

REMARKS.—Records good except those for period of ice effect, Nov. 22 to Feb. 21, which are fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	159	170	118	99	97	325	159	182	122	263	85	85
2.....	159	170	126	97	97	234	159	278	122	248	87	82
3.....	137	170	129	97	97	207	159	293	115	234	87	85
4.....	133	159	129	97	100	207	170	309	122	220	85	82
5.....	133	137	118	94	102	194	182	293	148	263	85	85
6.....	133	133	116	89	98	182	194	234	148	234	82	85
7.....	118	129	113	88	94	182	234	278	159	207	82	80
8.....	118	122	116	87	93	182	234	469	170	194	82	80
9.....	118	118	114	87	92	170	220	394	137	137	80	78
10.....	122	137	113	87	90	170	207	359	129	122	78	78
11.....	126	182	113	87	87	170	207	278	115	118	78	80
12.....	129	194	113	87	92	159	182	263	115	112	80	85
13.....	129	182	112	88	97	159	207	234	137	105	82	97
14.....	133	159	110	89	96	137	207	234	124	102	78	92
15.....	137	148	112	89	94	137	207	220	1,060	99	78	89
16.....	137	137	113	89	94	170	207	220	816	97	78	89
17.....	129	133	112	90	94	592	220	207	724	97	78	85
18.....	126	133	110	92	94	550	592	194	469	94	78	80
19.....	129	126	110	92	94	469	592	170	394	92	82	82
20.....	126	133	110	92	100	431	592	137	325	92	80	80
21.....	122	137	104	94	105	263	550	137	342	92	78	78
22.....	118	137	106	97	182	234	431	133	293	89	78	78
23.....	115	128	107	97	342	234	325	133	234	89	80	80
24.....	112	128	108	97	359	207	293	148	159	89	80	82
25.....	115	128	110	97	394	207	234	137	159	87	82	102
26.....	118	128	104	94	412	182	207	137	133	87	78	102
27.....	118	128	99	94	394	170	194	137	122	92	80	97
28.....	115	115	99	94	325	170	182	133	115	87	82	102
29.....	118	102	99	96	-----	170	182	129	112	87	78	105
30.....	122	101	97	97	-----	159	182	126	234	89	78	102
31.....	159	-----	98	97	-----	148	-----	126	-----	87	82	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	159	112	128	0.780	0.90
November.....	194	101	140	.854	.95
December.....	129	97	111	.677	.78
January.....	99	87	92.6	.565	.65
February.....	412	87	158	.963	1.00
March.....	592	137	231	1.41	1.63
April.....	592	159	264	1.61	1.80
May.....	469	126	217	1.32	1.52
June.....	1,060	112	272	1.66	1.85
July.....	263	87	132	.805	.93
August.....	87	78	80.7	.492	.57
September.....	105	78	86.9	.530	.59
The year.....	1,060	78	159	.970	13.17

RIB RIVER AT RIB FALLS, WIS.

LOCATION.—Chain gage in NW. $\frac{1}{4}$ sec. 27, T. 29 N., R. 5 E., at highway bridge at Rib Falls, 6 miles below mouth of Black Creek.

DRAINAGE AREA.—309 square miles.

RECORDS AVAILABLE.—May, 1925, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,910 second-feet June 14 (gage height, 8.10 feet); minimum (estimated), 5 second-feet Jan. 23.

1925-1930: Maximum discharge, 12,500 second-feet Aug. 21, 1926 (gage height, 10.10 feet); minimum (estimated), 5 second-feet Jan. 23, 1930.

REMARKS.—Records good except those for period of ice effect, Dec. 7 to Feb. 23, which are fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	46	192	37	44	7	512	120	144	53	316	32	25
2.....	42	150	37	44	7	512	108	644	46	215	29	27
3.....	39	98	34	44	7	461	223	820	42	125	29	27
4.....	39	82	34	44	7	69	207	644	46	144	29	27
5.....	39	78	37	44	7	240	293	387	120	192	27	27
6.....	39	60	37	44	7	266	316	363	293	157	25	25
7.....	42	60	30	34	7	177	316	412	644	120	25	25
8.....	42	60	30	34	10	192	266	1,000	412	87	25	25
9.....	42	60	30	34	10	144	232	940	293	64	25	25
10.....	39	60	30	34	10	157	223	617	150	60	25	24
11.....	42	56	30	34	10	177	248	436	131	60	24	24
12.....	49	56	30	28	13	207	363	387	98	60	24	29
13.....	49	56	36	28	13	207	387	387	125	53	24	42
14.....	46	60	30	24	13	192	293	316	6,190	46	24	37
15.....	46	60	30	24	14	185	284	87	4,870	42	24	37
16.....	42	60	30	19	19	163	248	248	1,580	39	24	34
17.....	42	60	36	16	21	880	215	200	1,130	34	24	34
18.....	42	60	38	12	24	1,420	880	200	820	34	24	29
19.....	46	60	38	9	34	1,270	940	144	436	32	22	27
20.....	49	60	38	9	39	880	590	125	87	29	22	24
21.....	42	42	38	7	2,020	387	436	108	240	32	22	24
22.....	46	37	38	7	2,110	461	339	92	185	29	22	94
23.....	46	39	38	5	880	436	248	120	1,000	25	22	24
24.....	46	39	41	7	617	157	207	114	461	27	24	27
25.....	42	39	41	5	1,840	266	185	125	223	27	24	29
26.....	42	39	44	16	1,660	284	150	103	157	42	24	53
27.....	39	39	41	16	880	512	137	98	98	37	24	49
28.....	39	39	41	16	461	207	125	82	82	185	24	37
29.....	39	37	41	13	-----	177	108	82	69	69	24	37
30.....	42	37	41	13	-----	87	108	69	1,270	53	25	34
31.....	56	-----	41	8	-----	114	-----	60	-----	37	25	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	56	39	43.3	0.140	0.16
November.....	192	37	63.7	.206	.23
December.....	44	30	36.0	.117	.13
January.....	44	5	23.1	.075	.09
February.....	2,110	7	384	1.24	1.29
March.....	1,420	69	368	1.19	1.37
April.....	940	108	293	.948	1.06
May.....	1,000	60	308	.997	1.15
June.....	6,190	42	712	2.30	2.57
July.....	316	25	79.7	.258	.30
August.....	32	22	24.7	.080	.09
September.....	53	24	30.4	.098	.11
The year.....	6,190	5	195	.631	8.55

YELLOW RIVER AT SPRAGUE, WIS.

LOCATION.—Chain gage in NW. $\frac{1}{4}$ sec. 11, T. 19 N., R. 3 E., 1 mile southeast of Sprague and 10 miles above Necedah Dam.

DRAINAGE AREA.—436 square miles.

RECORDS AVAILABLE.—September, 1926, to September, 1930.

EXTREMES.—Maximum discharge during year, 2,230 second-feet June 16 (gage height, 12.70 feet); minimum (estimated), 11 second-feet Jan. 27–29.

1926–1930: Maximum discharge (estimated), 2,660 second-feet Sept. 17, 1928; minimum, that of Jan. 27–29, 1930.

REMARKS.—Records good for medium and high stages and fair for low stages except those for period of ice effect, Nov. 29 to Feb. 23, which are poor. No gage-height record on Sundays and holidays; discharge interpolated.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	39	30	26	12	1,250	146	100	75	157	42	17
2	27	42	30	26	12	971	157	100	75	146	42	17
3	28	44	30	26	12	692	157	117	75	146	42	16
4	28	45	30	26	12	581	168	168	71	152	42	16
5	28	48	30	26	12	480	157	219	85	157	39	15
6	28	51	30	26	13	386	157	193	136	142	39	15
7	27	48	30	26	13	320	157	168	233	126	37	15
8	26	45	30	26	13	275	157	157	511	117	36	15
9	26	45	30	26	14	254	146	157	789	108	34	15
10	26	44	30	26	14	233	146	247	924	100	33	15
11	26	42	29	26	14	233	146	226	716	92	32	14
12	27	39	28	26	14	261	136	206	441	88	30	14
13	28	45	28	25	14	233	131	168	352	90	30	14
14	30	48	28	23	14	290	126	146	540	92	32	14
15	31	48	27	26	16	193	126	136	1,380	71	28	14
16	32	48	26	25	17	200	136	126	2,230	67	28	14
17	32	48	25	21	18	206	136	117	2,020	64	27	14
18	32	48	24	19	18	261	146	108	1,820	57	26	14
19	32	48	28	16	20	305	168	100	1,650	54	26	13
20	32	42	28	13	21	336	229	100	1,100	51	24	13
21	32	39	28	12	23	290	290	108	624	48	26	14
22	31	37	28	12	138	233	275	100	472	48	24	14
23	32	35	28	12	253	206	219	100	320	45	23	17
24	33	37	28	12	369	180	180	100	261	42	22	17
25	35	39	28	12	764	168	157	100	441	45	22	18
26	36	36	27	12	1,040	146	136	100	624	48	22	19
27	36	32	26	11	1,130	126	126	92	460	54	21	20
28	37	32	26	11	1,220	136	117	88	290	60	19	20
29	37	32	26	11	-----	136	108	78	235	54	18	19
30	36	30	27	12	-----	136	100	76	180	48	18	19
31	37	-----	27	12	-----	136	-----	75	-----	45	18	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	37	26	30.8	0.071	0.08
November	51	30	41.9	.096	.11
December	30	24	28.1	.064	.07
January	26	11	19.6	.045	.05
February	1,220	12	187	.429	.45
March	1,250	126	318	.729	.84
April	290	100	158	.362	.40
May	247	75	131	.300	.35
June	2,230	71	638	1.46	1.63
July	157	42	84.3	.193	.22
August	42	18	29.1	.067	.08
September	20	13	15.7	.036	.04
The year	2,230	11	139	.319	4.32

KICKAPOO RIVER AT GAYS MILLS, WIS.

LOCATION.—Chain gage in sec. 28, T. 10 N., R. 4 W., at highway bridge just below dam and power plant of Interstate Power Co. at Gays Mills, 2 miles below mouth of Tainter Creek.

DRAINAGE AREA.—629 square miles.

RECORDS AVAILABLE.—December, 1913, to September, 1930.

EXTREMES.—Maximum discharge during year (estimated), 2,640 second-feet Feb. 23; minimum, 180 second-feet June 28 (gage height, 1.00 foot).

1913-1930: Maximum discharge, about 6,300 second-feet Mar. 24, 1917 (gage height, 15.05 feet); minimum, about 100 second-feet during later part of January, 1915.

REMARKS.—Records poor. Stage-discharge relation affected by ice from Dec. 21 to Feb. 28.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	325	341	325	310	280	427	357	310	295	281	267	852
2.....	325	325	341	325	295	409	357	310	295	267	267	742
3.....	325	325	325	325	295	427	357	310	295	267	267	881
4.....	341	325	325	310	325	427	341	310	295	267	281	505
5.....	325	325	325	310	310	427	341	310	852	281	281	427
6.....	325	310	325	295	295	427	341	310	665	281	281	325
7.....	295	310	341	295	310	427	341	310	592	281	267	310
8.....	310	325	341	310	295	409	325	325	446	295	267	281
9.....	295	325	357	280	295	409	310	325	592	310	267	267
10.....	310	325	357	295	280	409	325	310	526	295	267	267
11.....	310	341	357	295	280	374	341	310	446	267	230	267
12.....	310	341	374	295	280	357	341	295	465	281	242	267
13.....	325	325	391	295	280	341	341	295	1,600	281	267	254
14.....	325	325	374	280	265	341	341	295	2,090	267	267	254
15.....	341	310	357	295	265	341	341	310	1,560	267	267	267
16.....	325	310	357	310	295	341	357	310	1,260	281	267	254
17.....	325	310	341	295	355	325	427	295	526	281	267	254
18.....	341	310	341	295	740	341	465	310	427	267	267	267
19.....	341	310	325	295	1,640	341	391	310	465	267	254	267
20.....	325	325	325	295	2,140	341	357	310	325	267	267	254
21.....	325	325	325	295	2,340	341	325	295	374	267	254	254
22.....	325	325	325	295	2,540	341	310	295	341	267	242	254
23.....	357	310	325	295	2,640	325	295	310	310	267	242	242
24.....	357	310	340	295	2,640	341	295	325	310	267	242	242
25.....	341	325	340	310	1,120	341	310	310	310	267	242	254
26.....	341	325	355	295	740	357	310	295	281	267	242	341
27.....	325	446	355	295	545	341	310	267	267	267	230	357
28.....	325	357	355	280	425	341	310	267	219	267	230	325
29.....	325	341	325	280	-----	341	310	281	230	267	281	267
30.....	341	325	325	265	-----	341	325	281	281	267	254	254
31.....	357	-----	310	265	-----	357	-----	295	-----	267	267	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	357	295	328	0.521	0.60
November.....	446	310	328	.521	.58
December.....	391	310	341	.542	.62
January.....	325	265	296	.471	.54
February.....	2,640	265	804	1.28	1.33
March.....	427	325	368	.585	.67
April.....	465	295	340	.541	.60
May.....	325	267	303	.482	.56
June.....	2,090	219	565	.898	1.00
July.....	310	267	274	.436	.50
August.....	281	230	259	.412	.48
September.....	881	242	342	.544	.61
The year.....	2,640	219	375	.596	8.09

MAQUOKETA RIVER BELOW NORTH FORK OF MAQUOKETA RIVER, NEAR MAQUOKETA, IOWA

LOCATION.—Water-stage recorder in SW. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 17, T. 84 N., R. 3 E., at Bridgeport Bridge, 1,200 feet above mouth of Mill Creek and 3 miles north-east of Maquoketa.

DRAINAGE AREA.—1,600 square miles.

RECORDS AVAILABLE.—September, 1913, to September, 1930.

EXTREMES.—Maximum discharge during year, 8,320 second-feet Feb. 20 (gage height, 12.9 feet); minimum, 112 second-feet Nov. 29 (gage height, 1.17 feet).

1913-1930: Maximum discharge, 21,800 second-feet Mar. 14, 1929; maximum gage height, 22.0 feet Mar. 27, 1916; minimum discharge, that of Nov. 29, 1929.

REMARKS.—Records fair. Gage-height record furnished by Iowa Railway & Light Corp., and results of discharge measurements furnished by Corps of Engineers, United States Army, through Prof. F. A. Nagler, of University of Iowa.

Daily discharge, in second-feet, 1927-1930

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1927-28												
1	1,260	764	764	-----	-----	886	-----	646	488	• 580	488	-----
2	3,300	861	668	-----	-----	740	-----	602	529	• 602	646	-----
3	3,360	812	580	-----	-----	788	-----	602	440	• 1,010	623	-----
4	2,140	740	602	-----	-----	646	-----	602	464	• 1,510	910	-----
5	1,840	764	623	-----	-----	692	-----	346	488	• 861	1,190	-----
6	5,910	716	716	-----	-----	668	-----	476	516	• 716	984	-----
7	4,230	716	984	-----	-----	668	-----	558	512	• 602	1,010	-----
8	2,930	764	1,130	-----	-----	740	-----	529	558	• 623	886	-----
9	2,290	764	558	-----	-----	2,550	-----	512	504	764	668	-----
10	1,950	788	716	-----	2,270	1,790	-----	529	460	646	602	-----
11	1,840	740	836	-----	1,740	6,850	-----	500	504	525	646	-----
12	2,630	764	836	-----	1,420	4,400	-----	492	495	623	537	1,080
13	• 2,340	716	812	-----	1,370	11,100	-----	488	602	623	623	1,580
14	• 1,950	692	959	-----	2,460	7,440	-----	516	533	623	602	1,420
15	• 1,630	886	959	-----	2,400	-----	-----	492	472	529	558	1,370
16	• 1,470	1,080	-----	-----	1,790	-----	-----	529	493	716	516	1,310
17	1,240	1,240	-----	-----	1,370	-----	-----	580	456	492	623	• 1,520
18	1,110	1,110	-----	-----	-----	• 1,210	-----	480	512	521	602	• 1,160
19	984	1,080	-----	-----	-----	-----	-----	984	2,080	1,320	421	• 1,010
20	886	836	-----	-----	-----	-----	-----	1,030	• 1,950	2,070	558	861
21	910	886	-----	-----	-----	-----	-----	861	• 1,030	1,260	1,060	812
22	886	886	-----	-----	-----	861	-----	646	• 1,110	1,310	984	788
23	812	861	-----	-----	-----	812	-----	602	2,760	1,110	1,640	668
24	861	861	-----	-----	-----	740	-----	580	• 1,370	861	3,100	645
25	934	861	-----	-----	-----	668	-----	646	• 1,060	716	• 1,740	646
26	910	934	-----	-----	740	934	-----	646	• 910	646	• 1,160	580
27	861	788	-----	-----	959	1,130	-----	464	• 810	602	• 960	623
28	764	910	-----	-----	886	1,420	-----	525	740	623	• 1,060	623
29	836	861	-----	-----	886	1,240	-----	508	812	537	2,760	623
30	740	836	-----	-----	-----	1,130	-----	456	716	508	4,470	580
31	788	-----	-----	-----	-----	959	-----	537	-----	533	2,230	-----

• Estimated or partly estimated.

Daily discharge, in second-feet, of Maquoketa River below North Fork of Maquoketa River, near Maquoketa, Iowa, 1927-1930—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928-29												
1	558	886	-----	1, 010	1, 210	1, 580	1, 680	2, 060	-----	1, 110	476	375
2	602	812	-----	836	1, 210	1, 470	1, 630	-----	-----	861	943	398
3	580	1, 580	-----	692	1, 190	1, 630	1, 740	-----	-----	764	1, 740	409
4	580	2, 930	-----	836	1, 290	2, 060	1, 790	-----	-----	740	1, 260	337
5	836	2, 490	-----	910	1, 240	2, 400	1, 900	-----	-----	602	984	448
6	886	1, 840	1, 160	764	1, 290	4, 380	1, 740	-----	-----	740	836	492
7	764	1, 630	1, 160	1, 130	1, 420	7, 670	1, 900	-----	-----	3, 000	646	456
8	716	1, 680	1, 260	1, 310	1, 470	5, 700	3, 320	-----	-----	2, 180	623	413
9	646	2, 340	1, 160	1, 420	1, 420	5, 510	2, 760	-----	-----	2, 180	602	480
10	623	1, 970	1, 080	1, 420	1, 290	4, 340	1, 840	-----	-----	1, 580	602	464
11	623	1, 630	1, 080	1, 470	1, 310	3, 760	1, 740	-----	-----	1, 060	602	692
12	716	1, 310	1, 110	1, 420	1, 240	6, 200	1, 740	-----	-----	856	602	740
13	1, 310	-----	1, 210	1, 310	1, 260	15, 700	1, 950	-----	-----	836	558	623
14	1, 080	-----	2, 060	1, 260	1, 260	21, 000	1, 840	-----	-----	833	525	558
15	740	-----	2, 630	1, 210	1, 260	16, 200	1, 680	-----	-----	836	602	472
16	836	1, 260	2, 990	1, 240	1, 310	8, 860	1, 630	-----	-----	* 984	500	500
17	959	* 3, 550	* 2, 230	1, 310	1, 310	4, 240	1, 520	-----	-----	* 959	504	480
18	1, 130	* 4, 490	* 1, 790	1, 310	1, 240	3, 110	1, 470	-----	-----	* 934	440	468
19	1, 110	4, 040	* 1, 520	1, 290	1, 210	2, 990	1, 470	-----	-----	* 861	456	425
20	-----	2, 930	* 1, 310	1, 210	1, 240	2, 870	1, 630	-----	-----	* 788	516	452
21	-----	-----	* 1, 240	1, 290	1, 190	2, 400	1, 790	-----	-----	* 740	492	488
22	-----	-----	1, 030	1, 240	1, 190	2, 030	1, 740	-----	-----	* 669	492	468
23	-----	-----	1, 010	1, 160	1, 240	2, 860	1, 630	-----	-----	* 623	400	488
24	-----	-----	1, 090	1, 290	1, 210	3, 050	1, 580	-----	-----	623	444	440
25	-----	-----	1, 160	1, 210	1, 210	2, 400	2, 140	-----	-----	512	375	460
26	-----	-----	1, 210	1, 190	1, 420	1, 900	2, 690	-----	-----	504	417	452
27	-----	-----	1, 260	1, 210	1, 370	1, 790	2, 990	-----	886	508	444	460
28	-----	-----	1, 240	1, 130	1, 580	1, 680	2, 630	-----	1, 000	464	429	444
29	910	-----	1, 190	1, 110	-----	1, 630	2, 750	-----	984	480	406	464
30	836	-----	1, 160	1, 210	-----	1, 580	2, 730	-----	740	448	460	484
31	812	-----	1, 030	1, 260	-----	1, 580	-----	-----	-----	464	444	-----
1929-30												
1	558	516	-----	320	-----	1, 110	387	740	646	-----	-----	409
2	456	500	-----	-----	-----	984	472	1, 190	902	-----	-----	346
3	472	456	-----	-----	-----	861	468	910	558	-----	-----	295
4	476	429	-----	-----	-----	692	452	886	558	-----	-----	320
5	533	403	-----	-----	-----	836	421	788	740	-----	-----	-----
6	492	460	* 340	-----	* 270	716	402	716	1, 160	-----	-----	328
7	525	529	-----	-----	-----	668	409	812	1, 130	-----	-----	292
8	464	468	-----	-----	-----	623	364	740	984	-----	-----	324
9	433	448	-----	-----	-----	580	394	886	812	-----	-----	310
10	488	468	-----	-----	-----	602	402	934	668	-----	-----	271
11	488	476	-----	-----	* 800	558	429	984	646	-----	-----	271
12	580	476	-----	-----	* 2, 000	496	433	910	580	-----	-----	296
13	623	476	500	-----	* 2, 300	537	372	764	602	-----	-----	320
14	602	480	558	-----	1, 130	456	372	692	764	-----	-----	320
15	521	476	533	-----	668	460	480	692	1, 900	-----	-----	338
16	500	460	558	-----	1, 220	440	558	646	1, 840	-----	-----	292
17	504	472	537	-----	1, 680	492	668	580	1, 310	-----	-----	282
18	512	492	493	-----	1, 420	472	1, 010	558	1, 130	-----	-----	288
19	580	492	460	-----	4, 340	521	934	558	1, 030	-----	-----	299
20	602	460	-----	-----	6, 760	558	1, 190	558	934	-----	-----	254
21	558	379	-----	-----	4, 560	537	1, 420	508	692	-----	-----	313
22	508	346	-----	-----	2, 230	537	1, 900	508	996	-----	-----	235
23	521	342	-----	-----	1, 840	537	1, 520	3, 250	1, 310	-----	-----	251
24	537	342	-----	-----	1, 520	602	1, 130	3, 150	1, 370	-----	-----	241
25	512	448	* 320	-----	1, 420	480	1, 030	-----	1, 160	-----	-----	258
26	537	448	-----	-----	1, 310	512	984	-----	1, 080	-----	-----	886
27	512	504	-----	-----	1, 260	476	788	-----	959	-----	-----	580
28	492	402	-----	-----	1, 190	464	740	-----	764	-----	-----	460
29	492	248	-----	-----	-----	456	668	-----	623	-----	-----	402
30	464	220	-----	-----	-----	417	740	-----	646	-----	-----	331
31	468	-----	-----	-----	-----	433	-----	-----	-----	-----	-----	-----

* Estimated or partly estimated.

Monthly discharge, in second-feet, of Maquoketa River below North Fork of Maquoketa River, near Maquoketa, Iowa, 1927-1930

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
1927-28					
October.....	5,910	740	1,760	1.10	1.27
November.....	1,240	692	850	.531	.59
December 1-15.....	1,130	558	783	.489	.27
March.....	11,100	646	1,880	1.18	1.36
May.....	1,030	456	589	.368	.42
June.....	2,760	440	813	.508	.57
July.....	2,070	492	796	.498	.57
August.....	4,470	421	1,120	.700	.81
September 12-30.....	1,580	580	942	.589	.42
1928-29					
December.....	2,990	1,010	1,400	.875	.85
January.....	1,470	692	1,180	.738	.85
February.....	1,470	1,190	1,290	.806	.84
March.....	21,000	1,470	4,660	2.91	3.36
April.....	3,320	1,470	1,970	1.23	1.37
July.....	3,000	448	926	.579	.67
August.....	1,740	375	609	.381	.44
September.....	740	375	479	.299	.33
1929-30					
October.....	623	433	516	.322	.37
November.....	529	-----	437	.273	.30
December.....	558	-----	373	.233	.27
February.....	6,760	-----	1,440	.900	.94
March.....	1,110	-----	584	.365	.42
April.....	1,900	364	718	.449	.50
May 1-24.....	3,250	508	957	.598	.63
June.....	1,900	558	940	.588	.66
September 2-30.....	886	235	338	.211	.23

ROCK RIVER AT AFTON, WIS.

LOCATION.—Chain gage on line between secs. 22 and 27, T. 2 N., R. 12 E., at highway bridge in Afton, three-fourths mile above mouth of Bass Creek.

DRAINAGE AREA.—3,190 square miles.

RECORDS AVAILABLE.—February, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 4,620 second-feet Mar. 4 (gage height, 5.96 feet); minimum, 256 second-feet Aug. 18 (gage height, 0.00 foot).
1914-1930: Maximum discharge, 13,000 second-feet Mar. 23, 1929 (gage height, 10.81 feet); minimum, that of Aug. 18, 1930.

REMARKS.—Records good except those for periods of ice effect, Nov. 2^o to Dec. 7, Dec. 18-30, Jan. 4, Jan. 8 to Feb. 10, Feb. 14-17, which are fair. Considerable diurnal fluctuation caused by operation of power plants at and above Janesville.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	933	1,560	983	983	775	4,270	1,700	2,180	1,490	1,160	824	446
2-----	1,040	1,420	983	1,040	928	4,270	1,700	2,260	1,160	1,040	775	728
3-----	983	1,560	1,040	928	928	3,940	1,860	2,530	1,220	1,100	728	875
4-----	1,040	1,630	1,040	928	875	4,380	2,020	2,710	875	983	728	824
5-----	728	1,560	1,040	928	1,040	3,940	2,020	2,890	1,220	875	683	824
6-----	928	1,490	1,040	983	824	3,940	2,180	3,390	1,420	1,160	728	683
7-----	928	1,560	1,040	983	597	4,050	2,440	3,290	1,780	1,100	557	824
8-----	983	1,560	1,040	1,100	557	3,940	2,350	3,090	1,860	1,100	557	824
9-----	875	1,560	1,100	875	597	3,830	2,350	3,090	1,860	1,040	597	728
10-----	1,040	1,560	1,160	1,280	683	3,830	2,260	2,990	1,860	1,100	775	597
11-----	983	1,560	983	1,100	875	3,720	2,260	2,620	1,860	1,100	775	557
12-----	983	1,560	983	1,160	928	3,500	2,180	2,350	1,780	928	597	597
13-----	1,100	1,560	928	928	1,220	3,500	2,260	2,100	1,630	875	683	518
14-----	1,100	1,560	875	928	1,160	3,500	2,260	1,940	1,560	824	557	518
15-----	983	1,490	928	728	1,040	3,290	2,440	2,020	1,780	928	597	446
16-----	1,220	1,420	928	775	1,040	3,190	2,800	1,940	1,860	775	557	481
17-----	824	1,490	983	875	1,040	3,190	2,710	1,940	1,780	875	728	557
18-----	928	1,560	983	728	1,100	3,190	2,530	1,940	1,780	824	398	518
19-----	1,040	1,490	928	1,040	2,440	3,090	2,800	1,940	1,700	557	775	557
20-----	1,040	1,490	928	683	2,990	2,990	3,390	1,780	1,700	557	481	728
21-----	983	1,420	928	824	2,020	2,990	3,830	1,630	1,700	446	683	446
22-----	1,160	1,280	875	728	2,020	2,800	3,830	1,420	1,560	639	518	446
23-----	1,280	1,100	875	775	2,350	2,710	3,830	1,630	1,560	413	413	518
24-----	1,280	1,160	824	824	2,890	2,710	3,720	1,700	1,490	557	557	518
25-----	1,350	1,100	824	728	3,610	2,890	3,500	1,780	1,420	481	413	557
26-----	1,280	983	775	639	3,940	2,100	3,390	1,780	1,420	481	518	683
27-----	1,560	983	775	824	4,050	1,560	3,190	1,700	1,350	518	518	824
28-----	1,700	928	728	775	4,270	1,700	3,090	1,780	1,280	597	481	557
29-----	1,860	928	597	775	-----	1,700	2,890	1,700	983	875	557	413
30-----	1,700	983	481	728	-----	1,700	2,260	1,700	983	928	481	683
31-----	1,630	-----	875	728	-----	1,560	-----	1,700	-----	775	518	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October-----	1,860	728	1,150	0.361	0.42
November-----	1,630	928	1,380	.433	.48
December-----	1,160	481	918	.288	.33
January-----	1,280	639	881	.276	.32
February-----	4,270	557	1,670	.524	.55
March-----	4,380	1,560	3,160	.991	1.14
April-----	3,830	1,700	2,670	.837	.93
May-----	3,390	1,420	2,180	.685	.79
June-----	1,860	875	1,530	.480	.54
July-----	1,160	413	826	.255	.30
August-----	824	398	605	.190	.22
September-----	875	413	616	.195	.22
The year-----	4,380	398	1,460	.458	6.24

ROCK RIVER AT LYNDON, ILL.

LOCATION.—Chain gage in NE. ¼ sec. 21, T. 20 N., R. 5 E., at highway bridge at Lyndon, 14 miles above Rock Creek.

DRAINAGE AREA.—9,010 square miles.

RECORDS AVAILABLE.—November, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, about 17,100 second-feet Feb. 26, 27; minimum, 1,050 second-feet Sept. 8 (gage height, 4.13 feet).

1914-1930: Maximum discharge, 39,500 second-feet Mar. 28, 1916; maximum gage height, 19.6 feet Feb. 16, 1918, backwater from ice; minimum discharge, 655 second-feet Sept. 27, 1918 (gage height, 3.73 feet).

REMARKS.—Records good except those for period of ice effect, Nov. 30 to Feb. 23, which may be poor. Some diurnal fluctuation at low stages owing to power plants upstream. About 100 second-feet diverted above gage to Illinois and Mississippi Canal.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,910	4,680				15,700	4,920	6,460	3,890	3,310	1,980	1,980
2	2,910	4,680				13,700	4,920	6,460	3,690	3,310	2,120	6,230
3	2,910	4,680				11,500	4,920	6,230	5,780	2,930	1,640	3,310
4	2,910	4,890				9,150	4,710	6,230	3,120	2,930	1,980	2,930
5	2,730	4,890				6,230	4,710	6,700	2,590	3,310	2,120	2,120
6	2,560	4,890				8,400	4,710	7,900	2,590	2,930	2,420	1,980
7	2,560	4,890				8,150	4,500	7,420	3,690	2,760	1,980	1,980
8	2,390	4,890				7,660	4,920	6,940	3,500	2,760	2,270	1,640
9	2,560	4,060				7,660	4,920	7,180	4,710	3,310	2,270	1,700
10	3,090	4,060				7,660	4,500	6,460	4,920	3,310	2,120	2,120
11	2,910	4,470				7,660	4,500	6,700	4,710	3,310	2,120	1,570
12	2,560	4,890			4,900	7,180	4,500	6,460	4,290	3,120	1,640	1,640
13	2,730	4,890				7,420	4,290	5,780	4,500	3,310	2,120	1,440
14	2,910	4,680				6,940	4,290	5,130	4,090	3,120	1,770	1,440
15	2,910	4,680				6,940	4,710	4,710	4,290	2,760	1,700	1,570
16	2,910	4,680	2,550	2,700		6,700	5,130	4,920	4,920	3,120	1,500	1,700
17	2,910	4,680				6,460	6,000	4,290	5,780	2,590	3,690	1,770
18	2,910	4,060				6,700	7,420	4,710	6,460	2,270	2,930	1,770
19	2,560	4,260				6,460	8,400	4,290	7,180	2,270	3,690	1,570
20	2,910	4,680				6,460	8,650	4,500	6,230	2,270	2,120	1,500
21	2,730	4,470				6,460	9,910	4,290	5,560	2,420	1,840	1,570
22	3,090	4,260				6,460	10,700	4,090	4,710	2,120	1,980	1,640
23	3,280	3,660				6,460	11,200	4,290	4,920	1,700	1,980	1,640
24	3,660	2,730				6,230	10,400	4,090	4,710	2,120	1,980	1,570
25	4,060	2,910				13,700						
						15,700						
26	3,860	2,910				6,230	9,150	4,090	4,290	1,840	1,980	3,120
27	3,860	3,280				17,100	6,000	7,900	4,290	1,840	1,770	2,760
28	4,060	4,060				16,500	5,130	7,660	4,920	4,090	1,840	2,930
29	4,060	2,910					4,920	7,180	4,290	3,310	1,440	3,120
30	4,470	2,400					4,920	6,940	4,090	3,500	1,840	1,440
31	4,470						4,710		3,690		1,980	1,700

Month	Maximum	Minimum	Mean	Month	Maximum	Minimum	Mean
October	4,470	2,390	3,140	May	7,900	3,690	5,350
November	4,890	2,400	4,210	June	7,180	2,590	4,470
December			2,550	July	3,310	1,440	2,580
January			2,700	August	3,690	1,440	2,060
February	17,100		6,890	September	6,230	1,440	2,170
March	15,700	4,710	7,370				
April	11,200	4,290	6,550	The year	17,100	1,440	4,140

PECATONICA RIVER AT FREEPORT, ILL.

LOCATION.—Chain gage in NW. $\frac{1}{4}$ sec. 32, T. 27 N., R. 8 E., at Hancock Avenue Bridge, in Freeport, 2 miles above mouth of Yellow Creek. Zero of gage 739.52 feet above mean sea level.

DRAINAGE AREA.—1,330 square miles.

RECORDS AVAILABLE.—September, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,060 second-feet Feb. 24 (gage height, 16.25 feet); minimum, 226 second-feet Sept. 1 (gage height, 3.86 feet).

1914-1930: Maximum discharge, 18,400 second-feet Mar. 16, 1929 (gage height, 19.76 feet); minimum, 200 second-feet Dec. 14, 1917.

REMARKS.—Records fair except those estimated for periods of ice effect, Nov. 29 to Dec. 5, Dec. 18-25, Jan. 7 to Feb. 11, which may be poor.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1.....	667	690	470	644	400	1,130	529	740	484	502	307	233	
2.....	621	740		690		865	529	1,190	462	600	288	326	
3.....	552	690		765		667	552	1,860	441	678	307	626	
4.....	552	621		715		644	552	1,340	462	550	269	950	
5.....	529	575		598		865	552	940	484	980	346	526	
6.....	529	552	598	621	400	815	552	815	715	1,310	366	346	
7.....	529	575	621			790	484	1,040	1,190	980	346	307	
8.....	529	552	598			690	506	1,280	1,020	550	346	288	
9.....	506	552	621			644	441	1,040	815	502	326	288	
10.....	506	598	598			644	441	815	667	502	326	307	
11.....	529	621	598			667	462	690	667	478	326	288	
12.....	529	690	552			667	462	644	621	432	326	288	
13.....	621	667	575			2,070	667	462	621	552	432	307	288
14.....	598	644	621			2,500	575	484	621	575	410	307	307
15.....	552	621	621			2,500	621	506	644	2,180	388	269	269
16.....	462	552	621	400	2,070	598	790	598	2,700	388	307	307	
17.....	506	552	621		1,460	575	1,130	575	1,900	388	307	288	
18.....	552	552			1,070	598	1,220	575	1,310	388	307	288	
19.....	575	598			2,460	621	1,340	552	950	410	288	269	
20.....	598	552			3,500	644	1,550	552	864	366	288	251	
21.....	644	552			3,900	621	1,620	552	808	346	326	251	
22.....	621	484	480		4,590	598	1,720	506	756	346	288	251	
23.....	644	400			5,810	598	1,490	575	782	346	251	251	
24.....	690	462			5,980	575	1,160	890	836	326	233	269	
25.....	740	575			4,820	598	965	1,040	782	326	269	269	
26.....	740	575	552		3,170	552	840	790	652	388	269	920	
27.....	667	575	575		1,960	484	765	621	574	388	269	1,070	
28.....	621	552	598		1,400	506	740	598	478	502	251	678	
29.....	598	470	575			575	715	552	502	326	307	432	
30.....	575	470	552			529	690	552	526	326	288	346	
31.....	621		598			506		506		346	233		

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	740	462	587	0.441	0.51
November.....	740	400	577	.434	.48
December.....			545	.410	.47
January.....			453	.341	.39
February.....	5,980		1,950	1.47	1.53
March.....	1,130	484	649	.488	.56
April.....	1,720	441	808	.608	.68
May.....	1,860	506	784	.589	.68
June.....	2,700	441	858	.645	.72
July.....	1,310	326	490	.368	.42
August.....	366	233	298	.224	.26
September.....	1,070	233	393	.295	.33
The year.....	5,980	233	690	.519	7.03

SUGAR RIVER NEAR BRODHEAD, WIS.

LOCATION.—Chain gage in sec. 26, T. 2 N., R. 9 E., at highway bridge 2 miles southwest of Brodhead and 2 miles above Jordan Creek.

DRAINAGE AREA.—529 square miles.

RECORDS AVAILABLE.—February, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 3,930 second-feet Feb. 21 (gage height, 7.32 feet); minimum discharge, 70 second-feet Jan. 5; minimum gage height, 0.68 foot July 19.

1914-1930: Maximum discharge, about 13,000 second-feet Sept. 13, 1915 (gage height, 11.4 feet); minimum, about 47 second-feet Aug. 26, 1923.

REMARKS.—Records fair except those for period of ice effect, Nov. 21 to Feb. 19, which are poor. Flow subject to slight diurnal fluctuation caused by operation of power plant in Brodhead.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	235	394	185	115	175	470	262	324	198	235	139	143
2.....	235	341	210	120	175	292	255	551	198	210	133	187
3.....	235	277	220	125	185	324	248	551	187	235	109	262
4.....	262	277	210	130	185	324	242	490	198	248	198	308
5.....	210	277	210	70	185	341	235	358	248	277	121	262
6.....	176	277	200	185	200	324	262	308	358	292	165	235
7.....	198	262	200	125	200	324	277	308	394	262	165	210
8.....	210	262	165	155	200	262	210	470	324	135	187	176
9.....	235	262	175	235	210	277	235	376	277	235	154	165
10.....	248	235	200	200	210	292	222	277	262	394	127	187
11.....	235	292	175	185	210	292	222	292	277	412	176	198
12.....	210	324	130	155	220	324	235	292	277	376	187	165
13.....	187	376	140	185	220	235	210	292	262	324	165	165
14.....	210	292	145	155	235	292	235	292	248	358	187	143
15.....	248	262	125	165	235	248	262	292	394	341	187	141
16.....	235	277	155	155	250	222	490	262	510	308	187	139
17.....	248	222	175	175	275	292	682	248	450	292	154	137
18.....	235	235	165	185	325	277	682	262	431	222	154	143
19.....	222	262	185	185	825	308	551	262	376	135	176	154
20.....	222	248	210	200	2,840	292	431	248	376	112	210	141
21.....	277	275	260	175	3,930	292	682	262	376	123	187	133
22.....	292	235	165	210	2,320	292	593	292	324	210	176	131
23.....	358	235	165	175	1,220	292	470	450	292	198	154	133
24.....	412	185	235	165	823	308	431	510	277	235	99	143
25.....	450	210	175	155	593	277	324	490	262	262	154	165
26.....	376	235	165	125	551	277	292	324	248	187	154	176
27.....	394	210	165	165	682	292	277	262	210	119	165	277
28.....	277	165	175	185	551	324	277	262	235	139	165	341
29.....	324	250	175	200	-----	308	292	262	222	165	165	187
30.....	277	235	155	175	-----	262	292	248	324	133	165	165
31.....	341	-----	120	175	-----	308	-----	235	-----	165	127	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	450	176	267	0.505	0.58
November.....	394	165	263	.497	.55
December.....	260	120	179	.338	.39
January.....	235	70	165	.312	.36
February.....	3,930	175	651	1.23	1.28
March.....	470	222	298	.563	.65
April.....	682	210	346	.654	.73
May.....	551	235	334	.631	.73
June.....	510	187	300	.567	.63
July.....	412	112	237	.448	.52
August.....	210	99	161	.304	.35
September.....	341	131	184	.348	.39
The year.....	3,930	70	279	.527	7.16

SOUTH BRANCH OF KISHWAUKEE RIVER AT DE KALB, ILL.

LOCATION.—Chain gage in NE. $\frac{1}{4}$ sec. 22, T. 40 N., R. 4 E., at Lincoln Highway bridge in De Kalb. Zero of gage 835.83 feet above mean sea level.

DRAINAGE AREA.—70 square miles.

RECORDS AVAILABLE.—July, 1925, to September, 1930.

EXTREMES.—Maximum discharge during year, 367 second-feet Apr. 17 (gage height, 4.85 feet); minimum, 0.01 second-foot July 31 (gage height, 0.07 foot).

1925-1930: Maximum discharge, 960 second-feet June 12, 1929 (gage height, 8.84 feet); minimum, that of July 31, 1930.

REMARKS.—Records good except those for estimated periods and for very small flows, which may be poor.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	2.5	56		49		163	86	67	11	7.8	0.02	0.3
2.....	1.5	49		76		145	67	64	10	7.2	.02	9.2
3.....	1.4	42		62		136	62	56	8.8	6.2	.4	7.2
4.....	1.2	36		52		83	52	54	6.9	4.8	.4	3.3
5.....	.9	31	a 20	a 49		76	49	52	6.9	4.5	.5	2.4
6.....	.6	26		46		70	44	52	10	4.2	.3	1.4
7.....	.8	23				67	42	52	11	3.8	.1	1.4
8.....	1.0	21				62	36	46	10	4.2	.7	1.2
9.....	1.2	19				59	33	42	8.2	8.5	.9	1.1
10.....	1.0	24	15		a 40	59	32	36	7.6	6.6	.7	.9
11.....	.7	54	15			56	29	39	6.9	49	.7	.9
12.....	.9	49	a 18			52	28	34	6.9	18	.4	.9
13.....	1.2	46	20			49	a 28	32	6.9	9.9	.4	.9
14.....	1.4	46	a 19			42	27	31	13	6.6	.9	.6
15.....	1.3	46	18			42	36	30	6.9	4.8	.8	.3
16.....		42	18			42	136	28	6.9	3.8	.7	.2
17.....		a 40	18			42	367	25	6.6	3.0	1.8	.1
18.....	a 3.0	39	14			46	268	26	5.6	2.0	1.2	.06
19.....		36		a 40		46	202	25	4.5	1.5	1.2	.06
20.....					120	49	246	24	3.6	1.4	.9	.06
21.....	5.6				104	39	292	22	3.0	1.3	.9	.05
22.....	11				112	39	224	19	2.8	1.3	.9	.05
23.....	15		a 10		a 142	42	172	a 18	2.4	1.2	.5	.03
24.....	16				172	42	136	18	2.4	1.2	.1	.04
25.....	26	a 20			292	24	112	17	2.0	1.2	.08	.04
26.....	36				328	15	97	16	59	1.1	.06	64
27.....	27				224	36	86	16	30	.8	.05	46
28.....	21	18			172	86	86	16	18	.3	.04	.32
29.....	22	a 20				145	80	13	12	.06	.04	17
30.....	27	21				112	76	12	9.2	.02	.03	9.5
31.....	42		31			97		12		.07	11	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....		0.6	9.07	0.130	0.15
November.....	56	19	32.0	.457	.51
December.....	31		16.6	.287	.27
January.....	76		43.0	.614	.71
February.....	328		86.6	1.24	1.29
March.....	163	15	66.5	1.950	1.10
April.....	367	27	108	1.54	1.72
May.....	67	12	32.1	.459	.58
June.....	59	2.0	9.97	.142	.16
July.....	49	.01	5.36	.077	.09
August.....	11	.02	.863	.012	.01
September.....	64		6.71	.096	.11
The year.....	367	.01	54.2	.499	6.65

• Estimated.

IOWA RIVER AT IOWA CITY, IOWA

LOCATION.—Water-stage recorder in sec. 15, T. 79 N., R. 6 W., 200 feet below highway bridge in Iowa City and 100 feet below Iowa State University hydraulic laboratory.

DRAINAGE AREA.—3,140 square miles.

RECORDS AVAILABLE.—June, 1903, to July, 1906; October, 1913, to September, 1930.

EXTREMES.—Maximum discharge during year, 13,600 second-feet June 15 (gage height, 13.3 feet); minimum, 88 second-feet Sept. 6, 16, 17 (gage height, 0.00 foot), owing to regulation.

1903–1906, 1913–1930: Maximum discharge, 36,200 second-feet June 7, 1918 (gage height, 19.45 feet); practically no flow Sept. 3, 1925, caused by regulation.

REMARKS.—Records good except those for period of ice effect, Jan. 9 to Feb. 7, and for period Dec. 21–23, which are fair. Records of stage and several discharge measurements furnished by Prof. Floyd A. Nagler, of Iowa State University.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	625	640	320	381	222	3,060	815	1,460	1,066	1,060	242	175
2	648	630	329	396	182	2,430	815	1,750	1,010	1,010	276	130
3	670	625	401	405	192	1,810	815	1,830	952	980	263	92
4	625	620	455	381	172	1,790	790	1,680	925	952	259	120
5	580	640	505	410	203	1,460	712	1,320	1,280	1,430	186	188
6	580	635	510	420	238	1,490	765	1,320	1,750	2,650	242	132
7	602	625	525	480	282	1,460	615	1,790	1,830	1,980	250	165
8	580	615	515	353	435	1,420	685	1,830	1,830	1,350	237	104
9	576	585	480	320	451	1,380	642	2,020	1,860	1,160	242	95
10	553	600	515	300	550	1,320	622	2,520	2,020	1,060	246	190
11	605	630	495	275	710	1,250	690	2,100	2,020	980	233	110
12	848	640	525	260	1,560	1,220	599	2,520	1,860	952	188	104
13	601	832	590	244	1,600	1,160	626	2,790	1,640	925	234	125
14	580	1,100	605	240	1,940	1,060	635	2,340	2,300	842	194	120
15	602	1,040	555	230	2,020	1,010	715	2,100	11,300	765	178	109
16	602	1,040	600	220	1,640	1,010	740	1,940	7,470	740	207	104
17	526	980	645	210	1,280	1,010	870	1,790	5,640	650	219	95
18	553	980	690	166	1,490	1,060	842	1,750	3,900	605	253	118
19	566	980	790	189	2,100	1,060	842	1,640	3,510	532	208	135
20	602	925	633	178	2,520	1,120	980	1,560	3,240	557	238	107
21	580	815	372	154	2,970	1,100	1,220	1,460	2,970	505	206	95
22	602	355	353	154	5,340	1,100	1,680	1,350	4,250	500	196	100
23	576	367	358	160	4,800	1,120	1,860	3,170	2,760	490	202	93
24	562	450	344	175	6,880	1,100	2,180	3,910	2,100	465	219	102
25	548	545	367	185	6,400	1,100	2,260	2,430	1,860	420	127	1,390
26	562	690	372	189	5,630	1,010	2,100	1,860	1,680	358	125	2,310
27	517	800	353	154	4,500	980	1,860	1,600	1,530	386	177	812
28	486	734	372	203	3,800	952	1,720	1,420	1,380	334	188	928
29	530	475	362	207	-----	925	1,560	1,320	1,250	320	178	582
30	548	329	348	207	-----	870	1,490	1,220	1,190	311	152	423
31	576	-----	396	222	-----	842	-----	1,160	-----	294	177	-----
Month	Maximum			Minimum			Mean			Per square mile		Run-off in inches
October	848			486			587			0.172		0.20
November	1,100			329			697			.204		.23
December	790			320			473			.139		.16
January	480			154			260			.076		.09
February	6,880			172			2,150			.630		.66
March	3,060			842			1,280			.375		.43
April	2,260			599			1,090			.320		.36
May	3,910			1,160			1,900			.557		.64
June	11,300			925			2,610			.765		.85
July	2,650			294			825			.242		.28
August	276			125			211			.062		.07
September	2,310			92			312			.091		.10
The year	11,300			92			1,020			.299		4.07

DES MOINES RIVER AT OTTUMWA, IOWA

LOCATION.—Chain gage at Market Street Bridge, in Ottumwa.

DRAINAGE AREA.—13,200 square miles.

RECORDS AVAILABLE.—March, 1917, to September, 1927; January, 1929, to September, 1930 (discontinued).

EXTREMES.—Maximum discharge during year, 27,700 second-feet June 17 (gage height, 10.4 feet); minimum, 195 second-feet Sept. 20–25 (gage height, 1.2 feet).

1917–1927, 1929–30: Maximum discharge, 58,700 second-feet June 11, 1917 (gage height, 16.5 feet); minimum, that of Sept. 20–25, 1930.

Maximum known discharge (estimated), 100,000 second-feet May 31, 1903.

REMARKS.—Records good above and fair below 1,000 second-feet, except those for periods of ice effect, Dec. 20–23, Jan. 20 to Feb. 10, which are probably poor. Power plant above gage causes some diurnal fluctuation at low stages. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	610	1,120	510	610	450	4,780	1,440	3,230	2,570	2,780	510	420
2	420	1,120	510	610		3,230	1,120	3,230	2,370	2,370	510	420
3	420	1,270	420	510		3,230	1,120	2,780	2,170	1,980	510	420
4	420	1,270	420	510		1,610	1,270	2,780	2,170	1,980	510	420
5	420	970	610	610		2,370	1,270	2,370	4,240	2,170	510	335
6	510	970	720	610	450	1,790	1,270	2,370	7,610	2,170	510	335
7	510	970	610	610		1,610	1,610	3,230	9,100	1,980	720	335
8	510	840	720	970		1,610	1,270	3,470	7,320	1,980	610	335
9	420	840	610	970		1,790	1,270	4,780	5,330	1,790	840	335
10	610	840	610	840		1,790	1,120	4,780	4,510	1,790	610	335
11	720	970	720	720	1,120	1,610	1,120	4,240	3,980	1,610	510	335
12	970	840	720	970	1,270	1,610	1,120	4,510	3,720	1,440	510	335
13	720	970	720	970	1,610	1,440	1,120	6,170	3,470	1,270	420	335
14	610	1,980	610	720	5,050	1,440	970	9,100	3,720	1,270	420	335
15	720	2,370	720	610	6,450	1,270	970	10,000	21,100	1,270	420	260
16	610	1,980	840	610	3,720	1,270	1,270	10,300	26,100	1,120	420	260
17	610	1,790	840	510	1,980	1,270	1,610	9,720	27,700	970	420	260
18	510	1,790	840	510	2,370	1,440	1,610	9,100	23,800	970	510	260
19	510	1,610	720	510	3,470	1,610	1,980	8,500	13,000	840	510	260
20	840	1,440	700	400	7,610	1,980	1,790	7,320	9,720	840	510	195
21	610	1,270			7,900	2,570	1,610	6,170	9,100	840	420	195
22	610	970			5,330	3,230	2,570	5,610	7,320	840	510	195
23	720	840			6,170	3,470	2,570	6,450	6,170	720	510	195
24	720	510			6,450	2,370	3,230	7,610	5,330	720	510	195
25	720	510	720	400	7,030	2,370	3,000	7,900	4,510	720	510	195
26	510	610	610	400	7,320	1,980	3,000	6,450	3,980	720	510	1,270
27	510	720	610		7,320	1,980	3,000	4,780	3,720	610	510	1,270
28	420	720	510		5,610	1,790	2,780	3,980	3,230	610	510	2,370
29	610	510	510		-----	1,610	2,570	3,470	2,780	610	420	1,980
30	970	510	510		-----	1,440	2,570	3,230	3,470	610	420	335
31	1,270	-----	510	-----	-----	1,440	-----	3,000	-----	610	420	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,270	420	624	0.047	0.05
November	2,370	510	1,100	.083	.09
December	840	420	644	.049	.06
January	970	-----	574	.043	.05
February	7,900	-----	3,300	.250	.26
March	4,780	1,270	2,030	.154	.18
April	3,230	970	1,770	.134	.15
May	10,300	2,370	5,500	.417	.48
June	27,700	2,170	7,780	.589	.66
July	2,780	610	1,290	.098	.11
August	840	420	508	.037	.04
September	2,370	195	491	.037	.04
The year	27,700	195	2,120	.16	2.17

FOX RIVER AT WAYLAND, MO.

LOCATION.—Chain gage in NW. $\frac{1}{4}$ sec. 31, T. 65 N., R. 6 W., at bridge on State highway 4 three-fourths mile west of Wayland.

DRAINAGE AREA.—400 square miles.

RECORDS AVAILABLE.—October, 1929, to September, 1930. At site 2 miles upstream from February, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, 3,460 second-feet June 16 (gage height, 14.16 feet); no flow Sept. 10, 13, 23.

Maximum stage known, about 21.8 feet during May, 1928.

REMARKS.—Records good except those for periods of ice effect, Nov. 23–26, 29, 30, Dec. 1–11, 21–31, Jan. 1–4, 10–31, Feb. 1–11, which are poor.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6	1,460	57	38	16	116	73	21	9	66	1.8	0.2
2	4.6	800	47	47	22	104	53	156	8	57	1.2	.1
3	3.8	370	38	47	38	57	43	116	5	36	.8	.2
4	3.8	208	38	47	47	66	40	116	6	31	.4	.1
5	3.0	136	38	51	68	75	38	43	9	26	.4	.2
6	3.0	110	38	59	92	80	34	34	11	22	.4	.1
7	2.5	86	38	86	270	78	25	29	5	23	.5	.2
8	2.5	72	47	86	433	66	20	23	9	21	.3	.2
9	3.0	62	57	80	580	64	16	20	11	16	1.0	.1
10	5	79	68	57	800	57	18	26	4.6	9	12	0
11	47	76	92	57	1,040	59	22	28	5	8	1.5	.1
12	370	86	104	47	2,710	47	17	36	7	6	2.5	.1
13	454	92	129	47	1,700	57	18	42	6	5	1.0	0
14	185	920	142	38	1,070	51	16	31	7	3.8	2.0	1.5
15	142	1,430	129	38	944	45	17	26	1,430	2.5	7	.4
16	59	624	122	38	824	33	142	23	3,340	1.0	5	.2
17	40	330	129	29	824	34	122	18	2,520	.5	4.6	.1
18	31	208	156	29	800	142	116	22	559	1.0	3.0	.2
19	22	163	178	29	690	559	57	17	454	2.0	2.0	.2
20	25	129	129	29	756	290	47	45	475	1.5	2.5	.2
21	40	104	80	22	559	163	42	34	142	1.0	2.5	.2
22	60	86	47	22	412	116	33	40	122	2.0	1.5	.1
23	110	68	38	22	185	70	26	26	129	2.5	1.0	0
24	72	57	38	22	163	57	20	22	122	1.5	1.0	.1
25	48	47	30	22	149	51	17	25	129	1.0	.5	5
26	35	38	29	22	185	69	15	18	129	1.0	.5	129
27	24	61	29	16	200	68	26	15	116	1.0	.5	36
28	20	68	29	16	156	66	21	18	28	.5	.4	13
29	1,200	68	29	16	---	61	18	13	23	1.5	.5	8
30	1,310	57	29	16	---	57	17	10	122	2.0	.5	4.6
31	1,980	---	29	16	---	80	---	7	---	2.2	.4	---

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,980	2.5	204	0.510	0.59
November	1,460	38	270	.675	.75
December	178	29	70.4	.176	.20
January	86	16	38.4	.106	.11
February	2,710	16	562	1.40	1.46
March	559	33	94.8	.237	.27
April	142	15	39.0	.068	.11
May	156	7	35.5	.089	.10
June	3,340	4.6	331	.828	.92
July	66	.5	11.4	.028	.03
August	12	.3	1.91	.0048	.006
September	129	0	6.68	.017	.02
The year	3,340	0	135	.338	4.57

WYACONDA RIVER NEAR CANTON, MO.

LOCATION.—Chain gage in SE. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 33, T. 62 N., R. 6 W., three-fourths mile below Sugar Creek and 3 miles southwest of Canton.

DRAINAGE AREA.—447 square miles.

RECORDS AVAILABLE.—February, 1922, to September, 1930.

EXTREMES.—Maximum discharge during year, 3,040 second-feet Feb. 13 (gage height, 10.88 feet); minimum, 0.2 second-foot Sept. 22-24 (gage height, 0.40 foot).

1922-1930: Maximum discharge, 16,000 second-feet Nov. 18, 1928 (gage height, 26.7 feet); minimum, that of Sept. 22-24, 1930.

REMARKS.—Records good except those for periods of ice effect, Nov. 21-26, 30, Dec. 1-11, 20-23, Jan. 10 to Feb. 11, which are poor.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	17	2,280	26	58	26	186	68	50	8	294	0.4	0.4
2-----	12	1,000	20	62	32	146	60	250	7	72	.5	.9
3-----	13	362	20	64	32	56	56	239	5	42	.5	1.3
4-----	11	206	20	66	48	89	50	102	4	25	.6	1.2
5-----	10	136	20	62	79	95	45	72	3	17	.6	1.1
6-----	10	104	20	58	228	82	43	56	4	14	.5	.9
7-----	10	87	26	64	386	82	40	45	8	11	.4	1.8
8-----	9	75	32	48	850	82	37	42	10	8	.4	1.6
9-----	10	66	40	48	1,000	77	35	35	7	7	.6	1.3
10-----	19	72	58	32	1,170	72	34	34	6	5	1.2	.7
11-----	92	106	79	32	1,520	68	32	35	5	5	5	.6
12-----	128	118	146	32	2,360	66	30	35	6	3	5	.6
13-----	790	106	186	32	3,000	58	28	38	8	2.7	2.7	.5
14-----	273	2,520	196	32	2,600	50	26	30	8	2.0	1.3	166
15-----	102	2,280	146	32	910	45	28	24	11	1.6	1.2	22
16-----	60	320	109	32	339	43	109	22	2,440	1.3	1.0	7
17-----	41	316	108	32	339	48	533	20	850	1.2	.9	4
18-----	29	206	186	32	483	316	196	21	386	1.2	1.0	2.0
19-----	24	156	156	32	790	970	106	27	99	1.0	.7	.9
20-----	25	118	92	32	700	434	77	75	64	.9	.6	.4
21-----	188	68	68	32	558	186	68	62	156	.6	.6	.3
22-----	137	32	40	32	410	136	64	42	79	.7	.5	.2
23-----	87	32	32	32	294	102	50	34	46	.6	.4	.2
24-----	62	32	30	26	1,960	89	42	31	28	.7	.4	.2
25-----	52	32	28	26	850	84	37	27	22	.6	.3	77
26-----	44	40	31	26	1,170	84	35	34	72	.9	.3	176
27-----	34	68	34	26	508	82	34	25	156	.9	.3	77
28-----	31	77	38	26	250	77	34	19	54	.7	.3	37
29-----	2,600	40	42	26	-----	72	38	15	28	.5	.4	19
30-----	2,880	32	46	26	-----	68	42	12	35	.4	.5	12
31-----	3,000	-----	48	26	-----	70	-----	10	-----	.4	.4	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October-----	3,000	9	349	0.781	0.90
November-----	2,520	32	386	.864	.96
December-----	196	20	68.5	.153	.18
January-----	66	26	38.3	.086	.10
February-----	3,000	26	818	1.83	1.91
March-----	970	43	133	.298	.34
April-----	533	26	69.2	.155	.17
May-----	250	10	50.4	.113	.13
June-----	2,440	3	154	.345	.38
July-----	294	.4	16.8	.038	.04
August-----	5	.3	.95	.002	.002
September-----	176	.2	20.5	.046	.05
The year-----	3,000	.2	170	.380	5.16

NORTH FABIUS RIVER AT MONTICELLO, MO.

LOCATION.—Chain gage in SE. $\frac{1}{4}$ sec. 6, T. 61 N., R. 7 W., at highway bridge 1 mile south of Monticello.

DRAINAGE AREA.—452 square miles.

RECORDS AVAILABLE.—February, 1922, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,350 second-feet Oct. 29 (gage height, 20.5 feet); minimum, 1.2 second-feet Sept. 5, 8 (gage height, 0.81 foot).

1922-1930: Maximum discharge, 16,000 second-feet Nov. 18, 1928 (gage height, 30.0 feet); minimum discharge, 1 second-foot July 9, 1922; minimum gage height, 0.50 foot Aug. 10, 1926.

REMARKS.—Records fair except those for periods of ice effect, Nov. 22-25, 29, 30, Dec. 1-10, 21-29, Jan. 8 to Feb. 13, which are poor. Discharge estimated Jan. 2.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9	1,960	21	99	27	162	74	42	12	132	2.2	2.2
2	6.0	712	21	99	27	154	56	435	12	94	2.2	1.8
3	6.0	492	15	99	34	139	49	162	10	58	2.2	1.5
4	5.7	216	15	88	51	124	47	69	10	31	2.4	1.3
5	5.7	146	21	88	99	105	40	54	10	22	2.2	1.2
6	5.7	111	21	88	245	94	40	42	9	18	2.0	1.3
7	5.3	83	27	78	568	78	39	33	8	17	1.8	1.3
8	4.8	69	42	69	780	69	27	30	8	16	1.7	1.2
9	4.2	69	69	60	1,020	69	27	48	6.7	12	1.7	1.5
10	30	88	99	60	1,140	64	26	33	6.2	9	1.7	1.3
11	64	132	124	51	1,260	58	26	33	5.6	8	2.2	1.5
12	378	105	189	51	1,770	51	25	35	7	7	2.2	1.5
13	852	171	378	42	3,370	46	25	35	6.2	6.7	2.2	1.5
14	397	2,250	207	42	1,820	36	22	25	5.6	6.2	2.2	64
15	124	876	154	34	924	33	20	19	5,340	5.6	2.2	12
16	64	454	99	34	1,070	30	435	18	2,350	5.0	2.0	5.0
17	46	264	88	34	1,160	39	511	17	690	4.1	2.0	3.8
18	30	207	198	34	1,310	207	146	19	171	3.8	2.0	3.3
19	25	154	171	34	1,480	876	69	32	111	3.3	2.0	2.6
20	42	111	132	34	549	416	69	132	78	3.3	2.0	2.0
21	473	69	88	34	454	226	74	64	226	3.0	1.8	1.5
22	162	60	60	27	378	124	44	35	111	2.8	1.8	1.5
23	83	51	34	27	340	105	34	35	64	3.3	1.8	1.3
24	64	42	27	27	435	88	33	40	60	3.0	1.8	1.3
25	60	42	27	27	608	88	31	64	58	3.0	1.8	88
26	58	51	27	27	828	94	28	44	530	2.8	1.8	32
27	36	78	34	27	245	105	28	25	124	2.8	1.7	12
28	15	69	42	27	207	88	30	19	49	2.8	1.7	4.5
29	5,880	42	51	27	-----	83	36	14	30	2.8	1.7	3.0
30	3,970	27	60	27	-----	83	40	12	189	2.6	2.2	2.8
31	1,690	-----	69	27	-----	78	-----	12	-----	2.6	2.4	-----

Month	Maximum	Minimum	Mean	Pe- square mile	Run-off in inches
October	5,880	4.2	471	1.04	1.20
November	2,250	27	307	.679	.76
December	378	15	84.2	.186	.21
January	99	27	49.1	.109	.13
February	3,370	27	793	1.75	1.82
March	876	30	129	.285	.33
April	511	20	71.7	.159	.18
May	435	12	54.1	.120	.14
June	5,340	5.6	343	.759	.85
July	132	2.6	15.9	.035	.04
August	2.4	1.7	1.99	.0044	.005
September	88	1.2	8.66	.019	.02
The year	5,880	1.2	189	.418	5.68

NORTH FABIVS RIVER AT TAYLOR, MO.

LOCATION.—Chain gage in NE. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 2, T. 59 N., R. 6 W., at bridge on State highway 61 at Taylor. Zero of gage about 470.04 feet above mean sea level.

DRAINAGE AREA.—930 square miles.

RECORDS AVAILABLE.—April to September, 1930.

EXTREMES.—Maximum discharge during period, 4,600 second-feet June 16 (gage height, 8.70 feet); minimum, 4.5 second-feet Sept. 13.

Maximum stage known, 23.5 feet Nov. 19, 1928.

REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1930

Day	Apr.	June	July	Aug.	Sept.	Day	Apr.	June	July	Aug.	Sept.
1.....				8	7	16.....		4,510		8	27
2.....				8	8	17.....				9	33
3.....				8	9	18.....	402		11	9	25
4.....				7	8	19.....			10	9	20
5.....				8	8	20.....			11	8	17
6.....				7	7	21.....			10	8	12
7.....				7	8	22.....			12	8	10
8.....				6	6	23.....			13	8	9
9.....				6	5	24.....			12	7	8
10.....				9	5	25.....			11	7	610
11.....				7	5	26.....			11	7	425
12.....	67			8	5	27.....			11	6	163
13.....				7	4.5	28.....		245	10	6	45
14.....				8	23	29.....			10	8	23
15.....				7	358	30.....			9	9	19
						31.....			9	8	-----
Month					Maximum	Minimum	Mean	Per square mile	Run-off in inches		
July 18-31.....					13	9	10.7	0.012	0.006		
August.....					9	6	7.61	.0082	.009		
September.....					610	4.5	63.8	.069	.08		

MIDDLE FABIVS RIVER NEAR BARING, MO.

LOCATION.—Chain gage in NW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 26, T. 64 N., R. 12 W., at bridge on State highway 15, 6 miles north of Baring.

DRAINAGE AREA.—156 square miles.

RECORDS AVAILABLE.—April to September, 1930.

EXTREMES.—Maximum discharge during period, 1,580 second-feet June 16 (gage height, 11.64 feet); no flow on many days.

REMARKS.—Records fair; fragmentary, owing to no gage readings for many days.

Daily discharge, in second-feet, 1930

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1		125		13	0.1	0	16			1,260			0
2		113		12 15		0	17	92	18	317	0.9		0
3		64		10 10			18			55		0.1	0
4				10	.1	0	19		96	34	.4		
5		34				0	20		53	31			0
6				11		0	21		36	119	.2		
7		31		2.3	0	0	22		28		.7	0	0
8		44		2.3	0		23		25	25		0	0
9		40		2.3	0	0	24		79		.2		
10		28		9 1.7	0		25			70	.1		
11	12			9		0	26		26	37	.1		0
12		36		.9	0		27		19	24			0
13				8		0	28			13	.1		
14		22		.7			29	17		34		0	0
15			1,150	.9		.1	30	31			.1	0	0
							31		13				

SALT RIVER NEAR HUNNEWELL, MO.

LOCATION.—Chain gage in SW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 10, T. 56 N., R. 9 W., half a mile below Black Creek and 2 miles west of Hunnewell.

RECORDS AVAILABLE.—April to September, 1930.

EXTREMES.—Maximum discharge during period, 3,610 second-feet July 2 (gage height, 11.30 feet); minimum, 0.5 second-foot Sept. 5.

Highest stage known, about 21.8 feet.

REMARKS.—Records fair.

Daily discharge, in second-feet, 1930

Day	Apr.	June	July	Aug.	Sept.	Day	Apr.	June	July	Aug.	Sept.
1			2,140			16				2.2	322
2			3,610		1.2	17		960	12		
3			500			18			12		
4						19				9	30
5				3.6	.5	20		97		7	
6						21		72			
7	42		52	3.4		22				4.0	
8			39			23		75		3.1	
9		7	33	1.5	.7	24		50			
10					.6	25		34	6		3.6
11				1.5	.6	26		800	6		2.7
12			22			27		1,050		1.2	1.4
13		8			.6	28			2.9	1.2	
14				1.9		29					5
15	24				54	30		3,020		1.2	5
						31			4.3		

SALT RIVER NEAR NEW LONDON, MO.

LOCATION.—Chain gage in NE. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 36, T. 56 N., R. 5 W., at bridge on State highway 61, 2 miles north of New London.

DRAINAGE AREA.—2,480 square miles.

RECORDS AVAILABLE.—February, 1922, to September, 1930.

EXTREMES.—Maximum discharge during year, 17,400 second-feet Feb. 13 (gage height, 16.45 feet); minimum, 5 second-feet Aug. 21, 24, Sept. 4, 6.

1922-1930: Maximum discharge, 58,700 second-feet June 21, 1928 (gage height, 28.8 feet); minimum, that of Aug. 21, 24, Sept. 4, 6, 1930.

REMARKS.—Records rather poor prior to July 2; good after that date. Ice effect Dec. 19-24, Jan. 20 to Feb. 6. Discharge estimated Oct. 22, Mar. 25.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	132	9,960	170	259	208	1,540	500	112	64	9,100	15	7
2.....	104	7,680	170	7,800	208	1,400	422	135	56	6,660	15	7
3.....	138	5,780	164	5,670	208	778	397	160	52	4,020	9	6
4.....	132	2,010	164	2,010	346	691	321	1,470	48	1,710	8	5
5.....	104	1,200	154	1,810	552	691	321	1,540	52	952	8	6
6.....	104	500	157	1,620	1,070	579	268	1,010	46	448	8	5
7.....	104	836	138	894	11,700	526	225	836	42	255	8	12
8.....	99	720	124	1,010	10,300	474	200	474	42	148	7	9
9.....	94	662	115	1,400	8,400	448	193	422	38	121	7	9
10.....	952	552	109	1,470	9,960	422	178	397	35	106	8	9
11.....	1,810	500	109	1,470	10,600	372	178	181	35	89	7	8
12.....	2,810	552	138	1,810	15,800	346	170	167	54	77	7	8
13.....	2,310	397	268	1,810	16,600	268	157	141	46	66	8	7
14.....	2,310	3,030	346	1,810	9,520	225	157	135	42	46	8	15
15.....	2,810	3,360	372	2,010	5,010	204	157	135	31	46	8	46
16.....	1,540	4,350	397	2,010	2,410	185	144	102	28	31	9	109
17.....	579	3,690	422	1,710	2,710	184	151	102	18	29	9	268
18.....	778	2,010	346	1,540	4,900	182	1,330	118	18	29	9	448
19.....	225	952	500	1,200	5,010	181	1,540	112	720	28	8	268
20.....	157	720	170	720	4,570	1,260	1,470	92	372	28	8	208
21.....	157	691	138	448	4,460	1,400	500	92	167	29	5	151
22.....	300	448	138	208	4,900	1,130	474	69	132	35	7	115
23.....	1,260	422	138	84	10,100	691	372	82	126	31	6	89
24.....	894	422	138	62	6,660	749	346	77	104	28	7	66
25.....	579	397	154	62	4,240	706	242	86	94	28	8	66
26.....	526	250	296	42	4,570	662	189	86	1,200	28	8	69
27.....	208	225	346	42	4,900	662	181	73	1,400	21	7	33
28.....	141	208	296	42	2,810	448	141	82	1,620	21	7	28
29.....	2,610	200	296	62	-----	448	106	73	894	16	7	22
30.....	8,960	170	287	62	-----	500	118	69	6,770	16	8	18
31.....	6,880	-----	250	170	-----	474	-----	69	-----	16	8	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	8,960	94	1,280	0.516	0.59
November.....	9,960	170	1,760	.710	.79
December.....	500	109	226	.091	.10
January.....	7,800	42	1,350	.536	.62
February.....	16,600	208	5,810	2.34	2.44
March.....	1,540	181	607	.245	.28
April.....	1,540	106	372	.150	.17
May.....	1,540	69	281	.113	.13
June.....	6,770	18	478	.193	.22
July.....	9,100	16	783	.316	.36
August.....	15	5	8.13	.0033	.004
September.....	448	5	70.6	.028	.03
The year.....	16,600	5	1,050	.423	5.73

CUIVRE RIVER NEAR TROY, MO.

LOCATION.—Chain gage in SW. $\frac{1}{4}$ sec. 18, T. 49 N., R. 1 E., at Frenchman Bluff highway bridge, 3 miles northeast of Troy. Zero of gage, 446.58 feet above mean sea level.

DRAINAGE AREA.—908 square miles.

RECORDS AVAILABLE.—February, 1922, to September, 1930.

EXTREMES.—Maximum discharge during year, 18,100 second-feet Jan. 2 (gage height, 19.10 feet); minimum discharge, 0.3 second-foot Aug. 2-9; minimum gage height, 1.40 feet Aug. 7.

1922-1930: Maximum discharge, about 52,600 second-feet May 18, 1929 (gage height, 25.75 feet); minimum, that of Aug. 2-9, 1930.

REMARKS.—Records fair except those for periods of slight ice effect, Dec. 18-24, Jan. 8-10, 18-31, Feb. 1-4, which were estimated.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	44	1,050	54	2,970	172	440	" 163	" 50	2 ⁹	" 58	" 0.4	0.8
2.....	39	440	51	12,400	272	328	130	56	1 ⁹	77	" 3	.8
3.....	32	233	51	1,950	500	272	122	59	" 1 ⁹	51	" 3	.8
4.....	28	" 164	49	910	1,300	272	122	61	17	" 40	" 3	.8
5.....	22	95	46	620	1,890	259	113	" 58	" 1 ⁹	30	" 3	.8
6.....	20	" 77	44	384	2,070	233	98	56	15	" 25	" 3	.8
7.....	18	59	44	384	5,800	220	" 89	" 54	15	20	" 3	1.1
8.....	18	" 55	46	328	2,970	196	80	51	13	17	" 3	2.8
9.....	24	51	46	272	2,340	184	80	49	13	17	" 3	2.0
10.....	34	272	49	272	1,350	150	77	46	13	15	" 5	1.7
11.....	50	560	49	412	1,470	161	75	44	2 ⁹	10	" 8	1.7
12.....	69	384	51	685	3,830	140	72	42	20	9	1.1	" 1.7
13.....	64	196	51	2,410	3,750	130	66	39	1 ⁹	" 7	1.1	1.7
14.....	59	3,040	51	8,410	1,830	130	" 65	" 36	1 ⁹	4.4	" 1.1	10
15.....	56	1,530	49	" 2,000	755	130	" 64	34	17	" 3.2	1.1	30
16.....	46	470	49	870	685	113	" 64	34	15	2.0	" 1.1	24
17.....	42	300	" 170	790	1,470	113	64	34	13	1.7	1.1	20
18.....	34	196	196	685	2,130	113	64	34	13	1.4	1.1	17
19.....	34	161	172	620	1,890	130	64	34	" 13	" 1.4	" 1.1	13
20.....	196	113	130	500	1,830	150	61	34	13	1.4	1.1	10
21.....	196	106	98	412	1,890	130	59	34	13	" 1.2	1.1	7
22.....	113	80	83	328	4,730	122	" 56	34	" 12	1.1	" 1.1	5
23.....	42	75	69	246	11,600	113	54	" 34	12	" 9	1.1	4.4
24.....	30	66	69	196	2,270	" 126	" 52	34	" 12	.8	" 1.0	3.6
25.....	30	64	" 100	150	2,010	140	49	" 32	12	.5	.8	3.2
26.....	28	56	106	130	1,410	150	46	30	12	" 5	.5	3.6
27.....	" 29	51	" 114	130	870	" 220	46	" 28	" 12	.5	.5	2.8
28.....	30	51	122	130	560	300	46	26	12	.5	" 6	" 2.2
29.....	1,150	54	130	130	-----	" 254	" 46	" 24	" 26	" 5	.8	1.7
30.....	620	51	130	" 113	-----	208	46	22	39	.4	.8	1.7
31.....	1,150	-----	130	113	-----	196	-----	" 21	-----	.4	" 8	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	1,150	18	140	0.154	0.18
November.....	3,040	51	337	.371	.41
December.....	196	44	83.8	.092	.11
January.....	12,400	113	1,290	1.42	1.64
February.....	11,600	172	2,270	2.50	2.60
March.....	440	113	188	.207	.24
April.....	163	46	74.4	.082	.09
May.....	61	21	39.5	.044	.05
June.....	39	12	16.0	.018	.02
July.....	77	0.4	12.9	.014	.02
August.....	1.1	0.3	0.75	.00083	.001
September.....	30	0.8	5.89	.0065	.007
The year.....	12,400	0.3	359	.395	5.37

* Estimated.

DES PLAINES RIVER AT LEMONT, ILL.

LOCATION.—Staff gage in NW. $\frac{1}{4}$ sec. 20, T. 37 N., R. 11 E., at Stephens Street highway bridge, one-fourth mile north of Lemont and 8 miles above confluence with Chicago Sanitary Canal. Zero of gage 584.10 feet above mean sea level.

DRAINAGE AREA.—705 square miles.

RECORDS AVAILABLE.—November, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 2,170 second-feet Apr. 22 (gage height, 5.00 feet); minimum, 0.2 second-foot Sept. 28 (gage height, 2.40 feet). 1914-1930: Maximum discharge, 5,520 second-feet Mar. 18, 1919; no flow on various dates in 1919 and 1925.

REMARKS.—Records fair. Part of flow during high water spills into Chicago Sanitary Canal 7 miles above gage. This overflow (not included in tables of discharge) occurred only 3 days during current year, as follows: Apr. 21, 15 second-feet; Apr. 22, 30 second-feet; Apr. 23, 10 second-feet.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	90	148	65	72	25	1,300	1,090	855	108	63	14	17
2	65	118	46	80	72	1,170	1,780	975	108	63	14	17
3	44	106	27	93	119	1,090	1,660	1,030	84	63	14	29
4	27	90	27	106	166	855	1,470	975	84	45	14	38
5	14	65	27	115	190	661	1,300	975	75	29	14	38
6	27	56	21	124	166	595	975	1,090	134	41	9.7	38
7	44	44	30	130	118	550	692	1,170	194	45	9.7	29
8	33	27	33	136	130	532	595	1,170	164	45	9.7	29
9	27	27	38	166	154	460	505	1,380	182	38	4.7	29
10	27	210	44	196	178	422	445	975	194	29	9.7	17
11	27	178	54	224	282	422	422	800	164	45	14	17
12	33	148	65	252	385	400	385	635	134	63	14	17
13	44	130	65	259	430	385	385	482	134	123	9.7	17
14	27	148	65	266	400	385	400	390	134	134	9.7	14
15	21	148	65	239	350	350	422	346	123	108	17	14
16	14	118	65	212	350	315	640	330	108	84	17	14
17	14	118	65	184	415	280	855	305	108	45	17	9.7
18	5.3	90	65	175	438	280	1,470	305	84	38	17	9.7
19	5.3	75	65	166	460	301	1,900	346	84	17	17	4.7
20	14	65	65	169	505	315	1,900	390	75	17	17	4.7
21	21	65	62	172	855	315	2,030	434	63	17	14	9.7
22	27	90	59	126	1,170	298	2,170	390	45	29	14	9.7
23	44	118	56	80	1,560	280	2,030	346	45	29	14	14
24	56	118	32	36	1,780	315	1,900	390	45	17	14	17
25	65	106	44	35	1,900	301	1,560	346	45	14	9.7	17
26	148	90	36	33	1,660	326	1,380	434	134	17	9.7	45
27	210	65	27	32	1,660	350	1,170	380	164	17	9.7	17
28	148	65	36	30	1,380	338	975	194	134	17	9.7	17
29	148	65	44	29	—	315	915	164	134	17	9.7	9.7
30	166	65	54	28	—	385	745	134	108	17	17	6.4
31	178	—	65	26	—	505	—	134	—	17	17	—

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	210	5.3	58.5	0.083	0.10
November	210	27	98.5	.140	.16
December	—	—	49.6	.070	.08
January	—	—	129	.183	.21
February	1,900	—	618	.877	.91
March	1,300	280	477	.677	.78
April	2,170	385	1,140	—	—
May	1,380	134	590	.837	.96
June	194	45	113	.160	.18
July	134	14	43.3	.061	.07
August	17	4.7	12.9	.018	.02
September	45	.2	18.3	.026	.03
The year	2,170	.2	276	—	—

• Estimated.

DES PLAINES RIVER AT JOLIET, ILL.

LOCATION.—Water-stage recorder in NE. $\frac{1}{4}$ sec. 9, T. 35 N., R. 10 E., at Jackson Street Bridge, Joliet. Zero of gage 524.31 feet above mean sea level.

RECORDS AVAILABLE.—December, 1914, to September, 1930.

EXTREMES.—Maximum daily discharge during year, 15,100 second-feet Apr. 2; minimum daily discharge, about 6,900 second-feet in January and February.

1914-1930: Maximum daily discharge, 18,400 second-feet Mar. 18, 1919; minimum daily discharge occurred in August, 1927, during period of no record.

REMARKS.—Records good except those for days when recorder was not operating, which are fair. Discharge includes flow of Chicago Sanitary Canal. Diversion averaging about 275 second-feet made to Illinois & Michigan Canal just above gage.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	12,000	* 11,200	* 10,700	9,480	* 6,900	11,400	13,500	11,100	8,280	9,000	7,620	12,900
2-----	12,000	11,100	* 10,600	9,240	* 6,900	10,600	15,100	* 11,100	8,280	8,280	7,620	12,900
3-----	12,000	11,100	* 11,000	* 7,830	* 7,000	10,300	14,400	* 11,100	8,280	8,280	8,280	11,100
4-----	* 12,000	11,400	* 9,900	* 9,000	* 7,100	10,300	12,900	11,100	8,760	8,280	8,760	10,800
5-----	* 11,800	11,100	* 7,000	8,760	* 7,200	10,000	12,000	11,400	8,280	* 11,700	8,520	10,600
6-----	11,700	11,100	* 7,300	8,760	* 7,410	10,000	11,700	11,700	10,000	9,480	8,520	10,300
7-----	12,000	11,100	* 10,800	9,000	7,410	10,000	11,100	9,480	9,000	8,520	* 9,200	10,600
8-----	12,000	11,100	11,100	* 9,000	7,200	10,000	11,100	10,300	8,280	8,760	* 8,700	10,600
9-----	12,300	11,100	11,100	* 8,900	7,410	9,480	10,800	10,600	8,280	* 9,000	* 9,450	10,600
10-----	12,300	12,300	11,700	* 8,800	8,280	9,750	9,750	* 10,300	8,280	* 8,800	9,240	10,300
11-----	12,300	11,400	11,700	* 8,760	8,040	9,750	* 9,480	10,800	8,280	* 8,600	8,520	9,750
12-----	12,000	11,700	11,700	* 8,700	8,520	9,750	* 9,750	9,750	8,280	* 8,520	9,000	* 9,240
13-----	12,000	12,000	12,000	* 8,800	9,000	9,480	9,750	8,520	8,040	* 8,280	8,520	* 9,200
14-----	12,000	12,600	12,000	* 9,200	9,000	9,750	8,280	8,760	8,040	8,280	8,520	* 9,100
15-----	12,000	11,700	12,000	* 8,900	9,000	9,750	* 10,300	* 8,520	8,280	* 8,800	11,100	* 9,100
16-----	12,000	11,400	12,000	* 8,700	9,240	9,480	* 11,400	* 8,500	8,280	8,280	13,500	* 8,900
17-----	11,700	11,100	12,000	* 8,600	9,240	9,750	* 11,300	* 8,520	8,280	* 8,300	13,500	* 8,700
18-----	11,400	11,400	11,700	* 7,700	9,240	10,300	* 11,600	9,000	8,280	* 8,300	13,500	* 8,500
19-----	11,100	11,400	11,100	* 7,100	9,240	9,750	* 12,600	10,600	8,040	* 8,280	13,200	* 8,500
20-----	12,300	11,100	* 10,800	* 7,000	9,240	9,480	13,800	8,520	8,520	8,280	13,200	* 8,100
21-----	10,800	11,100	* 9,400	* 7,000	9,750	9,480	13,800	8,040	8,760	8,280	13,200	* 8,000
22-----	11,700	11,100	* 7,200	* 7,000	10,800	9,480	12,900	7,880	8,760	8,280	13,200	* 8,000
23-----	12,900	10,800	* 7,300	* 7,000	11,700	10,000	12,600	* 8,000	9,000	8,280	13,200	* 7,700
24-----	11,400	10,800	* 8,900	* 7,000	12,900	10,300	* 11,900	* 7,830	9,000	8,280	12,900	* 7,700
25-----	11,100	10,800	* 10,900	* 7,000	14,100	* 10,000	* 11,800	7,830	* 9,480	8,280	12,900	* 7,800
26-----	11,100	10,600	* 10,400	* 7,000	13,500	* 9,700	* 11,700	7,830	* 9,400	8,280	12,900	* 8,300
27-----	11,100	10,600	* 10,700	* 6,900	12,900	* 9,700	11,700	* 8,600	* 9,100	10,300	12,900	* 8,100
28-----	11,100	11,100	* 10,800	* 6,900	11,400	* 9,800	11,400	7,620	* 9,240	10,000	12,900	* 7,900
29-----	11,400	10,800	10,800	* 6,900	-----	* 10,600	11,400	7,410	9,240	7,830	13,200	* 7,500
30-----	11,400	* 10,800	10,600	* 6,900	-----	10,800	11,400	* 7,100	9,240	7,620	12,900	* 7,500
31-----	* 11,200	-----	11,100	* 6,900	-----	11,100	-----	* 7,620	-----	7,620	12,900	-----

Month	Maximum	Minimum	Mean	Month	Maximum	Minimum	Mean
October-----	12,900	10,800	11,700	May-----	11,700	-----	9,210
November-----	12,600	10,600	11,200	June-----	10,000	8,040	8,640
December-----	12,000	-----	10,500	July-----	11,700	7,620	8,600
January-----	9,480	-----	8,020	August-----	13,500	7,620	11,000
February-----	14,100	-----	9,270	September-----	12,900	-----	9,280
March-----	11,400	9,480	10,000	The year-----	15,100	-----	9,940
April-----	15,100	8,280	11,700				

* Estimated or partly estimated.

ILLINOIS RIVER AT MORRIS, ILL.

LOCATION.—Chain gage in NE. $\frac{1}{4}$ sec. 9, T. 33 N., R. 7 E., at highway bridge at Morris, 10 miles below mouth of Kankakee River. Zero of gage 478.97 feet above mean sea level.

RECORDS AVAILABLE.—October, 1919, to September, 1930. From January, 1903, to December, 1904, at station near Minooka.

EXTREMES.—Maximum discharge during year, 35,100 second-feet Apr. 22 (gage height, 15.2 feet); minimum, 7,600 second-feet Sept. 25 (gage height, 5.16 feet).

1919-1930: Maximum discharge, 60,600 second-feet Apr. 12, 1922 (gage height, 20.1 feet); minimum, 5,120 second-feet Aug. 21, 1929 (gage height, 3.9 feet).

A stage of 26.2 feet occurred in 1831.

REMARKS.—Records good except those for ice periods, Dec. 21, 22, Jan. 3-10, Jan. 15 to Feb. 2, which may be poor. Discharge includes flow of Chicago Sanitary Canal. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13,400	13,100	11,900	13,600	11,900	25,800	21,200	18,000	9,420	9,860	7,800	12,600
2	13,100	12,900	11,700	14,800	11,900	22,200	24,400	16,900	9,860	8,800	7,800	13,400
3	13,100	12,900	11,700	14,000	11,900	21,200	24,400	16,900	9,640	8,800	7,800	12,400
4	13,100	12,900	11,700	15,000	12,400	19,500	22,800	16,400	10,100	8,800	8,600	11,700
5	13,100	12,900	11,700	15,500	12,400	18,500	20,100	16,100	9,420	8,800	9,000	11,000
6	13,100	12,600	8,400	18,000	11,900	17,400	19,000	16,400	11,400	8,800	8,600	10,800
7	13,100	12,900	9,420	18,000	12,400	16,900	17,400	15,600	11,900	9,200	8,600	10,800
8	13,100	12,900	11,600	19,000	12,900	16,400	15,800	14,400	10,300	8,600	8,600	10,800
9	13,400	12,600	12,400	17,000	13,400	15,400	15,400	14,100	10,300	9,200	8,600	10,800
10	13,400	12,600	12,400	16,500	13,800	14,800	14,400	13,600	9,860	8,800	8,600	10,300
11	13,400	14,100	12,600	17,400	13,800	14,800	13,400	13,600	9,860	8,800	9,200	9,860
12	13,100	13,100	12,600	18,000	14,400	14,800	12,900	13,600	9,860	8,600	8,600	9,640
13	13,100	13,400	12,900	18,000	16,400	13,800	12,900	11,900	9,420	8,800	8,600	9,420
14	12,900	14,400	13,400	18,700	17,400	13,400	12,900	11,400	9,200	8,800	8,600	9,420
15	12,900	13,800	13,100	19,800	16,400	13,400	11,900	11,200	9,200	8,600	11,000	9,420
16	12,900	13,600	12,900	20,400	15,400	12,900	16,400	11,000	11,000	8,600	12,200	9,200
17	12,600	13,600	13,600	20,400	13,800	12,900	26,900	11,000	11,000	8,600	13,100	8,600
18	12,600	13,600	13,400	18,500	14,800	13,400	28,700	11,200	11,000	8,600	13,100	8,600
19	12,400	13,600	12,900	17,000	14,800	13,400	29,600	11,200	11,200	8,600	12,600	8,600
20	12,400	13,600	12,900	15,500	15,400	13,400	28,400	12,600	9,420	8,600	12,600	8,000
21	13,100	13,600	12,000	14,500	15,800	13,400	31,400	11,000	9,420	8,600	12,900	8,000
22	12,400	13,400	10,500	14,000	16,900	13,400	35,100	11,000	9,420	8,600	12,900	8,200
23	14,100	13,400	9,000	13,500	21,700	13,400	31,800	11,200	9,420	8,400	12,400	7,800
24	13,400	13,400	9,420	13,000	24,400	13,400	29,600	11,200	9,640	8,400	12,400	7,800
25	12,600	13,100	12,600	12,500	30,000	13,400	27,800	10,800	9,640	8,600	12,400	7,600
26	12,600	13,100	11,700	12,300	31,800	12,900	25,200	10,300	10,100	8,600	12,600	7,800
27	12,600	12,900	12,900	12,200	30,000	12,400	22,800	9,860	9,640	8,400	12,600	7,800
28	12,900	12,600	13,100	12,100	27,800	12,400	20,900	10,500	9,420	8,200	12,600	7,800
29	12,900	12,200	13,100	12,000	-----	13,400	19,800	9,200	9,420	8,600	12,600	7,800
30	13,100	12,200	13,100	11,900	-----	15,400	19,000	9,200	9,860	8,000	12,600	7,600
31	12,900	-----	13,600	11,900	-----	18,500	-----	9,000	-----	7,800	12,600	-----

Month	Maximum	Minimum	Mean	Month	Maximum	Minimum	Mean
October	14,100	12,400	13,000	May	18,000	9,000	12,600
November	14,400	12,200	13,200	June	11,900	9,200	9,980
December	13,600	8,400	12,100	July	9,860	7,800	8,660
January	20,400	11,900	15,600	August	13,100	7,800	10,700
February	31,800	11,200	17,000	September	13,400	7,600	9,450
March	25,800	12,400	15,400				
April	35,100	11,900	21,700	The year	35,100	7,600	13,200

ILLINOIS RIVER AT PEORIA, ILL.

LOCATION.—Staff gage in NW. $\frac{1}{4}$ sec. 2, T. 8 N., R. 8 E., at foot of Grant Street, Peoria, $4\frac{1}{2}$ miles above mouth of Kickapoo Creek. Zero of gage 428.92 feet above mean sea level.

RECORDS AVAILABLE.—March, 1910, to September, 1930. From March, 1903, to July, 1906, at station $3\frac{1}{2}$ miles downstream.

EXTREMES.—Maximum discharge during year, 40,700 second-feet Apr. 25 (gage height, 19.75 feet); minimum, 8,190 second-feet Sept. 26 (gage height, 9.15 feet).

1910–1930: Maximum discharge, 58,300 second-feet Oct. 9, 1926 (gage height, 25.05 feet); minimum, somewhat less than 7,250 second-feet during period Dec. 11, 1916, to Jan. 10, 1917.

Maximum known stage, 26.6 feet in 1844.

REMARKS.—Records fair except those for periods of ice effect, Nov. 30 to Dec. 4, Dec. 18–19, 21–25, Jan. 20 to Feb. 5, which are probably poor. Gage height record furnished by Corps of Engineers, United States Army.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	14,200	14,900	15,000	16,700	16,900	35,800	21,800	34,500	15,500	13,200	11,600	12,400
2.....	14,500	15,000	14,000	17,200	16,900	37,100	22,700	34,400	15,400	12,800	10,900	12,700
3.....	14,200	14,900	13,300	17,700	17,700	35,900	24,000	33,500	15,400	13,000	10,300	12,900
4.....	14,400	15,100	13,000	16,900	17,200	35,500	25,700	35,400	15,600	12,300	10,300	13,000
5.....	14,500	14,100	13,600	17,800	17,300	34,600	27,100	30,500	14,600	12,400	10,400	12,800
6.....	13,800	15,500	13,700	18,700	17,300	34,400	27,100	29,900	15,300	12,900	10,300	12,800
7.....	14,700	15,800	13,500	21,400	19,800	33,300	27,100	29,600	15,900	12,900	10,400	12,700
8.....	14,400	15,200	14,400	21,600	20,100	32,200	26,800	30,000	15,300	12,600	10,400	12,700
9.....	14,700	15,200	14,600	22,300	19,800	30,400	26,200	29,500	15,100	12,900	10,300	12,300
10.....	15,300	15,200	14,800	20,500	20,400	29,000	24,900	27,500	15,100	12,900	10,600	12,000
11.....	14,900	15,300	15,600	19,300	20,900	28,200	24,900	25,600	14,400	12,300	10,500	12,100
12.....	14,500	15,700	15,400	20,300	21,700	27,300	24,000	24,700	14,000	12,800	10,500	12,000
13.....	15,000	16,200	15,100	21,700	21,400	28,100	23,200	25,600	14,400	12,000	10,500	11,800
14.....	14,900	15,700	15,900	22,800	22,300	27,300	22,900	24,700	13,800	12,600	10,500	11,600
15.....	14,600	15,700	15,300	24,300	22,900	26,400	22,300	23,800	14,800	11,500	10,500	11,800
16.....	14,700	16,000	15,400	21,500	22,300	24,900	21,800	22,900	14,500	11,500	10,500	11,500
17.....	14,700	16,100	15,100	21,400	23,200	24,200	21,800	22,900	14,700	11,700	10,400	11,100
18.....	14,600	15,700	14,700	22,600	22,400	25,600	22,500	22,200	14,300	11,700	11,200	10,900
19.....	14,500	16,300	14,500	22,700	22,200	23,200	27,000	21,100	13,800	11,900	11,400	10,200
20.....	15,000	15,600	13,100	22,500	22,400	21,900	29,100	20,000	13,600	12,200	11,500	11,100
21.....	15,000	16,100	12,800	21,500	22,700	24,200	33,200	20,100	13,100	11,900	11,800	10,500
22.....	16,200	16,000	12,500	20,500	23,000	21,900	35,800	19,500	12,900	12,300	12,000	10,700
23.....	13,800	14,200	12,500	20,000	23,300	20,500	37,300	19,200	13,500	12,100	12,100	10,500
24.....	14,200	16,100	13,000	19,500	24,900	22,300	39,100	17,700	13,000	12,200	12,100	9,670
25.....	14,700	15,100	13,400	19,000	26,900	24,900	40,700	17,400	13,000	11,900	12,100	10,300
26.....	14,400	15,800	13,900	19,200	30,400	20,800	39,600	16,800	13,100	11,400	12,200	8,190
27.....	14,700	16,600	13,500	18,000	32,800	20,200	38,700	17,400	13,100	11,800	12,200	10,200
28.....	15,200	16,700	13,700	17,500	35,400	19,400	35,700	18,300	13,200	11,800	12,400	10,300
29.....	15,000	15,800	14,700	18,300	-----	20,400	35,300	17,000	12,300	12,700	12,400	10,200
30.....	14,900	15,000	15,500	17,500	-----	21,000	36,400	16,600	12,400	12,100	12,400	10,300
31.....	14,500	-----	15,700	17,500	-----	20,200	-----	15,900	-----	12,000	12,400	-----

Month	Maximum	Minimum	Mean	Month	Maximum	Minimum	Mean
October.....	16,200	13,800	14,700	May.....	35,400	15,900	24,000
November.....	16,700	14,100	15,600	June.....	15,900	12,300	14,200
December.....	15,900	12,500	14,200	July.....	13,200	11,400	12,500
January.....	24,300	16,700	19,900	August.....	12,400	10,300	11,200
February.....	35,400	16,900	22,300	September.....	13,000	8,190	11,400
March.....	37,100	19,400	26,800	The year.....	40,700	8,190	17,900
April.....	40,700	21,800	28,800				

ILLINOIS RIVER AT BEARDSTOWN, ILL.

LOCATION.—Staff gage in N.E. $\frac{1}{4}$ sec. 15, T. 18 N., R. 12 W., at highway bridge on State Street in Beardstown, $9\frac{1}{2}$ miles below mouth of Sangamon River. Zero of gage 420.33 feet above mean sea level.

RECORDS AVAILABLE.—October, 1920, to September, 1930.

EXTREMES.—Maximum discharge during year, 48,000 second-feet Mar. 5, 6 (gage height, 18.0 feet); minimum, 10,500 second-feet Aug. 8-13, 17-19, Sept. 27, 28 (gage height, 7.8 feet).

1920-1930: Maximum discharge, 105,000 second-feet Oct. 9, 1924; maximum gage height, 26.25 feet Oct. 12, 1926; minimum discharge, 9,620 second-feet Dec. 19-22, 1922, Sept. 10-12, 1925 (gage height, 7.7 feet).

Maximum discharge known, about 115,000 second-feet Apr. 4, 1904.

REMARKS.—Records good except those for ice period, Jan. 19 to Feb. 6, which are probably poor. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	14,600	17,000	17,000	20,100	24,000	45,000	27,600	42,500	20,400	13,900	11,200	12,200
2-----	14,900	17,000	15,600	20,800	25,500	45,400	28,000	42,500	19,800	14,300	11,200	12,200
3-----	14,900	17,000	14,300	20,800	26,500	46,700	28,000	42,100	19,000	14,300	10,900	12,200
4-----	14,900	17,000	13,600	21,200	27,500	47,600	28,700	41,800	18,700	14,300	10,900	12,600
5-----	14,600	17,000	14,600	21,900	28,500	48,000	29,100	41,000	18,000	13,900	10,900	12,600
6-----	14,900	16,600	15,300	23,300	30,000	48,000	29,400	40,200	17,300	13,900	10,900	12,600
7-----	14,900	16,600	16,000	24,400	30,900	47,600	29,800	39,400	17,300	13,900	10,900	12,900
8-----	14,900	16,600	16,600	25,100	32,000	47,100	30,200	38,700	17,000	13,900	10,500	12,900
9-----	14,000	16,600	17,000	25,500	32,800	45,800	30,600	37,600	17,000	13,900	10,500	12,900
10-----	13,400	16,600	17,700	25,800	33,500	45,000	30,600	36,800	16,600	13,900	10,500	12,900
11-----	14,700	17,300	18,400	25,500	34,200	43,300	30,600	36,100	16,600	13,900	10,500	12,900
12-----	14,700	17,700	18,400	25,500	35,400	42,500	30,200	35,000	16,600	13,900	10,500	12,900
13-----	15,100	17,700	18,000	26,200	36,100	41,400	29,800	34,200	16,300	13,600	10,500	12,600
14-----	15,900	18,000	18,000	27,600	36,800	40,600	29,400	33,100	16,000	13,600	10,900	12,600
15-----	15,600	18,700	18,000	29,100	36,800	39,100	29,100	32,000	15,600	13,200	10,900	13,200
16-----	15,600	19,000	18,000	28,300	36,800	38,000	29,400	31,300	15,600	13,200	10,900	12,900
17-----	15,600	19,000	18,000	27,600	36,500	36,800	29,800	30,200	15,600	12,900	10,500	12,600
18-----	15,600	19,000	18,000	26,200	35,700	36,500	29,800	29,800	15,300	12,900	10,500	12,200
19-----	15,600	19,000	17,300	25,500	35,400	35,700	30,600	28,700	15,300	12,900	10,500	12,200
20-----	15,600	18,700	17,000	25,000	35,400	35,000	31,300	28,000	15,300	12,600	10,900	11,900
21-----	15,600	18,700	16,600	24,500	35,400	34,600	32,400	27,300	15,300	12,200	11,200	11,500
22-----	15,600	18,400	15,600	24,500	35,400	33,900	33,500	26,500	15,300	11,900	11,500	11,500
23-----	15,900	18,400	15,600	25,000	36,500	32,800	35,000	25,800	14,900	11,900	11,500	11,500
24-----	15,600	18,400	17,000	25,000	36,000	32,000	36,500	25,100	14,900	11,900	11,900	11,200
25-----	16,400	18,000	17,300	24,800	39,100	31,300	38,300	24,400	14,600	11,900	11,900	11,200
26-----	16,400	18,000	18,000	24,600	41,000	30,600	39,800	23,700	14,600	11,500	11,900	10,900
27-----	16,400	17,700	18,400	24,500	42,100	29,800	41,000	22,900	14,600	11,500	11,900	10,500
28-----	16,100	17,700	18,700	24,400	43,700	29,400	41,800	22,200	14,600	11,200	12,200	10,500
29-----	16,000	17,300	19,000	24,200	-----	28,700	42,500	21,900	14,600	11,200	12,200	11,200
30-----	16,500	17,000	19,400	24,100	-----	28,300	42,900	21,500	14,300	11,200	12,200	11,200
31-----	16,500	-----	19,400	24,000	-----	28,000	-----	20,800	-----	11,200	12,200	-----
Month	Maxi- mum	Mini- mum	Mean	Month				Maxi- mum	Mini- mum	Mean		
October-----	16,500	13,400	15,400	May-----				42,500	20,800	31,700		
November-----	19,000	16,600	17,700	June-----				20,400	14,300	16,200		
December-----	19,400	13,600	17,700	July-----				14,300	11,200	12,900		
January-----	29,100	20,100	24,700	August-----				12,200	10,500	11,100		
February-----	43,700	24,000	34,300	September-----				13,200	10,500	12,100		
March-----	48,000	28,000	38,500	The year-----				48,000	10,500	22,000		
April-----	42,900	27,600	32,500									

SPRING CREEK AT JOLIET, ILL. .

LOCATION.—Staff gage in SE. $\frac{1}{4}$ sec. 10, T. 35 N., R. 10 E., at Benton Street Bridge in Joliet, half a mile above mouth.

DRAINAGE AREA.—19.7 square miles.

RECORDS AVAILABLE.—July, 1925, to September, 1930.

EXTREMES.—Maximum discharge during year, 144 second-feet Feb. 22 (gage height, 2.0 feet); minimum, 2.6 second-feet Sept. 27 (gage height, 0.28 foot).

1925-1930: Maximum discharge, 1,070 second-feet June 11, 1926 (gage height, 6.5 feet); minimum, 2.0 second-feet Aug. 5, Aug. 10 to Sept. 3, 1926.

REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.3	8.5	11	12	7.2	37	31	27	9.9	8.5	4.8	6.9
2	5.6	8.5	11	12	8.2	31	40	26	9.2	6.9	4.6	34
3	5.3	8.2	10	11	13	27	57	24	8.5	6.6	4.8	28
4	4.8	8.5	9.9	11	12	26	44	25	7.9	6.9	4.8	23
5	5.3	7.9	9.2	12	9.9	22	32	22	14	6.3	6.6	17
6	5.1	7.9	8.5	14	12	20	27	20	22	5.6	5.6	14
7	4.3	7.5	8.2	45	12	18	22	18	19	5.9	5.3	10
8	4.6	6.9	7.9	32	11	18	18	16	16	6.9	4.8	8.1
9	4.1	6.6	7.2	27	15	16	16	15	15	7.9	12	6.9
10	8.5	16	6.9	20	22	15	14	14	14	8.5	11	5.4
11	8.2	14	7.5	18	17	14	12	16	13	8.8	7.8	5.2
12	7.5	14	7.9	20	57	13	11	15	14	7.2	6.0	8.4
13	7.2	13	7.5	21	57	12	12	16	12	6.9	6.2	5.4
14	6.6	13	7.2	27	51	12	14	18	9.9	6.3	4.4	6.6
15	6.3	12	6.9	36	45	11	16	17	8.5	5.9	3.7	6.0
16	5.9	11	7.9	34	33	11	37	16	11	5.6	4.0	5.7
17	5.6	13	9.2	31	18	14	52	15	10	5.3	23	5.4
18	5.3	12	8.8	27	16	15	57	18	9.2	5.3	20	5.4
19	6.6	11	9.6	15	24	14	44	20	9.2	4.8	16	7.2
20	9.2	12	9.2	13	37	12	52	20	8.5	5.3	16	6.9
21	8.5	12	8.5	12	36	12	61	18	8.5	5.1	12	5.4
22	11	11	7.9	10	144	12	70	16	7.9	5.1	9.8	4.9
23	12	11	7.5	9.6	136	14	80	15	7.2	4.6	7.2	4.2
24	11	10	7.9	9.2	136	17	70	16	7.9	4.3	5.4	3.7
25	11	9.6	8.5	8.5	129	12	57	14	8.5	4.3	5.2	3.5
26	11	9.2	8.8	9.9	108	11	37	14	8.5	4.1	4.9	3.0
27	10	8.8	8.2	8.8	91	9.6	21	13	7.9	4.3	4.9	2.6
28	9.6	8.5	8.5	7.9	53	12	20	13	7.9	4.1	4.7	4.9
29	9.2	7.9	7.9	7.5	-----	32	18	12	7.9	4.3	4.9	4.7
30	9.9	7.5	7.5	6.9	-----	29	24	11	8.5	4.6	5.4	4.9
31	9.2	-----	8.8	6.6	-----	27	-----	11	-----	4.6	7.2	-----
Month	Maximum		Minimum		Mean		Per square mile		Run-off in inches			
October	12		4.1		7.57		0.384		0.44			
November	16		6.6		10.2		.513		.58			
December	11		6.9		8.44		.428		.49			
January	45		6.6		17.3		.878		1.01			
February	144		7.2		46.8		2.38		2.48			
March	37		9.6		17.6		.893		1.03			
April	80		11		35.5		1.80		2.01			
May	27		11		17.1		.868		1.00			
June	22		7.2		10.7		.543		.61			
July	8.8		4.1		5.83		2.96		.34			
August	23		3.7		7.81		3.96		.46			
September	34		2.6		8.48		.430		.48			
The year	144		2.6		15.9		.807		10.93			

KANKAKEE RIVER AT MOMENCE, ILL.

LOCATION.—Chain gage in NE. $\frac{1}{4}$ sec. 24, T. 31 N., R. 13 E., at highway bridge in Momence, $1\frac{1}{2}$ miles above Tower Creek. Zero of gage, 610.32 feet above mean sea level.

DRAINAGE AREA.—2,340 square miles.

RECORDS AVAILABLE.—February, 1905, to July, 1906; December, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year not determined; minimum, 481 second-feet Aug. 29 (gage height, 1.71 feet).

1905-6, 1915-1930: Maximum discharge, 12,600 second-feet Jan. 22, 1916; minimum, 306 second-feet Sept. 1, 16, 17, 1919 (gage height, 1.37 feet).

REMARKS.—Records good except those for periods of ice effect, Dec. 9-16, 23-31, Jan. 1, 2, 19-31, Feb. 1-7, which may be poor.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	870	1,660	1,580	3,600		4,710	4,170	3,150	1,380	930	690	569
2	870	1,660	1,740			4,440	3,900	2,920	1,380	930	714	930
3	870	1,580	1,740	3,490		4,440	3,900	2,700	1,310	870	* 650	930
4	870	1,580	1,740	3,490	2,700	4,170	3,650	2,700	1,310	870	580	870
5	870	1,510	1,740	3,490		3,900	3,400	2,500	1,310	870	602	726
6	870	1,510	1,740	3,960		3,650	3,150	2,300	1,380	* 870	624	679
7	870	1,510	1,740	4,740		3,650	2,920	2,300	1,440	870	646	657
8	870	1,510	1,740	4,470	2,500	3,400	2,500	2,110	1,440	870	668	657
9	870	1,510		4,470	2,700	2,920	2,300	2,110	1,440	810	668	635
10	870	1,510		4,210	2,700	2,920	2,200	1,830	1,310	810	* 690	613
11	870	1,510		4,740	2,500	2,700	2,110	2,110	1,310	810	714	591
12	928	1,510	1,800	4,740	2,700	2,700	1,920	1,830	1,310	738	690	591
13	928	1,580		4,740	3,150	2,500	1,920	1,830	1,240	* 750	690	591
14	928	1,580		5,020	2,920	2,300	1,920	1,740	1,180	762	646	* 590
15	928	1,580		5,920	3,150	2,300	2,300	1,660	* 1,180	738	624	591
16	928	1,580		5,610	2,920	2,110	4,170	1,660	1,180	714	624	591
17	928	1,580	1,900	4,740	2,920	2,110	3,900	1,660	1,180	714	* 660	569
18	928	1,580	1,900	4,210	2,700	2,020	4,170	1,660	1,180	714	690	569
19	928	1,660	1,980		2,700	2,110	1,920	1,740	1,120	714	668	547
20	985	1,660	2,060		3,400	2,110	2,300	1,830	1,120	* 700	624	547
21		1,040	1,660	2,310	3,400	2,110	5,000	1,740	1,050	679	580	* 540
22		1,100	1,660	2,310	3,900	2,110	4,710	1,740	1,050	646	602	525
23		1,100	1,660		4,170	2,020	4,440	1,740	1,050	624	580	547
24		1,100	1,660		4,710	1,920	4,440	1,740	1,050	624	* 570	547
25		1,170	1,660		5,580	1,830	4,170	1,660	990	602	558	569
26		1,170	1,660		5,580	1,740	3,900	1,580	1,050	580	558	* 580
27		1,230	1,660	2,500	5,200	1,660	3,900	1,580	990	624	503	591
28		1,300	1,580		4,710	1,580	3,900	1,510	990	646	503	547
29		1,660	1,580			1,830	3,650	1,440	936	668	481	547
30		1,660	1,580			2,110	3,400	1,440	930	668	503	547
31		1,660				2,700		1,440		690	* 540	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,660	870	1,040	0.444	0.51
November	1,660	1,510	1,590	.679	.76
December		1,580	2,040	.872	1.01
January			3,900	1.67	1.92
February	5,580	2,500	3,330	1.42	1.48
March	4,710	1,580	2,670	1.14	1.31
April	5,000	1,920	3,340	1.43	1.60
May	3,150	1,440	1,930	.825	.95
June	1,440	930	1,190	.509	.57
July	930	580	745	.318	.37
August	714	481	617	.264	.30
September	930	525	619	.265	.30
The year		481	1,910	.816	11.08

* Estimated.

KANKAKEE RIVER AT CUSTER PARK, ILL.

LOCATION.—Chain gage in NW. $\frac{1}{4}$ sec. 19, T. 32 N., R. 10 E., at Wabash Railway bridge in Custer Park, one-fourth mile above Horse Creek. Elevation of zero of gage 531.27 feet above mean sea level.

DRAINAGE AREA.—4,870 square miles.

RECORDS AVAILABLE.—November, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 16,600 second-feet Apr. 21 (gage height, 11.29 feet); minimum, 585 second-feet Sept. 25–28 (gage height, 5.25 feet).

1914–1930: Maximum discharge, 31,200 second-feet Apr. 11, 1922 (gage height, 15.05 feet); minimum, 250 second-feet Nov. 15, 1914 (gage height, 4.09 feet).

REMARKS.—Records fair except those estimated because of ice effect, which may be poor.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	960	1,540	960	7,390	^a 4,740	11,900	9,220	6,270	1,960	1,090	1,090	680
2-----	960	1,460	730	11,200	^a 4,740	9,870	10,200	5,740	1,870	1,230	730	960
3-----	960	1,460	630	^a 12,600	4,740	8,590	9,220	5,480	1,870	1,160	680	1,230
4-----	960	1,540	900	^a 14,000	4,740	7,680	7,980	5,230	1,780	1,020	1,020	960
5-----	900	1,540	1,090	^a 13,000	4,980	7,100	6,820	4,740	1,700	900	680	730
6-----	840	1,620	1,160	^a 11,900	4,740	6,540	6,000	4,270	1,780	1,160	680	1,090
7-----	840	1,540	1,230	11,200	4,980	6,000	^a 5,200	4,040	2,040	1,090	680	680
8-----	840	1,460	1,300	10,500	5,480	5,480	4,500	3,600	2,130	1,020	900	960
9-----	1,020	1,380	1,380	^a 9,870	5,740	7,680	4,040	3,390	2,220	1,160	680	630
10-----	900	1,460	1,620	^a 9,540	6,270	6,000	3,600	3,180	2,130	1,160	1,020	621
11-----	900	1,700	1,700	^a 9,220	5,230	4,270	3,390	2,980	1,960	1,160	730	630
12-----	960	1,780	1,780	8,900	4,980	4,040	3,180	2,980	1,870	960	680	680
13-----	900	1,870	1,870	9,220	5,740	3,820	2,980	2,780	1,700	900	1,020	680
14-----	900	2,130	1,960	10,500	6,270	3,600	2,980	2,590	1,700	900	680	630
15-----	960	2,310	1,960		6,270	3,390	3,180	2,590	1,620	900	680	630
16-----	960	2,220	2,310		6,000	3,180	7,680	2,400	1,460	900	730	630
17-----	900	2,220	2,590		5,740	3,180	13,700	2,590	1,460	900	730	621
18-----	960	2,130			4,740	2,980	15,500	2,590	1,540	900	680	621
19-----	840	2,040			4,740	3,390	15,500	2,590	1,540	840	730	612
20-----	900	1,960			4,980	3,600	15,100	2,780	1,540	900	1,020	612
21-----	840	1,870			5,740	3,600	16,200	2,980	1,540	840	680	603
22-----	900	1,780		^a 6,800	6,820	3,390	16,200	3,180	1,460	680	630	603
23-----	960	1,700	^a 4,800		8,590	3,390	15,900	3,390	1,300	900	680	594
24-----	1,020	1,540			10,500	3,390	15,500	3,180	1,300	840	680	603
25-----	1,090	1,700			14,000	2,590	13,000	2,780	1,230	785	680	585
26-----	1,380	1,620			14,400	2,590	11,200	2,590	1,230	730	680	585
27-----	1,540	1,540			14,400	2,400	9,540	2,400	1,160	730	630	585
28-----	1,700	1,780			13,700	2,400	8,280	2,310	1,160	960	680	585
29-----	1,700	1,780	5,480			3,390	7,390	2,130	1,090	960	680	630
30-----	1,700	1,460	5,740	4,980		5,230	6,820	2,040	1,090	730	680	621
31-----	1,620		6,270	^a 4,740		7,100		2,040		1,020	680	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October-----	1,700	840	1,060	0.218	0.25
November-----	2,310	1,380	1,740	.357	.40
December-----	6,270	630	3,080	.632	.73
January-----			8,410	1.73	1.99
February-----	14,400	4,740	6,930	1.42	1.48
March-----	11,900	2,400	4,900	1.01	1.16
April-----	16,200	2,980	9,000	1.85	2.06
May-----	6,270	2,040	3,280	.674	.78
June-----	2,220	1,090	1,610	.331	.37
July-----	1,230	680	949	.195	.22
August-----	1,090	630	749	.154	.18
September-----	1,230	585	696	.143	.16
The year-----	16,200	585	3,510	.721	9.78

• Estimated.

IROQUOIS RIVER NEAR CHEBANSE, ILL.

LOCATION.—Chain gage in SW. $\frac{1}{4}$ sec. 10, T. 29 N., R. 13 W., at highway bridge 3 miles below Beaver Creek, $4\frac{1}{2}$ miles east of Chebanse, and 6 miles above confluence with Kankakee River. Zero of gage 598.27 feet above mean sea level.

DRAINAGE AREA.—2,120 square miles.

RECORDS AVAILABLE.—April, 1923, to September, 1930.

EXTREMES.—Maximum discharge during year, 9,670 second-feet Apr. 19 (gage height, 9.94 feet); minimum, 22 second-feet Sept. 25 (gage height, 0.73 foot). 1923-1930: Maximum discharge, 21,400 second-feet Oct. 5, 1926 (gage height, 16.1 feet); minimum, 12 second-feet Sept. 4, 1925 (gage height, 0.60 foot).

Maximum known stage, approximately 19.6 feet in 1913.

REMARKS.—Records good except those for Dec. 19, 27, Jan. 16 to Feb. 7, Mar. 17-23, July 30 to Sept. 30, which may be poor.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	173	276	4,230	1,620	6,300	4,840	2,500	428	157	52	50
2	50	182	276	4,710	1,620	5,490	4,710	2,500	400	157	58	50
3	55	190	276	9,510	1,780	4,710	4,230	2,400	350	157	65	55
4	55	190	281	9,200	1,860	4,230	3,320	2,120	320	157	65	61
5	55	182	252	8,300	2,030	3,990	3,100	1,940	310	149	52	61
6	61	173	243	7,140	2,300	2,400	2,600	1,780	300	149	48	68
7	61	165	234	6,860	2,700	1,860	2,030	1,700	400	149	40	68
8	68	149	234	6,160	3,100	1,780	1,700	1,460	660	141	40	68
9	68	149	234	5,490	3,540	1,620	1,230	1,160	630	117	50	58
10	74	157	234	4,470	3,760	1,540	1,090	1,020	570	110	40	52
11	81	182	225	3,760	3,320	1,300	950	950	540	87	45	48
12	81	225	225	3,320	3,100	1,230	810	880	455	74	50	42
13	87	243	225	3,990	2,900	1,090	660	845	375	55	55	48
14	87	281	330	6,160	2,700	1,090	630	780	340	81	55	52
15	81	400	510	5,750	2,700	950	845	750	262	110	48	52
16	81	375	630	4,230	2,500	845	3,540	720	281	87	48	48
17	81	350	690	3,760	2,400	750	6,580	660	300	74	65	45
18	74	330	880	3,210	2,300	810	9,350	690	320	61	65	40
19	74	290	1,020	2,800	2,120	950	9,670	750	300	55	58	40
20	74	271	1,160	2,400	2,500	1,090	8,750	1,020	281	50	52	35
21	74	262	1,160	2,210	2,900	1,160	9,510	1,380	252	50	48	35
22	81	252	1,160	2,030	3,100	1,160	9,510	1,460	243	40	42	35
23	87	243	1,160	1,940	3,430	1,160	9,670	1,230	234	87	35	27
24	102	234	1,160	1,940	4,710	1,090	9,510	1,020	207	81	30	27
25	117	225	1,300	1,940	5,750	1,020	7,250	950	190	74	30	22
26	141	243	1,460	1,860	6,860	950	6,020	780	165	68	35	25
27	149	271	1,700	1,780	7,700	880	5,230	750	157	61	32	28
28	157	271	1,940	1,780	7,280	750	3,540	660	165	55	38	32
29	157	281	2,500	1,700	-----	1,700	3,100	600	165	45	38	32
30	165	276	3,320	1,620	-----	3,210	2,900	570	165	48	42	38
31	165	-----	3,990	1,460	-----	3,870	-----	482	-----	48	42	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	165	45	89.9	0.042	0.05
November	400	149	240	.113	.13
December	3,990	225	945	.446	.51
January	9,510	1,460	4,060	1.92	2.21
February	7,700	1,620	3,310	1.56	1.62
March	6,300	750	1,970	.929	1.07
April	9,670	630	4,550	2.15	2.40
May	2,500	482	1,180	.657	.64
June	660	157	326	.154	.17
July	157	40	91.4	.043	.05
August	65	30	47.2	.022	.08
September	68	22	44.7	.021	.02
The year	9,670	22	1,390	.656	8.90

FOX RIVER NEAR MUKWONAGO, WIS.

LOCATION.—Chain gage in SE. $\frac{1}{4}$ sec. 24, T. 5 N., R. 18 E., $1\frac{1}{2}$ miles northeast of Mukwonago.

DRAINAGE AREA.—231 square miles.

RECORDS AVAILABLE.—April, 1927, to July, 1930 (discontinued).

EXTREMES.—Maximum discharge during year, 783 second-feet Feb. 22 (gage height, 4.74 feet); minimum, 11 second-feet July 24 (gage height, 0.80 foot).
1927-1930: Maximum discharge, 1,560 second-feet Mar. 15, 1929 (gage height, 7.24 feet); minimum, that of July 24, 1930.

REMARKS.—Records poor. Stage-discharge relation affected by ice Dec. 3 to Feb. 21.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1.....	110	203	72	78	58	257	298	103	34	24
2.....	90	178	69	59	48	257	319	220	29	22
3.....	96	140	72	61	37	257	298	277	27	19
4.....	96	103	76	48	35	257	238	228	26	20
5.....	81	96	76	69	39	178	194	178	28	24
6.....	75	90	72	90	42	146	159	124	42	29
7.....	70	81	75	67	44	139	124	81	90	34
8.....	69	81	70	40	51	117	117	78	90	25
9.....	73	73	64	34	46	106	83	59	90	19
10.....	73	110	81	32	42	96	72	55	79	16
11.....	75	146	70	44	46	103	68	62	60	18
12.....	90	146	66	50	49	96	77	69	50	22
13.....	82	154	62	56	75	96	74	56	57	20
14.....	73	146	69	52	96	90	70	60	55	17
15.....	73	117	61	44	83	82	70	63	62	16
16.....	75	103	53	49	68	91	146	54	69	16
17.....	66	100	79	42	52	110	298	50	70	15
18.....	64	96	41	44	73	154	501	48	67	15
19.....	61	96	32	45	220	139	525	45	57	14
20.....	82	103	73	46	431	117	444	42	49	13
21.....	103	90	55	45	454	90	363	41	49	12
22.....	110	90	64	41	783	76	341	38	46	14
23.....	146	110	73	38	717	76	277	45	44	12
24.....	229	100	71	35	651	76	194	67	50	11
25.....	220	90	62	34	525	70	103	56	40	12
26.....	214	96	53	38	477	103	96	44	49	16
27.....	173	83	59	41	298	203	93	42	36	18
28.....	132	96	55	38	319	162	90	50	26	20
29.....	132	73	54	35	-----	139	96	49	28	13
30.....	124	76	52	31	-----	158	83	41	29	12
31.....	83	-----	96	32	-----	178	-----	39	-----	15

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	229	61	105	0.455	0.52
November.....	203	73	109	.472	.53
December.....	96	32	65.4	.283	.33
January.....	90	31	47.0	.203	.23
February.....	783	35	209	.905	.94
March.....	257	70	136	.589	.68
April.....	525	68	197	.863	.95
May.....	277	38	79.5	.344	.40
June.....	90	26	50.9	.220	.25
July.....	34	11	17.8	.0771	.09

FOX RIVER AT ALGONQUIN, ILL.

LOCATION.—Staff gage in NW. $\frac{1}{4}$ sec. 34, T. 43 N., R. 8 E., at Chicago Street Bridge in Algonquin, 300 feet above Crystal Lake outlet. Zero of gage 729.75 feet above mean sea level.

RECORDS AVAILABLE.—October, 1915, to September, 1930.

DRAINAGE AREA.—1,340 square miles.

EXTREMES.—Maximum discharge during year, 2,260 second-feet Feb. 27 to Mar. 1 (gage height, 2.7 feet); minimum, 54 second-feet Sept. 29 (gage height, 0.76 foot).

1915-1930: Maximum discharge, 7,120 second-feet Mar. 31, 1916 (gage height, 5.3 feet); minimum, that of Sept. 29, 1930.

REMARKS.—Records good. Discharge occasionally regulated during summer at dam 16 miles above gage. No record Jan. 21 to Feb. 17; discharge estimated by comparison with that at Dayton.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	590	995	491	470		2,260	995	1,350	437	284	160	154
2.....	550	995	491	510		1,800	1,060	1,350	367	300	148	205
3.....	550	995	491	550		1,800	1,060	1,350	350	300	148	192
4.....	530	930	482	530		1,880	1,060	1,880	333	300	226	178
5.....	510	930	473	520		1,950	1,060	1,950	300	300	284	166
6.....	419	870	473	550		1,880	1,060	2,100	300	300	300	166
7.....	455	870	473	600		1,800	1,060	1,720	384	300	226	166
8.....	473	870	473	590		1,650	1,060	1,650	384	284	212	142
9.....	482	810	482	590		1,650	1,060	1,500	384	284	212	120
10.....	473	810	491	590	480	1,500	810	1,420	367	284	226	120
11.....	464	810	491	590		1,200	755	1,130	317	284	239	110
12.....	419	810	491	590		1,060	660	870	284	269	226	110
13.....	419	810	491	590		1,060	580	755	284	269	198	110
14.....	455	810	491	590		1,060	660	700	269	269	185	100
15.....	455	810	491	560		995	810	690	325	226	172	100
16.....	437	755	491	540		870	930	670	455	212	172	100
17.....	437	755	473	530		870	1,200	670	455	212	172	90
18.....	410	755	437	520	700	870	1,500	670	473	160	172	81
19.....	401	755	401	520	810	810	1,650	650	491	148	160	81
20.....	473	755	300	520	995	810	1,800	650	455	148	148	81
21.....	482	755	254		1,350	810	1,880	473	437	148	126	81
22.....	530	755	292		1,650	810	1,950	384	384	160	115	72
23.....	570	630	317		1,720	810	1,950	367	333	212	95	72
24.....	590	590	333		1,950	680	1,950	367	300	212	86	54
25.....	630	590	350		2,100	520	2,100	437	300	226	105	120
26.....	670	570	367	480	2,100	464	2,100	491	300	226	115	142
27.....	670	510	367		2,260	464	1,950	570	317	212	137	178
28.....	700	455	367		2,260	700	1,800	570	317	198	142	154
29.....	755	455	384			700	1,720	590	300	172	142	142
30.....	810	446	401			810	1,500	590	284	172	142	142
31.....	810		437			810		473		172	154	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	810	401	536	0.400	0.46
November.....	995	446	755	.563	.63
December.....	491	254	427	.316	.37
January.....			527	.393	.45
February.....	2,260		931	.695	.72
March.....	2,260	464	1,140	.851	.98
April.....	2,100	580	1,320	.985	1.10
May.....	2,100	367	937	.699	.81
June.....	491	269	356	.266	.30
July.....	300	148	234	.175	.20
August.....	300	86	172	.128	.15
September.....	205	54	124	.093	.10
The year.....	2,260	54	619	.462	6.27

FOX RIVER AT DAYTON, ILL.

LOCATION.—Float gages above and below dam in SE. $\frac{1}{4}$ sec. 29, T. 34 N., R. 4 E., at plant of North Counties Hydroelectric Co., in Dayton, 6 miles above mouth of River.

DRAINAGE AREA.—2,570 square miles.

RECORDS AVAILABLE.—April, 1925, to September, 1930.

EXTREMES.—Maximum daily mean discharge during year, 6 580 second-feet Apr. 21; minimum, 167 second-feet Sept. 23.

1925-1929: Maximum daily mean discharge, 14,300 second-feet Apr. 1, 1929; minimum, that of Sept. 23, 1930.

REMARKS.—Records fair. Daily discharge computed from electrical output of power plant and flow over dam. Power-plant data furnished by North Counties Hydroelectric Co.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	940	1,240	694	675	544	3,080	1,860	2,970	606	517	283	268
2.....	699	1,310	606	792	547	2,740	1,860	2,910	578	514	282	1,720
3.....	709	1,370	624	1,070	523	2,260	1,860	2,640	602	437	244	1,080
4.....	694	1,260	564	988	615	2,300	1,860	2,540	557	417	201	627
5.....	675	1,330	738	984	706	2,300	1,860	2,540	463	416	225	379
6.....	624	1,240	762	994	616	2,300	1,840	2,990	479	458	225	365
7.....	540	1,150	740	1,060	636	2,130	1,740	3,610	602	487	244	332
8.....	557	1,170	580	944	636	2,080	1,780	3,480	559	534	303	336
9.....	556	1,160	518	724	661	1,900	1,620	3,010	578	516	243	226
10.....	562	1,170	627	516	635	1,890	1,410	2,540	602	517	321	268
11.....	599	1,280	649	743	814	1,820	1,320	2,280	624	557	244	323
12.....	647	1,400	606	898	1,370	1,830	1,270	1,880	599	557	245	282
13.....	627	1,240	690	902	1,830	1,830	1,180	1,520	647	410	284	332
14.....	534	1,260	719	992	1,840	1,800	1,110	1,320	542	380	321	304
15.....	608	1,220	647	902	1,550	1,730	1,270	1,280	448	365	267	269
16.....	608	1,200	606	745	1,200	1,550	2,060	1,240	510	491	333	202
17.....	578	1,100	766	545	1,160	1,450	3,810	1,200	576	437	392	201
18.....	538	1,030	497	493	1,440	1,690	4,500	1,060	627	366	461	224
19.....	559	1,250	230	568	1,530	1,620	3,820	1,200	599	305	267	302
20.....	555	1,110	203	658	1,940	1,530	4,440	1,460	647	284	331	244
21.....	491	1,060	464	748	2,160	1,420	6,580	1,170	608	286	268	201
22.....	622	850	478	745	2,100	1,340	5,640	921	559	287	336	201
23.....	961	677	491	590	2,940	1,340	4,810	850	493	315	263	167
24.....	940	670	495	570	3,290	1,400	4,320	874	481	246	320	169
25.....	984	716	478	656	4,440	1,540	4,180	697	555	202	267	201
26.....	980	1,260	516	564	4,420	1,450	3,830	764	482	268	225	336
27.....	894	1,040	493	520	3,960	1,150	3,690	961	844	225	245	495
28.....	740	938	586	613	3,480	1,140	3,540	874	582	225	268	370
29.....	1,000	396	536	614	-----	1,710	3,670	890	499	202	283	268
30.....	1,160	250	538	547	-----	1,880	3,280	833	422	183	283	302
31.....	1,120	-----	629	523	-----	1,840	-----	588	-----	348	268	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	1,160	491	719	0.280	0.32
November.....	1,400	250	1,080	.420	.47
December.....	766	203	573	.223	.26
January.....	1,070	493	738	.287	.33
February.....	4,440	523	1,700	.661	.69
March.....	3,080	1,140	1,810	.704	.81
April.....	6,580	1,110	2,870	1.12	1.25
May.....	3,610	588	1,710	.665	.77
June.....	844	422	566	.220	.25
July.....	557	183	379	.147	.17
August.....	461	201	283	.110	.13
September.....	1,720	167	366	.142	.16
The year.....	6,580	167	1,060	.412	5.61

VERMILION RIVER AT STREATOR, ILL.

LOCATION.—Chain gage in SE. $\frac{1}{4}$ sec. 2, T. 30 N., R. 3 E., at South Bloomington Street Bridge in Streator. Zero of gage 555.61 feet above mean sea level.

DRAINAGE AREA.—1,080 square miles.

RECORDS AVAILABLE.—July, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 5,150 second-feet Apr. 19 (gage height, 11.81 feet); minimum, 0.5 second-foot Sept. 30 (gage height, 1.15 feet).

1914-1930: Maximum discharge, 16,500 second-feet Apr. 20, 1920 (gage height, 22.9 feet); no flow Aug. 25-28, Sept. 16-30, 1920, Aug. 24-27, Sept. 3, 4, 1923.

REMARKS.—Records good except those for periods of ice effect, Nov. 29 to Dec. 3, Jan. 16 to Feb. 2, Feb. 14, and for discharges below 20 second-feet, which may be poor. Water supply for city of Streator is diverted from river 1 mile above gage and is returned as sewage through Prairie Creek 2 miles below gage.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.2	31	18	42	380	3,120	2,270	892	162	39	3.0	1.8
2	5.6	38		47		2,390	2,090	852	153	42	3.9	1.2
3	4.6	31		47	330	1,970	1,790	780	136	42	3.9	1.2
4	6.8	23	16	52	455	1,320	1,420	744	127	37	3.9	1.8
5	6.8	23	14	52	545	960	1,370	672	120	42	4.8	1.8
6												
6	5.6	17	14	46	610	920	1,220	608	127	39	3.9	2.6
7	5.6	17	17	122	720	840	960	576	136	35	3.0	2.6
8	6.8	14	16	260	760	800	780	546	136	27	3.0	1.2
9	9.2	11	14	610	800	720	610	576	127	23	3.9	1.2
10	8.0	11	16	680	840	575	515	546	136	18	3.9	1.8
11												
11	12	13	19	680	840	545	405	516	136	22	3.9	1.2
12	15	16	19	800	1,420	485	405	458	153	15	5.6	.9
13	15	16	27	840	1,420	405	720	402	162	15	5.6	.9
14	12	57	25	880	1,200	310	840	350	144	20	4.8	.9
15	10	91	29	840	1,040	270	1,270	324	153	16	4.8	1.8
16												
16	12	97	29		800	250	1,790	312	153	14	3.9	1.2
17	12	88	25		720	250	2,770	324	162	11	3.9	1.2
18	9.2	88	25		545	330	4,830	324	182	8.5	2.2	1.8
19	12	64	21		485	430	5,150	337	136	5.6	3.0	.9
20	10	64	27		455	430	4,510	324	127	5.6	3.4	.9
21												
21	11	52	21		645	405	4,990	324	127	6.5	1.8	1.2
22	14	57	21		1,730	405	4,510	300	127	5.6	1.8	1.2
23	16	57	21		2,450	405	3,890	288	112	4.8	2.6	.7
24	16	62	16		4,270	430	2,390	300	94	4.8	2.6	.9
25	17	45	16		4,030	380	2,030	288	70	3.9	2.6	.9
26												
26	23	45	22		3,870	230	1,740	288	44	3.9	1.2	.5
27	19	31	22		3,790	240	1,390	288	51	4.8	1.8	.7
28	23	31	17		3,050	250	1,340	276	42	4.8	1.2	.7
29	21		21			260	1,010	288	48	3.9	1.2	.9
30	25	18	33			880	852	264	44	3.9	2.6	.5
31	23		42			2,150		216		3.0	2.6	

Month	Maximum	Minimum	Mean	Month	Maximum	Minimum	Mean
October	25	4.6	12.8	May	892	216	438
November	97	14	40.9	June	182	42	121
December	42		21.3	July	42	3.0	17.0
January		42	390	August	5.6	1.2	8.24
February	4,270		1,380	September	2.6	.5	1.24
March	3,120	230	753				
April	5,150	405	2,000	The year	5,150	.5	422

MACKINAW RIVER NEAR GREEN VALLEY, ILL.

LOCATION.—Chain gage in sec. 15, T. 23 N., R. 5 W., at Chicago & North Western Railway bridge 3 miles north of Green Valley.

DRAINAGE AREA.—1,100 square miles.

RECORDS AVAILABLE.—March, 1921, to September, 1930.

EXTREMES.—Maximum discharge during year, 3,450 second-feet Feb. 25 (gage height, 7.29 feet); minimum, 34 second-feet Sept. 20–30 (gage height, 0.98 foot).

1921–1930: Maximum discharge, 21,800 second-feet May 19, 1927 (gage height, 14.2 feet); minimum, 30 second-feet various dates in September and October, 1922.

REMARKS.—Records good except those for period of ice effect, Jan. 9 to Feb. 11, which may be poor.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	85	83	105		1,670	1,420	820	215	240	55	44
2	75	85	80	425		1,480	1,360	820	215	240	53	42
3	74	91	80	682		1,200	1,310	770	202	190	50	40
4	74	94	80	1,120		1,140	1,140	720	202	150	50	40
5	73	94	80	1,060		1,040	1,090	670	190	130	48	40
6	73	91	77	940	720	980	925	580	190	107	48	38
7	72	85	80	765		870	770	580	190	103	46	36
8	70	80	88	630		820	670	535	180	100	46	36
9	70	77	94			770	580	495	180	100	46	36
10	69	94	104			720	580	475	170	97	45	36
11	88	262	107			670	535	455	170	94	44	36
12	97	232	112		1,090	670	515	435	190	91	44	36
13	94	217	116		1,090	625	455	415	190	88	44	36
14	91	204	123		1,360	580	475	415	190	88	44	36
15	85	246	120		980	535	515	398	180	86	46	36
16	77	167	120		720	495	980	380	170	85	53	36
17	75	167	116		580	495	2,250	365	170	85	50	36
18	73	167	112		720	535	3,150	350	160	82	50	36
19	73	145	112		770	580	2,520	365	150	82	50	36
20	70	141	109	720	625	2,170	380	140	82	50	34	
21	66	141	105		770	625	1,880	365	130	79	50	34
22	66	121	105		870	515	2,020	350	130	79	50	34
23	70	94	102		1,810	495	2,090	335	125	75	50	34
24	80	94	102		2,340	535	1,810	305	123	72	49	34
25	83	91	99		3,450	535	1,420	290	116	69	49	34
26	83	91	105		3,250	495	1,310	278	110	67	49	34
27	80	88	109		2,790	380	1,200	265	107	67	48	34
28	77	88	112		2,170	380	1,040	252	107	64	48	34
29	77	88	112		770	980	240	103	62	62	46	34
30	97	85	109		1,040	870	228	215	57	44	34	
31	91		105		1,420		228		55	44		

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	97	66	78.1	0.071	0.08
November	262	77	127	.115	.13
December	123	77	102	.093	.11
January		105	719	.654	.75
February		580	1,190	1.08	1.12
March	1,670	380	764	.695	.80
April	3,150	455	1,270	1.15	1.28
May	820	228	437	.397	.46
June	215	103	164	.149	.17
July	240	55	98.9	.090	.10
August	55	44	48.0	.044	.05
September	44	34	36.2	.033	.04
The year		34	413	.375	5.09

SPOON RIVER AT SEVILLE, ILL.

LOCATION.—Chain gage in SW. $\frac{1}{4}$ sec. 24, T. 6 N., R. 1 E., at Toledo, Peoria & Western Railroad bridge in Seville. Zero of gage 467.78 feet above mean sea level.

DRAINAGE AREA.—1,600 square miles.

RECORDS AVAILABLE.—July, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,240 second-feet Feb. 14 (gage height, 14.20 feet); minimum, 29 second-feet Sept. 24 (gage height, 2.80 feet).

1914-1930: Maximum discharge, 28,900 second-feet Aug. 22, 1924 (gage height, 30.5 feet); minimum, 3.8 second-feet July 31, Aug. 27-29, 1914 (gage height, 1.35 feet).

REMARKS.—Records poor.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	235	481	* 260	582	*380	2,990	815	915	310	235	44	49
2	221	481		717		2,450	815	865	310	221	40	50
3	168	390		765		1,920	717	865	279	180	44	41
4	194	310		717		1,920	717	765	279	158	41	52
5	194	310	357	670	1,870	625	717	765	264	153	40	86
6	180	279	374	625	765	1,700	625	670	310	235	38	84
7	178	235	390		1,320	1,600	625	765	374	444	40	56
8	162	250	425		1,430	1,480	582	670	1,220	540	38	52
9	158	207	444		1,760	1,380	582	625	540	310	39	50
10	264	765	462	1,870	1,260	540	582	444	221	33	48	48
11	294	765	481	*380	1,980	1,220	540	540	390	155	42	40
12	462	670	520		3,620	1,160	520	540	341	146	42	43
13	325	625	582		5,050	1,060	500	520	325	126	40	40
14	294	965	765		6,240	1,020	520	462	310	109	126	48
15	264	1,120	582	5,190	915	540	481	279	91	75	43	43
16	235	815	540	*380	3,690	915	1,650	444	500	95	54	41
17	221	670	* 408		3,820	915	1,380	462	408	79	67	46
18	194	625	500		3,360	1,120	1,390	481	325	76	57	43
19	180	582	*340		3,560	1,320	1,920	582	294	73	1,430	40
20	180	520		3,170	717	1,430	582	264	68	625	34	
21	194	425		* 260	2,810	1,020	1,980	582	250	71	180	35
22	194	341			2,150	915	1,870	500	250	59	134	32
23	221	310	2,570		915	1,820	462	235	61	105	30	
24	279	341	3,430		915	1,760	425	221	58	78	29	
25	310	341	6,030		915	1,480	462	207	43	72	294	
26	310	444	481	*260	5,470	815	1,220	444	221	50	61	178
27	279	444	500		4,700	815	1,120	390	180	58	61	1,870
28	264	325	520		3,620	815	1,060	625	180	54	57	1,760
29	408	250	540		-----	915	1,020	408	158	52	55	325
30	425	*260	540	*260	-----	915	1,060	390	582	48	53	178
31	765	-----	520		-----	865	-----	341	-----	43	51	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	765	158	266	0.166	0.19
November.....	1,120	207	485	.308	.34
December.....	765	-----	431	.269	.31
January.....	765	-----	431	.274	.32
February.....	6,240	-----	2,840	1.78	1.85
March.....	2,990	815	1,250	.781	.90
April.....	1,980	500	1,050	.656	.73
May.....	915	341	567	.354	.41
June.....	1,220	158	342	.214	.24
July.....	540	43	139	.087	.10
August.....	1,430	33	125	.077	.09
September.....	1,870	29	191	.119	.13
The year.....	6,240	29	661	.413	5.61

* Estimated.

SANGAMON RIVER AT MONTICELLO, ILL.

LOCATION.—Chain gage in SW. $\frac{1}{4}$ sec. 12, T. 18 N., R. 5 E., at Illinois Central Railroad bridge half a mile west of Monticello.

DRAINAGE AREA.—550 square miles.

RECORDS AVAILABLE.—February, 1908, to December, 1912; June, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 2,810 second-feet Jan. 4, 15 (gage height, 11.6 feet); minimum, 1 second-foot Aug. 6-10, 13, 27, 28, Sept. 6, 11-14, 21-23.

1908-1912, 1914-1930: Maximum discharge, 15,400 second-feet Oct. 4, 1926 (gage height, 18.4 feet); minimum, 1 second-foot July 31 to Aug. 3, 1914, Aug. 6-10, 13, 27, 28, Sept. 6, 11-14, 21-23, 1930.

REMARKS.—Records fair except those estimated, which may be poor.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	121	31	1,970	360	2,060	1,090	610	132	114	4	8
2	13	103	26	2,250	360	1,410	1,000	630	123	105	4	5
3	13	121	22	2,570	410	965	865	610	105	96	2	4
4	10	140	22	2,810	530	750	750	570	132	88	2	2
5	7	130	31	2,150	725	700	700	515	123	88	2	2
6	13	121	43	1,810	805	650	570	485	114	88	1	1
7	22	121	55	1,530	895	630	485	425	105	80	1	2
8	17	103	85	1,410	835	590	425	397	105	73	1	4
9	13	94	121	1,190	775	500	384	372	96	73	1	2
10	22	103	130	1,000	750	470	360	348	88	105	1	2
11	69	202	150	865	650	455	336	312	80	96	4	1
12	49	224	170	1,410	610	425	312	290	73	88	2	1
13	49	224	191	2,150	750	397	290	279	66	73	1	1
14	43	180	180	2,460	700	372	279	268	60	60	5	1
15	31	112	202	2,810	630	348	301	257	54	54	5	8
16	26	94	257	2,460	570	336	930	246	54	36	4	12
17	22	103	301	2,250	515	324	1,530	235	54	31	4	8
18	17	103	384	2,150	470	360	1,890	246	48	21	4	5
19	13	94	360	1,670	455	455	1,740	312	48	16	8	4
20	17	85	312	1,410	440	425	1,530	410	48	12	12	2
21	10	77	290	1,190	425	384	1,600	397	42	12	8	1
22	13	69	268	1,090	410	360	1,810	360	42	12	5	1
23	85	62	246	965	630	348	2,060	312	36	8	4	1
24	180	55	224	805	1,410	372	1,970	290	36	8	4	5
25	224	49	202	700	1,810	324	1,470	257	31	8	2	8
26	202	43	180	610	2,460	301	1,090	235	31	16	2	5
27	121	43	180	530	2,350	372	865	213	26	12	1	4
28	62	37	191	470	2,150	470	775	202	26	8	1	4
29	69	37	224	425	-----	805	725	181	36	8	4	2
30	85	31	268	384	-----	750	675	161	48	5	5	2
31	103	-----	324	372	-----	700	-----	141	-----	5	12	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	224	7	52.8	0.096	0.11
November	224	31	103	.187	.21
December	384	22	183	.333	.38
January	2,810	372	1,480	2.69	3.10
February	2,460	360	863	1.55	1.61
March	2,060	301	574	1.04	1.20
April	2,060	279	960	1.75	1.95
May	630	141	341	.620	.71
June	132	26	68.7	.125	.14
July	114	5	48.4	.088	.10
August	12	1	3.7	.0067	.008
September	12	1	3.6	.0065	.007
The year	2,810	1	387	.704	9.52

* Estimated.

SANGAMON RIVER AT RIVERTON, ILL.

LOCATION.—Chain gage in SW. $\frac{1}{4}$ sec. 9, T. 16 N., R. 4 W., at Wabash Railway bridge in Riverton, 5 miles below mouth of South Fork. Zero of gage 503.15 feet above mean sea level.

DRAINAGE AREA.—2,560 square miles.

RECORDS AVAILABLE.—February, 1908, to December, 1912; August, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 9,800 second-feet Feb. 28 (gage height, 22.52 feet); minimum, 23 second-feet Sept. 12 (gage height, 7.40 feet).

1908–1912, 1914–1930: Maximum discharge, 30,200 second-feet Oct. 4, 1926 (gage height, 32.0 feet); minimum, 3.0 second-feet Oct. 3–15, 1914 (gage height, 6.9 feet).

REMARKS.—Records above 50 second-feet good except those for ice-affected periods, Nov. 29 to Dec. 9, Dec. 18–30, Jan. 16 to Feb. 1, which may be poor. Records below 50 second-feet fair. Some regulation of low-water flow by municipal reservoir at Decatur.

Daily and monthly discharge, in second-feet, 1929–30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	218		856	1,280	9,630	2,670	1,730	406	599	55	316
2	78	207		3,610	1,530	8,610	3,480	1,600	383	524	55	176
3	65	207		5,200	1,680	7,620	3,540	1,530	338	452	50	89
4	62	186		5,100	1,860	7,140	3,300	1,420	338	406	40	49
5	56	176	40	5,200	2,120	5,720	3,000	1,250	316	316	39	40
6												
7	69	166		5,620	2,720	4,140	2,460	1,220	316	250	38	40
8	62	146		5,880	3,680	3,180	2,170	1,220	316	283	38	39
9	56	146		6,340	3,870	2,780	1,860	1,060	316	261	36	35
10	63	136		5,410	3,420	2,410	1,530	1,030	316	196	36	30
11	93	186	88	4,580	3,300	2,080	1,390	967	294	207	36	25
12												
13	112	218	122	4,140	2,890	1,900	1,250	910	272	228	38	25
14	146	239	228	3,800	3,240	1,770	1,120	802	272	166	38	23
15	122	283	261	3,480	3,360	1,640	1,090	776	261	136	40	30
16	122	283	272	3,180	3,420	1,560	1,090	750	261	116	40	45
17	122	294	294	3,240	2,890	1,390	1,060	724	239	103	44	107
18												
19	118	294	316		2,890	1,320	1,500	699	218	91	49	166
20	118	250	360		2,560	1,320	2,080	699	207	80	53	136
21	116	239			2,310	1,360	2,120	674	196	69	46	84
22	112	228			2,220	1,500	2,360	674	196	62	41	56
23	105	207			2,510	1,360	2,560	699	196	55	39	46
24												
25												
26												
27												
28												
29												
30												
31												

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	261	56	115	0.045	0.05
November	294		196	.077	.09
December			303	.11 ³	.14
January	6,340	856	3,030	1.18	1.36
February	9,800		3,740	1.46	1.52
March	9,630	1,090	2,710	1.06	1.22
April	3,870	1,060	2,440	.953	1.06
May	1,730	452	880	.344	.40
June	406	166	265	.104	.12
July	599	47	171	.067	.08
August	316	31	55.1	.022	.03
September	316	23	74.2	.023	.03
The year	9,800	23	1,150	.443	6.10

SANGAMON RIVER NEAR OAKFORD, ILL.

LOCATION.—Chain gage in sec. 6, T. 19 N., R. 7 W., at highway bridge 3 miles northeast of Oakford and $1\frac{1}{4}$ miles above Crane Creek. Zero of gage 458.88 feet above mean sea level.

DRAINAGE AREA.—5,000 square miles.

RECORDS AVAILABLE.—October, 1909, to March, 1912; August, 1914, to June, 1919; March, 1921, to August, 1922; October, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year not determined; minimum, 165 second-feet Sept. 13 (gage height, 0.72 foot).

1909-1912, 1914-1919, 1921-22, 1928-1930: Maximum discharge, 37,600 second-feet (revised) Apr. 14, 1922 (gage height, 19.84 feet); minimum, 85 second-feet Aug. 30, 31, Nov. 27, 1914.

REMARKS.—Records good. Gage-height record furnished by Sanitary District of Chicago.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	365	550	* 470	-----	5, 140	4, 170	1, 100	920	284	238
2.....	365	575	* 470	-----	5, 580	3, 770	1, 040	920	305	372
3.....	325	525	* 470	-----	5, 580	3, 390	980	920	305	440
4.....	345	500	* 470	-----	5, 470	3, 300	920	920	305	350
5.....	325	478	500	-----	5, 030	3, 120	920	770	284	305
6.....	325	455	500	-----	4, 810	2, 940	860	710	263	242
7.....	325	432	500	-----	4, 370	2, 760	800	1, 100	263	229
8.....	305	432	500	-----	3, 870	2, 680	800	980	250	197
9.....	305	410	-----	5, 470	3, 390	2, 440	800	770	246	181
10.....	305	* 600	-----	4, 810	3, 120	2, 360	800	630	250	177
11.....	410	700	-----	4, 170	2, 850	* 2, 150	800	630	246	173
12.....	410	810	-----	3, 970	2, 520	* 1, 900	800	580	225	169
13.....	410	810	-----	3, 670	2, 600	* 1, 850	770	530	238	165
14.....	388	755	-----	3, 390	2, 520	* 1, 800	740	485	263	201
15.....	388	755	-----	3, 210	* 2, 500	* 1, 700	680	440	328	263
16.....	365	755	-----	3, 120	3, 030	* 1, 650	680	440	328	305
17.....	345	755	-----	2, 940	4, 590	* 1, 650	655	418	* 330	305
18.....	* 340	700	-----	3, 210	5, 930	1, 650	605	395	* 300	305
19.....	325	700	-----	3, 480	6, 050	1, 580	605	372	* 280	284
20.....	525	650	-----	3, 570	5, 690	1, 800	605	350	* 260	263
21.....	325	600	-----	3, 210	5, 580	1, 800	605	350	* 240	221
22.....	325	575	-----	3, 120	6, 410	1, 720	580	350	* 230	189
23.....	* 320	525	-----	3, 030	7, 010	1, 440	555	328	* 210	201
24.....	388	* 525	-----	2, 940	6, 650	1, 580	555	350	201	197
25.....	410	525	-----	2, 850	6, 410	1, 580	508	328	197	189
26.....	* 400	525	-----	2, 850	5, 930	1, 440	605	350	197	177
27.....	410	* 525	-----	2, 680	5, 470	1, 440	555	328	197	197
28.....	455	500	-----	2, 680	5, 360	1, 370	555	305	181	197
29.....	500	478	-----	3, 210	5, 030	1, 230	580	305	177	259
30.....	525	* 470	-----	3, 870	4, 590	1, 160	630	305	205	242
31.....	525	-----	-----	4, 480	-----	1, 160	-----	284	217	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	525	305	874	0. 075	0. 09
November.....	810	410	586	. 117	. 13
December 1-8.....	-----	-----	485	. 097	. 03
March 9-31.....	-----	-----	3, 480	. 696	. 60
April.....	7, 010	2, 500	4, 770	. 954	1. 06
May.....	4, 170	1, 160	2, 080	. 416	. 48
June.....	1, 100	508	723	. 145	. 16
July.....	1, 100	284	544	. 109	. 13
August.....	330	177	252	. 050	. 06
September.....	440	165	241	. 048	. 05

* Estimated.

SOUTH FORK OF SANGAMON RIVER AT KINCAID,¹ ILL.

LOCATION.—Chain gage in NE. $\frac{1}{4}$ sec. 14, T. 13 N., R. 3 W., at Chicago & Illinois Midland Railway bridge 1 mile southeast of Kincaid and 6 miles below mouth of Bear Creek.

DRAINAGE AREA.—510 square miles.

RECORDS AVAILABLE.—May, 1917, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,700 second-feet Jan. 16 (gage height, 21.5 feet); minimum, 0.6 second-foot Aug. 27-30 (gage height, 4.40 feet).

1917-1930: Maximum discharge, 11,800 second-feet Mar. 15, 1922 (gage height, 26.6 feet); no flow Aug. 29, Oct. 6, 23, 1922.

REMARKS.—Records good except those for estimated periods and for discharges below 5 second-feet, which may be poor.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	5.7	36	12	540	156	1,930	810	112	23	66	5.7	0.8
2.....	5.7	33	14	710	174	1,710	985	96	23	138	4.5	.8
3.....	5.7	28	10	1,710	211	1,120	985	104	20	112	3.4	.7
4.....	5.7	23	6.9	1,930	320	960	860	96	20	59	2.2	.8
5.....	* 5.7	* 20	10	* 1,320	* 620	* 795	* 680	* 92	* 20	* 40	* 2.2	* 1.0
6.....	5.7	18	10	1,710	910	* 630	510	88	20	23	* 2.2	1.1
7.....	6.9	18	16	1,180	960	465	382	84	18	26	* 2.2	1.2
8.....	5.7	18	14	1,300	960	* 420	274	80	20	45	2.2	1.2
9.....	6.9	14	12	1,010	1,240	382	263	73	18	76	2.0	.9
10.....	5.7	12	18	960	1,120	320	211	70	18	28	2.0	1.1
11.....	8.4	16	28	910	1,010	320	192	73	18	23	2.0	.9
12.....	14	23	33	910	910	285	183	62	18	14	1.7	.8
13.....	33	33	42	1,440	985	241	174	59	* 17	14	1.7	1.1
14.....	23	36	52	2,850	* 1,150	221	174	56	* 16	12	2.0	.9
15.....	33	20	52	5,320	985	201	174	52	16	6.9	2.4	1.3
16.....	23	23	70	6,700	835	192	174	52	14	8.4	2.8	1.5
17.....	16	23	80	6,220	630	183	192	48	14	6.9	2.4	1.5
18.....	14	23	120	4,870	540	211	211	45	14	5.7	2.2	6.9
19.....	12	18	* 150	3,280	555	263	183	52	12	4.5	2.2	2.4
20.....	* 11	* 17		* 2,230	* 770	* 230	* 210	* 60	* 24	* 3.4	* 2.2	* 1.8
21.....	10	16			985	192	231	52	18	2.2	2.2	1.3
22.....	8.4	14	* 90		730	174	211	45	18	4.5	2.0	1.3
23.....	8.4	14			770	156	221	39	20	4.5	2.0	1.3
24.....	10	14			1,180	165	192	28	20	4.5	1.7	2.0
25.....	14	14			1,240	192	174	23	156	4.5	1.3	1.3
26.....	14	12	138	* 480	2,030	201	147	26	174	2.8	1.1	1.1
27.....	14	14	183		2,030	221	129	23	174	28	.6	.9
28.....	16	16	174		2,350	296	120	26	174	129	.6	.8
29.....	23	12	* 245			320	120	23	66	59	.6	.7
30.....	33	12	* 322			570	120	23	138	14	.6	.8
31.....	30		395			750		23		6.9	.7	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	33	5.7	13.8	0.027	0.03
November.....	36	12	19.7	.039	.04
December.....	395	6.9	88.7	.174	.20
January.....	6,700		1,690	3.31	5.82
February.....	2,350	153	953	1.87	1.95
March.....	1,930	156	462	.9C ^a	1.04
April.....	985	120	316	.62 ^a	.69
May.....	112	23	57.6	.113	.13
June.....	174	12	44.0	.08 ^a	.10
July.....	138	2.2	31.3	.0F1	.07
August.....	5.7	.6	2.05	.0C40	.005
September.....	6.9	.7	1.34	.0C ^a 6	.003
The year.....	6,700	.6	304	.566	8.08

^a Estimated.

¹ Published 1917-1929 as South Fork of Sangamon River at power plant near Taylorville, Ill.

CROOKED CREEK AT RIPLEY, ILL.

LOCATION.—Chain gage in NE. $\frac{1}{4}$ sec. 33, T. 1 N., R. 2 W., at highway bridge one-fourth mile east of Ripley. Zero of gage 431.31 feet above mean sea level.

DRAINAGE AREA.—1,310 square miles.

RECORDS AVAILABLE.—March, 1921, to September, 1930.

EXTREMES.—Maximum discharge during year, 5,790 second-feet Feb. 23 (gage height, 18.31 feet); minimum, 8.9 second-feet Sept. 11, 12 (gage height, 2.12 feet).

1921-1930: Maximum discharge, 12,500 second-feet July 25, 1924 (gage height, 25.0 feet); minimum, that of Sept. 11, 12, 1930.

Old high-water marks are at gage height, 26.0 feet.

REMARKS.—Records fair except those for periods of ice effect, Dec. 1-3, 18-30, Jan. 6 to Feb. 11, which may be poor. Probable backwater effect from Illinois River, Feb. 14-17, Feb. 23 to Mar. 18, Apr. 14 to May 10; discharge estimated.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	95	530	110	193	210	1,260	340	150	86	134	20	11
2.....	123	470		210		1,150	297	220	82	134	19	11
3.....	100	440		240		970	297	300	77	128	18	10
4.....	95	415		250		690	279	310	73	122	18	10
5.....	67	390	117	260		570	279	250	69	122	17	10
6.....	52	340	117	250	210	500	279	290	65	128	17	10
7.....	48	270	117			340	279	315	61	153	16	9.8
8.....	48	240	123			310	279	240	61	173	15	9.5
9.....	67	210	142			355	261	245	58	96	14	9.5
10.....	148	240	148			360	261	245	58	38	14	9.2
11.....	202	315	162			400	261	244	54	38	13	8.9
12.....	220	415	177			390	261	203	54	36	12	8.9
13.....	250	500	193			4,150	375	261	180	51	36	12
14.....	220	890	240			3,630	355	244	153	51	35	34
15.....	210	890	315			3,280	350	995	140	48	35	440
16.....	193	830	340		210	2,720	350	1,960	122	48	34	140
17.....	170	770	315			2,230	340	1,720	128	48	33	73
18.....	155	620				2,200	880	1,380	128	48	32	58
19.....	148	530				2,160	1,880	1,560	122	45	32	42
20.....	135	135				2,800	1,480	2,160	117	48	31	28
21.....	106	135				3,350	960	1,680	117	48	30	22
22.....	100	129				4,800	800	1,310	117	51	28	16
23.....	95	129				5,790	560	890	112	48	26	15
24.....	111	129	180			5,120	620	650	106	45	25	14
25.....	148	135				4,450	560	470	106	45	24	13
26.....	148	142				4,080	530	355	101	54	23	13
27.....	170	135				2,470	470	225	101	140	22	12
28.....	185	135				1,750	440	240	101	279	22	12
29.....	193	129					390	250	96	365	22	12
30.....	315	123					390	200	96	590	21	11
31.....	620		177				390		91		20	11

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	620	48	159	0.121	0.14
November.....	890	123	359	.274	.31
December.....	340		176	.134	.15
January.....	200		215	.164	.19
February.....	5,790		2,200	1.68	1.75
March.....	1,890	310	626	.478	.55
April.....	2,160	200	664	.507	.57
May.....	315	91	171	.131	.15
June.....	590	45	95.0	.073	.08
July.....	173	20	59.1	.045	.05
August.....	140	11	25.3	.019	.02
September.....	830	8.9	117	.089	.10
The year.....	5,790	8.9	392	.299	4.06

MACOUPIN CREEK NEAR KANE, ILL.

LOCATION.—Chain gage in SE. $\frac{1}{4}$ sec. 11, T. 9 N., R. 11 W., at highway bridge $3\frac{1}{2}$ miles northwest of Kane. Zero of gage 427.12 feet above mean sea level.

DRAINAGE AREA.—875 square miles.

RECORDS AVAILABLE.—October, 1928, to September, 1930. From March, 1921, to September, 1928, at Chicago & Alton Railroad bridge 2 miles upstream.

EXTREMES.—Maximum discharge during year, 9,350 second-feet Jan. 14 (gage height, 19.1 feet); minimum, 8.8 second-feet Sept. 29, 30 (gage height, 3.03 feet).

1921-1930: Maximum discharge, 22,200 second-feet Oct. 4, 1926; maximum gage height, 24.6 feet at former gage, Mar. 15, 1922; minimum discharge, 1 second-foot Sept. 29, Oct. 3, 1922.

REMARKS.—Records good except those for periods of ice effect, Nov. 29, 30, Dec. 20-27, Jan. 20 to Feb. 3, and for period July 2-14, which are probably poor. Gage-height record furnished by Sanitary District of Chicago.

Daily and monthly discharge, in second-feet, 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	215	38	1,780	230	785	360	74	20	41	11	9.9
2	23	197	38	4,510	385	560	340	100	20		11	9.9
3	18	114	34	3,850	760	435	260	125	20		11	9.9
4	18	83	34	2,240	1,640	360	202	139	20		11	9.9
5	13	62	34	795	1,990	340	162	89	20		14	9.6
6	13	53	38	595	2,060	320	146	74	20		14	9.6
7	13	49	53	745	2,360	300	118	60	20		14	13
8	13	42	78	880	1,640	280	112	56	20	24	14	13
9	13	42	95	520	960	230	100	50	18		14	13
10	50	127	101	395	785	220	94	46	16		14	13
11	134	370	101	370	735	202	84	42	18		11	13
12	164	156	114	850	1,140	185	84	38	20		12	13
13	197	101	114	4,160	1,920	177	79	38	20		14	112
14	72	164	120	8,900	1,260	162	74	35	20		14	139
15	39	134	114	6,750	735	162	79	32	20		15	360
16	32	95	107	5,600	460	162	79	32	16	15	14	340
17	29	83	295	3,850	460	154	94	32	16	15	14	51
18	23	78	1,210	1,290	885	202	112	35	16	15	14	30
19	20	67	670	685	1,380	220	139	460	16	15	12	30
20	18	53	345	460	1,200	185	118	132	18	15	12	24
21	18	49	172	360	910	162	100	69	16	15	10	20
22	18	42	114	320	1,140	139	118	49	16	15	10	17
23	26	34	83	280	3,160	132	230	45	16	15	10	13
24	35	42	101	250	3,220	139	139	41	16	15	10	13
25	35	38	127	220	2,200	162	106	35	16	15	10	13
26	39	42	172	194	3,580	177	94	32	760	15	9.9	43
27	31	42	275	185	3,000	240	94	32	146	15	9.9	22
28	72	45	395	169	1,410	260	100	26	64	15	9.9	12
29	720	42	545	154	-----	360	100	26	52	11	9.9	8.8
30	320	34	620	146	-----	460	94	26	45	11	9.9	8.8
31	120	-----	720	139	-----	410	-----	23	-----	11	9.9	-----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	720	13	76.2	0.087	0.10
November	370	34	89.8	.103	.11
December	1,210	34	228	.261	.30
January	8,900	139	1,670	1.91	2.20
February	3,580	230	1,490	1.70	1.77
March	785	132	267	.305	.35
April	360	74	134	.153	.17
May	460	23	67.5	.077	.09
June	760	16	50.7	.058	.06
July	41	11	19.2	.022	.03
August	14	9.9	11.8	.013	.01
September	360	8.8	46.4	.058	.06
The year	8,900	8.8	339	.387	5.25

KASKASKIA RIVER AT VANDALIA, ILL.

LOCATION.—Chain gage in SE. ¼ sec. 16, T. 6 N., R. 1 E., at Gallatin Street Bridge at Vandalia, 3½ miles above Hickory Creek. Zero of gage (revised), 455.30 feet above mean sea level.

DRAINAGE AREA.—1,980 square miles.

RECORDS AVAILABLE.—February, 1908, to December, 1912; August, 1914, to September, 1930.

EXTREMES.—Maximum discharge during year, 10,600 second-feet Jan. 13, 14 (gage height, 19.9 feet); minimum, 16 second-feet Sept. 11, 12, 29, 30. 1908–1912, 1914–1930: Maximum discharge, 20,000 second-feet Oct. 4, 1926; maximum stage, 23.0 feet June 5, 1917; minimum discharge, 3.5 second-feet Aug. 22, 1911.

REMARKS.—Records good except those for estimated periods in December, January, February, June, and July, which may be poor.

Daily and monthly discharge, in second-feet, 1929–37

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1.....	52	214	108	2, 180	49	3, 440	2, 680	1, 170	214	250	45	20	
2.....	52	214	108			3, 540	2, 440	960	183		45	20	
3.....	52	214	108			2, 760	2, 600	870	183		35	19	
4.....	52	230	132			2, 200	2, 160	810	183		18	18	
5.....	56	168	102			1, 640	1, 820	720	198		22	17	
6.....	56	154	102	5, 210	74	1, 470	1, 640	665	183	250	26	22	
7.....	52	140	102	5, 350		2, 000	1, 470	615	183		26	22	
8.....	52	134	140	6, 460		2, 600	1, 330	590	190		18	22	
9.....	52	134	264	6, 660		190	2, 240	1, 330	590		154	26	20
10.....	56	190	282	6, 990		140	1, 750	1, 020	590		198	25	18
11.....	102	380	230	7, 100	134	1, 260	900	515	127	270	25	16	
12.....	198	515	247	7, 100	127	1, 260	840	400	154		25	16	
13.....	198	515	540	10, 600	127	1, 200	780	420	114		25	18	
14.....	198	515	1, 860	10, 600	120	1, 170	750	420	90		27	21	
15.....	198	340	2, 240	9, 980	406	870	720	420	90		29	154	
16.....	114	214	3, 000	8, 600		960	690	320	270	69	30	176	
17.....	90	190	3, 540	7, 100		960	990	320		69	30	154	
18.....	79	176	1, 310	5, 930		960	1, 020	380		60	31	84	
19.....	74	161		5, 850		930	1, 230	380		60	23	37	
20.....	79	140		5, 700		930	1, 170	264		60	22	24	
21.....	79	140		4, 590	5, 280	900	1, 110	264	270	60	22	22	
22.....	176	134		3, 440		810	1, 260	300		56	22	21	
23.....	183	134		3, 040		810	1, 260	320		56	22	21	
24.....	176	127		2, 240		750	1, 260	320		48	22	48	
25.....	127	127		1, 890		3, 740	780	1, 260	300	48	22	21	
26.....	127	127	653	3, 590	3, 590	810	1, 260	320	270	48	20	21	
27.....	102	120			3, 540	810	1, 230	320		48	18	18	
28.....	102	120			3, 490	930	1, 260	262		48	18	17	
29.....	127	120			2, 200	1, 440	1, 230	264		600	48	19	16
30.....	214	114				2, 200	1, 230	264		500	48	19	16
31.....	214					2, 320		247			45	20	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	214	52	113	0. 057	0. 07
November.....	515	114	207	. 105	. 12
December.....		102	1, 010	. 510	. 59
January.....	10, 600		4, 490	2. 27	2. 62
February.....	5, 280		981	. 495	. 58
March.....	3, 540	750	1, 510	. 763	. 88
April.....	2, 680	690	1, 330	. 672	. 75
May.....	1, 170	247	472	. 258	. 27
June.....			249	. 126	. 14
July.....		45	149	. 075	. 09
August.....	45	18	25. 1	. 013	. 01
September.....	176	16	37. 3	. 019	. 02
The year.....	10, 600	16	885	. 447	6. 08

• Estimated.

BIG MUDDY RIVER AT PLUMFIELD, ILL.

LOCATION.—Chain gage in W. $\frac{1}{2}$ sec. 20, T. 7 S., R. 2 E., at highway bridge at Plumfield, $1\frac{1}{2}$ miles below mouth of Middle Fork.

DRAINAGE AREA.—753 square miles.

RECORDS AVAILABLE.—August, 1914, to September, 1930. From June, 1908, to December, 1912, at Chicago, Burlington & Quincy Railroad bridge 2 miles upstream.

EXTREMES.—Maximum discharge during year, 11,800 second-feet Jan. 16 (gage height, 26.49 feet); minimum, 0.3 second-foot Aug. 12, 13 (gage height, 0.73 foot).

1914-1930: Maximum discharge, 16,300 second-feet Feb. 1, 1916 (gage height, 30.2 feet); no flow Aug. 18-26, 1914.

REMARKS.—Records good. Discharge estimated Nov. 17, Dec. 24. Jan. 26, Sept. 14, 29.

Daily and monthly discharge, in second-feet, 1928-1930

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928-29												
1.....	4.6	45	1,070	159	4,220	4,430	524	89	142	33	14	5.3
2.....	4.4	324	1,220	126	2,760	4,360	839	459	446	27	11	3.6
3.....	6.1	811	1,240	118	1,620	3,800	955	783	312	19	7.5	3.3
4.....	7.0	1,050	1,050	103	1,100	3,380	*694	1,140	126	17	6.5	3.3
5.....	10	1,140	*1,010	*174	671	2,890	433	1,250	65	14	5.9	7.6
6.....	118	1,080	970	245	289	2,820	235	1,500	47	71	22	7.2
7.....	126	*738	925	576	126	2,820	168	1,730	54	459	21	56
8.....	16	396	657	755	103	2,580	134	2,460	312	537	12	43
9.....	8.4	*250	336	699	118	1,990	811	3,520	783	727	8.8	31
10.....	7.8	103	177	498	126	1,430	1,390	4,150	881	783	7.6	17
11.....	7.3	89	150	485	*89	853	1,890	3,940	895	420	7.2	11
12.....	8.1	68	126	537	*71	408	2,820	3,240	940	110	6.2	12
13.....	7.2	52	*598	485	*59	511	3,590	3,240	1,390	49	6.5	15
14.....	7.2	47	1,070	312	*59	970	3,730	3,520	1,840	35	6.2	15
15.....	23	47	1,270	215	*54	1,200	2,460	5,620	3,870	37	5.8	12
16.....	168	459	1,440	168	*65	1,370	2,220	7,600	6,060	71	5.6	13
17.....	881	825	2,040	*476	150	1,460	1,890	8,000	6,420	312	3.6	14
18.....	1,120	1,240	2,820	783	267	1,480	1,670	7,700	5,970	245	3.8	13
19.....	1,320	1,370	3,800	1,700	336	1,440	1,480	7,050	4,980	150	3.8	12
20.....	1,390	1,440	4,360	3,520	420	*1,200	1,100	6,240	3,800	56	3.6	10
21.....	1,200	1,480	4,430	5,140	372	970	589	5,300	2,400	33	3.8	9.0
22.....	741	1,410	4,080	5,540	245	629	267	4,580	1,390	21	3.8	8.0
23.....	267	986	3,520	5,620	159	576	150	4,080	797	17	3.6	8.0
24.....	134	472	2,580	5,790	159	537	134	3,450	459	14	7.8	7.3
25.....	77	215	1,570	6,600	498	420	126	2,640	267	12	9.4	7.0
26.....	59	134	1,000	7,600	1,570	300	126	1,620	267	9.8	10	8.0
27.....	49	96	537	8,100	2,640	289	177	1,080	278	8.0	54	7.0
28.....	43	77	267	7,800	4,080	396	256	699	168	7.5	22	6.1
29.....	47	110	215	7,410	-----	384	186	446	83	6.7	12	4.8
30.....	68	769	225	6,510	-----	472	118	360	47	6.1	9.2	5.2
31.....	56	-----	195	5,380	-----	433	-----	205	-----	12	6.8	-----

* Estimated.

*Daily and monthly discharge, in second-feet, of Big Muddy River at Plumfield,
Ill.—Continued*

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929-30												
1.....	235	18	7.6	1,370	126	3,660	278	29	8.0	6.7	0.8	3.8
2.....	472	77	7.6	1,590	142	3,590	186	27	7.0	5.8	.8	3.3
3.....	142	142	7.5	1,700	289	2,820	150	24	6.4	5.5	1.0	3.3
4.....	71	142	7.0	2,460	1,120	1,990	150	22	5.8	5.8	1.0	3.0
5.....	45	89	7.0	3,170	1,500	1,300	186	19	6.1	5.5	1.0	3.0
6.....	29	49	8.0	3,310	2,220	741	168	19	6.1	4.0	1.2	2.5
7.....	21	33	11	3,870	2,700	485	134	18	5.8	3.1	1.2	4.4
8.....	16	22	21	4,290	2,760	550	89	16	5.5	2.6	1.2	16
9.....	12	23	68	6,330	2,340	671	68	15	5.5	2.5	1.0	14
10.....	11	19	96	7,800	1,700	602	56	14	6.1	5.3	1.0	9.4
11.....	9.4	19	89	8,700	1,250	384	47	15	4.6	3.8	1.2	7.3
12.....	8.3	19	68	8,700	867	245	43	16	4.3	2.7	.3	7.0
13.....	7.5	19	110	9,000	1,270	177	37	16	3.4	2.2	.3	7.0
14.....	7.0	21	550	9,990	1,440	142	33	12	3.1	2.0	1.2	*12
15.....	6.4	22	755	11,300	1,890	110	31	15	4.0	1.7	1.5	142
16.....	4.8	24	986	11,800	2,460	96	31	16	4.6	1.2	1.7	433
17.....	3.7	*26	1,270	11,200	2,280	77	33	15	3.4	1.2	1.5	769
18.....	3.4	27	1,520	10,200	1,620	83	77	14	4.0	1.2	1.5	896
19.....	3.4	25	1,940	9,110	1,190	77	312	14	4.3	1.2	1.7	986
20.....	5.8	17	2,700	7,900	811	89	472	12	4.6	.8	245	970
21.....	6.7	18	3,030	6,690	524	77	300	11	4.6	.8	205	589
22.....	6.1	16	2,960	5,220	348	68	142	10	4.8	.8	59	195
23.....	6.7	16	2,640	3,940	267	56	96	13	5.8	1.2	2.7	77
24.....	6.4	12	*1,800	2,520	278	110	77	12	5.5	1.2	15	103
25.....	5.2	12	1,440	1,520	629	384	65	12	7.3	1.2	12	589
26.....	4.8	11	986	*1,070	1,390	629	49	9.8	7.0	1.2	10	867
27.....	4.7	11	925	727	1,670	839	41	9.0	8.0	1.0	8.4	955
28.....	5.8	10	1,120	446	2,760	1,000	35	9.0	19	1.0	7.2	825
29.....	5.9	9.2	1,250	256	-----	986	33	9.0	12	.8	6.2	*480
30.....	5.5	8.0	1,290	177	-----	699	29	8.3	8.0	.8	4.7	110
31.....	5.2	-----	1,410	134	-----	433	-----	8.0	-----	.8	3.8	-----

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1928-29					
October.....	1,390	4.4	257	0.341	0.39
November.....	1,480	45	577	.766	.85
December.....	4,430	126	1,450	1.93	2.22
January.....	8,100	103	2,700	3.59	4.14
February.....	4,220	-----	801	1.06	1.10
March.....	4,430	289	1,510	2.01	2.32
April.....	3,730	118	1,040	1.38	1.54
May.....	8,000	89	3,150	4.18	4.82
June.....	6,420	47	1,520	2.02	2.25
July.....	783	6.1	139	.185	.21
August.....	54	3.6	10.0	.013	.01
September.....	56	3.3	12.5	.017	.02
The year.....	8,100	3.3	1,100	1.46	19.87
1929-30					
October.....	472	3.4	38.0	0.050	0.06
November.....	142	8.0	31.9	.042	.05
December.....	3,030	7.0	938	1.25	1.44
January.....	11,800	134	5,050	6.71	7.74
February.....	2,760	126	1,350	1.79	1.86
March.....	3,660	56	747	.993	1.14
April.....	472	29	115	.153	.17
May.....	29	8.0	14.8	.020	.02
June.....	19	3.1	6.15	.0082	.009
July.....	6.7	.8	2.44	.0032	.004
August.....	245	.3	20.1	.027	.03
September.....	986	2.5	303	.402	4.5
The year.....	11,800	.3	719	.955	12.97

* Estimated.

NOTE.—Records for the year ending Sept. 30, 1929, supersede those published in Water-Supply Paper 685.

BIG MUDDY RIVER AT MURPHYSBORO, ILL.

LOCATION.—Chain gage in SE. $\frac{1}{4}$ sec. 8, T. 9 S., R. 2 W., at South Twentieth Street highway bridge at Murphysboro, one-fourth mile below mouth of Lewis Creek. Zero of gage 331.00 feet above mean sea level.

DRAINAGE AREA.—2,170 square miles.

RECORDS AVAILABLE.—December, 1916, to September, 1930.

EXTREMES.—Maximum stage during year, greater than 36.45 feet Jan. 16-18, when gage was inaccessible; minimum discharge, 1.3 second-feet Aug. 11, 14 (gage height, 2.21 feet).

1916-1930: Maximum discharge not determined; minimum, 1.0 second-foot Aug. 1, 1921.

Maximum stage known, 39.6 feet about Feb. 2, 1916 (discharge, about 28,000 second-feet).

REMARKS.—Records fair. Stage-discharge relation affected by backwater from Mississippi River whenever height on United States Weather Bureau gage at Chester, Ill., exceeds about 10.7 feet; daily discharge not determined for long periods of backwater.

Daily gage height, in feet, 1929-30

Day	Oct.	Nov	Dec.	Jan.	Feb.	Mar.	Apr	May	June	July	Aug.	Sept.
1.....	4.23	3.32	-----	14.29	6.90	22.30	9.34	4.28	3.28	5.07	2.36	2.59
2.....	4.38	6.82	-----	16.84	6.65	23.10	7.44	4.33	3.03	5.07	2.26	2.64
3.....	4.58	7.87	-----	20.36	7.55	22.25	6.84	4.18	2.83	4.92	2.26	2.59
4.....	4.83	6.87	-----	21.46	16.28	21.00	6.19	4.08	2.78	4.92	2.26	2.64
5.....	5.03	5.72	-----	22.20	19.43	20.85	6.09	4.08	2.77	4.87	2.31	2.48
6.....	4.63	5.57	3.37	22.75	21.10	19.07	5.94	4.63	2.77	4.67	2.26	2.43
7.....	4.33	5.42	4.16	25.10	22.35	16.12	5.74	5.18	2.72	4.52	2.26	2.58
8.....	4.13	4.82	4.51	26.20	23.00	13.87	5.34	4.68	2.72	3.92	2.31	2.53
9.....	4.63	4.57	5.21	27.75	22.30	12.62	5.19	4.38	2.67	3.47	2.26	2.53
10.....	3.68	4.57	4.96	29.60	21.35	11.12	4.84	4.18	2.62	3.17	2.26	2.48
11.....	3.63	4.47	4.91	31.60	19.73	10.72	4.74	3.88	2.82	2.97	2.21	2.43
12.....	3.53	4.42	4.86	32.85	18.88	9.84	4.59	4.33	4.27	2.82	2.26	2.43
13.....	3.33	4.47	7.26	34.40	18.83	8.19	4.49	5.63	4.32	2.77	2.26	2.43
14.....	3.23	4.47	9.91	35.65	18.98	7.34	4.39	7.18	3.62	2.92	2.21	2.48
15.....	3.13	4.42	10.74	36.45	19.43	6.89	4.34	7.33	3.22	2.87	2.26	3.68
16.....	3.03	4.47	14.24	-----	18.08	6.54	4.24	7.13	2.82	2.77	2.25	5.02
17.....	2.98	4.42	17.39	-----	17.38	6.09	4.29	7.18	2.77	2.67	2.25	4.67
18.....	2.93	4.32	19.09	-----	16.63	6.19	6.89	7.28	3.77	2.57	2.25	5.92
19.....	2.93	4.22	20.01	36.15	16.03	6.29	7.94	7.23	6.97	2.52	2.25	8.02
20.....	2.98	4.02	20.86	35.15	15.73	6.09	7.84	7.28	9.32	2.46	2.25	8.42
21.....	2.88	3.82	21.26	34.05	13.58	5.94	7.83	7.08	11.05	2.46	2.30	8.27
22.....	3.03	3.87	20.76	32.80	11.58	5.99	7.78	6.73	10.80	2.46	2.30	7.92
23.....	3.02	3.97	19.89	31.85	9.35	5.94	6.83	6.58	10.05	2.46	3.60	6.87
24.....	2.97	3.87	18.59	30.30	8.55	6.39	5.43	6.13	8.27	2.51	3.90	6.47
25.....	3.02	3.72	17.49	30.20	9.00	7.99	4.48	5.48	7.77	2.56	3.60	6.42
26.....	2.97	3.67	16.44	26.30	18.13	10.97	4.43	5.03	6.17	2.46	3.24	6.81
27.....	2.92	3.62	16.24	23.75	19.58	11.37	4.38	4.58	5.17	2.46	3.04	7.21
28.....	2.87	3.52	15.79	19.88	20.90	11.42	4.43	4.28	4.57	2.41	2.84	7.21
29.....	2.92	3.57	16.14	16.08	-----	11.32	4.33	4.23	4.47	2.36	2.74	8.01
30.....	3.02	-----	15.29	13.33	-----	11.37	4.28	4.18	4.77	2.36	2.64	7.46
31.....	3.27	-----	14.74	9.10	-----	11.57	-----	3.78	-----	2.41	2.54	-----

Daily and monthly discharge, in second-feet, of Big Muddy River at Murphysboro, Ill., 1929-30

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Apr.	June	July	Aug.	Sept.
1	104	28	• 34	3,380	655				3.9	12
2	120	606	• 33	4,550	580				1.8	14
3	145	938	• 33	6,400	851				1.8	12
4	180	• 595	• 33	7,000	4,300				1.8	9.6
5	212	• 315	• 31	7,390	5,850		20		2.6	7.4
6										
7	152	• 300	31	7,720	6,780		20		1.8	5.8
8	114	278	93	9,060	7,500		17		1.8	11
9	93	172	132	9,720	7,830	304	17		2.6	9.2
10	152	138	239	10,800		286	15		1.8	9.2
	53	138	196	12,100		220	13		1.8	7.4
11										
12	50	126	187	13,800		206		31	1.3	5.8
13	41	120	180	15,000		193		22	1.8	5.8
14	29	126	750	17,300		180		20	1.8	5.8
15	24	126	1,620	19,100		168		28	1.3	7.4
	18	120	1,900	20,600		156		25	1.8	90
16										
17	14	126	3,340	21,500		150		20	1.7	250
18	12	120	4,850	22,500		156		15	1.7	206
19	11	109	5,700	22,000				11	1.7	420
20	11	98	6,180	20,200				8.8	1.7	975
	12	78	6,680	18,500				6.8	1.7	1,100
21										
22	9.4	61	6,900	16,700				6.8	2.4	1,070
23	14	65	6,620	15,000				6.8	2.4	944
24	14	74	6,120	14,000				6.8	80	655
25	12	65	5,450	12,600				8.5	110	555
	14	53	4,900	12,600				10	80	532
26										
27	12	50	4,350	9,780				6.8	50	630
28	11	46	4,250	8,250				6.8	35	736
29	9.1	40	4,060	6,120				5.2	23	736
30	11	44	4,200	4,200				3.9	18	975
	14	• 40	3,840	2,940				3.9	14	820
31	26		3,560	1,340				5.2	9.6	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	212	9.1	54.6	0.025	0.03
November	938	28	173	.080	.09
December	6,900	31	2,790	1.29	1.49
January	22,500	1,340	12,000	5.53	6.38
February 1-8			4,290	1.98	.59
April 8-17			202	.083	.03
June 4-10			17.4	.0080	.002
July 11-31			12.3	.0057	.005
August	110	1.3	14.9	.0069	.008
September	1,100	5.8	361	.166	.19

• Estimated.

MISCELLANEOUS DISCHARGE MEASUREMENTS

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

Miscellaneous discharge measurements in Hudson Bay and upper Mississippi River drainage basins during the years ending September 30, 1929 and 1930

Date	Stream	Tributary to—	Locality	Gage height	Dis-charge
1930				<i>Feet</i>	<i>Sec.-ft.</i>
May 8	Ottertail River	Red River	Breckenridge, Minn.	-1.40	377
June 17	do.	do.	do.	-1.96	207
July 20	do.	do.	do.	-2.04	170
Aug. 23	do.	do.	do.	-3.43	13.7
Sept. 9	do.	do.	do.	-3.50	12.8
May 12	Hay Creek	Roseau River	In sec. 7, T. 162 N., R. 38 W., near Salol, Minn.	3.44	103
Apr. 9	Middle Fork of Two Rivers.	South Fork of Two Rivers.	About 2 miles above mouth, near Hallock, Minn.		86.5
May 16	do.	do.	do.		113
19	do.	do.	do.		91.6
21	do.	do.	do.		71.8
22	do.	do.	do.		51.1
1929					
Sept. 28	Mississippi River	Gulf of Mexico	Grand Rapids, Minn.		2,260
Oct. 31	do.	do.	do.		2,190
Nov. 7	do.	do.	do.		819
1930					
May 15	do.	do.	do.		366
1929					
Nov. 5	do.	do.	Altkin, Minn.	4.08	2,520
1930					
May 14	do.	do.	do.	8.61	5,240
July 23	do.	do.	do.	2.15	1,780
Sept. 17	do.	do.	do.	3.00	2,140
Apr. 7	do.	do.	Red Wing, Minn.	2.43	9,060
May 20	do.	do.	do.	7.99	32,500
June 10	do.	do.	do.	4.68	14,100
July 26	do.	do.	do.	1.37	6,510
Aug. 24	do.	do.	do.	.55	5,700
Apr. 3	do.	do.	Marquette, Iowa	5.20	22,600
17	do.	do.	do.	4.17	18,300
June 3	do.	do.	do.	7.02	35,400
17	do.	do.	do.	7.61	37,200
July 16	do.	do.	do.	4.08	20,000
Aug. 1	do.	do.	do.	2.30	14,100
19	do.	do.	do.	1.44	10,800
1929					
Aug. 20	Prairie River	Mississippi River	Below Prairie River Power Co.'s plant near Grand Rapids, Minn.		181
21	do.	do.	do.		188
21	do.	do.	do.		254
Sept. 5	do.	do.	do.		177
Oct. 19	do.	do.	do.		272
1930					
July 15	Crow Wing Lake No. 3.	Crow Wing River	7 miles northeast of Hubbard, Minn.	1.40	42.4
28	do.	do.	do.	1.35	54.1
Sept. 11	do.	do.	do.	.70	34.4
Aug. 7	St. Croix River	Mississippi River	Osceola, Wis.	682.75	1,460
Sept. 5	do.	do.	do.	682.45	1,130
1929					
Nov. 9	Lows Creek	Chippewa River	Eau Claire, Wis.	8.00	27.0
1930					
Sept. 19	do.	do.	do.	7.96	20.6
Apr. 12 ^a	Maquoketa River	Mississippi River	Sec. 8, T. 88 N., R. 5 W., near Manchester, Iowa.	3.23	14.5
June 4 ^a	do.	do.	do.	3.32	17.6
Apr. 12 ^a	do.	do.	Sec. 29, T. 87 N., R. 4 W., below Delhi, Iowa.	1.68	14.6
June 4 ^a	do.	do.	do.	1.61	243

^a Measurements furnished by Corps of Engineers, U. S. Army, through Prof. F. A. Nagler, of University of Iowa.

Miscellaneous discharge measurements in Hudson Bay and upper Mississippi River drainage basins during the years ending September 30, 1929 and 1930—Con.

Date	Stream	Tributary to—	Locality	Gage height	Dis-charge
1930				<i>Feet</i>	<i>Sec.-ft.</i>
Apr. 12 ^a	North Fork of Maquoketa River.	Maquoketa River.	Sec. 21, T. 85 N., R. 2 E., near Fulton, Iowa.	1.34	134
May 17 ^a	do.	do.	do.	1.57	164
June 6 ^a	do.	do.	do.	3.36	501
Sept. 3 ^a	do.	do.	do.	1.49	158
17 ^a	do.	do.	do.	1.09	100
27 ^a	do.	do.	do.	2.26	281
1929					
June 5 ^a	Wapsipinicon River.	do.	Sec. 17, T. 85 N., R. 5 W., at Waubeek, Iowa.	2.84	413
Aug. 14 ^a	do.	do.	do.	1.95	112
14 ^a	do.	do.	do.	2.19	132
Sept. 3 ^a	do.	do.	do.	1.49	37
17 ^a	do.	do.	do.	1.47	33.3
26 ^a	do.	do.	do.	1.91	110
Apr. 12 ^a	do.	do.	Sec. 23, T. 83 N., R. 1 W., at Oxford Mills, Iowa.	1.76	373
May 17 ^a	do.	do.	do.	2.60	1,250
June 5 ^a	do.	do.	do.	2.06	850
Aug. 14 ^a	do.	do.	do.	.55	23.8
Sept. 3 ^a	do.	do.	do.	.44	7.78
Mar. 22	Plum Creek.	Spencer Creek	In SE. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 28, T. 55 N., R. 4 W., at bridge or State highway 61, $2\frac{1}{2}$ miles northwest of Frankford, Mo	1.12	1.6
Apr. 14	do.	do.	do.	1.04	.44
July 2	do.	do.	do.	.81	.14
Aug. 12	do.	do.	do.	.71	.03

^a Measurements furnished by Corps of Engineers, U. S. Army, through Prof. F. A. Nagler, of University of Iowa.

^b Estimated.

INDEX

A		Page			Page
Accuracy of data and computed results.....	4-5		Des Moines River at Ottumwa, Iowa.....		111
Acres-foot, definition of.....	2		Des Plaines River at Joliet, Ill.....		120
Afton, Wis., Rock River at.....	105		at Lemont, Ill.....		119
Algonquin, Ill., Fox River at.....	129		Dorset, Minn., Sand Lake outlet near.....		64
Alma, Wis., Mississippi River at.....	57		Durand, Wis., Chippewa River at.....		80
Apple River near Somerset, Wis.....	76		E		
Appropriations, record of.....	1		Elk River, Minn., Mississippi River at.....		54
B			Emerson, Manitoba, Red River at.....		25
Babb, Mont., Lower St. Mary Lake near.....	13		F		
St. Mary Canal near.....	16-17		Fargo, N. Dak., Red River at.....		23
St. Mary River near.....	14		Flambeau River at Babbs Island, near Win-		
Sherburne Lake Reservoir near.....	20		ter, Wis.....		83
Badger, Minn., Badger Creek near.....	49		at Flambeau Reservoir, Wis.....		81
Badger Creek near Badger, Minn.....	49		near Butternut, Wis.....		82
Baring, Mo., Middle Fabius River near.....	116		near Ladysmith, Wis.....		84
Beardstown, Ill., Illinois River at.....	123		Fountain City, Wis., Mississippi River near.....		58
Big Muddy River at Murphysboro, Ill.....	143-144		Fox River at Algonquin, Ill.....		129
at Plumfield, Ill.....	141-142		at Dayton, Ill.....		130
Black River at Neillsville, Wis.....	89		at Wayland, Mo.....		112
Bois des Sioux River near Tenney, Minn.....	26		near Mukwonago, Wis.....		128
Brodhead, Wis., Sugar River near.....	108		Freeport, Ill., Pecatonica River at.....		107
Bronson, Minn., South Fork of Two Rivers			G		
at.....	36		Gays Mills, Wis., Kickapoo River at.....		101
Browning, Mont., St. Mary Canal near.....	18		Genoa, Wis., Mississippi River at.....		62
Bruce, Wis., Chippewa River near.....	78		Grand Forks, N. Dak., Red River at.....		24
Butternut, Wis., Flambeau River near.....	82		Grantsburg, Wis., St. Croix River near.....		72
C			Green Valley, Ill., Mackinaw River near.....		132
Canton, Mo., Wyaconda River near.....	113		H		
Canyon Creek near Many Glacier, Mont.....	22		Hallock, Minn., Two Rivers at.....		37
Caribou, Minn., Roseau River at.....	44		Hay Creek, Minn., discharge measurement		
Roseau River near.....	45		of.....		145
Chebanse, Ill., Iroquois River near.....	127		Houston, Minn., Root River near.....		91
Chippewa River at Bishops Bridge, near			Hunnewell, Mo., Salt River near.....		116
Winter, Wis.....	77		I		
at Chippewa Falls, Wis.....	79		Illinois River at Beardstown, Ill.....		123
at Durand, Wis.....	80		at Morris, Ill.....		121
near Bruce, Wis.....	78		at Peoria, Ill.....		122
Clayton, Iowa, Mississippi River at.....	63		Iowa River at Iowa City, Iowa.....		110
Colfax, Wis., Red Cedar River near.....	86		Iroquois River near Chebanse, Ill.....		127
Computations, results of, accuracy of.....	4-5		J		
Control, definition of.....	2		Joliet, Ill., Des Plaines River at.....		120
Cooperation, record of.....	10		Spring Creek at.....		124
Crooked Creek at Ripley, Ill.....	138		Jump River at Sheldon, Wis.....		85
Crookston, Minn., Red Lake River at.....	33		K		
Crow River at Rockford, Minn.....	67		Kane, Ill., Macoupin Creek near.....		139
Crow Wing Lake No. 3, Minn., discharge			Kankakee River at Custer Park, Ill.....		126
measurements of.....	145		at Momence, Ill.....		125
Culvre River near Troy, Mo.....	118		Kaskaskia River at Vandalia, Ill.....		140
Custer Park, Ill., Kankakee River at.....	126		Kawishiwi River near Winton, Minn.....		52
D			Kickapoo River at Gays Mills, Wis.....		101
Data, accuracy of.....	4-5		Kimball, Alberta, St. Mary River near.....		15
explanation of.....	2-4				
Dayton, Ill., Fox River at.....	130				
De Kalb, Ill., South Branch of Kishwaukee					
River at.....	109				

	Page	N	Page
Kincaid, Ill., South Fork of Sangamon River at.....	137	Namakagon River near Trego, Wis.....	75
Kishwaukee River, South Branch of, at De Kalb, Ill.....	109	Neche, N. Dak., Pembina River at.....	41
Knowlton, Wis., Wisconsin River at.....	94	Neillsville, Wis., Black River at.....	89
Kratka, Minn., Red Lake River at.....	31	Nekoosa, Wis., Wisconsin River near.....	95
L		New London, Mo., Salt River near.....	117
La Crosse, Wis., Mississippi River at.....	61	North Fabius River at Monticello, Mo.....	114
La Crosse River near West Salem, Wis.....	90	at Taylor, Mo.....	115
Ladysmith, Wis., Flambeau River near.....	84	O	
Lamoille, Minn., Mississippi River at.....	60	Oakford, Ill., Sangamon River near.....	136
Lancaster, Minn., North Fork of Two Rivers near.....	38	Ottertail River, Minn., discharge measurements of.....	145
State ditch No. 85 near.....	39	Ottumwa, Iowa, Des Moines River at.....	111
Lemont, Ill., Des Plaines River at.....	119	P	
Lower St. Mary Lake near Babb, Mont.....	13	Pecatonica River at Freeport, Ill.....	107
Lows Creek, Wis., discharge measurements of.....	145	Pelan, Minn., South Fork of Two Rivers at.....	35
Lyndon, Ill., Rock River at.....	106	Pembina River at Neche, N. Dak.....	41
M		near Manitou, Manitoba.....	40
Mackinaw River near Green Valley, Ill.....	132	Peoria, Ill., Illinois River at.....	122
Macoupin Creek near Kane, Ill.....	139	Pine Creek near Pine Creek, Minn.....	48
Malung, Minn., Roseau River at.....	42	Platte River at Royalton, Minn.....	65
South Fork of Roseau River near.....	46	Plum Creek, Mo., discharge measurements of.....	146
Manitou, Manitoba, Pembina River near.....	40	Plumfield, Ill., Big Muddy River at.....	141-142
Mankato, Minn., Minnesota River at.....	70	Prairie River, Minn., discharge measurements of.....	145
Many Glacier, Mont., Canyon Creek near.....	22	Prairie River near Merrill, Wis.....	98
Swiftcurrent Creek at.....	19	Prescott, Wis., Mississippi River at.....	56
Maquoketa River below North Fork of Maquoketa River, near Maquoketa, Iowa.....	102-104	Publications, information concerning.....	5-9
discharge measurements of.....	145	Obtaining or consulting.....	6
North Fork of, discharge measurements of.....	146	on stream flow, lists of.....	7, 9
Menomonie, Wis., Red Cedar River at.....	87	R	
Merrill, Wis., Prairie River near.....	98	Rainy River Basin, Minn., gaging-station record in.....	52
Wisconsin River at.....	93	Red Cedar River at Menomonie, Wis.....	87
Middle Fabius River near Baring, Mo.....	116	near Colfax, Wis.....	86
Minnesota River at Mankato, Minn.....	70	Red Lake at Redby, Minn.....	30
near Montevideo, Minn.....	69	at Waskish, Minn.....	29
Minot, N. Dak., Souris (Mouse) River at.....	50	Red Lake River at Crookston, Minn.....	33
Mississippi River at Alma, Wis.....	57	at Kratka, Minn.....	31
at Clayton, Iowa.....	63	at Thief River Falls, Minn.....	32
at Elk River, Minn.....	54	Red River at Emerson, Manitoba.....	25
at Genoa, Wis.....	62	at Fargo, N. Dak.....	23
at La Crosse, Wis.....	61	at Grand Forks, N. Dak.....	24
at Lamoille, Minn.....	60	Red River Basin, N. Dak.-Minn.-Manitoba, gaging-station records in.....	23-51
at Prescott, Wis.....	56	Redby, Minn., Red Lake at.....	30
at St. Paul, Minn.....	55	Rhineland, Wis., Wisconsin River near.....	92
at Winona, Minn.....	59	Rib River at Rib Falls, Wis.....	99
discharge measurements of.....	145	Ripley, Ill., Crooked Creek at.....	138
near Fountain City, Wis.....	58	Riverton, Ill., Sangamon River at.....	135
near Royalton, Minn.....	53	Rock River at Afton, Wis.....	105
Momence, Ill., Kankakee River at.....	125	at Lyndon, Ill.....	106
Montevideo, Minn., Minnesota River near.....	69	Rockford, Minn., Crow River at.....	67
Monticello, Ill., Sangamon River at.....	134	Root River near Houston, Minn.....	91
Monticello, Mo., North Fabius River at.....	114	Roseau River at Caribou, Minn.....	44
Morris, Ill., Illinois River at.....	121	at Malung, Minn.....	42
Mud Creek near Sprague, Manitoba.....	47	at Ross, Minn.....	43
Mukwonago, Wis., Fox River near.....	128	below Cut-off ditch, near Caribou, Minn.....	45
Murphysboro, Ill., Big Muddy River at.....	143-144	South Fork of, near Malung, Minn.....	46
Muscoda, Wis., Wisconsin River at.....	96	Ross, Minn., Roseau River at.....	43

	Page	T	Page
Royalton, Minn., Mississippi River near.....	53	Taylor, Mo., North Fabius River at.....	115
Platte River at.....	65	Tenney, Minn., Bois des Sioux River near...	26
Rum River near St. Francis, Minn.....	68	Terms, definition of.....	2
Run-off in inches, definition of.....	2	Thief River near Thief River Falls, Minn....	34
Rush City, Minn., St. Croix River near.....	73	Thief River Falls, Minn., Red Lake River at...	32
S		Tomahawk River at Tomahawk, Wis.....	97
St. Cloud, Minn., Sauk River near.....	66	Trego, Wis., Namakagon River near.....	75
St. Croix Falls, Wis., St. Croix River near....	74	Troy, Mo., Cuivre River near.....	118
St. Croix River at Swiss, Wis.....	71	Twin Valley, Minn., Wild Rice River at.....	29
discharge measurements of.....	145	Two Rivers at Hallock, Minn.....	37
near Grantsburg, Wis.....	72	Middle Fork of, Minn., discharge meas- urements of.....	145
near Rush City, Minn.....	73	North Fork of, near Lancaster, Minn.....	38
near St. Croix Falls, Wis.....	74	South Fork of, at Bronson, Minn.....	36
St. Francis, Minn., Rum River near.....	68	at Pelan, Minn.....	35
St. Mary Canal at Hudson Bay divide, near Browning, Mont.....	18	U	
at intake, near Babb, Mont.....	16	Upper Mississippi River Basin, Minn.- Wis.-Iowa-Ill.-Mo., gaging station records in.....	53-143
at St. Mary crossing, near Babb, Mont....	17	Upper St. Mary Lake at St. Mary Chalet, Mont.....	12
St. Mary Chalet, Mont., Upper St. Mary Lake at.....	12	V	
St. Mary River near Babb, Mont.....	14	Vandalia, Ill., Kaskaskia River at.....	140
near Kimball, Alberta.....	15	Vermilion River at Streator, Ill.....	131
St. Mary River Basin, Mont.-Alberta, gag- ing-station records in.....	12-22	W	
St. Paul, Minn., Mississippi River at.....	55	Wapsipinicon River, Iowa, discharge meas- urements of.....	146
Salt River near Hunnewell, Mo.....	116	Waskish, Minn., Red Lake at.....	29
near New London, Mo.....	117	Wayland, Mo., Fox River at.....	112
Sand Lake outlet near Dorset, Minn.....	64	West Fargo, N. Dak., Sheyenne River at....	28
Sangamon River at Monticello, Ill.....	134	West Salem, Wis., La Crosse River near....	90
at Riverton, Ill.....	135	Westhope, N. Dak., Souris (Mouse) River near.....	51
near Oakford, Ill.....	136	Wild Rice River at Twin Valley, Minn.....	29
South Fork of, at Kincaid, Ill.....	137	Winona, Minn., Mississippi River at.....	59
Sauk River near St. Cloud, Minn.....	66	Winter, Wis., Chippewa River near.....	77
Second-feet per square mile, definition of....	2	Flambeau River near.....	83
Second-foot, definition of.....	2	Winton, Minn., Kawishiwi River near.....	52
Seville, Ill., Spoon River at.....	133	Wisconsin River at Knowlton, Wis.....	94
Sheldon, Wis., Jump River at.....	85	at Merrill, Wis.....	93
Sherburne, Mont., Swiftcurrent Creek at....	21	at Muscoda, Wis.....	96
Sherburne Lake Reservoir near Babb, Mont....	20	at Whirlpool Rapids, near Ranelander, Wis.....	92
Sheyenne River at Sheyenne, N. Dak.....	27	near Nekoosa, Wis.....	95
at West Fargo, N. Dak.....	28	Work, authorization of.....	1
Somerset, Wis., Apple River near.....	76	division of.....	10-11
Souris (Mouse) River at Minot, N. Dak.....	50	scope of.....	1-2
near Westhope, N. Dak.....	51	Wyaconda River near Canton, Mo.....	113
Spoon River at Seville, Ill.....	133	Y	
Sprague, Manitoba, Mud Creek near.....	47	Yellow River at Sprague, Wis.....	100
Sprague, Wis., Yellow River at.....	100	Z	
Spring Creek at Joliet, Ill.....	124	Zumbro River at Zumbro Falls, Minn.....	88
Stage-discharge relation, definition of.....	2		
State ditch No. 85 near Lancaster, Minn....	39		
Streator, Ill., Vermillion River at.....	131		
Sugar River near Brodhead, Wis.....	108		
Swiftcurrent Creek at Many Glacier, Mont....	19		
at Sherburne, Mont.....	21		
Swiss, Wis., St. Croix River at.....	71		