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SURFACE WATER SUPPLY *of the* UNITED STATES

1940

PART 5

HUDSON BAY AND UPPER MISSISSIPPI RIVER BASINS

Prepared under the direction of

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In cooperation with the States of
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ILLUSTRATION

Plate 1. Gaging-station structures: A, Mississippi River at Le Claire, Iowa; B, Rock River at Afton, Wis.; C, Minnesota River near Carver, Minn. Page 2

SURFACE WATER SUPPLY OF HUDSON BAY AND UPPER MISSISSIPPI RIVER BASINS, 1940

SCOPE OF WORK

This volume is one of a series of 14 reports presenting results of measurements of stage and flow made on streams, lakes, and reservoirs in the United States during the water year ending September 30, 1940. The work was begun in 1888 in connection with special studies relating to irrigation. Measurements of the flow of streams and of the stage and contents of lakes and reservoirs have been made at about 8,800 gaging stations in the United States and also at many gaging stations in Alaska and Hawaii. In July 1940, 4,760 gaging stations were being maintained by the Geological Survey and cooperating organizations. Miscellaneous discharge measurements were made at many other points.

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

DEFINITION OF TERMS

The units in which stream-flow data are presented in this report and other terms used herein are defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

"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 draining from it in a given period were uniformly distributed on its surface. It is used for comparing run-off with rainfall, which is usually expressed in inches.

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

"Second-foot-day" is the volume of water represented by a flow of 1 second-foot for 24 hours. It is equivalent to 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons and represents a run-off of 0.0372 inch from one square mile.

"Stage-discharge relation" is an abbreviation for the term "relation of gage height to discharge."

"Control" is a term used to designate a feature below the gage that defines the stage-discharge relation at the gage. This feature may be a natural section, a reach of the channel, or an artificial structure.

EXPLANATION OF DATA

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

measurements in determining the daily flow. The records of stage are obtained either from direct readings on a nonrecording 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. Typical structures in use at gaging stations are shown on plate 1.

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

For most of the gaging stations in the area covered by this report the data presented 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. Skeleton rating tables are published except for those stations whose daily discharge for the greater part of the year was determined by the shifting-control method, the slope method, or other special methods.

The description of the station gives the type of gage, its latitude and longitude determined from the best available maps, and information in regard to diversions that decrease the flow at the gage, artificial regulation from pondage or storage, and the accuracy of the records. Under "Average discharge" is given the average discharge for the number of years indicated. It is given only for stations for which there are 10 or more complete years of record. Under "Extremes" are given the maximum discharge and gage height; the minimum discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height (unless it is of no importance). Unless otherwise qualified, the maximum discharge corresponds to the crest stage, obtained by use of a water-stage recorder or a nonrecording gage read at the time of the crest. Likewise the minimum discharge represents the lowest stage, unless otherwise qualified. The peak discharge for the year with the time of its occurrence is given below the table of monthly discharge for some stations. Selected lower peaks are also given if the peak discharge exceeded the mean discharge for that day by more than 10 percent. This supplementary information is generally not given for stations having drainage areas of less than 10 square miles or more than 10,000 square miles.

The table of daily discharge gives, for stations equipped with nonrecording gages, the discharge in second-feet corresponding to once-daily readings of the gage or the mean of twice-daily readings. For flashy floods the mean daily discharge is determined from gage-height graphs based on gage readings made once or twice daily or oftener, as stated in the station description. For stations equipped with water-stage recorders, except those on streams subject to sudden or rapid fluctuation, the table gives the discharge corresponding to the mean daily gage height. For stations subject to such fluctuation the mean daily gage height may not indicate the true mean daily discharge, which must be obtained by averaging the discharge for intervals of the day or by using the discharge integrator, an instrument for obtaining the mean daily discharge from a continuous gage-height graph and containing as an essential element the rating curve of the station.

At some gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources, which necessitates the use of the slope or fall in a reach of the stream as a factor in the determination of discharge. Information requisite for determining the slope or fall is obtained by means of an auxiliary

A. MISSISSIPPI RIVER AT LE CLAIRE, IOWA.

B. ROCK RIVER AT AFTON, WIS.

C. MINNESOTA RIVER NEAR CARVER, MINN.

GAGING-STATION STRUCTURES.

gage set at some distance from the base gage. The auxiliary gage, if one is used, is described under "Location." At some stations the stage-discharge relation is affected by changing stage, and for them the rate of change of stage is used as a factor in the determination of discharge.

At most gaging stations in the northern part of the United States and at some in the mountainous regions of other parts the stage-discharge relation is affected by ice during the winter, which makes it impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of occasional winter discharge measurements and gage heights, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for stations in the same or nearby basins. The days included in the periods of ice effect and the days during the winter period on which discharge measurements were made are indicated in the table by symbols referring to footnotes.

In the table of monthly discharge the column headed "Second-foot-days" gives the sum for each month of the figures for that month given in the table of daily discharge. The column headed "Maximum" gives the maximum daily discharge and not the instantaneous discharge when the water surface was at crest stage. Likewise, in the column headed "Minimum" the quantity given is the minimum daily discharge. The column headed "Mean" gives the average flow in cubic feet per second during the month.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

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

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

Yield at some stations as indicated by monthly means may vary widely from natural yield, owing to diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or other factors. For such stations figures of "second-feet per square mile" and "run-off in inches" are not published unless storage or diversion records are included indicating the extent of the regulation or diversion or unless satisfactory adjustments can be made for changes in contents of reservoirs or for other changes incident to use and control. Figures of second-feet per square mile and run-off in inches are also omitted if the drainage area includes large noncontributing areas or if the average annual rainfall over the drainage area is less than 20 inches.

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

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 obeervations in each succeeding year may be expected

to throw new light on data previously published, and that greater degree of refinement in computations and records may be warranted with the increase in data and the use of improved equipment.

PUBLICATIONS

The results of stream-flow measurements are now published annually in 14 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.
11. Pacific slope basins in California.
12. Pacific slope basins in Washington and upper Columbia River Basin.
13. Snake River Basin.
14. Pacific slope basins in Oregon and lower Columbia River Basin.

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

East of the Mississippi River:
Albany, N. Y., 526 Federal Building.
Asheville, N. C., 220 Post Office Building.
Atlanta, Ga., 5 North Rhodes Center.
Augusta, Maine, Statehouse.
Baton Rouge, La., 124 Geology Building., Louisiana State University.
Boston, Mass., 945 Post Office Building.
Charleston, W. Va., 408 Union Building.
Charlottesville, Va., House G, Dawson Row, University of Virginia.
Chattanooga, Tenn., 442 Post Office Building.
College Park, Md., Engineering Building, University of Maryland.
Columbia, S. C., 119 United States Courthouse.
Columbus, Ohio, 404 Engineering Experiment Station, Ohio State University.
Harrisburg, Pa., 490 Education Building.
Hartford, Conn., 225 Capitol Building, 410 Asylum Street.
Indianapolis, Ind., 511 Board of Trade Building.
Jackson, Miss., 208 Millsaps Building.
Louisville, Ky., 652 Federal Building.
Madison, Wis., 666 State Office Building.
Montgomery, Ala., 507 Post Office Building.
Ocala, Fla., 302 Post Office Building.
St. Paul, Minn., 808 New Post Office Building.
Trenton, N. J., 228 Federal Building.
Urbana, Ill., 14 Post Office Annex, Elm Street.

West of the Mississippi River:
Austin, Tex., 302 West 15th Street.
Boise, Idaho, 429 Federal Building.
Denver, Colo., 230 Customhouse.
Fort Smith, Ark., 6 Post Office Building.
Helena, Mont., 408 Federal Building.
Honolulu, Hawaii, 225 Federal Building.
Idaho Falls, Idaho, 204 Federal Building.
Iowa City, Iowa, 508 Hydraulic Laboratory, University of Iowa.
Lincoln, Nebr., 1404 Statehouse.
Los Angeles, Calif., G-31 United States Post Office and Courthouse.
Oklahoma City, Okla., 303 Capitol Office Building.
Portland, Oreg., 606 Post Office Building.

Rolla, Mo., Missouri Geological Survey Building, Missouri School of Mines and Metallurgy.
St. Louis, Mo., 926 New Federal Building.
Salt Lake City, Utah, 303 Federal Building.
San Francisco, Calif., 625 Market Street Building.
Santa Fe, N. Mex., 204 United States Courthouse.
Tacoma, Wash., 1100 Washington Building.
Topeka, Kans., 305 Federal Building.
Tucson, Ariz., 210 Post Office Building.

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

Records of flow of streams in the United States have been published in the reports tabulated as follows:

Stream-flow data in reports of the 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	....do.....	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871-93)..	1888 to Dec. 31, 1893.
B 131.....	Descriptions, measurements, gage heights, and ratings.	1893-94.
16th A, pt. 2	Descriptive information only.	
B 140.....	Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years).	1895.
W 11.....	Gage heights (also gage heights for earlier years).	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895-96.
W 15.....	Descriptions, measurements, and gage heights of streams east of the Mississippi River and Missouri River and tributaries above Kansas River.	1897.
W 16.....	Descriptions, measurements, and gage heights of streams west of the Mississippi River except Missouri River and tributaries above Kansas River.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	1897.
W 27.....	Measurements, ratings, and gage heights of streams east of the Mississippi River and Missouri River and tributaries.	
W 28.....	Measurements, ratings, and gage heights of streams west of the Mississippi River except Missouri River and tributaries.	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.

Note.- Reports containing records for years after 1901 are given in table on page 6.

The table on the following page gives, by years and drainage basins, the numbers of the papers on surface water supply published from 1899 to 1940. The data for any particular station will, in general, be found in the reports covering the years during which the station was maintained. For example, the data for 1910 to 1920 for any station in the area covered by part 3 are published in Water-Supply Papers 283, 303, 323, 353, 403, 433, 453, 473, 503, which contain records for the Ohio River Basin for those years.

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, the streams and points of measurement listed appearing in the same relative order as the streams and gaging stations in the body of the report. An index of the records obtained prior to 1904 has been published in Water-Supply Paper 119.

Numbers of water-supply papers containing results of stream measurements, 1899-1940

(For basins included see p. 4)

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1899 a...	35	b35, 36	36	36	36	c36, 37	37	37	d37, 38	38, e39	38, f39	38	38	38
1900 g...	47, h48	48	48, 149	49	49	49, j50	50	50	50	51	51	51	51	51
1901.....	65, 75	65, 75	65, 75	65, 75	k65, 66, 75	66, 75	k65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902.....	82	b82, 83	83	m82, 83	k83, 85	84	k83, 84	84	85	85	85	85	85	85
1903.....	97	b97, 98	98	97	k98, 99, n100	99	k98, 99	99	100	100	100	100	100	100
1904.....	o124, p125, q126	q126, 127	128	129	k128, 130	130, r131	k128, 131	132	133	133, s134	134	135	135	135
1905.....	o165, p166, q167	q167, 168	169	170	171	172	k169, 173	174	175, t177	176, s177	177	178	178	u177, 178
1906.....	o201, p202, q203	q203, 204	205	206	207	208	k205, 209	210	211, t213	212, s213	213	214	214	214
1907-8...	241	242	243	244	245	246	247	248	249	250, s251	251	252	252	252
1909.....	261	262	263	264	265	266	267	268	269	270, s271	271	272	272	272
1910.....	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911.....	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912.....	321	322	323	324	325	326	327	328	329	330	331	332-A	332-B	332-C
1913.....	351	352	353	354	355	356	357	358	359	360	361	362-A	362-B	362-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
1931.....	711	712	713	714	715	716	717	718	719	720	721	722	723	724
1932.....	726	727	728	729	730	731	732	733	734	735	736	737	738	739
1933.....	741	742	743	744	745	746	747	748	749	750	751	752	753	754
1934.....	756	757	758	759	760	761	762	763	764	765	766	767	768	769
1935.....	781	782	783	784	785	786	787	788	789	790	791	792	793	794
1936.....	801	802	803	804	805	806	807	808	809	810	811	812	813	814
1937.....	821	822	823	824	825	826	827	828	829	830	831	832	833	834
1938.....	851	852	853	854	855	856	857	858	859	860	861	862	863	864
1939.....	871	872	873	874	875	876	877	878	879	880	881	882	883	884
1940.....	891	892	893	894	895	896	897	898	899	900	901	902	903	904

a Rating tables and index to Water-Supply Papers 35-39 contained in Water-Supply Paper 39. Tables of monthly discharge for 1899 in 21st Annual Report, part 4.
b James River only.
c Gallatin River.
d Green and Gunnison Rivers and Colorado River above Gunnison River.
e Mojave River only.
f Kings and Kern Rivers and south Pacific slope basins.
g Rating tables and index to Water-Supply Papers 47-52 and data on precipitation, wells, and irrigation in California and Utah contained in Water-Supply Paper 52. Monthly discharge for 1900 in 22d Annual Report, part 4.
h Wissahickon and Schuylkill Rivers to James River.
i Scioto River.
j Loup, Platte, and Elkhorn Rivers and tributaries below Platte River.
k 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 The Great Basin in California, except Truckee and Carson River Basins.
t Below mouth of Gila River.
u Rogue, Umpqua, and Siletz Rivers only.

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From time to time reports have been published that are compilations of records for various areas, usually a single State or drainage basin. These reports contain records previously published (some of which have been revised), as well as some records not contained in the annual series of water-supply papers. The following table gives the numbers and titles of these reports, arranged in alphabetical order by States and drainage basins.

Reports containing compilation of discharge by States and drainage basins

Water-Supply Paper	Year ending	State or drainage basin and title
		STATE
107	1903	Alabama, Water powers of, with an appendix on stream measurements in Mississippi.
298	1912	California, Water resources of, part 1, Stream measurements in Sacramento River Basin.
299	1912	California, Water resources of, part 2, Stream measurements in San Joaquin River Basin.
300	1912	California, Water resources of, part 3, Stream measurements in the Great Basin and Pacific coast river basins.
447	1918	California, southern, Surface water supply of Pacific slope of.
597-E	1927	California, Surface water supply of Sacramento River Basin.
636-D	1927	California, Surface water supply of San Joaquin River Basin.
636-E	1927	California, southern, Surface water supply of Pacific slope basins in.
637-A	1927	California, Surface water supply of minor San Francisco Bay, northern Pacific, and Great basins in.
74	1900	Colorado, Water resources of.
197	1905	Georgia, Water resources of.
415	1915	Massachusetts, Surface waters of.
230	1906	Nebraska, Surface water supply of.
370	1910	Oregon, Surface water supply of.
850	1937	Texas, Summary of records of surface waters of.
424	1916	Vermont, Surface waters of.
492	1919	Washington, Summary of hydrometric data in.
870	1935	Washington, Summary of records of surface waters of.
469	1921	Wyoming, Surface waters of, and their utilization.
		DRAINAGE BASIN
395	1914	Colorado River (Ariz., Colo., N. Mex., Utah, Wyo.) and its utilization.
617	1927	Colorado River, upper (Colo., Utah), and its utilization.
517	1920	Great Salt Lake Basin, Water powers of.
618	1926	Green River (Utah, Wyo.) and its utilization.
198	1906	Kennebec River Basin (Maine), Water resources of.
491	1917	Milk River. (See St. Mary and Milk Rivers.)
536	1920	New-Kanawha River Basin (N. C., Va., W. Va.), Surface water supply of.
279	1909	Penobscot River Basin (Maine), Water resources of.
192	1906	Potomac River Basin (D. C., Md., W. Va.)
358	1913	Rio Grande Basin (Colo., N. Mex., Tex.), Water resources of, 1888-1913.
491	1917	St. Mary and Milk Rivers (Mont., Canada), Water supply of.
109	1904	Susquehanna River Basin (Pa., Md.), Hydrography of.

Records of discharge have been published also in State reports. Some of these are not contained in the publications of the Geological Survey or are revisions of records previously published in its water-supply papers. The following table contains a list of these reports.

State reports containing compilation of records of discharge

State	Year ending	Report	Issued by
Alabama.....	1915	Bull. 17, Water powers of Alabama....	Geological Survey of Alabama.
Arkansas....	1928	Stream-gaging report 1.....	Arkansas Geological Survey.
Connecticut:	1926	Bull. 44, Water resources of Connecticut.	State Geological and Natural History Survey.
Do.....	1933[a]	5th biennial report.....	Connecticut State Water Commission.
Georgia.....	1907	Bull. 16, Water powers of Georgia....	Geological Survey of Georgia.
Do.....	1920[b]	Bull. 38, Water powers of Georgia....	Do.

a Includes records of monthly discharge in second-feet per square mile for years 1912-33.
b Includes records for years 1907-18.

State reports containing compilation of records of discharge--Continued

State	Year ending	Report	Issued by
Illinois....	1911	Water resources of Illinois.....	Rivers and Lakes Commission.
Do.....	1934	Stream-flow data of Illinois.....	Division of Waterways.
Indiana.....	1927	Pub. 72, Surface water supply of Indiana.	Department of Conservation.
Do.....	1930[c]	Pub. 112, Surface water supply of Indiana.	Do.
Iowa.... ...	1932	Stream-flow records of Iowa.....	Iowa State Planning Board.
Kansas.....	1919	Surface waters of Kansas.....	Kansas Water Commission.
Do.....	1924[d]	....do.....	Do.
Do.....	1928[e]	....do.....	Kansas State Board of Agriculture.
Do.....	1935[f]	Stream-flow data of Kansas.....	Do.
Do.....	1939[g]	....do.....	Do.
Kentucky....	1920	Surface waters of Kentucky.....	Kentucky Geological Survey.
Minnesota...	1912	Water-resources investigation of Minnesota.	State Drainage Commission.
Missouri....	1926	Vol. 20, 2d series, Water Resources of Missouri.	Missouri Geological Survey and Water Resources.
Do.....	1939[h]	Vol. 26, 2d series, Surface waters of Missouri.	Do.
Nebraska....	1914	1st hydrographic report.....	Bureau of Water Power, Irrigation, and Drainage.
Do.....	1928[i]	2d hydrographic report.....	Do.
New Jersey..	1928	Bull. 33, Surface water supply of New Jersey.	Department of Conservation and Development.
Do.....	1934[j]	Special Report 5, Surface Water Supply of New Jersey.	State Water Policy Commission.
New Mexico..	1925	Surface water supply of New Mexico...	Office of the State Engineer.
North Carolina.	1923	Bull. 34, Discharge records of North Carolina Streams.	Department of Conservation and Development.
Do.....	1936[k]	Bull. 39, Discharge records of North Carolina streams.	Do.
Ohio.....	1921[l]	Bull. 73, Ohio stream flow.....	Engineering Experiment Station, Ohio State University.
Do.....	1939[m]	Bull. 200, Compilation of stream-flow records of Ohio.	Department of Agriculture, Division of Conservation and Natural Resources.
Oregon.....	1914	Bull. 4, Water resources of the State of Oregon.	Office of the State Engineer.
Do.....	1924[n]	Bull. 7, Water resources of the State of Oregon.	Do.
Do.....	1930[o]	Bull. 8, Water resources of the State of Oregon.	Do.
Do.....	1936[p]	Bull. 9, Water resources of the State of Oregon.	Do.
Pennsylvania	1911	Report of the Water Supply Commission of Pennsylvania.	Water Supply Commission of Pennsylvania.
Do.....	1932[q]	Stream-flow records of Pennsylvania..	Department of Forests and Waters.
Tennessee...	1924	Bull. 34, Water resources of Tennessee.	Department of Education.
Do.....	1930[r]	Bull. 40, Surface waters of Tennessee.	Do.
Utah.....	1905	5th biennial report, State Engineer..	Office of the State Engineer.
Virginia....	1927	Bull. 31, Water resources of Virginia.	Conservation and Development Commission.
Washington..	1933	Bull. 5, Monthly and yearly summaries of hydrometric data.	Department of Conservation and Development.
Wisconsin...	1914	1st report of Railroad Commission of Wisconsin to Legislature on water powers.	Railroad Commission of Wisconsin.
Do.....	1923[s]	2d report of Railroad Commission of Wisconsin to Legislature on water powers.	Do.

c Includes records for years 1927-30.
d Includes records for years 1919-24.
e Includes records for years 1924-28.
f Includes records for years 1928-35.
g Includes records for years 1935-39.
h Includes records for years 1927-39.
i Includes records for years 1914-28.
j Includes records for years 1928-34.
k Includes records for years 1889-1936; records of daily and monthly discharge are not included.
l Includes all available records prior to 1921.
m Includes records for years 1902-39.
n Includes records for years 1914-24.
o Includes records for years 1924-30.
p Includes records for years 1930-36.
q Includes records for years 1928-32.
r Includes average weekly discharge for years 1920-30.
s Includes records for years 1914-23.

Note.- In addition to the records contained in the reports listed above, the following States have issued annual or biennial reports in which are contained records of discharge: California, Colorado, Connecticut, Idaho, Indiana, Missouri, Montana, Nebraska, New Mexico, New York (also New York City Board of Water Supply), North Dakota, Oregon, Pennsylvania, Utah, Washington, and Wyoming.

The reports listed in the foregoing tables contain the customary records of discharge collected during the systematic operation of gaging stations. Detailed information on the stage and discharge of many streams during major floods has been included in special reports on these floods published by the Geological Survey. The more recent of these reports also contain other pertinent hydrologic information and analyses and compilations of data relating to earlier noteworthy floods. The following list gives the numbers and titles of these reports.

Water-Supply Paper	Title
88	The Passaic flood of 1902.
92	The Passaic flood of 1903.
96	Destructive floods in the United States in 1903.
147	Destructive floods in the United States in 1904.
162	Destructive floods in the United States in 1905.
334	The Ohio Valley flood of March-April 1913.
426	Southern California floods of January 1916.
487	The Arkansas River flood of June 3-5, 1921.
488	The floods in central Texas in September 1921.
520-G	Some floods in the Rocky Mountain region.
636-C	The New England flood of November 1927.
771	Floods in the United States, magnitude and frequency.
773-E	The New York State flood of July 1935.
796-B	Flood on Republican and Kansas Rivers, May and June 1935.
796-C	Flood in La Canada Valley, California, January 1, 1934.
798	The floods of March 1936, Part 1, New England Rivers.
799	The floods of March 1936, Part 2, Hudson River to Susquehanna River region.
800	The floods of March 1936, Part 3, Potomac, James and upper Ohio Rivers.
816	Major Texas floods of 1936.
836-A	Stages and flood discharges of the Connecticut River at Hartford, Conn.
838	Floods of Ohio and Mississippi Rivers, January-February 1937.
842	Floods in Canadian and Pecos River Basins of New Mexico, May and June 1937.
843	Floods of December 1937 in northern California.
847	Maximum discharges at stream-measurement stations through September 1938.
867	Hurricane floods of September 1938.
869	Flood of August 1935 in Muskingum River Basin, Ohio.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE GEOLOGICAL SURVEY

The following table contains a list of gaging stations for the area covered by this report at which records of daily discharge were collected during the water year October 1939 to September 1940 by agencies other than the Geological Survey. The records for these stations are not contained in the publications of the Geological Survey.

Records of discharge collected by agencies other than the Geological Survey

Stream	Location	Period	Collected by	Remarks
Blue Earth River.	Near Rapidan, Minn., at Rapidan hydroelectric plant.	1911-40	Northern States Power Co.	Unpublished.
Cannon River.....	Near Cannon Falls, Minn., at Cannon Falls hydroelectric plant.	1921-40	....do.....	Do.
Gull River.....	Gull Lake Reservoir, Minn.	1910-40	Corps of Engineers, U. S. Army.	Unpublished.
Leech Lake River.	Leech Lake Reservoir, Minn.	1884-1940	....do.....	Do.
Minnesota River..	Near Granite Falls, Minn., at Minnesota Falls hydroelectric plant.	1928-40	Northern States Power Co.	Do.
Mississippi River	Alton, Ill.....	1933-40	Corps of Engineers, U. S. Army.	Published by Mississippi River Commission.
Do.....	Near Anoka, Minn., at Coon Rapids hydroelectric plant.	1918-40	Northern States Power Co.	Unpublished.
Do.....	Minneapolis, Minn., at lower-dam hydroelectric plant.	1900-1940	....do.....	Do.
Do.....	Pokegama Reservoir..	1883-1940	Corps of Engineers, U. S. Army.	Do.

Records of discharge collected by agencies other than the Geological Survey--Continued

Stream	Location	Period	Collected by	Remarks
Mississippi River	St. Cloud, Minn., at St. Cloud hydro-electric plant.	1924-40	Northern States Power Co.	Unpublished.
Do.....	St. Paul, Minn., at Twin City Lock and Dam.	1925-40	Ford Motor Co.....	Do.
Do.....	Winnibigoshish Reservoir.	1884-1940	Corps of Engineers, U. S. Army.	Do.
Pine River.....	Pine River Reservoir, Minn.	1886-1940	....do.....	Do.
Sandy River.....	Sandy Lake Reservoir, Minn.	1892-1940	....do.....	Do.

Note.- The Soil Conservation Service is making studies of run-off from three areas of less than 5 acres each in the vicinity of LaCrosse, Wis. (started in 1932), four areas of less than 300 acres each in the vicinity of Edwardsville, Ill. (started in 1938), and four areas of less than 325 acres each in the vicinity of Fennimore, Wis. (started in 1938). Records of these studies are in the files of that organization.

COOPERATION

The work in the several States was done under cooperative agreements with the organizations listed below.

Illinois: Department of Registration and Education, J. J. Hallihan, director, through the Division of Water Survey, Dr. A. M. Buswell, chief; and Department of Public Works and Buildings, F. L. Smith, director, through the Division of Waterways, Carter Jenkins, chief engineer.

Indiana: Department of Public Works, V. M. Simmons, administrative officer.

Iowa: University of Iowa Institute of Hydraulic Research, Prof. E. W. Lane, associate director, and F. M. Dawson, dean of College of Engineering; Iowa Geological Survey, Dr. A. C. Trowbridge, director; State Conservation Commission, M. L. Hutton, director.

Minnesota: Department of Conservation, Division of Drainage and Waters, W. S. Olson, director.

Missouri: Missouri Geological Survey and Water Resources, H. A. Buehler, State geologist; and State Highway Department, C. W. Brown, chief engineer.

North Dakota: Office of State engineer, E. J. Thomas.

Wisconsin: Public Service Commission, G. P. Steinmetz, chief engineer; and Wisconsin Statutory Committee on Water Pollution, Adolph Kanneberg, chairman.

Financial assistance was furnished by the Corps of Engineers, United States Army, in the operation of 132 gaging stations, of which 45 were in Illinois, 27 in Iowa, 28 in Minnesota, 9 in Missouri, 10 in North Dakota, 1 in South Dakota, and 12 in Wisconsin. Financial assistance was also furnished by the Fish and Wild Life Service, United States Department of the Interior, the Flood Control Coordinating Committee, United States Department of Agriculture, and the Weather Bureau, United States Department of Commerce. Several stations in the Hudson Bay Basin were maintained from funds appropriated by the United States Department of State.

Full cooperation exists between this organization and the Dominion Water and Power Bureau, Department of Mines and Resources, Canada. On waters adjacent to the international boundary, certain stations are maintained jointly by the United States and Canada under the terms of the Boundary Waters Treaty of 1909, and others are maintained under a subsequent agreement between the two Governments. The records from all these stations are obtained in such a manner as to be equally acceptable and available in both countries. These stations are herein designated international gaging stations.

Assistance in collecting records was also rendered by the following municipalities, organizations, and corporations:

Illinois: North Counties Hydroelectric Co. and city of Bloomington.

Iowa: Mississippi River Power Co., Interstate Power Co., Central States Power and Light Corporation, Iowa Electric Co., Des Moines Electric Co., Des Moines Waterworks, city of Ottumwa, Jacob E. Decker & Sons, Boone Water Department, and Iowa State College.

Wisconsin: Northern States Power Co., Lake Superior District Power Co., and Wisconsin Public Service Corporation.

DIVISION OF WORK

The stream-gaging work was conducted by the water resources branch of the Geological Survey--Glenn L. Parker, chief hydraulic engineer, Carl G. Paulsen, assistant chief hydraulic engineer, and Rudolph G. Kasel, chief of the division of surface waters.

The data for the stations in the States were collected and prepared for publication under the supervision of district engineers as follows: in Illinois (except for the Sny at Atlas, Kaskaskia River at Carlyle, and stations on Galena, Apple, Plum, Edwards, and Henderson Rivers and Pope Creek), J. H. Morgan; in Indiana, H. E. Grosbach; in Iowa, for stations on Grant and Platte Rivers in Wisconsin and for stations on Galena, Apple, Plum, Edwards, and Henderson Rivers and Pope Creek in Illinois, R. G. Kasel and his successor, L. C. Crawford; in Minnesota (except for St. Croix River near Rush City), in North Dakota, for Mississippi River at Prescott and at La Crosse, Wis., and for Whetstone River near Big Stone, S. Dak., P. R. Speer; in Missouri and for Kaskaskia River at Carlyle, Ill., H. C. Beckman; in Montana, A. H. Tuttle; in Wisconsin (except for Mississippi River at Prescott and at La Crosse and stations on Grant and Platte Rivers) and for St. Croix River near Rush City, Minn., F. C. Christopherson.

The records were reviewed and the manuscript prepared for publication under the direction of B. J. Peterson, engineer in charge, and M. C. Boyer, associate engineer, section of reports.

HUDSON BAY BASIN

ST. MARY RIVER BASIN

Upper St. Mary Lake at St. Mary Chalet, Mont.

Location.- Water-stage recorder, lat. 48°44', long. 113°26', in NE¼ sec. 4, T. 34 N., R. 14 W., at St. Mary Chalet in Glacier National Park, half a mile upstream from outlet.

Records available.- May 1929 to September 1940 (incomplete).

Extremes.- Maximum gage height recorded during year, 4.83 feet May 26; minimum recorded, 0.49 foot Nov. 22.

1929-40: Maximum gage height recorded, 6.88 feet June 15, 1937; minimum recorded, 0.02 foot Dec. 16, 29, 30, 1929, Jan. 1, 1930.

Remarks.- Records excellent. No diversions.

Gage heights, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.99	0.61	0.51					-	4.58	3.05	2.11	1.33
2	.98	.62						-	4.61	3.00	2.06	1.32
3	.98	.65						-	4.57	2.99	1.99	1.31
4	.97	.65						2.83	4.51	2.98	1.94	1.34
5	.94	.63						3.01	4.43	2.98	1.90	1.44
6	-	.62						3.10	4.32	2.96	1.87	1.40
7	-	.64						3.09	4.20	2.90	1.82	1.38
8	-	.71						3.09	4.08	2.82	1.80	1.38
9	-	.74						3.08	3.98	2.78	1.78	1.38
10	-	.78						3.21	3.88	2.71	1.75	1.38
11	-	.68						3.62	3.93	2.67	1.71	1.37
12	.67	.69						4.15	4.05	2.64	1.71	1.37
13	.68	.68						4.43	4.21	2.65	1.69	1.39
14	.66	.69						4.54	4.28	2.61	1.65	1.58
15	.66	.69						4.54	4.24	2.58	1.60	1.67
16	.68	.65						4.47	4.16	2.58	1.56	1.68
17	.67	.63						4.37	4.06	2.56	1.53	1.67
18	.68	.63						4.25	3.97	2.51	1.51	1.63
19	.69	.62						4.18	3.90	2.49	1.50	1.66
20	.70	.60						4.24	3.90	2.44	1.48	1.65
21	.64	.58						4.28	3.91	2.40	1.48	1.74
22	.60	.57						4.33	3.86	2.35	1.48	1.97
23	.61	.53						4.40	3.75	2.31	1.47	2.13
24	.58	-						4.55	3.58	2.28	1.45	2.20
26	.60	-						4.72	3.48	2.22	1.43	2.24
26	.62	-						4.82	3.45	2.19	1.41	2.22
27	.71	-						4.77	3.38	2.23	1.42	2.18
28	.65	-						4.61	3.28	2.27	1.42	2.13
29	.65	-						4.44	3.18	2.23	1.39	2.09
30	.63	-						4.37	3.10	2.19	1.38	2.06
31	.60	-						4.44	-	2.12	1.37	-

Lower St. Mary Lake near Babb, Mont.

Location.- Water-stage recorder, lat. 48°50', long. 113°25', in NE¼ sec. 3, T. 35 N., R. 14 W., half a mile upstream from outlet and 3 miles southeast of Babb.

Records available.- May 1929 to September 1940 (incomplete).

Extremes.- Maximum gage height recorded during year, 2.60 feet June 2; minimum observed, -0.73 foot Feb. 3.
1929-40: Maximum gage height recorded, 5.35 feet June 16, 1937; minimum recorded, -0.75 foot Nov. 26-28, 1936.

Remarks.- Records good. No diversions. Stage increased by inflow of Swiftcurrent Creek.

Gage heights, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-0.35	-0.23	-0.59				-	-	2.55	1.88	1.66	0.11
2	-.35	-.20					-	-	2.58	1.86	1.58	.09
3	-	00			h-0.73		-0.52	-	2.50	1.84	1.50	.09
4	-	.18					-.52	1.19	2.43	1.84	1.44	.05
5	-	.30					-.52	1.35	2.41	1.87	1.39	.05
6	-	.37					-.51	1.50	2.40	1.90	1.34	.00
7	-	.45					-.50	1.63	2.33	1.93	1.30	-.05
8	-	.47					-.49	1.70	2.31	1.90	1.28	-.07
9	-	.38					-.46	1.73	-	1.92	1.25	-.08
10	-	.28					-.43	1.78	-	1.92	1.22	-.10
11	-	.21					-	1.90	-	1.92	1.20	-.13
12	-.51	.15					-	2.04	-	1.91	1.18	-.15
13	-.52	.11					-	2.13	-	1.88	1.11	-.14
14	-.53	.07					-	2.22	-	1.85	1.06	-.07
15	-.53	.00					-	2.26	-	1.84	.98	-.06
16	-.54	-.02					-	2.24	-	1.83	.90	-.05
17	-.54	-.08					-	2.20	-	1.81	.83	-.04
18	-.55	-.12					-	2.14	2.23	1.79	.75	-.03
19	-.57	-.13					-	2.10	2.21	1.77	.66	-.01
20	-.56	-.16					-	2.09	2.17	1.74	.62	.00
21	-.53	-.22					-	2.12	2.15	1.70	.55	.06
22	-.51	-.30					-	2.24	2.18	1.68	.50	.20
23	-.50	-.36					-	2.36	2.16	1.68	.44	.35
24	-.46	-.42					-	2.43	2.07	1.68	.38	-
25	-.42	-.46					-	2.49	2.01	1.67	.34	-
26	-.38	-.50					-	2.50	1.97	1.68	.30	-
27	-.36	-.53					-	2.50	1.94	1.78	.24	-
28	-.32	-.56					-	2.46	1.95	1.82	.22	.50
29	-.31	-.57					-	2.39	1.90	1.80	.19	.49
30	-.28	-.58					-	2.43	1.88	1.76	.17	.47
31	-.26	-					-	2.48	-	1.71	.14	-

h Observed.

St. Mary River near Babb, Mont.

Location.- Water-stage recorder, lat. 48°51', long. 113°25', in NE¼ sec. 27, T. 36 N., R. 14 W., 600 feet downstream from diversion dam and head gates of St. Mary canal on Blackfeet Indian Reservation and 1 mile east of Babb.

Drainage area.- 278 square miles (including area drained by Swiftcurrent Creek above point of diversion into St. Mary Lake, since Oct. 1, 1915).

Records available.- April 1902 to September 1925, May 1929 to September 1932, October 1934 to September 1940 (summers only).

Extremes.- Maximum discharge recorded during year, 1,340 second-feet May 20 (gage height, 4.37 feet); minimum recorded, 29 second-feet Nov. 18-20 (gage height, 1.16 feet).

1902-25, 1929-32, 1934-40: Maximum discharge observed, 7,980 second-feet June 5, 1908 (gage height, 9.4 feet, estimated); minimum recorded, that of Nov. 18-20, 1939.

Remarks.- Records good. Entire flow of Swiftcurrent Creek below Sherburne Reservoir is diverted into lower St. Mary Lake above station. Records since 1929 do not include flow in St. Mary canal, which diverts water from river at left end of dam.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	120	-						-	1,080	568	312	74
2	116	33						475	1,120	554	289	79
3	123	43					†50.5	528	1,020	549	260	104
4	118	43						a546	925	535	260	213
5	116	44						563	911	540	257	208
6	109	45						618	925	544	232	198
7	-	45						670	898	549	221	182
8	-	46						660	867	535	213	178
9	-	45						649	855	525	203	175
10	-	43						687	760	525	213	175
11	-	42						771	720	507	223	164
12	89	41						879	760	489	223	164
13	92	41						945	812	471	208	161
14	90	40						1,020	861	450	216	182
15	89	37						1,040	892	437	205	185
16	92	33						1,020	879	420	164	188
17	94	30						988	855	404	144	192
18	90	29						925	836	392	152	195
19	80	29						892	812	373	154	203
20	52	29						1,010	766	350	185	205
21	-	-						1,120	743	332	164	223
22	-	-						995	754	309	144	263
23	-	-						1,040	737	305	133	315
24	-	-						1,020	682	299	148	350
25	-	-						1,080	624	286	139	369
26	-	-						1,080	588	286	122	377
27	-	-						1,080	568	329	107	377
28	-	-						1,020	573	361	100	377
29	-	-						945	563	343	94	373
30	-	-						972	563	332	88	369
31	-	-						1,030	-	312	83	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	-	-	-	-	-
November 2-20	738	46	29	38.8	1,460
December	-	-	-	-	-
Calendar year	-	-	-	-	-
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	-	-	-	-	-
May 2-31	26,268	1,120	475	876	52,100
June	23,949	1,120	563	798	47,500
July	13,211	568	286	426	26,200
August	5,656	312	83	182	11,220
September	6,809	377	70	227	13,510
Water year	-	-	-	-	-

† Discharge measurement.
a No gage-height record; discharge interpolated.
Note.- Results of discharge measurements May 2 and 3 used as daily means.

St. Mary River near Kimball, Alberta

(International gaging station)

Location.- Water-stage recorder, lat. 49°04', long. 113°14', in SW¼ sec. 25, T. 1, R. 25 W., fourth meridian, 1½ miles southwest of Kimball and 4 miles north of international boundary. Zero of gage is 3,917 feet above mean sea level (Dominion Water and Power Bureau levels). Chain gage 3 miles downstream used during winter.

Drainage area.- 497 square miles.

Records available.- January 1913 to September 1940. September 1902 to December 1912 at site half a mile north of international boundary, 1905 to 1912 at site half a mile downstream published in reports of Department of Mines and Resources, Canada.

Average discharge.- 38 years, 807 second-feet.

Extremes.- Maximum discharge during year, 1,680 second-feet May 21 (gage height, 4.23 feet); minimum observed, 27.8 second-feet Nov. 5 (at winter section).

1902-40: Maximum discharge, 18,000 second-feet (estimated) June 5, 1908; minimum, 16 second-feet Nov. 29, 1936.

Remarks.- Records excellent except those for periods of no gage-height record or ice effect, which are fair. Since 1917 St. Mary canal has diverted water from river near Babb, Mont., to North Fork of Milk River; Alberta Railway & Irrigation Co.'s canal diverts water from river 2 miles below station. Flow regulated by Sherburne Lake Reservoir on Swiftcurrent Creek.

Cooperation.- This station is one of the international gaging stations maintained jointly by the United States and Canada under the Boundary Waters Treaty. The records have been collected and compiled jointly with the Dominion Water and Power Bureau, Department of Mines and Resources, Canada.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	170	38.2	112	136	77	100	157	583	1,440	735	473	279
2	164	41.4	109	136	73	*107	135	608	1,490	706	454	275
3	162	44.6	107	*135	69	105	128	652	1,380	636	408	279
4	162	a36.2	106	135	*65	104	*122	520	1,220	679	403	310
5	162	27.8	106	132	67	103	125	686	1,200	700	390	298
6	154	53	102	130	69	103	129	764	1,210	693	364	263
7	154	69	96	128	70	103	129	802	1,200	686	339	241
8	150	65	90	125	71	102	125	787	1,210	672	327	234
9	144	73	92	122	72	100	125	779	1,160	652	314	231
10	142	65	94	121	73	96	125	844	1,070	652	298	221
11	140	62	107	120	75	92	129	1,040	1,110	633	327	214
12	138	a56	130	118	77	89	132	1,290	1,160	620	327	205
13	129	49.4	75	115	79	90	154	1,320	1,200	602	302	205
14	127	47.8	103	114	80	112	175	1,350	1,230	583	298	259
15	127	49.4	135	112	81	152	181	1,340	1,240	572	306	249
16	127	a49.0	117	110	83	189	170	1,290	1,210	548	256	249
17	125	a49.0	a116	108	85	199	187	1,240	1,140	526	217	256
18	123	a49.0	*115	105	86	192	201	1,160	1,080	515	231	259
19	119	a49.0	141	102	88	186	208	1,090	1,030	489	201	271
20	111	a72	138	100	*89	*177	227	1,190	979	473	256	267
21	a96	a171	147	98	88	167	286	1,590	951	468	234	294
22	a81	175	141	96	87	158	339	1,230	999	440	208	364
23	a66	152	133	*94	85	150	408	1,320	969	421	178	430
24	a51	138	122	92	83	145	435	1,320	860	408	201	499
25	35.0	138	125	89	84	145	454	1,380	802	366	187	510
26	94	136	128	89	85	150	468	1,450	779	412	170	499
27	94	129	129	89	87	173	520	1,420	764	560	154	489
28	58	123	130	88	90	196	583	1,310	757	633	184	478
29	71	119	130	86	94	198	602	1,210	735	572	298	468
30	39.8	116	132	85	-	199	595	1,230	727	586	294	459
31	58	-	134	81	-	178	-	1,340	-	489	282	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	3,572.8	170	35.0	115	7,090
November	2,442.8	175	27.8	81.4	4,850
December	3,642	147	75	117	7,220
Calendar year 1939	143,196.6	1,560	27.8	392	284,000
January	3,393	138	81	109	6,730
February	2,312	94	65	79.7	4,590
March	4,360	199	89	141	8,650
April	7,754	602	122	258	15,380
May	34,135	1,590	520	1,101	67,710
June	32,302	1,490	727	1,077	64,070
July	17,749	735	398	573	35,200
August	8,881	473	154	286	17,620
September	9,555	510	205	318	18,950
Water year 1939-40	130,098.6	1,590	27.8	355	258,100

* Winter discharge measurement made on this day.

a No gage-height record; discharge interpolated Oct. 21-24, Nov. 4, 12, and Dec. 17, estimated Nov. 16-21 on basis of observer's notes.

Note.- Stage-discharge relation affected by ice Dec. 25 to Apr. 5. Chain-gage readings at winter section used Oct. 25 to Nov. 15, when water was below intake, and Dec. 11 to Apr. 4.

St. Mary canal at intake, near Babb, Mont.

(International gaging station)

Location.- Water-stage recorder, lat. 48°51', long. 113°25', in NW¼NE¼ sec. 27, T. 36 N., R. 14 W., 600 feet downstream from intake of canal on Blackfeet Indian Reservation and 1 mile east of Babb.

Records available.- 1918-40 (irrigation seasons only).

Remarks.- Records good. Canal diverts water from west bank of St. Mary River near Babb and discharges it into North Fork of Milk River. This water then flows in the natural channel of Milk River through Canada and back into Montana where it is used for irrigation in Milk River Valley east of Havre. Some water may be returned to St. Mary River at St. Mary crossing.

Cooperation.- This station is one of the international gaging stations maintained jointly by the United States and Canada under the Boundary Waters Treaty. The records have been collected and compiled jointly with the Dominion Water and Power Bureau, Department of Mines and Resources, Canada.

Discharge, in second-feet, 1939-40

Day	Oct.	Nov.				May	June	July	Aug.	Sept.	Oct.	Nov.
1	-	154				-	678	682	766	186	2.6	311
2	-	156				-	678	682	722	185	2.6	429
3	-	220				a150	675	682	690	144	2.0	519
4	-	303				369	672	684	650	9.4	1.9	556
5	-	337				378	672	690	616	6.9	1.6	586
6	-	372				386	672	711	610	6.9	1.0	652
7	-	410				426	672	726	604	5.8	.5	666
8	-	417				478	672	740	603	5.4	.8	676
9	-	392				512	669	758	600	5.4	.9	675
10	-	329				516	672	766	579	5.0	.6	674
11	-	306				519	682	776	542	4.8	.7	672
12	-	282				525	682	777	542	4.6	.7	672
13	-	267				534	686	785	525	4.0	.7	384
14	-	251				537	688	782	482	4.0	.4	10.2
15	-	235				537	692	790	441	4.0	.5	10.2
16	-	226				538	690	797	437	4.0	.9	11.8
17	-	202				538	690	795	410	3.8	11.8	16.6
18	-	186				536	687	797	359	3.8	23.8	12.2
19	7.3	182				536	684	797	306	3.4	23.4	10.6
20	63	113				367	682	795	258	3.4	23.8	10.2
21	98	4.4				179	684	795	257	3.6	32.5	11.8
22	93	4.2				522	686	795	253	3.6	32.0	10.2
23	92	3.4				592	682	798	235	3.4	32.5	a9.6
24	95	3.6				658	688	805	197	2.8	33.0	h9.0
25	110	3.4				672	686	800	196	2.6	32.5	-
26	120	3.4				674	684	803	194	2.4	33.0	-
27	132	3.8				674	684	816	192	2.6	33.5	-
28	137	3.0				672	684	821	190	2.2	33.0	-
29	136	3.4				672	682	816	190	2.2	32.5	-
30	143	a3.4				674	684	814	188	2.2	32.0	-
31	151	-				675	-	798	187	-	149	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
1939					
October 19-21	1,377.3	151	7.3	106	2,730
November	5,376.0	417	3.0	179	10,660
1940					
May 3-31	15,046	675	150	519	29,840
June	20,439	692	669	681	40,540
July	23,873	821	682	770	47,350
August	13,021	766	187	420	25,830
September	627.2	186	2.2	20.9	1,240
October	576.7	149	.4	18.6	1,140
November 1-24	7,594.4	676	9.0	316	15,060
The period	-	-	-	-	161,000

a No gage-height record; discharge estimated Nov. 30, May 3, interpolated Nov. 23, 1940.
h On basis of staff-gage reading.
Note.- Canal not in operation Oct. 1-18, Dec. 1, 1939, to May 2, 1940, and after Nov. 24, 1940.

St. Mary canal at St. Mary crossing, near Babb, Mont.

(International gaging station)

Location.- Water-stage recorder, lat. 48°57', long. 113°21', in NE¼ sec. 30, T. 37 N., R. 13 W., 500 feet east of outlet of St. Mary River siphon, 9 miles northeast of Babb, and 10 miles downstream from intake.

Records available.- 1918-40 (irrigation seasons only).

Remarks.- Records excellent.

Cooperation.- This station is one of the international gaging stations maintained jointly by the United States and Canada under the Boundary Waters Treaty. The records have been collected and compiled jointly with the Dominion Water and Power Bureau, Department of Mines and Resources, Canada.

Discharge, in second-feet, 1939-40

Day	Oct.	Nov.				May	June	July	Aug.	Sept.	Oct.	Nov.
1	-	152				-	598	594	660		-	128
2	-	156				-	600	590	628		-	320
3	-	188				a80	598	590	596		-	417
4	-	274				296	594	592	558		-	468
5	-	312				320	592	596	530		-	501
6	-	331				330	594	609	519		-	562
7	-	363				350	594	628	517		-	579
8	-	379				403	594	634	517		-	571
9	-	362				441	590	651	515		-	569
10	-	323				449	590	655	503		-	551
11	-	288				454	601	664	463		-	508
12	-	263				459	601	664	461		-	336
13	-	247				461	605	672	452		-	32.8
14	-	235				467	605	668	417		-	-
15	-	224				468	609	672	365		-	-
16	-	211				468	609	679	358		-	-
17	-	192				468	605	677	349		-	-
18	-	175				468	603	676	292		-	-
19	-	170				467	600	677	264		-	-
20	36.5	147				427	600	676	201		-	-
21	100	25.1				75	598	674	199		-	-
22	94	.7				445	601	674	198		-	-
23	94	-				495	600	674	190		-	-
24	91	-				579	603	679	155		-	-
25	118	-				596	600	679	153		-	-
26	103	-				600	600	679	152		-	-
27	121	-				598	598	691	152		-	-
28	137	-				598	596	693	84		-	-
29	137	-				594	594	693	6.7		-	-
30	140	-				594	592	693	-		4.9	-
31	145	-				596	-	683	-		27.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
1939					
Oct. 20-31	1,316.5	145	36.5	110	2,610
Nov. 1-22	5,017.8	379	.7	228	9,950
1940					
May 3-31	13,046	600	80	450	25,880
June	17,964	609	590	599	35,630
July	20,376	693	590	657	40,420
Aug. 1-29	10,454.7	660	6.7	361	20,740
Oct. 30-31	31.9	27.0	4.9	16.0	63
Nov. 1-13	5,542.8	579	32.8	426	10,990
The period	-	-	-	-	133,700

a No gage-height record; discharge estimated.

Note.- Canal not in operation Oct. 1-19, Nov. 23, 1939, to May 2, 1940, Aug. 30 to Oct. 29, and after Nov. 13, 1940.

St. Mary canal at Hudson Bay divide, near Browning, Mont.

(International gaging station)

Location.- Water-stage recorder, lat. 48°59', long. 113°04', in sec. 5, T. 37 N., R. 11 W., on Blackfeet Indian Reservation, 3 miles upstream from canal outlet and 30 miles north of Browning.

Records available.- 1917-40 (irrigation seasons only).

Remarks.- Records excellent.

Cooperation.- This station is one of the international gaging stations maintained jointly by the United States and Canada under the Boundary Waters Treaty. The records have been collected and compiled jointly with the Dominion Water and Power Bureau, Department of Mines and Resources, Canada.

Discharge, in second-feet, May to November 1940

Day				May	June	July	Aug.	Sept.	Oct.	Nov.		
1				-	585	583	679	0.8		-		
2				-	591	589	655	.1		104		
3				-	591	587	613	0		321		
4				-	589	583	574	0		426		
5				a274	585	587	542	.3		473		
6				a316	585	591	519	.1		517		
7				324	587	620	513	-		566		
8				363	602	635	511	-		587		
9				410	580	646	507	-		b570		
10				440	580	657	505	-		b515		
11				452	587	664	479	-		b545		
12				450	589	671	458	-		b505		
13				456	609	679	450	-		b340		
14				458	589	673	436	-		b35		
15				467	600	675	393	-		b20		
16				463	602	682	359	-		b10		
17				463	598	686	352	-		-		
18				465	598	684	326	-		-		
19				463	596	684	289	-		-		
20				460	598	684	237	-		-		
21				292	589	684	196	-		-		
22				187	594	682	194	-		-		
23				434	596	682	190	-		-		
24				530	591	686	175	-		-		
25				583	598	686	151	-		-		
26				591	596	686	146	-		-		
27				591	591	704	145	-		-		
28				591	591	701	140	-		-		
29				589	591	697	66	-		-		
30				589	589	697	16.7	-		-		
31				591	-	695	5.0	-		-		

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
May 5-31	12,292	591	187	455	24,380
June	17,767	609	580	592	35,240
July	20,460	704	583	660	40,580
August	10,821.7	679	5.0	349	21,460
September 1-6	1.3	.8	0	.22	2.6
November 2-16	5,534	587	10	369	10,980
The period	-	-	-	-	132,600

a No gage-height record; discharge dtermined on basis of records for the other St. Mary canal stations.
b Stage-discharge relation affected by ice.
Note.- Canal not in operation Oct. 1-22, Nov. 27, 1939, to May 4, 1940, Sept. 7 to Nov. 1, and after Nov. 16, 1940.

Swiftcurrent Creek at Many Glacier, Mont.

(International gaging station)

Location.- Water-stage recorder, lat. 48°48', long. 113°38', in sec. 12, T. 35 N., R. 16 W., at outlet of Swiftcurrent Lake at Many Glacier, Glacier National Park, 14 miles southwest of Babb.
Drainage area.- 31.4 square miles.
Records available.- June 1912 to September 1940 (winter records incomplete).
Extremes.- Maximum discharge during year, 695 second-feet May 12 (gage height, 3.88 feet); minimum observed, 9.6 second-feet Mar. 14-15 (gage height, 1.46 feet).
1912-40: Maximum discharge, 2,250 second-feet June 13, 1937 (gage height, 6.89 feet, affected by backwater from bridge); minimum observed, that of Mar. 14-15, 1940.
Remarks.- Records excellent. No diversion or regulation. This station is one of the International gaging stations maintained jointly by the United States and Canada under the Boundary Waters Treaty. The records have been collected and compiled jointly with the Dominion Water and Power Bureau, Department of Mines and Resources, Canada.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

1.6	20	2.0	84	3.5	549
1.7	31	2.2	131	4.0	742
1.8	45	2.5	209		
1.9	63	3.0	365		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36.6				-	a18.6	35.2	124	443	159	98	58
2	36.6				-	a18.0	35.2	161	400	156	91	56
3	33.8				†15.0	a17.4	36.6	328	418	172	89	54
4	32.4				-	h16.8	33.8	400	396	179	82	58
5	39.4				-	a17.2	31.0	325	368	198	80	74
6	42.2				-	h17.6	28.8	253	321	177	78	76
7	40.8				-	a17.2	28.8	209	277	154	78	69
8	36.6				-	h16.8	32.4	201	280	141	80	61
9	32.4				-	a16.3	42.2	238	271	138	80	59
10	28.8				-	a15.7	48.6	372	287	129	78	56
11	28.8				-	h15.2	40.8	617	358	129	78	52
12	25.5				-	a13.3	38.0	641	400	136	80	52
13	27.7				-	a11.5	52	519	418	148	78	54
14	29.9				-	h9.6	112	436	429	148	71	107
15	27.7				-	h9.6	148	393	358	138	69	138
16	29.9				-	16.8	134	362	302	136	63	114
17	28.8				-	26.6	117	325	277	138	59	98
18	28.8				-	23.3	134	296	265	136	58	84
19	27.7				-	22.2	161	355	274	129	56	82
20	28.8				-	21.1	179	429	293	126	58	76
21	19.2				-	21.1	198	407	302	119	61	93
22	23.3				-	23.3	174	425	287	117	61	179
23	27.7				-	24.4	166	466	232	114	63	182
24	39.4				-	25.5	151	507	193	112	61	156
25	39.4				-	24.4	136	557	193	105	59	131
26	35.2				-	29.9	121	549	212	98	58	114
27	33.8				-	33.8	119	447	204	109	58	98
28	32.4				-	36.6	131	362	179	121	65	84
29	36.6				h19.2	35.2	136	312	164	114	59	82
30	35.2				-	35.2	129	331	161	100	59	74
31	35.2				-	35.2	-	418	-	96	59	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	1,000.6	42.2	19.2	32.3	1.03	1.19	1,980
November	-	-	-	-	-	-	-
December	-	-	-	-	-	-	-
Calendar year	-	-	-	-	-	-	-
January	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-
March	665.4	36.6	9.6	21.5	.685	.79	1,320
April	2,929.4	198	28.8	98.0	3.12	3.48	5,810
May	11,765	641	124	380	12.1	13.95	23,340
June	8,962	443	161	299	9.52	10.62	17,780
July	4,170	198	96	135	4.30	4.96	8,270
August	2,167	98	56	69.9	2.23	2.57	4,300
September	2,671	182	52	89.0	2.83	3.16	5,300
Water year	-	-	-	-	-	-	-

† Discharge measurement.
a No gage-height record; discharge interpolated.
h Computed from staff-gage reading.

Sherburne Lake Reservoir at Sherburne, Mont.

Location.- Water-stage recorder, lat. 48°50', long. 113°31', in sec. 35, T. 36 N., R. 15 W., in gate house at Sherburne Dam on Swiftcurrent Creek, about 6 miles southwest of Babb. Zero of gage is 4,700.0 feet above mean sea level.
Drainage area.- 64 square miles.
Records available.- May to June 1915, May 1917 to September 1918, June 1921 to September 1940.
Extremes.- Maximum contents during year, 50,200 acre-feet June 23 (elevation, 4,778.20 feet); minimum observed, 1,900 acre-feet Sept. 2, 3 (elevation, 4,730.4 feet).
1915, 1917-18, 1921-40: Maximum contents, 60,420 acre-feet June 20, 1925 (elevation, 4,784.6 feet); no usable contents at times.
Remarks.- Reservoir is formed by earth-fill dam completed in 1921, storage began in 1919. Capacity, 66,100 acre-feet between elevations 4,726 (6 feet above lowest outlet gate sill) and 4,788 feet (crest of spillway) above mean sea level. Stream bed above gates prevents withdrawal of storage to sill elevation. Dead storage negligible. Figures given herein represent usable contents. Water is used for irrigation on Milk River project of Bureau of Reclamation.
Cooperation.- Daily gage readings furnished by Bureau of Reclamation.

Capacity table (elevation, in feet, and contents, in acre-feet)

4,726	0	4,731	2,230	4,740	8,340	4,760	26,900
4,727	340	4,732	2,820	4,744	11,500	4,765	32,600
4,728	730	4,734	4,090	4,748	14,900	4,770	38,700
4,729	1,180	4,736	5,440	4,752	18,700	4,775	45,500
4,730	1,680	4,738	6,860	4,756	22,600	4,780	53,000

Contents, in acre-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6,126	7,371	3,316	-	-	-	-	21,100	42,600	46,298	14,468	1,928
2	6,241	7,298	3,378	-	-	11,420	-	21,400	43,370	45,570	13,600	1,900
3	6,342	6,644	3,570	8,190	9,880	-	14,000	21,700	44,450	44,855	12,804	1,900
4	6,435	6,000	3,765	-	-	-	-	22,200	45,320	44,165	12,012	2,496
5	6,615	5,372	-	-	-	-	-	22,710	45,962	43,440	11,228	2,643
6	6,745	4,693	-	8,416	-	-	14,450	22,930	46,368	42,535	10,356	2,882
7	6,846	3,830	-	-	-	-	-	22,930	46,690	41,664	9,443	3,099
8	6,911	3,316	-	-	-	-	-	22,930	47,080	40,650	8,492	3,254
9	6,991	3,130	3,960	-	-	11,900	-	22,930	47,365	39,493	7,517	3,378
10	7,108	2,944	-	-	10,290	-	-	22,500	47,575	38,258	6,788	3,570
11	7,218	2,761	-	-	-	-	-	22,400	47,875	37,076	6,428	3,700
12	7,283	2,761	-	-	-	-	-	24,840	48,355	35,979	5,860	3,895
13	7,349	2,702	-	8,872	-	-	15,170	26,152	48,760	34,744	5,168	4,090
14	7,422	2,643	-	-	-	-	-	27,395	49,180	33,678	4,964	4,358
15	7,502	2,525	-	-	-	-	-	28,418	49,465	32,677	4,425	4,559
16	7,612	2,584	5,790	-	-	12,220	-	29,400	49,585	31,604	3,960	4,828
17	7,762	2,466	-	-	10,536	-	-	30,322	49,660	30,597	3,570	5,236
18	7,920	2,407	-	-	-	-	-	31,070	49,705	29,544	3,378	5,372
19	8,115	2,378	-	-	-	-	17,610	31,976	49,720	28,484	3,316	5,720
20	8,062	2,348	-	9,178	-	-	17,900	33,040	49,825	27,450	2,820	5,860
21	7,988	2,407	-	-	-	-	18,400	33,760	49,930	26,438	2,584	6,070
22	7,942	2,496	-	-	-	-	18,970	34,288	50,155	25,400	2,407	6,572
23	7,905	2,554	6,428	9,256	-	12,840	19,330	34,991	50,125	24,283	2,289	7,006
24	7,838	2,643	-	-	10,780	-	19,600	36,096	49,900	23,106	2,230	7,517
25	7,785	2,761	-	-	-	-	20,000	37,328	49,600	21,980	2,175	7,890
26	7,755	2,820	-	-	-	-	20,600	38,726	49,300	20,850	2,065	8,265
27	7,740	2,913	-	9,412	-	-	20,700	39,896	48,910	19,830	2,010	8,568
28	7,740	3,006	-	-	-	-	20,800	40,806	48,385	18,808	1,982	8,796
29	7,710	3,068	-	-	-	-	20,900	41,378	47,755	17,682	1,955	9,024
30	7,517	3,192	7,371	-	-	13,600	21,000	41,825	47,020	16,560	1,955	9,256
31	7,386	-	-	-	-	-	-	42,041	-	15,422	1,928	-

Monthly elevation and contents, water year October 1939 to September 1940

Month	Elevation (feet)	Contents (acre-feet)	Change in contents during month (acre-feet)
Sept.30	36.86	6,035	-
Oct. 31	38.72	7,386	+1,351
Nov. 30	32.60	3,192	-4,194
Dec. 31	-	a7,576	+4,384
Calendar year 1939	-	-	+4,669
Jan. 31	-	a9,680	+2,104
Feb. 29	-	a11,237	+1,557
Mar. 31	-	a13,700	+2,463
Apr. 30	54.40	21,000	+7,300
May 31	72.57	42,041	+21,041
June 30	76.08	47,020	+4,979
July 31	48.58	15,422	-31,598
Aug. 31	30.45	1,928	-13,494
Sept. 30	41.20	9,256	+7,328
Water year 1939-40	-	-	+3,221

a No elevation; contents interpolated.
Note.- Contents computed from gage-height graph through observer's readings Oct. 1-31 and Aug. 10-13; observer's daily 7 a.m. readings Nov. 1 to May 11 and Aug. 14 to Sept. 30.

Swiftcurrent Creek at Sherburne, Mont.

(International gaging station)

Location.- Water-stage recorder, lat. 48°50', long. 113°31', in sec. 35, T. 36 N., R. 15 W., 800 feet downstream from spillway of Sherburne Lake Dam at Sherburne.
Drainage area.- 64 square miles.
Records available.- July 1912 to September 1940 (winter records incomplete).
Extremes.- Maximum discharge during year, 760 second-feet July 26 (gage height, 5.02 feet); no flow Oct. 15-19 (gages in dam closed).
1912-40: Maximum discharge, 2,280 second-feet June 17, 1916 (gage height, 7.83 feet); no flow at times when gates in dam were closed.
Remarks.- Records excellent except those for period for which once-daily gage readings were used, which are good, and those for periods of ice effect or no gage-height record, which are fair. No diversions. Flow regulated by operation of gates at dam.
Cooperation.- This station is one of the international gaging stations maintained jointly by the United States and Canada under the Boundary Waters Treaty. The records have been collected and compiled jointly with the Dominion Water and Power Bureau, Department of Mines and Resources, Canada.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 17

0.3	0.0	1.2	10	2.0	46
.4	.4	1.3	12	2.3	73
.5	1	1.4	15	2.6	112
.6	2	1.5	18	3.0	178
.8	4	1.6	22	3.5	276
1.0	6	1.8	33	4.0	396

Apr. 1 to Sept. 30

1.4	14	2.0	47	3.5	279
1.5	17	2.2	66	4.0	398
1.6	21	2.5	102	4.5	544
1.7	26	2.8	149	5.0	750
1.8	32	3.1	200	5.4	959

Note.- Same as preceding table below 1.4 feet.

Discharge, in second-feet, water year October 1939 to September 1941

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	116						97	270	569	621	69
2	.4	254						146	143	569	514	68
3	.3	401						238	2.7	576	502	44.0
4	.2	391						298	78	595	489	2.8
5	.3	375						380	186	622	474	3.1
							hb0.6					
6	.3	404						419	217	668	474	2.7
7	.2	326						451	217	668	489	2.3
8	.2	241						446	217	685	486	2.2
9	.2	152						443	217	703	471	2.1
10	.2	120						443	270	712	468	2.2
11	.2	127						307	312	726	474	2.1
12	.2	133						96	315	731	454	2.0
13	.2	122					hb1.0	2.1	317	741	401	2.2
14	.1	116						2.0	315	745	356	2.3
15	0	98						1.3	317	731	306	1.7
16	0	81						1.1	317	712	248	1.3
17	0	71					al.4	1.1	317	703	223	1.0
18	0	-						1.0	317	694	184	.9
19	0	-					hl.4	.9	319	690	186	.9
20	35.2	-					hl.4	.9	319	681	180	.8
21	56	-					hl.4	118	319	668	146	.9
22	46.8	-					hl.4	315	319	687	125	.9
23	47.6	-					hl.4	252	326	726	106	.9
24	64	-					hl.4	125	362	717	97	.9
25	73	-					hl.4	83	390	708	90	.9
26	73	-					hl.4	2.4	408	731	84	.6
27	73	-					h149	2.2	439	736	70	.7
28	73	-					h149	2.2	471	722	92	.8
29	73	-					h149	151	516	717	76	.8
30	98	-					h97	324	569	708	72	.8
31	118	-					-	324	-	667	70	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	834.0	118	0	26.9		1,650
November 1-17	3,528	404	71	208		7,000
December	-	-	-	-		-
Calendar year	-	-	-	-		-
January	-	-	-	-		-
February	-	-	-	-		-
March	-	-	-	-		-
April	569.4	149	-	19.0		1,130
May	5,473.2	451	.9	177		10,860
June	9,101.7	569	2.7	303		18,050
July	21,304	745	569	687		42,260
August	9,028	621	70	291		17,910
September	221.8	69	.6	7.39		440
Water year	-	-	-	-		-

a No gage-height record; discharge estimated.
b Stage-discharge relation affected by ice.
h Computed from staff-gage reading.

Otter Tail River near Detroit Lakes, Minn.

Location.- Water-stage recorder and concrete control, lat. 46°50', long. 95°42', in sec. 23, T. 139 N., R. 40 W., 5 miles downstream from Height of Land Lake and 7½ miles east of city of Detroit Lakes.

Drainage area.- 270 square miles.

Records available.- March 1937 to September 1940.

Extremes.- Maximum daily discharge during year, 42 second-feet Sept. 21, 22; maximum gage height observed, 5.30 feet Apr. 6, ice jam; minimum daily discharge, 0.1 second-foot Mar. 23.

1937-40: Maximum daily discharge, 90 second-feet Mar. 23, 24, 1939; minimum daily, that of Mar. 23, 1940.

Remarks.- Records good except those for periods of ice effect or no gage-height record, and those below 5 second-feet, which are poor. Flow partly regulated by dams at Minnesota Department of Conservation on several lakes above station.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

2.5	0	2.8	4.0	3.4	36
2.6	.5	3.0	10.2	3.6	59
2.7	2.0	3.2	20.8		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	26	25				a0.7	2.8	1.0	2.6	a0.6	0.6
2	35	b24	b24				a1.0	1.2	2.2	2.9	a.5	.5
3	35	b24	b24			a0.6	a2.0	3.7	3.2	5.9	a1.6	.4
4	35	b26	b24		a1.0		a5.0	1.0	2.4	4.4	a.6	.4
5	37	*b30	24	a12			a10	1.0	2.6	3.2	a.4	.3
6	37	32	23			*.6	b26	1.6	1.0	2.4	.3	.2
7	37	32	23				b22	1.8	.7	2.2	a.3	.2
8	36	32	23		*b.8		*b19	1.6	.5	1.8	a.2	.2
9	36	32	23				b10	1.4	.6	1.4	.2	.3
10	36	b32	22				b4.0	1.4	.7	1.3	a.3	.4
11	36	b32	22	*b11		a.4	2.6	1.2	3.2	1.0	a.3	.4
12	36	b32	21	b12			2.6	.7	3.4	.8	.3	.3
13	36	31	b20	b12			2.8	.7	2.8	.7	a.2	.3
14	36	31	b20	b11			3.8	1.0	2.2	1.7	.2	8.1
15	36	31	b20	b8.0	a.8		2.4	.8	2.0	1.0	1.6	18
16	36	30	b16				2.0	.6	2.2	.7	.7	26
17	35	30	b16				3.0	.5	2.8	2.5	.6	33
18	35	29	b14	a6.0			3.6	.8	2.2	2.2	.6	35
19	34	29	b14			a.2	3.2	.7	2.0	1.8	.5	37
20	34	29	b14				4.6	1.0	1.8	1.3	.5	40
21	32	27	b14				2.4	1.3	2.4	.8	.4	42
22	31	27	b15				2.0	1.0	2.2	.6	.4	42
23	31	26	b15	a4.0		*.1	1.4	.8	2.0	.5	.5	37
24	31	26	b15				1.4	1.0	1.6	.3	.5	26
25	32	26	b15		a.6		1.4	2.6	1.3	.3	.5	35
26	30	26	b14			a.3	3.4	3.4	1.2	.4	.5	33
27	30	26	b14				2.0	3.4	1.4	.4	.5	30
28	29	26	b14	a2.0			3.4	3.0	3.6	.5	.5	29
29	28	26	b14				3.6	1.0	5.8	.6	.5	28
30	27	25	b13		-	*b.5	2.6	.8	4.0	.4	.5	27
31	26	-	a13		-	a.5	-	1.2	-	a.4	.5	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,040	37	26	33.5	2,060
November	855	32	24	28.5	1,700
December	570	25	13	18.4	1,130
Calendar year 1939	8,671.7	90	.7	23.8	17,200
January	236.0	-	-	7.61	468
February	23.0	-	-	.79	46
March	11.5	-	-	.37	23
April	154.9	26	-	5.16	307
May	45.0	3.8	.5	1.45	89
June	64.8	5.6	.5	2.16	129
July	47.2	5.9	.3	1.52	94
August	15.8	1.6	.2	.51	31
September	530.6	42	.2	17.7	1,050
Water year 1939-40	3,593.8	42	-	9.82	7,130

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and record of operation of dam at outlet of Height of Land Lake.
b Stage-discharge relation affected by ice.

Otter Tail River below Pelican River, near Fergus Falls, Minn.

Location.- Water-stage recorder, lat. 46°13'45", long. 96°07'00", in SW¼ sec. 20, T. 132 N., R. 43 W., 500 feet downstream from Dayton Hollow Dam, 5 miles downstream from Pelican River, and 5 miles southwest of city of Fergus Falls.

Drainage area.- 1,810 square miles.

Records available.- November 1933 to September 1940. October 1930 to November 1933 at site 4 miles downstream.

Extremes.- Maximum discharge during year, 600 second-feet Sept. 2 (gage height, 3.28 feet, affected by backwater from aquatic growth); minimum, 2.8 second-feet (regulated) Sept. 10 (gage height, 1.01 feet); minimum daily, 4.0 second-feet Sept. 15.
1930-40: Maximum discharge, 810 second-feet Dec. 11, 1930; minimum, 1.0 second-foot May 2, 1934, Sept. 30, 1935; minimum daily, 1.6 second-feet Feb. 7, 1937.

Remarks.- Records good. Flow completely regulated by power plants above stations.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	41	23	26	a7.0	23	40	141	458	388	63	16	24
2	6.2	24	22	a18	24	43	140	290	232	56	16	32
3	16	23	12	a17	23	27	215	148	275	59	14	22
4	17	29	19	a17	8.0	42	183	156	280	9.5	14	27
5	18	21	19	a18	24	34	147	253	264	43	42	34
6	7.6	27	24	a16	24	46	162	262	278	32	35	18
7	28	27	19	a7.0	20	46	178	272	275	11	26	7.6
8	20	24	20	a7.0	23	41	188	272	209	26	30	18
9	15	23	20	a17	23	a65	230	325	20	25	7.6	37
10	16	24	7.6	ab18	26	a26	243	254	134	30	7.1	25
11	30	22	17	a16	10	a38	214	276	141	21	7.1	26
12	15	20	15	a17	25	a38	124	200	164	20	7.6	38
13	26	27	15	a17	32	45	195	302	168	9.5	26	26
14	20	27	15	a7.0	40	44	74	323	179	9.5	19	29
15	16	27	14	a19	34	44	129	364	184	14	27	4.0
16	20	23	16	a24	36	43	202	362	35	10	18	25
17	15	25	6.6	a22	40	27	167	342	79	23	6.6	26
18	25	25	17	a22	39	45	116	326	92	29	30	27
19	19	11	19	a22	51	46	126	246	90	28	24	28
20	19	23	17	a22	41	43	136	332	74	9.5	22	26
21	8.8	24	17	a7.0	41	41	44	509	72	24	11	26
22	25	24	23	a20	44	40	168	408	49	79	61	15
23	19	23	24	a22	41	46	168	363	49	72	8.0	21
24	19	27	6.2	a22	42	14	135	313	65	24	14	18
25	20	26	6.2	a22	29	43	137	280	84	40	6.6	14
26	22	11	22	a22	41	31	60	185	56	26	18	19
27	27	20	19	23	40	24	146	335	45	17	20	19
28	16	12	22	9.5	43	56	203	345	54	22	19	15
29	25	23	20	24	42	75	232	379	66	15	19	5.8
30	13	9.5	a24	22	-	126	393	345	10	20	25	17
31	29	-	a22	24	-	68	-	352	-	15	5.8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	613.6	41	6.2	19.8	1,220
November	674.5	29	9.5	22.5	1,340
December	545.6	26	6.2	17.6	1,080
Calendar year 1939	32,709.2	482	3.5	89.6	64,870
January	547.5	24	7.0	17.7	1,090
February	929	51	8.0	32.0	1,840
March	1,387	126	14	44.7	2,750
April	4,996	393	44	167	9,910
May	9,577	509	148	309	19,000
June	4,111	388	10	137	8,150
July	882	79	9.5	28.4	1,750
August	602.4	61	5.8	19.4	1,190
September	669.4	38	4.0	22.3	1,330
Water year 1939-40	25,535.0	509	4.0	69.8	50,650

a No gage-height record; discharge computed on basis of power-plant records.
b Stage-discharge relation affected by ice.
Note.- Backwater from aquatic growth July 26 to Sept. 30; discharge computed on basis of gage heights and two discharge measurements.

Red River of the North at Fargo, N. Dak.

Location.- Staff gage, lat. 46°52'10", long. 96°47'00", in sec. 7, T. 139 N., R. 48 W., just upstream from Island Park Dam in Fargo and 10 miles upstream from Sheyenne River. Datum of gage is 870.00 feet above mean sea level (general adjustment of 1912).
Drainage area.- 6,940 square miles (revised).
Records available.- May 1901 to September 1940.
Average discharge.- 38 years (1902-40), 411 second-feet.
Extremes.- Maximum discharge observed during year, 1,030 second-feet Apr. 8, discharge measurement (gage height, 9.63 feet); no flow at times.
1901-40: Maximum discharge observed, 7,740 second-feet July 11, 1916 (gage height, 21.04 feet, present datum); maximum gage height observed, 23.6 feet (present datum) Apr. 6, 1916, affected by ice; no flow for many days in each year of period 1932-40.
Maximum stage known, 40.1 feet Apr. 7, 1897, U. S. Weather Bureau gage, zero of which is 863.5 feet above mean sea level (general adjustment of 1912).
Remarks.- Records good except those below 10 second-feet, which are fair. Gage read once daily. Flow partly regulated by several lakes in Otter Tail River Basin and municipal pools created by dams in channel of Red River. Figures of daily discharge do not include diversion by city of Fargo.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 14 to Nov. 19, Nov. 21 to Dec. 12)

Oct. 1 to Jan. 24				Jan. 25 to Sept. 30					
7.2	0	7.5	21	7.2	0	7.8	78	8.8	460
7.3	.4	7.6	36	7.3	.4	8.0	128	9.2	695
7.4	8.4			7.4	9.0	8.2	193	9.6	970
				7.6	40	8.4	270		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	16	18	b5.0	b3.0	18	55	193	382	55	7.3	0
2	0	18	18	b3.6	b.4	18	67	270	407	51	9.0	0
3	0	20	18	b.3	b0	20	101	358	382	42	20	0
4	0	17	17	b0	b0	21	358	488	382	30	12	0
5	0	12	16	0	b.4	20	650	516	407	27	10	0
6	0	16	16	0	b0	27	830	421	313	20	9.0	0
7	0	18	18	0	b0	30	970	270	270	21	7.3	0
8	0	18	17	0	b0	35	970	215	313	24	2.1	0
9	0	20	17	0	b.4	37	970	270	336	24	1.0	0
10	0	16	17	0	b3.0	34	900	313	292	20	7.3	0
11	0	17	17	0	b4.8	37	795	336	313	18	4.7	0
12	0	13	17	0	b7.5	38	695	336	238	16	6.4	0
13	0	13	17	0	9.0	44	605	358	140	12	2.1	0
14	4.4	13	16	b0	9.0	48	546	358	78	10	.1	0
15	15	15	15	b0	10	46	675	358	59	9.0	0	0
16	12	16	12	b0	8.1	40	605	358	94	10	0	0
17	13	17	13	b0	9.0	38	546	407	123	14	0	0
18	17	17	b15	0	9.0	42	434	460	143	16	0	0
19	20	18	b17	0	12	42	358	488	146	9.0	0	0
20	21	20	b17	0	15	50	336	488	109	7.3	.6	0
21	20	20	b15	0	15	50	292	460	74	5.6	0	0
22	17	20	b12	0	15	38	226	434	63	1.2	0	0
23	20	20	b12	0	15	50	200	382	67	0	0	0
24	18	20	b9.5	0	15	48	186	460	74	0	0	0
25	16	21	b9.5	2.2	15	53	149	546	70	0	0	0
26	17	20	b9.5	b5.5	15	50	176	516	65	0	0	0
27	18	18	b7.5	b4.8	18	50	230	460	61	0	0	0
28	21	18	b8.5	b3	20	51	212	434	55	1.6	0	0
29	20	17	b8.5	b4.8	20	57	200	336	53	8.1	0	0
30	18	17	b7.5	b3.0	-	55	162	292	55	7.3	0	0
31	18	-	b6.0	b1.3	-	55	-	336	-	10	.4	-

Month	Observed					Diversion (acre-feet)*	Adjusted for diversion	
	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet		Run-off in acre-feet	Mean in sec.-ft.
October	305.4	21	0	9.85	606	237	843	13.7
November	521	21	12	17.4	1,030	217	1,250	21.0
December	433.6	18	6.0	14.0	860	195	1,060	17.2
Calendar year 1939	66,535.9	3,600	0	182	128,014	-	-	-
January	33.5	5.5	0	1.08	66	205	271	4.41
February	248.6	20	0	8.57	493	190	683	11.9
March	1,242	57	18	40.1	2,460	206	2.670	43.4
April	13,399	970	55	447	26,580	206	26.790	450
May	11,917	546	193	384	23,640	258	23.900	389
June	5,564	407	53	185	11,040	291	11,330	190
July	469.1	55	0	15.1	930	335	1.260	20.5
August	99.3	20	0	3.20	197	236	433	7.04
September	0	0	0	0	0	270	270	4.54
Water year 1939-40	34,232.4	970	0	93.5	67,902	2,846	70.760	97.5

* Diversion by city of Fargo pumping plant.
b Stage-discharge relation affected by ice.
Note.- Shifting control or backwater from debris on control Oct. 14 to Nov. 21 to Dec. 12; discharge computed on basis of two discharge measurements and gage heights.

Red River of the North at Grand Forks, N. Dak.

Location.- Water-stage recorder, lat. 47°56', long. 97°03', in SE¼NE¼ sec. 33 (revised) T. 152 N., R. 50 W., in Grand Forks, 2 miles downstream from Red Lake River. Datum of gage is 778.42 feet above mean sea level (general adjustment of 1929).

Drainage area.- 30,200 square miles (includes 3,940 square miles in closed Devils Lake Basin).

Records available.- May 1901 to September 1940 in reports of U. S. Geological Survey. April 1882 to November 1912 in report of Minnesota State Drainage Commission.

Average discharge.- 58 years, 2,096 second-feet.

Extremes.- Maximum daily discharge during year, 10,000 second-feet Apr. 18; maximum gage height, 21.88 feet (affected by ice) Apr. 18; minimum discharge, 94 second-feet Sept. 6. 1882-1940: Maximum discharge observed, 43,000 second-feet Apr. 10, 1897 (gage height, 50.2 feet), from rating curve extended above 32,000 second-feet; minimum discharge, 2.4 second-feet Feb. 3-5, 12, 14, 16-19, 1937 (caused by unusual regulation during repair of dam at Grand Forks).

Remarks.- Records excellent except those for periods of backwater from aquatic vegetation, which are good, and those for periods of ice effect or missing gage heights, which are fair.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	296	319	371	190	170	220	320	2,390	1,390	553	165	200
2	296	319	358	160	170	200	340	2,350	1,310	428	270	175
3	296	274	a300	130	170	200	420	2,350	1,310	443	300	175
4	296	259	a350	150	160	190	500	2,350	1,160	490	270	185
5	344	267	a300	160	160	190	550	2,390	1,240	474	250	150
6	401	239	248	200	140	220	750	2,390	1,200	382	260	108
7	433	*208	256	190	160	240	1,200	2,430	1,240	334	290	108
8	371	292	332	180	160	200	*1,600	2,430	1,270	325	350	165
9	386	433	417	140	*160	200	2,600	2,350	1,240	268	330	185
10	319	386	433	120	150	220	4,000	2,220	1,240	325	260	220
11	294	281	358	140	150	200	5,000	2,050	1,120	346	225	250
12	358	261	319	160	180	220	5,500	1,970	1,160	370	205	180
13	319	235	320	*160	150	220	*6,000	1,930	1,120	286	185	175
14	332	212	300	140	160	*220	7,000	1,880	1,080	222	165	160
15	276	242	280	150	180	200	7,500	1,970	1,080	167	170	150
16	308	332	*260	130	180	200	8,500	1,880	1,010	214	155	135
17	296	386	280	150	160	220	*9,000	1,840	974	292	135	125
18	308	371	300	170	160	220	10,000	1,800	833	209	135	150
19	332	386	320	160	140	240	9,000	1,800	816	205	170	140
20	344	386	320	160	160	240	7,500	1,760	682	248	190	125
21	319	386	300	180	180	240	6,000	1,760	682	237	155	130
22	308	358	240	190	200	220	5,000	1,930	698	254	155	170
23	319	401	220	160	180	240	4,400	1,800	682	320	160	185
24	308	417	180	160	170	240	3,600	1,720	698	290	150	145
25	289	417	170	170	180	240	*3,270	1,590	649	350	130	165
26	308	417	180	170	190	240	3,020	1,590	633	360	145	200
27	308	371	200	190	200	260	2,780	1,550	601	220	160	185
28	308	a410	200	170	190	260	2,560	1,550	569	200	200	185
29	319	a430	200	160	220	260	2,430	1,630	569	140	320	235
30	332	a370	240	150	-	300	2,300	1,510	569	125	300	260
31	308	-	200	160	-	340	-	1,430	-	120	220	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	10,031	433	276	324	19,900
November	10,065	433	208	336	19,960
December	8,752	433	170	282	17,360
Calendar year 1939	221,777	6,500	68	608	439,850
January	5,000	200	120	161	9,920
February	4,930	220	140	170	9,780
March	7,100	340	190	229	14,080
April	122,640	10,000	320	4,088	243,300
May	60,590	2,430	1,430	1,955	120,200
June	28,825	1,390	569	961	57,170
July	9,197	553	120	297	18,240
August	6,575	350	130	212	13,040
September	5,121	260	108	171	10,160
Water year 1939-40	278,826	10,000	108	762	553,110

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of record for station on the Red Lake River at Crookston, Minn.

Note.- Stage-discharge relation affected by ice Dec. 13 to Apr. 18. Stage-discharge relation affected by aquatic vegetation July 23 to Sept. 30; discharge computed on basis of three discharge measurements, gage heights, and records for the station on Red Lake River at Crookston, Minn.

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Red River of the North at Emerson, Manitoba

(International Gaging Station)

Location.- Chain gage, lat. 49°00'30", long. 97°13'00", on Canadian National Ry. bridge in Emerson. Zero of gage is at mean sea level (adjustment of 1928 by Geodetic Survey of Canada).

Drainage area.- 40,200 square miles (revised), including 3,940 square miles of closed Devils Lake Basin.

Records available.- March to November 1902 and October 1929 to September 1940 in reports of U. S. Geological Survey. May 1912 to September 1929 in reports of Dominion Water and Power Bureau, Department of Mines and Resources, Canada.

Average discharge.- 27 years (1913-40), 1,873 second-feet.

Extremes.- Maximum discharge observed during year, 14,600 second-feet Apr. 21 (elevation, 766.27 feet, affected by ice); minimum observed, 95 second-feet Jan. 18.
1912-40: Maximum daily discharge observed, 46,200 second-feet Apr. 24, 1916 (elevation, 785.16 feet); minimum observed, 0.9 second-foot Feb. 6-8, 1937.

Remarks.- Records good except those for period of ice effect, which are poor. Gage read once daily.

Cooperation.- This station is one of the international gaging stations maintained by Canada under agreement with the United States.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	288	367	334	145	123	180	253	3,300	1,540	551	356	200
2	285	451	213	155	135	190	253	2,940	1,530	521	312	232
3	285	460	295	*162	138	195	243	2,530	1,480	506	262	292
4	304	457	316	165	130	203	248	2,720	1,410	491	238	305
5	343	451	331	163	*126	208	245	2,670	1,350	476	238	280
6	352	475	313	160	123	225	238	2,640	1,300	446	250	250
7	355	*504	*305	145	135	225	238	2,670	1,220	401	305	200
8	355	460	304	125	115	220	235	2,370	1,210	401	356	190
9	355	376	275	103	150	215	255	2,640	7,210	416	335	170
10	388	316	275	105	153	210	328	2,660	1,190	407	341	158
11	394	298	293	138	145	220	*740	2,620	1,240	380	326	144
12	421	250	260	170	143	230	1,520	2,530	1,240	356	338	130
13	427	228	278	180	143	233	2,970	2,400	1,220	326	356	118
14	424	285	295	170	145	230	3,860	2,260	1,170	300	356	158
15	361	397	316	145	145	*221	6,200	2,170	1,130	312	312	225
16	349	448	301	118	148	228	7,300	2,050	1,120	335	300	238
17	373	448	270	115	155	220	8,600	1,990	1,080	335	280	250
18	358	400	268	95	155	225	10,800	2,000	1,060	318	262	200
19	358	334	307	125	160	193	11,400	1,980	1,020	288	232	175
20	328	304	322	118	160	230	13,800	1,940	970	282	200	164
21	331	355	*314	110	165	265	14,600	1,890	938	275	180	146
22	340	*411	298	*104	170	263	*13,100	1,870	849	270	164	142
23	355	421	283	110	168	225	11,700	1,840	772	262	164	138
24	382	400	290	123	158	220	9,970	1,840	684	250	175	134
25	373	316	285	135	148	228	8,410	1,860	642	250	195	130
26	343	263	288	135	143	230	6,550	1,860	622	250	195	134
27	355	412	263	140	*162	235	5,760	1,780	632	268	180	164
28	361	463	220	145	175	230	4,890	1,710	608	312	180	180
29	352	421	195	138	183	*253	4,170	1,640	587	329	180	175
30	*346	364	168	128	-	255	3,660	1,620	566	371	164	182
31	427	-	143	123	-	245	-	1,590	-	389	175	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	11,068	427	285	357	21,950
November	11,535	504	228	384	22,880
December	8,618	334	143	278	17,090
Calendar year 1939	251,088	6,700	118	688	498,000
January	4,193	180	95	135	8,320
February	4,299	183	115	148	8,530
March	6,950	265	180	224	13,790
April	152,536	14,600	235	5,085	302,600
May	69,180	3,300	1,590	2,232	137,200
June	31,590	1,540	566	1,053	62,660
July	11,074	551	250	357	21,960
August	7,907	356	164	255	15,680
September	5,604	305	118	187	11,120
Water year 1939-40	324,554	14,600	95	887	643,800

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 6 to Apr. 21.

Bois des Sioux River near Fairmount, N. Dak.

Location.- Chain gage, lat. 46°03'00", long. 96°33'25", on line between secs. 22 and 27, T. 130 N., R. 47 W., at bridge on Minnesota highway 55, and North Dakota highway 11, three-quarters of a mile upstream from Minneapolis, St. Paul, & Sault Ste. Marie Ry. bridge, 2 miles east of Fairmount, 5 miles west of Tenney, Minn., and 15 miles downstream from Lake Traverse. Datum of gage is 952.13 feet above mean sea level (general adjustment of 1912). Prior to Mar. 29, 1940, staff gage at railway bridge three-quarters of a mile downstream at datum 8.95 feet higher.

Drainage area.- 1,560 square miles (revised).

Records available.- April 1919 to September 1940.

Average discharge.- 20 years (1920-40), 5.54 second-feet.

Extremes.- Flow less than 0.1 second-foot throughout year.
1919-40: Maximum discharge, 390 second-feet Apr. 22, 1922 (gage height, 5.7 feet site and datum then in use); maximum gage height, 5.9 feet Mar. 26, 27, 1939, site and datum then in use; no flow during parts of several years.
Maximum stage known, 9.0 feet April 1916, site and datum then in use.

Remarks.- Records poor. Gage read once daily when water stood in channel. Flow less than 0.1 second-foot during water year 1940.
Following are the figures of discharge in second-feet for the calendar year 1939.

Second-foot-days.....831.9
Maximum.....100
Minimum.....0
Mean.....2.28
Run-off in acre-feet.....1,650

Mustinka River above Wheaton, Minn.

Location.- Chain gage, lat. 45°49', long. 96°29', on line between secs. 7 and 8, T. 127 N., R. 46 W., 1 mile upstream from Chicago, Milwaukee, St. Paul & Pacific R. R. bridge, 1½ miles northeast of Wheaton and, 8 miles upstream from mouth.

Drainage area.- 834 square miles (revised).

Records available.- March to September 1917, June 1919 to September 1924, and March 1931 to September 1940. June to November 1916, at site 3½ miles downstream.

Extremes.- Maximum daily discharge during year, 338 second-feet Apr. 2; maximum gage height observed, 8.08 feet Apr. 2, affected by ice; no flow for several months.
1917, 1919-24, 1931-40: Maximum discharge observed, 2,340 second-feet Apr. 1, 1917 (gage height, 14.7 feet, datum then in use); no flow during several months.

Remarks.- Records good except those for period of ice effect and those below 2 second-feet, which are fair. Gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Mar.	Apr.	May	June	Day	Mar.	Apr.	May	June
1	0	b*221	23	5.3	16	0	39	1.4	0
2	0	b338	16	2.0	17	0	37	1.6	0
3	0	b327	12	1.0	18	0	26	3.5	0
4	0	b*267	8.7	.8	19	0	18	3.2	0
5	0	b257	7.3	.6	20	0	17	5.7	0
6	0	b267	8.9	.4	21	0	16	14	0
7	0	b248	8.3	.3	22	0	14	15	0
8	0	b*212	16	.4	23	0	25	12	0
9	0	164	14	.4	24	0	28	8.3	.1
10	0	*136	8.0	.4	25	0	18	7.0	0
11	0	111	4.9	.3	26	0	12	25	0
12	0	78	3.0	.2	27	0	8.0	36	0
13	0	68	2.0	.2	28	0	8.7	30	.1
14	0	68	3.2	.1	29	0	11	21	0
15	0	50	1.9	.1	30	b0	18	15	0
					31	a26	-	9.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October.....	0	0	0	0	0
November.....	0	0	0	0	0
December.....	0	0	0	0	0
Calendar year 1939	7,860.1	1,400	0	21.5	15,585
January.....	0	0	0	0	0
February.....	0	0	0	0	0
March.....	26	26	0	.8	52
April.....	3,107.7	338	8.0	104	6,160
May.....	345.1	36	1.4	11.1	684
June.....	12.7	5.3	0	.42	25
July.....	0	0	0	0	0
August.....	0	0	0	0	0
September.....	0	0	0	0	0
Water year 1939-40	3,491.5	338	0	9.54	6,921

* Winter discharge measurement made on this day.
a No gage-height record; discharge estimated.
b Stage-discharge relation affected by ice.

Wild Rice River near Abercrombie, N. Dak.

Location.- Staff gage, lat. 46°28'35", long. 96°47'15", in NE¼SW¼ sec. 25, T. 135 N., R. 49 W., 160 feet upstream from rubble masonry dam which serves as control, 3½ miles northwest of Abercrombie, and 8 miles downstream from Antelope Creek. Prior to Dec. 7, 1939, chain gage at highway bridge 1 mile upstream and at datum 5.0 feet lower (determined by water-surface observations).

Records available.- April 1932 to September 1940.

Extremes.- Maximum daily discharge during year, 200 second-feet Apr. 3, 6, 7; maximum gage height observed, 3.10 feet Apr. 8 (affected by backwater from ice); no flow for several months.

1932-40: Maximum daily discharge, 1,700 second-feet Mar. 25, 1939, from rating curve extended above 400 second-feet; no flow for some periods each year.

Remarks.- Records good except those for period of ice effect and those below 5 second-feet, which are fair. Gage read twice daily during periods of flow.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

1.03	0	1.15	1.24	2.0	35
1.05	.13	1.20	2.0	2.5	156
1.07	.30	1.3	4.1	3.0	390
1.10	.61	1.5	9.9		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							b22	24	8.6	0		
2							b150	17	6.7	.1		
3							b200	15	6.1	0		
4							b170	22	5.6	0		
5							*b170	24	5.6	0		
6							b200	23	5.1	0		
7							b200	22	4.6	0		
8							*b160	20	3.8	0		
9							b120	18	3.6	0		
10							b100	16	3.2	0		
11							*b80	15	3.2	0		
12							b65	13	2.8	0		
13							78	12	2.8	0		
14							57	18	2.2	0		
15							45	24	1.5	0		
16							40	21	1.4	0		
17							33	18	1.1	0		
18							31	18	.8	0		
19							31	21	.5	0		
20							26	28	.2	0		
21							21	35	.1	0		
22							17	29	0	0		
23							14	26	.1	0		
24							13	21	.1	0		
25							12	19	.1	0		
26							12	18	.5	0		
27							13	16	.4	0		
28							20	15	.4	0		
29							18	13	.4	0		
30							29	10	.3	0		
31							-	9.3	-	0		

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1939	10,783.0	1,700	0	29.3	21,390
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	2,147	200	12	71.6	4,260
May	600.3	35	9.3	19.4	1,190
June	71.8	8.6	0	2.39	142
July	.1	.1	0	.003	.2
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1939-40	2,819.2	200	0	7.70	5,590

* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.

Sheyenne River at Sheyenne, N. Dak.

Location.- Staff gage, lat. 47°50'20", long. 99°07'30", in NE¼ sec. 5, T. 150 N., R. 66 W., at recreation-pond dam 1 mile north of Sheyenne. Datum of gage is 1,408.65 feet above mean sea level (general adjustment of 1912). Former gage at site 250 feet downstream but at datum 1.49 feet higher.

Drainage area.- 5,930 square miles (includes 3,940 square miles in closed basin of Devils Lake).

Records available.- April 1929 to June 1933, October 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 63 second-feet, discharge measurement Apr. 16 (gage height, 3.92 feet); no flow during most of year.
1929-33, 1939-40: Maximum discharge observed, 990 second-feet Feb. 24, 1930 (gage height, 8.79 feet, datum then in use); no flow during parts of most years.

Remarks.- Records fair. Gage read once daily.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

3.5	0	3.8	24.0
3.6	2.3	3.9	52
3.7	10.4	4.0	98

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							0	e26	3.7			
2							0	e23	3.7			
3							0	e21	3.7			
4							0	19	3.7			
5							0	e18	4.4			
6							0	e17	4.4			
7							0	e16	3.7			
8							0	16	2.3			
9							0	18	3.7			
10							0	15	3.7			
11							.1	14	3.0			
12							18	13	2.3			
13							e31	13	2.3			
14							44	10	2.3			
15							40	10	1.8			
16							57	10	.8			
17							48	10	.5			
18							40	10	.2			
19							30	10	.1			
20							28	10	0			
21							24	9.4	0			
22							21	10	0			
23							21	10	0			
24							19	10	0			
25							e21	8.4	0			
26							e24	7.5	0			
27							e26	6.7	0			
28							e28	6.7	0			
29							30	5.1	0			
30							e28	4.4	0			
31							-	3.7	-			

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year	-	-	-	-	-
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	578.1	57	0	19.3	1,150
May	380.9	26	3.7	12.3	756
June	50.3	44	0	1.68	100
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1939-40	1,009.3	57	0	2.76	2,010

e Gage-height record faulty; discharge computed on basis of records for adjacent days.

Sheyenne River at Valley City, N. Dak.

Location.- Water-stage recorder and concrete control, lat. 46°55', long. 98°01', in SE¼NW¼ sec. 28, T. 140 N., R. 58 W., about 100 feet downstream from College Dam in Valley City and 15 miles downstream from Baldhill Creek. Gage used in 1919 was about half a mile upstream.

Drainage area.- 8,360 square miles (includes 3,940 square miles in closed basin of Devils Lake).

Records available.- March to August 1919, March 1938 to September 1940.

Extremes.- Maximum daily discharge during year, 484 second-feet Apr. 8; maximum gage height, 5.14 feet Apr. 8 (affected by ice); no flow during several periods.
1919, 1938-40: Maximum discharge observed, 2,750 second-feet Apr. 18, 1919 (gage height, 14.9 feet, site and datum then in use); no flow during several periods in 1938-40.

Remarks.- Records good except those for period of ice effect and those below 10 second-feet, which are fair.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Feb. 29		Mar. 1 to Sept. 30					
2.18	0	2.26	0	2.70	5.79	3.6	165
2.20	.1	2.30	.05	2.80	10.0	4.0	263
2.30	1.0	2.40	.21	3.00	27	4.4	354
		2.50	1.06	3.2	60	4.8	458
		2.60	2.82	3.4	102	5.0	511

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0						0	98	28	.1	0	0.2
2	0						0	84	25	.1	3.6	.1
3	0						0	74	19	0	.5	.1
4	.2						0	74	21	0	.1	.1
5	.7						0	74	20	0	.1	.1
6	.6						b10	68	21	0	0	0
7	0						b250	70	19	0	0	0
8	0						b484	74	15	0	0	0
9	0						*b445	72	15	0	0	0
10	0						b296	70	16	0	0	0
11	0						*b242	60	10	.2	0	0
12	0						*b204	66	8.2	.1	0	.1
13	0						b204	58	7.4	0	0	.1
14	0						b204	70	8.6	0	0	.1
15	0						b204	62	7.0	0	.2	.1
16	0						204	60	4.8	0	7.0	.1
17	0						215	62	4.5	.2	9.1	.1
18	0						246	80	2.6	.1	8.6	.1
19	0						263	66	.6	0	7.0	.1
20	0						252	66	.2	0	4.5	.1
21	0						219	66	.2	0	3.9	.1
22	0						184	58	.1	0	1.7	0
23	0						154	55	.3	0	1.1	0
24	0						154	53	.2	0	1.1	0
25	0						146	47	.2	0	.7	0
26	0						132	47	.3	0	1.1	0
27	0						115	46	.3	0	1.2	.2
28	0						115	40	.2	8.4	.7	.1
29	0						110	36	.2	.1	.6	0
30	0						110	33	.2	.5	.4	0
31	0						-	32	-	0	.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	1.5	0.7	0	0.05	3.0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1939	6,695.6	293	0	18.3	13,280
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	5,162	484	0	172	10,240
May	1,921	98	32	62.0	3,810
June	255.1	28	.1	8.50	506
July	9.8	8.4	0	.32	19
August	53.4	9.1	0	1.72	106
September	1.9	.2	0	.06	3.8
Water year 1939-40	7,404.7	484	0	20.2	14,690

* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.

Sheyenne River at West Fargo, N. Dak.

Location.- Water-stage recorder, lat. 46°53'20", long. 96°54'55", in sec. 31, T. 140 N., R. 49 W., about half a mile north of West Fargo and 3 miles upstream from Maple River. Datum of gage is 877.19 feet above mean sea level (general adjustment of 1929).

Drainage area.- 9,370 square miles (includes 3,940 square miles in closed Devils Lake Basin).

Records available.- September 1929 to September 1940. March 1902 to June 1907 and March to August 1919 at site a quarter of a mile upstream.

Average discharge.- 11 years (1929-40), 72.8 second-feet.

Extremes.- Maximum discharge during year, 555 second-feet Apr. 18 (gage height, 7.88 feet); minimum, 4.2 second-feet Sept. 29, 30.
1902-7, 1919, 1929-40: Maximum discharge, 2,260 second-feet Apr. 28. 1919 (discharge measurement); minimum, 2.0 second-feet Dec. 14, 1936 (gage height, 1.90 feet).

Remarks.- Records good except those for periods of ice effect, backwater from debris on control, or no gage-height record, all of which are fair.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.0	13	20	6.5	6.0	7.0	8.5	206	56	23	a17	13
2	8.8	12	19	6.5	6.0	6.5	10	206	70	22	a15	13
3	10	12	17	6.5	*5.5	6.0	12	196	67	22	13	12
4	10	12	17	6.5	6.0	6.0	14	176	67	18	13	a12
5	11	12	16	6.5	6.0	6.0	32	161	64	17	12	a13
6	11	15	*19	6.5	5.5	6.0	76	151	62	18	11	a15
7	12	15	20	6.5	5.5	6.0	86	142	62	18	12	14
8	11	15	20	7.0	5.5	6.0	128	137	58	18	a11	11
9	13	20	20	6.5	5.5	6.0	196	128	56	18	11	9.1
10	13	21	20	*6.5	5.5	6.0	170	116	53	a14	11	8.2
11	13	16	20	6.5	6.0	*6.5	150	108	53	14	10	7.4
12	13	17	20	6.5	6.0	7.0	140	105	54	14	9.9	7.8
13	13	16	19	6.5	6.0	7.5	140	102	52	13	9.5	7.6
14	13	17	15	6.5	6.0	8.0	146	108	49	12	9.3	7.6
15	12	17	15	6.5	5.5	7.0	216	108	45	13	8.9	7.2
16	13	18	13	6.5	5.0	6.0	354	128	42	14	8.2	7.6
17	13	20	16	6.5	5.0	6.0	499	142	40	18	7	7.8
18	12	19	18	6.5	5.0	6.5	527	132	35	18	6	8.0
19	13	18	16	6.5	4.8	6.5	499	116	32	a17	6.8	8.2
20	13	18	16	6.5	5.0	7.5	378	108	30	a18	7.4	a7.4
21	13	18	15	6.5	5.0	7.5	318	99	30	a14	6.9	6.6
22	13	19	11	6.0	5.5	7.5	276	96	28	a13	9.3	5.8
23	14	19	11	6.0	5.0	7.0	249	93	29	12	9.5	7.0
24	13	19	10	6.0	5.5	7.0	249	90	29	a12	9.9	7.0
25	13	20	11	6.0	5.5	7.5	266	93	28	12	24	6.8
26	13	24	10	6.0	6.5	7.0	271	96	28	11	11	6.6
27	14	18	10	6.5	7.0	6.5	249	90	28	11	9.1	6.6
28	13	20	9.0	6.0	7.0	6.5	227	87	27	12	11	6.0
29	14	18	9.0	6.0	7.0	7.0	211	84	25	11	12	5.0
30	14	18	8.0	6.0	-	7.5	206	82	25	13	13	5.2
31	14	-	7.5	6.0	-	8.5	-	77	-	13	14	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	383.8	14	8.0	12.4	761
November	516	24	12	17.2	1,020
December	471.5	20	7.5	15.2	935
Calendar year 1939	18,056.7	600	7.0	49.5	35,810
January	197.5	7.0	6.0	6.37	392
February	165.3	7.0	4.8	5.70	328
March	209.5	8.5	6.0	6.76	416
April	6,303.5	527	8.5	210	12,500
May	3,763	206	77	121	7,460
June	1,324	70	25	44.1	2,630
July	458	23	11	14.8	908
August	340.7	24	6.0	11.0	676
September	259.7	15	5.0	8.66	515
Water year 1939-40	14,392.5	527	4.8	39.3	28,540

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for station at Valley City.
Note.- Stage-discharge relation affected by ice Dec. 2, 13, 14, Dec. 19 to Apr. 4, Apr. 10-13. Backwater from debris on control Oct. 1 to Nov. 14, Nov. 26 to Dec. 1, Dec. 3-10; discharge computed on basis of three discharge measurements, gage-height record, and engineers' notes.

Buffalo River near Dilworth, Minn.

Location.- Water-stage recorder, lat. 46°57'40", long. 96°39'40", in SW¼SE¼ sec. 6, T. 140 N., R. 47 W., 6 miles north of U. S. Highway 10, 8 miles northeast of Dilworth, and 9 miles downstream from South Branch.

Drainage area.- 1,040 square miles.

Records available.- March 1931 to September 1940 (prior to 1936, winter records incomplete).

Extremes.- Maximum daily discharge during year, 500 second-feet Apr. 6-8; minimum daily, 0.1 second-foot Jan. 30, Feb. 4-20.
1931-40: Maximum discharge observed, 1,460 second-feet Apr. 16, 1936 (gage height, 14.56 feet); no flow at times in 1936.

Remarks.- Records fair except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		a7.0	a13		0.2	a2.4	a4.0	82	a32	7.6	9.2	10
2		a7.0	a13	a3.0	.2	a2.2	a10	90	a30	6.8	12	10
3	a3.0	*7.0	a12		.2		a20	92	a26	6.6	22	9.2
4		S.5	a12		.1		a100	a90	a24	6.2	25	9.0
5		9.5	*11	a2.0	.1		a300	a85	a24	5.6	18	9.4
6		9.0	11		.1	a2.0	*500	a80	a25	5.0	17	7.2
7		8.0	12		.1		500	a75	a25	4.8	15	6.4
8		S.5	11	a1.0	.1		500	a75	25	4.1	13	6.0
9		8.5	11		.1		480	a70	26	4.3	12	5.6
10	a5.0	8.0	10		.1	a2.2	460	a65	26	4.3	11	5.4
11		11	10	*.5	.1	*2.4	440	a60	25	4.1	10	5.2
12		9.5	9.0	.5	.1	2.4	440	56	24	3.8	9.6	5.2
13		9.5	S.0	.5	.1	2.4	420	52	22	3.6	9.4	5.2
14		11	S.0	.5	.1	2.4	*380	50	20	4.1	8.8	5.2
15		12	7.5	.5	.1	2.4	360	52	18	3.8	9.2	5.4
16		12	7.0	.5	.1	2.4	340	58	16	4.1	S.4	5.6
17		11	7.5	.5	.1	2.4	260	58	14	6.0	8.2	5.2
18		10	aS.0	.4	.1	2.4	210	62	13	8.4	7.8	5.0
19	a6.0	11	S.0	.4	.1		172	64	12	10	7.6	4.2
20		10	8.0	.5	.1		141	67	11	12	9.2	4.4
21		12	7.0	.5	1.9		120	70	11	11	11	4.8
22		12		.5	2.0		105	70	11	9.4	9.2	4.4
23		a13	a6.0	.4	a2.0	a2.0	92	a65	11	8.2	7.8	4.4
24		a13		.4	a2.0		84	a65	11	6.6	7.2	4.2
25		13		.2	a2.2		77	a60	11	5.6	7.6	4.4
26		13	a5.0	.2			70	a55	10	5.0	9.2	4.4
27	a7.0	a13		.2	a2.4		64	a50	9.8	4.8	9.4	4.4
28		a13		.2			58	a48	9.4	6.2	9.2	4.6
29		a13	a4.0	.2			62	a44	8.8	7.4	9.8	4.6
30		a13		.1	-	a3.0	74	a40	8.4	7.4	10	4.4
31		-		.2	-		-	a36	-	7.4	11	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	170.0	-	-	5.48	337
November	316.0	-	-	10.5	627
December	253.0	-	-	8.16	502
Calendar year 1939	17,750.0	1,300	0.9	486	35,210
January	26.9	-	.1	.87	53
February	22.0	-	.1	.76	44
March	70.0	-	-	2.26	139
April	6,863.0	500	-	229	13,610
May	1,986	92	-	64.1	3,940
June	539.4	-	8.4	18.0	1,070
July	194.2	12	3.6	6.26	385
August	343.8	25	7.2	11.1	682
September	173.4	10	4.2	5.78	344
Water year 1939-40	10,957.7	500	.1	29.9	21,730

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records, engineers' notes, and records for the Wild Rice River at Twin Valley.
Note.- Stage-discharge relation affected by ice Nov. 3-22, 25, 26, Dec. 5-17, 19-21, Jan. 11 to Feb. 22, Mar. 11-18, Apr. 6-17. Backwater from aquatic growth June 8 to Sept. 30; discharge computed on basis of gage heights and four discharge measurements.

Wild Rice River at Twin Valley, Minn.

Location.- Water-stage recorder, lat. 47°16', long. 96°14', in SW¼ (previously published in error) sec. 22, T. 144 N., R. 44 W., three-quarters of a mile northeast of village of Twin Valley and 7 miles downstream from Marsh Creek.

Drainage area.- 881 square miles (revised).

Records available.- July 1930 to September 1940. June 1909 to September 1917, at site a quarter of a mile downstream.

Average discharge.- 11 years, 1912-17, 1934-40, 127 second-feet.

Extremes.- Maximum discharge during year, 1,100 second-feet Apr. 9 (gage height, 7.28 feet) occurred during period of ice effect; minimum, 0.5 second-foot Nov. 4 (gage height, 0.74 foot).

1909-17, 1930-40: Maximum discharge, 9,200 second-feet July 22, 1909 (gage height, 20.0 feet, site and datum then in use), from rating curve extended above 3,300 second-feet; minimum, that of Nov. 4, 1939.

Remarks.- Records good except those for periods of ice effect or backwater from aquatic growth, which are fair, and those for periods of no gage-height record, which are poor. Flow partly regulated by Rice Lake and several smaller lakes above station. Diurnal fluctuation caused by mill at Faith, 17 miles above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	14	9.0			12	13	248	89	30		
2	7.4	11	17			11	13	240	85	28		
3	20	5.0	22	a10	a9.5	10	13	224	82	26	a40	a6.5
4	22	7.0	12			10	20	216	93	25		
5	26	22	17			9.8	30	208	93	20		
6	9.8	8.1	20			9.8	55	203	106	26		
7	22	22	19			*9.8	160	202	116	20		
8	21	18	9.0	a9.0	a9.5	9.8	*550	206	114	8.5	a30	a5.0
9	8.7	15	22		(*)	9.8	950	206	110	a17		
10	23	5.0	18			10	900	216	111	a18		
11	21	15	13		a9.0	11	*440	216	138			
12	22	14	24	(*)	a9.0	11	300	208	149			
13	23	8.5	*17	a9.5	8.1	12	400	202	128	a15	a14	a5.0
14	20	17	22		8.1	12	481	208	117			
15	21	19	18		8.1	13	*396	208	110			
16	7.9	20	17		8.1	13	366	216	102			c8.0
17	20	10	20		8.1	13	416	206	100			c5.2
18	16	17	13	a9.0	8.1	13	426	194	76	a22	a8.5	c4.2
19	7.5	24	20		8.1	13	366	190	65			c4.2
20	6.5	10	20		7.6	13	309	200	64			2.6
21	18	16	18		7.6	14	264	198	58			2.0
22	20	20	12		8.0	16	240	184	50			2.6
23	7.8	24	16	a9.0	9.0	16	240	180	46	a16	a7.5	2.8
24	19	9.0	16		10	16	224	164	45			c9.8
25	7.8	20	11		11	16	216	152	48			c7.0
26	*6.5	21			12	16	205	154	44			c4.6
27	13	15			12	16	197	156	40			c3.4
28	21	26	a12	a9.0	12	16	208	154	38	a20	a7.5	c3.6
29	20	30			12	17	216	152	34			c9.4
30	7.9	20			-	15	240	126	32			c4.6
31	17	-			-	*14	-	100	-			-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	500.8	26	6.5	16.2	993
November	482.6	30	5.0	16.1	957
December	494.0	24	-	15.9	980
Calendar year 1939	19,391.3	420	3.9	53.1	38,460
January	286.5	-	-	9.24	568
February	270.9	-	-	9.34	537
March	398.0	17	9.8	12.8	789
April	8,862	950	13	295	17,580
May	5,937	248	100	192	11,780
June	2,483	149	32	82.8	4,920
July	603.5	30	-	19.5	1,200
August	545.0	-	-	17.6	1,080
September	156.5	-	2.0	5.21	310
Water year 1939-40	21,019.8	950	2.0	57.4	41,690

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of four discharge measurements, approximate gage-height record, records of gate operation at outlet of Rice Lake near Bagley, and records for power plant at Heiberg.

c Backwater from aquatic growth; discharge computed on basis of one discharge measurement and gage-height record.

Note.- Stage-discharge relation affected by ice Oct. 31 to Nov. 5, Nov. 7-24, Nov. 27 to Dec. 7, Dec. 9-25, Feb. 22 to Mar. 3, Mar. 10 to Apr. 12.

Goose River near Portland, N. Dak.

Location.- Chain gage, lat. 47°33', long. 97°28', on line between secs. 12 and 13, T. 147 N., R. 54 W., at highway bridge 6¾ miles northwest of Portland. Datum of gage is 978.76 feet above mean sea level (general adjustment of 1929).

Drainage area.- 544 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 487 second-feet Apr. 16 (gage height, 7.88 feet, from graph based on gage readings); no flow for several months.
Maximum discharge known, 4,300 second-feet in 1882 (computed by engineers in St. Paul office, Corps of Engineers, U. S. Army) gage height, 23.2 feet.

Remarks.- Records fair. Gage read twice daily Apr. 14, 16-21, and once daily during other periods of flow.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

1.3	0	3.0	31.3	5.5	210
1.4	.1	3.5	58	6.0	260
1.6	.3	4.0	88	7.0	376
2.0	2.3	4.5	121	8.0	500
2.5	12.0	5.0	161		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							0	2.2	0.2			
2							0	1.1	0			
3							0	1.1	0			
4							0	.9	0			
5							0	.5	0			
6							0	.5	0			
7							0	.9	0			
8							a2	1.1	0			
9							b12	1.0	0			
10							*b18	.9	0			
11							b13	.8	0			
12							*b28	.4	0			
13							b82	.8	0			
14							145	.7	0			
15							224	1.1	0			
16							436	.5	0			
17							210	.5	0			
18							100	.5	0			
19							73	.5	0			
20							38	.4	0			
21							26	.4	0			
22							18	.4	0			
23							16	.4	0			
24							12	.4	0			
25							8.3	.3	0			
26							6.9	.3	0			
27							3.7	.3	0			
28							3.4	.2	0			
29							2.3	.2	0			
30							2.2	.2	0			
31							-	.2	-			

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year	-	-	-	-	-
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	1,479.8	436	0	49.3	2,940
May	19.7	2.2	.2	.64	39
June	.2	.2	0	.01	.4
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1939-40	1,499.7	436	0	4.10	2,980

* Winter discharge measurement made on this day.
a No gage-height record; discharge estimated.
b Stage-discharge relation affected by ice.

Goose River at Hillsboro, N. Dak.

Location.- Staff gage, lat. 47°24', long. 97°03', in NW¼ sec. 5, T. 145 N., R. 50 W., 50 feet upstream from city water supply dam. Prior to Mar. 29, 1940, chain gage at footbridge 600 feet downstream and at datum 11.45 feet lower.

Records available.- March 1931 to September 1940.

Extremes.- Maximum discharge observed during year, 710 second-feet Apr. 17 (gags height, 1.66 feet); no flow during several periods.

1931-40: Maximum discharge, 1,060 second-feet Apr. 16, 1936 (gage height, 13.06 feet, site and datum then in use), from rating curve extended above 331 second-feet; no flow at times in 1936, 1938, 1939, and 1940.

Remarks.- Records good except those for period of ice effect, which are fair, and those below 5 second-feet, which are poor. Gage read twice daily Apr. 4 to July 9, Aug. 2-9, Aug. 29 to Sept. 1, once daily on other days of flow.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge in second-feet)

0.15	0	.35	27	1.0	240
.20	3.1	.40	38	1.3	410
.25	8.9	.5	64	1.7	760
.30	17	.7	121		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							a0	27	3.1		6.8	0.4
2							a0	21	3.1		48	0
3							b.4	19	3.1		36	0
4							b.8	19	5.3		21	0
5							b2.2	17	3.1		14	0
6							b10	14	4.2		10	0
7							b55	15	3.1		3.1	0
8							b60	12	2.1		2.1	0
9							b110	7.6	3.1		1.4	0
10							*b240	4.2	3.1		.8	0
11							b280	3.1	3.1		0	0
12							285	2.1	3.1		0	0
13							260	2.1	3.1		0	0
14							334	5.3	1.4		0	0
15							432	6.4	1.4		0	0
16							562	6.4	1.4		0	0
17							710	10	1.4		0	0
18							494	7.6	.4		0	0
19							240	7.6	.4		0	0
20							131	7.6	0		0	0
21							112	7.6	0		0	0
22							86	7.6	0		0	0
23							61	7.6	0		0	0
24							43	7.6	0		0	0
25							38	7.6	0		0	0
26							34	7.6	0		0	0
27							27	6.4	0		0	0
28							27	4.2	0		0	0
29							29	4.2	0		1.4	0
30							25	3.1	0		.4	0
31							-	3.1	-		.4	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1939	4,315.3	460	0	11.8	8,550
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	4,688.4	710	0	156	9,300
May	280.6	27	2.1	9.05	557
June	49.0	5.3	0	1.63	97
July	0	0	0	0	0
August	145.4	48	0	4.69	288
September	.4	.4	0	.01	.8
Water year 1939-40	5,163.8	710	0	14.1	10,240

* Winter discharge measurement made on this day.
a No gage-height record; discharge estimated.
b Stage-discharge relation affected by ice.

South Fork of Goose River near Portland, N. Dak.

Location.- Chain gage, lat. 47°31', long. 97°27', on line between secs. 31 and 32, T. 147 N., R. 53 W., at highway bridge 1 mile downstream from Middle Fork, 4 miles upstream from mouth, and 4.4 miles west of Portland. Datum of gage is 959.51 feet above mean sea level (general adjustment of 1929).

Drainage area.- 362 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 460 second-feet (gage height 8.22 feet, affected by backwater from ice, from graph based on gage readings); no flow for several months.

Maximum stage known, 11 feet sometime in May 1935, according to information furnished by local resident.

Remarks.- Records fair. Gage read twice daily Apr. 7-12, 14-19, 21-26, Apr. 28 to May 3, May 6-10, 12, 13, 16 and once daily during other periods of flow.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

0.4	0	1.0	3.5	2.0	26	3.5	96	6.0	235
0.5	.2	1.3	8.3	2.5	44	4.0	126	7.2	412
.7	1.0	1.6	15.0	3.0	69	5.0	197		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							b0	12	1.8			
2							b0	10	1.5			
3							b0	8.9	1.8			
4							b0	8.1	1.3			
5							b0	8.1	2.1			
6							b0	6.6	1.8			
7							b20	6.2	1.8			
8							b50	7.4	1.8			
9							b260	7.2	1.6			
10							*b340	6.2	1.4			
11							b190	5.9	.6			
12							*b180	5.6	.6			
13							b240	5.3	.6			
14							b340	5.9	a.4			
15							*b400	6.2	a.2			
16							295	5.6	a.2			
17							114	5.0	a.1			
18							56	5.0	a0			
19							36	5.9	0			
20							28	5.4	0			
21							22	6.6	0			
22							19	4.4	0			
23							15	3.3	0			
24							13	3.0	0			
25							12	3.4	0			
26							11	3.4	0			
27							9.8	3.1	0			
28							8.9	2.8	0			
29							13	2.3	0			
30							16	2.1	0			
31							-	1.8	-			

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1939	-	-	-	-	-
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	2,688.7	400	0	89.6	5,330
May	172.7	12	1.8	5.57	343
June	19.6	2.1	0	.65	39
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1939-40	2,881.0	400	0	7.87	5,710

* Winter discharge measurement made on this day.
a No gage-height record; discharge estimated.
b Stage-discharge relation affected by ice.

Red Lake near Red Lake, Minn.

Location.- Water-stage recorder, lat. 47°57', long. 95°17', in NW¼ sec. 28, T. 152 N., R. 36 W., just upstream from dam at outlet, 18 miles northwest of village of Red Lake. Datum of gage is 1,169.70 feet (revised) above mean sea level (general adjustment of 1912).

Drainage area.- 1,950 square miles.

Records available.- May 1933 to September 1940. April 1930 to September 1933 at site at Waskish. June 1930 to November 1932 at site at Redby.

Extremes.- Maximum elevation recorded during year, 1,176.46 feet June 16; minimum recorded, 1,174.38 feet June 19.
1930-40: Maximum elevation, that of June 16, 1940; minimum, 1,170.50 feet Nov. 20, 1936 (revised).

Remarks.- Records excellent except those for Dec. 15 to Feb. 11, which are good. Water level subject to fluctuation caused by change in direction and velocity of wind and by seiches.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.14	5.06	4.85	4.90	4.90	4.97	5.07	5.63	5.88	5.63	5.56	5.08
2	5.10	5.02	4.93	4.90	4.90	4.97	5.09	5.64	5.91	5.63	5.49	5.07
3	5.04	4.96	4.97	4.90	4.90	4.96	5.20	5.68	6.01	5.61	5.46	5.08
4	5.09	4.99	4.97	4.90	4.90	4.95	5.20	5.69	6.03	5.57	5.42	5.08
5	5.10	4.99	4.95	4.90	4.90	4.97	5.21	5.64	5.94	5.55	5.34	5.03
6	5.15	5.00	4.95	4.90	4.90	4.97	5.22	5.69	5.92	5.54	5.32	5.07
7	5.17	4.92	4.89	4.90	4.90	4.96	5.22	5.77	5.95	5.57	5.30	5.05
8	5.14	5.02	4.95	4.89	4.89	4.96	5.21	5.78	6.07	5.59	5.37	5.07
9	5.16	4.87	4.94	4.89	4.90	4.96	5.24	5.76	5.98	5.54	5.37	4.93
10	5.12	4.70	4.94	4.90	4.89	4.95	5.23	5.78	5.87	5.71	5.35	4.88
11	4.84	4.94	4.89	4.90	4.90	4.95	5.25	5.77	5.89	5.63	5.32	4.90
12	5.10	4.97	4.85	4.90	4.89	4.94	5.25	5.79	5.85	5.53	5.32	4.84
13	5.10	4.99	4.95	4.90	4.89	4.93	5.28	5.87	5.98	5.37	5.34	4.89
14	5.04	4.99	4.96	4.89	4.90	4.93	5.28	6.00	5.59	5.46	5.35	4.93
15	4.83	4.96	4.96	4.89	4.89	4.93	5.28	5.91	5.80	5.44	5.33	4.90
16	5.05	4.98	4.95	4.90	4.90	4.94	5.29	5.90	5.86	5.41	5.32	4.89
17	5.09	4.97	4.96	4.89	4.90	4.93	5.30	5.90	5.90	5.47	5.29	4.95
18	5.00	4.99	4.97	4.89	4.91	4.92	5.33	5.84	5.76	5.51	5.23	4.95
19	5.09	5.00	4.96	4.89	4.90	4.93	5.33	5.89	5.74	5.51	5.22	4.92
20	5.01	4.96	4.96	4.89	4.90	4.93	5.33	5.88	5.81	5.46	5.03	4.92
21	4.98	4.97	4.97	4.89	4.89	4.92	5.35	5.87	5.77	5.45	5.21	4.93
22	5.05	4.99	4.97	4.89	4.89	4.92	5.35	5.84	5.80	5.45	5.27	4.94
23	5.17	4.91	4.95	4.89	4.90	4.92	5.36	5.88	5.72	5.46	5.17	5.01
24	5.17	5.00	4.93	4.88	4.89	4.92	5.37	5.90	5.65	5.49	5.20	4.97
25	5.11	5.00	4.92	4.89	4.91	4.93	5.38	5.90	5.63	5.49	5.21	4.86
26	5.03	4.98	4.93	4.88	4.93	4.93	5.39	5.90	5.65	5.53	5.17	4.79
27	4.98	4.96	4.92	4.90	4.94	4.94	5.40	5.86	5.61	5.50	5.13	4.85
28	4.99	4.98	4.92	4.89	4.93	4.99	5.47	5.87	5.52	5.57	5.13	4.90
29	4.98	4.96	4.91	4.90	4.96	5.05	5.53	5.84	5.56	5.42	5.01	4.89
30	4.93	4.95	4.90	4.90	-	5.06	5.61	5.84	5.60	5.53	5.06	4.86
31	4.88	-	4.91	4.89	-	5.06	-	5.84	-	5.53	5.09	-

Note.- Gage heights Dec. 16 to Feb. 10 computed from record at river station located about 125 feet downstream.

Red Lake River near Red Lake, Minn.

Location.- Water-stage recorder, lat. 47°57', long. 95°17', in NW¼ sec. 28, T. 152 N., R. 36 W., just downstream from dam at outlet of lower Red Lake, about 18 miles northwest of hamlet of Red Lake, Minn. Datum of gage is 1,169.70 feet (revised) above mean sea level (general adjustment of 1912).

Drainage area.- 1,950 square miles.

Records available.- May 1933 to September 1940.

Extremes.- Maximum discharge during year, 534 second-feet June 2 (gage height, 6.18 feet, affected by aquatic growth); minimum, 18 second-feet Sept. 4 (gage height, 3.20 feet, affected by aquatic growth).

1933-40: Maximum discharge, that of June 2, 1940; no flow Sept. 19, 1933; Aug. 31 to Sept. 10, Oct. 1, 1935; May 16-17, 19-22, Nov. 20, 1936.

Maximum discharge known, 1,190 second-feet June 17, 1927, from discharge measurement by Minnesota Department of Drainage and Waters.

Remarks.- Records fair. Flow completely regulated by Red Lake.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	205	225	215	190	200	220	240	340	430	320	220	20
2	200	220	220	190	200	220	240	350	430	310	220	20
3	190	205	240	190	200	220	260	360	430	310	210	19
4	195	215	240	190	200	220	260	360	440	300	205	28
5	210	215	240	190	200	220	260	350	430	300	190	130
6	210	220	240	190	200	220	280	370	430	290	185	130
7	220	215	240	190	200	220	280	390	430	300	175	130
8	220	220	240	190	200	220	260	390	440	300	175	135
9	220	200	240	190	200	220	280	390	430	290	175	135
10	210	180	240	190	200	220	280	390	420	310	165	130
11	175	210	220	190	200	220	280	390	420	300	165	130
12	210	220	190	190	200	220	280	400	410	280	160	122
13	210	220	200	190	200	220	280	420	410	250	160	140
14	200	220	200	190	200	220	280	430	360	260	160	145
15	175	220	200	190	200	220	280	430	390	250	150	145
16	200	220	200	190	200	220	280	420	400	250	150	150
17	205	220	200	190	200	220	280	420	400	250	145	160
18	200	220	200	190	200	220	290	410	380	250	135	165
19	220	225	200	190	200	220	300	420	370	250	130	165
20	205	220	200	190	200	220	300	420	380	235	84	165
21	200	220	200	190	200	220	300	420	380	235	49	165
22	205	225	200	190	200	220	300	420	380	235	42	165
23	235	210	200	190	200	220	300	430	360	235	36	175
24	235	225	200	190	200	220	300	430	340	230	32	175
25	225	225	200	190	200	220	300	430	340	230	28	165
26	220	225	200	190	220	220	300	430	340	235	25	155
27	205	225	200	190	220	220	300	420	330	230	24	165
28	200	230	200	190	220	240	300	430	310	235	24	175
29	200	230	190	190	220	240	320	420	310	215	23	175
30	195	225	190	190	-	240	340	420	320	225	22	165
31	190	-	190	190	-	240	-	420	-	225	22	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	6,390	235	175	206	12,670
November	6,550	230	180	218	12,990
December	6,535	240	190	211	12,960
Calendar year 1939	70,444	350	104	193	139,710
January	5,890	190	190	190	11,680
February	5,880	220	200	203	11,660
March	6,900	240	220	223	13,690
April	8,550	340	240	285	16,960
May	12,520	430	340	404	24,830
June	11,640	440	310	388	23,090
July	8,135	320	215	262	16,140
August	3,686	220	22	119	7,310
September	4,044	175	19	135	8,020
Water year 1939-40	86,720	440	19	237	172,000

Note.- Stage-discharge relation affected by backwater from aquatic growth or ice, or a combination of both throughout the year; discharge computed on basis of fifteen discharge measurements, gage-height record, engineers' notes, and weather records.

Red Lake River at Highlanding, near Goodridge, Minn.

Location.- Water-stage recorder, lat. 48°03', long. 95°48', on line between secs. 28 and 29, T. 153 N., R. 40 W., at bridge at Highlanding, 7 miles south of Goodridge and 33 miles upstream from Thief River.

Drainage area.- 2,300 square miles.

Records available.- October 1930 to September 1940.

Average discharge.- 10 years, 72.8 second-feet.

Extremes.- Maximum discharge during year, 1,300 second-feet Apr. 19 (gage height, 6.22 feet, affected by backwater from ice); minimum, 103 second-feet Sept. 9 (gage height, 3.60 feet, affected by aquatic vegetation); minimum gage height, 3.20 feet Nov. 10, affected by aquatic vegetation.

1930-40: Maximum discharge observed, 1,460 second-feet May 13, 1938 (gage height, 7.18 feet); maximum gage height observed, 7.44 feet Apr. 21, 1939, affected by backwater from ice; no flows during infrequent periods in 1931-34, 1936, 1937.

Remarks.- Records excellent except those for periods of ice effect or backwater from aquatic vegetation, which are good. Flow partly regulated by dam at outlet of Red Lake.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	245	220	190	170	180	200	220	533	400	260	160	145
2	245	*240	160	170	180	200	220	549	410	250	175	145
3	245	260	180	180	180	200	240	533	420	240	165	135
4	245	260	180	170	160	200	240	517	420	225	155	135
5	250	240	170	180	180	200	260	486	430	215	145	130
6	245	220	170	180	180	200	260	455	430	205	140	125
7	240	220	180	180	180	200	260	455	440	195	140	130
8	240	220	180	160	180	200	280	440	440	190	135	118
9	235	220	190	180	180	*200	300	440	450	180	135	108
10	235	190	200	180	180	200	320	424	440	170	135	108
11	230	220	200	180	180	200	320	424	440	170	135	112
12	230	220	200	180	*180	200	*320	408	420	170	135	120
13	235	200	180	180	180	200	360	408	420	165	135	130
14	235	200	180	180	180	220	440	408	400	160	135	135
15	235	220	*170	*180	190	220	500	408	390	155	135	145
16	230	220	170	180	190	220	600	424	380	155	135	150
17	230	220	170	180	190	220	700	424	380	155	135	160
18	230	220	180	180	190	220	900	424	360	155	135	160
19	230	220	180	180	190	220	1,260	424	350	150	135	165
20	225	220	190	180	190	220	1,080	420	340	145	135	165
21	225	200	190	180	190	220	980	420	350	135	135	170
22	225	220	180	180	190	220	946	410	360	135	135	170
23	225	200	170	180	190	220	861	410	350	140	135	180
24	225	200	180	180	190	220	694	410	340	145	135	180
25	230	200	180	180	190	220	533	400	320	145	140	180
26	230	200	180	180	200	220	455	400	310	145	140	175
27	225	200	180	180	200	220	393	400	310	150	145	175
28	220	200	180	180	200	220	408	400	290	170	150	175
29	220	240	180	180	200	220	455	400	280	165	145	170
30	220	220	180	180	-	220	517	400	270	155	140	170
31	220	-	180	180	-	220	-	390	-	155	145	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	7,200	250	220	232	14,280
November	6,530	260	190	218	12,950
December	5,620	200	170	181	11,150
Calendar year 1939	68,676	1,100	88	188	136,230
January	5,550	180	170	179	11,010
February	5,410	200	180	187	10,730
March	6,560	220	200	212	13,010
April	15,322	1,260	220	511	30,390
May	13,444	549	390	434	26,670
June	11,340	450	270	378	22,490
July	5,350	260	135	173	10,610
August	4,400	180	135	142	8,730
September	4,466	160	108	149	8,860
Water year 1939-40	91,192	1,260	108	249	180,880

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Oct. 31 to Apr. 18. Backwater from aquatic vegetation Oct. 1-30, May 20 to Sept. 30; discharge computed on basis of six discharge measurements, gage heights, and weather records.

Red Lake River at Crookston, Minn.

Location.- Water-stage recorder, lat. 47°47', long. 96°36', in sec. 30, T. 150 N., R. 46 W., at highway bridge in Crookston, a quarter of a mile downstream from dam and power house of Crookston Light & Power Co. Datum of gage is 833.03 feet above mean sea level (general adjustment of 1929).

Drainage area.- 5,330 square miles (revised).

Records available.- May 1901 to September 1940.

Average discharge.- 39 years, 880 second-feet.

Extremes.- Maximum discharge during year, 6,000 second-feet Apr. 16 (gage height, 14.73 feet), occurred during period of ice effect; minimum, 25 second-feet Sept. 4 (gage height, 2.91 feet, affected by aquatic growth).
1901-40: Maximum discharge, 14,700 second-feet July 5, 1919; minimum, 2.0 second-feet Dec. 14-16, 1937.

Remarks.- Records fair. Flow regulated by power plants above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	300	220	145	130	170	220	160	1,360	620	260	190	102
2	270	225	380	150	170	150	220	1,480	520	360	200	170
3	260	220	270	160	180	170	240	1,540	680	370	145	84
4	310	185	110	200	160	180	180	1,510	580	280	170	26
5	420	130	110	170	190	240	260	1,300	540	195	225	72
6	290	235	300	150	170	170	190	1,580	620	260	260	185
7	370	410	330	110	150	200	550	1,310	620	185	225	210
8	310	360	320	120	170	240	*1,200	1,220	680	270	130	210
9	235	310	250	200	*150	170	1,700	1,170	420	250	145	310
10	330	260	205	150	200	280	2,000	1,120	700	300	135	38
11	290	155	290	190	170	170	2,800	1,140	560	190	102	195
12	270	90	340	*140	*170	220	2,400	864	580	210	118	112
13	260	185	360	160	220	*160	*2,400	1,200	560	72	72	100
14	290	290	270	95	200	180	2,800	1,080	520	195	62	100
15	260	290	260	150	130	170	4,000	996	520	290	54	130
16	320	280	*225	190	200	180	*5,500	958	420	124	82	124
17	290	300	300	160	140	220	5,000	907	600	140	145	116
18	330	300	*320	160	150	150	4,400	936	380	230	220	86
19	270	290	290	180	170	190	3,640	655	410	220	102	100
20	270	320	250	190	180	140	3,020	1,050	390	215	145	215
21	300	300	245	130	180	200	3,020	947	340	270	118	165
22	310	320	170	160	120	160	*2,300	773	420	190	155	54
23	225	330	175	160	180	160	1,700	631	350	340	80	170
24	260	320	150	140	180	160	1,940	736	380	380	114	210
25	270	300	280	180	180	180	1,820	701	380	215	140	135
26	245	310	225	130	170	170	1,640	635	370	60	210	150
27	280	330	180	140	220	170	1,400	795	360	56	240	220
28	260	245	240	130	190	200	1,180	719	360	60	310	205
29	270	260	180	170	180	320	1,390	547	380	58	80	240
30	270	220	180	180	-	75	1,420	614	195	175	130	60
31	290	-	130	190	-	170	-	671	-	290	135	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	8,925	420	225	288	17,700
November	7,990	410	90	266	15,850
December	7,480	380	110	241	14,840
Calendar year 1939	96,895	2,660	45	265	192,200
January	4,865	200	95	157	9,650
February	5,040	220	120	174	10,000
March	5,765	320	75	186	11,430
April	60,470	5,500	160	2,020	119,900
May	31,145	1,580	547	1,000	61,780
June	14,455	700	195	482	28,670
July	6,710	380	56	216	13,310
August	4,639	310	54	150	9,200
September	4,294	310	26	143	8,520
Water year 1939-40	161,778	5,500	26	442	320,800

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 28 to Apr. 18. Backwater from aquatic growth Oct. 1 to Dec. 27, June 1 to Sept. 30; discharge computed on basis of seven discharge measurements, gage heights, and engineers' notes.

Thief River near Thief River Falls, Minn.

Location.- Water-stage recorder and concrete control, lat. 48°11', long. 96°10', in sec. 3, T. 154 N., R. 43 W., 5 miles north of city of Thief River Falls and 7 miles upstream from mouth.

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 1940.

Average discharge.- 22 years (1909-17, 1922-24, 1928-40), 73.9 second-feet.

Extremes.- Maximum discharge observed during year, 728 second-feet Apr. 15 (gage height, 7.85 feet, affected by backwater from ice); no flow for several months.
1909-17, 1920-21, 1922-24, 1928-40: Maximum discharge observed, 4,080 second-feet Apr. 23, 1916 (gage height, 14.5 feet); no flow in fall and winter of several years.

Remarks.- Records good except those below 5 second-feet, those for period of ice effect, and those estimated, which are poor. Flow regulated in Thief and Mud Lakes and in swamps above station. Some water diverted into Mud Lake, which is used as game preserve. Twice-daily gage readings used Apr. 10-20.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

3.8	0	4.6	11.9	6.5	358
3.9	.06	4.8	29.6	7.0	485
4.0	.13	5.0	56	7.8	713
4.2	.40	5.5	140		
4.4	3.0	6.0	242		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							0	58	2.5	0		
2							0	66	2.5	0		
3							0	64	2.3	0		
4							0	59	2.1	0		
5							0	53	2.1	0		
6							0	46	1.9	0		
7							0	40	1.7	0		
8							a30	33	1.5	0		
9							a90	29	1.7	0		
10							*b130	24	1.7	0		
11							b160	20	1.7	0		
12							b150	17	1.7	0		
13							b190	15	1.4	0		
14							b400	13	1.1	0		
15							*b700	12	.8	0		
16							567	11	.6	0		
17							181	10	.4	0		
18							150	8.5	.4	0		
19							220	9.0	.3	0		
20							163	8.5	.2	0		
21							126	6.9	.2	0		
22							108	6.4	.2	0		
23							90	6.4	.1	0		
24							79	7.4	.1	0		
25							68	6.4	.1	0		
26							59	5.6	0	0		
27							55	4.5	0	0		
28							53	3.6	0	.2		
29							52	2.7	0	.1		
30							50	2.7	0	0		
31							-	2.7	-	0		

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1939	467.7	33	0	1.28	928
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	3,871	700	0	129	7,680
May	651.3	66	2.7	21.0	1,290
June	29.3	2.5	0	.98	58
July	.3	.2	0	.01	.6
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1939-40	4,551.9	700	0	12.4	9,030

* Winter discharge measurement made on this day.
a No gage-height record; discharge estimated.
b Stage-discharge relation affected by ice.

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Clearwater River near Pinewood, Minn.

Location.- Staff gage, lat. 47°39', long. 95°09" in sec. 8, T. 148 N., R. 35 W., 3½ miles northeast of Pinewood. Datum of gage is 1,322.59 feet above mean sea level (general adjustment of 1929).

Drainage area.- 132 square miles.

Records available.- April to September 1940.

Extremes.- Maximum discharge during period, 246 second-feet, Apr. 13 (gage height, 4.25 feet, from graph based on gage readings); minimum daily, 15 second-feet, Sept. 6.

Remarks.- Records good.

Rating table, Apr. 9 to Sept. 30 (gage height in feet, and discharge in second-feet)

1.3	14.2	2.2	66	3.5	174
1.4	18.6	2.4	80	4.0	224
1.6	28.6	2.6	96	4.1	235
1.8	40	2.8	112		
2.0	52	3.0	129		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							-	129	49	23	24	19
2							-	120	43	24	25	18
3							-	112	43	26	24	17
4							-	104	46	26	24	16
5							-	96	56	26	23	16
6							-	88	56	25	24	15
7							-	76	56	25	23	26
8							-	76	46	26	23	23
9							138	76	46	23	23	23
10							165	84	46	23	23	20
11							165	88	43	26	22	20
12							235	80	40	23	22	20
13							235	73	37	22	20	19
14							224	76	34	20	19	19
15							214	76	34	19	22	18
16							194	76	31	19	22	18
17							184	70	29	24	20	19
18							165	70	27	22	20	19
19							138	66	26	20	19	19
20							120	66	25	20	18	19
21							112	66	26	19	18	18
22							104	62	27	17	17	19
23							96	59	27	22	17	22
24							88	59	26	26	18	22
25							84	56	25	22	19	20
26							76	56	23	20	20	20
27							70	52	23	19	19	20
28							80	49	27	24	19	19
29							100	49	24	24	20	19
30							120	46	23	22	22	19
31							-	43	-	23	20	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October					
November					
December					
Calendar year					
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April 9-30	3,107	235	70	141	6,160
May	2,299	129	43	74.2	4,560
June	1,064	56	23	35.5	2,110
July	705	28	17	22.7	1,400
August	649	25	17	20.9	1,290
September	581	26	15	19.4	1,150
The period	-	-	-	-	16,670

Clearwater River near Leonard, Minn.

Location.- Staff gage, lat. 47°44', long. 95°13', in E½SW¼ sec. 12, T. 149 N., R. 36 W., 300 feet downstream from dam at outlet of Clearwater Lake and 8 miles northeast of Leonard.

Drainage area.- 153 square miles.

Records available.- June 1934 to September 1940.

Extremes.- Maximum daily discharge during year, 266 second-feet Apr. 16; minimum discharge, 2 second-feet Mar. 25 to Apr. 3 (estimated leakage through stoplogs).
1934-40: Maximum discharge observed, 334 second-feet May 11, 1938 (discharge measurement); minimum discharge, that of Mar. 25 to Apr. 3, 1940.

Remarks.- Records fair. Flow regulated by dam 300 feet above station. Gage read once daily.

Rating table, water year 1939-40, except period of backwater from debris (gage height in feet, and discharge in second-feet)
(Shifting-control method used Oct. 1 to Feb. 15, Apr. 8-24)

0.6	6.8	1.2	57	1.8	163
.8	18	1.4	87	2.0	210
1.0	35	1.6	122	2.2	266

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	25	30	26	18	26	a2	210	60	26	26	18
2	17	25	30	26	18	26	a2	186	60	26	26	18
3	17	25	30	26	16	26	a4	163	56	26	26	19
4	20	25	30	26	18	26	12	194	65	26	26	18
5	32	25	30	23	18	26	18	252	68	25	26	18
6	32	28	30	23	18	26	26	186	65	25	26	18
7	30	25	30	23	18	26	43	163	65	25	24	27
8	30	28	30	23	18	26	68	134	65	26	23	27
9	32	28	32	22	18	26	104	122	57	26	24	27
10	32	25	32	20	18	26	134	111	55	26	24	24
11	32	25	30	18	19	26	134	111	50	27	21	18
12	30	25	30	18	18	26	152	111	50	29	19	16
13	26	25	30	18	18	31	174	108	47	27	19	16
14	26	25	28	18	18	31	210	115	45	26	19	16
15	25	25	28	18	18	31	252	115	43	26	19	16
16	25	25	30	18	22	31	266	111	39	26	19	16
17	25	23	30	18	22	31	252	111	35	26	19	18
18	25	20	30	18	22	27	237	111	31	26	16	19
19	25	20	30	18	22	26	210	108	29	26	16	19
20	25	20	30	18	22	26	186	104	29	26	16	19
21	25	23	30	18	22	26	163	97	27	24	16	19
22	25	25	30	18	22	26	152	90	27	24	14	19
23	25	28	30	18	22	26	132	90	27	24	14	22
24	25	32	30	18	22	26	126	81	27	29	14	31
25	25	32	30	18	19	a19	115	81	26	27	14	29
26	25	32	30	18	19	a2	108	81	26	26	14	22
27	26	32	30	18	19	a2	117	68	26	24	14	21
28	26	28	30	18	26	a2	152	60	26	26	14	21
29	25	30	30	18	26	a2	142	60	26	27	16	19
30	25	30	26	18	-	a2	174	60	26	27	18	19
31	25	-	26	18	-	a2	-	60	-	26	18	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	799	32	16	25.8	1,580
November	764	32	20	26.1	1,560
December	922	32	26	29.7	1,830
Calendar year 1939	13,381	115	10	36.7	26,530
January	616	26	18	19.9	1,220
February	578	26	18	19.9	1,150
March	681	31	2	22.0	1,350
April	3,867	266	2	129	7,670
May	3,654	252	60	118	7,250
June	1,278	68	26	42.6	2,530
July	806	29	24	26.0	1,600
August	600	26	14	19.4	1,190
September	609	31	16	20.3	1,210
Water year 1939-40	15,194	266	2	41.5	30,140

a No gage-height record; leakage through stoplogs estimated.
Note.- Backwater from debris Apr. 8-24; discharge computed on basis of three discharge measurements and gage heights.

Clearwater River at Plummer, Minn.

Location.- Water-stage recorder, lat. 47°55', long. 96°03', in SE¼SW¼ sec. 4, T. 151 N., R. 42 W., on U. S. Highway 59, three-quarters of a mile northwest of Plummer. Prior to Nov. 10, staff gage at same site and datum.

Drainage area.- 512 square miles.

Records available.- April 1939 to September 1940.

Extremes.- Maximum discharge during year, 840 second-feet Apr. 16; maximum gage height, 8.51 feet Apr. 15, affected by backwater from ice; minimum discharge, 7.9 second-feet Aug. 18 (gage height, 2.05 feet, affected by backwater from aquatic vegetation).
1939-40: Maximum discharge, that of Apr. 16, 1940; minimum, that of Aug. 18, 1940.

Remarks.- Records good except those for Oct. 28 to Apr. 15 and Sept. 16-27, which are fair. Gage read once daily Oct. 1 to Nov. 10.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	42	48	20	18	19	20	520	131	23	17	11
2	32	42	42	20	17	20	18	500	122	22	16	11
3	33	44	34	20	17	20	22	490	120	22	17	11
4	36	48	26	20	17	22	26	480	118	20	17	10
5	40	50	26	20	17	24	34	460	120	18	16	9.8
6	40	*50	28	20	17	24	40	440	116	17	15	12
7	40	51	28	20	17	24	50	430	110	17	15	20
8	40	50	30	20	16	26	80	430	106	16	14	15
9	40	*46	32	20	14	24	160	420	108	15	14	12
10	42	46	32	20	*15	24	*220	410	108	16	14	12
11	44	46	30	19	18	*22	300	400	104	17	14	13
12	50	44	28	19	22	22	380	390	94	16	14	12
13	56	50	26	18	26	22	440	370	86	14	14	11
14	56	55	*26	18	26	22	*550	370	78	14	14	11
15	54	55	28	*17	24	22	750	360	68	14	13	11
16	52	50	30	18	22	22	740	350	62	13	13	a11
17	52	50	32	17	20	24	440	340	56	15	15	a10
18	50	50	30	17	20	24	350	330	50	15	12	a12
19	49	48	26	17	20	24	360	320	45	13	12	a13
20	48	44	26	18	19	24	380	310	40	13	12	a13
21	46	50	24	18	19	22	390	290	36	12	11	a13
22	45	50	24	18	18	22	390	270	36	12	11	a13
23	44	50	24	18	19	22	400	240	35	14	11	a16
24	44	49	22	18	19	20	410	218	34	15	11	a26
25	46	44	22	18	20	20	410	205	32	15	11	a24
26	46	48	22	18	20	20	420	192	30	14	11	a19
27	45	36	22	17	20	22	420	179	28	13	11	a18
28	44	40	22	17	17	24	440	165	27	18	11	17
29	44	42	22	13	18	28	470	157	25	20	11	17
30	44	48	22	19	-	28	500	148	24	18	12	18
31	40	-	22	19	-	24	-	140	-	16	12	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,374	56	32	44.3	2,730
November	1,418	55	36	47.3	2,810
December	856	48	22	27.6	1,700
Calendar year	-	-	-	-	-
January	571	20	13	18.4	1,130
February	552	26	14	19.0	1,090
March	707	28	19	22.8	1,400
April	9,610	750	18	320	19,060
May	10,324	520	140	333	20,480
June	2,149	131	24	71.6	4,260
July	497	23	12	16.0	986
August	411	17	11	13.3	815
September	421.8	26	9.8	14.1	837
Water year 1939-40	28,890.8	750	9.8	78.9	57,300

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of recorded range of stage, weather records.
Note.- Stage-discharge relation affected by ice Oct. 28 to Nov. 6, Nov. 8-22, Nov. 27 to Apr. 15. Backwater from aquatic vegetation Oct. 1-27, June 2 to Sept. 30; discharge computed on basis of gage-heights and five discharge measurements.

Clearwater River at Red Lake Falls, Minn.

Location.- Water-stage recorder, lat. 47°53', long. 96°17', in sec. 22, T. 151 N., R. 44 W., at Great Northern Ry. bridge at Red Lake Falls, about 1½ miles upstream from mouth and 2 miles downstream from nearest tributary, which enters from left.

Drainage area.- 1,420 square miles (revised).

Records available.- June 1909 to September 1917, November 1934 to September 1940.

Average discharge.- 13 years, 198 second-feet.

Extremes.- Maximum daily discharge during year, 3,000 second-feet Apr. 15; maximum gage height, 11.43 feet Apr. 15, affected by backwater from ice. No flow Aug. 19-22 (result of regulation).
1909-17, 1934-40: Maximum discharge observed, 3,990 second-feet Apr. 15, 16, 1916; no flow Sept. 15, 1936, Sept. 14, 1939, Aug. 19-22, 1940.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are poor. Flow partly regulated by Clearwater Lake and several smaller lakes. Diurnal fluctuation caused by mill 600 feet above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	47	47			55	65	834	175	31	23	3.0
2	41	35	38			26	42	834	160	42	15	7.0
3	50	37	54			24	50	807	155	37	33	19
4	44	31	42			42	60	781	145	14	36	18
5	47	48	45		20	44	55	730	145	29	18	9.0
6	56	62	49	a25		22	60	705	140	24	12	30
7	56	68	49			*20	120	681	130	14	23	30
8	54	60	43			40	200	657	140	29	24	14
9	62	50	50			18	600	634	130	23	29	43
10	58	34	49		*16	34	1,000	634	140	23	23	a40
11	60	37	60		19	36	1,100	611	130	26	8.0	35
12	56	32	62		*44	*28	1,200	588	125	19	8.0	38
13	66	43	*32	*22	8	28	1,400	540	120	16	7.8	a35
14	66	42	40	20	28	24	2,200	520	104	13	11	a30
15	60	49	45	5.5	20	28	3,000	500	94	32	16	a30
16	64	56	49	15	11	24	*2,400	490	80	23	6.6	a25
17	62	52	30		36	28	1,550	470	76	30	15	21
18	60	50	*28		13	36	1,110	460	76	30	.2	8.0
19	60	54	50		40	34	950	440	60	29	16	15
20	56	52	36		12	30	891	420	60	28	5.6	9.4
21	54	50			28	32	862	400	48	26	9.8	6.5
22	54	52			22	28	807	380	60	21	1.8	1.5
23	52	56			36	28	781	340	31	47	4.2	7.3
24	52	50		20	30	34	755	310	54	28	12	16
25	48	64			40	30	730	290	37	29	.1	39
26	50	52	a30		50	34	705	270	37	26	15	23
27	50	50			22	42	705	245	40	20	3.7	21
28	46	47			50	24	705	235	47	28	6	32
29	45	38			26	48	755	225	35	28	13	2.3
30	48	43			-	60	807	205	18	36	4.7	13
31	54	-			-	30	-	190	-	43	14	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,674	66	41	54.0	3,320
November	1,441	68	31	48.0	2,860
December	1,228	-	-	39.6	2,440
Calendar year 1939	25,147.5	644	2.4	68.9	49,890
January	662.5	-	-	21.4	1,310
February	733	-	-	25.3	1,450
March	1,011	60	18	32.6	2,010
April	25,665	3,000	42	856	50,910
May	15,426	634	190	498	30,600
June	2,792	175	18	93.1	5,540
July	840	47	13	27.1	1,670
August	414.5	36	.1	13.4	822
September	621.0	43	1.5	20.7	1,230
Water year 1939-40	52,508.0	3,000	.1	143	104,200

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed from records for station at Plummer, and from discharge for adjacent days.
Note.- Stage-discharge relation affected by ice Jan. 13 to Apr. 16. Backwater from aquatic vegetation Oct. 1 to Dec. 20, May 13 to Sept. 30; discharge computed on basis of 10 discharge measurements, gage heights, and engineers' notes.

Forest River near Fordville, N. Dak.

Location.- Chain gage, lat. 48°12', long. 97°44', on line between secs. 32 and 33, T. 155 N., R. 55 W., at highway bridge a quarter of a mile downstream from South Branch and 2 miles southeast of Fordville.

Drainage area.- 491 square miles.

Records available.- April to September 1940.

Extremes.- Maximum daily discharge during period, 110 second-feet Apr. 17, 18; maximum gage height observed, 3.60 feet Apr. 17, affected by ice; no flow Apr. 1-13, Sept. 3.

Remarks.- Records good except those for periods of ice effect, no gage-height record, or backwater from beaver dam, which are fair. Gage read twice daily at high stages and once daily at low stages.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							a0	13	a3.8	1.8	23	1.0
2							a0	9.2	a4.2	1.6	35	.4
3							a0	8.3	4.0	a1.4	a30	0
4							a0	7.4	a3.8	1.2	26	.5
5							a0	8.3	3.6	a1.0	18	1.2
6							a0	9.2	a3.6	.9	10	1.3
7							a0	13	3.6	.8	6.6	1.4
8							a0	10	a4.0	a.8	4.6	1.5
9							a0	9.6	4.4	.8	2.6	1.4
10							a0	10	a3.8	a1.5	a2.6	1.4
11							a0	9.2	3.1	3.8	2.6	1.3
12							0	8.4	3.0	4.8	2.6	1.3
13							a0	7.8	2.8	3.8	1.6	1.2
14							b6.0	7.4	2.6	a2.0	1.5	1.2
15							b44	8.2	a2.4	1.0	5.6	1.0
16							b80	7.8	2.3	1.0	8.8	1.0
17							b110	7.0	2.3	a3.2	4.6	.9
18							*b110	6.6	a2.2	5.4	4.6	.9
19							b70	6.2	2.0	1.8	a3.6	.8
20							61	6.0	a2.0	1.4	2.6	.8
21							47	6.0	1.9	1.4	a2.5	.8
22							*28	5.8	2.0	2.0	a2.4	.7
23							19	5.6	a1.9	a3.4	2.3	1.0
24							15	5.2	1.8	2.0	2.3	.9
25							12	4.8	a1.8	a2.0	2.0	.8
26							10	4.8	1.8	1.8	1.9	.6
27							15	4.6	1.9	31	1.4	.6
28							10	4.4	1.9	90	1.2	.6
29							4.8	a4.2	a1.9	52	1.0	.5
30							7.0	a4.0	a1.8	13	1.4	.4
31							-	3.8	-	12	1.3	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October					
November					
December					
Calendar year					
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	648.8	110	0	21.6	1,290
May	225.8	13	3.8	7.28	448
June	82.2	4.4	1.8	2.74	163
July	250.6	90	.8	8.08	497
August	216.2	35	1.0	6.97	429
September	27.4	1.5	0	.91	54
The period	1,451.0	110	0	-	2,880

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
b Stage-discharge relation affected by ice.
Note.- Backwater from beaver dam May 10 to July 26 and Aug. 23 to Sept. 30; discharge computed on basis of five discharge measurements, gage heights, weather records, and records for station at Minto.

Forest River near Minto, N. Dak.

Location.- Chain gage, lat. 48°16', long. 97°24', on line between secs. 1 and 12, T. 155 N., R. 53 W., 3 miles southwest of Minto.

Drainage area.- 538 square miles.

Records available.- March 1932 to September 1940.

Extremes.- Maximum discharge observed during year, 244 second-feet Apr. 17 (gage height, 6.00 feet); no flow during most of year.
1932-40: Maximum discharge observed, 700 second-feet Apr. 2, 1933 (gage height, 12.95 feet, affected by ice), from rating curve extended above 550 second-feet; no flow on many days in each year during the periods 1932-34, 1936-40.

Remarks.- Records good except those affected by backwater, which are fair. Gage read twice daily Mar. 31 to Apr. 7, Apr. 15 to June 1, June 3-30, Aug. 3 to Sept. 20, and once daily during remaining periods when river was flowing.

Discharge, in second-feet, water year October 1939 to September

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	b0	22	5.1	0	0	2.4
2						-	†b0	21	5.4	0	1.3	1.8
3						-	b0	19	5.1	0	42	1.3
4						-	b0	17	4.9	0	93	.7
5						-	b0	17	4.7	0	52	.2
6						-	b0	15	4.6	0	35	.1
7						-	b0	14	4.2	0	25	0
8						-	0	14	4.0	0	18	0
9						-	0	13	4.5	0	14	0
10						-	0	13	3.6	0	12	0
11						-	0	13	3.1	0	11	0
12						-	0	12	3.4	0	8.1	0
13						-	†0	12	3.4	0	6.8	0
14						-	b12	11	3.3	0	6.2	0
15						-	b18	11	3.4	0	6.0	0
16						-	68	11	3.1	0	6.0	0
17						-	*216	10	2.9	0	7.4	0
18						-	237	10	3.0	0	7.6	0
19						-	184	9.8	3.1	†0	7.2	0
20						-	108	8.8	3.3	0	6.8	0
21						-	78	8.1	2.7	0	6.2	0
22						-	73	7.6	2.7	0	5.6	0
23						-	49	7.6	2.5	0	5.2	0
24						-	42	7.6	2.7	0	4.8	0
25						-	32	7.4	2.0	0	4.2	0
26						-	30	6.8	1.3	0	3.9	0
27						-	26	6.5	.8	0	3.4	0
28						-	27	6.0	.4	0	2.9	0
29						-	27	5.7	.2	0	2.7	0
30						†0	25	5.3	0	0	2.0	0
31						b0	-	5.1	-	0	2.6	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1939	2,451.3	180	0	6.71	4,860
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	1,252	237	0	41.7	2,480
May	347.3	22	5.1	11.2	689
June	93.4	5.2	0	3.11	185
July	0	0	0	0	0
August	408.9	93	0	13.2	811
September	6.5	2.4	0	.217	13
Water year 1939-40	2,108.1	237	0	5.76	4,180

* Winter discharge measurement made on this day.
† Observation of no flow made on this day.
b Stage-discharge relation affected by ice.
Note.- Backwater from beaver dam Aug. 20 to Sept. 20; discharge computed on basis of gage heights and one observation of no flow.

South Branch of Park River near Park River, N. Dak.

Location.- Chain gage, lat. 48°24', long. 97°50', on line between secs. 15 and 16, T. 157 N., R. 56 W., at highway bridge half a mile upstream from small unnamed creek and 4½ miles northwest of town of Park River.

Drainage area.- 255 square miles.

Records available.- March to September 1940.

Extremes.- Maximum discharge observed during period, 171 second-feet Apr. 19 (gage height, 3.16 feet); no flow at times.

Remarks.- Records good except those for period of shifting control, which are fair, and those for period of ice effect, which are poor. Gage read twice daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	b0	6.7	1.0	0	0.2	0
2						-	b0	5.8	1.0	0	.2	0
3						-	b0.1	4.5	.9	0	.1	0
4						-	b.2	4.2	.7	0	.1	0
5						-	b.4	3.6	.7	0	0	.2
6						-	b.4	3.0	.4	0	.1	.1
7						-	b.4	2.8	.2	0	0	0
8						-	b.2	2.7	.2	0	0	0
9						-	b0	2.4	.1	0	0	0
10						-	b0	2.4	.1	0	0	0
11						-	b0	2.0	.1	0	0	0
12						-	b0	2.1	0	0	0	0
13						-	b0	1.8	0	0	0	0
14						-	b0	2.1	0	0	0	.1
15						-	b.2	2.0	0	0	.2	.1
16						-	b2.4	1.8	0	.1	0	.1
17						-	b22	1.5	0	0	0	0
18						-	*b75	1.6	0	0	0	0
19						-	162	1.8	0	0	.1	0
20						-	122	1.9	0	0	0	.1
21						-	39	1.8	0	0	0	0
22						-	*31	1.6	0	0	0	0
23						-	18	1.3	0	0	0	0
24						-	13	1.3	0	0	.1	0
25						-	8.8	1.3	0	0	.1	0
26						-	7.6	1.1	0	0	0	0
27						-	8.0	1.1	0	0	0	0
28						-	6.9	1.2	0	.1	0	0
29						-	8.5	1.1	0	.2	.1	0
30						b0	8.3	1.1	0	.1	0	0
31						b0	-	1.1	-	.1	0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October					
November					
December					
Calendar year					
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	532.4	162	0	17.7	1,060
May	70.8	6.7	1.1	2.28	140
June	5.4	1.0	0	.18	11
July	.6	.2	0	.02	1.2
August	1.3	.2	0	.04	2.6
September	.7	.2	0	.02	1.4
The period	-	162	0	-	1,220

* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.- Shifting-control method used July 28 to Sept. 30.

Park River at Grafton, N. Dak.

Location.- Chain gage, lat. 48°25', long. 97°24', in NE¼ sec. 13, T. 157 N., R. 53 W., at Grafton. Rubble masonry dam 2 miles downstream serves as control.

Records available.- April 1931 to September 1940 (incomplete prior to 1937).

Extremes.- Maximum discharge during year, 210 second-feet Apr. 20 (gage height, 5.83 feet, affected by ice, from graph based on gage readings); no flow during part of year.
1931-40: Maximum discharge observed, 2,010 second-feet, Apr. 2, 1933 (gage height, 15.18 feet, affected by ice), from rating curve extended above 300 second-feet; no flow at times.

Remarks.- Records good except those for period of ice effect and those below 10 second-feet, which are fair. Gage read once daily.

Rating table, water year 1939-40, except periods of ice effect or backwater from debris on control (gage height, in feet, and discharge, in second-feet)

3.6	0	3.9	16	4.4	64	5.2	156
3.7	3.0	4.0	25	4.6	86	5.4	180
3.8	8.5	4.2	44	5.0	132	5.7	216

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							0	9.2	1.5	0	1.5	
2							†0	8.5	c2.1	0	1.2	
3							0	8.0	c1.2	0	.9	
4							0	7.4	a1.0	0	1.5	
5							0	8.0	a.7	0	.3	
6							0	6.8	a.5	0	.3	
7							0	6.3	c.3	0	0	
8							0	4.6	a.5	0	0	
9							0	4.6	a.5	0	0	
10							0	4.6	a.5	0	0	
11							†0	4.1	a.5	0	0	
12							0	4.1	a.5	0	0	
13							0	3.6	.9	0	0	
14							0	4.6	.3	0	0	
15							a1	3.6	0	0	1.5	
16							b9.0	3.0	.3	0	.9	
17							*b110	2.7	0	0	.3	
18							b120	5.8	0	0	0	
19							b120	4.1	0	0	0	
20							b190	3.6	0	0	0	
21							*b190	3.0	0	0	0	
22							b120	2.7	0	0	0	
23							92	2.1	0	0	0	
24							61	2.4	0	0	0	
25							36	2.4	0	a0	0	
26							32	2.1	0	0	0	
27							17	1.8	0	0	0	
28							16	2.1	0	2.1	0	
29							15	1.8	0	1.5	0	
30							12	1.5	0	.3	0	
31							-	1.2	-	.3	0	

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1939	1,134.1	130	0	3.11	2,250.5
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	1,141.0	190	0	38.0	2,260
May	130.3	9.2	1.2	4.20	258
June	11.3	2.1	0	.38	22
July	4.2	2.1	0	.14	8.3
August	8.4	1.5	0	.27	17
September	0	0	0	0	0
Water year 1939-40	1,295.2	190	0	3.55	2,565.3

* Winter discharge measurement made on this day.
† Observation of no flow made on this day.
a No gage-height record; discharge estimated.
b Stage-discharge relation affected by ice.
c Backwater from debris on control; discharge computed on basis of engineer's inspection on June 7.

Pembina River near Manitou, Manitoba

Location.- Chain gage, lat. 49°08'50", long. 98°33'30", on bridge near Lea's farm, 9 miles south of Manitou.

Drainage area.- 2,060 square miles.

Records available.- October 1929 to September 1940 (incomplete) in reports of U. S. Geological Survey. April 1921 to September 1935 in reports of Dominion Water and Power Bureau, Canada.

Extremes.- Maximum daily discharge observed during year, 150 second-feet Apr. 20; no flow June 15, 16, July 8-30.
1921-40: Maximum daily discharge observed, 1,620 second-feet Apr. 19, 1923; no flow on many days in 1934, 1937, 1939, and 1940.

Remarks.- Records fair. Gage read once daily.

Cooperation.- Records furnished by Dominion Water and Power Bureau, Department of Mines and Resources, Canada.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							-	8.6	1.3	0.1	1.0	0.4
2							-	7.2	1.3	.2	12.9	.4
3							-	6.6	1.3	.2	11.5	.4
4							-	6.6	1.3	.2	11.5	.4
5							-	6.6	1.3	.2	11.2	.4
6							-	7.2	1.0	.3	11.2	.4
7							-	7.2	.8	.3	7.6	.4
8							-	3.7	.6	0	5.6	.3
9							-	3.7	.6	0	5.2	.3
10							-	3.6	.6	0	5.0	.3
11							-	3.5	.6	0	5.0	.3
12							-	3.1	.5	0	4.3	.3
13							-	3.0	.5	0	1.9	.3
14							-	3.1	.3	0	1.1	.3
15							-	3.1	0	0	1.2	.2
16							-	2.4	0	0	1.1	.2
17							-	2.3	.2	0	1.0	.2
18							-	2.3	.2	0	.9	.2
19							-	2.3	.1	0	.8	.2
20							b150	2.2	.1	0	.8	.2
21							b87	2.2	.2	0	.7	.2
22							b52	2.2	.2	0	.6	.2
23							b59	2.1	.1	0	.6	.2
24							b19.0	2.0	.1	0	.6	.2
25							b19.0	1.8	.1	0	.6	.2
26							9.9	1.8	.1	0	.5	.1
27							9.9	1.8	.2	0	.5	.1
28							8.6	1.6	.2	0	.5	.1
29							8.6	1.6	.1	0	.5	.1
30							8.6	1.5	.1	0	.5	.1
31							-	1.4	-	.3	.5	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October							
November							
December							
Calendar year							
January	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-
April 20-30	431.6	150	8.6	39.2	0.0190	0.0078	856
May	108.3	8.6	1.4	3.5	.0017	.0020	215
June	14.0	1.3	0	.5	.0002	.0003	28
July	1.8	.3	0	.1	.0000	.0000	3.6
August	106.9	12.9	.5	3.4	.0017	.0019	212
September	7.6	.4	.1	.3	.0001	.0001	15
Water year 1939-40	670.2	-	-	-	-	-	1,330

b Stage-discharge relation affected by ice.
Note.- No gage-height record Aug. 25 to Sept. 18, Sept. 20-30; discharge estimated.

Pembina River near Walhalla, N. Dak.

Location.- Staff gage, lat. 48°53'32", long. 97°59'09", in 8E¼SW¼ sec. 35, T. 163 N., R. 57 W., 1½ miles downstream from Little Pembina River and 3½ miles southwest of Walhalla.

Drainage area.- 3,020 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum daily discharge during year, 766 second-feet Apr. 19; maximum gage height, 5.52 feet Apr. 18, 19, affected by ice; no flow during most of year.

Remarks.- Records good except those for periods of ice effect and those below 5 second-feet, which are fair. Gage read once daily.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.3	0	2.0	32	3.0	190
1.4	1.0	2.2	49	3.5	371
1.6	6.6	2.4	72	4.0	590
1.8	17	2.6	100	4.5	610

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0	b0.1				a0	44	6.6	0	46	
2		0	b0				a0	38	9.7	0	46	
3		0	b0				a0	33	9.7	0	44	
4		0	b0				a0	30	8.6	0	32	
5		.1	b.1				a0	27	7.0	0	23	
6	a0.1	.1	b.1				a0	25	5.6	0	16	
7		.1	b.1				a0	23	4.8	0	11	
8		b0	b.1				a0	23	4.5	0	7.5	
9		b0	b.1				a0	23	5.6	0	5.2	
10		b0	b.1				a0	22	5.6	0	3.4	
11		b.1	b0				*b0	19	4.5	0	2.0	
12	.1	b.2	b0				b0	18	2.9	0	1.6	
13	.1	b.4	b0				b0	16	2.0	0	.9	
14	0	b.5	0				b8.8	19	1.8	0	.7	
15	0	b.6	0				b23	18	1.6	0	.7	
16	0	.5	0				b51	16	.8	0	.7	
17	0	.4	0				b128	15	.7	.2	.9	
18	0	.3	0				b45S	18	.3	.4	.8	
19	0	.3	0				*b766	19	0	.2	.3	
20	0	.2	0				436	18	0	0	.1	
21	0	.2	0				163	15	.1	0	0	
22	0	.2	0				85	14	.3	0	0	
23	0	b.1	0				92	13	.6	0	0	
24	0	b0	0				*85	12	.6	0	0	
25	0	b0	0				66	11	.5	0	0	
26	0	b0	0				53	11	.2	0	0	
27	0	b0	0				44	10	.2	0	0	
28	0	*b.1	0				50	9.7	0	0	0	
29	0	b.1	0				67	8.8	0	0	0	
30	0	b.2	0				60	7.9	0	0	0	
31	0	-	0				-	7.9	-	22	0	

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	1.3	0.1	0	0.04	2.6
November	4.7	.6	0	.16	9.3
December	.7	.1	0	.02	1.4
Calendar year	-	-	-	-	-
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	2,635.8	766	0	87.9	5,230
May	584.3	44	7.9	18.8	1,160
June	85.0	9.7	0	2.83	169
July	22.8	22	0	.74	45
August	242.8	46	0	7.83	482
September	0	0	0	0	0
Water year 1939-40	3,577.4	766	0	9.77	7,100

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for station at Fecho.
b Stage-discharge relation affected by ice.

Pembina River at Neche, N. Dak.

Location.- Water-stage recorder 60 feet above concrete dam, lat. 48°58', long. 97°33', in sec. 31, T. 164 N., R. 53 W., in Neche.

Drainage area.- 3,080 square miles (revised).

Records available.- May 1903 to September 1915, April 1919 to September 1940.

Average discharge.- 21 years (1919-40), 99.1 second-feet.

Extremes.- Maximum discharge during year, 816 second-feet Apr. 20 (gage height, 7.97 feet); no flow during most of year.
1903-15, 1919-40: Maximum discharge observed, 3,870 second-feet May 2, 1904 (gage height, 20.9 feet); no flow on many days in period 1932-40.

Remarks.- Records good except those below 10 second-feet, which are fair.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Aug. 15)

5.7	0	6.1	56	7.2	366
5.8	11.7	6.2	75	7.6	570
5.9	24.4	6.4	116	8.0	e38
6.0	39.1	6.8	220		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							0	87	16		0	
2							0	79	16		0	
3							0	64	16		.5	
4							0	58	16		36	
5							0	51	15		30	
6							0	44	15		29	
7							0	42	12		27	
8							0	41	9.3		23	
9							0	39	10		18	
10							0	38	10		15	
11							0	38	9.3		12	
12							0	36	9.3		8.2	
13							0	33	7.1		6.0	
14							0	32	6.0		3.8	
15							0	32	4.9		c3.8	
16							0	32	4.9		3.8	
17							0	32	3.8		2.7	
18							b87	30	2.7		0	
19							b402	27	1.0		0	
20							*730	26	0		0	
21							536	27	1.7		0	
22							259	27	3.8		0	
23							154	26	3.8		0	
24							128	24	1.1		0	
25							121	23	.2		0	
26							99	22	1.9		0	
27							83	20	0		0	
28							75	19	0		0	
29							71	18	0		0	
30							75	16	0		0	
31							-	16	-		0	

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1939	1,445.6	60	0	3.96	2,870
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	2,820	730	0	94.0	5,590
May	1,099	87	16	35.5	2,180
June	196.8	16	0	6.56	390
July	0	0	0	0	0
August	218.8	36	0	7.06	434
September	0	0	0	0	0
Water year 1939-40	4,334.6	730	0	11.8	8,590

* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.
c Backwater from debris on control; discharge computed on basis of one discharge measurement and gage heights.

Tongue River at Cavalier, N. Dak.

Location.- Chain gage, lat. 48°48', long. 97°37', on line between NE¼ and SE¼ sec. 4, T. 161 N., R. 54 W., on State Highway 5 in Cavalier. Datum of gage is 869.58 feet above mean sea level (levels by Corps of Engineers, U. S. Army).

Records available.- October 1938 to September 1940.

Extremes.- Maximum discharge observed during year, 288 second-feet Apr. 20 (gage height, 6.77 feet); no flow for several months.
1938-40: Maximum discharge observed, that of Apr. 20, 1940; no flow for several months in each year.

Remarks.- Records good except those below 2 second-feet, which are fair. Gage read twice daily during period of flow.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

0.3	0	1.4	2.00	3.5	64
.4	.06	1.6	4.4	4.0	87
.6	.20	2.0	14	5.0	148
.8	.42	2.5	27	6.0	222
1.0	.70	3.0	45	6.8	288

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							a0	24	1.6	0.4	0.1	0
2							b0	18	2.4	a.4	.1	0
3							b0	14	2.2	a.4	.1	0
4							b0	12	2.3	a.4	.1	0
5							b0	7.4	2.5	a.4	1.2	0
6							b0	6.0	2.4	.4	1.1	0
7							b0	5.2	2.2	a.4	.8	0
8							b0	5.0	1.9	a.4	.6	0
9							b0	4.8	1.9	a.5	.4	0
10							b0	4.6	1.8	a.5	.1	0
11							b0	4.4	1.6	a.4	.1	0
12							b0	4.3	2.3	a.4	.1	0
13							b0	4.1	1.6	.3	0	0
14							b0	3.8	1.3	a.2	0	0
15							b0	4.8	1.0	.2	0	0
16							b110	4.4	1.9	a.2	0	0
17							b148	4.4	.7	a.3	0	.1
18							176	4.1	.5	a.3	0	.1
19							*230	3.5	.4	.2	0	0
20							206	3.2	.4	.2	0	0
21							77	3.2	.4	.2	0	0
22							41	3.2	.4	.1	0	0
23							27	3.0	.4	.1	0	0
24							20	2.8	a.4	.1	0	0
25							14	2.5	.4	.1	0	0
26							10	2.1	a.5	.1	0	0
27							10	2.0	a.5	.1	0	0
28							12	1.9	a.4	.1	0	0
29							22	1.8	a.4	.1	0	0
30							32	1.6	a.4	.1	0	0
31							-	1.6	-	.1	0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	0	0	0	0	0		0
November	0	0	0	0	0		0
December	0	0	0	0	0		0
Calendar year 1939	571.7	30	0	1.57	.012		1,130
January	0	0	0	0	0		0
February	0	0	0	0	0		0
March	0	0	0	0	0		0
April	1,135	230	0	37.8	.28		2,250
May	167.7	24	1.6	5.41	.040		333
June	37.1	2.5	.4	1.24	.0092		74
July	8.1	.5	.1	.26	.0019		16
August	4.8	1.2	0	.15	.0011		9.5
September	.2	.1	0	.01	.000074		.4
Water year 1939-40	1,352.9	230	0	3.70	.027		2,680

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of observer's notes and record for station at Pembina.
b Stage-discharge relation affected by ice.

Tongue River near Pembina, N. Dak.

Location.- Staff gage above rubble masonry dam, lat. 48°55'08", long. 97°19'30", in NW NW¼NE¼ sec. 26, T. 163 N., R. 52 W., 3¼ miles upstream from mouth and 5 miles southwest of Pembina.

Drainage area.- 491 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 192 second-feet Apr. 20 (gage height, 9.70 feet); no flow during most of year.
Maximum stage known, 16.5 feet in 1916 (from information from local residents).

Remarks.- Records good. Gage read twice daily Apr. 19 to June 5 and once daily thereafter during period of flow.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

8.38	0	8.8	28	9.6	166
8.4	.2	9.0	53	9.7	192
8.5	2.6	9.2	84		
8.6	e.0	9.4	120		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							0	12	1.3			
2							0	12	.8			
3							0	29	.8			
4							0	30	.4			
5							0	21	.2			
6							0	14	0			
7							0	12	0			
8							0	10	0			
9							0	8.0	0			
10							0	8.0	0			
11							0	6.1	0			
12							0	5.5	0			
13							0	4.3	0			
14							0	4.3	0			
16							0	3.4	0			
16							0	3.4	0			
17							0	2.6	0			
18							0	1.6	0			
19							146	1.9	0			
20							192	4.3	0			
21							179	4.3	0			
22							179	4.3	0			
23							149	3.8	0			
24							87	3.4	0			
25							40	3.4	0			
26							30	3.0	0			
27							23	2.6	0			
28							18	2.6	0			
29							16	1.9	0			
30							14	1.6	0			
31							-	1.3	-			

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year	-	-	-	-	-
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	1,073	192	0	35.8	2,128
May	225.6	30	1.3	7.28	447
June	3.5	1.3	0	.12	6.9
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1939-40	1,302.1	192	0	3.56	2,580

Roseau River near Malung, Minn.

Location.- Staff gage, lat. 48°45'45", long. 95°42'05", in SE¼SE¼ sec. 17, T. 161 N., R. 39 W., at highway bridge three-quarters of a mile downstream from Bear Creek, 1¼ miles southeast of Malung, and 3¼ miles upstream from South Fork. Prior to June 30, 1938, staff gage at site 1 mile downstream at different datum.

Drainage area.- 252 square miles.

Records available.- October 1939 to September 1940. August 1928 to June 1938 at site at Malung 1 mile downstream.

Extremes.- Maximum discharge observed during year, 413 second-feet Apr. 17 (gage height, 6.71 feet, affected by ice).
1928-38, 1939-40: Maximum discharge observed, 1,780 second-feet May 11, 1938 (gage height, 12.44 feet, site and datum then in use); no flow at times.

Remarks.- Records good except those for periods of backwater from ice or beaver dams, which are fair. Gage read twice daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a2.6	2.6	2.2					148	19	1.2	23	15
2	a3.3	2.0	1.8					139	35	.7	24	14
3	a4.0	2.0	2.0					139	48	.6	24	13
4	a3.3	2.2	2.2				a0.8	130	50	.6	34	12
5	*3.3	2.6	2.2					116	49	.6	45	12
6	2.6	2.6	2.2					99	41	.5	49	15
7	2.9	3.2	2.4				a1.1	87	34	.5	50	26
8	2.6	3.0	2.4				a1.6	79	30	.4	47	40
9	5.7	2.4	2.4				a2.4	83	28	.4	40	45
10	6.7	2.4	2.2				a4.2	75	28	.5	31	40
11	6.0	2.4	2.2				a4.6	67	38	.5	23	33
12	4.6	2.4	2.0				a3.2	71	30	.5	16	24
13	3.2	3.6	1.5				*2.6	71	24	.4	13	19
14	2.4	4.6	1.8				15	63	14	1.1	12	15
15	2.4	4.2	1.9				120	54	8.8	.9	25	14
16	2.4	4.2	2.4				*300	41	8.8	.6	47	13
17	2.0	4.2	-				*360	33	7.4	.5	50	13
18	3.0	4.2	-				360	30	5.3	.5	47	14
19	4.3	4.2	-				300	21	4.0	.8	40	13
20	4.6	3.6	-				253	17	2.5	.8	26	12
21	4.6	3.0	-				232	19	2.6	.6	16	11
22	5.0	3.2	-				158	20	2.0	1.1	13	11
23	4.6	3.6	-				139	20	2.0	1.1	12	10
24	4.0	3.0	-				*116	23	2.0	.6	11	9.4
25	4.0	3.0	-				148	17	1.6	.5	11	9.4
26	3.0	3.2	-				148	34	1.1	.4	10	10
27	2.6	*4.0	-				130	26	1.1	.3	10	10
28	2.2	3.0	-				121	19	1.2	3.6	10	10
29	2.6	2.4	-				139	16	1.1	10	10	10
30	4.2	2.4	-				148	16	1.3	29	11	10
31	4.2	-	-				-	13	-	24	14	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	112.9	6.7	2.2	3.64	224
November	93.4	4.6	2.0	3.11	185
December	-	-	-	-	-
Calendar year	-	-	-	-	-
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	3,211.5	360	-	107	6,370
May	1,786	148	13	57.6	3,540
June	520.8	50	1.1	17.4	1,030
July	83.8	29	.3	2.70	166
August	794	50	10	25.6	1,570
September	502.8	45	9.4	16.8	997
Water year	-	-	-	-	-

* Winter discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for station at Ross.
Note.- Stage-discharge relation affected by ice Oct. 13-18, Oct. 23 to Dec. 16, Apr. 13-19. Backwater from beaver dam Aug. 19 to Sept. 30; discharge computed on basis of two discharge measurements, gage heights, weather records, engineers' notes, and records for station at Ross.

Roseau River at Roseau, Minn.

Location.- Staff gage above spillway of concrete dam, lat. 48°51'02", long. 95°45'42", in SW¼ sec. 13, T. 162 N., R. 40 W., at dam in Roseau, a quarter of a mile downstream from State Highway 11. Datum of gage is 1,026.33 feet above mean sea level (Geodetic Survey of Canada datum, adjustment of 1928). Gage readings have been reduced to elevations above mean sea level.

Records available.- April to June 1940.

Extremes.- Maximum elevation during period, 1,037.63 feet Apr. 17, from floodmarks; minimum observed, 1,031.73 feet June 15.

Remarks.- Gage read twice daily Apr. 14-22, and once daily thereafter.

Gage-height, in feet, April to June 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							-	32.59	32.05			
2							-	32.57	32.03			
3							-	32.57	32.19			
4							-	32.57	32.27			
5							-	32.51	32.23			
6							-	32.47	32.21			
7							-	32.39	32.17			
8							-	32.35	32.11			
9							-	32.33	32.09			
10							-	32.31	32.09			
11							-	32.29	32.09			
12							-	32.29	32.09			
13							-	32.27	32.09			
14							31.98	32.25	32.07			
15							g32.59	32.19	31.73			
16							g35.55	32.17	31.83			
17							g37.11	32.11	31.93			
18							g36.93	32.11	31.92			
19							g35.15	32.09	31.92			
20							g33.13	32.07	31.92			
21							g32.86	32.03	31.92			
22							32.69	32.03	31.93			
23							32.63	32.03	31.93			
24							32.57	32.03	31.93			
25							32.61	32.03	31.93			
26							32.59	32.09	31.93			
27							32.59	32.15	31.93			
28							32.57	32.13	31.93			
29							32.57	32.09	31.93			
30							32.61	32.09	-			
31							-	32.07	-			

g Gage heights from graph based on gage readings.
Note.- Add 1,000.00 feet to obtain elevations above mean sea level.

Roseau River near Roseau, Minn.

Location.- Staff gage, lat. 48°55'24", long. 95°46'02", in SW¼ sec. 24, T. 163 N., R. 40 W., on steel highway bridge, 1½ miles upstream from Mud Creek and 5½ miles north of Roseau. Datum of gage is 1,023.21 feet above mean sea level (datum of 1928 by Geodetic Survey of Canada). Gage readings have been reduced to elevations above mean sea level.

Records available.- April 1930 to September 1940 (fragmentary).

Extremes.- Maximum elevation observed during year, 1,032.45 feet Apr. 17, 18; minimum observed, 1,025.18 feet May 7.
1930-40: Maximum elevation observed, 1,036.24 feet May 12, 1938; minimum observed, 1,023.00 feet Sept. 2, 1936.

Remarks.- Gage read twice daily.

Elevation, in feet, water year October 1939 to September 1940

Apr. 16	g30.44	Apr. 19	g31.05	Apr. 24	26.55
17	g32.33	20	g29.51	May 2	26.15
18	32.45	21	g28.60	7	25.18

g Determined from graph based on gage readings.
Note.- Add 1,000.00 feet to obtain elevation above mean sea level.

Roseau River at Ross, Minn.

Location.- Water-stage recorder, lat. 48°54'37", long. 95°55'18", in SE¼ sec. 27, T. 163 N. R. 41 W., a quarter of a mile north of Ross. Datum of gage is 1,018.44 feet above mean sea level (Geodetic Survey of Canada datum, adjustment of 1928).

Drainage area.- 1,210 square miles (revised).

Records available.- July 1928 to September 1940.

Average discharge.- 12 years, 124 second-feet.

Extremes.- Maximum daily discharge during year, 700 second-feet Apr. 20, 21; maximum gage height, 9.47 feet Apr. 18, affected by ice; minimum discharge recorded; 1.1 second-feet Jan. 16, discharge measurement; minimum gage height, 0.38 foot during period Jan. 1-15, affected by ice.

1928-40: Maximum discharge, 2,290 second-feet May 18, 1938 (gage height, 14.64 feet); minimum recorded, that of Jan. 16, 1940.

Remarks.- Records good except those affected by backwater, which are fair. Flow regulated by Roseau Lake.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.2	12	12	a4.4	4.4	4.6	4.6	413	54	17	20	17
2	9.2	12	12	a3.6	4.4	4.8	4.5	389	68	15	24	18
3	9.2	12	13	a3.0	4.4	5.0	5.0	344	82	13	26	18
4	9.6	13	13	a2.8	4.6	5.0	5.0	302	90	12	28	18
5	12	14	14	a2.8	4.6	5.0	5.0	262	98	11	30	17
6	14	15	14	a2.6	4.6	5.5	*5.0	232	98	9.8	31	17
7	17	15	14	a2.6	4.4	5.5	6.0	205	90	9.0	32	19
8	16	15	14	a2.6	4.2	5.5	8.0	181	80	8.4	33	20
9	16	17	14	a2.4	4.0	5.5	12	165	70	8.0	33	28
10	14	16	15	a2.4	3.8	5.0	20	161	66	7.6	32	37
11	15	14	14	a2.2	3.6	4.8	22	153	68	7.0	30	42
12	17	15	13	a2.0	3.4	5.0	15	141	70	7.4	27	42
13	17	15	12	a1.8	*3.4	5.0	12	134	68	7.4	24	40
14	17	16	14	a1.4	3.6	5.5	14	130	60	7.5	21	35
15	17	16	13	a1.1	4.0	*5.5	40	124	56	8.2	20	31
16	18	*16	13	*1.1	4.4	6.0	140	114	45	9.6	19	29
17	18	16	13	1.2	4.4	6.0	*380	99	35	9.6	18	26
18	19	16	14	1.3	4.6	6.0	500	88	31	9.4	20	23
19	18	15	*14	1.4	4.6	5.5	600	84	26	8.6	24	22
20	11	15	13	1.6	4.6	5.0	700	76	22	8.6	27	20
21	9.5	15	12	1.9	4.4	5.0	700	71	21	8.6	28	19
22	9.8	15	11	2.0	4.4	4.4	685	65	20	8.4	27	18
23	10	15	10	2.0	4.2	4.0	610	61	21	8.6	25	17
24	10	15	10	1.9	4.0	4.0	514	57	23	8.2	23	15
25	10	15	9.5	2.2	4.0	4.0	*449	55	22	8.4	20	14
26	10	15	8.5	2.6	4.2	4.4	413	55	21	8.0	18	13
27	10	15	7.5	2.8	4.6	4.6	377	56	21	8.2	16	13
28	9	14	6.5	3.0	4.8	4.8	355	60	22	8.8	15	14
29	10	13	5.5	3.2	5.0	4.8	366	58	20	9.4	15	14
30	11	13	5.5	3.6	-	4.8	401	54	19	11	15	14
31	11	-	5.0	4.0	-	4.6	-	50	-	14	15	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	403.8	19	9	13.0	801
November	440	17	12	14.7	873
December	359.0	15	5.0	11.6	712
Calendar year 1939	12,008.1	200	2.3	32.9	23,810
January	73.5	-	1.1	2.37	146
February	123.6	5.0	3.4	4.26	245
March	155.1	6.0	4.0	5.00	308
April	7,368.4	700	4.6	246	14,620
May	4,439	413	50	143	8,800
June	1,487	98	19	49.6	2,950
July	296.0	17	7.0	9.55	587
August	736	33	15	23.7	1,460
September	670	42	13	22.3	1,330
Water year 1939-40	16,551.4	700	1.1	45.2	32,830

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of range of stage and weather records.
Note.- Stage-discharge relation affected by ice Oct. 26 to Dec. 31, Jan. 16 to Apr. 21. Backwater from aquatic vegetation Oct. 1-25, June 2 to Sept. 30; discharge computed on basis of four discharge measurements, gage heights, and engineers' notes.

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Roseau River near Badger, Minn.

Location.- Water-stage recorder, lat. 48°54'42", long. 96°00'24", in SW¼ sec. 30, T. 163 N., R. 41 W., 9 miles north of Badger. Datum of gage is 1,016.90 feet above mean sea level (Geodetic Survey of Canada datum, adjustment of 1928). Gage readings have been reduced to elevations above mean sea level.

Records available.- August 1928 to September 1940 (incomplete).

Extremes.- Maximum elevation recorded during year, 1,026.24 feet Apr. 18; minimum recorded, 1,018.70 feet July 12.
1928-40: Maximum elevation recorded, 1,030.31 feet May 18, 1938; minimum recorded, 1,017.73 feet July 22, 1932, and Sept. 2, 1929.

Elevation, in feet, April to July 1940

Day	Apr.	May	June	July	Day	Apr.	May	June	July
1	-	22.96	19.04	18.97	16	23.19	20.05	19.33	-
2	-	22.85	19.32	18.92	17	25.71	19.87	19.12	-
3	-	22.49	19.62	18.90	18	26.23	19.68	19.04	-
4	-	22.11	19.35	18.89	19	26.06	19.54	18.95	-
5	-	21.77	20.01	18.85	20	25.46	19.41	18.85	-
6	-	21.47	20.02	18.81	21	25.11	19.32	18.84	-
7	-	21.18	19.95	18.76	22	24.91	19.22	18.76	-
8	-	20.92	19.84	18.73	23	24.45	19.16	18.80	-
9	-	20.73	19.81	18.72	24	23.88	19.10	18.90	-
10	-	20.64	19.61	18.72	25	23.41	19.03	18.98	-
11	-	20.58	19.62	18.71	26	23.10	19.02	19.00	-
12	-	20.44	19.70	18.71	27	22.79	19.04	19.05	-
13	-	20.32	19.72	18.72	28	22.58	19.15	19.06	-
14	21.14	20.27	19.62	18.77	29	22.58	19.14	19.02	-
15	21.50	20.20	19.52	18.80	30	22.80	19.07	19.01	-
					31	-	18.98	-	-

Note.- Add 1,000.00 feet to obtain elevations above mean sea level.

Roseau River near Haug, Minn.

Location.- Water-stage recorder, lat. 48°55'28", long. 96°12'26", in SE¼ sec. 21, T. 163 N., R. 43 W., 5 miles south of international boundary and 8¾ miles northwest of Haug. Datum of gage is 1,014.02 feet above mean sea level (Geodetic Survey of Canada datum, adjustment of 1928). Gage readings have been reduced to elevations above mean sea level.

Records available.- April 1932 to September 1940 (incomplete).

Extremes.- Maximum elevation recorded during year, 1,021.57 feet Apr. 19; minimum recorded, 1,015.78 feet July 13.
1932-40: Maximum elevation recorded, 1,023.35 feet May 22, 1938; minimum recorded, 1,014.74 feet Aug. 8, 1933.

Elevation, in feet, April to July 1940

Day	Apr.	May	June	July	Day	Apr.	May	June	July
1	-	19.36	16.08	16.14	16	18.12	17.07	16.46	-
2	-	19.40	16.21	16.12	17	18.47	16.95	16.28	-
3	-	19.26	16.46	16.11	18	19.80	16.78	16.15	-
4	-	18.96	16.68	16.06	19	21.30	16.66	16.08	-
5	-	18.68	16.85	15.96	20	21.52	16.56	16.02	-
6	-	18.38	16.94	15.92	21	21.42	16.45	16.02	-
7	-	18.13	16.92	15.90	22	21.28	16.36	16.06	-
8	-	17.87	16.85	15.86	23	21.08	16.28	16.00	-
9	-	17.66	16.77	15.85	24	20.79	16.25	16.05	-
10	-	17.51	16.66	15.86	25	20.37	16.19	16.14	-
11	-	17.44	16.60	15.86	26	19.96	16.19	16.20	-
12	-	17.38	16.63	15.86	27	19.64	16.18	16.20	-
13	-	17.27	16.65	15.83	28	19.40	16.17	16.25	-
14	17.76	17.21	16.62	15.84	29	19.25	16.18	16.17	-
15	17.86	17.16	16.53	15.83	30	19.24	16.15	16.16	-
					31	-	16.08	-	-

Note.- Add 1,000.00 feet to obtain elevations above mean sea level.

Roseau River at outlet of State ditch 69, near Oak Point, Minn.

Location.- Staff gage, lat. 48°56'16", long. 96°20'19", in SE¼SE¼ sec. 16, T. 163 N., R. 44 W., in State ditch 69, 50 feet upstream from Roseau River, 2 miles upstream from State ditch 51, and 3¾ miles southeast of Oak Point.

Records available.- April to June 1940.

Extremes.- Maximum gage height observed during period, 8.78 feet Apr. 20; minimum observed, 2.47 feet June 25.

Remarks.- Gage read once daily.

Gage-height, in feet, April to June 1940

Day	Apr.	May	June	Day	Apr.	May	June
1	-	g6.04	3.01	16	-	3.89	3.17
2	-	6.17	3.01	17	-	3.77	3.05
3	-	g6.04	3.17	18	7.29	3.65	2.93
4	-	5.83	f3.30	19	8.03	3.57	2.81
5	-	g5.60	g3.49	20	g8.69	3.41	2.71
6	-	g5.14	3.63	21	8.37	3.37	2.61
7	-	4.93	3.67	22	g8.04	3.27	2.67
8	-	4.73	3.59	23	7.73	3.19	2.63
9	-	g4.38	3.49	24	7.61	3.15	2.49
10	-	4.21	3.41	25	g7.32	3.13	2.47
11	-	4.21	3.33	26	f6.88	3.13	2.49
12	-	4.21	3.29	27	6.49	3.11	2.57
13	-	4.13	3.27	28	g6.28	3.11	2.69
14	-	4.03	3.31	29	6.05	3.07	2.55
15	-	4.01	3.29	30	5.97	3.05	2.53
				31	-	3.05	-

f Gage height estimated.
g Gage height from graph of observer's readings.

Roseau River at head of State ditch 51, near Oak Point, Minn.

Location.- Staff gage, lat. 48°56'53", long. 96°22'56", in NE¼NE¼ sec. 18, T. 163 N., R. 44 W., at head of State ditch 51 (known locally as Caribou cut-off ditch), 2 miles southeast of Oak Point, and 2½ miles south and 3 miles east of Caribou. Datum of gage is 1,007.88 feet above mean sea level (Geodetic Survey of Canada datum, adjustment of 1928). Gage readings have been reduced to elevations above mean sea level.

Records available.- April 1933 to September 1940 (incomplete).

Extremes.- Maximum elevation observed during year, 1,015.98 feet Apr. 20; minimum observed, 1,010.01 feet July 16.
1933-40: Maximum elevation observed, 1,018.89 feet May 26, 1938; minimum observed, 1,009.66 feet Aug. 11, 12, 1933.

Remarks.- Gage read once daily.

Elevation, in feet, April to September 1940

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-	13.64	10.99				16	-	11.83	11.13	10.01		
2	-	13.73	10.97				17	-	11.71	11.01			
3	-	13.65	11.13				18	14.38	11.59	10.89			
4	-	13.48	11.29				19	g15.06	11.51	10.73			
5	-	13.26	11.53				20	g15.es	11.35	10.65			
6	-	g13.93	11.63				21	15.73	11.29	10.55			
7	-	12.66	11.65				22	15.43	11.21	10.63			
8	-	12.58	11.55				23	15.18	11.13	10.57			
9	-	12.23	11.47				24	15.04	11.09	10.44			
10	-	12.11	11.37				25	14.74	11.07	10.41			10.50
11	-	12.11	11.33				26	14.36	11.07	10.41			
12	-	12.11	11.29				27	14.06	11.05	10.51			
13	-	12.03	11.27				28	g13.83	11.05	10.63			
14	-	11.95	11.29				29	13.67	11.03	10.55			
15	-	11.91	11.27				30	13.58	11.01	10.51			
							31	-	11.01	-			

g Gage height from graph of observer's readings.
Note.- Add 1,000 feet to obtain elevations above mean sea level.

Roseau River below State ditch 51, near Caribou, Minn.

(International gaging station)

Location.- Water-stage recorder, lat. 48°58'54", long. 96°27'46", in SE¼SW¼ sec. 34, T. 164 N., R. 45 W., 400 feet downstream from State ditch 51 (known locally as Caribou cut-off ditch) and 0.6 mile west of Caribou. Datum of gage is 1,002.14 feet above mean sea level (Geodetic Survey of Canada datum, adjustment of 1928).

Drainage area.- 1,530 square miles.

Records available.- April 1929 to September 1940 (winter records incomplete).

Extremes.- Maximum daily discharge during year, 800 second-feet Apr. 22; minimum gage height recorded, 1.25 feet Aug. 2.

1929-40: Maximum discharge, 1,880 second-feet Apr. 13, 1932 (gage height, 8.80 feet, affected by ice); no flow Aug. 13, 1936.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are poor. Some flow at high stages is diverted above station to headwaters of Two Rivers.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Rating tables, water year 1939-40, except periods of ice effect or backwater from leaves (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 18		Mar. 19 to Sept. 30			
1.0	2.0	1.2	5.0	3.5	325
1.1	3.0	1.5	16	4.0	444
1.2	5.0	2.0	56	4.5	568
1.3	9.0	2.5	121	5.0	797
1.4	13	3.0	215		
1.5	19				

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	c7.0	b15						493	51	23	9.2	16
2	c7.4	b17						506	53	22	8.4	14
3	c7.8	b17						468	59	20	12	13
4	c9.0	b16						420	77	17	19	14
5	c10	b18						360	89	16	24	14
6	c11	b17					a5.0	314	99	15	26	19
7	c13	b18						269	102	14	26	29
8	c15	b15						236	92	12	28	28
9	c17	b18						202	86	12	31	26
10	c19	-						180	80	12	35	26
11	c20	-					a8.0	166	71	12	38	33
12	c18	-						157	68	10	38	48
13	c18	-						144	68	8.4	36	54
14	c17	-						139	74	10	31	59
15	c18	(*)					*a18	134	67	9.2	31	55
16	c18	-						123	63	7.7	30	50
17	c18	-					a23	115	55	7.1	23	44
18	c20	-					a80	103	46	8.0	26	36
19	19	-					b220	92	41	9.6	20	35
20	19	-					b550	82	37	8.8	17	31
21	b17	-					b750	74	32	8.8	17	26
22	b16	-					b800	67	35	8.4	27	26
23	b13	-					b750	62	34	9.2	30	25
24	b12	-					724	58	29	9.2	27	25
25	b13	-					658	56	25	8.4	29	26
26	b13	-					580	54	25	8.0	31	24
27	b14	-					518	53	26	7.4	28	20
28	b11	-					*456	52	32	9.6	22	16
29	b16	-					444	55	29	10	20	13
30	b15	-					468	54	27	8.4	21	14
31	b15	-					-	52	-	8.4	19	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	456.2	20	7.0	14.7	905
November 1-9	151.0	18	15	16.8	300
December	-	-	-	-	-
Calendar year	-	-	-	-	-
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	7,162	800	5.0	239	14,210
May	5,340	506	52	172	10,590
June	1,672	102	25	55.7	3,320
July	349.6	23	7.1	11.3	693
August	779.6	38	8.4	25.1	1,550
September	859	59	13	28.6	1,700
Water year	-	-	-	-	-

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for station at Ross.
b Stage-discharge relation affected by ice.
c Backwater from leaves on control; discharge computed on basis of one discharge measurement, gage heights, weather records, and records for stations at Ross and near Malung.

Roseau River at international boundary, near Caribou, Minn.

Location.- Water-stage recorder, lat. 48°59'57", long. 96°30'20" near center of sec. 29, T. 164 N., R. 45 W., 400 feet upstream from last international-boundary crossing and about 3 miles northwest of Caribou. Datum of gage is 1,002.59 feet above mean sea level (Geodetic Survey of Canada datum, adjustment of 1928). Gage readings have been reduced to elevations above mean sea level.

Records available.- May 1933 to September 1940 (incomplete).

Extremes.- Maximum elevation recorded during year, 1,006.78 feet Apr. 22; minimum recorded, 1,002.48 feet July 16.

1933-40: Maximum elevation recorded, 1,006.79 feet Apr. 20, 1936, affected by ice; minimum recorded, 1,001.97 feet Aug. 14, 1933.

Elevation, in feet, April to July 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							-	-	3.10	2.83		
2							-	-	3.12	2.81		
3							-	-	3.17	2.79		
4							-	-	3.24	2.76		
5							-	-	3.29	2.73		
6							-	-	3.32	2.70		
7							-	-	3.34	2.66		
8							-	3.70	3.31	2.65		
9							-	3.66	3.29	2.61		
10							-	3.60	3.26	2.62		
11							-	3.56	3.21	2.63		
12							-	3.54	3.20	2.59		
13							-	3.51	3.21	2.53		
14							-	3.49	3.23	2.57		
15							4.51	3.46	3.21	2.56		
16							-	3.44	3.18	2.50		
17							-	3.40	3.15	-		
18							-	3.36	3.07	-		
19							4.74	3.31	3.01	-		
20							5.27	3.27	2.99	-		
21							5.74	3.22	2.94	-		
22							6.03	3.11	2.94	-		
23							5.09	3.16	2.95	-		
24							4.97	3.15	2.89	-		
25							4.81	3.14	2.83	-		
26							4.61	3.13	2.83	-		
27							-	3.11	2.84	-		
28							-	3.11	2.91	-		
29							-	3.14	2.90	-		
30							-	3.15	2.87	-		
31							-	3.13	-	-		

Note.- Add 1,000.00 feet to obtain elevations above mean sea level.

South Fork of Roseau River near Malung, Minn.

Location.- Staff gage, lat. 48°47', long. 95°44', in center of sec. 7, T. 161 N., R. 39 W., 1 mile northwest of Malung.

Drainage area.- 312 square miles (revised).

Records available.- May 1911 to September 1914, July 1928 to June 1938, October 1939 to September 1940.

Extremes.- Maximum daily discharge observed during year, 400 second-feet Apr. 17; maximum gage-height observed, 9.86 feet Apr. 17, affected by ice; no flow for several months. 1911-14, 1928-38, 1939-40: Maximum discharge observed, 1,040 second-feet Oct. 1, 1912 (gage height, 10.3 feet, present datum), from rating curve extended above 390 second-feet; maximum gage height observed, 14.17 feet, from floodmarks, May 11, 1938; no flow at times.

Remarks.- Records good except those affected by ice or backwater from beaver dam or aquatic growth, which are poor. Gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0	b0.1					7.6	1.1	0.2	2.4	0
2		0	b0					7.1	1.9	.2	2.4	0
3	a0	0						5.7	2.2	.2	2.6	0
4		0						4.8	2.5	.2	2.3	0
5		0						3.9	2.4	.2	2.2	0
6	0	0					a0	2.7	2.2	.2	1.9	.8
7	0	0						2.4	1.6	.2	1.9	1.4
8	0	0						2.4	1.0	.1	1.6	.8
9	0	0						2.4	.7	.1	1.3	.6
10	0	0						2.3	.5	.2	1.3	.3
11	0	0						2.6	.5	.1	1.0	.2
12	0	0						2.2	.4	.1	.8	.1
13	0	0					*b.1	1.7	.3	.1	.6	0
14	0	0					b3	2.2	.3	.2	.6	.1
15	0	0		a0	a0	a0	b120	2.9	.2	.2	.5	.1
16	0	0	a0				b340	3.1	.2	.1	.5	.1
17	0	0					*b400	2.2	.2	.1	.4	.2
18	0	0					b360	1.7	.2	.1	.3	.1
19	0	0					b200	1.7	.2	.1	.2	.2
20	0	0					113	2.2	.2	.1	.2	.1
21	0	b0					76	1.4	1.3	0	0	.1
22	0	b0					54	1.3	.2	0	0	0
23	0	b0					26	1.3	.2	.4	0	.2
24	0	b0					*14	1.4	.2	.4	0	.2
25	0	b0					9.8	1.5	.2	.2	0	.1
26	0	b0					7.8	1.8	.2	.2	0	.1
27	0	*b.1					4.6	2.0	.2	.2	0	.1
28	0	b.2					5.0	1.7	.3	1.3	0	0
29	0	b.1					6.2	1.4	.2	2.0	0	0
30	0	b.1					7.8	1.3	.2	2.0	0	0
31	0	-					-	1.2	-	1.9	0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	0	0	0	0	0
November	.5	.2	0	.02	1.0
December	.1	.1	0	.00	.2
Calendar year	-	-	-	-	-
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	1,747.3	400	0	58.2	3,470
May	80.1	7.6	1.2	2.58	159
June	22.0	2.5	.2	.73	44
July	11.6	2.0	0	.37	23
August	25.0	2.6	0	.81	50
September	5.9	1.4	0	.20	12
Water year 1939-40	1,892.5	400	0	5.17	3,760

* Winter discharge measurement made on this day.
a No gage-height record; discharge estimated.
b Stage-discharge relation affected by ice.
Note.- Backwater from aquatic growth or beaver dam May 22 to Sept. 30; discharge computed on basis of gage heights, weather records, two estimates of low flow, and records for the Roseau River near Malung and at Ross.

Mud Creek near Sprague, Manitoba

(International gaging station)

Location.- Water-stage recorder, lat. 48°59'33", long. 95°39'43", in NE¼ sec. 34, T. 164 N., R. 39 W., half a mile south of international boundary, 3½ miles south of Sprague, Manitoba, 8 miles upstream from mouth, and 14 miles northeast of Roseau, Minn. Datum of gage is 1,038.4 feet above mean sea level (Geodetic Survey of Canada datum, adjustment of 1928).

Drainage area.- 158 square miles (revised).

Records available.- September 1928 to September 1940 (incomplete).

Extremes.- Maximum daily discharge during year, 65 second-feet Apr. 16; maximum gage height recorded, 5.74 feet Apr. 16, affected by ice; minimum discharge recorded, 0.1 second-foot Aug. 16 (gage height, 0.49 foot).

1928-40: Maximum discharge, 1,560 second-feet July 17, 1937 (gage height, 14.70 feet, affected by backwater from aquatic vegetation), from rating curve extended above 860 second-feet; no flow Aug. 8-10, 1934, several days in August and September 1936, July 30 to Aug. 7, 1939.

Remarks.- Records good except those for periods of no gage-height record or those affected by ice or backwater from debris on control, which are poor.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Rating tables, water year 1939-40, except for periods of ice effect or backwater from debris (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 15				Apr. 16 to Sept. 30			
0.6	0.4	0.5	0.1	1.5	8.5	3.5	56
.7	1.0	.6	.6	2.0	16	4.0	71
.8	1.6	.8	2.0	2.5	26		
.9	2.4	1.0	3.5	3.0	41		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	c1.0							b60	7.2	2.4	1.6	1.2
2	c.9							b48	7.3	2.4	2.1	.9
3	c1.1							b36	8.1	2.1	2.3	.8
4	c1.8						a.4	b30	8.1	2.0	2.1	.7
5	-							b24	7.8	1.8	1.6	.7
6	-							b22	7.0	1.6	1.4	1.2
7	-							*b20	6.4	1.6	2.1	2.6
8	-						a.7	b19	5.6	1.4	1.5	1.8
9	-							b19	4.2	1.3	.7	1.7
10	-							b18	4.9	1.3	.6	1.4
11	-						a1.0	b17	5.0	1.2	.5	1.2
12	-							b16	5.0	1.2	.5	c1.0
13	-							b15	4.9	1.0	.4	c.8
14	-							14	4.8	1.2	.4	c.7
16	-						a20	13	4.5	1.4	.4	c.5
16	-	(*)					*b65	*12	4.0	1.5	.2	c.4
17	-						b60	12	3.6	1.4	.4	c.9
18	-						b60	11	3.3	1.4	.4	c1.9
19	-						b48	11	2.8	1.6	.4	c1.7
20	-						b36	11	2.5	1.5	.3	c2.0
21	-						b28	10	2.6	1.4	.2	c1.3
22	-						b22	9.7	2.9	1.2	.2	c1.2
23	-						b18	9.2	2.9	1.2	.2	c1.1
24	-						*b17	8.5	2.9	1.4	.2	c1.2
25	-						b17	7.9	2.9	2.2	.5	c1.0
26	-						b13	8.0	2.7	.9	.9	c1.0
27	-						b12	7.5	2.7	.2	.9	c.9
28	-						b15	7.3	2.9	1.9	1.1	c.8
29	-						b36	7.1	2.9	2.8	1.1	c.7
30	-						b60	6.4	2.6	2.4	3.3	c.7
31	-						-	6.0	-	1.8	2.1	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October					
November					
December					
Calendar year					
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	536.5	65	.4	17.9	1,060
May	515.6	60	6.0	16.6	1,020
June	135.0	8.1	2.5	4.50	268
July	48.7	2.8	.2	1.57	97
August	30.6	3.3	.2	.99	61
September	34.0	2.6	.4	1.13	67
Water year	-	-	-	-	-

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for nearby stations.
b Stage-discharge relation affected by ice.
c Backwater from debris on control; discharge computed on basis of three discharge measurements, gage heights, weather records, and comparisons with records for Pine Creek near Pine Creek and Roseau River at Ross.

Pine Creek near Pine Creek, Minn.

(International gaging station)

Location.- Water-stage recorder, lat. 48°59'35", long. 95°55'04", in SW¼SW¼ sec. 26, T. 164 N., R. 41 W., half a mile south of international boundary, 2 miles northeast of village of Pine Creek, and 6 miles upstream from Roseau River. Prior to Aug. 30, recorder at site 50 feet downstream at same datum. Datum of gage is 1,038.42 feet above mean sea level (Geodetic Survey of Canada datum, adjustment of 1928).

Drainage area.- 73.1 square miles (revised).

Records available.- August 1928 to September 1940 (winter records incomplete).

Extremes.- Maximum daily discharge during year, 55 second-feet Apr. 30, May 1; maximum gage height, 5.88 feet Apr. 15, affected by ice; minimum daily discharge recorded, 2.4 second-feet Aug. 17.

1928-40: Maximum discharge, 516 second-feet Apr. 17, 1936 (gage height, 8.58 feet), from rating curve extended above 400 second-feet.

Remarks.- Records poor.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.0	7.5						b55	30	10	6.5	a8.0
2	6.0	7.0						b50	34	9.5	7.5	a9.0
3	6.0	8.0						b40	36	9.5	6.0	a9.0
4	6.5	7.5						b34	36	9.0	5.5	a9.0
5	7.0	8.0					a5.0	b32	32	8.0	5.5	a8.0
6	8.0	8.0						b30	30	8.5	5.0	a8.0
7	7.5	7.5						*28	28	8.0	6.5	a9.0
8	7.0	8.0					a6.0	26	26	6.0	6.0	9.0
9	6.5	7.5					a8.0	26	26	5.0	3.8	8.5
10	6.5	5.5					a12	24	32	5.0	4.0	9.0
11	7.0	8.0					a12	22	36	5.5	4.6	8.5
12	7.0	7.0					a10	26	34	5.0	3.6	8.0
13	7.0	a7.0					a7.0	26	26	6.0	4.4	7.5
14	7.0	a7.0					*b7.0	26	22	6.0	4.4	7.0
15	7.0	a7.5					b32	26	18	6.5	4.8	7.0
16	7.0	*7.5					b44	22	19	6.5	5.0	7.0
17	7.0						*b48	22	14	6.5	2.4	7.0
18	7.0						b40	22	12	6.5	3.4	8.5
19	7.0						b36	24	10	7.0	3.8	9.5
20	7.0						b38	22	10	6.5	3.8	9.0
21	7.5						b40	19	11	6.5	4.0	9.0
22	7.0						b34	20	16	6.0	3.6	8.5
23	7.5	a7.0					b32	20	18	7.0	3.6	8.0
24	7.5						b36	19	16	7.5	5.0	8.0
25	7.5						*b28	19	15	8.0	5.5	8.0
26	8.0						b24	22	13	7.5	6.0	7.5
27	7.5						b18	22	8.0	6.5	6.0	7.5
28	7.5						b26	22	10	7.0	5.5	7.5
29	8.5						b50	22	11	9.5	5.5	7.5
30	8.0						b55	22	10	9.5	6.0	7.5
31	7.5	-					-	19	-	7.5	a8.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	221.0	8.5	6.0	7.13	438
November	216.5	8.0	5.5	7.22	429
December	-	-	-	-	-
Calendar year	-	-	-	-	-
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	678.0	55	5.0	22.6	1,340
May	809	55	19	26.1	1,600
June	639	36	8.0	21.3	1,270
July	223.0	10	5.0	7.19	442
August	155.2	8.0	2.4	5.01	308
September	244.5	9.5	7.0	8.15	435
Water year	-	-	-	-	-

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of record for adjacent days and record for Roseau River at Ross.

b Stage-discharge relation affected by ice.

Note.- Backwater from beaver dam Oct. 1 to Nov. 12, Nov. 16, May 7 to Aug. 30, Sept. 8-30; discharge computed on basis of eight discharge measurements, gage heights, and record for Roseau River near Ross.

Souris River near Sherwood, N. Dak.

(International gaging station)

Location.- Water-stage recorder, lat. 48°59', long. 101°58', in NE¼ sec. 33, T. 164 N., R. 87 W., 16 miles northwest of Sherwood and three-quarters of a mile south of international boundary.

Drainage area.- 9,570 square miles.

Records available.- March 1930 to September 1940.

Extremes.- Maximum daily discharge during year, 75 second-feet Apr. 15; maximum gage height, 3.58 feet, affected by backwater from ice; no flow for several months.
1930-40: Maximum discharge, 2,480 second-feet Mar. 28, 1939 (gage height, 19.08 feet, affected by ice); no flow for periods in each year.
Flood of 1927 reached a stage of about 22 feet.

Remarks.- Records good except those below 5 second-feet, which are fair, and those below 1 second-foot, which are poor.

Cooperation.- This is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0.2				0	0.1	8.6	4.8	0.2	0.1	
2	0	.2				0	.1	8.0	4.6	.2	.1	
3	.1	.2				0	.1	6.4	3.9	.3	.5	
4	.1	.2				0	.1	5.6	3.7	.2	1.6	
5	.1	.2				0	.1	6.4	10	.2	1.4	0.1
6	0	.4				0	.1	6.6	9.6	.1	1.3	
7	0	*.6				0	.1	7.0	8.4	.1	.9	
8	0					0	.1	9.6	5.2		.8	
9	0					0	.1	9.0	5.2		.5	
10	0					0	.1	7.6	4.8		.6	
11	0					0	.1	8.0	4.5		.6	0
12	0					0	.1	7.6	3.3		.3	0
13	0					0	*b.2	9.6	2.5		.2	0
14	0					0	50	16	2.5		.3	0
15	.1					0	*75	18	1.8		1.6	0
16	0		0.1			0	55	18	1.4		1.1	0
17	.1					.1	*60	19	1.3		.4	0
18	.1					.1	26	20	1.1		.2	0
19	.1	.3				.1	*19	20	1.1	.1	.1	0
20	.1					.1	16	19	1.4		.1	0
21	.1					.1	*32	20	1.8			0
22	.1					.1	30	12	1.8			0
23	.1					.1	*22	12	1.6			0
24	.1					.1	14	22	1.4			0
25	.1					.1	*13	22	1.1			0
26	.2					.1	b9.5	16	1.3		.1	0
27	.2					.1	9.0	12	1.1			0
28	.1					0	9.0	12	.6			0
29	.2					0	8.6	10	.5			0
30	.2					0	8.0	7.0	.4			0
31	.2	-				0	-	5.6	-			-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	2.4	0.2	0	0.08	4.8
November	8.9	-	-	.30	18
December	3.1	-	-	.1	6.1
Calendar year 1939	35,436.6	2,460	0	97.1	70,280
January	0	0	0	0	0
February	0	0	0	0	0
March	1.1	-	0	.04	2.2
April	457.5	75	.1	15.2	907
May	380.6	22	5.6	12.3	755
June	90.9	10	.4	3.03	180
July	3.7	.3	-	.12	7.3
August	13.8	1.6	-	.45	27
September	1.0	-	0	.03	2.0
Water year 1939-40	963.0	75	0	2.63	1,910

* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.- Backwater from debris on control Oct. 1 to Nov. 2; discharge computed on basis of gage heights and two field estimates. Discharge Nov. 8 to Dec. 31, Mar. 17 to Apr. 13, July 8 to Aug. 2, Aug. 21 to Sept. 10, estimated. Shifting control Apr. 27 to July 7, Aug. 4-20; discharge computed on basis of seven discharge measurements and gage heights.

Lake Darling near Foxholm, N. Dak.

Location.- Staff gage, lat. 48°27', long. 101°35', in NE¼NE¼ sec. 1, T. 157 N., R. 85 on control dam of Lake Darling, reservoir of Fish and Wildlife Service, on Souris River, about 6 miles north of Foxholm. Datum of gage is 1,577.00 feet above mean sea level (Fish and Wildlife Service bench mark).

Records available.- April 1937 to September 1940 (fragmentary).

Extremes.- Maximum gage height observed during year, 10.80 feet Oct. 7; minimum observed, 6.00 feet Sept. 14.

1938-40: Maximum gage height observed, 13.32 feet Apr. 11, 1939; minimum observed, 1.53 feet Mar. 1, 1938.

Remarks.- Reservoir is formed by concrete dam; storage began in April 1936; dam completed in July 1936. Capacity, 126,500 acre-feet between gage height 0.0 feet (sill of control gates) and 23.0 feet (top of 2-foot flashboards). Dead storage, 3,500 acre-feet. Water is used during periods of low flow at wildlife refuges below station. Gage read once or twice weekly except for periods when lake was frozen, when only occasional readings were made.

Cooperation.- Gage-height record furnished by Fish and Wildlife Service.

Capacity table (gage height, in feet, and contents, in acre-feet)

0	3,500	4.0	12,000	8.0	24,000	12.0	40,000	16	65,000	20	101,000
1.0	5,000	5.0	15,000	9.0	27,000	13.0	46,000	17	73,000	21	112,000
2.0	7,000	6.0	18,000	10.0	31,000	14	52,000	18	81,000	22	120,000
3.0	9,500	7.0	21,000	11.0	35,000	15	58,000	19	89,000	23	130,000

Monthly gage height and contents, water year October 1939 to September 1940

Date	Gage height (feet)	Contents (acre-feet)	Change in contents during month (acre-feet)
Sept.30	10.82	34,300	-
Oct. 31	b9.95	30,800	-3,500
Nov. 30	bf9.47	28,900	-1,900
Dec. 31	bf9.48	28,900	0
Calendar year 1939	-	-	-
Jan. 31	bf9.48	28,900	0
Feb. 29	bf9.48	28,900	0
Mar. 31	f9.56	29,200	+300
Apr. 30	f8.63	25,900	-3,300
May 31	8.72	26,200	+300
June 30	f8.39	25,200	-1,000
July 31	7.38	22,100	-3,100
Aug. 31	6.26	18,800	-3,300
Sept.30	6.08	18,200	-600
Water year 1939-40	-	-	-16,100

b Reading to top of ice.
f Interpolated.

Souris River near Foxholm, N. Dak.

Location.- Water-stage recorder and artificial control, lat. 48°22', long. 101°30', in SW¼SE¼ sec. 34, T. 157 N., R. 84 W., about 3 miles east of Foxholm. Gage used prior to November 1905 at same site.

Drainage area.- 10,100 square miles.

Records available.- June 1904 to November 1905, April 1937 to September 1940.

Extremes.- Maximum discharge during year, 504 second-feet Oct. 20, from loop rating curve; maximum gage height, 7.81 feet Oct. 20; no flow June 21, possibly on other days during periods of no gage-height record.

1904-05, 1937-40: Maximum discharge, 663 second-feet Apr. 17, 1939; maximum gage height, 8.92 feet, Apr. 17, 1939; no flow at times.

Remarks.- Records good except those for periods of no gage-height record and those for discharges below 10 second-feet, which are poor. Flow completely regulated by Lake Darling and several smaller reservoirs having a total storage capacity of 120,080 acre-feet.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.6					0.7	1.2	1.1	0.2	134	0.8
2	.1	.4					.7	.8	2.3	.2	137	.8
3	.1	.5					.8	.6	.6	.2	131	1.0
4	.1	.5					.7	2.2	.3	.2	131	1.0
5	.1	.5				a0.5	.7	3.7	.2	.2	128	.8
6	.1	.5					.8	1.1	2.2	.3	126	.7
7	.1	.5					.7	2.8	.9	.2	128	.8
8	.1						.7	1.8	.4	.2	128	1.0
9	.1						.6	1.4	3.0	.3	140	1.0
10	.1					.6	49	1.0	1.1	.5	154	.8
11	.4					.7	94	.8	.4	.4	154	.8
12	.4					.6	98	2.5	.5	.4	151	1.0
13	.4					.6	126	8.3	.4	.3	79	1.0
14	.3					.5	117	17	2.9	.4	1.8	1.0
15	1.0		a0.4	a0.2	a0.3	.6	151	6.9	.7	.4	1.4	1.0
16	.7					.6	193	5.6	.3	.4	1.2	1.0
17	202					.7	230	9.6	.2	.4	1.2	1.2
18	c412					.7	246	10	.3	.7	1.2	1.4
19	c497	a.5				.7	243	5.6	.3	.6	1.2	1.8
20	c437					.6	199	13	.1	.6	1.2	2.0
21	c323					.6	187	3.8	0	.5	1.6	1.8
22	c318					.6	184	2.8	.5	50	2.0	1.8
23	c317					.6	184	2.5	1.8	137	1.8	2.0
24	c253					.6	182	1.8	1.0	137	1.8	1.8
25	1.7					.6	182	.9	.5	134	1.8	1.6
26	.8					.6	125	.7	.3	134	1.6	1.6
27	.6					.6	1.2	.5	.4	134	1.4	1.6
28	.6					.6	2.6	.3	1.3	134	1.4	1.6
29	.6					.6	5.1	.2	.4	134	1.4	1.6
30	.5				-	.7	3.3	.1	.3	131	1.2	1.6
31	.7	-			-	.6	-	.1	-	131	1.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,768.7	497	0.1	89.3	5,490
November	15.0	-	-	.5	30
December	12.4	-	-	.4	25
Calendar year 1939	14,409.2	656	0	39.4	28,571.8
January	6.2	-	-	.2	12
February	8.7	-	-	.3	17
March	18.1	.7	-	.584	36
April	2,808.6	246	.6	93.6	5,570
May	109.6	17	.1	3.5	217
June	24.7	3.0	0	8.2	49
July	1,263.6	137	.2	40.8	2,510
August	1,747.2	154	1.0	56.4	3,470
September	37.9	2.0	.7	1.26	75
Water year 1939-40	8,820.7	246	0	24.1	17,501

a No gage-height record; discharge estimated.
c Discharge determined from loop rating curve.

Souris River above Minot, N. Dak.

Location.- Water-stage recorder and concrete control, lat. 48°14'45", long. 101°22'15", near center of sec. 17, T. 155 N., R. 83 W., about 3½ miles west of Minot. Datum of gage is 1,545.75 feet (revised) above mean sea level (general adjustment of 1929).

Drainage area.- 11,300 square miles (revised).

Records available.- May 1903 to March 1924, April 1927 to September 1928, and October 1929 to September 1934 at site at Minot, 10 miles downstream, and October 1934 to September 1940 at present site in reports of Geological Survey. May 1903 to September 1930 in reports of State engineer. Records equivalent except those for periods of low flow, when considerable industrial and sanitary waste enters river between the two sites.

Average discharge.- 27 years (1913-40), 117 second-feet.

Extremes.- Maximum discharge during year, 480 second-feet Oct. 20 (gage height, 6.42 feet); no flow during several months.

1903-24, 1927-28, 1929-40: Maximum discharge, 12,000 second-feet Apr. 20, 1904 (gage height, 21.9 feet, at site at Minot), from rating curve extended above 8,100 second-feet; no flow at times in February 1930, and in each year of period 1934-40.

Maximum stage known at present site, about 23 feet in April 1904.

Remarks.- Records good except those below 5 second-feet, which are poor. Flow of Souris and Des Lacs Rivers completely regulated by U. S. Fish and Wildlife Service dams above station.

Rating table, water year 1939-40, except periods of ice effect and of backwater from debris on control (gage height, in feet, and discharge, in second-feet)

4.04	0	4.4	27	5.3	210
4.05	.1	4.5	40	5.6	300
4.1	.5	4.6	56	6.0	428
4.2	5.1	4.8	94	6.2	480
4.3	15	5.0	137		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	3.6					0.4	3	0.3	0	128	0
2	0	2.4					.4	2.4	.7	0	153	0
3	0	2.0					.4	1.6	.7	0	144	0
4	0	2.4					.4	1.6	.7	0	130	0
5	0	3.0				a0.5	.4	2.4	.5	0	128	0
6	0	3.0					1.0	2.0	1.3	0	126	0
7	0	3.0					*1.6	3.6	.7	0	119	0
8	0						1.0	4.3	.7	0	122	0
9	0						.7	3.0	.7	0	122	0
10	0					.5	*.3	2.4	.5	0	130	0
11	0	a3.0				.5	.1	2.0	.3	0	142	0
12	0					.4	20	1.6	.2	0	142	0
13	0					.4	*100	6.8	.1	0	142	0
14	0					.4	120	12	.1	0	77	0
15	0					.3	128	20	0	0	12	0
16	0		a2.0	a0.4	a0.5	.4	140	16	0	0	1.0	0
17	0					1.0	*190	13	0	0	.3	0
18	88					.7	*280	12	0	0	0	a.2
19	360					.3	260	15	0	0	0	a.2
20	460					.2	236	14	0	0	0	a.2
21	450					.2	197	12	0	0	0	a.2
22	360					.2	184	15	0	0	0	a.2
23	330	a2.4				.2	182	12	0	0	0	a.2
24	330					.1	179	4.3	0	68	0	a.2
25	245					.2	177	2.0	0	124	0	a.2
26	52					.1	177	1.3	0	128	0	a.1
27	13					.2	115	1.3	0	128	0	a.1
28	6.0					.2	27	.7	0	130	0	a.1
29	4.3					.2	11	.5	0	128	0	a.1
30	4.3				-	.2	5.1	.4	0	128	0	a.1
31	3.6	-			-	.3	-	.3	-	126	0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,706.2	460	0	87.3	5,370
November	79.4	3.6	-	2.65	157
December	62.0	-	-	2.0	123
Calendar year 1939	19,525.1	1,400	0	53.5	38,731.09
January	12.4	-	-	.4	25
February	14.5	-	-	.5	29
March	11.7	1.0	-	3.77	23
April	2,736.8	280	.1	91.2	5,430
May	188.5	20	.3	6.08	374
June	7.5	1.3	0	.25	15
July	960	130	0	31.0	1,900
August	1,818.3	153	0	58.7	3,610
September	2.1	0.2	0	.07	4.2
Water year 1939-40	8,599.4	460	0	23.5	17,060.2

* Winter discharge measurement made on this day.

a No gage-height record, or record not used; discharge estimated.

Note.- Debris on control Oct. 18 to Nov. 7; discharge computed on basis of six discharge measurements and gage heights.

Souris River near Verendrye, N. Dak.

Location.- Water-stage recorder, lat. 48°09', long. 100°44', in NW¼SW¼ sec. 17, T. 154 N., R. 78 W., 3 miles northeast of Verendrye, 4 miles downstream from former site, and 7½ miles southwest of mouth of Wintering River.

Drainage area.- 12,200 square miles.

Records available.- February to June 1933 (gage heights only), April 1937 to September 1940.

Extremes.- Maximum discharge during period, 396 second-feet Oct. 24 (gage height, 5.32 feet); minimum recorded, 0.3 second-foot Oct. 10-21, may have been less sometime during period of no gage-height record.

1937-40: Maximum discharge recorded, 1,260 second-feet, Mar. 30, 1939; minimum recorded, 0.3 second-foot Aug. 11-19, 1937, Oct. 10-21, 1939.

Remarks.- Records good except those below 5 second-feet, which are fair. Flow regulated by U. S. Fish and Wildlife Service dams on Souris and Des Lacs Rivers.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	25					b4.0	85	10	1.4	118	2.0
2	.4	20					b4.4	57	11	1.4	130	1.8
3	.4	15					b4.8	38	10	1.4	130	2.0
4	.4	14					*b4.4	28	9.0	1.4	135	1.7
5	.4	14				a1	b4.8	26	8.4	1.2	145	1.7
6	.4	11					6.0	21	7.8	1.7	145	1.6
7	.4	11					6.6	20	6.6	2.0	130	1.6
8	.4	9.6					7.2	19	6.6	1.6	102	1.7
9	.4	9				*b1.1	9.0	18	6.6	1.2	118	1.6
10	.3	8				b1.7	8.4	17	6.6	1.7	130	1.4
11	.3	8				b2.4	9.0	16	4.8	1.7	114	1.4
12	.3	7				b1.8	9.0	19	5.2	1.4	112	1.2
13	.3	7				b1.7	11	21	5.6	1.4	114	1.1
14	.3	6				b1.7	14	25	3.6	1.2	124	1.1
15	.3	6				b1.8	19	25	3.6	1.1	130	1.1
16	.3	6				b2.8	23	26	3.6	1.1	124	1.2
17	.3	5				b4.4	23	27	2.8	1.1	80	1.4
18	.3	5				b4.4	86	25	2.8	1.6	48	1.6
19	.3	5				b4.4	185	23	2.4	1.4	34	1.7
20	.3	5				*b4.0	225	25	2.0	1.2	20	1.8
21	.3	a4				b3.2	350	25	1.6	1.0	13	2.0
22	135					b2.4	310	22	2.0	1.0	9.0	2.4
23	364					b2.4	250	19	2.8	1.1	6.6	3.2
24	396					b2.4	210	18	2.8	1.0	7.2	2.8
25	364					b2.4	189	17	3.2	1.2	6.0	2.8
26	330					b2.0	180	15	3.2	1.6	4.8	2.8
27	294					b2.0	178	15	2.0	1.6	4.4	2.8
28	216					b2.4	172	15	1.7	3.2	4.0	2.4
29	155					b2.8	132	15	1.7	86	3.2	2.0
30	76					b3.6	120	13	1.7	110	3.2	1.8
31	40	-				b4.0	-	11	-	114	2.8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,377.2	396	0.3	73.7	4,720
November	236.6	25	-	7.89	469
December	-	-	-	-	-
Calendar year	-	-	-	-	-
January	-	-	-	-	-
February	-	-	-	-	-
March	69.8	4.4	-	2.25	138
April	2,754.6	350	4.0	91.8	5,460
May	745.0	85	11	24.0	1,480
June	141.7	11	1.6	4.72	281
July	349.9	114	1.0	11.3	694
August	2,247.2	145	2.8	72.5	4,460
September	55.7	3.2	1.1	1.86	110
Water year	-	-	-	-	-

* Winter discharge measurement made on this day.
a No gage-height record; discharge estimated.
b Stage-discharge relation affected by ice.

Note.- Backwater from aquatic growth or debris on control Oct. 1-22, Oct. 29 to Nov. 3, Apr. 6-23, July 23 to Aug. 26; discharge computed on the basis of one field estimate of discharge and nine discharge measurements and gage heights. Shifting control used May 5-13, Sept. 17-30; discharge computed on basis of gage heights and two discharge measurements.

Souris River near Towner, N. Dak.

Location.- Water-stage recorder, lat. 48°18', long. 100°27', in NE¼ sec. 29, T. 156 N., R. 76 W., 4 miles southwest of Towner. Datum of gage is 1,443.50 feet above mean sea level (general adjustment of 1929).

Drainage area.- 13,090 square miles.

Records available.- March 1935 to September 1940 (after September 1938, gage heights and discharge measurements only). March 1933 to September 1934 at site at Towner, 5 miles downstream.

Extremes.- Maximum discharge observed during year, 311 second-feet Oct. 27 (gage height, 5.89 feet), result of discharge measurement; maximum gage height, 5.91 feet Mar. 31; minimum recorded, 1.74 feet Apr. 4.

1933-40: Maximum discharge observed, 1,150 second-feet, Apr. 1, 1939 (gage height, 12.42 feet), result of discharge measurement; no flow for several days in period June to September 1934 and in 1937.

Remarks.- Water-stage recorder operated Oct. 1 to Jan. 17 and Mar. 7 to Sept. 30; fragmentary record only Mar. 7 to Apr. 5. Water diverted for irrigation at Eaton Dam, about 5 miles upstream. Flow regulated by Eaton Dam and U. S. Fish and Wildlife Service dams on Souris and Des Lacs Rivers. Records of daily discharge not computed.

Discharge measurements, water year October 1939 to September 1940

Date	Gage height	Discharge	Date	Gage height	Discharge
Oct. 17	1.87	0.20	Apr. 8	2.02	1.86
23	1.96	.92	10	1.82	.40
24	3.40	112	16	1.88	.81
25	5.03	278	20	1.85	.60
26	5.71	310	21	3.03	57.8
27	5.89	311	22	3.42	85.7
28	5.82	262	23	3.74	103
29	5.59	239	24	3.86	116
31	4.60	144	25	3.99	112
Nov. 1	3.86	82.1	26	3.23	35.4
2	3.36	62.0	27	2.40	13.9
7	2.44	18.2	May 2	2.28	13.5
8	2.40	17.9	7	2.28	13.3
Mar. 7	-	2.8	11	2.34	18.0
9	2.10	2.26	June 21	2.42	9.90
19	2.96	1.49	Aug. 7	4.20	138
Apr. 4	1.74	.62	Sept. 23	1.95	1.12

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.07	3.89	2.11	2.03		-	-	2.32	2.85	1.98	3.18	2.05
2	2.06	3.31	2.11	2.04		-	-	2.28	2.81	1.97	3.52	2.02
3	2.07	2.97	2.11	2.04		-	-	2.21	2.74	1.94	3.72	2.00
4	2.08	2.74	2.10	2.03		-	h1.74	2.32	2.70	1.92	3.88	1.99
5	2.00	2.60	2.10	2.03		-	f1.85	2.31	2.70	1.90	3.94	1.98
6	1.81	2.51	2.10	2.03		-	2.00	2.26	3.32	1.92	4.08	1.97
7	1.82	2.43	2.10	2.03		-	2.02	2.25	3.48	1.90	4.21	1.92
8	1.80	2.42	2.10	2.03		-	1.93	2.29	3.40	1.90	4.39	1.91
9	1.81	2.51	2.10	2.03		h2.10	1.88	2.30	3.52	1.90	4.31	1.90
10	1.82	2.66	2.11	2.02		-	1.82	2.29	3.58	1.94	4.11	1.89
11	1.84	2.40	2.11	2.02		-	1.80	2.31	3.57	1.92	4.09	1.88
12	1.88	2.28	2.11	2.02		-	1.80	2.30	3.51	1.91	4.10	1.87
13	1.87	2.22	2.11	2.02		-	1.88	2.38	3.43	1.90	4.01	1.84
14	1.88	2.20	2.09	2.02		-	1.92	2.38	3.30	1.90	3.91	1.83
15	1.89	2.18	2.08	2.02		-	1.92	2.32	3.30	1.90	3.93	1.82
16	1.88	2.16	2.08	2.02		-	1.87	2.30	3.72	1.88	3.99	1.82
17	1.87	2.15	2.08	2.01		-	1.86	2.30	3.59	1.88	4.01	1.84
18	1.88	2.15	2.09	-		-	1.83	2.30	3.30	1.94	3.93	1.87
19	1.89	2.14	2.10	-		h2.96	1.84	2.56	2.99	1.98	3.62	1.89
20	1.89	2.14	2.10	-		h1.89	1.85	2.43	2.66	2.02	3.28	1.90
21	1.89	2.13	2.09	-		-	2.88	2.50	2.44	2.02	2.97	1.90
22	1.89	2.12	2.08	-		-	3.22	2.41	2.30	2.00	2.73	1.89
23	1.95	2.11	2.08	-		-	3.78	2.38	2.20	2.02	2.56	1.94
24	3.28	2.14	2.07	-		-	3.88	2.36	2.12	2.01	2.48	1.92
25	5.04	2.14	2.07	-		-	3.96	2.34	2.09	1.99	2.39	1.90
26	5.71	2.14	2.05	-		-	3.12	2.39	2.09	1.98	2.31	1.90
27	5.89	2.13	2.03	-		-	2.45	2.60	2.08	1.99	2.26	1.90
28	5.83	2.12	2.02	-		-	2.30	3.58	2.02	2.02	2.20	1.90
29	5.57	2.12	2.01	-		-	2.65	3.34	2.01	2.05	2.16	1.90
30	5.10	2.12	2.02	-		-	2.45	3.15	1.99	2.06	2.11	1.91
31	4.53	-	2.02	-		-	-	2.94	-	2.46	2.08	-

f Fragmentary gage-height record.
h Staff-gage reading.

Souris River near Bantry, N. Dak.

Location.- Water-stage recorder, lat. 48°30', long. 100°25', in SE¼ sec. 14, T. 158 N., R. 76 E., 8 miles east of Bantry.

Drainage area.- 13,400 square miles.

Records available.- March 1937 to September 1940 (no winter records).

Extremes.- Maximum discharge recorded during year, 263 second-feet Oct. 29 (gage height, 4.94 feet); no flow Oct. 1-23.
1937-40: Maximum discharge recorded, 866 second-feet Apr. 4, 1939; no flow at times in each year.

Remarks.- Records good except those for periods of backwater from beaver dam, aquatic vegetation, or ice, which are fair. Water diverted for irrigation at Eaton Dam about 42 miles above station. Flow regulated by dams of the U. S. Fish and Wildlife Service on Souris and Des Lacs Rivers.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	200	4.0			-	3.2	35	73	11	3.0	6.8
2	0	170	3.4			-	3.2	31	69	10	4.1	5.4
3	0	140	3.8			-	3.6	25	59	9.6	5.4	4.1
4	0	110	4.2			-	3.6	21	52	8.8	27	3.2
5	0	80	4.4			-	3.8	19	46	7.8	56	2.4
6	0	*60	4.6			-	3.8	18	42	7.8	80	2.3
7	0	*38	4.0			-	3.8	20	38	7.2	94	1.5
8	0	*22	4.0			-	*4.8	20	44	6.4	102	1.5
9	0	16	4.0			*2.2	5.5	19	58	6.2	114	.8
10	0	9.5	3.6			2.2	5.5	18	60	7.2	122	.5
11	0	8.5	4.0			2.2	*5.5	17	64	6.4	124	.4
12	0	7.5	-			2.2	6.5	17	64	5.6	116	.5
13	0	7.5	-			2.2	5.5	18	62	5.2	116	.4
14	0	8.0	-			2.2	5.5	22	62	5.0	116	.6
15	0	8.0	-			2.2	8.0	21	58	4.6	116	.7
16	0	7.5	-			2.2	*9.0	21	54	4.6	106	.7
17	0	6.5	-			2.2	9.5	21	52	4.8	104	.7
18	0	5.0	-			2.2	9.5	20	54	6.2	104	.7
19	0	4.2	-			2.2	11	19	54	6.6	104	.7
20	0	3.2	-			2.2	*16	18	49	6.6	100	.6
21	0	4.2	-			*2.4	14	19	44	6.4	90	.6
22	0	4.8	-			2.2	11	22	43	5.0	72	.6
23	0	4.8	-			2.2	*9.5	23	35	5.2	54	.6
24	.1	4.2	-			2.2	24	23	28	5.0	44	.7
25	.1	4.0	-			2.2	69	22	21	6.8	37	.7
26	24	3.8	-			2.2	90	20	19	5.2	31	.7
27	150	3.6	-			2.2	96	19	16	4.8	24	.7
28	240	3.2	-			2.4	80	18	15	5.7	18	.7
29	260	3.8	-			3.2	57	21	12	5.2	13	.7
30	250	4.2	-			3.2	41	46	12	5.2	11	.7
31	220	-	-			3.2	-	71	-	3.7	8.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,144.2	260	0	37.9	2,270
November	952.0	200	3.2	31.7	1,890
December 1-11	44.0	4.6	3.4	4.00	87
Calendar year	-	-	-	-	-
January	-	-	-	-	-
February	-	-	-	-	-
March 9-31	54.0	3.2	2.2	2.35	107
April	618.3	96	3.2	20.6	1,230
May	724.0	71	17	23.4	1,440
June	1,359.0	73	12	45.3	2,700
July	195.8	11	3.7	6.32	388
August	2,115.7	124	3.0	68.2	4,200
September	41.2	6.8	.4	1.37	82
Water year	-	-	-	-	-

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Nov. 6 to Dec. 11, Mar. 9 to Apr. 24. Backwater from beaver dam or aquatic vegetation Oct. 1-23, 25-27, Nov. 2-5, Apr. 26-28, June 8 to July 12, July 18-21, Aug. 3 to Sept. 30; discharge computed on basis of eight discharge measurements, gage heights, and engineers' notes.

Souris River near Westhope, N. Dak.

(International gaging station)

Location.- Water-stage recorder and concrete control, lat. 49°00', long. 100°57', in SW¼SE¼ sec. 30, T. 164 N., R. 79 W., 1,200 feet upstream from international boundary and 1 mile downstream from U. S. Fish and Wildlife Service dam 357.

Drainage area.- 17,600 square miles.

Records available. October 1937 to September 1940. July 1929 to September 1937 at site 6¼ miles upstream.

Extremes.- Maximum daily discharge during year, 27 second-feet Oct. 21-23, 25; maximum gage height, 4.35 feet Aug. 5 (affected by backwater); no flow during much of year. 1929-40: Maximum discharge observed, 1,130 second-feet Mar. 31 to Apr. 2, 1930, Apr. 19, 1933; maximum gage height observed, 7.25 feet, Apr. 19, 1933 (site and datum then in use); no flow during several periods.

Remarks.- Records fair except those below 8 second-feet, which are poor. Flow of Souris and Des Lacs Rivers completely regulated by U. S. Fish and Wildlife Service dams.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0.1					0	0.1	1.8	0.2	1.2	0.2
2	0	0					0	.2	.7	.1	1.2	.2
3	0	0					0	.2	.5	0	.7	.1
4	0	0					b0	.2	.6	0	.5	.1
5	0	0					b0	.2	.7	0	4.2	1.0
6	0	0					b0	.2	.6	.1	5.6	2.4
7	0	0					b0	.5	.6	.1	5.2	1.8
8	0	0					b0	.3	.5	.1	3.6	1.0
9	0	0					b0	.3	.5	.1	1.2	1.0
10	0	0					b0	.2	.6	2.2	.5	1.3
11	0	0					b0	.2	.5	9.2	.2	1.9
12	0	0					b0	.2	3.3	4.2	.2	4.7
13	0	0					b.2	.3	.8	3.0	.2	3.8
14	0	0					b1.5	.4	.2	3.0	.1	.4
15	0	0					b1.8	.3	.2	4.0	.2	.2
16	1.9	0					b1.0	.4	.2	5.8	3.1	1.4
17	9.8	0					1.0	.6	1.1	3.8	1.5	3.4
18	19	0					.3	.7	2.7	4.2	1.0	4.7
19	14	0					.1	.7	.6	3.9	.9	4.7
20	25	0					.1	.7	.4	7.6	3.3	4.7
21	27	0					.1	.6	.4	6.0	5.2	3.8
22	27	0					.1	.6	.7	4.2	6.4	3.4
23	27	0					.1	.5	.6	1.2	6.4	1.4
24	25	0					.1	.5	.5	.3	7.6	.4
25	27	0					.2	.4	.3	1.2	6.4	2.8
26	25	0					.2	.4	.4	3.0	5.2	10
27	25	0					.3	.3	.4	2.3	3.8	5.8
28	25	0					.2	.3	.3	1.9	2.1	2.4
29	22	0					.2	5.4	.2	.7	1.1	1.8
30	17	0					.1	12	.2	.7	.8	1.9
31	.4	-					-	3.0	-	.4	.5	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	317.1	27	0	10.2	629
November	.1	.1	0	.003	.2
December	0	0	0	0	0
Calendar year 1939	757.0	26	0	2.07	1,500
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	7.6	1.8	0	.25	15
May	30.9	12	.1	1.00	61
June	21.1	3.3	.2	.70	42
July	73.5	9.2	0	2.37	146
August	80.1	7.6	.1	2.58	159
September	72.7	10	.1	2.42	144
Water year 1939-40	803.1	27	0	1.65	2,000

b Stage-discharge relation affected by ice.

Note.- Backwater from aquatic growth or shifting control Oct. 19-30, Apr. 17 to May 6, May 12-30, June 1 to July 23, July 25 to Sept. 30; discharge computed on basis of six discharge measurements, observations of low flow, and determinations of point of zero flow.

Wintering River near Karlsruhe, N. Dak.

Location.- Water-stage recorder and concrete control, lat. 48°10', long. 100°32', on line between secs. 10 and 11, T. 154 N., R. 77 W., 80 feet upstream from highway bridge, 4 miles upstream from mouth, and about 7 miles northeast of Karlsruhe.

Drainage area.- 675 square miles.

Records available.- March 1937 to September 1940.

Extremes.- Maximum discharge for year, 11 second-feet May 15; maximum gage height recorded, 4.72 feet Mar. 19 (ice jam); no flow during several periods.
1937-40: Maximum discharge, 66 second-feet Mar. 17, 1938; maximum gage height, 7.01 feet Mar. 25-27, 1939, from floodmark, affected by backwater from ice; no flow at times in each year.

Remarks.- Records fair except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.3	0.9					b2.2	8.4	1.7	1.0	a2.0	1.2
2	.2	1.0					b3.2	6.7	2.4	1.0	a2.0	1.0
3	.6	.9					b1.7	5.5	2.0	2.2	a2.5	1.0
4	.7	.9				a0.2	*b1.7	4.4	2.0	2.4	a2.5	1.0
5	1.0	.9					b1.0	4.4	2.0	2.4	a2.0	.9
6	.7	.9					*b.3	4.4	2.0	2.2	a1.5	1.0
7	.9	.9					b.3	4.4	1.7	3.1	a1.2	1.2
8	.9	.9					b1.7	4.8	1.5	3.8	a1.0	1.2
9	.9					*b.2	*b4.0	5.1	1.7	4.1	a1.0	1.2
10	.9					b.2	b4.4	4.4	1.5	4.4	a1.0	1.2
11	.9					b.1	*b3.8	4.4	1.3	3.8	.9	1.3
12	.9					b.1	b2.8	3.8	1.0	3.4	1.0	1.2
13	.9					b0	b3.0	4.8	1.3	3.1	.9	1.0
14	.9					b0	*b5.5	10	1.2	4.4	.7	1.0
15	.9					b0	b7.0	10	1.0	4.8	.9	.7
16	.9		a0.4			b.2	b7.5	8.0	1.0	4.4	1.2	.7
17	.9					b.7	*b4.8	5.8	.7	3.1	1.0	.9
18	.7					b1.3	b5.5	5.1	.6	.7	1.0	.9
19	.7	a.8				b2.2	b6.0	4.4	.5	1.0	.9	.7
20	.7					b1.5	7.0	4.4	.5	.9	.7	.7
21	.7					*b1.3	6.2	4.1	.3	a1.0	.6	.6
22	.7					b1.0	4.4	4.1	.6	a1.0	.6	.6
23	.9					b.9	4.8	3.4	.7	a1.0	.7	.7
24	.9					b1.0	3.4	3.4	.9	a1.0	1.2	.6
25	.9					b1.3	3.1	3.1	.7	a1.5	1.3	.6
26	.9					b2.4	3.1	2.7	.9	a1.5	1.3	.7
27	.9					b4.0	3.4	2.4	.9	a2.0	1.5	.9
28	.9					b4.0	4.1	2.2	.6	a2.4	1.5	.9
29	.9					b3.2	5.8	2.2	.6	a2.7	1.5	.9
30	.9					b2.2	8.4	2.4	.3	a2.4	1.3	.9
31	1.0					b2.2	-	2.0	-	a2.0	1.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	25.1	1.0	0.2	0.81	50
November	24.9	-	-	.83	49
December	12.4	-	-	.40	25
Calendar year 1939	-	-	-	-	-
January	0	0	0	0	0
February	0	0	0	0	0
March	31.6	4.0	0	1.02	63
April	120.1	8.4	.3	4.00	238
May	145.2	10	2.0	4.68	288
June	34.1	2.4	.3	1.14	68
July	74.7	4.8	.7	2.41	148
August	38.6	2.5	.6	1.25	77
September	27.4	1.3	.6	.91	54
Water year 1939-40	534.1	10	0	1.46	1,060

* Winter discharge measurement made on this day.
a No gage-height record; discharge estimated.
b Stage-discharge relation affected by ice.
Note.- Backwater from aquatic vegetation Oct. 3-17, Oct. 29 to Nov. 8, April 20-29, May 19 to June 23, Sept. 23, 24; discharge computed on basis of eight discharge measurements, gage heights, and engineers' notes.

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Basswood River near Winton, Minn.

(International gaging station)

Location.- Water-stage recorder, lat. 48°05', long. 91°39', in sec. 30, T. 63 N., R. 10 W., on Jackfish Bay of Basswood Lake, used to determine discharge at outlet (lat. 48° 06', long. 91°39', in sec. 19, T. 65 N., R. 10 W., on international boundary, 18 miles northeast of Winton). Datum of gage is 1,299.80 feet above mean sea level.
Drainage area.- 1,920 square miles (above outlet of Basswood Lake).
Records available.- January 1931 to September 1940 in reports of Geological Survey. August 1925 to December 1930 in reports of Corps of Engineers, U. S. Army. March to June 1924 (gage heights only) in files of office of Corps of Engineers at Duluth, Minn.
Extremes.- Maximum daily discharge during year, 3,940 second-feet June 6, 7, 8, (gage height, 2.48 feet); minimum daily, 253 second-feet Mar. 12 (gage height, -0.57 foot).
1931-40: Maximum discharge, 7,950 second-feet about May 15, 1938 (gage height, 4.38 feet, from high-water marks), from rating curve extended above 6,000 second-feet; minimum observed, 184 second-feet Nov. 23, 27, 30, Dec. 2, 4, 1936 (gage height, -0.78 foot).
Remarks.- Records excellent except those for period of no gage-height record, which are good. Flow affected by storage on Kawishiwi River.
Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Rating table, water year 1939-40 (gage heights, in feet, and discharge, in second-feet)

-0.6	244	-0.2	384	0.4	854	1.0	1,490	1.6	2,350
-.5	274	0	514	.6	1,050	1.2	1,750	2.0	3,020
-.4	306	.2	676	.8	1,260	1.4	2,030	2.5	3,940

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a980	678	522	396	306	271	320	809	3,560	3,290	a1,100	628
2	a970	670	514	396	303	271	320	854	3,660	3,200	a1,000	628
3	a960	670	514	396	300	268	331	892	3,750	3,110	990	619
4	a950	670	507	384	303	265	342	950	3,840	2,940	970	611
5	a980	670	492	380	300	268	350	1,010	3,840	2,760	912	602
6	a980	687	492	380	296	265	359	1,050	3,940	2,600	892	602
7	a960	678	485	380	293	262	363	1,120	3,940	2,430	854	619
8	a950	687	500	371	290	259	367	1,180	3,940	2,350	836	619
9	a970	695	500	371	287	259	371	1,250	3,840	2,190	845	611
10	a970	670	500	367	287	256	371	1,340	3,840	2,110	818	586
11	a960	687	507	371	284	256	376	1,390	3,840	2,030	800	578
12	940	687	485	367	277	253	384	1,480	3,840	1,960	773	570
13	931	687	485	363	274	256	396	1,570	3,750	a1,900	747	562
14	931	678	485	355	271	259	401	1,710	3,750	a1,700	730	554
15	892	670	478	350	271	262	401	1,890	3,750	a1,600	704	546
16	854	661	492	355	280	265	407	1,960	3,750	a1,600	695	538
17	836	644	500	350	284	265	413	2,110	3,840	a1,600	678	546
18	818	636	492	342	280	262	430	2,190	3,750	a1,500	670	538
19	800	619	478	338	280	265	436	2,350	3,660	a1,500	653	546
20	791	602	464	338	277	265	442	2,430	3,660	a1,500	636	538
21	791	586	456	335	277	265	449	2,600	3,660	a1,500	628	538
22	782	570	456	335	271	265	464	2,680	3,660	a1,400	611	538
23	764	562	456	331	271	265	471	2,760	3,560	a1,300	594	546
24	747	570	449	328	271	268	471	2,850	3,560	a1,300	578	538
25	730	570	442	324	271	265	478	2,940	3,470	a1,200	611	514
26	721	562	436	320	271	265	485	3,020	3,560	a1,200	602	507
27	712	546	425	320	274	265	492	3,110	3,470	a1,100	594	507
28	712	538	419	320	274	274	514	3,200	3,470	a1,200	586	507
29	712	530	407	313	271	293	611	3,290	3,380	a1,200	594	500
30	695	522	401	313	-	310	747	3,380	3,380	a1,200	602	492
31	678	-	401	310	-	317	-	3,470	-	1,200	628	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	26,467	980	678	854	0.445	0.51
November	18,902	695	522	630	.328	.37
December	14,640	522	401	472	.246	.28
Calendar year 1939	446,618	4,740	332	1,220	.635	8.65
January	10,899	396	310	352	.183	.21
February	8,194	306	271	283	.147	.16
March	8,304	317	253	268	.140	.16
April	12,762	747	320	425	.221	.25
May	62,835	3,470	809	2,030	1.06	1.22
June	110,910	3,940	3,380	3,700	1.93	2.15
July	57,670	3,290	1,100	1,860	.969	1.12
August	22,931	1,100	578	740	.385	.44
September	16,828	628	492	561	.292	.33
Water year 1939-40	371,342	3,940	253	1,010	.526	7.20

a No gage-height record; discharge computed on basis of records for Kawishiwi River near Winton, and Vermillion River near Tower.

Namakan River at outlet of Lac la Croix, Ontario

(International gaging station)

Location.- Staff gage, lat. 48°24', long. 92°11', at Campbell's camp (previously known as Richardson's Island), 2½ miles west of outlet of Lac la Croix. Datum of gage is at mean sea level (United States and Canada Boundary Survey bench mark).
Drainage area.- 5,165 square miles.
Records available.- October 1934 to September 1940 in reports of Geological Survey. August 1921 to September 1938 in reports of Dominion Water and Power Bureau, Department of Mines and Resources, Canada.
Average discharge.- 18 years (1922-40), 2,968 second-feet.
Extremes.- Maximum daily discharge during year, 7,830 second-feet June 21 to July 2; minimum daily, 821 second-feet Mar. 25-31.
1921-40: Maximum discharge observed, 18,500 second-feet May 12-17, 1938 (gage height, 1,190.35 feet); minimum daily, 535 second-feet at times in February, March, and April 1924 (gage height, 1,181.50 feet).
Remarks.- Records good. Gage read once daily.
Cooperation.- This station is one of the international gaging stations maintained by Canada under agreement with the United States.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

1,181.90	765	1,183.40	2,310	1,185.50	5,860
1,182.20	990	1,183.80	2,850	1,186.00	6,980
1,182.50	1,280	1,184.20	3,440	1,186.50	8,130
1,182.80	1,600	1,184.60	4,100		
1,183.10	1,940	1,185.00	4,830		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,400	2,140	1,730	1,350	1,100	974	895	2,280	7,260	7,830	3,880	2,080
2	2,400	2,140	1,680	1,350	1,100	974	895	2,540	7,370	7,830	3,790	2,020
3	2,340	2,140	1,680	1,350	1,100	974	895	2,720	7,370	7,720	3,710	2,020
4	2,340	2,080	1,680	1,350	1,100	934	934	2,930	7,370	7,720	3,630	1,960
5	2,400	2,080	1,680	1,300	1,050	934	974	3,100	7,370	7,600	3,550	1,960
6	2,400	2,080	1,680	1,300	1,050	934	974	3,210	7,490	7,490	3,470	1,900
7	2,400	2,020	1,680	1,300	1,050	934	974	3,380	7,490	7,370	3,390	1,900
8	2,400	2,020	1,680	1,300	1,050	934	974	3,490	7,600	7,260	3,240	1,840
9	2,400	2,020	1,620	1,250	1,050	934	974	3,570	7,600	7,140	3,090	1,840
10	2,470	1,960	1,620	1,250	1,050	934	974	3,740	7,720	7,030	2,950	1,790
11	2,470	1,960	1,620	1,250	1,050	895	974	3,880	7,720	6,910	2,880	1,750
12	2,470	1,960	1,620	1,250	1,050	895	974	3,960	7,720	6,800	2,810	1,730
13	2,470	1,900	1,570	1,250	1,010	895	1,020	4,100	7,720	6,680	2,740	1,710
14	2,470	1,900	1,570	1,200	1,010	895	1,020	4,230	7,720	6,570	2,670	1,690
15	2,470	1,900	1,570	1,200	1,010	895	1,020	4,320	7,720	6,450	2,600	1,670
16	2,400	1,840	1,570	1,200	1,010	895	1,020	4,410	7,720	6,340	2,600	1,640
17	2,400	1,840	1,510	1,200	1,010	895	1,020	4,500	7,720	6,230	2,530	1,620
18	2,400	1,840	1,510	1,200	1,010	858	1,060	4,620	7,720	6,120	2,530	1,600
19	2,340	1,790	1,510	1,200	1,010	858	1,060	4,830	7,720	6,010	2,470	1,580
20	2,340	1,790	1,510	1,150	1,010	858	1,110	5,010	7,720	5,800	2,400	1,560
21	2,340	1,790	1,510	1,150	1,010	858	1,160	5,230	7,830	5,590	2,400	1,550
22	2,340	1,790	1,460	1,150	1,010	858	1,160	5,420	7,830	5,380	2,340	1,520
23	2,340	1,790	1,460	1,150	1,010	858	1,210	5,650	7,830	5,170	2,340	1,500
24	2,270	1,790	1,460	1,150	1,010	858	1,210	5,840	7,830	4,970	2,270	1,490
25	2,270	1,730	1,460	1,150	1,010	821	1,260	6,080	7,830	4,770	2,270	1,470
26	2,270	1,730	1,400	1,150	1,010	821	1,310	6,300	7,830	4,590	2,210	1,440
27	2,210	1,730	1,400	1,150	966	821	1,360	6,520	7,830	4,410	2,210	1,410
28	2,210	1,730	1,400	1,150	966	821	1,390	6,730	7,830	4,230	2,140	1,390
29	2,210	1,730	1,400	1,150	966	821	1,670	6,910	7,830	4,230	2,140	1,370
30	2,210	1,730	1,350	1,100	-	821	2,040	7,030	7,830	4,140	2,140	1,360
31	2,140	-	1,350	1,100	-	821	-	7,140	-	4,050	2,080	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	72,990	2,470	2,140	2,350	0.45	0.52
November	56,940	2,140	1,730	1,900	.37	.41
December	47,940	1,730	1,350	1,550	.30	.35
Calendar year 1939	1,157,760	8,710	990	3,170	.61	8.33
January	37,750	1,350	1,100	1,220	.24	.28
February	29,838	1,100	966	1,030	.20	.22
March	27,478	974	821	886	.17	.20
April	33,511	2,040	895	1,120	.22	.25
May	143,670	7,140	2,280	4,630	.90	1.04
June	230,140	7,830	7,260	7,670	1.48	1.65
July	190,430	7,830	4,050	6,140	1.19	1.37
August	85,470	3,880	2,080	2,760	.53	.61
September	50,360	2,080	1,360	1,680	.33	.37
Water year 1939-40	1,006,517	7,830	821	2,750	.53	7.27

Rainy River at Manitou Rapids, Minn.

(International gaging station)

Location.- Water-stage recorder, lat. 48°38', long. 93°53', in sec. 36, T. 160 N., R. 26 W., at Manitou Rapids, 3½ miles east of Manitou post office and 4 miles west of Indus.

Records available.- October 1932 to September 1934 at site 7 miles downstream, published as Rainy River near Birchdale, and October 1934 to September 1940 in reports of Geological Survey. October 1911 to October 1924 (gage heights only) and June 1928 to December 1930, at site near Birchdale in reports of Corps of Engineers, U. S. Army.

Extremes.- Maximum discharge during year, 30,700 second-feet May 3 (gage height, 12.20 feet); minimum observed, 4,020 second-feet Sept. 3 (gage height, 1.81 feet).

1933-40: Maximum discharge, 65,400 second-feet May 8, 1938 (gage height, 19.80 feet); minimum daily, 3,400 second-feet Dec. 26, 27, 1938, Feb. 13, 1939.

Remarks.- Records excellent except those for periods of ice effect or no gage-height record, which are good. Flow partly regulated by power plant at Fort Frances and by Rainy, Namakan, and many smaller lakes.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Rating tables, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 1		Apr. 2 to Sept. 30					
2.3	4,850	1.9	4,110	4.5	8,330	8.0	17,200
2.5	5,030	2.5	4,830	5.0	9,400	9.0	20,200
3.0	5,590	3.0	5,540	5.5	10,500	10.0	23,200
3.5	6,360	3.5	6,360	6.0	11,800	11.0	26,300
Note.- Same as following table above 3.5 feet.		4.0	7,310	7.0	14,400	12.0	30,300

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10,300	10,300	8,120	5,000	a6,500	7,000	7,500	22,000	8,540	7,310	10,300	7,510
2	8,750	a10,000	7,000	4,800	a6,500	7,500	8,120	28,400	8,330	6,360	10,300	5,240
3	8,960	a10,000	6,500	5,000	a6,000	7,000	8,120	30,300	7,510	7,510	10,100	4,110
4	9,620	a10,000	5,000	6,500	a6,000	5,500	8,120	28,400	7,710	7,910	10,100	5,240
5	10,100	a8,000	6,000	7,500	a4,800	5,500	7,310	23,800	8,750	6,720	7,310	7,710
6	11,800	a6,500	8,000	7,500	a5,500	6,500	6,720	18,700	8,330	8,120	8,750	7,910
7	13,600	a10,000	8,500	6,500	a6,500	7,500	6,360	17,800	8,750	8,750	9,620	7,910
8	13,300	a10,000	9,000	5,000	a7,000	7,500	5,860	17,200	8,960	6,910	10,100	7,110
9	11,300	a9,500	8,000	5,000	a7,000	7,000	5,860	16,100	7,910	8,330	9,840	5,860
10	12,300	a9,500	6,500	6,000	a6,500	6,500	8,330	15,200	7,310	8,960	9,840	7,510
11	12,800	a9,500	5,000	6,500	a5,500	5,500	9,400	15,000	6,540	9,180	9,180	7,310
12	12,800	a8,000	4,800	6,500	5,000	6,000	9,840	13,600	7,910	9,400	6,540	6,910
13	12,500	a6,500	6,000	6,500	5,000	7,000	9,840	11,000	7,710	9,400	7,910	8,120
14	12,300	a9,000	7,000	6,000	*6,000	7,000	10,100	11,800	7,510	9,400	8,750	8,750
15	11,500	a10,000	7,500	5,000	7,000	7,500	8,330	12,800	8,540	7,110	9,180	7,710
16	8,960	a10,000	8,000	4,800	8,000	8,000	10,300	12,800	6,720	7,910	9,180	6,190
17	10,500	*9,400	6,500	5,500	7,500	7,500	12,000	12,800	5,100	8,750	8,960	7,110
18	10,800	9,180	5,000	*6,500	6,000	*6,000	12,800	12,300	4,570	9,180	8,750	7,310
19	11,000	7,710	4,800	a7,000	5,000	6,000	13,000	11,300	5,700	9,180	6,910	6,910
20	10,500	5,460	*5,500	a6,500	5,000	7,000	12,500	9,840	7,310	9,400	6,910	7,710
21	9,840	7,310	6,000	a6,000	6,500	7,000	11,800	10,800	7,510	8,960	6,720	7,910
22	8,750	9,180	6,500	a5,000	7,500	7,000	9,840	11,800	7,510	6,360	7,910	6,540
23	6,720	9,400	6,500	a6,000	7,500	7,500	12,000	11,800	7,710	8,120	8,120	5,390
24	8,960	8,960	5,500	a7,000	7,500	7,000	12,500	11,800	6,020	8,960	8,120	7,110
25	10,300	7,510	4,800	a7,500	7,000	5,000	12,000	10,500	5,700	9,180	8,540	6,910
26	10,300	6,190	4,800	a7,000	6,500	5,000	11,500	8,960	7,110	9,620	6,910	6,190
27	10,300	4,850	6,000	a7,500	6,500	7,500	10,800	7,710	7,710	9,840	6,910	6,910
28	10,300	6,540	8,000	a6,000	6,500	7,500	9,400	7,310	7,710	9,620	7,710	7,510
29	8,540	8,540	8,000	a5,000	7,000	8,000	7,310	8,330	7,710	7,510	8,750	7,510
30	6,540	8,540	6,500	a5,500	-	8,500	12,800	8,960	7,710	8,750	8,960	5,860
31	8,750	-	6,000	a7,000	-	8,500	-	8,750	-	9,840	8,750	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	322,990	13,600	6,540	10,420		
November	255,570	10,300	4,850	8,519		
December	201,320	9,000	4,800	6,494		
Calendar year 1939	3,110,380	17,800	3,400	8,522		
January	189,100	7,500	4,800	6,100		
February	184,800	8,000	4,800	6,372		
March	213,000	8,500	5,000	6,871		
April	290,360	13,000	5,860	9,679		
May	447,860	30,300	7,310	14,450		
June	222,110	8,960	4,570	7,404		
July	262,550	9,840	6,360	8,469		
August	265,930	10,300	6,540	8,578		
September	207,980	8,750	4,110	6,933		
Water year 1939-40	3,063,570	30,300	4,110	8,370		

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for power plant at Fort Frances.

Note.- Stage-discharge relation affected by ice Dec. 2 to Jan. 18, Feb. 12 to Apr. 1.

Kawishiwi River near Winton, Minn.

Location.- Lat. 47°56', long. 91°46', in lot 3, sec. 20, T. 63 N., R. 11 W., at power plant of Minnesota Power & Light Co., just upstream from Fall Lake and 2½ miles east of Winton.

Drainage area.- 1,300 square miles.

Records available.- June 1905 to June 1907, October 1912 to September 1919, September 1923 to September 1940.

Average discharge.- 23 years (1913-19, 1923-40), 805 second-feet (adjusted for storage since 1932).

Extremes (regulated).- Maximum daily discharge during year, 4,260 second-feet May 29, 30; no flow Mar. 10.
1905-7, 1912-19, 1923-40: Maximum daily discharge, 8,010 second-feet May 8, 1938; no flow at times in each year of periods 1905-7, 1923-28, and in 1934, 1936, 1939, and 1940.

Remarks.- Records good except those above 950 second-feet, which are fair. Flow regulated by several reservoirs.

Cooperation.- Records collected by Minnesota Power & Light Co., under general supervision of the Geological Survey, in connection with a Federal Power Commission project.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	831	608	353	129	165	132	374	727	4,110	2,610	540	198
2	885	608	219	180	197	48	166	950	4,060	1,790	465	226
3	831	673	161	192	81	65	425	982	4,080	1,540	489	483
4	831	658	420	192	65	181	270	982	4,060	1,460	165	587
5	960	702	673	228	181	132	357	1,050	4,000	1,290	341	637
6	831	732	632	81	165	197	228	1,180	4,000	1,180	339	637
7	383	705	552	129	165	197	97	1,330	3,980	1,050	409	669
8	290	673	491	180	165	165	270	1,460	3,960	793	459	228
9	564	705	183	164	197	48	292	1,620	3,990	801	468	420
10	699	544	161	196	48	0	269	1,720	3,920	999	251	488
11	699	678	370	228	32	283	321	1,600	4,020	956	226	489
12	764	297	426	258	181	211	269	1,720	3,990	882	467	392
13	729	564	322	90	165	211	377	1,930	3,990	747	525	425
14	405	428	535	65	165	243	194	2,040	3,820	619	557	186
15	258	421	314	212	165	160	182	2,180	3,950	659	633	226
16	596	324	186	196	100	81	365	2,480	3,740	687	604	335
17	667	261	194	164	145	97	228	2,060	4,110	392	699	651
18	699	395	180	196	65	186	390	3,010	3,880	697	306	597
19	699	161	228	196	181	270	367	2,250	3,740	653	347	520
20	699	465	327	82	132	238	154	2,800	3,900	803	404	591
21	276	507	577	65	197	209	355	2,800	3,790	380	416	193
22	290	442	413	151	132	48	343	2,840	3,850	314	404	290
23	596	474	177	228	165	65	187	2,920	3,810	336	408	591
24	667	507	97	229	113	97	418	3,180	3,860	441	151	770
25	635	161	161	165	65	169	289	3,350	3,760	309	428	545
26	667	258	212	197	116	332	557	3,860	3,570	303	392	539
27	673	482	196	81	197	332	280	3,940	3,650	194	606	507
28	308	442	274	65	197	299	484	4,160	3,110	690	572	186
29	226	442	473	149	165	452	348	4,260	2,890	583	733	226
30	564	251	473	197	-	232	908	4,260	2,750	637	637	514
31	603	-	234	165	-	194	-	4,200	-	699	500	-

Month	Observed				Change in reservoir contents (mean second-feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	18,825	960	226	607	-148	459	0.353	0.41
November	14,598	732	161	487	-185	302	.232	.26
December	10,214	673	97	329	-95	234	.180	.21
Calendar year 1939	371,655	5,690	32	1,018	-3	1,015	.781	10.61
January	5,050	258	65	163	-54	109	.084	.10
February	4,107	197	32	142	-20	122	.094	.10
March	5,574	452	0	180	-36	144	.111	.13
April	9,764	908	97	325	+286	611	.470	.52
May	73,841	4,260	727	2,382	+285	2,667	2.05	2.36
June	114,340	4,110	2,750	3,811	-53	3,758	2.89	3.22
July	25,494	2,610	194	822	+232	1,054	.811	.94
August	13,941	733	151	450	-72	378	.291	.34
September	13,346	770	186	445	-169	276	.212	.24
Water year 1939-40	309,094	4,260	0	845	-2	843	.648	8.83

† Change in contents in the following lakes, the regulation from some of which is artificial, and from others natural: Garden Farm, Little Farm, White Iron, Birch, Gabbro, Little Gabbro, Bald Eagle, and Camp Six.

Vermilion River below Lake Vermilion, near Tower, Minn.

Location.- Water-stage recorder, lat. 47°58', long. 92°28', in sec. 2, T. 63 N., R. 17 W., 200 feet downstream from dam at outlet of Lake Vermilion, 4 miles upstream from Twomile Creek, which enters from the west, and 18 miles across Lake Vermilion from Tower.

Drainage area.- 530 square miles.

Records available.- May 1911 to September 1917, June 1928 to September 1940.

Average discharge.- 18 years, 275 second-feet.

Extremes.- Maximum discharge during year, 873 second-feet June 16 (gage height, 2.61 feet); minimum, 75 second-feet Mar. 11, 13, 27 (gage height, 0.33 foot).
1911-17, 1928-40: Maximum discharge observed, 2,290 second-feet May 9, 11, 13, 1938; minimum observed, 31 second-feet Oct. 19, 1936 (gage height, -0.14 foot).

Remarks.- Records good.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 11		Dec. 12 to Sept. 30			
0.4	80	0.3	72	1.4	309
.5	93	.4	83	1.6	377
.6	108	.6	111	1.8	454
.7	126	.8	147	2.0	540
.8	147	1.0	194	2.3	690
		1.2	246	2.6	873

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	113	102	93	87	81	82	83	352	701	602	366	161
2	122	110	93	87	81	82	82	388	685	592	352	158
3	113	112	93	86	81	81	93	426	713	582	339	154
4	108	113	92	86	81	81	97	467	741	573	332	152
5	126	106	92	86	81	81	97	492	753	568	316	156
6	124	110	92	84	81	81	97	483	759	554	316	149
7	122	100	92	84	81	80	97	518	747	514	312	154
8	122	100	93	83	81	79	97	531	759	505	296	149
9	126	112	93	83	81	79	97	549	765	492	293	138
10	134	89	92	83	79	79	97	559	718	483	293	128
11	128	98	94	83	79	78	97	573	724	479	283	128
12	122	98	94	84	78	78	97	564	718	467	277	132
13	126	98	94	84	78	79	97	568	707	462	271	120
14	136	98	94	83	78	81	98	573	674	422	271	123
15	139	96	94	83	78	81	98	592	658	407	262	123
16	115	96	94	83	80	81	101	612	674	399	241	123
17	130	94	94	83	81	80	103	642	741	403	235	125
18	130	94	94	82	81	80	105	674	736	399	216	118
19	121	94	94	82	80	81	108	685	718	392	209	121
20	126	94	93	83	80	81	111	701	741	407	206	111
21	115	94	93	83	80	80	118	701	765	399	194	111
22	117	94	93	83	79	80	123	696	753	392	184	110
23	121	94	93	83	79	79	132	707	718	377	182	110
24	132	94	93	83	79	79	138	707	696	377	177	108
25	117	94	91	83	79	79	143	707	658	356	177	107
26	112	94	90	83	80	78	152	736	658	342	175	105
27	105	94	90	83	82	78	158	730	664	332	163	103
28	112	94	90	82	82	80	177	730	632	370	163	101
29	113	93	90	81	82	83	227	730	627	377	165	100
30	113	93	89	82	-	86	303	718	607	370	158	98
31	110	-	87	81	-	84	-	707	-	377	158	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	3,750	139	105	121	0.228	0.26
November	2,952	113	89	98.4	.186	.21
December	2,863	94	87	92.4	.174	.20
Calendar year 1939	82,293	695	57	225	.424	5.78
January	2,586	87	81	83.4	.157	.18
February	2,323	82	78	80.1	.151	.16
March	2,491	86	78	80.4	.152	.17
April	3,623	303	82	121	.228	.25
May	18,818	736	352	607	1.15	1.32
June	21,210	765	607	707	1.33	1.49
July	13,771	602	332	444	.838	.97
August	7,582	366	158	245	.462	.53
September	3,776	161	98	126	.238	.26
Water year 1939-40	85,745	765	78	234	.441	6.00

Little Fork River at Little Fork, Minn.

Location.- Water-stage recorder, lat. 48°24', long. 93°34', in NW¼ sec. 9, T. 68 N., R. 25 W., 100 feet downstream from bridge on State Highway 65 at town of Little Fork and 1½ miles upstream from Beaver Creek.

Drainage area.- 1,620 square miles.

Records available.- June 1909 to September 1917, June 1928 to September 1940.

Average discharge.- 18 years (1911-17, 1928-40), 808 second-feet.

Extremes.- Maximum discharge during year, 13,300 second-feet May 2 (gage height 28.62 feet, affected by backwater from logs); minimum daily, 38 second-feet Jan. 18; minimum gage height, 5.18 feet Sept. 21.

1909-17, 1928-40: Maximum discharge observed, 19,300 second-feet Apr. 18, 1916 (gage height, 37 feet, affected by backwater); minimum observed, 21 second-feet Aug. 26, 27, 1936.

Remarks.- Records good except those for periods of ice effect, which are fair. Flow partly regulated by several small lakes above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	350	414	200	70	44	48	55	11,600	1,350	560	520	180
2	326	401	170	65	46	48	55	13,000	1,250	540	600	205
3	302	360	160	55	48	50	60	12,200	1,300	500	560	200
4	291	340	160	55	50	50	60	8,800	1,350	450	470	195
5	590	380	170	55	50	50	*60	6.400	1,400	410	400	180
6	1,540	363	180	60	50	50	65	5,000	1,750	370	340	165
7	1,670	376	190	55	50	50	70	4,100	2,050	340	290	180
8	1,440	340	180	55	48	50	100	3,400	2,050	330	260	180
9	1,280	320	180	55	48	50	550	3,000	2,000	300	230	195
10	1,200	300	190	55	50	50	800	2,800	1,850	280	205	175
11	1,160	300	180	50	50	50	900	2,900	1,650	250	180	150
12	1,120	320	170	50	50	50	1,200	2,800	1,450	245	165	135
13	1,120	320	160	48	*50	50	1,300	2,600	1,300	250	150	125
14	1,120	340	160	46	50	50	1,500	2,450	1,160	260	140	116
15	1,040	320	160	44	50	50	1,700	2,400	1,020	260	145	108
16	980	300	160	40	50	*50	1,900	2,600	920	245	140	104
17	890	260	170	*40	50	50	2,400	2,800	860	225	130	102
18	802	240	170	38	50	50	2,600	2,900	1,120	210	125	100
19	750	240	170	40	50	50	*2,800	2,800	2,250	205	124	98
20	698	240	160	42	50	50	2,800	2,600	2,300	200	118	98
21	649	*220	*150	42	50	50	2,600	2,600	2,000	195	118	96
22	618	220	140	42	48	50	2,400	2,450	1,700	210	116	100
23	588	238	120	42	48	50	2,200	2,250	1,400	210	114	110
24	558	229	120	42	48	50	2,000	2,050	1,250	290	110	110
25	528	227	130	42	48	50	1,800	1,900	1,120	310	118	108
26	513	223	130	42	48	50	1,580	1,750	1,000	270	110	104
27	498	220	110	40	48	50	1,440	1,700	880	240	108	102
28	470	220	100	40	48	50	1,280	1,650	760	260	108	118
29	456	220	95	40	48	50	2,480	1,600	680	310	110	165
30	442	200	80	42	-	55	6,800	1,500	620	320	130	165
31	428	-	80	42	-	55	-	1,450	-	330	135	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	24,417	1,670	291	788	0.486	0.56
November	8,691	414	200	290	.179	.20
December	4,695	200	80	151	.093	.11
Calendar year 1939	238,724	5,500	70	654	.404	5.49
January	1,474	70	38	47.5	.029	.03
February	1,418	50	44	48.9	.030	.03
March	1,556	55	48	50.2	.031	.04
April	45,555	6,800	55	1,520	.938	1.05
May	118,050	13,000	1,450	3,808	2.35	2.71
June	41,790	2,300	620	1,393	.860	.96
July	9,375	560	195	302	.186	.22
August	6,569	600	108	212	.131	.15
September	4,169	205	96	139	.086	.10
Water year 1939-40	267,759	13,000	38	732	.452	6.16

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Nov. 3-5, 8-22, 27-29, Dec. 1 to Apr. 24.

Big Fork River at Big Falls, Minn.

Location.- Water-stage recorder, lat. 48°12', long. 93°48', in sec. 35, T. 155 N., R. 25 W., at village of Big Falls, 700 feet downstream from falls, and 0.3 mile downstream from bridge on U. S. Highway 71.

Drainage area.- 1,520 square miles.

Records available.- August 1909 to December 1912, June 1928 to September 1940.

Average discharge.- 12 years (1928-40), 454 second-feet.

Extremes.- Maximum discharge during year, 6,320 second-feet, May 1 (gage height, 9.70 feet); minimum daily, 14 second-feet (regulated) Jan. 10.
1909-12, 1928-39: Maximum discharge observed, 13,000 second-feet Apr. 26, 1937 (gage height, 15.12 feet, from high-water mark); minimum, 7 second-feet (regulated) Aug. 7, 1939; minimum daily, that of Jan. 10, 1940.

Remarks.- Records good except those for periods of ice effect, which are fair. Flow regulated by power plant a quarter of a mile above station.

Rating tables, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Apr. 25-30, June 2)

Oct. 1 to May 1						May 2 to Sept. 30					
2.4	14	4.5	970	8.0	4,400	2.8	59	5.0	1,290	7.5	3,560
2.7	47	5.0	1,330	9.0	5,530	3.0	117	5.5	1,690	8.0	4,100
3.0	126	5.5	1,745	10.0	6,660	3.5	326	6.0	2,120	9.0	5,240
3.5	326	6.0	2,190			4.0	605	6.5	2,570	10.0	6,470
4.0	625	7.0	3,270			4.5	930	7.0	3,060		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	207	190	117	40	28	24	34	6,210	849	225	288	89
2	192	170	110	36	26	26	38	6,080	835	204	274	92
3	181	140	100	36	28	24	42	5,360	896	195	258	92
4	174	130	95	36	24	26	40	4,320	862	183	233	98
5	297	203	95	34	28	28	*38	3,460	930	168	195	98
6	612	188	98	34	28	32	40	2,860	930	156	179	89
7	566	180	104	32	28	40	44	2,430	965	156	152	92
8	477	170	101	17	26	40	60	2,210	930	152	142	89
9	429	178	101	30	26	38	150	2,030	842	138	124	86
10	441	120	98	14	26	34	400	2,030	776	131	114	78
11	435	130	100	60	28	36	450	2,030	711	124	102	78
12	424	130	100	18	30	32	600	1.900	648	124	92	72
13	412	140	85	22	30	30	650	1,770	605	117	86	70
14	401	140	80	32	*28	30	750	1,690	533	117	92	70
15	368	143	75	24	30	30	850	1,730	476	114	95	67
16	362	140	75	34	28	*32	1,000	1,770	404	102	95	67
17	326	133	75	*34	30	34	1,100	1,730	415	92	83	67
18	302	129	70	34	26	40	*1,200	1,650	605	89	75	67
19	278	126	70	36	28	40	1,200	1,570	623	89	75	72
20	269	123	65	36	28	38	1,100	1,490	557	89	78	70
21	256	*123	*65	40	26	34	1,000	1,450	481	108	75	70
22	252	120	60	32	24	32	950	1,370	431	108	75	70
23	231	123	60	24	26	30	900	1,290	404	117	72	78
24	219	120	55	19	24	28	850	1,210	372	134	67	83
25	195	126	50	19	22	28	800	1,180	341	134	78	86
26	190	126	50	15	30	30	*750	1,110	316	134	78	89
27	190	110	46	34	28	34	650	1,070	292	117	75	95
28	180	100	46	32	26	38	650	1,040	269	172	67	102
29	180	100	44	30	26	42	1,600	1,000	251	336	70	102
30	190	104	40	26	-	38	4,600	930	238	326	75	102
31	190	-	40	28	-	32	-	896	-	292	83	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	9,426	612	174	304	0.200	0.23
November	4,155	203	100	138	.091	.10
December	2,370	117	40	76.5	.050	.06
Calendar year 1939	116,276	2,780	25	319	.210	2.84
January	938	60	14	30.3	.020	.02
February	786	30	22	27.1	.018	.02
March	1,020	42	24	32.9	.022	.02
April	22,536	4,600	34	751	.494	.55
May	66,916	6,210	896	2,159	1.42	1.64
June	17,787	985	238	593	.390	.44
July	4,743	336	89	153	.101	.12
August	3,645	288	67	118	.078	.09
September	2,490	102	67	82.7	.054	.06
Water year 1939-40	136,802	6,210	14	374	.246	3.35

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Oct. 26 to Nov. 4, Nov. 7, 8, 10-13, 27-29, Dec. 2-5, Dec. 11 to Apr. 24.

MISSISSIPPI RIVER MAIN STEM

Mississippi River below Sandy River, near Libby, Minn.

Location.- Water-stage recorder, lat. 46°47', long. 93°20', in sec. 25, T. 50 N., R. 24 W., 600 feet downstream from Sandy River and three-quarters of a mile northwest of Libby. Datum of gage is 1,204.55 feet above mean sea level (general adjustment of 1912).

Drainage area.- 5,060 square miles.

Records available.- April 1930 to September 1940.

Average discharge.- 10 years, 918 second-feet.

Extremes.- Maximum discharge during year, 2,770 second-feet May 8 (gage height, 7.08 feet); minimum daily, 220 second-feet Mar. 14, 15.
1930-40: Maximum discharge, 8,000 second-feet May 13, 1938 (gage height, 15.43 feet); minimum, 83 second-feet Nov. 16, 1936 (gage height, 1.44 feet).

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by power plants and Winnibigoshish, Leech, Pokegama, and Sandy lakes, which are Government reservoirs. Total capacity available for storage, 804,900 acre-feet.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

2.5	474	3.6	960	6.0	2,200
2.7	554	4.0	1,160	7.0	2,720
2.9	638	4.5	1,420	8.0	3,240
3.2	768	5.0	1,680		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	768	768	600	420	420	320	340	1,730	1,680	596	554	575
2	814	702	550	320	480	300	340	1,840	1,630	575	490	575
3	680	638	550	320	480	380	420	1,990	1,580	534	486	554
4	575	702	500	320	500	360	550	2,200	1,420	554	486	534
5	a550	659	600	260	500	340	700	2,300	1,580	638	534	534
6	a580	659	600	260	500	300	850	2,510	1,680	414	534	702
7	596	617	700	280	400	300	950	2,720	1,730	390	422	768
8	596	554	814	a300	380	320	1,100	2,770	1,730	510	498	659
9	746	596	886	340	420	320	*1,300	2,670	1,730	470	534	617
10	1,260	550	768	380	440	300	1,300	2,620	1,780	486	659	575
11	1,520	500	791	400	380	260	1,300	2,720	1,730	514	724	514
12	1,580	550	680	400	340	280	1,200	2,510	780	554	617	554
13	1,580	680	480	480	340	260	*1,100	2,250	1,890	746	554	724
14	1,580	768	400	550	240	260	1,100	2,250	2,040	838	680	814
15	1,680	724	480	550	260	260	1,210	2,410	1,940	768	814	886
16	1,780	*680	550	550	340	260	1,420	2,510	1,680	554	768	838
17	1,890	638	617	440	360	280	1,470	2,460	1,470	478	659	659
18	1,890	617	746	420	340	280	1,580	2,410	1,320	502	596	554
19	1,840	596	746	480	300	260	1,600	2,360	1,290	514	617	554
20	1,780	596	500	500	*320	260	1,800	2,250	1,240	554	596	596
21	1,780	596	480	500	260	300	1,800	2,200	1,110	575	462	638
22	1,780	554	400	500	280	420	*1,580	2,250	1,190	554	490	554
23	1,780	575	420	*440	400	*400	1,290	2,300	1,260	534	534	534
24	1,680	617	500	300	480	340	1,260	2,200	1,210	554	575	510
25	1,680	791	600	340	460	280	1,260	2,100	1,140	554	638	617
26	1,580	e14	650	420	440	300	1,260	2,040	1,160	596	659	960
27	1,680	746	550	460	420	300	1,240	1,990	1,140	659	575	1,470
28	1,630	617	300	460	340	280	1,190	1,840	1,010	724	514	1,520
29	1,520	510	280	480	300	300	1,420	1,840	838	791	554	1,780
30	1,240	500	300	500	-	320	1,730	1,840	680	638	554	1,840
31	985	-	320	420	-	320	-	1,730	-	534	554	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	41,720	1,890	550	1,346	0.266	0.31
November	19,114	814	500	637	.126	.14
December	17,358	886	280	560	.111	.13
Calendar year 1939	504,949	4,080	280	1,383	.273	3.72
January	12,690	550	260	409	.081	.09
February	11,120	500	240	383	.076	.08
March	9,460	420	260	305	.060	.07
April	35,660	1,800	340	1,189	.235	.26
May	69,810	2,770	1,730	2,252	.445	.51
June	43,658	2,040	680	1,455	.288	.32
July	17,902	838	390	577	.114	.13
August	17,931	814	422	578	.114	.13
September	23,209	1,840	510	774	.153	.17
Water year 1939-40	319,632	2,770	240	873	.173	2.34

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for station near Royalton.
Note.- Stage-discharge relation affected by ice Nov. 10-12, Nov. 30 to Dec. 7, Dec. 13-16, Dec. 20 to Apr. 14, Apr. 19-21.

Mississippi River near Royalton, Minn.

Location.- Lat. 45°52', long. 94°22', in lot 2, sec. 20, T. 39 N., R. 32 W., at plant of Minnesota Power & Light Co., 5 miles northwest of Royalton and 5 miles downstream from Swan River.

Drainage area.- 11,600 square miles.

Records available.- March 1924 to September 1940.

Average discharge.- 16 years, 2,435 second-feet.

Extremes.- Maximum daily discharge during year, 9,080 second-feet Apr. 11; minimum daily, 458 second-feet Jan. 8.
1924-40: Maximum daily discharge, 19,200 second-feet May 10, 11, 1938; minimum daily, 254 second-feet Nov. 25, 1936.

Remarks.- Records fair except those above 5,000 second-feet, which are poor. Flow regulated by Government reservoirs on headwaters.

Cooperation.- Records collected by Minnesota Power & Light Co., under general supervision of the Geological Survey, in connection with a Federal Power Commission project.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,080	2,070	1,270	822	767	933	1,310	6,350	4,420	1,460	1,690	1,360
2	1,040	2,040	1,190	703	713	861	1,760	6,180	3,570	1,850	1,680	1,190
3	1,060	1,760	847	691	787	883	2,460	6,090	2,980	1,720	1,700	987
4	1,580	1,600	902	536	833	793	2,660	6,060	4,000	1,190	1,540	1,280
5	1,520	1,180	1,060	512	667	499	4,150	6,320	3,810	706	1,310	1,280
6	1,670	1,300	1,080	632	599	849	4,550	5,210	3,750	1,030	1,140	1,140
7	1,530	1,410	1,120	568	853	956	4,360	5,440	3,830	1,560	1,100	1,150
8	1,270	1,410	1,360	458	905	783	5,320	5,410	3,670	1,240	1,190	1,130
9	1,540	1,200	1,390	500	893	801	7,150	5,670	3,390	1,410	889	1,060
10	1,640	1,240	1,360	671	858	922	8,950	5,590	2,770	1,360	1,060	939
11	1,690	1,040	1,220	658	798	600	9,080	5,730	3,650	1,380	1,200	1,220
12	1,540	964	1,420	567	599	782	8,070	5,300	3,420	1,320	1,040	1,300
13	2,040	883	1,020	503	605	1,090	7,290	4,270	3,560	952	1,080	1,300
14	2,150	991	847	724	802	1,040	6,330	4,910	3,480	982	1,140	1,250
15	2,410	1,400	1,120	581	838	922	5,100	5,480	3,070	824	1,340	854
16	2,560	1,500	1,180	517	890	701	5,510	5,590	2,780	1,030	1,780	949
17	2,800	1,400	1,380	681	658	736	5,460	5,400	3,030	1,310	1,640	1,410
18	2,680	1,380	1,100	722	728	1,010	5,260	5,540	3,220	1,580	1,100	1,680
19	2,710	1,320	1,290	778	743	1,050	4,990	4,960	3,070	1,680	995	1,360
20	2,620	1,150	999	733	632	1,090	4,490	5,070	2,660	1,340	1,130	1,400
21	2,730	1,390	815	783	817	1,160	4,570	5,480	2,370	1,250	1,440	1,430
22	2,870	1,220	1,020	705	808	1,130	4,320	5,540	2,300	1,080	1,190	1,280
23	2,430	1,100	1,170	729	692	1,010	4,330	5,280	2,360	1,010	1,200	1,300
24	2,710	1,210	1,170	749	671	1,070	4,260	5,400	1,680	983	1,180	1,240
25	2,650	1,370	859	733	719	991	4,230	5,250	2,090	1,080	1,140	1,000
26	2,630	1,150	765	753	718	983	3,840	4,900	2,280	1,140	943	1,080
27	2,480	930	865	726	682	1,240	2,940	4,440	2,240	1,100	1,080	1,130
28	2,480	1,140	957	772	867	1,140	2,940	4,520	2,180	1,230	1,570	1,260
29	2,100	1,480	952	660	897	1,370	3,090	4,600	2,230	901	1,470	1,480
30	2,120	1,400	1,030	470	-	1,330	5,110	4,500	2,170	988	1,460	2,170
31	2,000	-	922	715	-	1,280	-	3,060	-	1,500	1,360	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	64,330	2,870	1,040	2,075	0.179	0.21
November	39,628	2,070	883	1,321	.114	.13
December	33,680	1,420	765	1,086	.094	.11
Calendar year 1939	1,119,168	13,900	765	3,066	.264	3.61
January	20,354	822	458	657	.057	.07
February	22,039	905	599	760	.066	.07
March	30,005	1,370	499	968	.083	.10
April	143,880	9,080	1,310	4,796	.413	.46
May	163,540	6,350	3,060	5,275	.455	.52
June	90,030	4,420	1,680	3,001	.259	.29
July	38,186	1,850	706	1,232	.106	.12
August	39,777	1,780	889	1,283	.111	.13
September	37,609	2,170	854	1,254	.108	.12
Water year 1939-40	723,058	9,080	458	1,976	.170	2.33

Mississippi River at Elk River, Minn.

Location.- Water-stage recorder, lat. 45°18', long. 93°34', in SE¼ sec. 34, T. 33 N., R. 26 W., fourth principal meridian, in town of Elk River, 2,500 feet downstream from Elk River. Datum of gage is 847.92 feet above mean sea level (general adjustment of 1912).

Drainage area.- 14,500 square miles.

Records available.- July 1915 to September 1940.

Average discharge.- 25 years, 4,065 second-feet.

Extremes.- Maximum discharge during year, 18,100 second-feet Apr. 11 (gage height, 8.31 feet); minimum daily, 850 second-feet Dec. 31.
1915-40: Maximum discharge, 31,300 second-feet May 12, 1938 (gage height, 11.31 feet); minimum, 278 second-feet, Nov. 15, 1933.

Remarks.- Records good except those for period of ice effect, which are fair. Flow partly regulated by six Government reservoirs on headwaters; total usable capacity, 885,300 acre-feet.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

1.9	785	2.8	2,150	4.5	5,800	7.0	13,400
2.0	900	3.2	2,920	5.0	7,160	8.0	17,000
2.2	1,170	3.6	3,760	5.5	8,610		
2.4	1,470	4.0	4,600	6.0	10,100		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,100	2,720	2,020	950	950	1,300	2,400	7,740	5,050	2,370	1,550	1,970
2	1,800	2,820	1,800	1,200	950	1,300	2,600	8,900	5,170	2,820	1,860	1,870
3	1,440	2,620	1,360	1,200	1,000	1,500	3,200	8,900	5,290	2,100	2,620	1,830
4	1,520	2,350	1,660	1,100	950	1,400	4,400	8,610	4,500	2,080	2,460	1,600
5	1,750	2,100	1,570	1,000	*1,000	1,200	5,500	8,900	5,050	1,990	1,940	1,570
6	2,240	1,990	1,240	1,100	1,100	1,300	8,500	9,500	4,820	1,610	1,940	1,570
7	2,370	1,570	1,300	950	1,000	1,100	9,200	7,020	5,050	1,260	1,600	1,660
8	2,260	1,970	*1,520	1,100	1,000	1,100	10,100	7,740	4,940	1,110	1,400	1,550
9	1,950	1,730	1,630	1,000	1,200	1,400	10,700	7,740	4,710	2,020	1,320	1,580
10	2,220	1,880	1,800	900	1,200	1,200	13,400	7,450	4,600	2,280	1,650	1,940
11	2,040	1,720	1,830	950	1,100	*1,100	17,000	7,450	3,970	1,730	1,530	1,420
12	2,260	1,350	1,660	*900	1,200	1,400	15,600	7,450	4,280	1,580	1,360	1,300
13	2,170	1,320	1,500	900	1,200	1,200	14,100	7,450	4,710	1,520	1,400	1,320
14	2,310	1,660	1,200	900	1,000	1,100	13,000	6,200	4,500	1,530	1,380	1,650
15	2,820	1,610	1,300	1,000	1,000	1,400	11,700	7,160	4,390	1,170	1,350	1,820
16	2,920	1,660	1,600	900	1,200	1,500	*7,740	7,160	4,080	1,220	1,750	1,800
17	3,130	1,720	1,680	1,000	1,300	1,300	8,610	7,740	3,340	1,360	2,130	1,340
18	3,550	2,080	1,700	1,000	1,300	1,000	8,610	7,300	3,550	1,230	2,290	1,500
19	3,440	2,150	1,950	1,000	1,300	1,200	8,320	7,740	4,080	1,700	2,170	1,970
20	3,340	1,880	1,410	1,000	1,100	1,500	7,740	7,020	3,660	1,880	1,380	2,220
21	3,440	1,660	1,100	1,000	1,100	1,600	7,160	7,020	3,550	2,010	1,380	1,880
22	3,440	1,920	1,000	1,000	1,200	1,700	7,160	7,160	3,340	1,800	1,530	1,660
23	3,440	1,950	1,300	950	1,200	1,600	6,880	7,300	2,920	1,550	1,920	1,950
24	3,440	1,750	1,500	1,000	1,200	1,500	6,460	7,020	2,920	1,570	1,530	1,800
25	3,240	1,610	1,300	950	1,100	1,300	6,060	7,300	2,920	1,360	1,600	1,800
26	3,550	1,720	1,400	1,100	1,000	1,300	5,930	6,740	2,350	1,110	1,520	1,410
27	3,550	1,630	1,200	1,100	1,000	1,300	5,800	6,860	2,620	1,460	1,630	1,240
28	3,130	1,500	1,100	1,100	1,100	1,300	5,170	5,800	2,920	1,240	1,460	1,770
29	2,820	1,530	1,200	1,000	1,000	1,600	4,710	5,800	3,130	1,490	1,950	1,600
30	3,020	1,650	1,100	1,000	-	1,900	5,050	5,800	2,620	1,720	2,290	1,720
31	2,720	-	850	1,000	-	2,200	-	5,670	-	1,470	2,190	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	83,420	3,550	1,440	2,691	0.186	0.21
November	55,820	2,820	1,320	1,861	.128	.14
December	44,780	2,020	850	1,445	.100	.11
Calendar year 1939	1,603,800	22,500	850	4,394	.303	4.10
January	31,250	1,200	900	1,008	.070	.08
February	31,950	1,300	950	1,102	.076	.08
March	42,800	2,200	1,100	1,381	.095	.11
April	242,800	17,000	2,400	8,093	.558	.62
May	227,660	9,500	5,670	7,344	.506	.58
June	119,030	5,290	2,350	3,968	.274	.31
July	51,340	2,820	1,110	1,656	.114	.13
August	54,100	2,620	1,320	1,745	.120	.14
September	50,310	2,220	1,240	1,677	.116	.13
Water year 1939-40	1,035,260	17,000	850	2,829	.195	2.64

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 13-16, Dec. 21 to Apr. 6.

Mississippi River near Anoka, Minn.

Location.- Water-stage recorder, lat. 45°07'36", long. 93°17'48", in SW¼ sec. 12, T. 119 N., R. 21 W., half a mile downstream from Coon Creek, 1½ miles downstream from hydroelectric plant of Northern States Power Co. at Coon Rapids, and 6½ miles downstream from Anoka. Datum of gage is 805.02 feet above mean sea level (general adjustment of 1912).

Drainage area.- 19,100 square miles.

Records available.- June 1931 to September 1940.

Extremes (regulated).- Maximum discharge during year, 34,200 second-feet Apr. 10 (gage height, 11.55 feet); minimum daily, 1,070 second-feet Jan. 5.
1931-40: Maximum discharge, 40,800 second-feet Mar. 26, 1939 (gage height, 13.15 feet); minimum, 586 second-feet Sept. 13, 1934 (gage height, 0.37 foot).

Remarks.- Records excellent. Flow partly regulated by Government reservoirs on headwaters and power plants above station.

Rating tables, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 9		Apr. 10 to Sept. 30			
0.8	1,050	0.9	1,200	3.8	7,120
1.3	1,770	1.6	2,320	5.6	12,500
2.1	3,120	2.6	4,270	7.9	20,400
2.9	4,740				
4.5	8,870				

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,500	2,990	2,310	1,150	1,200	1,320	3,360	7,990	6,150	2,580	1,720	2,380
2	2,040	2,980	2,150	1,100	1,200	1,540	4,020	10,300	5,640	2,980	2,070	2,000
3	1,910	3,000	1,840	1,280	1,200	1,570	5,730	10,300	6,230	2,510	2,670	2,090
4	1,560	2,600	1,730	1,330	1,200	*1,640	5,700	9,670	5,440	2,250	2,660	2,060
5	2,010	2,550	2,010	1,070	*1,210	1,300	6,920	10,300	5,340	2,300	2,330	1,970
6	2,430	2,270	1,750	1,230	1,430	1,520	*8,870	10,900	5,960	2,010	2,050	1,790
7	2,540	2,100	1,840	1,160	1,200	1,320	11,700	8,500	5,770	1,520	2,020	2,120
8	2,590	2,030	1,890	1,130	1,290	1,260	13,100	8,500	5,770	1,290	1,580	1,890
9	2,470	2,320	1,940	1,260	1,200	1,380	14,800	8,790	5,400	2,050	1,530	1,870
10	2,220	2,190	2,170	1,150	1,500	1,510	19,000	8,500	5,240	2,670	1,930	1,860
11	2,560	2,000	2,220	*1,160	1,390	1,280	20,400	8,500	4,670	2,130	1,790	2,060
12	2,420	1,940	2,100	1,160	1,410	1,450	20,100	8,220	4,420	1,740	1,560	1,580
13	2,610	1,850	1,720	1,160	1,420	1,450	18,300	8,400	5,220	1,710	1,580	1,590
14	2,450	1,840	1,420	1,120	1,220	1,330	16,900	7,330	5,010	1,850	1,740	1,790
15	2,950	2,040	1,450	1,110	1,200	1,430	15,200	8,160	4,640	1,500	1,710	1,930
16	3,020	2,040	1,970	1,100	1,340	1,640	11,500	8,490	4,580	1,380	1.920	2,330
17	3,260	2,040	2,140	1,110	1,360	1,640	10,300	8,790	3,770	1,560	2,310	1,540
18	3,550	2,280	2,040	1,120	1,460	1,320	10,600	8,570	3,670	1,470	2,410	1,520
19	3,560	2,450	2,250	1,120	1,360	1,310	9,970	9,040	4,090	1,640	2,480	2,340
20	3,440	2,220	1,680	1,160	1,300	1,680	9,370	8,570	4,050	2,090	1,690	2,240
21	3,460	2,110	1,350	1.130	1,240	1,660	8,750	8,330	3,830	2,310	1,620	2,250
22	3,590	2,100	1,160	1,160	1,280	1,850	8,540	8,570	3,750	2,000	1,700	1,920
23	3,670	2,250	1,400	1,160	1,340	1,900	8,120	8,330	3,360	1,710	2,280	2,050
24	3,570	2,160	1,780	1,160	1,300	1,870	7,660	8,260	3,340	1,800	1,890	2,140
25	3,520	2,050	1,810	1,160	1.290	1,640	7,350	8,090	3,460	1,580	1,870	2,100
26	3,600	1,910	1,630	1,180	1,240	1,600	7,050	7,990	2,640	1,220	2,000	1,700
27	3,740	2,140	1,840	1,200	1,200	1,790	6,900	7,780	2,720	1,720	2,170	1,420
28	3,290	1,850	1,700	1,350	1,310	1,520	6,500	6,770	3,350	1,510	1,830	1,880
29	3,300	1,920	1,530	1,220	1,220	1,940	5,860	6,670	3,360	1,630	2,140	1,900
30	3,210	1,890	1,590	1,180	-	2,340	5,970	6,670	3,070	1,850	2,490	1,850
31	3,100	-	1,100	1,290	-	2,670	-	6,480	-	1,770	2,690	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	90,140	3,740	1,560	2,908	0.152	0.18
November	65,910	3,000	1,650	2,197	.115	.13
December	55,510	2,310	1,100	1.791	.094	.11
Calendar year 1939	1,943,970	29,100	1,160	5,330	.279	3.80
January	36,370	1,350	1,070	1,173	.061	.07
February	37,510	1,500	1,200	1,293	.068	.07
March	49,670	2,670	1,260	1,602	.084	.10
April	309,540	20,400	3,360	10,280	.538	.60
May	261,960	10,900	6,480	8,450	.442	.51
June	133,940	6,230	2,640	4,465	.234	.26
July	58,330	2,980	1,220	1,882	.099	.11
August	62,430	2,690	1,530	2,014	.105	.12
September	58,160	2.380	1,420	1,939	.102	.11
Water year 1939-40	1,218,470	20,400	1,070	3,329	.174	2.37

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 20 to Apr. 6.

Mississippi River at St. Paul, Minn.

Location.- Water-stage recorder, lat. 44°56'40", long. 93°05'20", in NE¼ sec. 6, T. 28 N., R. 22 W., in St. Paul, 6 miles downstream from Minnesota River. Datum of gage is 684.16 feet above mean sea level (general adjustment of 1912). Auxiliary water-stage recorder, lat. 93°01'45", long. 44°53'45", in SE¼ sec. 22, T. 28 N., R. 22 W., in South St. Paul, 7 miles downstream, at same datum.

Drainage area.- 36,800 square miles.

Records available.- March 1887 to September 1940.

Average discharge.- 48 years (1892-1940), 8,769 second-feet (adjusted for diversion).

Extremes.- Maximum discharge observed during year, 23,700 second-feet Apr. 12 (gage height, 7.20 feet); minimum daily discharge, 1,020 second-feet Mar. 21.

1887-1940: Maximum discharge, 80,800 second-feet Apr. 6, 1897 (gage height, 18.0 feet); minimum daily, 632 second-feet Aug. 26, 1934.

Maximum discharge known, 107,000 second-feet Apr. 29, 1881 (gage height, 19.6 feet), determined by Corps of Engineers, U. S. Army.

Remarks.- Records good. Records of Mississippi River at Twin City Lock and Dam adjusted for lockage for the first time this year. Partial regulation by Government reservoirs on headwaters and power plants upstream. Stage-discharge relation affected most of year by backwater from Hastings Dam. Beginning July 20, 1938, sewage from Minneapolis and St. Paul, which formerly entered above station, was diverted to a sewage-disposal plant, thence to river below station. Figures of daily discharge do not include this diversion.

Cooperation.- Records of Mississippi River at Twin City Lock and Dam furnished by Ford Motor Co.

Revisions.- The discharge in second-feet for Mar. 27, 1939 has been revised to 32,000 second-feet superseding that published in Water-Supply Paper 875.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,570	3,270	2,320	1,190	1,220	1,400	6,540	8,850	7,620	4,340	1,940	3,960
2	2,110	3,200	2,490	1,140	1,280	1,520	7,970	11,200	6,970	4,270	2,500	3,350
3	2,140	3,220	1,940	1,370	1,310	1,600	8,140	12,000	7,160	3,700	2,970	3,550
4	1,830	2,980	1,820	1,320	1,280	1,740	8,480	11,800	7,300	3,130	2,880	3,490
5	2,390	2,890	2,080	1,160	1,330	1,540	9,730	11,700	6,250	3,290	2,660	3,070
6	2,540	2,510	2,010	1,240	1,510	1,610	10,300	11,900	8,500	2,750	2,360	2,890
7	2,760	2,380	2,050	1,210	1,310	1,590	12,800	11,400	7,500	2,140	2,320	3,170
8	2,940	2,060	2,020	1,100	1,400	1,600	15,100	9,840	7,650	1,960	1,690	2,770
9	2,870	2,670	2,210	1,320	1,320	1,560	16,400	10,100	7,380	2,460	1,710	2,730
10	2,220	2,360	2,410	1,180	1,510	1,750	20,500	10,000	7,860	3,360	2,210	2,510
11	3,120	2,170	2,360	1,230	1,580	1,520	21,300	9,840	7,580	3,030	2,000	2,780
12	2,560	2,130	2,400	1,220	1,360	1,570	23,400	9,500	6,720	2,010	1,760	1,970
13	2,930	1,820	1,970	1,230	1,510	1,500	23,000	9,530	8,050	2,200	1,740	2,090
14	2,500	2,020	1,490	1,250	1,370	1,030	21,200	9,440	8,170	2,270	2,040	2,040
15	3,110	2,070	1,480	1,040	1,270	1,190	19,600	8,850	6,630	1,990	1,910	2,740
16	3,430	2,180	2,080	1,120	1,310	1,680	17,600	9,400	6,150	1,520	2,360	3,250
17	3,760	2,250	2,320	1,060	1,520	1,860	14,400	9,690	5,200	1,740	3,140	2,320
18	3,800	2,420	2,210	1,110	1,460	1,700	14,400	9,870	4,780	1,700	2,860	2,240
19	3,940	2,790	2,580	1,070	1,540	1,570	14,100	9,750	4,880	1,720	2,990	2,890
20	3,780	2,440	2,200	1,180	1,430	1,630	13,300	10,200	4,890	2,410	2,300	2,640
21	3,780	2,450	1,390	1,020	1,270	1,740	12,500	9,280	4,570	2,540	2,100	2,890
22	2,830	2,220	1,290	1,050	1,400	1,810	11,600	9,540	4,810	2,150	1,980	2,410
23	2,940	2,490	1,460	1,100	1,350	1,960	11,500	9,480	4,270	1,830	2,400	2,390
24	3,840	2,540	1,830	1,060	1,480	1,990	10,900	9,400	4,690	1,940	2,060	2,620
25	3,890	2,660	2,100	1,250	1,360	2,450	10,500	8,920	5,100	1,760	2,140	2,470
26	3,810	2,480	1,840	1,160	1,340	1,800	10,200	9,270	4,980	1,330	2,220	2,040
27	4,160	2,710	2,150	1,200	1,280	1,620	10,300	8,580	4,900	1,640	2,530	1,880
28	3,610	1,770	1,800	1,310	1,350	1,380	10,000	8,490	5,400	1,530	2,290	2,060
29	3,770	2,050	1,640	1,230	1,360	1,700	9,370	7,800	4,800	2,350	2,620	2,310
30	3,490	1,950	1,610	1,220	-	2,370	8,310	7,580	4,920	2,000	3,080	2,060
31	3,600	-	1,280	1,300	-	3,980	-	7,560	-	1,920	3,650	-

Month	Observed				Diversion (mean second-feet)†	Adjusted for diversion		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
March 1939	368,030	36,600	3,290	11,870	177	12,047	0.327	0.38
Water year 1939	2,571,900	35,600	1,900	7,046	158	7,204	.196	2.67
October 1939	97,020	4,160	1,830	3,130	164	3,294	.090	.10
November	73,150	3,270	1,770	2,438	146	2,584	.070	.08
December	60,840	2,590	1,280	1,963	143	2,106	.057	.07
Calendar year 1939	2,399,970	35,600	1,280	6,575	159	6,734	.183	2.50
January 1940	36,640	1,370	1,020	1,182	141	1,323	.036	.04
February	40,030	1,580	1,220	1,380	140	1,520	.041	.04
March	54,460	3,980	1,030	1,757	201	1,958	.053	.06
April	403,740	23,400	6,840	13,460	170	13,630	.370	.04
May	300,760	12,000	7,560	9,702	166	9,868	.268	.31
June	185,680	8,500	4,270	6,189	186	6,375	.173	.19
July	72,980	4,340	1,330	2,354	175	2,529	.069	.08
August	73,430	3,650	1,690	2,369	173	2,542	.069	.08
September	79,580	3,960	1,880	2,553	158	2,811	.076	.08
Water year 1939-40	1,478,310	23,400	1,020	4,039	164	4,203	.114	1.17

† Diversion to Twin City sewage-disposal plant. Records furnished by Minneapolis-St. Paul Sanitary District.

Note.- Gage-height record Dec. 4 to Apr. 14 consists of once-daily staff-gage readings. Discharge Oct. 1 to Mar. 31, June 16 to Sept. 30 computed on basis of records at Twin City Lock and Dam (adjusted for lock discharge), and flow of Minnesota River at Carver. Observed discharge, Apr. 1 to June 15, computed by using fall as determined by auxiliary water-stage recorder as a factor.

Mississippi River at Prescott, Wis.

Location.- Water-stage recorder, lat. 44°44'45", long. 92°48'00", in sec. 9, T. 26 N., R. 20 W., at Prescott, 200 feet downstream from St. Croix River. Datum of gage is 600.00 feet above mean sea level (general adjustment of 1912; levels by Corps of Engineers, U. S. Army). Auxiliary staff gage, lat. 44°39'14", long. 92°38'21", in sec. 14, T. 25 N., R. 19 W., half a mile (revised) upstream from Diamond Bluff, 2 miles upstream from Trimbelle River and 10.7 miles downstream from Prescott, at same datum.

Drainage area.- 45,000 square miles.

Records available.- June 1928 to September 1940.

Average discharge.- 12 years, 9,043 second-feet.

Extremes.- Maximum discharge during year, 33,800 second-feet Apr. 14 (gage height, 78.87 feet); minimum daily, 1,380 second-feet July 13; minimum gage height, 71.69 feet Apr. 14. 1928-40: Maximum discharge, 65,000 second-feet Apr. 2, 1939 (gage height, 82.41 feet); minimum daily, that of July 13, 1940; minimum gage height, 65.08 feet Aug. 29, 1934, present datum.

Remarks.- Records good. Discharge for Apr. 1 to June 19 computed by using fall as determined by twice-daily readings of auxiliary staff gage as a factor; discharge for the remainder of the year computed through dam 3. Flow partly regulated by reservoirs, navagation dams, and power plants above station.

Cooperation.- Gage readings Apr. 1 to June 19 furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,150	5,100	5,350	3,800	4,460	5,120	10,900	14,900	14,300	7,450	6,380	6,570
2	4,380	5,100	5,230	3,700	4,280	4,870	12,700	16,900	13,600	6,210	6,320	6,450
3	5,190	5,300	4,450	3,590	4,180	4,960	14,200	20,200	13,200	5,480	7,830	5,260
4	5,610	5,700	4,130	3,670	4,210	4,740	14,300	19,100	15,400	5,890	5,610	5,800
5	4,780	5,800	4,200	3,790	4,020	4,040	15,100	18,500	14,200	5,200	6,140	5,270
6	5,900	5,650	4,410	3,680	4,050	4,350	16,400	18,600	15,400	4,730	4,440	4,630
7	4,650	5,700	5,100	3,730	4,190	4,410	19,400	18,500	14,300	5,880	4,100	6,130
8	5,150	5,600	3,700	3,130	4,250	4,430	23,000	16,700	15,400	3,800	4,850	5,480
9	5,220	5,500	5,020	3,620	4,090	4,480	25,900	16,500	14,300	3,480	4,300	4,400
10	5,000	6,600	5,270	4,270	4,080	4,320	28,300	16,500	12,300	6,090	4,150	4,040
11	4,730	6,950	4,010	4,390	4,350	4,040	29,700	15,500	13,900	11,400	5,130	3,710
12	5,060	7,200	6,330	4,360	4,390	4,040	32,000	14,600	12,500	3,760	4,410	5,060
13	7,500	4,560	4,780	4,300	3,780	4,640	33,400	14,900	11,700	1,380	3,960	3,800
14	5,390	4,420	3,540	4,130	4,040	5,740	33,400	16,000	14,000	5,300	4,000	3,710
15	4,520	5,010	3,680	2,440	4,460	4,280	33,000	16,500	12,300	4,620	4,490	4,330
16	6,590	6,130	4,800	2,270	4,400	4,320	31,600	16,400	10,200	3,350	5,000	4,250
17	7,240	4,800	4,670	3,260	4,780	5,800	28,300	17,100	10,000	2,220	5,220	4,730
18	4,910	5,670	5,000	3,790	4,940	5,220	24,000	19,000	8,890	4,490	6,870	4,700
19	6,120	4,280	5,680	3,940	4,400	4,170	23,900	21,700	7,860	4,500	5,500	4,340
20	7,140	5,020	5,100	4,210	3,460	4,680	23,500	22,600	7,500	4,450	5,380	4,750
21	7,800	6,430	3,980	3,790	4,370	4,910	20,400	22,500	7,910	5,120	4,640	5,100
22	7,200	6,240	3,280	2,870	4,360	4,280	18,000	21,100	9,600	3,600	5,500	4,830
23	6,930	5,960	3,680	3,220	4,300	4,170	17,900	20,900	10,500	4,150	4,130	4,040
24	6,140	6,450	4,170	4,080	4,260	4,430	18,000	20,500	10,300	2,790	4,190	5,280
25	7,170	7,030	4,840	3,840	4,340	4,530	17,500	18,900	9,020	4,660	5,980	4,050
26	7,100	6,450	5,170	3,860	4,320	5,070	16,800	18,000	8,100	3,860	4,350	4,400
27	7,040	5,320	5,150	3,670	4,330	4,840	16,000	17,500	7,340	2,350	5,370	3,840
28	5,540	4,210	5,080	3,860	4,410	4,570	15,900	16,700	8,150	3,270	6,130	3,800
29	5,670	5,090	4,760	4,000	4,790	7,210	16,200	16,500	8,640	7,130	4,740	4,340
30	7,250	6,030	4,450	3,980	-	8,370	15,500	15,600	7,500	4,780	5,310	4,510
31	5,130	-	3,750	3,910	-	11,300	-	15,100	-	3,440	6,790	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	182,200	7,800	4,150	5,877	0.131	0.15
November	169,300	7,200	4,210	5,643	.125	.14
December	142,760	6,330	3,280	4,605	.102	.12
Calendar year 1939	4,452,550	64,200	3,280	12,200	.271	3.69
January	115,240	4,390	2,270	3,717	.083	.10
February	124,290	4,940	3,460	4,286	.095	.10
March	156,330	11,300	4,040	5,043	.112	.13
April	645,200	33,400	10,900	21,510	.478	.53
May	554,000	22,600	14,600	17,870	.397	.46
June	338,310	15,400	7,340	11,280	.251	.28
July	144,830	11,400	1,380	4,672	.104	.12
August	161,210	7,830	3,960	5,200	.116	.13
September	141,600	6,570	3,710	4,720	.105	.12
Water year 1939-40	2,875,270	33,400	1,380	7,856	.175	2.38

Mississippi River at Winona, Minn.

Location.- Water-stage recorder, lat. 44°03'20", long. 91°38'15", in sec. 23, T. 107 N., R. 7 W., at highway bridge in Winona. Datum of Winona gage is 639.64 feet above mean sea level (general adjustment of 1929). Auxiliary water-stage recorder, lat. 44°05'05", long. 91°40'00", in sec. 9, T. 107 N., R. 7 W., at navigation dam 5-A, 2.7 miles upstream. Datum of auxiliary gage is 600.00 feet above mean sea level (general adjustment of 1912).

Drainage area.- 59,200 square miles.

Records available.- June 1928 to September 1940.

Average discharge.- 12 years, 17,900 second-feet.

Extremes.- Maximum daily discharge during year, 51,500 second-feet Apr. 17; maximum gage height, 7.83 feet Apr. 17; minimum daily discharge, 6,000 second-feet Jan. 5, 6, 17-19; minimum gage height, 4.73 feet Nov. 10.
1928-40: Maximum discharge, 94,900 second-feet Apr. 20, 1936; minimum, 2,250 second-feet Dec. 29, 1933.

Remarks.- Records good except those for periods of ice effect, which are fair. Discharge computed by using fall as determined by auxiliary water-stage recorder as a factor. Flow partly regulated by reservoirs, navigation dams, and power plants upstream.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11,100	12,100	13,400	8,000	7,000	9,000	36,800	26,000	24,300	16,200	9,500	11,500
2	10,400	11,800	11,100	7,500	8,000	9,500	37,600	26,000	21,100	16,700	10,000	11,700
3	9,220	11,400	10,800	7,000	7,500	11,000	37,300	30,000	20,600	15,000	11,000	11,900
4	8,810	10,100	8,500	6,500	8,000	11,000	38,100	32,000	23,000	12,000	13,000	11,500
5	9,690	9,910	8,000	6,000	8,500	11,000	35,300	30,000	24,100	12,000	11,000	10,100
6	11,200	10,500	8,500	6,000	8,500	10,000	36,200	26,000	26,600	11,000	9,500	10,100
7	10,800	11,000	8,500	6,500	*8,500	10,000	37,600	28,000	31,600	8,500	9,000	10,100
8	10,200	10,900	8,000	6,500	*8,500	11,000	39,400	28,000	41,100	10,000	8,500	9,670
9	9,660	11,000	9,500	6,500	*8,500	11,400	40,300	28,000	36,600	10,000	8,500	9,290
10	9,790	9,300	10,000	7,000	*8,000	12,000	42,000	24,000	37,900	9,000	10,000	9,110
11	9,100	9,810	11,000	6,500	*7,500	12,000	43,400	26,000	40,600	22,000	10,000	9,410
12	9,940	10,700	9,000	7,000	*8,500	10,000	44,000	24,000	44,200	22,000	9,500	9,110
13	11,900	11,200	9,000	7,000	*8,000	9,500	45,500	22,000	45,100	14,000	10,000	8,630
14	13,800	10,400	10,000	7,000	8,000	9,500	47,600	19,000	41,100	9,000	11,000	8,690
15	13,300	10,400	9,000	*7,500	8,000	10,000	49,900	22,000	35,700	9,000	11,000	8,820
16	13,300	10,000	9,500	7,000	8,500	10,000	51,200	24,500	31,400	9,500	10,000	8,410
17	13,000	10,800	9,500	6,000	9,000	10,000	51,500	24,500	26,200	9,500	10,100	8,350
18	12,100	11,600	9,500	6,000	9,000	13,000	61,100	25,100	19,900	8,500	11,500	8,760
19	11,400	11,100	10,000	6,000	9,500	12,000	49,300	29,300	15,800	8,500	13,800	9,420
20	11,100	9,960	11,000	6,500	9,500	9,800	47,200	31,800	17,100	9,000	13,900	10,200
21	10,900	9,960	8,500	6,500	8,500	9,500	45,300	30,700	14,800	9,000	11,700	10,600
22	11,300	11,000	10,000	7,500	8,500	8,500	43,700	31,600	17,100	9,500	11,100	10,100
23	12,700	11,800	8,000	6,500	8,500	9,000	40,300	32,900	32,300	9,500	10,900	9,570
24	13,900	11,900	7,500	6,500	8,500	9,000	35,400	34,400	34,400	9,500	11,300	8,920
25	12,700	13,100	8,000	7,000	8,500	9,000	32,400	39,300	30,400	9,000	10,900	9,090
26	12,800	12,500	9,500	6,500	7,500	8,500	30,000	38,100	22,400	9,500	11,400	9,570
27	12,800	13,200	9,500	7,000	8,000	9,000	30,000	36,300	21,400	9,000	12,200	9,040
28	13,700	13,200	9,500	7,000	8,500	9,000	30,000	32,300	25,300	9,000	11,600	9,170
29	11,900	10,700	*9,000	6,500	9,000	11,000	26,000	30,800	20,500	8,000	11,800	9,290
30	12,100	11,300	9,000	7,000	-	22,000	26,000	28,700	19,900	8,500	11,100	9,290
31	12,200	-	8,500	7,000	-	29,300	-	27,100	-	9,000	10,600	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	356,810	13,900	8,810	11,510	0.194	0.22
November	332,640	13,200	9,300	11,090	.187	.21
December	291,800	13,400	7,500	9,413	.159	.18
Calendar year 1939	8,459,230	93,900	7,500	23,180	.392	5.32
January	209,000	8,000	6,000	6,742	.114	.13
February	242,000	9,500	7,000	8,345	.141	.15
March	345,500	29,300	8,500	11,150	.188	.22
April	1,200,400	51,500	26,000	40,010	.676	.75
May	888,400	39,300	19,000	28,660	.484	.56
June	842,500	45,100	14,800	28,080	.474	.53
July	340,900	22,000	8,000	11,000	.186	.21
August	335,400	13,900	8,500	10,820	.183	.21
September	289,410	11,900	8,350	9,647	.163	.18
Water year 1939-40	5,674,760	51,500	6,000	15,500	.262	3.55

* Winter discharge measurement made on this day.
Note.- Slope-stage-discharge relation affected by ice Dec. 4 to Mar. 7, Mar. 10-19, 21-30.

Mississippi River at La Crosse, Wis.

Location.- Water-stage recorder, lat. 43°48'45", long. 91°15'25", in sec. 31, T. 16 N., R. 7 W., a quarter of a mile upstream from highway bridge at La Crosse. Datum of gage is 626.32 feet above mean sea level (general adjustment of 1912). Auxiliary water-stage recorder, lat. 43°51'50", long. 91°18'25", in sec. 28, T. 105 N., R. 4 W., at navigation dam 7, 4.7 miles upstream. Datum of auxiliary gage is 600.00 feet above mean sea level (general adjustment of 1912).

Drainage area.- 62,800 square miles.

Records available.- June 1929 to September 1940.

Average discharge.- 10 years (1930-40), 19,840 second-feet.

Extremes.- Maximum daily discharge during year, 54,400 second-feet June 12, 13; maximum gage height, 7.91 feet June 13; minimum daily discharge, 7,000 second-feet Jan. 6-8, 17, 21; minimum gage height observed, 4.02 feet June 19.

1929-40: Maximum discharge, 101,000 second-feet May 23, 1938 (discharge measurement); maximum gage height, 12.09 feet Sept. 15, 1938, present datum; minimum daily discharge, 3,300 second-feet, Dec. 30, 31, 1933; minimum gage height, 2.70 feet, Aug. 19, 20, 1936, present datum.

Maximum stage known, 16.0 feet June 19, 1880, present datum (discharge 190,000 second-feet, computed by Corps of Engineers, U. S. Army); minimum, -2.70 feet Aug. 19, 20, 1936, present datum.

Remarks.- Records good except those for period of ice effect, which are fair. Discharge computed by using fall as determined by auxiliary water-stage recorder as a factor. Flow partly regulated by reservoirs, navigation dams, and power plants above station.

Discharge, in second-feet, water year October 1929 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12,800	13,600	11,700	8,500	7,500	10,000	41,200	25,000	29,200	22,400	11,000	13,000
2	12,400	13,800	13,500	8,000	7,500	11,000	45,800	26,500	23,500	18,600	11,400	13,700
3	10,500	13,700	12,200	7,500	8,000	12,000	46,400	29,700	23,400	19,600	12,800	13,600
4	9,790	13,000	11,900	7,500	8,500	12,000	45,700	34,800	24,400	14,000	16,200	12,800
5	10,300	11,200	10,500	7,500	8,000	12,000	44,200	34,000	26,500	14,000	16,100	12,300
6	11,900	11,700	11,400	7,000	8,500	13,000	42,800	29,000	30,600	14,700	12,100	11,900
7	12,300	12,700	9,890	7,000	8,500	12,000	45,700	28,300	34,300	10,700	11,000	11,700
8	11,200	13,400	9,720	7,000	8,500	*12,000	47,100	29,000	44,400	11,600	10,200	11,200
9	10,000	13,000	11,000	7,500	8,500	12,000	47,100	28,000	46,500	13,200	9,960	10,200
10	8,910	12,800	11,000	7,500	8,500	11,000	49,300	24,800	43,600	11,000	10,500	9,850
11	8,600	12,900	12,000	7,500	8,500	11,000	50,800	24,100	48,700	25,400	11,100	10,400
12	9,370	12,400	11,700	7,500	*9,000	11,000	50,000	24,400	54,400	23,500	12,000	10,900
13	10,300	11,800	11,000	*8,000	9,000	12,000	50,800	22,500	54,400	18,500	11,700	9,910
14	12,900	11,400	11,000	8,000	9,500	11,000	51,500	21,500	50,000	10,400	11,600	9,650
15	14,800	11,400	*11,000	7,500	9,000	11,000	51,500	22,100	44,100	10,400	11,900	9,910
16	14,100	11,300	11,000	7,500	9,000	11,000	51,500	25,700	35,400	9,350	11,600	9,400
17	14,300	10,500	11,000	7,000	8,500	12,000	52,200	27,300	29,700	10,400	11,900	9,690
18	14,600	10,600	11,000	7,000	9,000	14,000	52,200	28,300	21,700	8,880	13,400	9,160
19	13,500	11,500	10,000	7,000	10,000	16,000	52,200	32,800	17,200	9,960	15,700	9,690
20	13,000	10,300	10,000	7,000	11,000	12,000	49,200	38,500	18,300	9,160	16,500	9,960
21	12,000	9,960	9,000	7,000	11,000	*12,000	47,000	37,800	17,600	10,200	15,000	10,800
22	11,700	9,620	8,500	7,500	10,000	10,000	46,400	35,600	18,200	11,400	13,200	10,800
23	12,300	12,400	9,000	7,500	10,000	10,000	44,100	37,900	32,800	11,400	12,400	10,500
24	14,300	12,500	8,500	7,500	11,000	10,000	38,900	41,500	40,700	10,800	12,100	9,100
25	14,100	12,300	8,000	7,500	10,000	10,000	35,400	45,100	43,600	10,200	11,600	9,540
26	14,200	13,300	9,000	7,500	9,500	9,500	33,900	45,000	39,800	10,200	12,400	9,600
27	13,700	12,300	9,500	7,500	9,000	10,000	30,200	41,300	37,000	9,910	13,800	9,600
28	14,200	12,800	*10,000	7,500	9,500	11,000	31,100	37,000	42,200	9,650	13,800	9,350
29	14,200	11,200	10,000	7,500	10,000	13,000	30,600	34,900	32,300	8,880	14,100	8,570
30	13,000	10,100	9,500	7,500	-	23,700	25,900	33,400	29,000	8,350	13,600	8,080
31	13,300	-	10,000	7,500	-	32,000	-	29,300	-	9,650	12,600	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	382,570	14,800	8,600	12,340	0.196	0.23
November	359,480	13,800	9,620	11,980	.191	.21
December	323,510	13,500	8,000	10,440	.166	.19
Calendar year 1939	9,282,310	97,000	8,000	25,430	.405	5.49
January	231,000	8,500	7,000	7,452	.119	.14
February	264,500	11,000	7,500	9,121	.145	.16
March	389,200	32,000	9,500	12,550	.200	.23
April	1,330,700	52,200	25,900	44,360	.706	.79
May	975,100	45,100	21,500	31,450	.501	.58
June	1,033,300	54,400	17,200	34,440	.548	.61
July	396,390	25,400	8,350	12,790	.204	.23
August	393,260	16,500	9,960	12,690	.202	.23
September	314,860	13,700	8,080	10,500	.167	.19
Water year 1939-40	6,393,870	54,400	7,000	17,470	.278	3.79

* Winter discharge measurement made on this day.

Note.- Slope-stage-discharge relation uncertain Nov. 1-30; discharge computed on basis of records at dam 7. Slope-stage-discharge relation affected by ice Dec. 13 to Mar. 29.

Mississippi River at McGregor, Iowa

Location.- Water-stage recorder, lat. 43°01'40", long. 91°10'22", in city park at north end of Main Street in McGregor, 2.6 miles upstream from Wisconsin River and 4.0 miles downstream from Yellow River. Datum of gage is 605.30 feet above mean sea level (general adjustment of 1912). Auxiliary gage is a water-stage recorder, lat. 43°12'33", long. 91°06'05", at dam 9, 2¾ miles northeast of Harpers Ferry and 14.2 miles upstream from McGregor gage. Datum of gage is 600.00 feet above mean sea level (general adjustment of 1912).

Drainage area.- 67,500 square miles.

Records available.- August 1936 to September 1940.

Extremes.- Maximum daily discharge during year, 52,100 second-feet Apr. 19; maximum gage height, 10.50 feet June 17; minimum daily discharge, 6,700 second-feet (estimated) Jan. 17-20; minimum gage height, 4.25 feet Dec. 8.

1936-40: Maximum daily discharge, 101,400 second-feet May 27, 1938; maximum gage height observed, 18.45 feet Sept. 18, 1938; minimum daily discharge, 6,200 second-feet Dec. 9, 1936 (discharge measurement); minimum gage height, -0.86 foot Aug. 18, 1936. Maximum stage known, about 21.0 feet in 1880.

Remarks.- Records good except those for period of ice effect and those for Dec. 11-22, which are fair. Stage-discharge relation affected by backwater from Wisconsin River and dam 10. Discharge computed by using fall as determined by auxiliary water-stage recorder as a factor. Flow regulated by reservoirs and navigation dams.

Cooperation.- Records collected in cooperation with Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11,800	13,600	13,900	9,500	9,100	9,600	44,700	30,400	25,400	15,100	13,000	13,000
2	11,200	13,900	13,900	9,500	9,300	10,000	49,800	26,300	22,800	12,000	13,700	13,400
3	11,700	14,600	13,600	9,300	9,400	10,500	51,900	28,700	19,100	13,300	17,200	13,100
4	10,700	15,200	13,300	9,000	9,500	10,500	51,400	35,000	23,900	14,600	19,700	11,800
5	11,300	14.700	12,200	8,500	9,600	12,000	48,600	36,400	29,100	11,800	20,600	11,600
6	10,400	14,300	11,900	8,000	9,700	12,500	46,600	32,900	32,200	11,400	16,000	12,800
7	10,400	13,900	10,600	7,900	9,800	12,400	45,400	28,300	36,900	11,500	11,100	11,900
8	10,400	13,400	9,680	7,800	*9,800	12,100	46,300	27,500	42,200	11,100	10,200	11,100
9	11,100	14,200	10,100	7,600	9,800	11,700	46,700	26,300	40,600	12,500	10,400	11,000
10	10,200	12,700	10,000	*7,500	9,800	11,500	47,800	26,300	41,800	10,200	10,400	10,500
11	9,420	12,300	10,700	7,300	9,800	11,500	49,000	26,200	42,200	27,000	11,400	9,710
12	8,110	11,400	11,000	7,200	9,800	11,700	49,500	24,600	43,500	30,400	13,000	9,680
13	8,890	11,800	10,500	7,000	9,700	12,500	50,100	23,000	46,500	23,000	15,100	10,200
14	12,800	11,700	*10,000	6,900	9,700	13,000	50,500	23,400	49,400	15,400	17,600	9,340
15	15,400	11,800	9,800	6,800	9,700	12,000	51,400	23,800	50,500	10,400	17,200	9,560
16	14,300	11,600	9,900	6,800	9,800	11,500	51,600	27,000	48,500	11,200	14,000	9,400
17	15,300	11,400	10,000	6,700	9,900	11,000	51,500	29,700	39,400	9,940	12,900	9,710
18	16,100	11,400	10,500	6,700	10,000	12,000	52,000	33,500	18,200	9,910	15,200	9,310
19	15,100	11,300	12,000	6,700	10,100	11,000	52,100	38,200	10,800	9,650	17,100	9,680
20	15,200	11,400	12,500	6,700	10,200	13,000	51,700	38,600	9,650	8,970	17,100	10,700
21	13,800	11,200	11,000	6,800	10,500	11,500	51,400	37,400	17,100	8.910	15,900	11,600
22	13,600	11,400	10,000	6,900	10,700	11,000	49,600	36,900	16,000	9,650	14,500	10,800
23	13,400	10,800	10,000	7,000	10,900	10,800	47,400	36,600	32,300	10,800	12,900	11,100
24	14,400	15,200	9,500	7,200	11,000	10,700	45,500	35,500	41,400	11,200	12,800	9,650
25	14,100	14,700	9,000	7,400	10,700	11,200	41,400	38,200	44,500	10,700	16,200	9,620
26	14,400	13,900	8,000	7,600	10,400	11,200	34,100	42,200	41,200	10,500	17,600	9,710
27	14,700	13,900	7,500	7,800	10,000	11,900	29,800	43,800	39,900	11,000	15,800	9,880
28	14,900	14,000	7,500	8,000	9,800	*13.400	29,300	43,300	40,400	9,740	15,900	10,500
29	14,200	13,900	8,000	8,200	9,600	19,500	28,500	38,400	36,600	9,650	15,800	9,740
30	13,500	13,900	8,500	8,500	-	27,000	30,300	33,600	26,700	10,500	14,100	9,370
31	13,800	-	9,500	8,800	-	38,800	-	30,100	-	11,900	13,900	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	394,620	16,100	8,110	12,730	0.189	0.22
November	389,500	15,200	10,800	12,980	.192	.21
December	324,580	13,900	7,500	10,470	.155	.18
Calendar year 1939	9,486,900	96,900	7,500	25,990	.385	5.23
January	237,600	9,500	6,700	7,665	.114	.13
February	288,100	11,000	9,100	9,934	.147	.16
March	409,000	38,800	9,600	13,190	.195	.23
April	1,376,100	52,100	28,500	45,870	.680	.76
May	1,002,100	43,800	23,000	32,330	.479	.55
June	1,008,750	50,500	9,650	33,620	.498	.56
July	393,920	30,400	8,910	12,710	.188	.22
August	458,300	20,600	10,200	14,780	.219	.25
September	319,560	13,400	9,310	10,650	.158	.18
Water year 1939-40	6,602,130	52,100	6,700	18,040	.267	3.65

* Winter discharge measurement made on this day.

Note.- Slope-stage-discharge relation affected by ice Dec. 23 to Mar. 4, and by unknown causes Dec. 11-22. Discharge for latter period based on one discharge measurement, computed flow through dam 9, and records for station at Clinton.

Mississippi River at Clinton, Iowa

Location.- Water-stage recorder, lat. 41°53'40", long. 90°09'24", in NE¼ sec. 16, T. 22 N., R. 3 E., in lower lock guide wall at dam 13, 1.2 miles upstream from Otter Creek, 2 miles north of Fulton, Ill., and 2.1 miles upstream from crossing of U. S. Highway 30 at Clinton. Datum of gage is 568.70 feet above mean sea level (general adjustment of 1912). Auxiliary gage is a water-stage recorder, lat. 41°46'50", long. 90°15'07", in NW¼ sec. 34, T. 81 N., R. 6 E., at foot of Yazoo Street in Camanche, Iowa, 4.9 miles upstream from Wapsipinicon River and 10.7 miles downstream from principal gage. Datum of gage is 563.21 feet above mean sea level (general adjustment of 1912).

Drainage area.- 85,600 square miles at U. S. Highway 30, where discharge measurements are made.

Records available.- October 1939 to September 1940. October 1932 to September 1939 in reports of U. S. Geological Survey and June 1873 to December 1932 in report of Iowa State Planning Board entitled "Stream Flow Records of Iowa, 1873-1932," for site 23 miles downstream from U. S. Highway 30 (published as Mississippi River at Le Claire). Records equivalent except for inflow from Wapsipinicon River.

Extremes:- Maximum daily discharge during year, 74,100 second-feet June 19; maximum gage height, 10.36 feet June 19; minimum daily discharge, 12,000 second-feet (estimated) Dec. 27-30; minimum gage height, -0.70 foot Dec. 30.
Maximum stage known, 19.7 feet June 25, 1880 (21.4 feet at Camanche).

Remarks.- Records good except those for Dec. 13 to Mar. 17, which are fair. Stage-discharge relation affected by backwater from Wapsipinicon River and dam 14. Discharge computed by using fall as determined by auxiliary water-stage recorder as a factor. Flow regulated by reservoirs and navigation dams.

Cooperation.- Records collected in cooperation with Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18,100	21,800	22,600	14,000	13,600	16,500	37,600	38,500	49,900	63,700	23,400	29,400
2	17,500	20,800	22,600	14,000	13,600	16,900	46,700	39,900	41,300	59,900	24,000	28,400
3	17,400	20,500	22,200	14,000	13,600	17,600	52,900	38,500	32,700	57,700	25,500	25,900
4	17,200	20,400	22,000	14,200	13,700	18,000	65,700	32,500	32,200	61,800	34,100	24,600
5	18,300	21,300	21,700	*14,600	13,800	18,400	65,900	35,000	31,600	63,900	43,800	24,000
6	17,400	21,000	21,300	14,500	13,900	18,500	64,800	46,500	34,100	61,300	32,900	23,000
7	17,400	20,500	21,000	14,000	13,900	18,200	63,400	46,500	39,600	46,200	26,800	22,300
8	17,400	20,000	20,700	13,600	14,000	18,800	64,400	40,400	44,700	35,000	21,700	22,200
9	18,500	19,800	19,700	13,500	14,000	17,900	64,300	37,800	52,400	29,600	20,700	22,500
10	18,800	19,300	18,800	13,300	14,200	17,600	62,600	36,100	54,500	26,900	20,500	21,000
11	18,700	20,000	17,700	13,200	14,400	17,600	64,800	36,200	56,300	28,700	22,800	19,600
12	18,000	19,300	17,500	13,100	14,500	18,500	64,600	34,800	55,100	31,100	23,800	19,400
13	17,700	19,800	17,700	13,100	14,600	19,900	63,900	33,300	53,400	42,700	25,500	19,500
14	18,500	19,900	17,100	12,700	14,800	21,400	63,600	31,500	56,500	34,600	33,900	17,900
15	19,200	20,000	16,400	12,600	15,000	21,800	64,300	31,000	62,400	28,300	34,500	18,000
16	18,000	19,800	16,000	12,500	15,300	21,600	66,400	32,800	65,500	19,300	35,500	17,800
17	18,100	20,000	15,700	12,400	15,500	21,400	67,800	33,600	67,800	19,000	30,900	18,200
18	19,800	19,500	15,400	12,300	15,500	21,700	69,100	34,600	70,000	18,400	24,400	18,200
19	19,100	19,000	15,700	12,200	15,600	27,000	68,400	39,100	74,100	18,600	26,100	18,200
20	20,000	18,700	16,000	12,200	15,700	33,000	67,300	47,900	58,100	17,000	26,000	18,400
21	21,000	19,000	17,100	12,300	15,800	34,400	65,600	48,400	28,700	16,800	26,100	18,000
22	21,000	19,500	16,400	12,400	15,800	29,800	64,700	48,300	28,800	16,800	28,200	17,800
23	19,400	19,500	15,400	12,500	*15,900	23,500	65,700	46,900	47,800	17,000	26,400	18,300
24	20,000	20,000	14,700	12,600	16,000	20,400	65,200	47,500	66,900	17,300	27,400	18,000
25	21,700	21,900	13,200	12,900	16,000	20,200	62,300	50,000	70,900	19,200	26,900	18,800
26	22,400	22,200	12,300	13,200	16,200	19,500	58,400	54,800	63,900	19,600	37,900	19,000
27	22,900	21,600	12,000	13,600	16,400	19,400	49,500	58,800	63,000	36,300	46,500	18,800
28	24,200	22,200	12,000	13,700	16,700	19,400	40,900	62,000	63,400	60,600	47,000	18,700
29	23,600	22,500	12,000	13,800	16,900	19,600	37,000	63,100	64,900	40,900	45,300	19,000
30	23,600	22,700	12,000	13,800	-	20,200	37,000	61,000	65,500	23,300	34,500	19,600
31	23,200	-	13,200	13,700	-	27,100	-	58,600	-	22,700	31,000	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	608,100	24,200	17,200	19,620	0.229	0.26
November	612,500	22,700	18,700	20,420	.239	.27
December	528,100	22,600	12,000	17,040	.199	.23
Calendar year	-	-	-	-	-	-
January	410,500	14,600	12,200	13,240	.155	.18
February	434,900	16,900	13,600	15,000	.175	.19
March	655,800	34,400	16,500	21,150	.247	.28
April	1,794,800	69,100	37,000	59,830	.699	.78
May	1,346,100	63,100	31,000	43,420	.507	.58
June	1,596,000	74,100	28,700	53,200	.621	.69
July	1,054,200	63,900	16,800	34,010	.397	.46
August	934,000	47,000	20,500	30,130	.352	.41
September	614,500	29,400	17,800	20,480	.239	.27
Water year 1939-40	10,589,500	74,100	12,000	28,930	.338	4.60

* Winter discharge measurement made on this day.

Note.- No gage-height record at auxiliary gage Dec. 13 to Mar. 14; discharge Dec. 13-31 computed on basis of gage heights at dam 13 and backwater corrections indicated by discharge measurements on Dec. 13 and Jan. 5; stage-discharge relation affected by ice Jan. 1 to Mar. 17.

Mississippi River at Keokuk, Iowa

Location.- Lat. 40°23'35", long. 91°22'25", at Mississippi River Power Co.'s dam and power plant at Keokuk, 2.8 miles upstream from Des Moines River.

Drainage area.- 119,000 square miles.

Records available.- October 1932 to September 1940 in reports of U. S. Geological Survey. January 1878 to December 1932 in report of Iowa State Planning Board entitled, "Streamflow records of Iowa, 1873-1932." Records for period May 1913, when Keokuk dam was completed, to September 1937 adjusted for change in contents in Keokuk Reservoir, those after September 1937 unadjusted. Records prior to 1913 collected at site at Galland, 8 miles upstream.

Average discharge.- 62 years (1878-1940), 60,320 second-feet.

Extremes.- Maximum daily discharge during year, 81,700 second-feet Apr. 19; minimum daily, 8,900 second-feet Jan. 1.

1878-1940: Maximum discharge, 314,000 second-feet May 18, 1888; minimum daily, 5,000 second-feet Dec. 27, 1933.

Flood of June 6, 1851, reached a stage estimated at 13.5 feet at Galland (discharge, 360,000 second-feet).

Remarks.- Records good. Discharge computed from records of operation of turbines in power plant and spillway gates in dam. Flow regulated by reservoirs and navigation dams. Two discharge measurements made during year by Geological Survey.

Cooperation.- Records of daily discharge furnished by Mississippi River Power Co.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16,300	26,400	26,800	8,900	18,500	20,900	36,400	45,400	61,600	68,900	28,700	49,800
2	17,900	25,100	27,400	12,200	18,000	17,700	50,000	46,200	55,200	70,700	31,200	49,600
3	18,300	24,800	26,500	14,100	16,300	23,900	53,000	47,400	47,900	67,100	33,900	46,500
4	19,000	24,100	26,800	14,700	13,800	32,800	56,700	46,700	42,800	62,800	36,600	45,900
5	19,900	23,000	26,800	16,000	18,400	35,400	71,300	45,900	40,700	61,700	45,400	41,300
6	21,300	22,700	26,500	13,800	16,000	30,900	79,500	46,600	39,900	63,500	50,200	38,900
7	20,300	21,500	26,700	14,700	16,000	31,700	75,600	49,900	39,200	61,800	40,600	38,400
8	19,900	21,400	26,200	16,600	16,100	32,900	76,200	50,400	41,500	58,800	33,600	31,300
9	20,000	22,300	27,200	18,500	18,300	31,100	73,200	48,700	43,100	45,700	30,500	32,500
10	20,600	23,800	27,800	17,700	14,900	33,000	72,700	47,300	53,900	40,300	28,000	33,100
11	20,600	22,800	28,200	18,100	14,400	35,400	76,600	42,700	56,900	36,400	25,500	29,300
12	20,100	23,000	28,300	16,000	18,200	35,900	73,200	37,600	59,100	36,800	28,600	26,800
13	19,500	23,300	26,100	13,800	16,500	32,900	72,500	40,400	59,200	34,600	36,700	24,200
14	20,000	23,100	25,200	11,900	17,100	27,500	73,800	39,000	59,000	33,800	42,800	23,300
15	20,100	22,800	24,700	15,900	17,200	27,000	73,300	33,900	59,000	38,500	46,900	23,000
16	20,900	22,800	24,800	16,300	17,500	24,800	73,400	33,600	59,500	36,000	48,900	24,000
17	21,100	23,100	24,000	15,400	14,700	24,800	76,300	36,100	61,100	30,100	54,900	25,200
18	21,200	23,100	23,800	14,100	15,100	36,300	76,900	38,500	66,700	25,200	55,900	24,700
19	21,200	24,800	23,400	13,800	19,800	44,700	81,700	39,600	73,900	22,000	43,600	24,200
20	22,100	23,300	22,700	12,800	20,700	49,600	81,200	45,300	73,500	18,200	38,800	23,700
21	22,300	23,000	23,000	11,800	20,000	49,700	78,000	51,200	63,800	18,000	36,900	22,400
22	21,600	22,700	22,700	14,500	19,700	51,100	75,500	52,300	34,200	18,900	36,000	21,700
23	23,300	22,000	22,700	15,000	21,500	47,700	76,300	53,400	35,000	19,000	35,200	23,200
24	25,200	23,000	20,200	16,100	16,800	37,400	75,100	54,400	51,900	18,900	34,500	23,300
25	25,200	24,400	19,000	16,000	15,600	34,700	74,100	55,000	62,400	20,600	31,500	22,300
26	24,600	24,900	21,400	14,800	19,900	31,100	73,600	57,900	77,200	21,600	33,800	21,600
27	25,800	25,900	18,600	13,800	22,800	31,800	68,700	59,300	77,600	31,600	41,100	21,100
28	25,500	26,200	17,700	12,000	20,100	30,700	60,800	59,600	73,400	43,700	53,700	20,700
29	25,500	26,500	15,800	14,900	20,400	29,300	50,100	62,000	67,800	44,800	56,700	21,000
30	28,300	26,400	15,100	14,600	-	28,200	45,500	67,300	66,900	47,000	58,100	21,300
31	26,700	-	11,000	15,400	-	29,000	-	65,200	-	26,000	56,400	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	674,300	28,300	16,300	21,750	0.183	0.21	1,337,000
November	712,200	26,500	21,400	23,740	.199	.22	1,413,000
December	727,100	28,300	11,000	23,450	.197	.23	1,442,000
Calendar year 1939	18,439,700	155,800	11,000	50,520	.425	5.75	36,570,000
January	454,200	18,500	8,900	14,650	.123	.14	900,900
February	515,000	22,800	13,800	17,760	.149	.16	1,021,000
March	1,029,900	51,100	17,700	33,220	.279	.32	2,043,000
April	2,081,200	81,700	36,400	69,370	.583	.65	4,128,000
May	1,498,800	67,300	33,600	48,350	.406	.47	2,973,000
June	1,703,900	77,600	34,200	56,800	.477	.53	3,380,000
July	1,223,000	70,700	18,000	39,450	.332	.38	2,426,000
August	1,255,200	58,100	25,500	40,490	.340	.39	2,490,000
September	871,300	49,800	20,700	29,040	.244	.27	1,728,000
Water year 1939-40	12,746,100	81,700	8,900	34,830	.293	3.97	25,280,000

Mississippi River at Alton, Ill.

Location.- Water-stage recorder, lat. 38°53'06", long. 90°10'56", in sec. 14, T. 5 N., R. 10 W., at Missouri & Illinois Bridge & Belt R. R. bridge at Alton, 7¼ miles upstream from Missouri River. Auxiliary gage is water-stage recorder, lat. 38°49'43", long. 90°06'27", at Hartford, Ill., 1½ miles upstream from Missouri River, and 6 miles downstream from Alton gage. Datum of each gage is at mean sea level (general adjustment of 1929). Prior to July 11, 1940, various combinations of gages were used.

Drainage area.- 171,500 square miles.

Records available.- March 1933 to January 1938 and October 1939 to September 1940 in reports of U. S. Geological Survey. Daily gage heights have been published in reports of Mississippi River Commission since January 1904, in reports of U. S. Weather Bureau December 1890 to September 1893 and since January 1917. Discharge measurements made intermittently by Mississippi River Commission and Corps of Engineers, U. S. Army since 1880 at Grafton, 15 miles upstream, are published in reports of those organizations.

Extremes.- Maximum discharge during year, 137,000 second-feet Apr. 19 (gage height, 407.10 feet); minimum observed, 16,300 second-feet Oct. 1; minimum gage height, 390.8 feet Jan. 15.

1933-38, 1939-40: Maximum discharge observed, 265,000 second-feet May 17, 1933; maximum gage height observed, 424.4 feet June 8, 1935; minimum discharge, 15,000 second-feet Dec. 30, 1933; minimum gage height, that of Jan. 15, 1940.

Maximum stage known, 432.5 feet in June 1844.

Remarks.- Records fair Oct. 1 to July 10 and good July 11 to Sept. 30. Discharge computed by using fall as determined by auxiliary water-stage recorder as a factor. During year 47 discharge measurements were made.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16,300	41,800	30,600	20,900	21,600	22,900	41,700	59,900	81,500	81,100	32,500	80,100
2	20,400	39,200	34,600	16,600	21,600	24,000	45,400	60,000	81,100	79,200	31,900	76,500
3	24,200	35,500	39,200	17,200	22,400	37,400	64,500	63,400	75,800	60,000	42,700	69,100
4	22,700	32,000	36,800	27,600	22,400	56,700	65,600	65,900	63,800	80,500	44,700	68,500
5	25,800	29,000	35,500	42,300	22,700	76,700	59,600	65,200	53,300	75,500	55,700	66,400
6	24,400	27,700	34,400	32,900	22,300	77,000	73,500	63,500	56,600	71,200	64,900	58,900
7	24,000	27,800	34,400	32,100	22,700	80,700	92,100	65,900	54,100	69,100	65,500	53,900
8	25,000	25,900	35,000	25,600	23,500	69,400	96,400	68,900	53,000	65,500	50,100	49,300
9	27,200	24,000	35,700	25,700	23,700	56,200	90,000	71,600	50,900	66,200	42,600	45,300
10	32,200	23,100	35,700	25,500	23,000	57,800	88,200	72,500	53,400	55,800	42,500	45,100
11	33,600	26,800	35,700	25,300	23,500	57,100	95,000	71,200	75,600	51,100	42,300	46,000
12	32,000	27,700	36,800	25,300	23,800	63,900	90,100	66,400	92,700	44,800	40,000	45,200
13	30,900	30,400	36,200	25,600	24,000	67,000	92,900	61,800	95,900	43,700	39,800	38,300
14	29,000	31,500	38,100	26,300	24,300	64,200	90,800	56,200	91,400	45,400	48,400	34,400
15	26,300	33,100	38,100	22,700	24,900	51,900	86,800	57,100	86,100	43,200	62,400	38,700
16	24,900	32,000	37,500	21,600	25,900	42,400	86,000	57,500	86,100	46,800	65,400	31,600
17	29,000	31,100	36,800	23,100	26,900	38,400	90,600	46,600	83,000	42,900	70,700	33,400
18	27,200	29,500	35,700	22,300	27,100	42,100	94,900	45,200	64,000	37,200	63,600	33,600
19	26,800	29,500	33,500	22,800	28,500	41,700	128,000	54,600	87,100	31,900	93,200	33,900
20	25,900	30,100	31,700	23,400	28,400	63,600	110,000	54,200	91,300	27,300	79,000	29,900
21	24,900	32,400	31,100	23,000	28,700	62,600	103,000	59,600	90,600	26,200	59,600	29,400
22	24,900	35,700	32,200	21,200	30,000	54,300	94,100	69,700	81,100	31,100	53,000	28,600
23	25,800	35,500	31,100	20,100	31,500	50,800	91,600	68,200	53,200	30,300	43,600	28,300
24	26,300	32,200	32,200	20,000	31,100	53,100	90,600	65,500	42,500	30,000	44,700	31,900
25	26,800	29,000	32,200	21,200	28,300	44,300	93,600	68,100	57,000	30,900	45,500	29,700
26	31,500	27,800	32,000	22,500	29,300	38,600	100,000	73,000	71,700	30,500	41,100	25,300
27	30,900	26,800	30,100	21,700	29,800	43,700	97,300	72,700	66,100	31,000	52,100	25,500
28	32,200	26,800	27,100	22,300	28,000	34,700	85,800	77,100	99,500	39,400	61,300	26,600
29	34,200	27,800	25,900	22,700	26,500	42,200	82,300	78,800	101,000	48,900	73,200	27,800
30	36,900	29,500	25,000	22,000	-	42,200	68,800	77,600	89,600	42,200	75,900	28,500
31	40,500	-	24,000	21,300	-	37,700	-	79,100	-	49,600	79,400	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	862,700	40,500	16,300	27,830	1,711,000
November	911,200	41,800	23,100	30.370	1,807,000
December	1,034,900	39,200	24,000	33.380	2,053,000
Calendar year 1939	-	-	-	-	-
January	742,800	42,300	16,600	23.960	1,473,000
February	746,400	31,500	21,600	25,740	1,480,000
March	1,595,500	80,700	22,900	51.470	3,165,000
April	2,589,200	128,000	41,700	86.310	5,136,000
May	2,021,400	79,100	45,200	65,210	4,009,000
June	2,269,000	101,000	42,500	75.630	4,500,000
July	1,530,500	81,100	27,300	49,370	3,036,000
August	1,727,700	93,200	31,900	55,730	3,427,000
September	1,259,900	80,100	25,300	42,000	2,499,000
Water year 1939-40	17,291,200	128,000	16,300	47,240	34,300,000

Crow Wing River at Nimrod, Minn.

Location.- Chain gage, lat. 46°39', long. 94°53', in sec. 32, T. 137 N., R. 33 W., on highway bridge, half a mile north of Nimrod and 0.7 mile upstream from Cat River.

Drainage area.- 1,010 square miles.

Records available.- April 1910 to September 1914, July 1930 to September 1940 (winter records incomplete prior to 1940).

Extremes.- Maximum daily discharge during year, 1,000 second-feet Apr. 12, 13; maximum gage height observed, 5.64 feet (affected by ice) Apr. 7; minimum daily discharge, 80 second-feet Dec. 2; minimum gage height observed, 2.34 feet (affected by ice) Dec. 2.

1910-14, 1930-40: Maximum discharge observed, 2,000 second-feet June 9, 1914; minimum observed, 45 second-feet Aug. 7, 1936.

Remarks.- Records excellent except those for periods of backwater from aquatic vegetation, which are good, and those for periods of ice effect, which are fair. Flow regulated by several lakes. Gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	100	185	95	100	160	190	220	735	375	215	160	165
2	102	180	80	110	160	190	240	670	370	205	160	165
3	106	190	180	110	160	200	280	606	364	195	175	160
4	102	*220	180	110	170	200	300	575	343	185	165	160
5	150	170	*180	110	180	*180	320	544	375	165	170	160
6	145	160	170	100	170	180	420	516	375	160	160	160
7	140	170	170	100	170	170	*480	487	364	160	160	165
8	140	170	160	110	*160	170	*550	487	354	160	155	165
9	155	170	160	*120	170	170	600	487	402	160	150	165
10	160	170	154	120	180	170	700	487	430	160	145	170
11	160	170	140	120	180	160	850	487	430	160	140	160
12	160	170	130	120	180	160	1,000	487	402	155	145	160
13	165	170	95	120	180	160	1,000	458	359	150	135	160
14	170	170	180	120	180	160	800	487	359	195	130	160
15	175	170	150	120	180	160	650	516	364	165	160	155
16	160	160	140	120	180	170	500	487	360	155	160	155
17	170	160	130	120	180	170	480	487	350	200	160	160
18	175	160	120	120	160	170	*450	516	340	185	165	160
19	175	150	110	120	180	160	410	487	320	185	170	160
20	180	160	130	120	180	160	400	487	300	175	170	160
21	185	170	130	120	170	150	420	606	300	160	165	160
22	185	160	120	130	160	150	410	544	300	145	155	160
23	185	150	110	130	140	140	390	544	300	140	155	160
24	180	160	110	130	140	140	350	516	310	140	175	160
25	170	140	110	140	140	140	340	487	290	140	160	160
26	180	130	110	140	160	140	360	516	260	150	175	160
27	190	120	110	150	170	150	364	487	235	160	160	175
28	165	120	100	160	180	190	430	458	250	160	170	180
29	185	120	100	160	180	*220	702	458	250	160	175	180
30	185	110	100	160	-	220	800	430	235	155	175	160
31	190	-	100	170	-	220	-	430	-	155	170	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	5,010	190	100	162	0.160	0.18
November	4,805	220	110	160	.158	.18
December	4,054	180	80	131	.130	.15
Calendar year	-	-	-	-	-	-
January	3,880	170	100	125	.124	.14
February	4,920	180	140	170	.168	.18
March	5,310	220	140	171	.169	.20
April	15,216	1,000	220	507	.502	.56
May	15,969	735	430	515	.510	.59
June	10,066	430	235	336	.333	.37
July	5,155	215	140	166	.164	.19
August	4,970	175	130	160	.158	.18
September	4,900	180	155	163	.161	.18
Water year 1939-40	84,255	1,000	80	230	.228	3.10

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Nov. 3 to Dec. 9, Dec. 11 to Apr. 16. Backwater from aquatic vegetation or debris Oct. 1 to Nov. 2, Apr. 17-26, June 16 to Sept. 30; discharge computed on basis of three discharge measurements, gage heights, weather records, and engineers' and observer's notes.

Little Sand Lake outlet near Dorset, Minn.

Location.- Staff gage, lat. 46°59', long. 94°55', in NE¼ sec. 36, T. 141 N., R. 34 W., 3 miles northeast of Dorset.

Records available.- July 1930 to September 1940 (winter records incomplete prior to 1940).

Extremes.- Maximum discharge observed during year, 30 second-feet Apr. 28; maximum gage height observed, 1.99 feet Apr. 11 (affected by ice); minimum daily discharge, 2.8 second-feet Nov. 11-14; minimum gage height observed, 0.91 feet Nov. 12-14.
1930-40: Maximum discharge observed, 74 second-feet Apr. 8, 1934 (gage height, 2.66 feet, affected by ice), from rating curve extended above 36 second-feet; no flow at times.

Remarks.- Records good except those for periods of backwater from ice and aquatic vegetation, which are fair. Gage read twice daily Oct. 1 to Jan. 8, Apr. 1 to Sept. 30; once daily during remainder of the year. Flow regulated by lakes above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.2	3.7	3.7	5.5	8.5	9.5	22	28	26	13	13	10
2	3.9	3.6	4.0	5.5	8.5	10	22	27	25	13	13	10
3	3.7	3.4	3.9	5.5	9.0	10	24	26	24	13	16	10
4	3.6	*3.3	3.9	5.5	9.5	10	24	26	25	13	16	10
5	5.4	3.3	*3.9	5.5	11	10	24	26	26	12	15	10
6	5.0	3.3	4.0	5.5	11	*11	24	24	26	12	15	9.8
7	5.0	3.3	4.2	5.5	*11	10	*22	24	26	12	14	9.4
8	5.0	3.4	4.2	*5.5	10	10	22	26	24	12	14	9.4
9	5.6	3.1	4.2	6.0	10	10	20	26	24	12	14	8.8
10	5.6	3.0	4.2	6.0	10	10	20	26	24	12	13	8.4
11	5.6	2.8	4.2	6.5	9.5	10	*20	26	22	11	13	8.0
12	5.4	2.8	4.2	6.5	9.0	10	20	25	22	11	13	7.4
13	5.0	2.8	4.2	6.5	9.0	11	19	25	20	11	12	7.2
14	5.0	2.8	4.2	6.0	8.5	11	19	26	19	12	12	7.2
15	4.8	3.0	4.2	5.5	8.5	11	19	28	18	11	13	6.6
16	4.6	3.0	4.2	5.5	8.5	11	18	27	18	11	14	6.6
17	4.2	3.0	4.2	5.5	8.0	10	18	27	18	11	13	6.8
18	4.2	3.0	4.2	5.5	8.0	10	*18	27	17	12	13	6.6
19	4.2	3.0	5.0	5.5	8.0	10	18	27	17	12	13	6.6
20	4.2	3.0	5.0	6.0	7.5	10	18	27	16	12	12	6.6
21	4.2	3.1	4.8	6.5	7.0	10	18	29	16	12	12	6.2
22	3.9	3.3	4.6	6.5	7.0	10	18	29	15	12	11	6.4
23	3.9	3.1	4.4	6.5	7.0	10	18	28	15	12	11	6.4
24	3.9	3.3	4.8	6.5	7.0	10	17	27	15	12	10	6.2
25	3.7	3.3	5.0	6.0	7.0	10	17	27	14	12	10	5.6
26	3.6	3.3	5.5	6.5	7.5	11	17	28	14	12	10	5.8
27	3.7	3.4	6.0	6.5	9.0	11	17	27	15	11	10	5.6
28	3.7	3.6	5.5	7.0	9.0	*13	21	27	14	11	10	5.4
29	3.7	3.6	5.5	7.5	9.0	17	27	26	13	11	10	5.6
30	3.7	3.6	5.5	7.5	-	18	28	26	13	11	10	5.4
31	3.7	-	5.5	8.0	-	20	-	26	-	11	11	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	135.9	5.6	3.6	4.38		
November	96.2	3.7	2.8	3.21		
December	140.9	6.0	3.7	4.55		
Calendar year	-	-	-	-		
January	190.0	8.0	5.5	6.13		
February	252.5	11	7.0	8.71		
March	344.5	20	9.5	11.1		
April	609	28	17	20.3		
May	824	29	24	26.6		
June	581	26	13	19.4		
July	365	13	11	11.8		
August	386	16	10	12.5		
September	224.0	10	5.4	7.47		
Water year 1939-40	4,149	29	2.8	11.3		

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Nov. 10, 11, Dec. 2, Dec. 11 to Apr. 11. Backwater from aquatic vegetation June 3 to Sept. 30; discharge computed on basis of three discharge measurements, gage heights, weather records, and observer's and engineers' notes.

Sauk River near St. Cloud, Minn.

Location.- Water-stage recorder, lat. 45°34', long. 94°14', in sec. 8, T. 124 N., R. 28 W., half a mile northwest of Waite Park, 3 miles west of St. Cloud, and 5 miles upstream from mouth. Datum of gage is 1,034.95 feet above mean sea level (general adjustment of 1912).

Drainage area.- 925 square miles (revised).

Records available.- July 1909 to December 1913, May 1929 to September 1940.

Average discharge.- 10 years (1909-12, 1930-31, 1934-40), 128 second-feet.

Extremes.- Maximum daily discharge during year, 912 second-feet Apr. 13; maximum gage height observed, 3.65 feet Apr. 9 (affected by ice); minimum daily discharge, 12 second-feet Dec. 30, 31; minimum gage height recorded, 0.42 foot Dec. 11.
1909-13, 1929-40: Maximum discharge, 1,950 second-feet May 6, 1936 (gage height, 4.90 feet); minimum, 0.2 second-foot Nov. 22, 1936.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by power plants and reservoirs above station.

Rating table, water year 1939-40, except period of ice effect or backwater from aquatic vegetation (gage height, in feet, and discharge, in second-feet)

0.6	12	1.4	126	3.0	830
.7	18	1.7	225	3.5	1,110
.9	36	2.0	345		
1.1	62	2.5	570		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	30	34	14	34	15	100	386	47	26	38	68
2	24	29	24	16	38	16	160	372	44	23	35	32
3	26	28	24	18	40	17	*220	368	53	22	35	25
4	28	28	*41	18	42	*28	*300	358	240	23	35	31
5	36	28	37	17	42	20	320	217	220	21	25	24
6	32	27	34	14	42	18	400	186	239	20	18	20
7	27	28	36	14	*38	17	*440	341	249	28	16	20
8	27	28	52	*17	38	17	500	332	205	24	16	48
9	31	29	35	17	38	17	850	332	58	20	17	26
10	35	*28	34	20	40	a18	850	328	62	20	20	23
11	33	22	32	17	40	a18	900	320	224	19	19	20
12	30	24	30	16	36	a18	865	199	230	16	18	19
13	31	30	14	15	30	a18	912	121	215	15	16	18
14	29	131	24	15	36	a18	695	328	184	15	18	19
15	29	148	26	17	38	a20	695	354	168	15	21	72
16	28	158	28	17	38	a20	802	345	51	15	24	35
17	29	150	28	17	36	a20	*748	332	41	20	25	33
18	32	142	26	16	36	a25	720	328	95	21	25	26
19	35	51	24	17	50	a25	670	199	105	17	21	23
20	33	44	14	18	30	a25	615	135	99	17	19	21
21	32	144	17	22	20	a30	448	311	115	16	16	23
22	32	151	24	24	18	a30	430	307	115	39	16	21
23	61	145	22	26	16	*a34	543	303	54	20	16	23
24	38	49	20	*28	16	a35	516	303	46	17	18	26
25	36	41	22	30	15	a35	480	291	37	21	20	21
26	34	37	19	30	15	a35	444	93	31	23	18	21
27	33	32	20	30	15	a40	390	75	32	20	20	22
28	32	30	18	36	14	a50	256	132	37	23	24	21
29	32	34	16	42	15	a60	239	147	28	31	29	66
30	30	36	12	42	-	a70	408	172	27	30	27	28
31	31	-	12	30	-	a80	-	55	-	32	28	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	992	61	24	32.0	0.035	0.04
November	1,882	158	22	62.7	.068	.08
December	799	52	12	25.8	.028	.03
Calendar year 1939	62,524	1,710	12	171	.185	2.84
January	670	42	14	21.6	.023	.03
February	906	50	14	31.2	.034	.04
March	889	-	15	28.7	.031	.04
April	15,936	912	-	531	.574	.64
May	8,070	386	55	260	.281	.32
June	3,351	249	27	112	.121	.13
July	669	39	15	21.6	.023	.03
August	693	38	16	22.4	.024	.03
September	875	72	18	29.2	.032	.04
Water year 1939-40	35,732	912	12	97.6	.106	1.45

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for stations on nearby streams.
Note.- Stage-discharge relation affected by ice Nov. 3, 4, 10-13, 27-30, Dec. 2, 3, 6, Dec. 13 to Mar. 9, Apr. 3-11. Backwater from aquatic vegetation Oct. 1-22, July 1 to Aug. 9; discharge computed on basis of one discharge measurement, gage heights, weather records, and engineers' notes.

Elk River near Big Lake, Minn.

Location.- Water-stage recorder and concrete control, lat. 45°20', long. 93°40', in sec. 23, T. 33 N., R. 27 W., at highway bridge 4 miles east of Big Lake and 4 miles downstream from St. Francis River.
Drainage area.- 615 square miles.
Records available.- April 1911 to September 1917, April 1931 to September 1940.
Average discharge.- 12 years (1911-17, 1934-40), 224 second-feet.
Extremes.- Maximum discharge during year, 1,240 second-feet Apr. 10 (gage height, 4.09 feet); maximum gage height, 5.55 feet Apr. 6 (affected by ice); minimum discharge, 35 second-feet July 24, 25 (gage height, 0.89 foot, affected by aquatic vegetation).
1911-17, 1931-40: Maximum discharge, 5,100 second-feet May 7, 1912 (gage height, 10 feet), from rating curve extended above 3,750 second-feet; minimum, 3.6 second-feet July 31, 1934.
Remarks.- Records excellent except those for periods of backwater from aquatic vegetation, which are good, and those for period of ice effect, which are fair.
Revisions.- Revised figures of discharge, in second-feet, for the water year 1938-39, superseding those published in Water-Supply Paper 875 are given herein.

Sept. 16	112	Sept. 21	94	Sept. 26	84
17	108	22	90	27	80
18	106	23	86	28	80
19	98	24	84	29	80
20	94	25	84	30	80

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	100	95	50	65	65	160	264	113	56	58	96
2	74	100	95	46	60	70	190	264	108	54	66	86
3	74	96	95	44	60	70	*280	256	100	52	64	76
4	74	96	95	42	65	*70	420	244	105	50	64	74
5	84	96	100	45	65	70	650	232	126	48	62	68
6	90	96	100	45	65	75	*850	220	132	44	54	64
7	88	98	100	45	65	75	1,000	213	135	44	52	64
8	90	*98	*100	45	65	80	945	202	126	44	46	80
9	96	100	100	*48	*65	80	1,050	194	118	43	46	60
10	108	100	98	48	65	80	1,200	198	113	43	52	58
11	106	100	95	48	70	75	1,200	187	105	46	60	56
12	98	95	90	46	70	70	1,070	177	94	46	60	52
13	98	95	80	46	65	70	966	168	86	43	52	49
14	98	95	75	46	55	65	844	177	78	41	50	46
15	98	95	85	46	60	65	744	198	70	40	52	46
16	94	100	85	44	60	70	644	202	62	38	56	54
17	96	98	95	42	65	75	564	191	58	44	56	76
18	96	98	105	40	65	80	*500	191	52	50	66	76
19	96	98	100	44	65	75	448	194	48	48	66	72
20	96	98	90	46	65	70	400	194	44	43	60	66
21	96	98	70	46	60	70	356	194	49	43	54	66
22	94	95	65	46	60	65	320	184	62	43	52	64
23	98	98	60	44	55	60	292	171	66	40	52	64
24	100	100	55	44	50	60	272	165	72	38	54	66
25	100	100	55	44	50	60	244	158	68	41	58	66
26	100	100	55	44	55	65	224	155	58	46	58	66
27	100	98	60	46	60	70	213	149	56	46	64	58
28	100	85	60	50	65	*80	213	143	60	46	74	54
29	100	90	55	55	65	90	232	138	66	69	88	54
30	100	90	50	60	-	100	252	132	60	67	90	52
31	104	-	50	65	-	140	-	123	-	54	98	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
September 1939	5,173	168	80	106	0.172	0.19
Water year 1938-39	89,211	2,620	80	244	.397	5.41
October 1939	2,922	108	74	94.3	.153	.18
November	2,906	100	85	96.9	.158	.18
December	2,513	105	50	81.1	.132	.16
Calendar year 1939	82,328	2,620	50	226	.366	4.99
January 1940	1,450	65	40	46.8	.076	.09
February	1,800	70	50	62.1	.101	.11
March	2,310	140	60	74.5	.121	.14
April	16,743	1,200	160	558	.907	1.01
May	5,878	264	123	190	.309	.36
June	2,490	135	44	83.0	.135	.15
July	1,450	69	38	46.8	.076	.09
August	1,884	98	46	60.8	.099	.11
September	1,909	96	46	63.6	.103	.11
Water year 1939-40	44,255	1,200	38	121	.197	2.68

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 10-15, 22, Nov. 28 to Dec. 7, Dec. 12-18, Dec. 19 to Apr. 7. Backwater from aquatic vegetation Oct. 1 to Nov. 9, June 12 to July 25, Aug. 1 to Sept. 30; discharge computed on basis of seven discharge measurements, gage heights, and engineers' notes.

Crow River at Rockford, Minn.

Location.- Water-stage recorder, lat. 45°05'15", long. 93°44'00", in sec. 29, T. 119 N., R. 24 W., at Rockford, 1 mile downstream from confluence of North and South Forks. Datum of gage is 893.65 feet above mean sea level (general adjustment of 1912).
Drainage area.- 2,520 square miles.
Records available.- June 1909 to September 1917, April 1929 to September 1940.
Average discharge.- 15 years (1909-17, 1930-31, 1934-40), 457 second-feet.
Extremes.- Maximum daily discharge during year, 1,200 second-feet Apr. 6; maximum gage height, 5.09 feet Apr. 6 (affected by ice); minimum discharge, 8.2 second-feet Dec. 13.

1909-17, 1929-40: Maximum discharge observed, 10,600 second-feet Apr. 2, 3, 1916; minimum, 1.8 second-feet Nov. 15, 1936 (gage height, 1.05 feet), caused by ice jam upstream.

Remarks.- Records excellent except those for periods of backwater from debris, which are fair, and those for periods of ice effect, which are poor.

Rating tables, water year 1939-40, except period of ice effect or backwater from debris (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 30				Mar. 31 to Sept. 30			
1.3	10	1.8	33	1.4	10	3.0	310
1.4	13	2.0	57	1.6	22	3.5	527
1.5	17	2.2	86	1.8	34	4.0	808
1.6	21			2.0	60	5.0	1,480
				2.5	165		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	51	c43	38	20	14	19	650	281	146	42	18	40
2	51	c42	32	15	13	20	750	269	146	38	18	42
3	44	41	32	15	13	20	800	245	139	39	19	42
4	46	41	32	12	13	20	*850	197	143	40	19	39
5	50	c40	38	10	13	20	1,100	173	139	32	20	32
6	46	c40	40	10	13	22	1,200	155	168	28	19	29
7	50	41	44	12	13	22	996	158	143	27	18	28
8	47	*c42	40	12	13	22	*839	168	134	25	17	25
9	51	c42	*47	12	13	24	725	163	139	24	17	24
10	56	38	44	*12	*13	24	651	148	123	24	18	22
11	60	30	42	12	14	*24	575	160	117	27	18	21
12	58	30	42	12	14	22	471	163	c108	31	17	22
13	54	36	26	13	13	22	406	168	c100	26	16	23
14	53	38	32	13	13	22	415	183	c92	25	15	21
15	52	42	32	13	13	22	384	211	82	24	15	21
16	c49	38	34	12	13	24	349	205	76	23	16	22
17	c47	42	38	12	14	24	317	178	71	22	16	22
18	c47	43	40	12	14	26	294	160	62	22	20	24
19	c46	42	38	13	14	26	275	143	52	21	19	23
20	c46	40	26	13	14	*24	257	139	43	21	18	23
21	c44	39	32	14	15	24	242	158	43	21	17	22
22	c43	40	32	14	15	24	239	153	44	19	17	22
23	c43	41	32	14	15	22	248	137	51	18	18	22
24	c42	41	30	13	14	22	275	139	71	17	18	21
25	c44	40	30	13	13	22	272	123	62	18	21	21
26	c41	43	30	13	15	24	251	117	57	18	23	22
27	c42	42	30	14	17	30	251	108	57	18	25	20
28	c41	33	25	14	18	40	254	111	62	20	29	20
29	c41	34	25	14	19	55	272	126	52	23	32	21
30	c42	33	20	14	-	90	284	151	48	19	34	19
31	c43	-	20	14	-	*281	-	153	-	18	36	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,470	60	41	47.4	0.019	0.02
November	1,177	43	30	39.2	.016	.02
December	1,043	47	20	33.6	.013	.02
Calendar year 1939	95,306	3,440	20	261	.104	1.41
January	406	20	10	13.1	.0052	.006
February	408	19	13	14.1	.0056	.006
March	1,083	281	19	34.9	.014	.02
April	14,892	1,200	239	496	.197	.22
May	5,143	281	108	166	.066	.08
June	2,770	168	43	92.3	.037	.04
July	770	42	17	24.8	.0098	.01
August	623	36	15	20.1	.0080	.009
September	755	42	19	25.2	.010	.01
Water year 1939-40	30,540	1,200	10	83.4	.033	.46

* Winter discharge measurement made on this day.
c Backwater from debris on control; discharge computed on basis of two discharge measurements, gage heights, weather records, and engineers' notes.
Note.- Stage-discharge relation affected by ice Nov. 10-14, Nov. 28 to Dec. 13, Dec. 18 to Mar. 30, Apr. 1-6.

South Fork of Crow River near Mayer, Minn.

Location.- Wire-weight gage, lat. 44°54', long. 93°53', on line between secs. 30 and 31, T. 117 N., R. 25 W., fifth principal meridian, at bridge on Minnesota Highway 7, 1½ miles north of Mayer, 4 miles southwest of Watertown, and about 16 miles upstream from confluence with North Fork. Prior to June 14, chain gage at same site and datum. Datum of gage is 926.00 feet above mean sea level (levels by Hennepin County Park Board Survey).

Records available.- April 1934 to September 1940 (incomplete).

Extremes.- Maximum daily discharge during year, 440 second-feet Apr. 5; maximum gage height observed, 4.66 feet Mar. 31 (affected by ice); no flow for several days during January and February.

1934-40: Maximum discharge observed, 2,470 second-feet Mar. 24, 1936 (gage height, 9.34 feet), from rating curve extended above 2,000 second-feet; no flow at times.

Remarks.- Records good except those for periods of backwater, which are fair, and those below 5 second-feet, which are poor. Gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	2.2	2.4	0.4	0		*340	37	9.5	5.7	0.4	14
2	.5	2.2	2.7	.2	0		380	33	8.5	5.4	.5	13
3	.7	2.0	2.2	.1	0	0.3	*360	30	8.0	4.4	.3	10
4	.5	2.0	2.0	0	0		360	27	10	3.7	.1	6.6
5	.4	2.0	2.4	0	0		440	24	12	2.4	0	5.0
6	.4	2.0	2.6	0	*0		*340	23	14	2.2	0	4.0
7	.5	2.2	2.4	0	0		320	21	17	2.0	.3	2.7
8	.7	*2.2	2.2	*0	0	.4	293	19	35	1.8	.5	1.8
9	.7	2.0	2.2	0	0		253	20	33	1.6	.5	1.4
10	.9	2.0	2.4	0	0		215	20	27	1.4	.4	.9
11	.9	1.8	*2.8	0	0	.5	179	19	22	1.4	.4	.7
12	.9	1.8	2.4	0	0	*.5	145	16	17	2.0	.4	.5
13	.9	1.6	2.0	0	0	.5	128	14	14	1.8	.3	.4
14	.9	1.6	2.0	0	0	.6	120	17	12	1.8	0	.3
15	.9	1.8	2.2	0	0	.7	106	22	12	1.6	0	.2
16	1.1	2.0	2.4	0	0	.8	92	23	19	1.4	0	.3
17	1.1	2.0	2.4	0	0	1.0	80	21	10	1.3	0	1.3
18	1.1	2.2	2.2	0	0	1.0	*69	19	7.1	.9	.4	2.4
19	1.3	2.0	2.4	0	0	1.0	64	17	5.4	.7	.3	5.7
20	1.3	2.0	2.4	0	0	*1.1	58	18	3.7	.7	.2	5.4
21	1.4	2.0	2.0	0	0	.8	51	16	3.1	.5	.1	3.7
22	1.4	2.2	1.8	0	0	.6	45	15	4.4	.5	0	1.8
23	1.4	2.2	1.8	0	0	.4	40	14	6.1	.4	0	5.0
24	1.4	2.2	1.8	0	0	.4	35	12	12	.4	0	4.7
25	1.4	2.4	1.8	0	0	.4	32	12	11	.4	0	4.0
26	1.6	2.4	1.6	0		.5	31	12	12	.3	0	3.4
27	1.6	2.2	1.4	0	.1	.5	28	12	9.5	.3	2.7	2.7
28	1.6	2.2	1.3	0		4.8	27	12	8.5	.4	5.4	2.4
29	1.8	2.0	.9	0		28	30	11	9.0	.5	7.6	2.4
30	2.0	2.2	.5	0	-	140	35	11	6.6	.7	10	1.8
31	2.0	-	.4	0	-	*320	-	10	-	.9	14	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	33.7	2.0	0.4	1.09	0.0009	0.001
November	61.6	2.4	1.6	2.05	.0018	.002
December	62.0	2.8	0.4	2.00	.0017	.002
Calendar year 1939	34,022.8	1,910	-	93.2	.080	1.07
January	0.7	.4	0	.02	.000017	.00002
February	.4	-	0	.01	.0000085	.00001
March	507.6	320	-	16.4	.014	.02
April	4,696	440	27	157	.134	.15
May	577	37	10	18.6	.016	.02
June	378.4	35	3.1	12.6	.011	.01
July	49.5	5.7	0.3	1.60	.0014	.002
August	44.8	14	0	1.45	.0012	.001
September	108.5	14	.2	3.62	.0031	.003
Water year 1939-40	6,520.2	440	0	17.8	.0152	.21

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 3 to Apr. 7. Backwater from debris on control Oct. 1 to Dec. 2, Sept. 5-16, 21-24; discharge computed on basis of two discharge measurements, one estimate of low flow, gage heights, weather records, and engineers' and observer's notes.

Rum River near St. Francis, Minn.

Location.- Water-stage recorder, lat. 45°19'40", long. 93°22'20", in SE¼ sec. 19, T. 33 N., R. 24 W., 4 miles south of St. Francis and 15¾ miles upstream from mouth. Datum of gage is 861.12 feet above mean sea level (general adjustment of 1912).

Drainage area.- 1,360 square miles.

Records available.- May 1929 to September 1940.

Extremes.- Maximum discharge during year, 2,630 second-feet Apr. 12 (gage height, 5.94 feet); minimum recorded, 56 second-feet July 16 (gage height, 2.16 feet).
1929-40: Maximum discharge, 5,550 second-feet May 14, 1938 (gage height, 8.80 feet); minimum, 29 second-feet Aug. 18, 1934 (gage height, 1.91 feet).

Remarks.- Records good except those for periods of ice effect, no gage-height record, and backwater from aquatic vegetation, all of which are poor. Flow regulated by storage in Mille Lacs Lake (occasionally), Ogechie and Onamia Lakes, and several other small lakes above station.

Rating tables, water year 1939-40, except periods of ice effect or backwater from aquatic vegetation (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Feb. 21		Feb. 22 to Sept. 30			
2.2	58	2.2	62	3.5	585
2.3	72	2.3	78	4.0	970
2.4	90	2.4	102	4.5	1,370
2.5	113	2.6	160	5.0	1,760
2.6	143	2.8	231	5.5	2,250
		3.0	317	6.0	2,720

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	104	137	110	85	90	120	220	555	304	124	110	135
2	102	134	120	80	95	130	260	573	290	116	102	130
3	102	128	110	80	100	130	340	599	276	107	97	125
4	104	131	110	75	100	130	*550	662	268	102	110	130
5	113	131	110	75	100	130	850	700	260	100	112	130
6	119	137	120	70	100	130	1,130	678	268	95	124	125
7	119	*137	120	70	100	130	1,330	620	264	95	116	125
8	116	134	120	75	95	130	*1,650	561	256	90	112	120
9	119	131	*120	*75	*95	130	2,300	508	247	85	110	120
10	131	131	134	75	95	130	2,630	486	247	85	118	116
11	131	125	120	75	100	*120	2,630	454	243	92	112	110
12	137	111	120	75	100	*120	2,630	426	231	88	108	107
13	140	116	110	75	95	124	2,540	410	220	85	102	a100
14	134	131	110	75	95	120	2,390	421	197	85	100	a100
15	131	143	110	70	100	120	2,110	476	190	83	100	a100
16	134	137	110	70	100	120	1,690	549	176	76	102	a110
17	131	125	110	70	110	130	1,370	573	173	78	102	a140
18	134	122	120	70	110	130	1,130	648	163	78	108	a140
19	134	119	110	70	110	130	970	778	148	76	110	a140
20	131	119	110	65	110	130	858	850	141	78	110	a130
21	131	119	100	70	110	120	786	858	138	76	108	a130
22	131	116	95	70	110	110	715	762	144	75	112	a120
23	137	119	95	70	100	100	655	655	141	72	116	a120
24	140	122	90	70	95	100	599	573	148	70	116	a110
26	137	122	90	65	90	110	561	508	144	70	118	a110
26	137	119	90	65	95	110	520	470	135	70	118	a100
27	137	116	90	65	100	120	486	432	129	70	120	a100
28	134	113	90	70	110	*121	459	395	135	73	130	a100
29	137	113	90	75	110	140	476	365	132	83	130	a100
30	140	110	85	60	-	180	508	341	129	76	140	a100
31	134	-	85	90	-	200	-	322	-	76	140	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	3,961	140	102	128	0.094	0.11
November	3,748	143	110	125	.092	.10
December	3,304	134	85	107	.079	.09
Calendar year 1939	179,421	5,000	85	492	.362	4.90
January	2,265	90	65	73.1	.054	.06
February	2,920	110	90	101	.074	.08
March	3,945	200	100	127	.093	.11
April	35,343	2,630	220	1,178	.866	.97
May	17,208	858	322	555	.408	.47
June	5,937	304	129	198	.146	.16
July	2,633	124	70	84.9	.062	.07
August	3,513	140	97	113	.083	.10
September	3,523	140	100	117	.086	.10
Water year 1939-40	88,300	2,630	65	241	.177	2.42

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of recorded range of stage and records for Elk River near Big Lake.
Note.- Stage-discharge relation affected by ice Nov. 30 to Dec. 15, Jan. 9 to Apr. 5. Backwater from aquatic vegetation Aug. 5 to Sept. 10; discharge computed on basis of one discharge measurement, gage heights, weather records, and records for Elk River near Big Lake, Minn.

Little Minnesota River near Peever, S. Dak.

Location.- Water-stage recorder, lat. 45°36'05", long. 96°52'18", in SW¼ sec. 13, T. 125 N., R. 50 W., 3¼ miles upstream from proposed Lake Traverse diversion, 5.3 miles northeast of Peever, S. Dak., 7¼ miles downstream from Jorgenson River, and 8 miles upstream from Big Stone Lake. Prior to Aug. 7, staff gage at site 100 feet downstream at same datum.

Drainage area.- 350 square miles.

Records available.- October 1939 to September 1940. April 1937 to September 1939 at site 4¼ miles downstream (miscellaneous discharge measurements only).

Extremes.- Maximum discharge observed during year, 420 second-feet Mar. 30 (gage height, 5.50 feet, affected by ice); no flow at times during year.

Remarks.- Records good except those for period of ice effect, which are fair, and those for periods of no gage-height record, which are poor. Staff gage read twice daily.

Rating tables, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 12				Apr. 13 to Sept. 30					
1.8	0	2.8	40	1.8	0	2.5	12.5	3.7	157
2.0	1.0	3.1	70	1.9	.2	2.8	33	4.0	238
2.2	3.8	3.3	96	2.0	.8	3.1	58	4.5	373
2.5	16.3	3.6	160	2.2	3.3	3.4	91		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							*b220	29	3.3	0.3	1.1	0.2
2					(*)		b180	25	3.0	.2	.3	.2
3							b110	24	2.3	.2	.3	.2
4							*b60	21	2.6	.2	.2	.1
5							b65	19	2.5	.1	.1	.1
6							b80	16	2.5	.1	.1	.1
7							b90	15	2.2	0	.1	.1
8	a0.1					a0.1	*b90	12	2.0	.2	.1	.4
9		a0.3				(*)	b95	11	2.0	.2	.1	.5
10							*b140	11	1.7	.2	.1	.4
11							128	8.9	1.7	1.0	.1	.3
12							80	8.0	1.5	.4	.1	.2
13							75	7.1	1.4	.2	.1	.3
14							62	9.4	1.2	.2	.1	.3
15	a.2		a0.1	a0	a0		58	12	.8	.1	.1	.3
16							59	26	.7	.1	.1	.4
17	a.1						51	24	.5	.1	.3	.4
18						a.2	49	20	.5	0	.4	.3
19	a.2						47	16	.5	0	.8	.3
20	a.3						41	15	.4	.1	.3	.3
21						b.3	40	14	.3	.1	.5	.3
22						b.3	38	12	.4	0	.5	.3
23		a.2				b.3	38	10	.5	.1	.4	.3
24						b.3	37	7.7	1.2	0	1.0	.3
25	a.4					b.3	32	7.1	.5	.1	.4	.4
26						b.3	28	6.2	.4	.2	.4	.5
27						*b.3	25	6.2	.4	.2	.4	.5
28						b6.5	29	5.4	.4	.2	.3	.5
29			(*)			b200	29	5.0	.4	.2	.3	.7
30	a.3				-	b320	35	4.4	a.4	.1	.3	.6
31		-			-	b300	-	3.8	-	0	.3	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	6.5	-	-	0.21	0.00060	0.0007	13
November	7.5	-	-	.25	.00071	.0008	15
December	3.1	-	-	.10	.00029	.0003	6.1
Calendar year	-	-	-	-	-	-	-
January	0	-	-	0	0	0	0
February	0	-	-	0	0	0	0
March	831.1	300	-	25.8	.077	.09	1,650
April	2,111	220	25	70.4	.201	.22	4,190
May	411.2	29	3.8	13.3	.038	.04	816
June	38.2	3.3	.3	1.27	.0036	.004	76
July	5.1	1.0	0	.16	.00046	.0005	10
August	9.7	1.1	.1	.31	.00089	.001	19
September	9.8	.7	.1	.32	.00091	.001	19
Water year 1939-40	3,433.2	300	0	9.38	.027	.3583	6,810

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of estimates of flow at Browns Valley.
b Stage-discharge relation affected by ice

Minnesota River at Ortonville, Minn.

Location.- Water-stage recorder, lat. 45°17'45", long. 96°26'40", in NW¼ sec. 16, T. 121 N., R. 46 W., 100 feet upstream from bridge on U. S. Highway 12, 1,000 feet downstream from concrete dam at outlet of Big Stone Lake, and half a mile southwest of Ortonville. Datum of gage is 956.38 feet (revised) above mean sea level (levels by Corps of Engineers, U. S. Army)

Drainage area.- 1,060 square miles (revised).

Records available.- February 1938 to September 1940.

Extremes.- Maximum discharge during year, 228 second-feet Apr. 11 (gage height, 4.12 feet); minimum, 0.1 second-foot for several days during winter.
1938-40: Maximum discharge observed, 385 second-feet Mar. 30, 1939 (gage height, 4.10 feet, site and datum then in use; minimum, that during winter of 1940.

Remarks.- Records good except those for periods of ice effect or backwater from aquatic growth, which are fair, and those below 3 second-feet, which are poor. Flow completely regulated by Big Stone Lake.

Revisions.- Revised figures of discharge for water year 1939, superseding those published in Water-Supply Paper 875, are given herein.

Discharge, in second-feet, 1938-40

1938-39

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							289	158	50	52	13	2.8
2							238	158	52	49	13	3.2
3							148	137	52	48	14	3.8
4							150	168	48	47	13	4.1
5							192	158	49	46	13	4.1
6						a0.2	103	156	49	42	13	4.5
7							126	161	52	39	14	3.6
8					a0.2		144	158	52	36	12	2.3
9							211	161	52	34	10	2.1
10							187	161	56	30	10	1.6
11							54	132	56	29	10	.9
12			a0.2				85	87	52	28	8.6	.7
13				a0.2		b.2	11	72	52	28	10	1.0
14						b.2	122	56	52	28	11	1.3
15						b.2	148	55	32	28	11	1.3
16	a0.2	a0.2				b.2	165	54	37	29	11	1.0
17					a*.2	b.2	161	53	36	28	11	1.2
18						b*.2	154	54	38	28	11	1.3
19						a55	175	54	41	28	11	1.5
20						b*95	228	54	27	27	8.6	1.6
21						b95	174	54	30	31	7.2	1.6
22			a*.2			b160	150	54	29	30	6.9	1.7
23					a.2	b180	175	71	26	30	6.5	1.6
24						b140	172	36	29	30	6.5	1.6
25						b120	164	44	32	30	6.5	1.7
26						b140	164	48	35	22	6.2	1.6
27			a.2	a*.2		*b170	164	50	47	14	5.8	1.6
28						b180	182	50	60	14	3.4	1.6
29				a.2		375	179	49	58	14	1.9	1.5
30					-	375	158	49	56	14	1.9	1.5
31					-	379	-	49	-	13	1.7	-

* Winter discharge measurement or estimate of low flow made on this day.
a Gage-height record faulty; discharge estimated.
b Stage-discharge relation affected by ice.
c Stage-discharge relation affected by aquatic vegetation; discharge computed on basis of two discharge measurements, gage heights, weather records, and engineers' notes.

Discharge, in second-feet, of Minnesota River at Ortonville, Minn., 1938-40--Continued

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.3	1.1	0.9	0.2	0.2	0.2	50	196	61	20	15	3.8
2	1.2	1.1	2.1	.1	*.2	.2	10	189	48	26	8.6	4.1
3	1.3	3.4	.7	.1	.2	.2	6.0	182	47	32	9.7	4.1
4	1.5	3.6	.9	.1	.2	.2	6.0	172	52	31	14	4.1
5	1.5	1.3	.7	.1	.2	.2	*55	207	59	32	7.6	3.8
6	1.3	2.8	.7	.2	.1	.2	100	186	59	41	4.5	4.1
7	1.6	1.9	.6	.2	.1	.2	100	182	60	36	7.3	4.1
8	1.6	1.0	.7	.2	.1	.2	*110	182	58	26	10	4.1
9	1.9	1.0	.5	.2	.1	*.2	*120	178	56	41	6.4	4.8
10	2.1	1.0	.4	.2	.2	.2	200	176	46	34	3.4	4.8
11	1.5	.9	.5	.2	.3	.2	207	161	50	32	3.4	4.1
12	1.5	.7	.5	.2	.2	.2	219	192	27	30	3.6	4.5
13	1.6	.9	.4	.2	.2	.2	*211	189	20	31	3.8	4.8
14	1.5	.9	.4	.2	.2	.2	196	207	21	27	3.8	3.8
15	1.1	.7	.4	.2	.2	.2	175	200	22	21	3.8	3.8
16	1.5	.6	.4	.1	.2	.3	196	189	18	26	3.2	3.8
17	1.6	1.0	.4	.1	.2	.3	219	189	19	26	2.8	4.5
18	2.1	3.0	.4	.1	.2	.4	215	154	22	25	2.5	5.8
19	1.3	1.2	.4	.1	.2	.3	211	168	22	22	1.9	5.8
20	2.1	2.8	.3	.2	.2	.2	207	144	20	16	1.7	5.6
21	2.8	2.1	.3	.2	.1	.2	186	168	18	12	1.7	5.6
22	1.3	3.2	.3	.3	.1	.1	196	168	19	11	1.3	5.6
23	1.2	1.2	.3	.2	.1	.1	111	164	18	14	1.3	5.6
24	1.9	1.3	.2	.1	.1	.1	89	164	16	15	1.9	5.6
25	1.5	3.0	.2	.1	.1	.2	132	164	18	20	1.5	5.6
26	.6	1.1	.2	.1	.1	.2	182	164	19	14	1.7	5.2
27	.5	1.3	.2	.2	.1	.2	164	138	22	11	3.0	5.6
28	1.2	.5	.2	.2	.1	11	186	147	20	11	3.0	5.6
29	1.6	*.5	*.2	.2	.1	26	192	144	18	12	3.2	5.6
30	1.1	.5	.2	.2	-	32	200	141	18	15	4.8	5.6
31	3.2	-	.2	.2	-	80	-	135	-	12	4.5	-

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 19 to Apr. 9. Stage-discharge relation affected by backwater from aquatic vegetation Oct. 1 to Nov. 7, June 17 to July 20, Aug. 30 to Sept. 30; discharge computed on basis of two discharge measurements, gage heights, weather records, and engineers' notes.

Monthly discharge, in second-feet, 1938-40

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October 1938	6.2	-	-	0.2	12
November	6.0	-	-	.2	12
December	6.2	-	-	.2	12
Calendar year 1938	-	-	-	-	-
January 1939	6.2	-	-	.2	12
February	5.6	-	-	.2	11
March	2,467.6	379	-	79.6	4,890
April	4,773	289	11	159	9,470
May	2,803	168	36	90.4	5,560
June	1,337	60	26	44.5	2,650
July	946	52	13	30.5	1,880
August	282.7	14	1.7	9.12	561
September	59.9	4.5	.7	2.00	119
Water year 1938-39	12,699.4	379	-	34.8	25,189
October 1939	48.0	3.2	0.5	1.55	95
November	45.6	3.6	.5	1.52	90
December	14.8	2.1	.2	.48	29
Calendar year 1939	12,789.4	379	-	35.0	25,367
January 1940	5.2	.3	.1	.17	10
February	4.6	.3	.1	.16	9.1
March	154.6	80	.1	4.99	307
April	4,451.0	219	6	148	8,828
May	5,342	207	135	172	10,600
June	973	61	16	32.4	1,930
July	722	41	11	23.3	1,430
August	144.9	15	1.3	4.67	287
September	143.9	5.8	3.8	4.80	285
Water year 1939-40	12,049.6	219	.1	32.9	23,900

Minnesota River at Montevideo, Minn.
(Formerly published as Minnesota River near Montevideo, Minn.)

Location.- Water-stage recorder and concrete control, lat. 44°56', long. 95°43', in sec. 19, T. 117 N., R. 40 W., at bridge on U. S. Highway 212, across river from Montevideo and 500 feet below Chippewa River. Datum of gage is 910.87 feet above mean sea level (general adjustment of 1912).

Drainage area.- 6,090 square miles (revised).

Records available.- July 1909 to September 1940.

Average discharge.- 31 years, 455 second-feet.

Extremes.- Maximum discharge during year, 2,220 second-feet Apr. 10 (gage height, 10.29 feet); minimum, 11 second-feet Dec. 13 (gage height, 1.92 feet, affected by debris on control).

1909-40: Maximum discharge, 22,000 second-feet June 25, 1919 (gage height, about 18.85 feet, from floodmarks) computed by A. F. Meyer, consulting engineer, Minneapolis, Minn.; no flow for several days in 1933, 1934, and 1936.

Remarks.- Records excellent except those affected by backwater, which are good, and those for periods of no gage-height record, which are poor. Flow regulated by Lac qui Parle and Big Stone and several smaller lakes above gage.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	16	21		*19		750	555	236	38	48	36
2	24	16	18		17		900	555	229	38	37	34
3	24	16	19		17		1,000	555	222	38	34	33
4	25	17	20		16	a23	1,300	555	205	37	32	33
5	26	17	21		16		*1,700	567	205	37	32	32
				a15								
6	22	16	20		16		1,700	567	210	36	30	31
7	21	16	21		17		1,900	567	210	38	30	31
8	20	16	19		17	*22	2,120	555	210	38	30	30
9	21	16	19		18	22	2,170	555	210	37	30	32
10	20	16	21		18	22	2,220	543	205	38	30	31
11	16	16	21		19	20	2,170	543	205	39	31	31
12	15	16	20		22	20	2,080	555	205	37	32	31
13	15	16	16		22		2,040	555	205	37	33	31
14	16	16	21		24	a20	1,990	639	200	38	33	30
15	16	16	21		24		1,910	687	197	37	33	31
				a17								
16	16	16	22		24		1,870	687	190	34	34	31
17	16	17	22		24		1,830	687	190	36	41	32
18	16	17	21		24		1,830	687	192	36	39	31
19	16	16	20		24	a24	1,670	687	157	36	32	30
20	16	18	20		24		1,590	687	113	36	31	30
21	16	19	19		24		1,520	663	86	36	30	27
22	16	18	20		24	24	1,480	663	64	34	30	28
23	16	19	20		24	19	1,450	663	69	36	31	38
24	17	20	19			16	1,330	663	74	36	39	56
25	18	20	19	a15		16	1,110	579	55	36	38	46
26	17	20	20		23	16	817	531	49	37	36	39
27	17	20	20			16	687	495	46	36	38	30
28	17	20	*20			24	591	415	42	36	52	30
29	17	20	19			200	567	361	38	34	45	30
30	16	20	19	20	-	600	555	258	39	33	38	30
31	16	-	a19	20	-	*700	-	236	-	33	36	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	568	26	15	18.3		-	1,130
November	522	20	16	17.4		-	1,040
December	617	22	16	19.9		-	1,220
Calendar year 1939	70,537.5	-	-	193		0.42	140,705
January	525	-	-	16.9		-	1,040
February	612	-	16	21.1		-	1,210
March	2,102	700	-	67.8		-	4,170
April	44,837	2,220	555	1,495		-	88,930
May	17,515	687	236	565		-	34,740
June	4,558	236	38	152		-	9,040
July	1,128	39	33	36.4		-	2,240
August	1,085	52	30	35.0		-	2,150
September	985	56	27	32.8		-	1,950
Water year 1939-40	75,054	2,220	15	205		.46	148,860

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and reports of outflow from Lac qui Parle.

Note.- Stage-discharge relation affected by ice Dec. 22-30, Jan. 30 to Feb. 23, Mar. 8-12, Mar. 22 to Apr. 7. Backwater from debris on control Oct. 5 to Dec. 21, Aug. 17 to Sept. 30; discharge computed on basis of four discharge measurements and gage heights.

Minnesota River at Judson, Minn.

Location.- Chain gage, lat. 44°12', long. 94°11', in sec. 33, T. 109 N., R. 28 W., on bridge three-quarters of a mile north of Judson and 11 miles upstream from Blue Earth River. Datum of gage is 700.00 feet above mean sea level (general adjustment of 1912). Prior to Oct. 1, 1939, at datum 0.43 foot higher.

Drainage area.- 11,100 square miles (revised).

Records available.- June 1938 to September 1940.

Extremes.- Maximum daily discharge during year, 3,460 second-feet Apr. 11, 12; maximum gage height, 71.04 feet Apr. 11, from graph based on gage readings; minimum daily discharge, 17 second-feet Jan. 25-27; minimum gage height observed, 61.68 feet, Oct. 9, Nov. 13, 14.

1938-40: Maximum daily discharge, that of Apr. 11, 12, 1940; minimum daily, that of Jan. 25-27, 1940.

Remarks.- Records good except those for periods of ice effect, which are poor. Gage read once daily.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 1

61.4	17	62.6	204
61.8	59	63.0	312
62.2	122	63.1	340

Apr. 2 to Sept. 30

61.9	63	63.6	456	66.0	1,341	71.1	3,510
62.2	114	64.0	621	67.0	1,701		
62.6	180	64.5	801	68.0	2,090		
63.0	312	65.0	981	70	2,960		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50	60	60	46	26	40	*550	1,410	657	284	127	270
2	50	62	*60	44	26	42	1,000	1,230	586	257	108	284
3	51	59	55	44	26	46	1,400	1,160	552	244	89	326
4	50	60	65	40	26	46	1,800	1,050	621	230	87	326
5	54	60	60	40	28	46	2,130	981	487	192	120	284
6	55	60	60	40	26	*46	*2,510	981	487	204	92	284
7	51	56	60	44	24	60	2,960	909	425	192	79	257
8	49	56	71	44	24	65	3,110	873	456	180	74	230
9	44	55	66	46	20	70	3,260	873	396	146	79	217
10	64	56	71	46	22	70	3,560	837	425	157	120	204
11	66	50	72	46	26	70	3,460	801	425	146	114	168
12	68	46	71	44	26	70	3,460	765	425	146	108	157
13	68	44	65	40	24	70	3,410	765	425	133	114	146
14	71	44	65	38	24	70	3,310	801	425	146	110	146
15	66	52	65	36	24	70	3,160	801	425	157	116	135
16	68	59	65	32	28	75	3,010	801	368	157	89	122
17	66	64	70	28	30	80	2,780	765	340	146	87	118
18	66	71	75	24	30	80	2,740	801	340	131	129	110
19	64	71	70	22	46	85	2,600	837	340	114	135	106
20	65	66	65	22	48	85	2,470	837	312	110	136	102
21	64	56	60	22	48	80	2,340	837	298	102	120	96
22	62	54	60	20	44	75	2,300	837	298	96	116	91
23	64	52	55	19	42	70	2,260	837	396	91	112	92
24	64	60	55	18	42	65	2,130	837	487	92	135	94
25	64	64	55	17	32	66	2,010	837	425	94	135	87
26	64	60	*55	17	28	65	1,970	801	354	89	131	86
27	64	56	65	17	40	65	1,930	801	326	80	135	79
28	64	54	55	18	44	90	1,810	765	426	77	146	77
29	64	54	55	19	40	140	1,740	765	519	76	244	76
30	65	60	50	22	-	240	1,630	729	426	73	244	77
31	64	-	50	*26	-	340	-	693	-	84	230	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	1,889	71	44	60.9	0.0055	0.006	3,750
November	1,721	71	44	57.4	.0052	.006	3,410
December	1,906	76	50	61.6	.0055	.006	3,780
Calendar year 1939	136,968	3,150	39	375	.034	.45	271,700
January	981	46	17	31.6	.0028	.003	1,960
February	914	48	20	31.6	.0028	.003	1,810
March	2,581	340	40	83.3	.0075	.008	5,120
April	72,600	3,460	550	2,420	.218	.24	144,000
May	27,017	1,410	693	872	.079	.09	53,590
June	12,870	657	298	429	.039	.04	25,530
July	4,426	284	73	143	.013	.01	8,760
August	3,860	244	74	125	.011	.01	7,660
September	4,847	326	76	162	.015	.02	9,610
Water year 1939-40	135,612	3,460	17	371	.033	.44	269,000

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Nov. 28 to Dec. 6, Dec. 13 to Apr. 4.

Minnesota River at Mankato, Minn.

Location.- Water-stage recorder, lat. 44°11', long. 94°00', in sec. 7, T.108 N., R. 26 W., at Main Street Bridge in Mankato, 2 miles downstream from Blue Earth River. Datum of gage is 747.92 feet above mean sea level (general adjustment of 1929).

Records available.- March 1922 to September 1940. May 1903 to October 1921 at site 1.8 miles upstream from present site and 1,000 feet downstream from Blue Earth River.

Average discharge.- 37 years, 2,130 second-feet.

Extremes.- Maximum discharge during year, 3,930 second-feet Apr. 11 (gage height, 7.59 feet); minimum, 37 second-feet Dec. 16 (gage height, 1.50 feet, from graph based on gage readings).

1903-40: Maximum discharge, 43,800 second-feet June 26, 1908 (gage height, 21.2 feet, site and datum then in use); minimum, 26 second-feet Aug. 4, 1934.

Maximum stage known, about 27 feet in 1881, original site (discharge, about 65,000 second-feet).

Remarks.- Records good except those for period of ice effect, which are fair. Diurnal fluctuation caused by power plant on Blue Earth River.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 28				Mar. 29 to Sept. 30					
1.5	37	2.2	165	1.8	113	3.5	764	6.0	2,650
1.6	52	2.5	232	2.0	150	4.0	1,090	7.5	3,850
1.8	86	2.8	321	2.5	270	4.5	1,450		
2.0	124			3.0	464	5.0	1,850		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	88	99	120	86	50	150	*1,490	1,610	783	68[illegible]	154	1,370
2	84	150	150	85	55	150	2,490	1,410	738	66[illegible]	164	1,200
3	84	99	77	85	55	160	3,370	1,260	669	54[illegible]	150	1,120
4	99	92	116	80	55	170	2,730	1,200	1,060	45[illegible]	156	1,020
6	118	90	144	80	60	*140	2,730	1,090	828	36[illegible]	192	956
6	101	90	105	80	60	144	3,050	1,060	719	344	152	692
7	92	94	114	75	60	169	3,210	1,060	796	32[illegible]	140	638
8	88	94	111	75	50	182	3,450	1,020	2,810	27[illegible]	131	526
9	92	109	152	80	50	180	3,530	988	1,890	25[illegible]	133	395
10	101	142	107	80	46	180	3,610	968	1,890	23[illegible]	174	520
11	101	97	107	80	48	109	3,770	956	1,930	23[illegible]	181	404
12	103	97	113	70	46	118	3,770	892	1,630	22[illegible]	247	860
13	109	96	79	70	48	190	3,770	828	1,300	211	560	1,020
14	111	103	122	65	46	188	3,610	892	1,200	20[illegible]	746	828
15	144	144	105	60	48	169	3,450	924	988	21[illegible]	387	706
16	101	99	81	55	50	161	3,450	892	738	21[illegible]	369	614
17	97	99	154	50	55	109	3,290	860	644	22[illegible]	391	537
18	103	103	122	44	60	120	2,970	860	688	20[illegible]	505	398
19	134	107	99	44	65	171	2,810	892	532	18[illegible]	273	362
20	97	116	118	42	72	120	2,730	924	464	17[illegible]	297	347
21	94	150	97	42	70	126	2,570	924	459	16[illegible]	237	343
22	94	105	132	44	75	167	2,490	924	475	15[illegible]	245	296
23	91	107	92	44	70	126	2,490	892	860	14[illegible]	229	207
24	99	105	124	46	70	114	2,330	892	1,260	14[illegible]	335	333
25	134	116	98	44	65	130	2,250	924	1,200	14[illegible]	453	330
26	96	150	*132	44	60	314	2,090	924	924	14[illegible]	310	262
27	105	103	114	46	60	298	2,010	860	815	13[illegible]	326	230
28	134	97	138	50	70	254	1,970	892	1,090	12[illegible]	751	230
29	97	105	114	50	75	689	1,890	892	1,060	12[illegible]	1,650	177
30	92	94	96	55	-	1,160	1,730	860	802	12[illegible]	1,650	148
31	96	-	90	55	-	1,200	-	790	-	12[illegible]	1,530	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	3,182	144	84	103	0.0070	0.008	6,310
November	3,252	150	90	108	.0073	.008	6,450
December	3,521	154	77	114	.0077	.009	6,980
Calendar year 1939	320,733	8,900	77	879	.059	.853	636,200
January	1,906	86	42	61.5	.0042	.005	3,780
February	1,694	75	46	58.4	.0039	.004	3,360
March	7,658	1,200	109	247	.017	.02	15,190
April	85,100	3,770	1,490	2,837	.192	.21	168,800
May	30,380	1,610	790	980	.066	.08	60,260
June	31,142	2,810	459	1,038	.070	.08	61,770
July	7,784	681	126	251	.017	.02	15,440
August	13,217	1,650	131	426	.029	.03	26,220
September	17,269	1,370	148	576	.039	.04	34,250
Water year 1939-40	206,105	3,770	42	563	.038	.514	408,800

Peak discharge.- Apr. 11 (10 p.m.) 3,930 sec.-ft.; June 8 (8 to 9:30 a.m.) 3,230 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice. Dec. 31, Jan. 2 to Feb. 18, Feb. 23 to Mar. 4, Mar. 9, 10, 13.

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Minnesota River near Carver, Minn.

Location.- Water-stage recorder, lat. 44°44', long. 93°38', in sec. 31, T. 115 N., R. 23 W., 3 miles south of Carver and 37 miles upstream from mouth. Datum of gage is 690.00 feet above mean sea level (general adjustment of 1912). Auxiliary wire-weight gage, lat. 44°48'00", long. 93°31'40" in NE¼ sec. 1, T. 115 N., R. 23 W. in Shakopee, 11 miles downstream. Datum of gage is 684.40 feet above mean sea level (general adjustment of 1912).

Drainage area.- 16,100 square miles (revised).

Records available.- September 1934 to September 1940.

Extremes.- Maximum daily discharge during year, 3,560 second-feet Apr. 14; maximum gage height, 7.74 feet Apr. 12; minimum discharge, 118 second-feet Jan. 6-10 (gage height, 2.69 feet).

1934-40: Maximum discharge, 23,200 second-feet Mar. 25, 1936; maximum gage height, 22.43 feet Mar. 26, 1936; minimum discharge, 104 second-feet Jan. 23, 1935; minimum gage height, 2.66 feet Nov. 22, 1935.

Remarks.- Records excellent except those for periods of ice effect, which are fair. Auxiliary gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	199	209	209	154	110	150	2,320	2,060	917	1,350	476	1,520
2	187	199	209	151	120	150	2,150	1,990	872	1,090	331	1,460
3	191	199	204	132	120	160	2,300	1,670	861	975	331	1,360
4	187	213	187	128	130	166	2,890	1,520	963	895	331	1,230
5	204	228	209	125	132	183	2,910	1,410	1,070	794	476	1,160
6	199	213	223	121	132	209	2,750	1,320	1,180	710	391	1,100
7	209	209	242	118	136	233	2,840	1,220	1,040	620	369	1,060
8	218	204	237	118	140	233	3,050	1,200	1,020	582	324	963
9	218	204	223	118	130	240	3,130	1,160	1,620	554	294	839
10	218	204	218	118	120	240	3,200	1,130	2,340	518	273	699
11	213	199	228	120	110	220	3,310	1,130	2,130	484	268	620
12	199	213	233	130	110	190	3,370	1,100	2,110	484	284	640
13	199	223	209	130	100	180	3,520	1,040	2,010	484	300	620
14	204	209	162	120	100	180	3,560	998	1,620	443	355	872
15	209	204	174	120	110	200	3,500	975	1,430	413	620	952
16	209	204	199	110	110	228	3,370	1,020	1,290	391	720	895
17	218	213	242	110	120	270	3,290	1,010	1,120	369	600	816
18	223	223	233	100	130	293	3,210	975	917	369	659	710
19	213	213	233	95	140	293	3,100	963	839	369	620	659
20	209	204	218	90	150	260	2,960	983	689	369	600	573
21	223	204	154	85	150	260	2,810	963	720	337	468	518
22	223	204	170	85	158	240	2,700	975	679	324	427	501
23	209	223	174	90	150	240	2,590	975	929	306	405	493
24	204	228	183	90	150	220	2,540	963	1,490	289	384	460
25	204	213	199	90	150	240	2,490	963	2,130	284	398	369
26	204	a209	195	90	140	220	2,410	963	2,120	268	484	427
27	218	204	195	90	140	240	2,330	975	1,720	263	610	435
28	223	218	191	95	140	242	2,260	975	1,490	273	820	405
29	209	228	183	95	140	417	2,220	963	1,520	289	720	377
30	218	213	170	100	-	1,050	2,100	963	1,570	268	1,070	362
31	223	-	166	110	-	2,350	-	952	-	268	1,480	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	6,484	223	187	209	0.013	0.01	12,860
November	6,331	228	199	211	.013	.01	12,560
December	6,272	242	154	202	.013	.01	12,440
Calendar year 1939	397,528	8,500	154	1,089	.0676	.91	788,600
January	3,428	154	85	111	.0069	.008	6,800
February	3,768	158	100	130	.0081	.009	7,470
March	9,997	2,350	150	322	.020	.02	19,830
April	85,180	3,560	2,100	2,840	.176	.20	169,000
May	35,484	2,060	952	1,145	.071	.08	70,380
June	40,406	2,340	679	1,347	.084	.09	80,140
July	15,432	1,350	263	498	.031	.04	30,610
August	15,688	1,480	268	506	.031	.04	31,120
September	23,095	1,520	362	770	.048	.05	45,810
Water year 1939-40	251,565	3,560	85	687	.043	.567	499,000

a No gage-height record; discharge interpolated.

Note.- Stage-discharge, or slope-stage-discharge relation affected by ice Jan. 11 to Feb. 4, Feb. 9 to Mar. 3, Mar. 9-15, 20-21, Mar. 30 to Apr. 3. Discharge Mar. 31 to May 2, June 10-13, 25, 26 computed by using fall as determined by gage heights from graph based on once-daily readings of auxiliary staff gage as a factor.

Whetstone River near Big Stone, S. Dak.

Location.- Water-stage recorder, lat. 45°17', long. 96°29', in sec. 18, T. 121 N., R. 46 W., 1½ miles west of Big Stone and 2 miles upstream from Big Stone Lake. Datum of gage is 996.96 feet above mean sea level (general adjustment of 1912).

Drainage area.- 389 square miles (revised).

Records available.- March 1910 to November 1912 (at site 2 miles downstream) and March 1931 to September 1940 in reports of Geological Survey. April 1899 to May 1904 and March 1910 to November 1912 (at site 2 miles downstream) in publication of State Drainage Commission of Minnesota entitled, "Report of water resources investigations of Minnesota" for 1909-12. Records incomplete for some winters.

Extremes.- Maximum daily discharge during year, 1,000 second-feet Mar. 31; maximum gage height, 7.92 feet Mar. 30, affected by ice; minimum daily discharge, 0.1 second-foot on several days in January and February.

1910-12, 1931-40: Maximum discharge observed, 2,900 second-feet May 21, 1937 (gage height, 10.10 feet), from rating curve extended above 1,700 second-feet; no flow at times in most years.

Maximum stage known, 26 feet, present datum, in June 1919, from information by a local resident.

Remarks.- Records good except those for periods of shifting control, ice effect, or no gage-height record, which are fair.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.6	1.3	1.9	0.7	0.3	0.8	*900	23	4.1	2.0	2.8	3.6
2	.7	1.3	1.8	.7	.3	.9	460	21	3.6	1.6	2.4	3.2
3	.6	1.4	2.0	.6	.3	.9	320	19	3.2	1.5	1.8	3.7
4	.6	1.3	2.1	.6	.3	.9	220	16	4.1	1.3	1.4	3.6
5	.7	1.4	2.1	.5	.2	.9	*170	14	3.7	.9	1.4	2.8
6	.7	1.4	2.0	.4	.2	.9	110	13	3.7	.7	1.0	2.2
7	.7	1.4	1.9	.4	.2	1.0	65	11	3.7	.8	.9	1.9
8	.7	1.5	1.9	.4	.1	1.0	120	11	3.6	.8	.7	1.6
9	.8	1.4	1.9	.4	.1	*.9	*150	9.8	3.7	.8	.8	1.6
10	.8	1.3	2.0	.4	.1	.8	120	9.4	3.2	1.2	1.2	1.4
11	.9	1.3	2.0	.4	.2	.8	85	8.7	3.0	1.8	.9	1.2
12	1.0	1.4	1.8	.3	.2	.7	60	7.9	2.8	1.6	.8	1.0
13	1.3	1.4	1.8	.3	.4	.7	*60	7.9	2.5	1.4	1.0	.8
14	1.0	1.6	1.9	.2	.7	.6	57	12	2.2	1.9	.9	.8
15	1.0	1.6	1.9	.2	.6	.7	49	11	2.0	1.8	.9	.8
16	1.0	1.6	1.8	.2	.4	1.3	a46	13	1.8	2.0	2.3	.8
17	1.0	1.8	1.8	.1	.4	2.0	a44	13	1.5	1.6	2.8	.8
18	1.0	1.8	1.8	.1	.4	2.8	a42	20	1.3	1.4	2.7	.7
19	1.3	1.8	1.5	.2	.5	4.0	a40	18	1.3	1.0	2.0	.7
20	1.3	1.8	1.6	.2	.6	3.4	a38	14	1.0	.7	1.5	.6
21	1.3	1.0	1.5	.2	.6	2.6	a36	11	.9	.6	1.2	.5
22	1.5	1.8	1.4	.2	.6	2.2	a34	9.4	1.1	.6	1.3	.5
23	1.3	1.8	1.3	.2	.5	2.0	32	9.1	2.8	.6	1.5	.9
24	1.3	1.9	1.3	.2	.4	1.9	36	7.9	5.1	.4	3.1	.4
25	1.3	1.8	1.3	.1	.4	2.2	38	7.2	4.8	.3	2.6	.4
26	1.3	1.8	1.3	.1	.5	2.6	34	7.0	4.1	a.4	2.2	.4
27	1.3	1.8	1.2	.2	.6	3.2	28	6.8	3.4	a.5	2.4	.5
28	1.3	1.9	1.2	.2	.7	80	27	6.5	3.0	a.5	2.8	.5
29	1.3	*1.9	*1.0	.2	.7	320	25	6.2	2.6	a.5	2.8	.7
30	1.3	1.9	1.0	.3	-	750	24	5.5	2.4	a.4	2.8	.7
31	1.3	-	.9	.3	-	1,000	-	4.8	-	a.3	3.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	32.2	1.5	0.6	1.04	0.0027	0.003	64
November	48.2	1.9	1.3	1.61	.0041	.005	96
December	50.9	2.1	.9	1.64	.0042	.005	101
Calendar year 1939	6,243.5	1,200	-	17.1	.044	.55	12,390
January	9.5	.7	.1	.31	.00080	.0009	19
February	11.5	.7	.1	.40	.0010	.001	23
March	2,192.7	1,000	.6	70.7	.182	.21	4,350
April	3,470	900	24	116	.298	.33	6,880
May	354.1	23	4.8	11.4	.029	.03	702
June	86.2	5.1	.9	2.87	.0074	.008	171
July	31.9	2.0	.3	1.03	.0026	.003	63
August	55.9	3.1	.7	1.80	.0046	.005	111
September	39.0	3.7	.4	1.30	.0033	.004	77
Water year 1939-40	6,382.1	1,000	.1	17.4	.045	.60	12,660

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Little Minnesota River near Peever, S. Dak.

Note.- Stage-discharge relation affected by ice Dec. 2, 12, 13, Dec. 19 to Apr. 13. Backwater from debris on control Oct. 1 to Dec. 1, Dec. 3-11, 14-18; discharge computed on basis of gage heights, one discharge measurement, and observer's notes.

Yellow Bank River near Odessa, Minn.

Location.- Water-stage recorder, lat. 45°13', long. 96°21', in SE¼ sec. 1, T. 120 N., R. 46 W., 150 feet downstream from highway bridge, 2¼ miles southwest of Odessa, and 4¾ miles upstream from Minnesota River. Prior to Aug. 14, wire-weight gage at site 150 feet upstream at same datum.

Drainage area.- 398 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 1,140 second-feet Apr. 1 (gage height, 9.46 feet, from graph based on gage readings); no flow Jan. 26 to Feb. 8.

Remarks.- Records good except those below 5 second-feet, and those for period of no gage-height record or backwater, which are poor. Gage read twice daily, Oct. 13 to Aug. 28.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		1.0	2.0	0.8	*0	0.7	*1,060	32	6.6	3.1	6.0	2.3
2		1.0	1.9	.7	0	.7	604	32	5.5	2.6	2.8	1.9
3		1.1	1.7	.6	0	.8	*398	31	6.4	2.1	1.5	1.8
4		1.0	1.9	.6	0	.9	340	30	7.6	1.8	1.3	1.5
5	a0.6	1.1	2.0	.5	0	1.0	300	29	7.3	1.5	1.0	1.3
6		1.1	1.9	.4	0	1.0	240	25	8.7	1.3	.9	1.2
7		1.1	2.0	.4	0	1.0	*140	23	7.3	1.2	.8	1.0
8		1.0	1.9	.4	0	1.0	130	21	6.4	1.5	.7	1.2
9		1.2	2.0	.4	.1	*1.0	*121	20	7.6	1.4	.7	1.2
10	a.7	1.1	2.0	.4	.2	.9	111	20	7.8	1.0	.7	1.0
11		1.0	1.8	.4	.3	.9	96	18	6.9	1.3	.7	.9
12		1.0	1.8	.3	.4	.8	71	17	6.0	1.6	.7	.8
13	1.0	1.2	1.4	.3	.5	.7	66	18	5.2	1.7	.7	.8
14	.9	1.5	1.2	.2	.6	.6	66	20	4.3	2.8	.7	.7
15	1.0	1.6	1.5	.2	.5	.6	62	18	3.8	2.1	.8	.7
16	1.1	1.5	2.0	.1	.6	.9	55	18	3.6	1.5	1.2	.8
17	1.2	1.7	2.0	.1	.4	1.2	49	17	3.3	1.3	1.1	.8
18	1.2	1.6	2.2	.1	.4	1.8	44	16	2.6	1.2	1.3	.7
19	1.1	1.6	2.0	.1	.4	2.6	39	16	2.0	1.0	1.2	.6
20	1.1	1.6	1.8	.1	.4	2.2	36	14	2.1	.8	.9	.5
21	1.2	1.6	1.6	.1	.4	1.8	36	13	2.1	.7	.8	.5
22	1.3	1.5	1.5	.1	.3	1.5	37	10	2.5	.7	.7	.5
23	1.2	1.6	1.2	.1	.4	1.3	37	9.5	5.2	.7	.8	.5
24	1.1	1.7	1.0	.1	.5	1.2	40	9.5	7.3	.5	1.3	.4
25	1.2	1.7	1.0	.1	.6	1.4	42	8.7	7.8	.5	1.2	.4
26	1.1	1.8	1.0	0	.7	1.7	42	8.2	7.3	.4	1.2	.3
27	1.2	1.8	.9	0	.7	2.0	37	e.2	5.5	.4	1.5	.3
28	*1.2	1.7	.9	0	.6	18	38	7.8	5.2	.3	5.5	.3
29	1.1	*1.9	*1.0	0	.7	180	37	7.3	4.8	.3	4.3	.3
30	1.0	1.9	.9	0	-	380	34	6.9	3.7	.3	3.8	.2
31	.9	-	.9	0	-	700	-	6.4	-	.5	3.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	28.7	1.3	-	0.93	0.0023	0.003	57
November	42.2	1.9	1.0	1.41	.0035	.004	84
December	48.9	2.2	.9	1.58	.0040	.005	97
Calendar year	-	-	-	-	-	-	-
January	7.6	.8	0	.25	.00063	.0007	15
February	9.7	.7	0	.33	.00083	.0009	19
March	1,310.2	700	.6	42.3	.106	.12	2,600
April	4,408	1,060	34	147	.369	.41	8,740
May	530.5	32	6.4	17.1	.043	.05	1,050
June	162.4	8.7	2.0	5.41	.014	.02	322
July	38.1	3.1	.3	1.23	.0031	.004	76
August	50.0	6.0	.7	1.61	.0040	.005	99
September	25.4	2.3	.2	.85	.0021	.002	50
Water year 1939-40	6,661.7	1,060	0	18.2	.046	.62	13,209

* Winter discharge measurement or observation of no flow made on this day.
a No gage-height record; discharge computed on the basis of weather records and records for stations on nearby streams.

Note.- Stage-discharge relation affected by ice Oct. 27 to Mar. 31, Apr. 4-8. Backwater from debris Oct. 13-26, Apr. 17-25, July 1-4, July 17 to Aug. 1, Sept. 21-30; discharge computed on basis of three discharge measurements, gage heights, and observations by engineers.

Pomme de Terre River near Appleton, Minn.

Location.- Staff gage, lat. 45°14', long. 95°59', in NE¼ sec. 1, T. 120 N., R. 43 W., 3 miles northeast of Appleton and 5 miles upstream from mouth.

Drainage area.- 885 square miles (revised).

Records available.- March 1931 to September 1940.

Extremes.- Maximum daily discharge during year, 500 second-feet Apr. 2; maximum gage height observed, 5.34 feet Apr. 2 (affected by ice); no flow Jan. 10 to Mar. 27.
1931-40: Maximum daily discharge, 850 second-feet Mar. 23, 1939; maximum gage height observed, 6.42 feet Mar. 21, 1936; no flow during several periods.

Remarks.- Records good except those for period of ice effect, which are poor. Flow regulated by lakes and dams above gage. Gage read twice daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	10	13	6.0	(*)	0	420	112	29	10	7.0	9.8
2	9.2	9.0	12	6.0		0	*500	112	31	9.8	11	9.4
3	8.0	8.5	11	5.5		0	440	105	28	9.4	15	8.8
4	8.6	11	13	4.6		0	260	98	28	9.4	13	9.4
5	9.2	13	13	3.4		0	*240	90	26	9.2	13	9.0
6	11	13	13	2.6		0	260	90	28	9.0	9.8	8.4
7	12	10	13	2.0		0	280	90	28	9.4	9.4	8.0
8	9.2	12	13	1.6		*0	320	80	25	9.8	8.0	8.4
9	11	10	13	1.0		0	*320	72	26	9.8	7.4	11
10	12	12	12	0		0	320	69	26	10	7.4	12
11	11	11	12	0		0	220	64	20	11	8.4	10
12	11	10	10	0		0	293	62	20	11	9.0	9.4
13	11	11	10	0		0	*293	57	18	10	9.0	8.8
14	11	12	10	0		0	240	69	16	9.4	8.4	9.0
15	10	13	8.5	0		0	179	84	14	9.0	8.4	9.4
16	10	13	10	0		0	128	90	13	8.6	8.0	13
17	10	12	10	0		0	105	78	12	9.4	11	13
18	10	12	8.5	0		0	91	65	9.8	9.4	11	11
19	10	10	6.5	0		0	91	60	9.8	9.4	9.4	11
20	10	11	7.0	0		0	98	56	9.4	7.8	8.8	9.8
21	10	11	7.5	0		0	105	53	9.8	7.4	8.4	9.4
22	10	10	8.0	0		0	105	52	11	6.6	7.6	9.4
23	10	11	8.0	0		0	105	59	13	7.0	8.8	8.7
24	10	*12	7.5	0		0	112	57	14	6.8	12	8.7
25	10	12	7.5	0		0	112	44	13	7.0	13	8.4
26	10	12	7.0	0		0	105	42	13	8.0	11	9.1
27	10	10	7.0	0		0	105	38	12	8.2	11	8.7
28	10	10	6.5	0		1.9	98	35	12	8.2	11	8.1
29	10	10	*6.5	0		17	105	33	11	8.0	11	8.1
30	10	12	6.5	0	-	70	105	30	11	7.0	11	8.7
31	10	-	6.5	0	-	200	-	31	-	6.6	10	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	314.2	12	8.0	10.1	0.011	0.01	623
November	333.5	13	8.5	11.1	.013	.01	661
December	297.0	13	6.5	9.58	.011	.01	589
Calendar year 1939	17,097.6	850	-	46.8	.0529	.67	33,916
January	32.7	6.0	0	1.05	.0012	.001	65
February	0	0	0	0	0	0	0
March	288.9	200	0	9.32	.011	.01	573
April	6,155	500	91	205	.232	.26	12,210
May	2,077	112	30	67.0	.076	.09	4,120
June	536.8	31	9.4	17.9	.020	.02	1,060
July	271.6	11	6.6	8.76	.0099	.01	539
August	307.2	15	7.0	9.91	.011	.01	609
September	285.9	13	8.0	9.53	.011	.01	567
Water year 1939-40	10,899.8	500	0	29.8	.0337	.44	21,616

* Winter discharge measurement or observation of no flow made on this day.
Note.- Stage-discharge relation affected by ice Nov. 1 to Apr. 9. Backwater from aquatic vegetation Oct. 1 to Dec. 12, May 27 to Sept. 20; discharge computed on basis of gage heights, and six discharge measurements.

Lac qui Parle River near Lac qui Parle, Minn.

Location.- Water-stage recorder, lat. 45°00', long. 95°55', in SW¼ sec. 27, T. 118 N., R. 42 W., 1 mile southwest of village of Lac qui Parle.

Drainage area.- 983 square miles (revised).

Records available.- March 1931 to September 1940; April 1910 to November 1914 at site 2 miles downstream.

Extremes.- Maximum daily discharge during year, 3,200 second-feet Apr. 2; maximum gage height, 11.14 feet Apr. 2, from floodmark; no flow on several days.
1910-14, 1931-40: Maximum daily discharge, that of Apr. 2, 1940. No flow at times in each of several years.

Remarks.- Records good.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	2.6	3.2	1.5	(*)	0	2,200	95	18	16	3.5	27
2	0	2.6	2.4	1.2		0	*3,200	97	17	14	4.6	25
3	0	2.9	2.6	.9		0	2,600	89	16	12	8.8	24
4	0	2.9	3.0	.6		0	*2,260	81	17	11	10	22
5	0	2.9	4.8	.5		0	1,700	73	20	9.3	7.6	19
6	0	2.9	4.8	.4		0	*1,200	65	20	7.6	6	17
7	0	2.9	4.4	.3		0	950	60	20	7.9	4.6	15
8	0	2.9	4.0	.3		*0	*829	55	21	7.9	3.1	13
9	.2	2.9	3.6	.2		0	713	52	32	6.6	2.1	12
10	.5	2.6	2.8	.2		0	573	48	50	6.0	10	10
11	.5	2.9	2.4	.2		0	443	44	37	6.3	11	8.6
12	.5	2.9	2.4	.2		0	349	41	31	6.0	7.9	6.6
13	1.5	2.9	2.2	.1		0	303	38	28	22	6.3	6.0
14	1.8	3.2	2.4	0		0	284	39	26	17	4.9	4.9
15	1.8	3.4	2.6	0		0	250	41	24	12	3.6	4.1
16	1.6	3.4	2.6	0		0	220	39	21	8.6	3.3	3.8
17	2.2	3.4	2.6	0		.5	194	36	19	6.9	4.4	3.8
18	2.4	3.4	2.6	0		2.0	169	39	17	5.8	5.5	3.8
19	2.2	3.7	2.6	0		4.8	147	39	14	4.9	4.3	3.1
20	2.2	3.7	2.4	0		4.4	130	33	13	3.8	4.1	2.1
21	2.2	3.7	2.2	0		4.0	117	29	12	2.6	3.3	1.8
22	2.2	3.7	2.0	0		3.2	109	26	11	1.9	2.1	1.3
23	2.2	3.7	2.0	0		2.6	104	25	13	1.8	2.3	.9
24	2.6	*3.7	2.0	0		2.2	106	24	18	1.3	5.5	.5
25	2.6	3.7	2.0	0		2.0	112	22	22	1.2	8.2	.4
26	2.6	3.7	2.0	0		2.0	108	21	24	1.2	8.6	.4
27	2.6	3.7	2.0	0		2.0	99	21	26	.9	7.2	.3
28	2.6	3.6	*2.0	0		10	98	22	27	.8	22	.3
29	2.6	3.2	2.0	0		200	94	21	23	.4	48	.2
30	2.4	3.2	1.8	0	-	600	92	21	18	.3	40	.1
31	2.4	-	1.6	0	-	1,100	-	20	-	.5	33	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	44.4	2.6	0	1.43	0.0015	0.002	88
November	96.9	3.7	2.6	3.23	.0033	.004	192
December	82.0	4.8	1.6	2.65	.0027	.003	163
Calendar year 1939	18,857.4	2,200	0	51.7	.0526	.65	37,399
January	6.6	1.5	0	.21	.00021	.0002	13
February	0	0	0	0	0	0	0
March	1,939.7	1,100	0	62.6	.064	.07	3,850
April	19,753	3,200	92	658	.669	.75	39,180
May	1,356	97	20	43.7	.044	.05	2,690
June	655	50	11	21.8	.022	.02	1,300
July	204.5	22	.3	6.60	.0067	.008	406
August	295.8	48	2.1	9.54	.0097	.01	587
September	237.0	27	.1	7.90	.0080	.009	470
Water year 1939-40	24,670.9	3,200	0	67.4	.0686	.93	48,940

* Winter discharge measurement or observation of no flow made on this day.

Note.- Stage-discharge relation affected by ice Nov. 28 to Mar. 31, Apr. 2, 3, 5-7. Backwater from debris Oct. 1 to Nov. 27; discharge computed on basis of gage heights, weather records, and two discharge measurements.

Chippewa River near Milan, Minn.

Location.- Chain gage, lat. 45°06', long. 95°48', on line between secs. 16 and 21, T. 119 N., R. 41 W., at bridge on State Highway 40, about 2½ miles downstream from unnamed tributary, 5½ miles east of Milan, and 7 miles upstream from former site near Watson.

Drainage area.- 1,720 square miles.

Records available.- March 1937 to September 1940. April 1910 to September 1917 and March 1931 to September 1936 at site near Watson.

Extremes.- Maximum daily discharge during year, 600 second-feet Apr. 1; maximum gage height, 4.62 feet (affected by ice) Apr. 1, from graph based on gage readings; no flow for several weeks.

1937-40: Maximum discharge observed, 1,100 second-feet Mar. 24, 1939 (gage height, 4.50 feet, from graph based on gage readings); no flow for several weeks during 1940.

Remarks.- Records good except those for periods of backwater from aquatic vegetation, which are poor. Gage read once daily Oct. 1 to Jan. 20, Mar. 1 to Sept. 30. Flow regulated by several small lakes above gage.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.2	17	16	1.4	(*)	0	600	169	48	27	6.2	21
2	8.6	16	16	1.0		0	*500	158	44	27	6.6	23
3	8.6	18	15	.5		.1	480	154	48	25	8.0	22
4	9.8	18	13	0		.1	460	148	44	23	19	21
5	14	20	14	0		.1	480	139	39	21	27	20
6	12	20	15	0		.1	480	131	61	20	21	19
7	11	18	16	0		.1	*480	127	53	20	18	18
8	11	16	18	0		*.1	440	117	48	19	14	16
9	11	16	20	0		.1	*406	117	53	19	17	15
10	13	13	24	0		0	361	115	53	18	13	14
11	13	11	20	0		0	340	110	48	17	12	13
12	12	13	19	0		0	300	106	44	21	11	11
13	14	15	16	0		0	268	99	41	20	13	12
14	*10	16	15	0		0	284	108	39	19	11	11
15	10	16	16	0		0	284	108	35	16	10	11
16	10	16	16	0		.1	*268	117	32	14	11	14
17	10	18	18	0		.2	237	124	28	14	14	14
18	10	20	20	0		.2	222	124	28	14	15	13
19	10	18	19	0		.3	222	117	26	14	14	12
20	12	16	17	0		.2	208	115	24	12	14	13
21	15	15	16	0		.1	208	106	22	9.2	13	14
22	16	15	14	0		.1	193	99	21	8.6	12	14
23	15	16	12	0		.1	185	94	20	8.6	11	13
24	14	*19	10	0		.1	161	90	32	8.0	19	12
25	14	22	8.5	0		.1	156	83	28	8.6	18	11
26	14	18	7.0	0		.2	154	76	30	8.6	17	11
27	16	16	6.5	0		*.2	151	70	29	8.0	20	11
28	14	15	*4.6	0		1.0	156	61	29	8.0	30	9.2
29	15	15	4.0	0		40	169	57	30	7.0	24	9.2
30	15	16	2.6	0		150	166	57	28	6.6	21	8.5
31	16	-	2.2	0		280	-	53	-	6.2	20	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	381.2	16	7.2	12.3	0.0072	0.008	756
November	498	22	11	16.6	.0097	.01	988
December	430.4	24	2.2	13.9	.0081	.009	854
Calendar year 1939	25,310.8	775	-	69.3	.0403	.54	50,212
January	2.9	1.4	0	.09	.000052	.00006	5.8
February	0	0	0	0	0	0	0
March	473.6	280	0	15.3	.0089	.01	939
April	9,019	600	151	301	.175	.20	17,890
May	3,349	169	53	108	.063	.07	6,640
June	1,105	61	20	36.8	.021	.02	2,190
July	467.4	27	6.2	15.1	.0088	.01	927
August	479.8	30	6.2	15.5	.0090	.01	952
September	425.9	23	8.5	14.2	.0083	.009	845
Water year 1939-40	16,632.2	600	0	45.4	.0264	.36	32,986.8

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Nov. 10-12, Dec. 2-7, 12-16, Dec. 19 to Apr. 8, Apr. 11, 12. Backwater from aquatic growth or debris Oct. 5 to Nov. 1, July 1 to Aug. 26; discharge computed on basis of two discharge measurements and gage heights.

Yellow Medicine River near Granite Falls, Minn.

Location.- Staff gage, lat. 44°43', long. 95°31', in sec. 35, T. 115 N., R. 39 W., 6 miles upstream from mouth and 8 miles south of town of Granite Falls. Former gage at site 500 feet upstream, same datum.

Drainage area.- 665 square miles (revised).

Records available.- March 1931 to June 1938, October 1939 to September 1940 (winter records incomplete prior to October 1939).

Extremes.- Maximum discharge during year, 1,740 second-feet Apr. 3 (gage height, 5.28 feet, from graph based on gage readings); minimum daily, 0.7 second-foot Oct. 1, 2. 1931-38, 1939-40: Maximum discharge observed, 2,250 second-feet Apr. 15, 1937 (gage-height, 6.62 feet); no flow July 26, Aug. 27, 1931, and several days in 1933.

Remarks.- Records good except those affected by backwater or those estimated, which are fair. Gage read twice daily except during period Jan. 24 to Mar. 28, when once-daily readings were made.

Rating table, water year 1939-40, except periods of ice effect and of backwater from leaves on control (gage height, in feet, and discharge, in second-feet)

0.4	0.5	1.8	101	3.5	624
.6	1.9	2.2	171	4.0	891
.8	5.6	2.6	261	4.5	1,190
1.0	15.0	3.0	401	5.2	1,670
1.4	47				

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a0.7	1.7	1.7	1.6	1.3	1.1	1,130	44	11	28	6.7	72
2	a.7	1.7	1.6	1.5	1.6	1.2	1,600	42	10	25	5.1	62
3	a.8	c1.6	1.5	1.4	1.5	1.2	*1,670	40	9.0	22	5.1	47
4	a.8	c1.8	1.7	1.3	1.4	1.2	1,390	38	9.4	19	4.8	39
5	a3.0	c1.9	1.8	1.2	1.2	1.3	950	36	11	17	33	32
6	a1.4	2.0	1.9	1.1	1.1	1.4	600	33	51	14	21	27
7	a1.1	2.0	2.0	1.0	1.0	*1.5	422	31	72	13	9.4	23
8	a1.1	c1.9	2.2	1.0	.9	1.6	325	29	143	12	6.4	20
9	a1.0	c2.0	2.2	1.0	.8	1.6	276	27	143	11	5.1	19
10	a1.6	c1.9	2.0	1.2	.9	1.5	224	26	109	e.6	13	14
11	a1.8	c1.8	1.9	1.3	.9	1.3	181	24	79	22	9.0	13
12	1.6	c1.7	1.9	1.3	1.2	1.2	150	21	63	15	7.5	12
13	1.5	c1.8	1.7	1.2	1.1	1.1	126	19	53	11	5.6	11
14	1.4	c1.8	1.7	1.1	1.0	1.0	117	22	42	8.6	4.4	9.4
15	1.3	c1.9	1.9	.9	1.0	1.0	117	22	34	7.5	3.8	8.6
16	1.4	c2.0	2.0	.8	1.1	1.1	109	22	29	6.4	3.1	7.9
17	1.4	c2.0	2.4	.8	1.2	1.2	92	24	25	6.7	8.6	7.1
18	1.4	1.9	2.2	.8	1.3	1.3	78	25	22	6.7	11	6.4
19	1.4	1.8	2.4	.8	1.4	1.5	75	24	18	5.4	8.6	5.1
20	1.4	1.9	2.4	.8	1.3	1.5	69	22	16	12	5.6	5.1
21	1.5	1.8	2.4	.9	1.2	1.4	66	20	15	11	4.6	4.6
22	1.5	1.7	2.2	.9	1.0	1.3	59	18	20	7.9	4.1	4.1
23	1.5	1.7	2.2	1.0	.9	1.1	55	17	23	6.0	3.6	4.1
24	1.5	1.6	2.0	.9	.9	1.2	55	17	32	5.4	4.6	3.6
25	1.6	1.7	2.0	.9	.8	1.4	59	16	51	4.4	4.4	3.1
26	1.7	1.7	1.9	.8	.9	1.5	55	16	54	4.1	9.0	3.1
27	1.8	1.7	1.8	.8	1.0	1.6	53	14	43	3.1	177.0	2.9
28	1.8	*1.6	*1.7	.9	1.0	1.8	51	13	41	3.1	152.0	2.9
29	1.7	1.5	1.7	.9	1.1	3.2	48	13	34	2.9	117.0	2.7
30	1.7	1.6	1.6	1.0	-	11	44	12	32	2.5	95.0	2.9
31	1.7	-	1.6	*1.1	-	*200	-	11	-	2.1	76.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	44.8	3.0	0.7	1.44	0.0022	0.003	89
November	53.7	2.0	1.5	1.79	.0027	.003	107
December	60.2	2.4	1.5	1.94	.0029	.003	119
Calendar year	-	-	-	-	-	-	-
January	32.2	1.6	0.8	1.04	.0016	.002	64
February	32.0	1.6	0.8	1.10	.0017	.002	63
March	251.3	200	1.0	e.11	.012	.01	498
April	10,246	1,670	44	342	.514	.57	20,320
May	736	44	11	23.8	.036	.04	1,460
June	1,294.4	143	9.0	43.1	.065	.07	2,570
July	323.4	28	2.1	10.4	.016	.02	641
August	824.1	177	3.1	26.6	.040	.05	1,630
September	474.6	72	2.7	15.8	.024	.03	941
Water year 1939-40	14,374.7	1,670	.7	39.3	.059	.80	28,500

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on the basis of weather records and records for comparison with stations on nearby streams.

c Stage-discharge relation affected by leaves on the control; discharge computed on basis of gage heights, weather records, and one discharge measurement.

Note.- Stage-discharge relation affected by ice Nov. 18 to Mar. 31, Apr. 12.

Redwood River at Marshall, Minn.

Location.- Chain gage, lat. 44°27', long. 95°47' in NW¼ sec. 4, T. 111 N., R. 41 W., at highway bridge on Fourth Street in Marshall, 10 miles upstream from Threemile Creek.

Drainage area.- 296 square miles.

Records available.- March to September 1940.

Extremes.- Maximum daily discharge during period, 800 second-feet Mar. 30; maximum gage height observed, 7.62 feet Mar. 30; no flow July 28 to Aug. 4, Sept. 30.
Flood in April 1937 reached a stage of 9.5 feet, from floodmarks.

Remarks.- Records good. Gage read once daily.

Cooperation.- Gage-height record furnished by Corps of Engineers, U. S. Army.

Rating table, water year 1939-40, except period of ice effect and of backwater from debris (gage height, in feet, and discharge, in second-feet)

0	0	1.5	49	4.0	369
.2	.7	2.0	91	4.5	461
.4	3.2	2.5	147	5.0	558
.6	6.6	3.0	214	5.5	659
.8	11.6	3.5	287	6.5	e73
1.0	19				

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	b850	31	c2.7	15	0	17
2						-	b650	26	c2.4	12	0	14
3						-	*b460	24	c2.7	8.0	0	12
4						-	352	21	c2.7	6.2	0	11
5						-	257	18	c2.8	4.1	55	16
6						-	*214	17	c5.6	3.5	40	11
7						-	186	17	6.2	3.2	8.9	a10
8						-	160	14	5.8	3.2	6.2	8.4
9						-	141	14	5.8	2.4	3.5	7.5
10						-	123	12	5.1	1.9	2.4	6.2
11						-	101	8.4	4.4	7.3	2.2	5.5
12						-	81	6.2	3.4	7.5	1.9	4.6
13						-	81	5.5	3.2	3.5	1.9	3.8
14						-	76	8.0	2.4	2.4	1.7	11
15						-	72	11	2.2	2.4	1.4	14
16						-	64	7.8	2.4	1.4	.9	12
17						-	56	5.5	2.2	.6	.6	9.2
18						-	48	5.1	2.2	.5	.2	6.2
19						-	45	6.2	1.7	.5	.1	5.1
20						b4.0	40	7.1	.9	.3	.1	a4.6
21						b4.0	39	6.6	1.2	.3	.1	4.1
22						b4.0	38	6.0	1.2	.2	.1	2.9
23						b4.0	38	4.7	6.4	.2	.1	2.7
24						b4.4	37	c4.9	20	.1	268	1.9
25						b5.0	34	c4.2	21	.1	272	.3
26						*b5.0	26	c3.4	8.4	.1	129	.1
27						b5.0	32	c3.1	4.4	.1	91	.1
28						b5.5	31	c4.1	5.5	0	68	.1
29						b13	32	c3.8	3.8	0	45	.1
30						*b800	33	c3.2	9.7	0	34	0
31						*b650	-	c2.9	-	0	25	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October							
November							
December							
Calendar year							
January	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-
March 20-31	1,503.9	800	4	125	0.422	0.19	2,960
April	4,199	650	28	140	.473	.53	8,330
May	313.7	31	2.9	10.1	.034	.04	622
June	148.4	21	.9	4.95	.017	.02	294
July	87.0	15	0	2.81	.0095	.01	173
August	1,059.3	272	0	34.2	.116	.13	2,100
September	201.4	17	0	6.71	.023	.03	399
The period	-	-	-	-	-	-	14,900

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
b Stage-discharge relation affected by ice.
c Backwater from debris; discharge computed on basis of gage heights and one discharge measurement.

Redwood River near Redwood Falls, Minn.

Location.- Wire-weight gage, lat. 44°31', long. 95°10', in NE¼ sec. 9, T. 112 N., R. 36 W., 3 miles west of town of Redwood Falls and 8.5 miles upstream from mouth. Prior to Mar. 26, 1940, chain gage at same site and datum.

Drainage area.- 636 square miles (revised).

Records available.- July 1909 to September 1914, August 1930 to September 1940 (winter records incomplete prior to 1936).

Extremes.- Maximum daily discharge during year, 655 second-feet Apr. 6, 7; maximum gage height, 4.84 feet (ice jam) Apr. 5, from graph based on gage readings; no flow for several days in January

1909-14, 1930-40: Maximum discharge observed, 1,400 second-feet Apr. 15, 1937 (gage height, 4.84 feet); no flow for several days in January 1940.

Remarks.- Records good except those for periods of ice effect, and those below 5 second-feet, which are poor. Gage read twice daily.

Rating table, water year 1939-40, except periods of ice effect and backwater from debris (gage height, in feet, and discharge, in second-feet)

1.0	0	1.8	36.8	3.2	463
1.2	.8	2.0	64	3.6	655
1.4	4.2	2.4	155		
1.6	16.0	2.8	293		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.5	1.0	1.7	0.7	1.0	1.6	160	60	11	17	12	72
2	.5	.9	1.6	.5	2.2	2.0	*200	57	11	16	4.7	70
3	.5	.8	1.4	.4	1.6	1.8	380	57	10	12	3.2	60
4	.5	.8	1.4	.4	2.6	1.7	500	57	13	11	2.3	57
5	2.6	.9	1.4	.4	2.0	1.6	650	54	12	9.3	3.5	45
6	1.0	1.2	1.5	.4	1.7	1.7	655	49	14	7.3	3.0	37
7	.8	1.1	1.5	.4	1.5	*1.7	655	46	14	a6.5	1.8	32
8	.8	1.0	1.6	.5	1.2	1.8	*533	42	14	5.7	2.3	27
9	.7	1.0	1.7	.4	1.2	1.7	417	36	15	5.2	12	24
10	1.2	1.0	1.8	.4	1.6	1.6	332	38	14	4.7	16	18
11	1.4	1.1	1.6	.3	2.2	1.5	275	37	13	4.7	24	17
12	1.1	.9	1.5	.2	2.0	1.4	222	36	13	4.2	20	15
13	1.0	.8	1.4	.2	1.8	1.2	202	31	12	4.0	15	14
14	1.0	.8	1.4	.1	1.8	1.2	195	34	11	3.5	12	11
15	.9	.9	1.5	.1	2.0	1.2	162	32	9.3	3.0	10	11
16	1.0	*1.0	1.8	.1	2.4	1.4	134	27	8.3	2.3	6.8	9.3
17	.9	1.2	1.7	0	2.2	1.5	118	29	7.8	2.0	17	9.3
18	1.2	1.4	1.6	0	2.0	1.6	105	30	15	2.0	a13	9.3
19	1.1	.9	1.4	0	2.0	1.7	94	29	11	a2.0	4.0	7.8
20	1.5	1.2	1.1	0	1.8	1.6	82	25	6.8	2.0	3.2	6.8
21	1.5	1.5	1.1	0	1.6	1.5	86	24	6.2	a1.9	3.2	5.7
22	1.5	1.4	1.0	.1	1.4	1.4	77	21	5.7	1.8	2.8	5.7
23	1.5	1.4	1.1	.2	1.0	1.2	72	19	12	1.8	2.0	5.2
24	1.2	1.2	1.1	.1	.8	1.2	72	19	30	1.7	3.0	5.7
25	1.1	1.5	1.0	.1	.8	1.4	69	18	28	1.8	3.0	4.2
26	1.1	1.4	1.1	0	1.0	1.8	66	a16	42	1.7	3.0	3.7
27	1.1	1.4	1.1	0	1.0	2.2	66	15	41	1.5	4.0	4.2
28	1.2	1.2	*1.1	0	1.0	3.2	67	15	36	1.4	a64	5.7
29	1.4	1.2	1.0	0	1.5	60	66	13	25	1.4	78	5.2
30	1.1	1.5	.9	0	-	*170	61	13	21	1.3	78	4.7
31	1.1	-	.8	*0	-	180	-	12	-	1.0	76	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	34.0	2.6	0.5	1.10	0.0016	0.002	67
November	33.6	1.5	.8	1.12	.0016	.002	67
December	41.9	1.8	.8	1.35	.0020	.002	83
Calendar year 1939	5,156.4	410	-	14.1	.021	.28	10,225
January	6.0	.7	0	.19	.00027	.0003	12
February	46.9	2.6	.8	1.62	.0024	.003	93
March	455.4	180	1.2	14.7	.021	.02	903
April	6,773.0	655	61	226	.330	.37	13,430
May	991.0	60	12	32.0	.047	.05	1,966
June	482.1	42	5.7	16.1	.024	.03	956
July	141.7	17	1.0	4.57	.0067	.008	281
August	502.8	78	1.8	16.2	.024	.03	997
September	602.5	72	3.7	20.1	.029	.03	1,200
Water year 1939-40	10,110.9	655	0	27.6	.040	.55	20,060

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Nov. 2-4, 11-14, 28-30, Dec. 6-8, Dec. 13 to Apr. 5. Backwater from debris Oct. 1 to Nov. 1, Nov. 5-10, 15-27, Dec. 1, 5, 9-12, Aug. 29 to Sept. 3; discharge computed on basis of three discharge measurements, gage heights, engineers' and observer's notes, and weather records.

Cottonwood River near New Ulm, Minn.

Location.- Staff gage, lat. 44°17', long. 94°26', in sec. 4, T. 109 N., R. 30 W., 1.8 miles south of New Ulm and 2 miles upstream from mouth. Datum of gage is 799.09 feet above mean sea level (general adjustment of 1912).

Drainage area.- 1,300 square miles (revised).

Records available.- August 1938 to September 1940. July 1909 to December 1913 at site half a mile upstream, March 1931 to March 1938 at site about 2¼ miles upstream (winter records incomplete prior to 1936).

Extremes.- Maximum discharge during year, 1,900 second-feet Apr. 1 (gage height, 7.69 feet, from graph based on gage readings); minimum daily, 0.6 second-foot Feb. 2-5. 1909-13, 1931-40: Maximum discharge observed, 4,580 second-feet Feb. 29, 1932; maximum gage height observed, 16.15 feet Mar. 13, 1938 (affected by backwater); minimum discharge observed, 0.6 second-foot Aug. 1, 1934 and Feb. 2-5, 1940.

Remarks.- Records good except those affected by backwater, which are fair. Gage read twice daily. Flow partly regulated by Cottonwood Lake and several other small lakes above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	9.4	9.4	3.0	0.7	3.4	1,720	71	32	7.2	4.8	84
2	12	9.0	7.6	3.0	.6	3.8	1,530	84	30	28	6.0	80
3	11	9.0	7.2	2.6	.6	4.2	1,170	92	2.8	42	6.0	77
4	11	8.4	8.0	2.2	.6	4.8	875	84	2.4	40	6.0	75
5	15	8.8	6.8	1.9	.6	5.0	613	77	2.0	35	11	68
6	12	8.4	6.6	1.8	.7	*6.0	397	72	2.1	28	8.4	60
7	14	8.0	7.6	1.6	.7	7.0	309	68	2.2	25	7.6	56
8	15	8.0	7.2	1.6	.8	8.0	235	64	1.7	22	6.0	47
9	15	8.0	8.4	1.6	.8	8.5	209	62	1.8	21	5.7	46
10	15	7.6	8.8	1.9	.9	8.5	193	28	1.7	19	10	38
11	14	7.6	8.0	2.0	1.0	8.5	170	2.9	1.9	19	8.9	33
12	12	7.6	8.8	1.9	1.1	8.0	155	17	2.2	16	8.4	31
13	12	8.0	7.2	2.0	1.4	8.5	127	41	2.2	15	20	30
14	12	7.6	6.8	1.9	1.4	9.0	106	51	2.0	11	20	28
15	12	7.6	8.0	1.9	1.4	9.0	106	58	1.6	9.4	26	26
16	12	8.0	8.4	1.9	1.6	9.5	127	48	1.7	8.0	27	25
17	12	8.0	8.8	1.6	1.8	11	84	38	1.7	8.0	28	24
18	11	8.0	9.4	1.5	1.9	13	76	42	1.9	8.0	23	23
19	12	7.6	10	1.4	1.9	15	86	46	2.2	6.5	17	23
20	13	8.0	8.0	1.2	2.0	24	77	56	2.4	5.2	12	21
21	14	8.0	8.8	1.1	2.2	15	71	51	2.5	4.4	9.4	20
22	11	7.2	8.4	1.1	2.2	12	69	40	2.3	4.2	9.4	20
23	11	8.4	7.6	1.1	2.2	11	66	34	2.6	3.8	10	20
24	11	8.0	7.6	.9	2.0	11	64	46	2.9	3.8	26	19
25	11	7.6	7.6	.9	1.8	11	63	46	3.2	3.6	26	15
26	11	7.6	*8.0	1.2	2.0	12	66	34	11	3.6	35	14
27	11	7.2	8.0	1.2	2.2	14	64	27	63	3.6	48	12
28	10	7.2	8.5	1.3	2.6	28	63	24	177	3.8	120	12
29	10	8.0	6.5	.7	2.8	50	77	32	138	2.6	141	12
30	10	7.2	5.5	*1.0	-	134	67	32	5.7	2.9	113	12
31	10	-	3.6	.9	-	*235	-	32	-	3.8	99	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	373	15	10	12.0	-	-	740
November	239.0	9.4	7.2	7.97	-	-	474
December	241.1	10	3.6	7.78	-	-	478
Calendar year 1939	22,282.0	1,350	1.4	61.0	0.047	0.69	44,180
January	49.9	3.0	.7	1.61	-	-	99
February	42.5	2.8	.6	1.47	-	-	84
March	707.7	235	3.4	22.8	-	-	1,400
April	9,035	1,720	63	301	-	-	17,920
May	1,499.9	92	2.9	48.4	-	-	2,980
June	506.7	177	1.6	16.9	-	-	1,010
July	413.4	42	2.6	13.3	-	-	820
August	898.6	141	4.8	29.0	-	-	1,760
September	1,051	84	12	35.0	-	-	2,080
Water year 1939-40	15,057.8	1,720	.6	41.1	.032	.42	29,860

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 29 to Mar. 18, Mar. 20-26. Backwater from aquatic vegetation or debris Oct. 1 to Dec. 28, June 3-26, July 20-31, Sept. 21-30; discharge computed on basis of gage heights and six discharge measurements.

Blue Earth River near Rapidan, Minn.

Location.- Water-stage recorder, lat. 44°05'51", long. 94°06'32", in SE¼SE¼ sec. 6, T. 107 N., R. 27 W., 0.2 mile downstream from Northern States Power Co. power plant, 2 miles west of Rapidan, 3½ miles downstream from Watonwan River, and 7½ miles upstream from LeSueur River. Prior to Nov. 15, 1939, staff gage at same site and datum.

Drainage area.- 2,430 square miles (revised).

Records available.- October 1939 to September 1940. July 1909 to November 1910 (winter records incomplete) at site 800 feet upstream, different datum, published as Blue Earth River at Rapidan Mills, Minn.

Extremes.- Maximum discharge during year, 1,710 second-feet June 7 (gage height, 3.97 feet); minimum observed, 12 second-feet Mar. 23 (gage height, 1.09 feet).
1909-10, 1939-40: Maximum discharge observed, 13,100 second-feet Mar. 12, 1910, from rating curve extended above 4,000 second-feet; minimum observed, that of Mar. 23, 1940.

Remarks.- Records good except those for period of no gage-height record, which are fair. Flow regulated by Rapidan Reservoir (capacity, 2,980 acre-feet).

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

1.1	13	1.6	117	2.4	471
1.2	24	1.8	186	2.8	725
1.4	62	2.0	269	3.2	1,110

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	a70	*b75	17	15	b79	*b416	105	71	187	16	834
2	21	18	*18	17	15	b108	b1,000	101	17	109	15	579
3	21	18	18	17	15	14	768	100	85	90	14	579
4	21	16	a85	17	15	b75	466	94	349	17	15	477
5	25	18	19	17	15	*b82	460	15	126	48	15	471
6	18	19	19	17	15	b107	454	88	70	47	16	374
7	18	19	19	16	15	b115	a150	95	321	24	16	233
8	18	19	90	16	15	b110	a170	97	924	17	16	19
9	18	a65	21	16	15	106	a150	97	438	17	16	236
10	18	19	21	16	15	18	a150	104	626	18	17	157
11	17	19	22	17	15	18	215	97	739	17	17	276
12	15	19	21	17	15	110	197	15	529	17	72	747
13	15	19	88	16	15	b110	190	14	471	16	265	669
14	65	a70	18	16	15	b90	21	54	454	19	193	548
15	19	16	a19	16	17	b85	196	16	284	16	94	471
16	14	16	a19	16	16	16	189	16	16	16	106	354
17	13	16	a19	16	16	16	192	15	211	64	145	349
18	58	16	a85	16	16	87	189	16	101	19	22	214
19	13	16	25	16	16	17	131	17	51	16	59	210
20	13	72	22	16	16	15	134	15	59	16	62	214
21	13	17	a22	16	16	65	13	14	69	16	53	213
22	13	16	a22	16	16	15	134	15	88	16	57	17
23	13	17	a22	16	16	13	134	34	233	16	62	214
24	a65	17	a22	16	16	13	134	67	306	15	219	219
25	14	75	a22	16	16	153	111	65	206	15	23	162
26	14	22	a22	16	15	278	116	18	17	15	64	133
27	a60	21	*a83	15	17	194	110	70	17	15	113	108
28	14	18	21	15	17	132	13	62	232	15	571	128
29	16	18	19	*15	b132	301	104	61	26	15	1,110	17
30	18	18	17	15	-	*438	105	17	18	14	1,030	60
31	18	-	17	15	-	444	-	60	-	15	974	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	699	65	13	22.5	0.0093	0.01	1,390
November	801	75	16	26.7	.011	.01	1,590
December	1,012	90	17	32.6	.013	.01	2,010
Calendar year	-	-	-	-	-	-	-
January	499	17	15	16.1	.0066	.008	990
February	566	132	15	19.6	.0081	.009	1,130
March	3,444	444	13	111	.046	.05	6,830
April	6,812	1,000	13	227	.093	.10	13,510
May	1,654	105	14	53.4	.022	.03	3,280
June	7,156	924	17	239	.098	.11	14,190
July	959	187	14	30.9	.013	.01	1,900
August	5,467	1,110	14	176	.072	.08	10,640
September	9,302	834	17	310	.128	.14	18,450
Water year 1939-40	38,373	1,000	13	105	.043	.57	76,110

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of power-plant record.
b Stage-discharge relation affected by ice.

Watonwan River near Garden City, Minn.

Location.- Chain gage, lat. 44°02'48", long. 94°11'35" in NE¼ sec. 28 T. 107 N., R. 28 W. at bridge on county highway number 13, 1 mile west of Garden City, 5 miles downstream from Perch Creek, and 6 miles upstream from Blue Earth River.

Drainage area.- 812 square miles.

Records available.- March to September 1940.

Extremes.- Maximum daily discharge during period, 300 second-feet Apr. 3; minimum discharge observed, 2.0 second-feet July 23 (gage height, 0.27 foot).

Remarks.- Records good except those for periods of no gage-height record or backwater, which are fair.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	*b150	18	8.0	c28	a2.5	c17
2						-	b160	18	6.6	c23	3.1	a15
3						-	b300	a16	6.6	c17	3.1	c14
4						-	b220	14	35	c15	a2.8	c13
5						-	b130	14	30	a14	a2.6	a12
6						-	*b100	14	43	a13	2.5	c12
7						-	82	13	c100	a12	a2.3	c11
8						-	78	a13	c66	c11	a2.3	c10
9						-	67	13	c56	6.0	a2.3	c10
10						-	65	13	c47	c8.6	a2.8	a9.0
11						-	*56	13	c42	a14	a3.0	c8.0
12						-	43	13	c37	c12	a5.0	c7.6
13						-	34	13	c28	c9.0	a30	c7.6
14						-	37	13	c23	8.5	a35	c7.0
15						-	33	33	c20	7.1	28	c6.2
16						-	33	31	c17	6.6	a27	a5.8
17						-	33	24	c16	5.4	a26	c5.4
18						-	28	24	c10	5.4	a25	a5.2
19						b5.5	28	24	c10	4.7	a24	c5.0
20						b4.4	23	24	c9.0	a4.0	a22	c5.4
21						b4.6	a22	19	c10	3.5	a20	c6.2
22						b4.8	25	17	c30	2.3	a19	c7.6
23						b5.5	20	a15	c41	2.0	c18	a10
24						b6.0	22	a13	c35	3.5	c29	a12
25						*b6.5	20	12	a33	2.8	c28	c10
26						b8.5	19	12	a31	2.8	c22	c7.0
27						b13	20	12	a33	2.8	c22	c6.2
28						b15	a22	12	c39	2.8	c26	c5.8
29						b90	25	a11	c41	2.5	c21	c5.2
30						b150	22	9.9	c37	a2.5	c21	c5.2
31						b220	-	9.0	-	a2.5	c20	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October							
November							
December							
Calendar year							
January	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-
March 19-31	536.8	220	4.4	41.3	0.051	0.02	1,060
April	1,917	300	19	63.9	.079	.09	3,800
May	499.9	33	9.0	16.1	.020	.02	992
June	940.2	100	6.6	31.3	.039	.04	1,860
July	256.3	28	2.0	8.27	.010	.01	508
August	497.3	35	2.3	16.0	.020	.02	986
September	261.4	17	5.0	8.71	.011	.01	518
The period	-	-	-	-	-	-	9,720

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for the station on Le Sueur River near Rapidan, Minn.
b Stage-discharge relation affected by ice.
c Backwater from debris; discharge computed on basis of three discharge measurements and gage heights.

Le Sueur River near Rapidan, Minn.

Location.- Water-stage recorder, lat. 44°06'49", long. 94°02'31" in SW¼ sec. 35, T. 108 N., R. 27 W., 600 feet downstream from highway bridge, 1½ miles above Blue Earth River, and 2 miles northeast of Rapidan. Prior to Nov. 15, 1939, staff gage at same site and datum.

Drainage area.- 1,100 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 1,600 second-feet June 8 (gage height, 8.20 feet, affected by vegetation); minimum daily, 2.0 second-feet Feb. 9; minimum gage height, 2.30 feet Nov. 28.

Remarks.- Records good except those for periods of ice effect, which are fair.

Rating table, water year 1939-40, except period of ice effect and of backwater from vegetation (gage height, in feet, and discharge, in second-feet)

2.0	0.75	2.4	11	3.0	62	4.2	268	5.5	652	7.0	1,180
2.1	2.1	2.6	23	3.4	112	4.6	372	6.0	822	7.5	1,370
2.2	4.0	2.8	41	3.8	181	5.0	492	6.5	998		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a11	10	*12	8.0	2.8	8.0	*604	27	12	c180	13	c165
2		10	13	7.5	2.8	8.5	415	25	11	c145	15	c145
3		10	14	7.5	2.6	9.0	263	25	13	122	15	122
4		10	13	7.0	2.4	9.0	173	24	54	102	16	101
5		10	12	6.5	2.2	9.5	126	23	51	86	19	84
6	a13	11	17	6.5	2.4	*10	124	22	44	73	16	72
7		12	14	6.5	2.2	11	124	20	c250	64	14	62
8		12	13	6.5	2.2	13	104	20	c1,300	55	12	53
9		12	13	6.5	2.0	14	90	19	c960	51	12	49
10		12	13	7.5	2.4	13	84	19	c900	46	15	45
11	a12	11	12	8.0	3.0	13	75	17	c640	52	16	40
12		9.0	12	8.5	2.8	14	65	16	c440	50	22	37
13		12	12	9.0	3.0	19	59	15	c330	45	c185	34
14		12	12	8.5	3.4	16	56	16	c260	39	c155	31
15	12	13	12	8.0	3.8	12	54	21	c195	35	127	30
16	11	13	13	7.5	4.4	10	50	20	c155	30	130	30
17	11	13	13	6.5	5.0	10	47	19	126	28	121	28
18	10	13	13	6.0	6.0	11	43	19	99	26	105	26
19	9.8	13	12	5.5	6.5	13	41	20	78	22	63	22
20	9.4	13	13	5.0	7.5	24	38	20	64	19	47	20
21	9.4	13	14	4.8	8.0	22	36	19	58	18	37	20
22	9.4	13	12	4.8	8.0	28	35	19	58	16	30	20
23	9.8	13	12	5.0	7.0	22	34	18	138	15	26	21
24	9.8	13	11	4.8	6.5	19	31	16	c350	15	53	22
25	9.8	13	11	3.8	6.5	17	29	16	c390	14	64	20
26	10	13	9.5	2.8	6.5	17	28	16	c340	14	81	19
27	10	13	*9.0	2.2	7.0	20	27	16	c290	13	81	19
28	10	12	9.0	2.2	8.0	27	26	15	c380	13	c155	17
29	10	12	8.5	*2.2	8.0	*160	28	15	c270	13	c260	16
30	10	12	8.0	2.4	-	*480	28	14	c220	13	c215	16
31	10	-	8.0	2.8	-	400	-	13	-	12	c190	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	339.4	-	9.4	10.9	0.0099	0.01	673
November	358.0	13	9.0	11.9	.011	.01	710
December	370	17	8.0	11.9	.011	.01	734
Calendar year	-	-	-	-	-	-	-
January	180.3	9.0	2.2	5.82	.0053	.006	358
February	134.9	8.0	2.0	4.65	.0042	.005	268
March	1,459	480	8.0	47.1	.043	.05	2,890
April	2,937	604	26	97.9	.089	.10	5,830
May	584	27	13	18.8	.017	.02	1,160
June	8,476	1,300	11	283	.257	.29	16,810
July	1,426	180	12	46.0	.042	.05	2,830
August	2,310	260	12	74.5	.068	.08	4,580
September	1,385	165	16	46.2	.042	.05	2,750
Water year 1939-40	19,959.6	1,300	2.0	54.5	.050	.68	39,590

Peak discharge.- June 8 (2:20 p.m.) 1,600 sec.-ft.; June 28 (8:00 p.m.) 476 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and records for stations on nearby streams.

c Backwater from vegetation; discharge computed on basis of four discharge measurements and gage heights.

Note.- Stage-discharge relation affected by ice Dec. 1-6, 12-16, Dec. 19 to Mar. 30.

St. Croix River near Danbury, Wis.

Location.- Water-stage recorder, lat. 46°04', long. 92°15', in sec. 33, T. 42 N., R. 15 W., on State Trunk Highway 35, 3½ miles downstream from Namekagon River and 10 miles northeast of Danbury.

Drainage area.- 1,550 square miles.

Records available.- March 1914 to September 1940.

Average discharge.- 26 years, 1,150 second-feet.

Extremes.- Maximum discharge during year, 2,930 second-feet May 16 (gage height, 3.01 feet); maximum gage height, 4.55 feet Apr. 10 (affected by backwater from ice); minimum daily discharge, 600 second-feet Dec. 14 (affected by backwater from ice).

1914-40: Maximum discharge observed, 8,480 second-feet Apr. 22, 1916 (gage height, 6.73 feet), from rating curve extended above 7,500 second-feet; minimum observed, 393 second-feet Aug. 6, 13, 1934 (gage height, -0.20 foot, site then in use).

Remarks.- Records good except those for period of ice effect or days of no gage-height record, which are fair.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	747	796	822	720	630	740	1,020	1,900	1,650	998	849	a850
2	747	822	878	700	630	750	1,200	1,900	1,540	966	878	a860
3	747	822	822	690	630	750	1,500	1,820	1,420	936	1,060	849
4	747	822	796	680	640	760	1,750	1,680	1,460	936	1,060	822
5	822	796	796	680	640	760	2,000	1,640	1,500	906	998	796
6	822	796	772	670	640	770	2,300	1,500	1,500	878	906	772
7	822	822	772	670	640	770	2,600	1,420	1,540	878	822	724
8	822	796	724	660	650	770	2,700	1,290	1,460	849	796	724
9	822	796	747	660	650	780	2,800	1,250	1,460	849	724	724
10	849	796	724	650	660	780	2,750	1,250	1,420	822	747	724
11	849	a780	724	650	660	780	2,600	1,210	1,330	822	772	702
12	849	a840	724	640	660	790	2,400	1,210	1,290	822	772	702
13	822	a850	702	640	670	790	2,200	1,170	1,250	796	796	702
14	822	822	600	640	670	800	2,000	1,500	1,210	796	822	702
15	822	822	660	640	680	810	1,860	2,380	1,140	796	822	702
16	796	a820	700	640	680	*810	1,900	2,880	1,140	772	878	702
17	796	a800	730	640	690	820	1,860	2,730	1,170	747	906	702
18	796	a798	750	640	690	830	1,820	2,480	1,140	772	906	a724
19	796	796	750	640	700	830	1,770	2,430	1,100	772	849	747
20	796	849	750	630	700	840	1,770	2,580	1,060	796	849	724
21	796	936	750	630	710	830	1,720	2,580	1,060	772	822	772
22	796	998	680	630	710	820	1,720	2,480	1,060	772	822	724
23	796	a990	650	620	720	820	1,640	2,190	1,060	772	849	724
24	796	a980	640	620	720	820	1,590	2,050	1,100	747	878	772
25	772	a950	700	618	730	810	1,540	1,950	1,060	772	a850	747
26	796	a930	750	*617	730	810	1,500	1,900	1,060	772	a820	747
27	822	a910	770	618	730	820	1,460	1,860	1,030	772	a780	724
28	822	a830	780	620	740	830	1,460	1,860	1,030	772	a790	702
29	a813	*822	780	620	740	860	1,500	1,820	998	772	a800	702
30	a805	822	760	630	-	890	1,820	1,820	998	772	a810	702
31	796	-	740	630	-	940	-	1,720	-	747	a840	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	24,901	849	747	803	0.518	0.60
November	25,297	998	780	843	.544	.61
December	22,943	878	600	740	.477	.55
Calendar year 1939	423,117	4,500	600	1,159	.748	10.15
January	20,033	720	617	646	.417	.48
February	19,740	740	630	681	.439	.47
March	24,980	940	740	806	.520	.60
April	56,750	2,800	1,020	1,892	1.22	1.36
May	58,450	2,880	1,170	1,885	1.22	1.41
June	37,266	1,680	998	1,242	.801	.89
July	25,351	998	747	818	.528	.61
August	26,273	1,060	724	848	.547	.63
September	22,270	860	702	742	.479	.53
Water year 1939-40	364,254	2,880	600	995	.642	8.74

* Winter discharge measurement made on this day.

a No gage-height record; discharge interpolated or computed on basis of records for station near Grantsburg and Namekagon River near Trego.

Note.- Stage-discharge relation affected by ice Dec. 14 to Apr. 14.

St. Croix River near Grantsburg, Wis.

Location.- Water-stage recorder, lat. 45°56', long. 92°39', near center of sec. 30, T. 40 N., R. 18 W., at Norway Point, 0.5 mile downstream from Sand Creek and 10 miles north of Grantsburg.

Drainage area.- 2,820 square miles.

Records available.- April 1923 to September 1940.

Average discharge.- 17 years, 1,902 second-feet.

Extremes.- Maximum discharge during year, 7,830 second-feet Apr. 10 (gage height, 9.13 feet); minimum daily, 900 second-feet Dec. 14 (affected by ice).
1923-40: Maximum discharge observed, 13,300 second-feet Mar. 18, 1937, Apr. 13, 1936 (gage height, 11.4 feet); minimum discharge, 510 second-feet Aug. 14, 17, 1934.

Remarks.- Records good except those for period of ice effect, which are fair.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used July 1 to Sept. 30)

3.7	930	5.5	2,580	8.0	6,150
4.0	1,140	6.0	3,240	9.0	7,670
4.5	1,530	6.5	3,950		
5.0	2,020	7.0	4,670		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,180	1,320	1,320	1,110	1,050	1,230	1,750	3,170	2,830	1,400	1,320	1,320
2	1,140	1,320	1,320	1,110	1,050	1,230	2,000	3,380	2,700	1,400	1,440	1,320
3	1,140	1,320	1,360	1,100	1,050	1,240	2,400	3,310	2,460	1,360	1,400	1,280
4	1,140	1,320	1,320	1,100	1,050	1,240	2,900	3,100	2,300	1,320	1,580	1,280
5	1,240	1,320	1,280	1,100	1,050	1,250	3,500	2,830	2,350	1,280	1,530	1,240
6	1,360	1,320	1,280	1,100	1,050	1,250	4,100	2,700	2,460	1,240	1,400	1,210
7	1,320	1,320	1,240	1,110	1,050	1,250	4,700	2,460	2,460	1,240	1,280	1,140
8	1,280	1,320	1,180	1,120	1,070	1,250	5,400	2,350	2,400	1,210	1,240	1,100
9	1,320	1,320	1,180	1,130	1,080	1,250	6,200	2,130	2,300	1,210	1,140	1,100
10	1,400	1,320	1,160	1,120	1,090	1,250	7,510	2,130	2,300	1,180	1,100	1,100
11	1,400	1,280	1,180	1,120	1,100	1,250	6,450	2,080	2,180	1,140	1,140	1,070
12	1,400	1,280	1,180	1,110	1,110	1,250	5,550	2,020	2,020	1,140	1,140	1,070
13	1,400	1,320	1,180	1,110	1,120	1,260	4,820	1,920	1,970	1,100	1,140	1,070
14	1,360	1,360	900	1,110	1,130	1,260	4,670	2,400	1,820	1,100	1,210	1,040
15	1,360	1,320	1,100	1,110	1,140	1,260	4,380	4,090	1,770	1,100	1,280	1,040
16	1,360	1,280	1,190	1,110	1,150	1,250	3,950	5,400	1,620	1,140	1,320	1,040
17	1,320	1,280	1,230	1,110	1,160	1,250	3,730	6,450	1,620	1,100	1,400	1,070
18	1,320	1,280	1,250	1,110	1,170	*1,250	3,520	7,200	1,620	1,140	1,480	1,100
19	1,320	1,280	1,260	1,100	1,180	1,250	3,380	7,050	1,530	1,140	1,440	1,140
20	1,320	1,280	1,260	1,100	1,190	1,250	3,240	6,300	1,480	1,140	1,360	1,180
21	1,320	1,360	1,250	1,090	1,190	1,240	3,100	6,150	1,440	1,140	1,280	1,180
22	1,320	1,440	1,240	1,090	1,200	1,230	2,960	6,000	1,480	1,140	1,240	1,180
23	1,320	1,530	1,220	1,070	1,200	1,230	2,830	5,550	1,480	1,140	1,210	1,140
24	1,320	1,480	1,190	1,060	1,210	1,230	2,640	4,820	1,530	1,100	1,210	1,180
25	1,280	1,480	1,170	1,050	1,210	1,240	2,580	4,240	1,480	1,100	1,240	1,210
26	1,280	1,400	1,160	1,060	1,220	1,240	2,460	3,880	1,440	1,140	1,210	1,210
27	1,360	1,360	1,140	*1,060	1,220	1,250	2,400	3,660	1,400	1,140	1,180	1,210
28	1,360	1,280	1,120	1,060	1,220	1,260	2,350	3,520	1,440	1,100	1,210	1,180
29	1,360	*1,320	1,110	1,050	1,220	1,300	2,400	3,380	1,400	1,100	1,240	1,180
30	1,320	1,320	1,110	1,050	-	1,400	2,700	3,240	1,400	1,140	1,280	1,140
31	1,360	-	1,110	1,050	-	1,550	-	3,030	-	1,100	1,280	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	40,680	1,400	1,140	1,312	0.465	0.54
November	40,130	1,530	1,280	1,338	.474	.53
December	37,210	1,360	900	1,200	.426	.49
Calendar year 1939	785,420	10,300	900	2,152	.763	10.35
January	33,880	1,130	1,050	1,093	.388	.45
February	32,930	1,220	1,050	1,136	.403	.43
March	39,140	1,550	1,230	1,263	.448	.52
April	110,570	7,510	1,750	3,686	1.31	1.46
May	119,940	7,200	1,920	3,869	1.37	1.58
June	56,680	2,830	1,400	1,889	.670	.75
July	36,420	1,400	1,100	1,175	.417	.48
August	39,920	1,580	1,100	1,288	.457	.53
September	34,720	1,320	1,040	1,157	.410	.46
Water year 1939-40	622,220	7,510	900	1,700	.603	8.22

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 14 to Apr. 9.

St. Croix River near Rush City, Minn.

Location.- Staff gage, lat. 45°42', long. 92°52', in SW¼ sec. 8, T. 37 N., R. 20 W., 200 feet upstream from Northern Pacific Ry. bridge, 5 miles east of Rush City, and 10 miles downstream from Snake River. Datum of gage is 766.9 feet above mean sea level (levels by Northern States Power Co.).

Drainage area.- 5,120 square miles.

Records available.- April 1923 to September 1940.

Average discharge.- 17 years, 2,833 second-feet.

Extremes.- Maximum discharge observed during year, 16,000 second-feet Apr. 12, ice breakup; maximum gage height, 12.60 feet Apr. 10 affected by ice; minimum discharge observed, 872 second-feet Dec. 14 (caused by ice above station).

1923-40: Maximum discharge observed, 27,700 second-feet Apr. 14, 1936 (gage height, 12.44 feet); maximum gage height observed, 13.9 feet Mar. 22, 1929 (ice jam); minimum discharge observed, 630 second-feet Aug. 14, 1933.

Remarks.- Records good except those for period of ice effect, which are fair. Gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,530	1,530	1,620	1,310	1,260	1,490	2,400	4,110	4,110	1,800	1,800	1,620
2	1,530	1,530	1,530	1,310	1,260	1,500	3,100	5,500	3,900	1,710	2,180	1,620
3	1,440	1,530	1,530	1,310	1,260	1,500	3,700	5,500	3,690	1,710	2,090	1,620
4	1,440	1,530	1,620	1,310	1,270	1,510	4,300	5,260	3,690	1,710	2,000	1,530
5	1,530	1,530	1,530	1,310	1,280	1,510	4,800	4,770	3,690	1,620	1,900	1,530
6	1,800	1,530	1,620	1,310	1,290	1,510	5,500	4,540	3,690	1,620	1,710	1,530
7	1,710	1,530	1,440	1,310	1,300	1,520	6,600	3,900	3,690	1,530	1,710	1,440
8	1,620	1,530	1,530	1,310	1,300	1,520	7,800	3,900	3,480	1,530	1,440	1,340
9	1,710	1,530	1,340	1,320	1,300	1,530	9,000	3,690	3,280	1,530	1,320	1,290
10	1,800	1,620	1,300	1,320	1,300	1,540	10,600	3,480	3,280	1,440	1,290	1,250
11	1,710	1,620	1,290	1,320	1,310	1,560	13,000	3,280	3,080	1,440	1,110	1,230
12	1,710	1,710	1,340	1,320	1,350	1,580	16,000	3,280	2,880	1,340	1,440	1,250
13	1,710	1,710	1,710	1,310	1,380	1,610	12,700	3,280	2,680	1,440	1,440	1,270
14	1,620	1,710	872	1,310	1,400	1,650	9,580	4,320	2,580	1,440	1,440	1,290
15	1,620	1,530	1,210	1,300	1,400	1,650	8,550	7,530	2,380	1,340	1,620	1,290
16	1,620	1,530	1,380	1,300	1,410	1,650	7,020	10,100	2,280	1,340	1,620	1,300
17	1,620	1,530	1,450	1,300	1,420	1,640	6,510	11,900	2,380	1,340	1,620	1,340
18	1,620	1,440	1,500	1,300	1,430	1,640	5,750	12,500	2,280	1,440	1,800	1,340
19	1,620	1,440	1,500	1,300	1,440	*1,630	5,500	12,200	2,280	1,440	2,090	1,340
20	1,620	1,530	1,500	1,290	1,450	1,610	5,010	10,100	2,180	1,440	1,900	1,440
21	1,620	1,530	1,500	1,260	1,470	1,600	5,010	9,580	2,000	1,440	1,710	1,440
22	1,530	1,620	1,490	1,250	1,480	1,590	4,540	9,320	1,900	1,440	1,620	1,440
23	1,530	1,710	1,450	1,250	1,480	1,580	4,320	8,810	1,900	1,440	1,620	1,340
24	1,620	1,710	1,430	1,250	1,480	1,570	4,110	7,530	2,000	1,440	1,530	1,440
25	1,620	1,710	1,390	1,240	1,480	1,580	4,110	6,510	2,000	1,340	1,620	1,440
26	1,620	1,710	1,360	1,240	1,480	1,600	3,690	6,000	1,900	1,440	1,530	1,440
27	1,620	1,620	1,340	1,230	1,490	1,650	3,690	5,500	1,900	1,340	1,530	1,440
28	1,620	*1,710	1,330	*1,230	1,490	1,710	3,690	5,260	1,900	1,340	1,620	1,440
29	1,620	1,710	1,330	1,230	1,490	1,800	3,690	5,010	1,900	1,300	1,620	1,340
30	1,530	1,710	1,320	1,240	-	1,900	4,110	4,320	1,800	1,270	1,710	1,440
31	1,620	-	1,320	1,250	-	2,020	-	4,320	-	1,440	1,710	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	50,130	1,800	1,440	1,617	0.316	0.36
November	47,880	1,710	1,440	1,596	.312	.35
December	44,072	1,710	872	1,422	.278	.32
Calendar year 1939	1,278,842	22,800	872	3,504	.684	9.29
January	39,840	1,320	1,230	1,285	.251	.29
February	40,150	1,490	1,260	1,384	.270	.29
March	49,950	2,020	1,490	1,611	.315	.36
April	188,380	16,000	2,400	6,279	1.23	1.37
May	196,300	12,500	3,280	6,300	1.23	1.42
June	80,700	4,110	1,800	2,690	.525	.59
July	45,430	1,800	1,270	1,465	.286	.33
August	51,340	2,180	1,110	1,656	.323	.37
September	42,060	1,620	1,230	1,402	.274	.31
Water year 1939-40	875,232	16,000	872	2,391	.467	6.36

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 16 to Apr. 12.

St. Croix River at St. Croix Falls, Wis.
(Formerly published as St. Croix River near St. Croix Falls, Wis.)

Location.- Water-stage recorder, lat. 45°24'30", long. 92°38'45", in NW¼ sec. 30, T. 34 N., R. 18 W., 1,800 feet downstream from Northern States Power Co. power plant, in town of St. Croix Falls. Datum of gage is 690.1 feet above mean sea level (unadjusted). Prior to Mar. 16, 1940, records of daily discharge computed from power-house records.

Drainage area.- 5,930 square miles.

Records available.- January 1910 to September 1940 in reports of Geological Survey. January 1902 to October 1912 (monthly discharge only, July 1905 to December 1909) in publication of Minnesota State Drainage Commission entitled "Report of water resources investigation of Minnesota for 1909-12".

Average discharge.- 35 years (1902-5, 1908-40) 3,463 second-feet.

Extremes (regulated).- Maximum discharge during year, 14,300 second-feet May 18 (gage height, 7.12 feet); minimum, 114 second-feet Mar. 27; minimum daily, 403 second-feet Jan. 13.

1902-5, 1908-40: Maximum daily discharge, 35,800 second-feet Mar. 26, 1920; no flow Sept. 30, 1929.

Remarks.- Records good. Monthly means for April to September, as furnished by Northern States Power Co. from power-plant rating, checked the monthly means computed by Geological Survey from stage-discharge relation within less than 4.5%. Flow controlled by operation of gates at power plant and regulated by Nevers dam, 10 miles above station.

Cooperation.- Records Oct. 1 to Mar. 15 furnished by Northern States Power Co.

Rating table, Mar. 16 to Sept. 30 (gage height, in feet, and discharge, in second-feet)

1.5	610	2.2	1,710	3.0	3,660	4.0	6,740	5.0	9,560	6.0	11,900
1.8	975	2.6	2,600	3.5	5,180	4.5	8,260	5.5	10,700	7.0	14,100

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,600	2,020	1,810	1,100	1,450	1,840	2,880	5,650	4,360	1,670	1,600	1,890
2	1,750	1,700	1,970	1,500	1,370	1,720	3,780	5,860	4,140	1,670	1,710	1,650
3	1,620	1,820	915	1,790	1,250	848	4,360	5,880	4,060	1,840	2,080	1,650
4	1,630	1,970	2,140	1,640	1,160	1,730	4,860	5,880	5,150	1,670	2,260	1,730
5	1,890	1,250	1,970	1,280	1,680	1,970	4,800	5,620	3,830	1,890	1,820	1,650
6	1,610	1,930	1,930	718	1,620	1,710	5,960	5,120	3,750	1,860	1,860	1,750
7	1,860	2,200	1,680	1,600	1,390	1,830	6,590	4,970	4,520	1,650	1,710	1,710
8	1,610	1,960	1,540	1,820	1,410	1,850	7,690	4,940	3,620	1,650	1,840	1,650
9	2,440	1,980	1,840	1,830	1,610	1,650	9,590	4,210	2,830	1,670	1,600	1,670
10	2,350	2,000	1,540	1,900	1,490	948	10,700	3,850	3,160	1,670	1,650	1,650
11	2,640	1,800	2,020	1,740	1,160	1,950	11,000	3,480	3,390	1,670	1,800	1,800
12	2,060	1,150	2,280	1,000	1,360	1,760	11,900	3,550	3,480	1,820	1,600	1,420
13	1,710	2,030	2,150	403	1,900	2,410	11,400	3,870	3,230	1,670	1,440	1,400
14	1,740	2,130	1,780	1,310	1,660	1,750	11,000	4,670	3,110	1,630	1,420	1,390
15	1,610	2,070	1,460	1,550	1,660	1,790	9,140	5,660	2,540	1,580	1,580	1,390
16	1,790	1,880	1,300	1,780	1,880	2,320	7,520	7,700	2,270	1,560	1,730	1,390
17	1,680	1,760	992	1,720	1,810	684	7,220	11,600	2,160	1,560	1,930	1,390
18	1,760	1,660	1,680	1,570	674	2,240	7,060	13,700	2,290	1,560	2,300	1,520
19	1,670	696	1,980	1,620	1,920	1,980	7,060	13,200	2,590	1,500	2,440	1,690
20	1,790	1,840	1,770	671	1,800	1,830	5,360	11,200	2,250	1,400	2,430	1,500
21	2,050	2,140	1,800	1,010	1,860	1,760	4,350	10,300	2,260	1,600	2,860	1,670
22	1,800	2,370	1,750	1,510	979	1,990	5,420	10,500	2,280	1,440	2,020	1,650
23	2,090	2,220	1,670	1,810	1,770	1,640	6,830	9,800	2,150	1,480	1,670	1,670
24	1,740	2,470	1,090	1,410	1,960	970	4,940	8,680	2,150	1,350	1,670	1,580
25	2,040	2,220	1,140	1,290	1,010	1,870	4,770	7,520	2,170	1,480	1,670	1,560
26	2,010	986	1,660	1,270	1,650	1,700	4,200	6,740	2,510	1,400	1,670	1,630
27	1,850	2,480	1,610	1,460	2,000	2,210	4,250	6,740	2,350	1,480	1,690	1,630
28	2,080	2,520	1,630	1,180	2,010	2,050	3,210	6,740	2,220	1,460	1,710	1,580
29	1,680	2,320	1,520	1,440	1,940	2,010	4,180	6,260	2,280	1,480	2,080	1,630
30	1,950	936	1,680	1,830	-	2,110	4,320	5,640	2,260	1,540	1,860	1,650
31	1,860	-	1,500	1,670	-	2,280	-	5,000	-	1,460	1,820	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	57,960	2,640	1,600	1,870	0.315	0.36
November	56,508	2,520	696	1,884	.318	.35
December	51,797	2,280	915	1,671	.282	.33
Calendar year 1939	1,496,410	24,800	340	4,100	.691	9.37
January	44,422	1,900	403	1,433	.242	.28
February	45,433	2,010	674	1,567	.264	.28
March	55,400	2,410	684	1,787	.301	.35
April	196,340	11,900	2,880	6,545	1.10	1.23
May	214,530	13,700	3,480	6,920	1.17	1.35
June	89,360	5,150	2,150	2,979	.502	.56
July	49,360	1,890	1,350	1,592	.268	.31
August	57,520	2,860	1,420	1,855	.313	.36
September	47,940	1,890	1,390	1,598	.269	.30
Water year 1939-40	966,570	13,700	403	2,641	.445	6.06

Namekagon River near Trego, Wis.

Location.- Lat. 45°57', long. 91°53', in SW¼ sec. 17, T. 40 N., R. 12 W., at power house of Wisconsin Hydroelectric Co., 5 miles northwest of Trego.

Drainage area.- 489 square miles.

Records available.- October 1927 to September 1940.

Average discharge.- 13 years, 411 second-feet.

Extremes.- Maximum daily discharge during year, 773 second-feet May 21; minimum daily, 241 second-feet Jan. 14.
1927-40: Maximum daily discharge, 1,360 second-feet Sept. 14, 1928; minimum daily, 113 second-feet Aug. 17, Sept. 7, 1930.

Remarks.- Records good. Diurnal fluctuation caused by power plant above station. Discharge computed from hourly records of load and head on power plant. Load-discharge rating of units determined by Geological Survey.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	306	339	341	304	276	313	387	618	622	418	304	314
2	306	339	340	278	276	313	391	616	516	378	372	333
3	306	334	306	265	276	315	422	583	550	380	386	334
4	302	315	339	277	276	315	512	584	599	355	386	334
5	325	304	339	278	281	314	529	521	590	354	359	334
6	323	334	339	278	294	330	524	573	628	353	390	334
7	323	333	340	276	295	357	467	496	596	333	377	336
8	323	333	340	266	322	358	546	502	612	333	302	337
9	323	333	340	265	323	360	662	541	598	333	302	332
10	332	333	340	255	323	361	685	505	541	333	315	331
11	365	334	340	299	297	365	703	510	536	333	315	309
12	355	335	346	264	288	355	693	509	537	333	317	295
13	347	335	352	263	281	357	615	514	512	333	319	295
14	346	333	344	241	280	356	550	510	488	333	293	295
15	347	333	332	271	288	318	653	601	464	333	307	295
16	348	333	335	270	288	310	630	618	465	333	319	295
17	343	327	343	269	286	310	639	663	456	321	331	295
18	345	327	347	269	256	314	604	646	428	321	317	294
19	336	317	330	278	319	348	626	638	424	321	339	293
20	334	327	362	279	320	360	625	731	424	321	340	316
21	337	334	369	270	320	360	640	773	391	321	320	300
22	338	334	332	270	320	345	596	745	424	320	321	301
23	338	341	291	273	320	328	612	707	423	319	323	301
24	338	353	284	273	287	326	572	683	448	320	295	301
25	338	349	295	273	287	326	576	690	447	320	292	301
26	338	309	311	286	287	326	576	651	448	319	300	300
27	343	341	335	286	320	324	586	637	370	319	299	300
28	326	342	307	256	321	389	525	634	355	319	299	300
29	326	342	319	292	313	354	576	660	401	319	300	301
30	326	260	328	293	-	389	575	660	415	320	298	301
31	324	-	332	294	-	353	-	648	-	308	303	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	10,307	365	302	332	0.679	0.78
November	9,903	353	260	330	.675	.75
December	10,290	362	264	332	.679	.78
Calendar year 1939	165,637	1,020	201	454	.928	12.60
January	8,541	304	241	276	.564	.65
February	8,652	323	276	298	.609	.66
March	10,589	359	310	342	.699	.81
April	17,301	703	387	577	1.18	1.32
May	18,969	773	496	612	1.25	1.44
June	14,708	628	355	490	1.00	1.12
July	10,356	418	308	334	.683	.79
August	10,070	390	292	325	.665	.77
September	9,307	337	293	310	.634	.71
Water year 1939-40	138,993	773	241	380	.777	10.58

Apple River near Somerset, Wis.

Location.- Lat. 45°10', long. 92°43', in sec. 21, T. 31 N., R. 19 W., at power plant of Northern States Power Co., 3½ miles downstream from Somerset.

Drainage area.- 550 square miles.

Records available.- January 1901 to September 1940.

Average discharge.- 39 years, 294 second-feet.

Extremes (regulated).- Maximum daily discharge during year, 1,010 second-feet Apr. 9; minimum daily, 38 second-feet Aug. 25.
1901-40: Maximum daily discharge, 2,280 second-feet in June 1905; no flow Sept. 30, 1929, Aug. 2, 1933.

Remarks.- Records good except those below 100 second-feet, which are fair. Records of daily discharge computed on basis of average daily load, head, and plant efficiency. The discharge as computed was checked within 4 percent by three discharge measurements made in June 1940 by the Geological Survey. A fourth discharge measurement at zero load indicated that the flow as computed during no load conditions may be considerable too low.
Cooperation.- Records of daily discharge furnished by Northern States Power Co.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	171	257	184	146	168	192	504	427	214	158	264	179
2	203	221	246	172	179	177	471	373	298	158	190	167
3	160	238	236	181	187	208	547	346	212	164	179	129
4	180	252	231	168	145	301	701	326	321	184	190	147
5	166	215	202	141	228	218	621	302	336	166	194	139
6	167	212	191	160	132	189	524	220	360	120	212	184
7	204	236	196	134	158	219	943	301	423	178	217	178
8	202	226	202	136	189	212	942	316	356	132	183	152
9	166	236	217	170	210	199	1,010	247	483	126	178	174
10	234	248	226	148	198	206	770	239	607	120	190	165
11	321	177	163	131	190	158	682	287	337	134	157	142
12	295	203	202	147	190	198	697	309	557	154	157	157
13	218	180	178	138	176	125	485	297	268	154	172	131
14	180	219	171	166	203	146	616	243	281	132	138	156
15	200	208	203	129	198	254	399	307	255	141	172	133
16	165	196	224	158	179	247	419	345	209	126	172	148
17	187	197	233	201	203	253	466	327	176	147	177	160
18	242	231	218	101	161	278	378	309	282	120	135	112
19	209	190	238	174	169	370	390	329	62	161	245	139
20	189	146	248	151	207	217	297	446	141	135	217	161
21	154	193	196	160	199	176	280	426	191	130	208	116
22	220	170	173	152	179	139	372	316	226	170	159	144
23	178	195	179	160	145	168	294	376	144	109	93	138
24	214	175	202	143	181	205	479	365	201	126	130	166
25	193	231	141	141	168	258	278	298	246	138	38	144
26	200	193	195	151	203	224	288	255	150	176	176	132
27	204	190	195	183	191	270	287	330	179	169	137	156
28	264	252	172	161	170	244	223	274	144	116	148	126
29	236	216	178	145	195	261	328	338	161	142	132	97
30	226	208	147	168	-	369	408	230	163	140	132	177
31	236	-	176	139	-	471	-	279	-	167	160	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	6,384	321	154	206	0.375	0.43
November	6,311	257	146	210	.382	.43
December	6,163	248	141	199	.362	.42
Calendar year 1939	107,243	1,570	59	294	.535	7.24
January	4,755	201	101	153	.278	.32
February	5,301	228	132	183	.333	.36
March	7,152	471	125	231	.420	.48
April	15,099	1,010	223	503	.915	1.02
May	9,783	446	220	316	.575	.66
June	7,983	607	62	266	.484	.54
July	4,493	184	109	145	.264	.30
August	5,252	264	38	169	.307	.35
September	4,449	184	97	148	.269	.30
Water year 1939-40	83,125	1,010	38	227	.413	5.61

Lakes in St. Croix River Basin

Big McKenzie Lake near Spooner, Wis.

Location.- Staff gage, lat. 45°56', long. 92°02', in SE¼ sec. 24, T. 40 N., R. 14 W., at bridge on County Trunk Highway E, at outlet from Big McKenzie to Middle McKenzie Lake.
Drainage area.- 25 square miles.
Lake-surface area.- 1,024 acres.
Records available.- August 1936 to September 1937, May 1939 to September 1940 (fragmentary).
Extremes.- Maximum gage height observed during year, 0.74 foot June 7; minimum observed, 0.20 foot Aug. 14, 25, Sept. 30.
1936-37, 1938-40: Maximum gage height observed, 1.36 feet May 30, 1937; minimum observed, that of Aug. 14, 25, Sept. 30, 1940.
Remarks.- Lake level not artificially regulated.

Gage height, in feet, water year October 1939 to September 1940

Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height
Oct. 6	0.36	Dec. 16	0.57	Feb. 23	0.47	May 4	0.69	Aug. 3	0.27
10	.42	19	.58	Mar. 2	.48	11	.56	4	.27
15	.44	22	.57	9	.44	18	.73	11	.21
20	.44	29	.55	16	.50	24	.70	14	.20
22	.43	31	.55	17	.49	26	.72	18	.33
30	.46	Jan. 5	.53	23	.44	June 2	.68	22	.23
Nov. 3	.44	8	.53	28	.43	7	.74	25	.20
5	.44	12	.53	31	.45	12	.64	Sept. 1	.31
10	.45	18	.53	Apr. 2	.43	22	.50	4	.31
12	.45	26	.50	3	.50	29	.42	14	.24
17	.48	31	.49	12	.54	30	.42	21	.24
24	.51	Feb. 5	.48	19	.52	July 4	.36	24	.26
Dec. 1	.55	9	.44	26	.49	7	.33	30	.20
4	.57	11	.44	28	.54	18	.28		
7	.57	21	.47	May 1	.68	26	.27		

Shell Lake at Shell Lake, Wis.

Location.- Staff gage, lat. 45°44', long. 91°56', in sec. 25, T. 38 N., R. 13 W., attached to post in bed of lake about 80 feet from engine house in town of Shell Lake, Wis.
Drainage area.- 14 square miles.
Lake-surface area.- 3,200 acres.
Records available.- August 1936 to September 1940 (fragmentary).
Extremes.- Maximum gage height observed during year, 0.95 foot Oct. 2; minimum observed, 0.08 foot Sept. 30.
1936-40: Maximum gage height observed, 1.78 feet June 16, 1939; minimum observed, that of Sept. 30, 1940.
Remarks.- Lake has no surface outlet.

Gage height, in feet, water year October 1939 to September 1940

Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height
Oct. 2	0.95	Dec. 4	0.59	May 3	0.64	July 5	0.85	Sept. 2	0.29
6	.93	8	.61	6	.63	8	.83	6	.25
9	.91	11	.60	10	.62	12	.81	9	.23
13	.89	15	.58	13	.64	15	.79	13	.18
16	.86	18	.57	17	.67	19	.76	16	.16
20	.84	22	.55	20	.70	22	.73	20	.14
23	.73	25	.53	24	.73	26	.70	23	.12
27	.71	29	.51	27	.75	29	.67	27	.10
30	.71	Apr. 1	.18	31	.77	Aug. 2	.65	30	.08
Nov. 3	.70	5	.19	June 3	.80	5	.63		
6	.68	8	.17	7	.83	9	.57		
10	.67	12	.16	10	.85	12	.50		
13	.65	15	.16	14	.87	14	.45		
17	.63	19	.16	17	.88	16	.47		
20	.63	22	.64	21	.90	19	.45		
24	.62	26	.63	24	.93	23	.41		
27	.61	29	.64	28	.91	26	.37		
Dec. 1	.61	May 2	.64	July 1	.87	30	.33		

Lakes in St. Croix River Basin

Bone Lake near Luck, Wis.

Location.- Staff gage, lat. 45°33', long. 92°24', in NW¼ sec. 5, T. 35 N., R. 16 W., on post driven into bed of lake near loose rock pier in front of John J. Tony's residence, 9 miles southeast of Luck.

Drainage area.- 15 square miles.

Lake-surface area.- 2,050 acres.

Records available.- September 1936 to September 1940 (fragmentary).

Extremes.- Maximum gage height observed during year, 6.89 feet Dec. 27; minimum observed, 6.37 feet July 19, 26, 31, Sept. 24, 28, 30.
1936-40: Maximum gage height observed, 7.30 feet May 10, 20, 1938; minimum observed, 6.18 feet Oct. 3 to Nov. 17, 1936.

Remarks.- Lake level not artificially regulated.

Revisions.- Stages published in Water-Supply Paper 875 for period May 10 to Sept. 30, 1939, are in error. Subtract 0.31 foot to give correct gage heights.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	6.69					-	-	-	-	-
2	-	-	-					6.75	-	6.51	6.75	-
3	-	-	-					-	-	-	-	-
4	6.53	6.59	-					6.73	6.79	-	-	6.57
5	-	-	6.71					-	-	6.49	-	-
6	6.53	-	-					-	-	-	6.65	-
7	-	6.59	-					6.71	-	-	-	6.51
8	-	-	-					-	6.83	-	-	-
9	-	-	6.73					-	-	6.45	6.59	-
10	-	6.59	-					6.67	-	-	-	6.49
11	6.53	-	-					-	6.77	-	-	-
12	-	-	6.73					-	-	6.41	-	-
13	6.55	-	-					-	-	-	6.59	-
14	-	-	-					6.69	-	-	-	6.41
15	-	6.59	-					-	6.69	-	-	-
16	-	-	6.73					-	-	6.39	6.59	-
17	6.59	-	-					6.69	-	-	-	6.39
18	-	6.59	-					-	6.65	-	-	-
19	-	-	6.83					-	-	6.37	-	-
20	-	-	-					-	-	-	-	-
21	6.55	-	-					-	-	-	6.55	6.41
22	-	6.67	-					6.75	6.57	-	-	-
23	-	-	6.83					-	-	6.39	-	-
24	-	6.67	-					-	-	-	6.49	6.37
25	6.59	-	-					6.71	-	-	-	-
26	-	-	-					-	6.55	6.37	-	-
27	-	-	6.89					-	-	-	6.47	-
28	6.59	6.67	-					6.71	-	-	-	6.37
29	-	-	-					-	6.53	-	-	-
30	-	-	-					-	-	-	-	6.37
31	6.59	-	-				6.77	6.69	-	6.37	6.53	-

Note.- Add 90.00 feet to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

Cannon River at Welch, Minn.

Location.- Water-stage recorder, lat. 44°34', long. 92°44', in sec. 28, T. 113 N., R. 16 W., at Welch, 3 miles above mouth of Belle Creek.

Drainage area.- 1,320 square miles (revised).

Records available.- June 1909 to January 1914, November 1930 to September 1940.

Average discharge.- 11 years (1911-13, 1931-40) 323 second-feet.

Extremes.- Maximum discharge during year, 2,330 second-feet July 11 (gage height, 5.61 feet); maximum gage height, 7.05 feet Mar. 30, affected by ice; minimum daily discharge recorded, 45 second-feet Jan. 3; minimum gage height recorded, 1.05 feet Jan. 2.
1909-14, 1930-40: Maximum discharge, 11,300 second-feet Mar. 23, 1936 (gage height, 12.04 feet) from rating curve extended above 9,500 second-feet; minimum, 11 second-feet Dec. 31, 1936 (gage height, 1.32 feet).

Remarks.- Records good except those for periods of ice effect, or no gage-height record, which are poor. Discharge partly regulated by power plants upstream.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

1.4	52	1.8	134	2.8	527	4.0	1,170
1.5	68	2.0	198	3.2	726	4.5	1,470
1.6	87	2.4	351	3.6	940	5.0	1,810

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55		*72	60	100	190	968	248	140	487	143	126
2	62	a95	93	50	130	220	1,050	244	146	445	140	113
3	113		a50	45	120	160	995	172	86	419	315	91
4	111			90	110	*105	885	206	220	285	132	172
5	118	a60		130	75	160	885	74	199	191	165	182
6	116		a100	70	130	240	830	124	233	216	172	180
7	113			75	150	200	858	140	302	191	126	143
8	54	a95		*95	150	200	804	113	219	302	116	106
9	68			200	140	220	752	121	150	282	131	105
10	143		a55	190	160	95	674	131	224	436	185	156
11	146			220	110	70	423	137	353	663	62	146
12	a130	a55		220	120	95	426	62	353	372	91	131
13	a110			240	220	110	216	98	368	283	126	106
14			a95	100	220	300	171	137	364	126	118	134
15	a60	a100		110	240	280	221	121	351	188	129	55
16				200	240	280	351	121	182	226	124	83
17	a110			200	240	90	266	124	70	188	134	103
18			a55	190	120	120	266	124	69	153	208	124
19		a60		220	200	255	240	60	116	134	126	121
20	a90		a150	200	380	230	240	110	150	137	134	118
21			a65	110	220	240	110	134	153	78	137	118
22	a60		80	100	110	200	169	121	315	84	137	52
23		a90	130	240	55	190	255	174	446	124	137	64
24			120	170	220	110	212	146	804	102	163	121
25			50	130	160	90	212	140		100	214	126
26	a90		50	110	80	240	222	79		100	70	111
27		a50	70	70	140	240	222	155	a660	111	97	121
28			130	75	190	220	96	156		65	289	131
29	a55	a80	110	65	220	240	160	150		133	204	76
30		a50	110	95	-	1,600	244	125		140	212	66
31	a95	-	70	*100	-	*1,500	-	82	-	131	267	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,834	146	-	91.4	0.069	0.08
November	2,465	-	-	82.2	.062	.07
December	2,745	-	-	88.5	.067	.08
Calendar year 1939	125,596	9,060	-	344	†.261	†3.54
January	4,170	240	45	135	.102	.12
February	4,750	380	55	164	.124	.13
March	8,490	1,600	70	274	.208	.24
April	13,423	1,050	96	447	.339	.38
May	4,129	248	60	133	.101	.12
June	9,973	-	69	332	.252	.28
July	6,892	663	65	222	.168	.19
August	4,804	315	62	155	.117	.13
September	3,481	182	52	116	.088	.10
Water year 1939-40	68,156	1,600	-	186	.141	1.92

Peak discharge.- June 22 (11 p.m.) 1,890 sec.-ft.; July 11 (1:30 a.m.) 2,330 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of power plant and weather records.
† Computed on basis of revised drainage area.
Note.- Stage-discharge relation affected by ice Dec. 22 to Mar. 18, Mar. 21-26, 29, 30.

Chippewa River at Bishops Bridge, near Winter, Wis.

Location.- Water-stage recorder, lat. 45°51', long. 91°04', 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 1940.

Average discharge.- 27 years (1913-40), 665 second-feet (unadjusted).

Extremes (regulated).- Maximum discharge, 2,050 second-feet Sept. 5, 6 (gage height, 6.75 feet); minimum, 85 second-feet May 3 (gage height, 3.82 feet).
1912-40: Maximum discharge observed, 6,940 second-feet Apr. 22, 1916 (gage height, 9.56 feet); minimum, 14 second-feet Apr. 17-20, 1925 (gage height, 3.25 feet).

Remarks.- Records good except those for periods of ice effect, which are fair. Flow regulated by Chippewa and Moose Lake Reservoirs.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Apr. 1-10, Apr. 14 to May 28, June 5-26)

4.3	251	5.0	605	5.8	1,160
4.6	386	5.4	860	6.2	1,510

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,000	623	611	874	413	402	239	138	588	279	769	522
2	1,000	623	611	867	413	402	155	129	588	279	769	522
3	1,000	623	611	860	413	402	161	116	653	279	769	522
4	1,000	623	605	854	413	402	161	111	1,030	282	769	752
5	776	623	605	847	418	397	155	108	1,510	282	769	1,360
6	635	617	605	847	418	341	168	108	1,510	275	769	1,360
7	629	617	605	840	418	b255	194	108	1,510	275	769	1,040
8	629	617	605	828	413	b255	190	108	1,510	275	769	1,040
9	641	617	605	828	424	b259	200	100	1,460	517	769	1,200
10	641	617	605	821	413	b263	218	95	1,460	802	769	1,200
11	641	617	605	821	413	b263	b211	95	1,460	802	769	1,200
12	635	611	600	821	418	259	b207	95	1,460	802	769	1,380
13	629	611	600	814	413	b267	b168	95	1,460	802	769	1,280
14	629	611	600	802	413	267	127	116	1,460	802	769	786
15	635	569	594	802	413	263	141	138	1,420	802	769	517
16	629	623	594	795	408	263	138	141	965	802	672	517
17	629	623	594	788	408	259	132	138	965	802	429	522
18	629	623	588	782	408	263	127	138	930	802	296	512
19	629	623	594	776	408	263	127	161	930	802	296	512
20	635	623	588	769	408	b263	124	152	930	802	296	506
21	629	623	588	762	408	b263	121	143	930	802	296	506
22	629	617	588	756	408	b263	121	135	708	802	296	484
23	629	623	588	750	b408	b263	121	132	468	802	336	484
24	629	623	588	743	b408	b263	121	129	468	802	332	484
25	629	623	588	736	b408	b263	118	121	456	782	332	478
26	629	617	588	730	402	b263	127	121	376	769	332	473
27	629	617	588	724	397	263	121	116	287	769	429	473
28	629	617	588	717	397	263	124	121	283	769	934	473
29	629	611	743	710	402	267	135	222	283	769	977	478
30	629	611	881	629	-	267	143	424	279	769	952	473
31	629	-	881	424	-	267	-	473	-	769	522	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	21,190	1,000	629	684	-990	314	0.405	0.47
November	18,516	623	569	617	-774	318	.410	.46
December	19,234	881	588	620	-800	321	.414	.48
Calendar year 1939	359,176	4,560	146	984	-2,914	892	1.15	15.65
January	24,117	874	424	778	-2,316	‡-87	‡-.112	‡-.13
February	11,904	424	397	410	-360	266	.343	.37
March	8,913	402	255	288	+364	424	.547	.63
April	4,595	239	118	153	+4,568	1,915	2.47	2.76
May	4,527	473	95	146	+3,754	1,548	2.00	2.31
June	28,337	1,510	279	945	-136	893	1.15	1.28
July	20,171	802	275	651	-796	354	.457	.53
August	19,262	977	296	621	-473	444	.573	.66
September	22,056	1,380	473	735	-1,102	310	.400	.45
Water year 1939-40	202,822	1,510	95	554	+939	584	.754	10.27

† Change in contents in Chippewa and Moose Lake Reservoirs.
‡ Negative figure indicates that ice storage on reservoir banks exceeded the inflow into the reservoir during that month.
b Stage-discharge relation affected by ice.
Note.- Discharge May 5-14, 25-28, June 3, 9-12, July 6 to Aug. 22 computed from twice-daily chain-gage readings.

Chippewa River near Bruce, Wis.

Location.- Water-stage recorder, lat. 45°28', long. 91°15', in SE¼ sec. 5, T. 34 N., R. 7 W., 1 mile east of Bruce and 1 mile downstream from Thornapple River.

Drainage area.- 1,600 square miles.

Records available.- December 1913 to September 1940.

Average discharge.- 26 years (1914-40), 1,327 second-feet (unadjusted).

Extremes (regulated).- Maximum discharge during year, 7,040 second-feet Apr. 10 (gage height, 9.15 feet); minimum, 460 second-feet Mar. 13, 14.
1914-40: Maximum discharge observed, 15,300 second-feet Mar. 24, 1935 (gage height, 12.4 feet, site and datum then in use), from rating curve extended above 13,000 second-feet; minimum observed, 155 second-feet June 10, 1932 (gage height, 0.9 foot, site and datum then in use).

Remarks.- Records good except those for periods of ice effect, which are fair. Flow from 48 percent of the drainage area regulated by Chippewa and Moose Lake Reservoirs.

Rating tables, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 30)

Oct. 1 to Apr. 8				Apr. 9 to Sept. 30					
1.4	476	2.6	916	1.8	511	3.5	1,480	7.0	4,520
1.7	554	3.0	1,140	2.0	597	4.0	1,830	8.0	5,520
2.0	651	3.4	1,380	2.5	865	5.0	2,600	9.0	6,800
2.3	772			3.0	1,160	6.0	3,470	10.0	8,050

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,350	970	916	1,130	800	640	820	1,800	1,260	597	1,190	780
2	1,320	970	970	1,140	700	640	1,040	1,720	1,220	574	1,220	752
3	1,320	943	916	1,160	660	630	1,400	1,420	1,160	574	1,190	725
4	1,320	970	916	1,200	660	630	1,780	1,190	1,620	552	1,130	698
5	1,320	970	916	1,140	650	620	2,200	1,040	3,010	532	1,100	1,100
6	1,050	970	943	1,130	650	620	2,800	923	3,770	532	1,070	1,550
7	970	916	916	1,130	650	550	3,800	865	4,740	532	1,040	1,520
8	943	916	865	1,120	650	480	5,200	808	5,620	511	1,010	1,220
9	995	916	890	1,110	650	480	6,560	780	5,400	532	981	1,220
10	1,080	916	865	1,100	650	480	6,920	698	4,080	883	1,010	1,350
11	1,110	916	865	1,090	650	470	6,560	672	3,280	1,070	981	1,350
12	1,080	916	890	1,080	650	470	5,510	646	2,760	1,040	981	1,320
13	1,020	943	841	1,070	650	460	4,190	622	2,440	1,040	1,040	1,660
14	1,020	890	651	1,060	650	*460	2,840	964	1,800	1,040	1,040	1,320
15	1,020	890	841	1,050	650	470	2,760	1,830	1,580	1,010	1,100	865
16	970	817	995	1,040	650	480	2,760	1,940	1,450	1,010	1,380	672
17	970	890	970	1,030	650	480	2,680	1,690	1,420	1,010	1,290	672
18	970	890	943	1,020	650	480	2,360	1,450	1,380	1,010	981	672
19	943	890	865	1,010	650	480	2,080	1,800	1,320	981	698	672
20	943	916	850	1,010	650	480	1,830	3,400	1,260	1,100	622	646
21	943	*916	840	1,000	640	480	1,620	3,870	1,260	1,160	597	646
22	943	916	830	1,000	640	480	1,480	3,010	1,420	1,130	574	646
23	943	916	820	1,000	640	480	1,350	2,240	1,100	1,070	552	646
24	943	916	820	*1,000	640	480	1,220	1,720	1,010	1,040	552	672
25	943	890	810	980	640	480	1,130	1,380	1,010	1,040	552	672
26	943	890	800	960	640	490	1,040	1,190	923	1,040	552	672
27	943	890	790	960	640	490	894	1,130	780	1,040	574	672
28	970	890	780	960	640	500	808	1,160	698	1,070	672	672
29	970	916	760	960	640	510	836	1,220	672	1,070	1,190	672
30	970	890	980	940	-	550	1,220	1,220	622	1,040	1,180	672
31	970	-	1,100	880	-	650	-	1,220	-	1,010	1,190	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	32,195	1,350	943	1,039	-990	669	0.418	0.48
November	27,445	970	817	915	-774	616	.385	.43
December	27,154	1,100	651	876	-800	577	.361	.42
Calendar year 1939	671,369	12,000	651	1,839	-2,914	1,747	1.09	14.81
January	32,480	1,200	880	1,048	-2,316	183	.114	.13
February	18,980	800	640	654	-360	510	.319	.34
March	16,090	650	460	519	+364	655	.409	.47
April	77,688	6,920	808	2,590	+4,568	4,352	2.72	3.04
May	45,618	3,870	622	1,472	+3,754	2,874	1.80	2.08
June	60,065	5,620	622	2,002	-136	1,950	1.22	1.36
July	27,840	1,160	511	898	-796	601	.376	.43
August	29,239	1,380	552	943	-473	766	.479	.55
September	27,406	1,660	646	914	-1,102	489	.306	.34
Water year 1939-40	422,200	6,920	460	1,157	+939	1,187	.742	10.07

* Winter discharge measurement made on this day.
† Change in contents in Chippewa and Moose Lake Reservoirs.
Note.- Stage-discharge relation affected by ice Dec. 20 to Apr. 8.

Chippewa River at Chippewa Falls, Wis.

Location.- Water-stage recorder, lat. 44°55'35", long. 91°24'40", in lot 1, sec. 12, T. 28 N., R. 9 W., at Chippewa Falls, 1 mile downstream from Duncan Creek. Datum of gage is 799.3 feet above mean sea level (Northern States Power Co. bench mark).

Drainage area.- 5,600 square miles.

Records available.- June 1888 to September 1940.

Average discharge.- 30 years (1907-10, 1913-40), 4,788 second-feet (unadjusted).

Extremes (regulated).- Maximum discharge during year, 31,600 second-feet June 8 (gage height, 13.76 feet); minimum, 183 second-feet Sept. 15 (gage height, 1.18 feet); minimum daily, 443 second-feet Jan. 7.

1888-1940: Maximum discharge, 78,000 second-feet Mar. 27, 1920 (gage height, 17.0 feet, site and datum then in use), from rating curve extended above 60,000 second-feet; minimum, 22 second-feet Apr. 2, 1934 (gage height, 0.63 foot); minimum daily, 40 second-feet Feb. 4, 1917.

Maximum stage known, 26.94 feet on Sept. 10, 1884 (site and datum in use to June 1932).

Remarks.- Records good. Flow regulated by operation of many power plants above station, especially Chippewa Falls hydroelectric plant, which is just above, and by Chippewa, Moose Lake, Flambeau, Rest Lake and Wissota Reservoirs.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

1.5	385	2.6	1,290	4.0	2,960	6	6,450	9	14,300
1.9	695	3.0	1,690	4.5	3,670	7	8,660	10	17,400
2.3	1,020	3.5	2,250	5	4,460	8	11,300	12	24,500

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	938	2,490	2,460	1,500	2,750	3,700	4,720	6,720	7,350	4,040	3,140	3,210
2	2,530	2,370	2,580	2,550	2,100	3,560	5,820	8,300	5,470	4,320	4,170	3,560
3	2,650	2,380	1,250	2,660	1,900	1,860	8,370	8,220	5,780	3,800	3,300	3,020
4	2,570	2,680	2,800	2,600	668	3,900	8,260	8,170	7,290	2,030	1,840	3,290
5	2,880	1,190	2,760	2,430	2,240	3,700	7,900	3,280	9,450	2,800	3,540	3,400
6	2,220	2,420	2,820	1,520	2,780	3,710	7,530	4,800	16,300	3,160	3,540	3,530
7	2,850	2,610	2,730	443	2,190	3,750	6,350	4,980	21,300	1,830	3,680	3,740
8	2,340	2,700	2,700	2,280	1,960	3,620	7,220	4,940	27,200	3,970	3,480	3,040
9	2,450	2,640	2,990	2,460	2,050	3,620	7,710	5,030	24,900	2,970	4,090	3,180
10	2,720	2,260	1,330	2,460	1,840	1,270	9,330	5,050	19,400	2,760	2,130	3,610
11	3,340	2,100	3,090	2,500	809	3,820	10,800	3,960	15,200	1,370	1,040	3,270
12	2,990	1,120	3,400	2,070	1,930	3,480	17,000	1,960	12,000	1,220	3,290	3,390
13	3,290	2,480	3,020	1,550	2,300	3,240	14,400	4,110	9,250	1,250	3,380	3,190
14	2,660	2,650	2,890	474	2,210	3,490	10,800	4,730	9,100	904	3,080	2,650
15	2,580	2,520	2,300	2,370	2,720	3,490	12,300	4,710	8,050	2,740	2,780	2,800
16	2,850	2,420	2,190	2,860	3,550	3,410	10,800	7,470	3,520	2,670	3,450	2,730
17	3,080	2,360	960	2,530	2,200	969	11,900	7,700	5,360	2,460	5,500	2,950
18	2,600	2,520	2,550	2,760	1,000	3,140	12,800	6,630	5,140	3,140	5,890	3,140
19	2,470	1,040	2,880	2,170	2,840	3,490	11,800	5,400	5,540	2,900	4,070	2,750
20	2,530	2,580	3,060	1,500	3,340	2,380	11,600	11,500	5,150	3,060	4,400	3,020
21	2,580	2,670	2,640	636	2,910	2,340	8,010	23,100	4,950	2,080	4,110	3,240
22	2,610	2,760	2,640	2,320	1,910	2,470	8,840	21,600	5,680	3,600	4,710	1,200
23	2,510	2,730	2,770	2,610	2,150	1,950	8,000	16,200	4,750	3,600	4,880	3,600
24	2,730	3,160	1,480	2,250	1,850	971	8,690	13,100	5,530	3,790	4,580	2,930
25	2,700	2,670	945	2,210	530	2,010	8,320	11,300	6,990	3,770	2,520	2,750
26	2,670	983	2,480	2,290	3,480	2,500	8,440	6,400	7,120	4,000	3,400	2,730
27	2,370	3,010	2,600	1,780	3,420	2,350	6,140	8,070	6,970	3,450	3,000	3,090
28	2,680	3,360	2,900	859	3,530	2,860	3,710	7,980	6,050	2,530	3,330	3,230
29	2,150	2,720	2,540	2,160	3,720	2,360	4,940	8,040	4,170	2,900	3,300	1,040
30	2,640	1,250	2,900	2,800	-	3,070	5,240	5,640	2,860	3,660	3,700	2,760
31	2,850	-	1,860	2,730	-	3,470	-	7,380	-	3,760	3,880	-

Month	Observed				Change in reservoir contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	81,028	3,340	938	2,614	-1,453	2,072	0.370	0.43
November	70,843	3,360	983	2,361	-1,499	1,783	.318	.35
December	76,515	3,400	945	2,468	-1,637	1,857	.332	.38
Calendar year 1939	2,292,656	42,200	938	6,281	-5,248	6,115	1.09	14.83
January	64,332	2,860	443	2,075	-3,130	906	.162	.19
February	66,877	3,720	530	2,306	-2,062	1,483	.265	.29
March	89,950	3,900	969	2,902	-2,338	2,029	.362	.42
April	267,740	17,000	3,710	8,925	+10,479	12,968	2.32	2.59
May	246,470	23,100	1,960	7,951	+7,649	10,807	1.93	2.22
June	277,820	27,200	2,860	9,261	-398	9,107	1.63	1.82
July	90,534	4,320	904	2,920	-816	2,615	.467	.54
August	111,200	5,890	1,040	3,587	-532	3,388	.605	.70
September	90,040	3,740	1,040	3,001	-2,364	2,089	.373	.42
Water year 1939-40	1,533,349	27,200	443	4,189	+1,899	4,249	.759	10.35

† Change in contents in Chippewa, Moose Lake, Flambeau, Rest Lake, and Wissota Reservoirs.

Chippewa River at Durand, Wis.

Location.- Water-stage recorder, lat. 44°37'45", long. 91°58'10", in SW¼ sec. 21, T. 25 N., R. 13 W., at Durand, 400 feet upstream from highway bridge. Datum of gage is 695.20 feet above mean sea level (general adjustment of 1912).

Drainage area.- 9,010 square miles.

Records available.- July 1928 to September 1940.

Average discharge.- 12 years, 6,844 second-feet (unadjusted).

Extremes (regulated).- Maximum discharge during year, 38,900 second-feet June 10 (gage height, 10.82 feet); minimum daily, 2,420 second-feet Jan. 22, 29.

1928-40: Maximum discharge, 103,000 second-feet Sept. 11, 1938 (gage height, 15.16 feet), from rating curve extended above 62,000 second-feet; minimum, 1,320 second-feet (estimated) Dec. 27, 1933.

Maximum stage known, 18.4 feet Sept. 12, 1884.

Remarks.- Records good except those for period of ice effect, which are fair. Flow partly regulated by power plants and by Chippewa, Moose Lake, Flambeau, Pest Lake, and Wissota Reservoirs, and by four reservoirs on Upper Red Cedar River.

Rating tables, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 15

1.5	2,900	3.0	5,650
2.0	3,680	3.5	6,950
2.5	4,590		

Note.- Same as following table above 3.6 feet.

Apr. 16 to Sept. 30

1.5	2,750	4	8,470	9	29,000
2.0	3,500	5	11,700	10	34,200
2.5	4,400	6	15,300	11	40,500
3.0	5,550	7	19,300		
3.5	6,940	8	23,800		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,600	4,400	3,190	2,980	4,110	5,020	11,700	7,540	10,100	5,810	4,940	5,300
2	3,120	3,850	3,760	2,900	3,650	4,910	11,100	9,100	9,420	6,940	5,060	4,400
3	3,510	3,940	4,030	3,300	3,480	4,700	14,200	10,400	7,390	6,800	5,420	4,830
4	3,940	3,680	3,270	3,830	3,060	3,650	18,500	10,400	8,470	5,420	4,720	4,500
5	3,850	3,550	4,120	3,650	2,540	5,020	19,300	11,100	11,100	4,200	3,580	4,500
6	4,300	3,430	4,210	3,740	2,980	5,360	18,900	5,550	13,800	4,720	5,060	4,500
7	3,510	3,600	4,210	3,300	3,560	*5,480	17,600	7,390	22,900	4,610	4,720	4,400
8	3,760	4,030	4,210	2,820	3,480	5,480	17,600	7,390	28,400	3,740	4,830	4,610
9	4,030	3,940	4,400	2,610	3,220	5,480	18,100	6,940	34,700	5,420	4,720	4,300
10	4,210	4,030	4,690	*3,390	3,060	5,480	16,400	6,650	38,200	4,830	4,940	4,610
11	4,300	3,850	3,680	3,560	3,060	3,560	16,800	6,940	32,100	4,720	3,740	4,300
12	4,500	3,350	4,400	3,560	2,540	4,700	18,100	5,420	22,400	3,660	2,890	4,500
13	4,210	3,270	4,590	3,300	2,820	5,020	20,200	3,830	17,200	3,190	4,400	4,720
14	4,590	3,760	4,400	2,980	3,300	4,300	17,200	5,810	14,200	2,890	4,610	4,400
15	4,120	3,940	4,210	2,540	3,220	5,020	14,900	6,500	13,100	2,820	4,400	4,200
16	3,760	3,850	3,680	2,540	3,480	5,600	14,200	6,800	11,100	3,580	3,920	4,010
17	4,300	3,850	3,600	3,390	4,300	5,980	13,800	8,780	7,850	4,010	4,720	4,500
18	4,300	3,940	3,190	3,560	3,560	4,300	14,900	9,420	8,470	3,830	6,940	4,400
19	4,120	3,850	3,940	3,300	*3,060	4,800	15,300	8,470	8,320	4,300	6,940	4,300
20	3,760	3,190	4,030	3,480	3,560	5,480	14,500	7,540	8,320	4,400	5,810	4,010
21	3,940	3,600	4,210	2,980	4,200	4,800	13,100	15,500	7,540	4,200	5,550	3,830
22	4,120	4,030	4,030	2,420	4,100	4,200	10,700	23,300	8,160	3,420	5,550	3,830
23	4,030	3,940	4,120	2,900	3,300	4,020	11,100	23,800	10,100	4,720	5,940	2,890
24	4,030	4,120	4,120	3,560	3,220	3,480	11,400	18,100	10,700	4,720	6,220	4,400
25	3,940	4,500	3,510	3,390	2,980	2,980	11,100	15,300	12,700	4,940	5,810	3,830
26	4,300	3,940	3,350	3,390	2,610	3,480	10,400	13,400	14,200	5,060	4,200	3,830
27	4,300	3,120	4,030	3,390	3,560	3,830	10,700	9,100	14,500	5,060	4,720	3,830
28	4,030	4,030	4,020	3,220	4,400	*4,110	8,000	11,100	12,100	4,500	4,400	4,200
29	4,030	4,500	4,020	2,420	4,500	4,700	6,080	10,400	10,100	4,010	4,400	4,100
30	3,760	4,120	3,920	*3,060	-	4,600	7,540	10,400	6,940	4,500	4,610	4,200
31	4,030	-	3,060	3,740	-	8,470	-	7,700	-	4,500	4,940	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	124,300	4,590	3,120	4,010	-1,815	3,332	0.370	0.43
November	115,500	4,500	3,120	3,850	-1,599	3,233	.359	.40
December	122,200	4,690	3,060	3,942	-1,809	3,267	.363	.42
Calendar year 1939	3,365,020	57,500	3,060	9,219	-5,270	9,052	1.00	13.63
January	99,200	3,830	2,420	3,200	-3,256	1,984	.220	.25
February	98,910	4,500	2,540	3,411	-2,091	2,576	.286	.31
March	148,010	8,470	2,980	4,775	-2,282	3,923	.435	.50
April	423,420	20,200	6,080	14,110	+10,849	18,296	2.03	2.26
May	310,070	23,800	3,830	10,000	+8,142	13,040	1.45	1.67
June	434,580	38,200	6,940	14,490	-390	14,340	1.59	1.77
July	139,520	6,940	2,820	4,501	-841	4,187	.465	.54
August	152,700	6,940	2,890	4,926	-588	4,706	.522	.60
September	128,230	5,300	2,890	4,274	-2,520	3,302	.366	.41
Water year 1939-40	2,296,640	38,200	2,420	6,275	+1,800	6,332	.703	9.56

* Winter discharge measurement made on this day.
† Change in contents in nine reservoirs above station.
Note.- Stage-discharge relation affected by ice Dec. 28 to Apr. 2.

Reservoirs in the Chippewa River Basin

The nine reservoirs listed below are used to stabilize flow of the Chippewa, Flambeau, and Red Cedar Rivers. Moose Lake and Chippewa Reservoir, which regulate flow above gaging station on Chippewa River at Bishops Bridge, and Rest Lake and Flambeau Reservoir, which regulate flow above station on Flambeau River at Flambeau Reservoir, are operated by the Chippewa-Flambeau Improvement Co.; Wissota Reservoir, which regulates flow above station on Chippewa River at Chippewa Falls; and the four reservoirs Birch Lake, Cedar Lake, Long Lake, and Bear Lake, which regulate flow above station on Red Cedar River near Colfax, are operated by the Northern States Power Co., who also furnish the records of gage heights and contents for all the above reservoirs. The usable capacity of those reservoirs usually is less in summer than in winter because the allowable summer drawdown is limited in the interests of riparian property owners.

Moose Lake on West Fork of Chippewa River, in sec. 14, T. 41 N., R. 6 W., 20 miles east of Hayward, completed in 1893, has usable capacity of 400 million cubic feet in winter, none in summer.

Chippewa Reservoir on Chippewa River, in sec. 2, T. 39 N., R. 6 W., 6 miles northeast of Winter. Drainage area, 763 square miles. Reservoir completed in 1923, has usable capacity of 9,650 million cubic feet at elevation 1,313.0 feet, which is limit set by Public Service Commission of Wisconsin. Datum of chain gage is at mean sea level (Northern States Power Co. bench mark)..

Rest Lake on Manitowisn River, in sec. 9, T. 42 N., R. 5 E., 7 miles east of Manitowish, used as reservoir since 1887, has usable capacity of 260 million cubic feet in summer and 660 in winter.

Flambeau Reservoir on North Fork of Flambeau River, in sec. 34, T. 42 N., R. 2 E., 13 miles east of Butternut. Drainage area, 647 square miles. Reservoir completed in 1926, has usable capacity of 5,740 million cubic feet at elevation 1,572,0 feet, which is limit set by Public Service Commission of Wisconsin. Datum of staff gage is at mean sea level (Northern States Power Co. bench mark).

Lake Wissota on Chippewa River, in sec. 3, T. 28 N., R. 8 W., 3 miles east of Chippewa Falls. Drainage area, 5,548 square miles, used as reservoir since 1917, has usable capacity of 3,547 million cubic feet at elevation 898.0 feet, which is limit set by Public Service Commission of Wisconsin; no usable storage available in summer. Datum of float gage is at mean sea level (Northern States Power Co. bench mark). This reservoir is used principally as a service pond for power generation.

Birch Lake on Red Cedar River at Birchwood, in sec. 25, T. 37 N., R. 10 W., used as reservoir since 1882, has usable capacity of 669 million cubic feet in summer and 908 in winter.

Cedar Lake on Red Cedar River, in sec. 22, T. 36 N., R. 10 W., half a mile south of Mikana, used as reservoir since 1882, has usable capacity of 359 million cubic feet in summer and 577 in winter.

Long Lake on Brill River, in sec. 24, T. 37 N., R. 11 W., 5 miles north of Brill, used as reservoir since 1883, has usable capacity of 386 million cubic feet in summer and 637 in winter.

Bear Lake on Bear Creek, in sec. 18, T. 36 N., R. 11 W., at Haugen, used as reservoir since 1880, has usable capacity of 413 million cubic feet.

Combined total contents, water year October 1939 to September 1940, for reservoirs in Chippewa River Basin

Date	Moose Lake and Chippewa Reservoir			Rest Lake and Flambeau Reservoir		
	Contents (million cubic feet)[1]	Change in contents		Contents (million cubic feet)[2]	Change in contents	
		Million cubic feet	Equivalent mean second-feet		Million cubic feet	Equivalent mean second-feet
Sept.30.....	6,860	-	-	4,914	-	-
Oct. 31.....	5,870	-990	-370	4,223	-691	-258
Nov. 30.....	5,096	-774	-299	3,477	-746	-288
Dec. 31.....	4,296	-800	-299	2,931	-546	-204
Calendar year 1939	-	-2,914	-92	-	-2,226	-71
Jan. 31.....	1,980	-2,316	-865	1,898	-1,033	-386
Feb. 29.....	1,620	-360	-144	1,170	-728	-291
Mar. 31.....	1,984	+364	+136	492	-678	-253
Apr. 30.....	6,552	+4,568	+1,762	3,507	+3,015	+1,163
May 31.....	10,306	+3,754	+1,402	7,233	+3,726	+1,391
June 30.....	10,170	-136	-52	7,119	-114	-44
July 31.....	9,374	-796	-297	6,997	-122	-46
Aug. 31.....	8,901	-473	-177	6,874	-123	-46
Sept.30.....	7,799	-1,102	-425	5,644	-1,230	-475
Water year 1939-40	-	+939	+30	-	+730	+23

1 Includes dead storage of 750 million cubic feet in summer, 350 in winter.
2 Includes dead storage of 910 million cubic feet in summer, 510 in winter.

Reservoirs in the Chippewa River Basin

Combined total contents, water year October 1939 to September 1940, for reservoirs in Chippewa River Basin--Continued

Date	Five reservoirs above Chippewa Falls, Wis.			Four reservoirs above Colfax, Wis.		
	Contents (million cubic feet)[3]	Change in contents		Contents (million cubic feet)[4]	Change in contents	
		Million cubic feet	Equivalent mean second-feet		Million cubic feet	Equivalent mean second-feet
Sept.30.....	15,401	-	-	1,853	-	-
Oct. 31.....	13,948	-1,453	-542	1,492	-361	-135
Nov. 30.....	12,449	-1,499	-578	1,390	-102	-39
Dec. 31.....	10,812	-1,637	-611	1,219	-171	-64
Calendar year 1939	-	-5,248	-166	-	-22	-.7
Jan. 31.....	7,682	-3,130	-1,169	1,093	-126	-47
Feb. 29.....	5,620	-2,062	-823	1,064	-29	-12
Mar. 31.....	3,282	-2,338	-873	1,120	+56	+21
Apr. 30.....	13,761	+10,479	+4,043	1,490	+370	+143
May 31.....	21,410	+7,649	+2,856	1,983	+493	+184
June 30.....	21,012	-398	-154	1,991	+8	+3
July 31.....	20,196	-816	-305	1,965	-26	-10
Aug. 31.....	19,664	-532	-199	1,909	-56	-21
Sept.30.....	17,300	-2,364	-912	1,754	-155	-60
Water year 1939-40	-	+1,899	+60	-	-99	-3
	Nine reservoirs above Durand, Wis.[5]					
Sept.30.....	17,254	-	-			
Oct. 31.....	15,439	-1,815	-678			
Nov. 30.....	13,840	-1,599	-617			
Dec. 31.....	12,031	-1,809	-675			
Calendar year 1939	-	-5,270	-167			
Jan. 31.....	8,775	-3,256	-1,216			
Feb. 29.....	6,684	-2,091	-835			
Mar. 31.....	4,402	-2,282	-852			
Apr. 30.....	15,251	+10,849	+4,186			
May 31.....	23,393	+8,142	+3,040			
June 30.....	23,003	-390	-150			
July 31.....	22,162	-841	-314			
Aug. 31.....	21,574	-588	-220			
Sept.30.....	19,054	-2,520	-972			
Water year 1939-40	-	+1,800	+57			

3 Includes dead storage of 5,665 million cubic feet in summer, 1,318 in winter.
4 Includes dead storage of 770 million cubic feet in summer, 62 in winter.
5 Contents include dead storage of 6,435 million cubic feet in summer, 1,380 in winter.

Flambeau River at Flambeau Reservoir, Wis.

Location.- Staff gage, lat. 46°04', long. 90°15', near north line of sec. 3, T. 41 N., R. 2 E., a quarter of a mile downstream from dam of Flambeau Reservoir. Datum of gage is 1,540.0 feet above mean sea level (Northern States Power Co. bench mark).

Drainage area.- 647 square miles.

Records available.- September 1927 to September 1940.

Average discharge.- 13 years, 614 second-feet (unadjusted).

Extremes (regulated).- Maximum discharge observed during year, 1,740 second-feet June 5-9; maximum gage height, 6.31 feet June 6, 7; minimum discharge observed, 49 second-feet Apr. 20, 22-24, 27, May 4, 5 (gage height, 3.06 feet).
1927-40: Maximum discharge observed, 3,440 second-feet May 28, 1939 (gage height, 8.39 feet); minimum observed, 3.1 second-feet Apr. 12, 1934 (gage height, 2.39 feet).

Remarks.- Records good. Flow regulated by Flambeau and Rest Lake Reservoirs. Gage read twice daily.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

3.0	39	4.0	324	6.0	1,520
3.2	76	4.5	537	6.5	1,890
3.4	126	5.0	821		
3.7	216	5.5	1,160		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	758	640	614	640	668	668	424	272	1,230	952	952	821
2	758	640	614	640	668	668	403	264	1,230	952	952	886
3	728	640	614	640	668	697	445	50	1,440	886	886	952
4	728	640	614	668	668	697	514	49	1,670	537	668	952
5	758	640	614	697	668	697	537	157	1,740	697	952	952
6	728	640	614	697	668	697	537	363	1,740	728	1,020	1,020
7	728	640	614	697	640	697	537	424	1,740	728	1,020	1,020
8	697	640	640	697	640	697	537	445	1,740	790	1,020	886
9	697	640	614	668	640	697	514	353	1,740	790	952	1,020
10	697	640	614	668	640	668	468	383	1,090	790	952	1,020
11	668	640	614	668	640	697	468	383	1,090	790	952	1,090
12	668	640	614	668	614	697	468	468	1,090	790	952	1,020
13	668	668	614	668	640	697	403	562	1,090	790	952	1,020
14	668	668	614	668	640	697	514	490	1,090	790	952	1,020
15	668	668	614	697	640	614	445	344	1,020	790	952	1,020
16	668	668	614	697	614	562	250	272	640	758	952	1,020
17	668	668	614	697	614	562	134	216	952	758	758	1,020
18	668	668	614	697	614	587	113	216	1,020	790	640	1,020
19	668	668	640	668	640	614	95	169	952	790	886	1,020
20	668	668	640	668	614	537	59	113	952	821	790	1,020
21	668	668	640	668	640	537	53	121	886	537	697	1,020
22	668	668	640	697	614	640	49	121	952	614	697	1,020
23	668	668	640	697	640	640	49	118	886	697	697	1,020
24	640	668	640	697	640	562	49	118	952	790	697	1,020
25	640	640	640	668	668	537	52	290	952	821	697	1,020
26	668	614	614	668	668	514	50	514	952	790	886	1,020
27	668	614	614	668	668	514	49	728	952	758	886	1,020
28	668	614	640	668	668	344	52	886	886	758	886	1,020
29	640	614	640	697	668	468	250	1,090	886	886	886	1,020
30	640	614	640	668	-	403	275	1,230	668	886	886	1,020
31	640	-	640	668	-	424	-	1,230	-	952	886	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	21,165	758	640	683	-691	425	0.657	0.76
November	19,406	668	614	647	-746	359	.555	.62
December	19,346	640	614	624	-546	420	.649	.75
Calendar year 1939	356,044	3,440	39	975	-2,226	904	1.40	18.98
January	20,972	697	640	677	-1,033	291	.450	.52
February	18,712	668	614	645	-728	354	.547	.59
March	18,730	697	344	604	-678	351	.543	.63
April	8,793	537	49	293	+3,015	1,456	2.25	2.51
May	12,469	1,230	49	402	+3,726	1,793	2.77	3.19
June	34,228	1,740	640	1,141	-114	1,097	1.70	1.90
July	24,206	952	537	781	-122	735	1.14	1.31
August	26,961	1,020	640	870	-123	824	1.27	1.46
September	29,999	1,090	821	1,000	-1,230	525	.811	.90
Water year 1939-40	254,987	1,740	49	697	+730	720	1.11	15.14

† Change in contents in Flambeau and Rest Lake Reservoirs.

Flambeau River at Babbs Island, near Winter, Wis.

Location.- Water-stage recorder, lat. 45°47', long. 90°45', near west line of sec. 16, T. 38 N., R. 3 W., 13 miles (revised) east of Winter.

Drainage area.- 1,020 square miles.

Records available.- August 1929 to September 1940; (prior to 1938-39, winter records incomplete).

Extremes (regulated).- Maximum discharge during year, 2,960 second-feet June 7 (gage height, 4.04 feet); maximum gage height, 4.87 feet Apr. 17 (affected by ice); minimum discharge, 489 second-feet Oct. 23 (gage height, 1.08 feet).
1929-40: Maximum discharge, 6,400 second-feet June 12, 1939 (gage height, 6.52 feet); minimum recorded, 218 second-feet Oct. 28, 1930 (gage height, 0.37 foot); minimum daily recorded, 312 second-feet July 29, 1934.

Remarks.- Records fair. Flow regulated by Flambeau and Rest Lake Reservoirs.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	926	792	716	680	730	760	630	1,220	1,800	644	1,060	1,220
2	926	829	800	720	720	840	620	1,260	1,610	995	1,300	861
3	893	743	770	740	720	750	720	1,030	1,430	1,030	1,260	1,060
4	893	926	716	760	680	640	980	861	2,260	829	1,140	1,300
5	926	800	716	720	760	790	1,040	800	2,160	580	829	1,140
6	926	716	770	680	660	700	1,060	692	2,380	800	1,030	1,180
7	893	782	800	640	700	790	1,230	861	2,660	743	1,060	1,180
8	861	782	770	700	680	750	1,220	800	2,430	667	1,100	1,140
9	861	842	716	760	670	740	1,330	743	2,480	829	1,100	1,030
10	1,100	829	716	820	670	770	1,600	861	2,000	829	1,140	1,140
11	926	770	743	700	650	700	1,520	893	1,480	861	1,140	1,220
12	926	866	716	750	670	740	1,450	743	1,340	829	1,030	1,260
13	926	582	716	750	680	760	1,400	580	1,340	800	1,100	1,260
14	861	829	600	770	660	760	1,440	1,180	1,340	800	1,100	1,260
15	800	770	860	690	680	680	1,500	1,430	1,220	800	1,260	1,380
16	800	800	900	740	690	740	2,000	1,280	1,280	800	1,950	1,100
17	861	743	716	720	700	740	2,200	1,140	695	770	1,480	1,220
18	770	861	622	790	680	740	2,000	1,140	1,220	800	1,660	1,340
19	893	835	620	700	660	700	1,560	1,030	1,030	829	960	1,480
20	829	692	600	680	720	*760	1,610	1,520	1,060	1,060	1,520	1,260
21	861	787	580	770	660	720	1,660	1,900	1,060	1,220	1,300	1,300
22	893	756	660	680	680	680	1,700	1,800	1,180	800	1,260	1,300
23	681	755	900	780	720	690	1,850	1,520	926	960	1,380	1,300
24	743	738	780	750	680	700	1,520	1,260	960	829	1,300	1,220
25	800	800	520	*710	750	580	1,380	926	1,140	1,260	1,100	1,260
26	829	743	600	730	600	660	1,140	1,180	995	1,060	995	1,300
27	829	692	700	700	780	650	1,030	991	995	1,140	1,380	1,260
28	692	770	750	730	620	660	893	1,800	995	960	1,220	1,300
29	800	743	700	640	740	630	800	1,750	1,060	800	1,300	1,260
30	743	716	740	690	-	630	1,180	1,950	960	1,030	1,300	1,300
31	861	-	650	690	-	660	-	1,850	-	995	1,430	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	26,529	1,100	681	856	-691	598	0.586	0.68
November	23,289	926	582	776	-746	488	.478	.53
December	22,163	900	520	715	-546	511	.501	.58
Calendar year 1939	527,168	6,250	520	1,444	-2,226	1,373	1.35	18.29
January	22,380	820	640	722	-1,033	336	.329	.38
February	20,010	780	600	690	-728	399	.391	.42
March	22,110	840	580	713	-678	460	.451	.52
April	40,263	2,200	620	1,342	+3,015	2,505	2.46	2.74
May	36,991	1,950	580	1,193	+3,726	2,584	2.53	2.92
June	43,486	2,660	695	1,450	-114	1,406	1.38	1.54
July	27,349	1,260	580	882	-122	836	.820	.95
August	38,184	1,950	829	1,232	-123	1,186	1.16	1.34
September	36,831	1,480	861	1,228	-1,230	753	.738	.82
Water year 1939-40	359,585	2,660	520	982	+730	1,005	.985	13.42

* Winter discharge measurement made on this day.
† Change in contents in Flambeau and Rest Lake Reservoirs.
Note.- Stage-discharge relation affected by ice Dec. 14-16, Dec. 19 to Apr. 18.

Connors Lake near Phillips, Wis.

Location.- Staff gage, lat. 45°46', long. 90°43', in sec. 22, T. 38 N., R. 3 W., attached to boat dock near ice house, 300 feet northwest of main building of Connors Lake Resort, 21 miles west of Phillips.

Drainage area.- 20 square miles.

Lake-surface area.- 409 acres.

Records available.- August 1936 to September 1940 (fragmentary).

Extremes.- Maximum gage height observed during year, 2.34 feet June 6; minimum observed, 1.64 feet Nov. 23, 27.
1936-40: Maximum gage height observed, 3.30 feet Nov. 15, 19, 1938; minimum observed, 0.86 foot Aug. 24, 1937.

Remarks.- Lake level not artificially regulated.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	-				1.70	-	-	1.96	1.80	-
2	1.72	-	-				-	2.06	-	-	-	1.82
3	-	1.66	-				-	-	2.16	-	-	-
4	-	-	1.70				1.80	-	-	1.80	-	-
5	1.75	-	-				-	-	-	-	1.76	1.80
6	-	1.68	-				-	2.06	2.34	-	-	-
7	-	-	1.70				-	-	-	-	-	-
8	-	-	-				1.84	-	-	1.76	1.68	-
9	1.74	1.68	-				-	2.04	-	-	-	1.78
10	-	-	-				-	-	2.32	-	-	-
11	-	-	1.68				1.86	-	-	1.70	-	-
12	1.72	-	-				-	-	-	-	1.76	1.74
13	-	1.66	-				-	1.98	2.28	-	-	-
14	-	-	1.68				-	-	-	-	-	-
15	-	-	-				1.88	-	-	1.70	1.90	-
16	1.68	1.66	-				-	2.06	-	-	-	1.76
17	-	-	-				-	-	2.14	-	-	-
18	-	-	1.70				1.96	-	-	1.68	-	-
19	1.70	-	-				-	-	-	-	1.86	1.78
20	-	1.66	-				-	2.20	2.10	-	-	-
21	-	-	1.74				-	-	-	-	-	-
22	-	-	-				2.04	-	-	1.84	1.82	-
23	1.68	1.64	-				-	2.18	-	-	-	1.78
24	-	-	-				-	-	2.00	-	-	-
25	-	-	1.72				2.08	-	-	1.76	-	-
26	1.68	-	-				-	-	-	-	1.76	1.76
27	-	1.64	-				-	2.20	1.96	-	-	-
28	-	-	1.72				-	-	-	-	-	-
29	-	-	-				2.04	-	-	1.76	1.80	-
30	1.68	1.66	-				-	2.18	-	-	-	1.76
31	-	-	-				-	-	-	-	-	-

Note.- Add 69 feet to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

South Fork of Flambeau River near Phillips, Wis.

Location.- Chain gage, lat. 45°42', long. 90°37', in NW¼SW¼ sec. 10, T. 37 N., R. 2 W., 0.5 mile downstream from mouth of Big Elk River and 12 miles west of Phillips.

Drainage area.- 666 square miles.

Records available.- August 1929 to September 1940 (winter records incomplete).

Extremes.- Maximum discharge observed during year, 3,000 second-feet May 22 (gage height, 9.26 feet), from rating curve extended above 2,600 second-feet; minimum observed, 158 second-feet Oct. 2.

1929-40: Maximum discharge observed, 6,210 second-feet Apr. 10, 1934 (gage height, 13.5 feet), from rating curve extended above 2,600 second-feet; minimum, 39 second-feet Aug. 31, Sept. 3-5, 1933.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	179	202	226				-	1,420	1,120	406	406	733
2	158	168	238				-	1,360	1,010	406	468	733
3	179	190	226				-	1,300	1,010	367	468	631
4	179	168	213				-	1,180	1,120	331	468	631
5	168	168	226				-	1,120	1,240	314	447	582
6	168	179	252				-	1,060	1,480	297	331	512
7	179	190	266				-	1,010	1,900	252	331	447
8	168	202	168				-	951	1,980	238	297	406
9	190	190	282				-	840	1,980	226	266	386
10	252	179	252				-	786	1,980	226	266	367
11	331	b168	190				-	733	1,750	226	252	349
12	331	b170	252				-	681	1,540	226	238	331
13	314	b175	190				-	681	1,060	202	226	314
14	297	179	190				1,180	1,060	951	213	252	297
15	266	179	b200				1,240	1,180	840	226	386	282
16	266	190	b205				1,900	1,240	733	202	733	282
17	282	179	b200				1,900	1,300	631	190	1,240	252
18	297	202	b200				2,060	1,360	606	190	1,360	349
19	297	179	b195				2,140	1,540	512	190	1,540	386
20	314	190	b190				2,060	2,500	447	367	1,680	386
21	282	202	b185				1,980	2,800	386	606	1,480	386
22	266	202	b185				1,980	3,000	386	681	1,240	406
23	252	202	b180				1,900	2,700	386	606	951	386
24	252	202	b175				1,750	2,410	490	512	895	349
25	238	190	b175				1,360	2,140	535	681	786	367
26	226	202	-				1,180	1,820	558	631	733	349
27	213	168	-				1,180	1,360	582	558	733	349
28	213	179	-				1,180	1,420	512	490	840	367
29	202	213	-				1,240	1,360	468	468	786	367
30	190	190	-				1,300	1,300	468	406	786	331
31	202	-	-				-	1,180	-	367	733	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	7,351	331	158	237	0.356	0.41
November	5,597	213	168	187	.281	.31
December 1-25	5,261	282	168	210	.315	.29
Calendar year	-	-	-	-	-	-
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April 14-30	27,530	2,140	1,180	1,619	2.43	1.54
May	44,792	3,000	681	1,445	2.17	2.50
June	28,661	1,980	386	955	1.43	1.60
July	11,301	681	190	365	.548	.63
August	21,618	1,680	226	697	1.05	1.21
September	12,313	733	252	410	.616	.69
Water year	-	-	-	-	-	-

b Stage-discharge relation affected by ice.

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Jump River at Sheldon, Wis.

Location.- Water-stage recorder, lat. 45°18', long. 90°58', in sec. 26, T. 33 N., R. 5 W., near highway bridge in Sheldon, 1,500 feet upstream from Soldier Creek and 11 miles upstream from mouth.

Drainage area.- 510 square miles.

Records available.- July 1915 to September 1940.

Average discharge.- 25 years, 502 second-feet

Extremes.- Maximum discharge during year, 6,150 second-feet May 21 (gage height, 8.26 feet); minimum, 22 second-feet Nov. 30 (gage height, 2.64 feet).
1915-40: Maximum discharge observed, 15,600 second-feet Mar. 26, 1920 (gage height, 11.48 feet); minimum observed, 12 second-feet July 28, 29, 1934, July 19, 1936.

Remarks.- Records good except those for periods of ice effect and those for period of partly plugged intake, which are fair. Chain gage read weekly Apr. 1-29.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

2.8	41	3.7	360	5.2	1,430	7.0	3,690
3.0	80	4.0	511	5.6	1,850	7.5	4,530
3.2	142	4.4	755	6.0	2,320	8.0	5,490
3.4	223	4.8	1,070	6.5	2,960	8.5	6,630

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	73	83	50	33	45	260	1,030	409	202	69	135
2	67	76	83	46	33	46	500	950	351	165	71	125
3	67	71	128	44	33	47	760	815	318	142	71	105
4	62	71	100	43	33	47	970	686	370	146	73	94
5	58	73	105	42	33	48	1,200	577	623	146	67	83
6	58	71	122	41	33	48	1,600	501	1,240	115	62	73
7	53	69	105	41	33	48	2,000	449	2,080	97	56	65
8	53	67	80	41	33	49	2,320	399	2,830	86	51	60
9	65	67	91	41	33	49	2,320	365	3,100	80	48	56
10	80	58	97	41	33	50	2,440	351	2,500	73	44	51
11	118	51	69	41	34	50	2,570	308	1,680	67	41	50
12	132	60	73	40	35	50	2,200	267	1,090	65	46	50
13	118	65	122	39	36	50	1,680	254	707	62	43	69
14	105	69	65	38	37	*50	1,480	336	506	65	41	71
15	97	67	70	36	37	51	1,680	565	380	71	62	73
16	86	58	70	34	38	52	2,200	974	299	62	866	53
17	83	60	65	34	38	53	2,320	815	245	60	654	51
18	78	65	61	33	39	53	2,260	830	210	56	434	80
19	73	56	60	33	39	54	1,960	1,340	194	53	281	83
20	73	69	64	33	40	55	1,580	4,440	162	53	206	173
21	71	67	64	33	40	57	1,430	5,920	142	76	162	165
22	69	53	63	32	40	59	1,250	4,530	189	105	150	139
23	69	62	62	*32	40	64	1,120	2,960	249	88	122	111
24	69	73	61	32	40	69	990	1,860	367	76	100	97
25	69	69	60	32	40	73	830	1,200	808	71	102	102
26	67	53	59	33	40	75	720	901	785	65	115	97
27	67	44	58	33	41	77	594	727	554	71	91	97
28	67	60	56	33	42	80	511	714	414	69	91	94
29	69	78	55	33	43	83	538	667	322	65	102	94
30	73	50	54	33	-	94	720	582	249	62	111	83
31	76	-	53	33	-	170	-	495	-	60	135	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,357	132	53	76.0	0.149	0.17
November	1,925	78	44	64.2	.126	.14
December	2,358	128	53	76.1	.149	.17
Calendar year 1939	202,192	9,080	42	554	1.09	14.74
January	1,150	50	32	37.1	.073	.08
February	1,069	43	33	36.9	.072	.08
March	1,896	170	45	61.2	.120	.14
April	43,003	2,570	260	1,433	2.81	3.14
May	36,808	5,920	254	1,187	2.33	2.69
June	23,373	3,100	142	779	1.53	1.71
July	2,674	202	53	86.3	.169	.19
August	4,567	866	41	147	.288	.33
September	2,679	173	50	89.3	.175	.20
Water year 1939-40	123,859	5,920	32	338	.663	9.04

Peak discharge.- May 21 (11 a.m.) 6,150 sec.-ft.; Aug. 16 (3 p.m.) 1,380 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 15 to Apr. 7. Intakes partly plugged Apr. 8-29; discharge computed on basis of weekly chain-gage readings.

Red Cedar River near Colfax, Wis.

Location.- Water-stage recorder, lat. 45°04', long. 91°42', in SW¼ sec. 22, T. 30 N., R. 11 W., 2½ miles downstream from Trout Creek and 5½ miles north of Colfax.

Drainage area.- 1,100 square miles.

Records available.- March 1914 to September 1940.

Average discharge.- 26 years, 733 second-feet (unadjusted).

Extremes (regulated).- Maximum discharge during year, 4,110 second-feet Apr. 7 (gage height, 4.80 feet); minimum, 190 second-feet July 30.
1914-40: Maximum discharge, 21,900 second-feet Apr. 3, 1934 (gage height, 11.4 feet, site and datum then in use), from rating curve extended above 4,820 second-feet; minimum daily, 159 second-feet Aug. 22, 1937.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by Birch, Cedar, Long, and Bear Lakes.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	534	550	559	340	365	460	900	820	667	375	375	375
2	478	568	658	330	375	460	1,200	730	613	438	430	406
3	559	534	577	330	385	460	2,000	739	559	430	470	308
4	559	518	559	340	390	475	2,600	604	1,580	406	502	375
5	586	534	559	340	395	485	3,040	568	1,640	360	446	398
6	613	462	559	340	400	490	3,340	478	1,580	368	352	375
7	586	518	568	345	400	500	3,800	631	1,920	375	368	352
8	613	542	577	350	405	500	3,600	478	2,560	345	345	360
9	613	534	613	350	410	490	2,920	577	2,380	345	360	406
10	676	542	534	350	410	480	2,080	510	2,080	406	454	308
11	640	526	534	355	410	460	a1,850	470	1,750	414	390	360
12	640	577	550	360	410	450	a1,600	613	1,320	406	322	352
13	631	518	559	360	410	440	a1,400	470	1,150	375	270	360
14	595	510	494	355	410	430	a1,250	550	1,100	352	352	352
15	559	478	613	350	410	*520	1,160	649	906	345	368	338
16	542	502	649	345	410	570	1,150	685	877	322	398	375
17	550	470	604	340	415	600	1,080	568	658	368	406	360
18	568	518	526	330	420	640	1,020	542	667	360	518	352
19	526	534	490	320	425	650	1,000	667	667	330	494	315
20	559	526	520	320	430	660	944	924	694	360	322	300
21	568	550	460	320	425	630	877	877	577	345	345	422
22	568	550	400	330	420	540	784	924	739	360	352	382
23	559	577	390	340	420	450	896	839	721	322	345	382
24	550	577	450	350	420	490	877	766	568	330	345	308
25	577	542	470	350	420	500	830	730	712	338	338	375
26	586	559	490	355	425	470	712	703	595	345	375	368
27	586	542	500	350	435	470	712	631	577	345	315	360
28	586	518	500	345	450	520	649	622	526	333	375	368
29	613	526	470	*340	460	560	649	712	494	303	398	406
30	542	454	380	340	-	620	811	667	518	253	390	398
31	595	-	350	355	-	680	-	586	-	315	398	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	17,957	676	478	579	-361	444	0.404	0.47
November	15,856	577	454	529	-102	490	.445	.50
December	16,162	658	350	521	-171	457	.415	.48
Calendar year 1939	293,597	6,680	350	804	-22	803	.730	9.93
January	10,625	360	320	343	-126	296	.269	.31
February	11,960	460	365	412	-29	400	.364	.39
March	16,150	680	430	521	+56	542	.493	.57
April	45,731	3,800	649	1,524	+370	1,667	1.52	1.70
May	20,330	924	470	656	+493	840	.764	.88
June	31,395	2,560	494	1,046	+8	1,049	.954	1.06
July	11,081	438	255	357	-26	347	.315	.36
August	11,918	518	270	384	-56	363	.330	.38
September	10,896	422	300	363	-155	303	.275	.31
Water year 1939-40	220,061	3,800	255	601	-99	598	.544	7.41

Peak discharge.- Apr. 7 (8 a.m.) 4,110 sec.-ft.; June 8 (11 p.m.) 2,920 sec.-ft.
* Winter discharge measurement made on this day.
† Change in contents in Birch, Cedar, Long, and Bear Lakes.
a No gage-height record; discharge computed on basis of records for station at Menomonie.
Note.- Stage-discharge relation affected by ice Dec. 19 to Apr. 4.

Red Cedar River at Menomonie, Wis.

Location.- Water-stage recorder, lat. 44°53', long. 91°56', in sec. 26, T. 28 N., R. 13 W., at Menomonie, 900 feet downstream from powerhouse of Northern States Power Co. and 1,000 feet downstream from Wilson Creek. Datum of gage is 780 feet above mean sea level (Northern States Power Co. bench mark).

Drainage area.- 1,760 square miles.

Records available.- June 1907 to September 1908, May 1913 to September 1923, March 1925 to September 1940.

Average discharge.- 25 years (1913-23, 1925-40), 1,183 second-feet (unadjusted).

Extremes.- Maximum discharge during year, 7,220 second-feet Apr. 7 (gage height, 5.18 feet); minimum, 187 second-feet Nov. 21 (gage height, 1.13 feet).
1907-8, 1913-23, 1925-40: Maximum discharge, 40,000 second-feet Apr. 4, 1934 (gage height, 16.0 feet, from floodmarks), from rating curve extended above 8,000 second-feet on basis of computed flow over Cedar Falls Dam 6 miles above station; minimum, 21 second-feet Dec. 9, 1928 (gage height, 0.65 foot).

Remarks.- Records good. Flow regulated by power plants at Menomonie and Cedar Falls and by four reservoirs above station.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

1.5	430	2.0	990	2.8	2,200	3.6	3,770	4.5	5,700
1.7	628	2.4	1,550	3.2	2,980	4.0	4,600	5.0	6,790

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	650	960	935	576	695	890	2,680	1,090	1,110	964	775	639
2	997	891	935	505	729	743	3,550	1,220	680	985	695	662
3	993	915	1,120	524	706	746	4,500	1,160	927	856	740	783
4	731	658	1,020	628	662	967	5,000	1,180	1,600	662	756	673
5	577	792	982	684	706	1,000	5,590	749	2,300	597	801	586
6	852	1,010	866	684	758	1,090	4,930	825	2,590	597	805	555
7	823	853	956	751	764	1,220	5,970	927	2,580	524	673	597
8	826	728	914	650	684	1,220	6,250	960	3,190	871	662	764
9	1,010	854	967	639	776	1,220	5,070	807	4,050	695	650	662
10	1,200	863	812	607	740	901	4,230	893	3,700	752	639	650
11	1,040	842	995	628	695	977	3,300	893	2,380	954	586	688
12	771	753	967	628	800	1,150	2,710	666	2,200	618	715	639
13	1,030	960	963	628	836	1,130	2,470	968	1,820	515	752	741
14	914	897	743	628	824	1,160	1,940	1,150	1,520	615	684	586
15	775	822	716	810	824	1,110	1,930	1,220	1,550	925	684	534
16	884	738	756	654	873	1,320	1,800	1,090	1,000	715	604	496
17	931	823	699	726	873	1,330	1,620	1,090	1,260	749	696	515
18	753	785	1,030	708	873	1,230	1,630	1,130	1,230	673	776	767
19	706	687	1,060	679	860	1,190	1,590	934	1,120	746	706	756
20	833	956	957	650	937	1,150	1,430	1,070	1,130	684	778	730
21	959	942	750	662	840	1,080	881	1,260	910	586	779	524
22	859	767	862	729	650	1,060	1,340	1,460	1,150	628	662	458
23	812	918	628	639	878	800	1,330	1,230	1,270	586	628	556
24	718	959	717	736	639	788	1,160	1,250	1,340	607	576	628
25	913	1,000	628	709	746	1,120	1,080	1,230	1,220	650	576	628
26	1,000	875	825	673	752	860	895	854	1,270	566	624	639
27	987	978	906	751	650	886	956	915	1,160	628	716	650
28	1,020	923	880	624	720	1,270	545	1,080	1,130	706	613	650
29	822	914	957	607	937	1,180	847	1,010	844	684	783	515
30	936	628	735	752	-	1,610	886	715	650	639	628	515
31	956	-	830	752	-	2,680	-	976	-	607	818	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	27,578	1,200	650	890	-361	755	0.429	0.49
November	25,744	1,010	628	858	-102	819	.465	.52
December	27,114	1,120	628	875	-171	811	.461	.53
Calendar year 1939	446,390	6,340	540	1,223	-22	1,222	.694	9.42
January	20,621	810	505	665	-126	618	.351	.40
February	22,457	937	639	774	-29	762	.433	.47
March	35,138	2,680	743	1,133	+56	1,154	.656	.76
April	78,440	6,250	545	2,615	+370	2,755	1.57	1.75
May	32,008	1,460	666	1,033	+493	1,217	.691	.80
June	49,181	4,050	650	1,639	+8	1,642	.933	1.04
July	21,617	985	515	697	-26	687	.390	.45
August	21,583	818	576	696	-56	675	.384	.44
September	18,816	783	458	627	-155	567	.322	.36
Water year 1939-40	380,297	6,250	458	1,039	-99	1,036	.589	8.01

† Change in contents in four reservoirs above station.

Pine Lake near Chetek, Wis.

Location.- Staff gage, lat. 45°18', long. 91°27', in NW¼ sec. 35, T. 33 N., R. 9 W., near diving pier on estate of B. J. Stewart, 13 miles southeast of Chetek.

Drainage area.- 3 square miles.

Lake-surface area.- 200 acres.

Records available.- September 1936 to September 1940 (fragmentary).

Extremes.- Maximum gage height observed during year, 6.96 feet June 11; minimum observed, 5.70 feet Dec. 16, Jan. 9, 13.
1936-40: Maximum gage height observed, 7.00 feet June 24, 1939; minimum observed, 4.50 feet Nov. 27, 30, 1937.

Remarks.- Lake level not artificially regulated.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	-	-			-	-	6.31	-	-	-
2	-	-	5.76	5.74			-	6.06	-	6.78	-	-
3	6.16	-	-	-			-	-	-	-	6.36	6.10
4	-	5.88	-	-			-	6.08	6.57	-	-	-
5	-	-	5.76	-			-	-	-	-	-	-
6	-	-	-	5.74			-	-	-	6.70	6.32	-
7	6.10	5.86	-	-			-	6.07	-	-	-	6.08
8	-	-	-	-			-	-	6.93	-	-	-
9	-	-	5.76	5.70			5.95	-	-	6.64	-	-
10	6.14	-	-	-			-	-	-	-	6.28	6.04
11	-	5.82	-	-			-	6.06	6.96	-	-	-
12	-	-	-	-			-	-	-	-	-	-
13	-	-	5.72	5.70			6.01	-	-	6.60	6.22	-
14	6.10	5.80	-	-			-	6.09	-	-	-	5.96
15	-	-	-	-			-	-	6.90	-	-	-
16	-	-	5.70	-			6.01	-	-	6.56	-	-
17	6.04	-	-	-			-	-	-	-	6.32	5.92
18	-	5.78	-	-			-	6.12	6.86	-	-	-
19	-	-	5.78	-			-	-	-	-	-	-
20	-	-	-	-			6.02	-	-	6.52	6.27	-
21	6.00	5.76	-	-			-	6.28	-	-	-	5.90
22	-	-	-	-			-	-	6.86	-	-	-
23	-	-	5.78	-			6.01	-	-	6.48	-	-
24	5.94	-	-	-			-	-	-	-	6.18	5.88
25	-	5.76	-	-			-	6.29	6.90	-	-	-
26	-	-	5.78	-			-	-	-	-	-	-
27	-	-	-	-			5.99	-	-	6.40	6.13	-
28	5.94	5.74	-	-			-	6.30	-	-	-	5.82
29	-	-	-	-			-	-	6.84	-	-	-
30	-	-	5.76	-			6.05	-	6.84	6.36	-	5.80
31	5.90	-	5.76	-			-	-	-	-	6.12	-

Note.- Add 90 feet to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

Buffalo River near Tell, Wis.

Location.- Chain gage, lat. 44°23'30", long. 91°50'55", in NW¼ sec. 16, T. 22 N., R. 12 W., a quarter of a mile north of Tell School and 1 mile northeast of Tell. Datum of gage is 679.88 feet above mean sea level (general adjustment of 1912).

Drainage area.- 398 square miles.

Records available.- October 1932 to September 1940 (prior to 1937, incomplete for winters).

Extremes.- Maximum discharge observed during year, 5,820 second-feet June 27 (gage height, 7.60 feet; minimum observed, 81 second-feet Jan. 4.
1932-40: Maximum discharge observed, 8,650 second-feet Apr. 3, 4, 1934 (gage height, 8.48 feet, from floodmarks); minimum observed, 59 second-feet Aug. 16, 1933.

Remarks.- Records good except those for period of ice effect, which are fair. Gage read twice daily.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 2		Apr. 3 to Sept. 30					
2.0	145	1.8	139	4.0	459	6.0	1,310
2.2	162	2.0	161	4.5	584	6.2	1,580
2.6	191	2.5	233	5.0	734	6.5	2,160
		3.0	306	5.5	937	6.8	3,000
		3.5	378	5.8	1,130	7.2	4,330

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	145	162	153	101	113	162	*1,660	262	175	378	161	190
2	145	153	153	93	113	162	1,560	233	175	277	161	175
3	145	145	153	*89	113	162	1,370	219	168	248	161	161
4	145	145	162	81	121	*171	995	204	168	246	161	155
5	145	153	162	85	121	171	802	190	161	219	190	149
6	145	153	162	85	137	171	671	190	182	219	175	161
7	145	153	162	89	121	171	439	190	367	219	155	155
8	145	153	162	85	121	181	378	182	641	190	149	149
9	153	153	162	89	121	181	506	175	734	190	149	149
10	181	153	162	101	121	202	439	175	531	190	161	149
11	171	153	153	101	121	191	422	175	460	364	168	149
12	162	145	153	101	*129	181	393	168	335	459	161	144
13	153	145	153	101	129	171	320	161	248	262	204	149
14	162	145	153	101	129	145	291	161	248	204	149	149
15	162	145	153	101	129	145	262	168	219	204	168	144
16	162	153	153	105	129	162	262	168	175	190	161	144
17	153	153	153	97	129	181	262	161	204	190	161	149
18	153	153	153	93	137	214	262	161	190	175	204	149
19	153	153	162	97	137	227	248	175	190	175	219	149
20	153	153	162	97	137	241	233	204	175	175	219	144
21	153	153	162	97	145	214	233	306	175	161	168	149
22	153	153	162	*101	145	181	219	248	271	161	161	139
23	153	153	153	97	137	162	219	219	4,190	161	161	144
24	153	153	145	101	145	129	204	204	2,360	161	149	233
25	153	153	137	101	145	*129	219	190	1,390	161	190	190
26	153	153	137	101	145	137	204	190	910	155	175	144
27	153	153	129	101	153	153	204	190	702	149	175	139
28	153	153	121	105	153	181	204	190	459	149	204	144
29	153	153	113	101	162	202	219	182	422	149	219	149
30	153	145	113	101	-	564	248	182	376	149	190	144
31	162	-	105	105	-	836	-	175	-	149	190	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	4,770	181	145	154	0.387	0.45
November	4,543	162	145	151	.379	.42
December	4,618	162	105	149	.374	.43
Calendar year 1939	93,949	3,480	105	257	.646	8.79
January	3,003	105	81	96.9	.243	.28
February	3,838	162	113	132	.332	.36
March	6,480	836	129	209	.525	.61
April	13,946	1,660	204	465	1.17	1.30
May	5,998	306	161	193	.485	.56
June	17,003	4,190	161	567	1.42	1.58
July	6,461	459	149	209	.525	.61
August	5,419	219	149	175	.440	.51
September	4,638	233	139	155	.389	.43
Water year 1939-40	80,739	4,190	81	221	.555	7.54

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 22 to Apr. 2.

Zumbro River at Zumbro Falls, Minn.

Location.- Water-stage recorder, lat. 44°17', long. 92°26', in sec. 36, T. 110 N., R. 14 W., at Zumbro Falls, 700 feet downstream from Spring Creek and 6.3 miles downstream from North Branch. Datum of gage is 811.26 feet above mean sea level (general adjustment of 1929).

Drainage area.- 1,130 square miles (revised).

Records available.- June 1909 to September 1917; April 1929 to September 1940.

Average discharge.- 19 years, 423 second-feet.

Extremes.- Maximum discharge during year, 9,690 second-feet July 11 (gage height, 17.80 feet); minimum, 36 second-feet (regulated) Mar. 12 (gage height, 6.32 feet).
1909-17, 1929-40: Maximum discharge, 21,800 second-feet Apr. 4, 1934 (gage height, 26.26 feet); minimum, 27 second-feet Jan. 12, 1935 (gage height, 6.30 feet).
Maximum stage known, about 30.5 feet, present site and datum, or 29.7 feet, original site and datum, sometime in April 1888.

Remarks.- Records good. Diurnal regulation caused by power plant upstream.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	106	121	96	81	b107	122	2,180	166	170	152	160	130
2	75	119	121	82	106	b121	1,530	157	125	152	147	119
3	101	118	126	115	107	b118	b1,450	156	137	145	480	132
4	100	119	99	b116	110	*113	1,110	238	165	121	296	146
5	99	117	123	b144	83	117	*920	169	148	116	180	144
6	102	87	124	b131	*106	115	867	195	154	144	180	136
7	104	118	125	121	102	121	829	201	209	118	132	134
8	106	116	124	*88	b105	120	806	207	233	143	139	117
9	84	102	126	115	b103	120	782	152	152	142	115	144
10	109	130	120	115	100	117	753	142	156	2,580	174	180
11	106	122	93	114	102	112	625	126	131	5,540	136	140
12	105	119	119	101	71	b108	433	124	166	1,280	112	132
13	108	87	b108	105	b103	b112	351	132	185	842	143	130
14	100	119	b116	103	b103	b121	337	191	157	618	320	130
15	100	120	122	65	104	b123	324	197	157	625	166	116
16	84	130	121	94	110	119	313	146	136	390	185	90
17	114	128	*118	b96	114	126	313	138	142	282	810	106
18	102	126	165	b112	118	b178	253	145	156	205	935	106
19	98	120	215	b105	83	188	286	143	145	193	328	102
20	79	183	132	100	108	175	270	128	151	192	224	103
21	77	181	113	102	b170	166	173	140	146	150	179	110
22	107	175	b137	69	b114	191	241	139	217	147	178	109
23	86	176	111	105	b89	170	229	141	448	159	144	83
24	108	174	115	102	96	153	178	142	284	164	178	114
25	109	137	129	100	b102	216	165	162	258	189	130	114
26	113	128	89	96	89	230	167	126	208	173	156	114
27	116	92	122	b100	116	238	175	170	175	157	172	106
28	114	125	109	115	115	224	164	158	358	131	173	122
29	119	128	b115	71	118	1,440	286	177	288	136	215	114
30	87	117	b97	97	-	5,870	178	125	178	144	186	83
31	120	-	105	103	-	*5,880	-	108	-	160	167	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	3,138	120	75	101	0.089	0.10
November	3,834	183	87	128	.113	.13
December	3,735	215	89	120	.106	.12
Calendar year 1939	134,704	11,400	75	369	†.327	†4.43
January	3,163	144	65	102	.090	.10
February	3,054	170	71	105	.093	.10
March	17,324	5,880	108	559	.495	.57
April	16,688	2,180	164	556	.492	.55
May	4,841	238	108	156	.138	.16
June	5,735	448	125	191	.169	.19
July	15,690	5,540	116	506	.448	.52
August	7,240	935	112	234	.207	.24
September	3,606	180	83	120	.106	.12
Water year 1939-40	88,048	5,880	65	241	.213	2.90

Peak discharge.- Mar. 30 (8 p.m.) 8,910 sec.-ft.; July 11 (1:30 a.m.) 9,690 sec.-ft.; Aug. 17, 18 (12 p.m.) 2,770 sec.-ft.

* Winter discharge measurement made on this day.
† Computed on basis of revised drainage area.
b Stage-discharge relation affected by ice.

Zumbro River at Theilman, Minn.

Location.- Cantilever chain gage, lat. 44°18', long. 92°11', in sec. 36, T. 110 N., R. 12 W., at Theilman, a quarter of a mile downstream from highway bridge, and half a mile upstream from an unnamed tributary. Datum of gage is 700.00 feet above mean sea level (general adjustment of 1912).

Drainage area.- 1,320 square miles (revised). Figures of discharge in second-feet per square mile and run-off in inches for water year 1939 published in Water-Supply Paper 875 were computed on the basis of 1,210 square miles.

Records available.- April 1938 to September 1940.

Extremes.- Maximum discharge observed during year, 8,800 second-feet July 11 (gage height, 36.73 feet), from rating curve extended above 6,400 second-feet; minimum daily discharge, 120 eecond-feet Jan. 16, 17, 23, 30.

1938-40: Maximum discharge observed, 12,000 second-feet Sept. 11, 1938 (gage height, 38.28 feet), from rating curve extended above 7,600 second-feet; minimum daily discharge, that of Jan. 16, 17, 23, 30, 1940.

Remarks.- Records good except those below 500 second-feet, which are poor. Diurnal fluctuation caused by power plant above station. Gage read twice daily.

Cooperation.- Gage-height record furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	145	165	190	170	140	300	*2,710	248	153	283	205	230
2	145	170	200	150	140	240	1,700	236	203	283	195	190
3	135	170	185	160	130	225	1,450	225	144	259	200	170
4	150	170	185	170	140	*225	1,120	214	182	259	440	200
5	155	170	210	170	150	236	920	321	182	225	260	200
6	150	155	210	190	140	236	820	225	182	225	225	200
7	150	165	200	180	*140	236	800	283	203	236	200	195
8	150	170	195	160	140	248	760	296	472	214	185	190
9	160	155	200	*140	130	248	740	296	334	236	160	155
10	155	190	200	160	130	225	740	203	271	259	170	245
11	155	185	165	160	150	214	700	182	271	5,860	195	230
12	155	185	190	170	160	192	660	172	236	2,380	160	200
13	165	165	190	150	150	260	532	162	271	1,120	160	190
14	160	170	170	150	180	220	502	225	283	840	180	185
15	160	180	195	130	190	240	472	259	248	660	440	185
16	155	190	220	120	180	240	472	259	248	580	300	150
17	150	200	*205	120	180	260	472	203	214	470	320	150
18	155	195	165	130	190	220	443	192	236	350	1,250	150
19	150	195	280	140	190	320	387	182	225	310	520	150
20	140	170	300	140	180	260	415	192	225	290	410	150
21	145	300	200	140	190	260	415	153	225	280	300	150
22	135	290	180	130	240	340	259	162	856	215	280	150
23	145	290	190	120	180	240	360	162	849	230	250	150
24	140	280	180	140	340	220	334	172	420	220	240	145
25	155	280	220	130	260	160	259	172	440	220	250	150
26	155	220	200	130	240	380	248	214	360	250	200	155
27	160	180	200	130	260	387	248	153	310	225	250	155
28	155	190	180	130	280	415	236	236	430	210	260	160
29	165	215	180	130	300	1,270	236	182	500	180	230	155
30	155	205	150	120	-	3,780	387	225	390	200	300	155
31	155	-	150	140	-	6,810	-	153	-	185	230	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	4,705	165	135	152	0.115	0.13
November	5,965	300	155	199	.151	.17
December	6,085	300	150	196	.148	.17
Calendar year 1939	162,815	11,000	135	446	†.338	†4.57
January	4,500	190	120	145	.110	.13
February	5,420	340	130	187	.142	.15
March	19,107	6,810	160	616	.467	.54
April	19,797	2,710	236	660	.500	.56
May	6,559	321	153	212	.161	.19
June	9,563	856	144	319	.242	.27
July	17,754	5,860	180	573	.434	.50
August	8,965	1,250	160	289	.219	.25
September	5,240	245	145	175	.133	.15
Water year 1939-40	113,660	6,810	120	311	.236	3.21

* Winter discharge measurement made on this day.
† Computed on basis of revised drainage area.
Note.- Stage-discharge relation affected by ice Dec. 21 to Mar. 2, Mar. 13-26.

North Fork of Whitewater River near Elba, Minn.

Location.- Water-stage recorder, lat. 44°05'33", long. 92°03'45" in sec. 6, T. 107 N., R. 10 W., 600 feet upstream from Fairwater, 2½ miles upstream from Middle Fork of Whitewater River, and 2¾ miles west of Elba, and 3½ miles upstream from confluence with South Fork of Whitewater River. Datum of gage is 770.09 feet above mean sea level (general adjustment of 1912; levels by Corps of Engineers, U. S. Army). Prior to Oct. 12, 1939, chain gage at site 1.9 miles downstream, different datum.

Drainage area.- 101 square miles.

Records available.- April 1939 to September 1940 (discontinued).

Extremes.- 1939: Maximum discharge observed during period Apr. 15 to Sept. 30, 74 second-feet (gage height, 2.40 feet, Apr. 18) site and datum then in use; minimum daily, 19 second-feet, several days during September.
1939-40: Maximum discharge during year, 2,730 second-feet (gage height, 6.13 feet) July 11; minimum daily, 12 second-feet, several days during winter.

Remarks.- Records good except those above 800 second-feet, which are fair.

Cooperation.- Gage height record Apr. 15 to Oct. 11, 1939, furnished by Corps of Engineers, U. S. Army.

Rating tables, Apr. 15, 1939, to Sept. 30, 1940, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Nov. 12 to Dec. 29, 1939, Jan. 30, 1940, to Mar. 21, June 10 to July 10)

Apr. 15 to Oct. 11, 1939		Oct. 12, 1939, to July 11, 1940				July 11 to Sept. 30			
1.6	17	0.9	10	2.5	305	1.1	8.4	2.5	283
1.8	24	1.1	24	3.0	500	1.3	23	3.0	455
2.0	35	1.5	71	3.5	765	1.5	44	3.5	703
2.2	52	2.0	154			2.0	118	4.0	996
2.4	74								

Discharge, in second-feet, 1939-40

1939

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							-	35	29	25	20	19
2							-	34	28	24	21	19
3							-	34	29	23	21	19
4							-	34	27	23	20	19
5							-	33	27	24	20	19
6							-	33	27	23	20	19
7							-	33	27	22	20	19
8							-	32	26	22	21	19
9							-	32	32	21	21	20
10							-	32	34	21	23	19
11							-	31	31	21	28	20
12							-	32	32	21	26	20
13							-	32	29	21	22	20
14							-	30	29	21	21	19
15							38	30	28	21	20	19
16							38	30	27	21	20	19
17							44	29	25	23	20	19
18							65	29	25	22	20	19
19							54	28	25	22	20	19
20							60	28	25	21	22	19
21							50	28	26	21	22	19
22							46	27	24	20	24	19
23							45	28	24	20	22	19
24							42	28	24	20	21	19
25							41	27	23	20	21	19
26							39	27	35	20	20	20
27							38	28	29	20	20	20
28							36	48	25	22	21	20
29							36	35	35	20	20	20
30							35	30	27	20	20	20
31							-	29	-	20	20	-

Discharge, in second-feet, of North Fork of Whitewater River near Elba, Minn., 1939-40--Continued

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	15	15	b12	16	15	65	16	15	15	16	14
2	20	15	14	b12	16	15	60	16	15	15	16	14
3	20	15	14	b12	16	15	44	15	15	15	16	14
4	20	15	13	b12	16	15	34	16	15	14	16	13
5	20	15	13	b12	16	*15	26	16	15	14	16	13
6	20	15	13	b13	16	15	23	15	15	14	15	13
7	20	15	13	b13	16	14	22	16	244	14	15	13
8	19	15	13	13	*16	15	21	16	106	14	15	13
9	21	15	13	13	b16	15	20	15	33	14	16	13
10	20	15	13	*13	16	15	20	16	23	280	16	13
11	20	15	13	13	16	14	20	16	20	805	16	13
12	18	15	13	13	16	15	18	15	17	94	15	13
13	16	15	13	13	16	15	17	16	15	41	15	13
14	16	15	13	13	16	14	17	16	15	31	17	13
15	15	15	13	b13	16	14	17	16	14	25	30	13
16	15	14	13	b13	16	14	16	16	14	22	19	13
17	15	14	13	b12	15	14	17	16	14	20	39	13
18	16	14	13	b12	15	15	16	17	15	19	56	13
19	16	14	13	b12	15	15	16	18	14	18	29	13
20	15	14	13	b13	15	15	16	17	14	17	19	14
21	15	14	12	b13	15	15	16	16	15	16	16	14
22	15	14	12	b13	15	14	16	16	15	16	14	14
23	16	14	12	b13	15	b13	16	16	85	16	14	14
24	15	14	12	b13	b14	14	16	16	25	16	14	14
25	15	13	13	b13	b13	15	16	16	17	16	14	14
26	16	13	13	b13	15	14	15	16	16	16	14	14
27	15	13	13	b14	15	15	16	16	16	16	14	14
28	15	14	13	b15	15	15	16	16	19	16	14	14
29	15	14	13	b15	15	499	16	16	17	16	13	14
30	15	14	b12	16	-	603	16	16	16	16	13	14
31	15	-	b12	16	-	199	-	15	-	16	13	-

Peak discharge.- Mar. 29 (7 p.m.) 1,980 sec.-ft.; June 7 (4:30 p.m.) 1,480 sec.-ft.; July 11 (12:30 a.m.) 2,730 sec.-ft.

b Stage-discharge relation affected by ice.

Monthly discharge, in second-feet, 1939-40

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
April 15-30, 1939	707	65	35	44.2	0.438	0.26
May	966	48	27	31.2	.309	.36
June	834	35	23	27.8	.275	.31
July	665	25	20	21.5	.213	.25
August	657	28	20	21.2	.210	.24
September	579	20	19	19.3	.191	.21
Water year	-	-	-	-	-	-
October 1939	529	21	15	17.1	.169	.19
November	432	15	13	14.4	.143	.16
December	401	15	12	12.9	.128	.15
Calendar year	-	-	-	-	-	-
January 1940	406	16	12	13.1	.130	.15
February	448	16	13	15.4	.152	.16
March	1,710	603	13	55.2	.547	.63
April	664	65	15	22.1	.219	.24
May	495	18	15	16.0	.158	.18
June	889	244	14	29.6	.293	.33
July	1,677	805	14	54.1	.536	.62
August	565	56	13	18.2	.180	.21
September	404	14	13	13.5	.134	.15
Water year 1939-40	8,620	805	12	23.6	.234	3.17

Whitewater River at Beaver, Minn.

Location.- Water-stage recorder, lat. 44°08'35", long. 92°00'14", in sec. 15, T. 108 N., R. 10 W., 500 feet downstream from Beaver Creek and half a mile northeast of Beaver. Datum of gage at 688.70 feet above mean sea level (general adjustment of 1912; levels by Corps of Engineers, U. S. Army). From Oct. 18, 1939, to Dec. 15, 1939, staff gage at same site and datum. Prior to Oct. 18, 1939, chain gage at site a quarter of a mile downstream. Datum of chain gage 600.00 feet above mean sea level (general adjustment of 1912; levels by Corps of Engineers, U. S. Army).

Drainage area.- 288 square miles.

Records available.- October 1939 to September 1940. Gage-height records collected at original site since January 1936 are contained in reports of the Corps of Engineers, U. S. Army.

Extremes.- Maximum discharge during year, 5,880 second-feet July 11 (gage height, 8.25 feet); minimum daily, 60 second-feet on several days.

Flood in September 1938 reached a stage of 92.75 feet, original site and datum, from floodmarks (discharge, 7,500 second-feet, computed by Corps of Engineers, U. S. Army).

Remarks.- Records good except those for periods of ice effect or shifting control, which are poor. Gage-height record Oct. 1-17 furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	72	74	65	70	75	258	80	78	68	66	66
2	65	72	74	65	70	74	224	78	78	66	64	64
3	65	72	74	65	70	72	205	77	78	66	66	64
4	67	72	72	65	70	72	150	77	80	65	64	62
5	69	72	74	65	70	*73	126	76	80	65	64	62
6	67	74	72	65	75	73	116	77	80	65	62	62
7	69	74	72	65	*70	75	116	76	296	64	62	62
8	65	74	72	65	70	76	112	77	335	64	62	60
9	76	74	72	*65	70	75	104	76	120	64	64	62
10	69	74	72	65	70	73	105	77	93	223	70	60
11	69	74	72	65	75	73	98	76	82	2,520	64	60
12	71	74	72	65	76	70	94	76	78	310	64	60
13	73	74	72	65	73	70	91	77	75	146	64	60
14	73	72	70	60	72	75	90	80	73	11[illegible]	81	60
15	71	72	68	60	70	76	87	81	70	100	82	60
16	69	72	68	60	70	74	84	80	68	90	145	62
17	71	72	*68	60	72	72	85	78	67	84	146	60
18	72	72	68	60	73	73	86	80	68	80	136	60
19	72	72	72	65	73	75	82	90	65	76	92	60
20	74	74	70	65	73	75	81	87	64	74	74	60
21	74	72	70	65	74	76	80	83	65	72	68	64
22	74	74	65	65	70	75	80	80	71	70	62	62
23	72	74	65	60	70	70	80	80	112	72	62	64
24	72	74	65	60	70	70	80	78	86	68	64	64
25	72	72	70	65	70	75	78	78	76	66	66	62
26	72	72	70	65	70	76	78	79	71	66	66	64
27	76	72	70	65	75	76	77	82	70	66	70	62
28	74	72	70	65	75	75	76	80	80	66	70	62
29	74	72	70	65	76	757	82	78	73	66	80	62
30	72	72	65	70	-	*1,860	80	78	70	64	70	62
31	74	-	70	70	-	785	-	78	-	64	68	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,198	76	65	70.9	0.246	0.28
November	2,184	74	72	72.8	.253	.28
December	2,178	74	66	70.3	.244	.28
Calendar year	-	-	-	-	-	-
January	1,990	70	60	64.2	.223	.26
February	2,082	76	70	71.8	.249	.27
March	5,466	1,860	70	176	.611	.71
April	3,185	258	76	106	.368	.41
May	2,450	90	76	79.0	.274	.32
June	2,802	335	64	93.4	.324	.36
July	5,144	2,520	64	166	.576	.66
August	2,338	146	62	75.4	.262	.30
September	1,854	66	60	61.8	.215	.24
Water year 1939-40	33,871	2,520	60	92.5	.321	4.37

Peak discharge.- Mar. 30 (3 a.m.) 2,400 sec.-ft.; June 7 (10:30 p.m.) 950 sec.-ft.; July 11 (5:30 a.m.) 5,880 sec.-ft.; Aug. 16 (7 p.m.) 468 sec.-ft.; Aug. 17 (5:30 p.m.) 580 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 21 to Feb. 11, Feb. 22-28, Mar. 12-14, 19, 20, 22-25. Stage-discharge relation affected by shifting control Oct. 18 to Nov. 15, Nov. 16 to Dec. 20, June 8, 9, July 14 to Aug. 14, Aug. 19 to Sept. 30.

Beaver Creek at Beaver, Minn.

Location.- Staff gage, lat. 44°09'10", long. 92°01'00", in SW¼ sec. 15, T. 108 N., R. 10 W., at Beaver, and half a mile upstream from Whitewater River. Datum of gage is 698.17 feet above mean sea level (general adjustment of 1912; levels by Corps of Engineers, U. S. Army).
Drainage area.- 15.4 square miles.
Records available.- October 1939 to October 1940 (discontinued).
Extremes.- Maximum gage height observed during period October 1939 to October 1940, 7.20 feet, from graph based on gage readings, July 10 (discharge not determined); minimum daily discharge, 7.0 second-feet several days during winter.
Remarks.- Records poor.
Cooperation.- Gage-height record furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, 1939-40

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		8.2	8.2	7.0	7.5	8.5	12	9.0	7.4	7.4	8.2	7.2
2		8.2	8.2	7.0	7.5	8.5	30	8.6	7.4	7.4	7.4	7.2
3		8.2	8.2	7.0	7.5	8.0	16	8.6	7.4	7.4	7.4	7.4
4		8.2	8.2	7.0	7.5	8.0	11	8.2	7.4	7.4	7.4	7.2
5		8.2	8.2	7.0	7.5	*8.0	11	8.2	7.4	7.4	7.4	7.2
6		8.2	7.8	7.0	8.0	8.0	10	7.8	7.4	7.4	7.4	7.2
7		8.2	7.8	7.0	*8.0	8.0	11	7.4	104	7.4	7.4	7.2
8		8.2	7.4	7.0	7.5	7.5	11	7.4	11	7.4	7.4	7.2
9		8.2	7.4	*7.0	7.5	8.0	10	7.4	9.4	7.4	7.4	7.2
10	a8.5	8.2	7.4	7.5	7.5	7.5	12	7.4	8.2	86	7.4	7.2
11		8.2	7.4	7.5	7.5	7.0	11	7.4	7.4	100	7.4	7.2
12		8.2	7.4	7.5	7.5	7.5	10	7.4	7.4	8.2	7.4	7.2
13		8.2	7.4	7.5	7.0	7.5	11	7.4	7.4	7.4	7.8	7.2
14		8.2	7.4	7.5	7.5	7.5	11	7.4	7.4	7.4	7.4	7.4
15		8.2	7.4	7.5	7.5	7.5	9.8	7.4	7.4	7.4	11	7.4
16		8.2	7.4	7.5	7.5	7.0	10	7.4	7.4	7.4	7.4	7.4
17		8.6	*7.4	7.0	7.5	8.0	9.8	7.4	7.4	7.4	100	7.4
18	8.6	8.6	7.4	7.0	7.5	8.0	11	7.8	7.8	7.4	7.4	7.4
19	8.6	8.2	7.8	7.0	8.0	8.0	9.8	8.6	7.4	8.2	7.4	7.2
20	8.6	8.2	7.4	7.0	7.5	8.0	10	8.2	7.4	7.4	7.4	7.4
21	8.6	8.2	7.2	7.0	8.0	8.5	9.8	7.4	7.4	7.4	7.4	7.4
22	8.6	8.2	7.2	7.0	7.5	8.0	9.8	7.4	11	7.4	7.4	7.4
23	8.6	8.2	7.0	7.0	7.5	8.0	9.8	7.4	8.6	7.4	7.4	7.8
24	8.6	8.2	7.0	7.0	7.5	7.5	9.8	7.4	8.6	7.4	7.4	7.4
25	8.6	8.2	7.2	7.0	7.5	8.0	9.8	7.4	7.4	7.4	7.4	7.4
26	8.2	8.2	7.2	7.0	7.5	7.8	9.8	7.4	7.4	7.4	7.4	7.8
27	8.2	8.2	7.2	7.0	7.5	8.2	9.4	7.4	7.4	7.4	8.2	7.4
28	8.2	8.2	7.2	7.0	8.0	7.8	9.0	7.4	7.4	7.4	8.2	7.4
29	8.2	8.2	7.2	7.0	8.0	35	10	7.4	7.4	7.4	7.4	7.4
30	8.2	8.2	7.0	7.0	-	*82	9.0	7.4	7.4	7.4	7.4	7.4
31	8.2	-	7.0	7.5	-	17	-	7.4	-	7.4	7.4	-

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on the basis of records for nearby stations.
Note.- Stage-discharge relation affected by ice Dec. 31 to Mar. 25.

1940

Day	Oct.	Day	Oct.	Day	Oct.	Day	Oct.	Day	Oct.	Day	Oct.
1	7.8	6	9.4	11	8.2	16	8.2	21	8.6	26	8.2
2	7.8	7	9.0	12	8.2	17	8.2	22	8.2	27	8.0
3	7.4	8	9.0	13	8.2	18	8.2	23	8.6	28	8.4
4	7.8	9	8.6	14	11	19	8.2	24	8.2	29	8.8
5	8.0	10	8.6	15	8.2	20	8.6	25	8.6	30	8.0
										31	8.0

Monthly discharge, in second-feet, 1939-40

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October 1939	262.5	-	-	8.47	0.550	0.63
November	246.8	8.6	8.2	8.23	.534	.60
December	231.6	8.2	7.0	7.47	.485	.56
Calendar year	-	-	-	-	-	-
January 1940	221.0	7.5	7.0	7.13	.463	.53
February	220.0	8.0	7.0	7.59	.493	.53
March	353.8	82	7.0	11.4	.740	.85
April	333.6	30	9.0	11.1	.721	.80
May	237.8	9.0	7.4	7.67	.498	.57
June	331.4	104	7.4	11.0	.714	.80
July	402.2	100	7.4	13.0	.844	.97
August	328.4	100	7.4	10.6	.688	.79
September	220.2	7.8	7.2	7.34	.477	.53
Water year 1939-40	3,389.3	104	7.0	9.26	.601	8.16
October 1940	265.2	11	7.4	8.55	.555	.64

Gilmore Creek at Winona, Minn.

Location.- Water-stage recorder, lat. 44°02'40", long. 91°41'25", in sec. 29, T. 107 N., R. 7 W., at west edge of Winona, 1,500 feet upstream from U. S. Highway 14, 2¼ miles upstream from Lake Winona, and 6½ miles upstream from mouth. Prior to Nov. 4, 1939, staff gage at same site and datum. Datum of gage is 672.92 feet above mean sea level (general adjustment of 1912).

Drainage area.- 8.95 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 217 second-feet, Mar. 29 (gage height, 2.57 feet), from rating curve extended above 40 second-feet by logarithmic plotting; minimum daily, 1.6 second-feet, June 27.

Remarks.- Records poor. Regulation at times from swimming pool three-quarters of a mile above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		2.5	3.2	2.6	2.6	3.0	3.9	3.3	3.3	2.2	3.0	c2.5
2		2.5	3.6	2.6	2.2	3.0	4.1	3.0	3.0	2.2	2.7	c2.7
3		2.5	3.6	2.6	2.2	3.4	3.9	2.5	3.0	2.2	2.7	3.0
4		3.0	3.2	2.6	2.4	3.0	3.6	1.9	3.0	2.2	2.7	3.0
5		3.0	3.0	2.6	2.5	3.0	3.0	2.5	3.0	2.2	2.7	2.7
6		3.0	3.0	2.6	2.4	3.0	3.0	2.5	3.3	2.2	2.5	2.5
7		3.0	3.0	2.6	2.2	3.0	3.0	2.5	3.6	2.2	2.5	2.2
8		a2.8	*3.0	2.6	2.2	3.0	3.3	2.5	2.7	2.2	2.5	1.9
9		a2.5	3.0	2.6	2.8	*3.0	2.7	2.5	2.5	2.2	2.5	1.9
10	a2.5	2.2	3.0	*2.4	*3.6	3.4	3.0	2.7	2.5	4.3	2.5	2.5
11		2.5	3.0	2.2	3.0	3.4	3.0	2.7	2.7	5.8	2.5	3.0
12		2.5	3.0	2.4	2.7	3.4	3.0	2.7	2.5	1.8	2.5	2.7
13		2.5	2.6	2.4	3.4	3.0	3.0	3.3	2.5	2.2	2.5	2.5
14		2.7	3.4	1.8	3.4	2.8	3.0	2.7	2.5	1.9	3.6	2.5
15		2.7	2.8	1.9	3.3	3.0	2.7	3.3	2.5	1.9	3.0	2.5
16		2.7	2.6	2.2	3.3	3.0	2.7	3.3	2.5	1.9	2.5	2.5
17		2.5	2.6	2.4	3.3	3.0	*3.3	3.3	2.5	2.2	2.5	2.5
18		2.5	2.6	2.5	3.3	3.0	2.5	3.3	3.0	2.2	2.2	2.5
19		2.5	2.6	2.6	3.3	3.0	2.5	3.9	2.5	1.9	1.9	2.5
20	2.5	2.7	2.6	2.6	3.3	3.0	2.5	2.5	2.5	1.8	2.5	2.5
21	2.5	2.7	2.6	2.2	3.3	3.0	2.7	2.7	2.5	1.8	2.7	2.5
22	a2.5	2.7	2.6	2.5	3.0	3.4	2.7	3.0	2.5	1.8	2.7	2.5
23	a2.5	2.7	2.6	2.5	3.0	3.6	3.0	3.3	2.5	1.8	2.7	2.5
24	2.5	2.7	2.6	2.2	3.0	3.6	2.7	3.3	3.0	1.9	2.7	2.5
25	2.5	2.7	2.6	2.2	3.0	3.6	2.7	3.3	1.8	3.3	2.7	2.5
26	a2.5	2.7	2.6	2.2	3.0	3.6	2.7	3.3	2.5	1.8	2.7	2.5
27	3.6	2.8	2.6	2.5	3.0	3.4	2.5	3.3	1.6	1.9	2.7	2.5
28	a2.5	2.8	2.6	2.5	3.0	3.9	2.5	3.3	2.2	1.9	2.5	2.5
29	a2.5	2.8	2.2	2.5	3.0	40	3.0	3.3	2.2	1.9	2.5	2.5
30	2.5	3.0	2.6	2.5	-	*22	3.0	3.3	2.2	2.5	2.5	2.5
31	2.5	-	2.6	2.6	-	6.4	-	3.0	-	2.5	2.5	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	78.6	3.6	-	2.54	0.284	0.33
November	80.4	3.0	2.2	2.68	.299	.33
December	87.6	3.6	2.2	2.83	.316	.36
Calendar year 1939	-	-	-	-	-	-
January	75.2	2.6	1.8	2.43	.272	.31
February	84.7	3.6	2.2	2.92	.326	.35
March	157.9	40	2.8	5.09	.569	.66
April	89.2	4.1	2.5	2.97	.332	.37
May	92.0	3.9	1.9	2.97	.332	.38
June	78.6	3.6	1.6	2.62	.293	.33
July	70.8	5.8	1.8	2.28	.255	.29
August	80.9	3.6	1.9	2.61	.292	.34
September	75.6	3.0	1.9	2.52	.282	.31
Water year 1939-40	1,051.5	40	1.6	2.87	.321	4.36

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Nov. 27, 28, Dec. 13 to Jan. 17, Jan.19, 20, Jan. 31 to Feb. 4, Feb. 6-10, 13, 14, Feb. 22 to Mar. 27, Apr. 7, 11, 12.

Trempealeau River at Dodge, Wis.

Location.- Chain gage, lat. 44°07'55", long. 91°33'10", in sec. 10, T. 19 N., R. 10 W., at highway bridge in Dodge, 9 miles upstream from mouth. Datum of gage is 663.78 feet above mean sea level (general adjustment of 1912).

Drainage area.- 633 square miles.

Records available.- December 1913 to September 1919. April 1934 to September 1940.

Average discharge.- 11 years, 405 second-feet.

Extremes.- Maximum discharge observed during year, 2,880 second-feet Apr. 1 (gage height, 6.72 feet); minimum daily observed, 117 second-feet Jan. 7, 8; minimum gage height observed, -0.13 foot Aug. 9.

1913-19, 1934-40: Maximum discharge, 10,000 second-feet (estimated), Mar. 17, 1919 (gage height, 11.5 feet, estimated from flood data); minimum daily, 98 second-feet Jan. 10, 1938 (affected by ice).

Remarks.- Records good except those for period of ice effect, which are fair. Gage read twice daily.

Rating tables, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 29		Mar. 30 to Sept. 30							
0.0	180	-0.1	179	1.5	469	3.5	989	6.0	2,340
.2	198	.2	214	2.0	591	4.0	1,160	6.5	2,710
.4	217	.6	265	2.5	718	4.5	1,380		
.6	244	1.0	351	3.0	851	5.0	1,670		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	198	217	217	153	144	198	2,790	374	225	265	191	225
2	198	207	229	144	144	198	1,870	306	214	265	191	214
3	198	207	229	*144	153	207	1,380	284	202	250	225	214
4	189	207	217	135	153	*207	1,330	265	202	250	284	214
5	198	207	217	126	153	207	1,050	265	202	225	214	202
6	189	207	217	126	162	229	797	250	202	225	202	202
7	198	207	217	117	162	244	641	250	237	225	179	202
8	198	207	217	117	171	262	692	250	517	214	179	191
9	207	207	217	126	162	283	692	237	517	202	179	191
10	217	207	217	126	162	307	616	237	374	214	191	179
11	217	207	207	135	171	262	591	237	284	499	202	179
12	207	207	217	144	*171	229	666	225	250	469	179	191
13	207	198	207	144	171	217	493	225	237	306	202	191
14	207	207	189	144	171	171	445	250	225	237	202	191
15	207	207	189	144	180	189	422	237	214	225	214	191
16	207	207	189	144	180	229	422	237	202	214	202	179
17	207	217	244	135	180	244	398	225	191	214	445	191
18	207	207	207	135	180	262	374	225	202	214	250	191
19	207	207	207	135	189	307	374	265	191	214	250	191
20	207	207	207	135	189	357	351	398	191	202	237	179
21	207	217	198	135	198	357	328	445	202	202	214	191
22	207	217	198	*135	198	307	328	374	236	191	202	191
23	198	207	189	144	198	229	328	306	692	191	202	191
24	207	217	189	144	189	217	328	265	1,120	191	202	237
25	207	217	180	144	189	*207	306	250	1,330	179	202	225
26	207	217	180	144	171	244	306	225	824	191	214	214
27	217	207	171	144	189	283	306	237	517	191	225	214
28	207	217	171	144	198	383	284	237	445	191	237	202
29	207	207	162	135	198	664	284	237	422	191	306	202
30	207	217	162	144	-	1,200	398	237	351	202	265	191
31	217	-	153	153	-	2,200	-	225	-	191	237	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	6,358	217	189	205	0.324	0.37
November	6,291	217	198	210	.332	.37
December	6,210	244	153	200	.316	.36
Calendar year 1939	133,772	6,640	153	366	.578	7.87
January	4,275	153	117	138	.218	.25
February	5,076	198	144	175	.276	.30
March	11,100	2,200	171	358	.566	.65
April	19,590	2,790	284	653	1.03	1.15
May	8,280	445	225	267	.422	.49
June	11,218	1,330	191	374	.591	.66
July	7,240	499	179	234	.370	.43
August	6,924	445	179	223	.352	.41
September	5,966	237	179	199	.314	.35
Water year 1939-40	98,528	2,790	117	269	.425	5.79

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 22 to Mar. 29.

Black River at Neillsville, Wis.

Location.- Water-stage recorder, lat. 44°34', long. 90°36', in sec. 15, T. 24 N., R. 2 W., at highway bridge in Neillsville, 1 mile downstream from O'Neill Creek and 1½ miles upstream from Cunningham Creek.

Drainage area.- 756 square miles.

Records available.- April 1905 to March 1909, December 1913 to September 1940.

Average discharge.- 26 years (1914-40), 570 second-feet.

Extremes.- Maximum discharge during year, 12,800 second-feet June 22 (gage height, 13.02 feet); minimum daily, 10 second-feet Jan. 18-27 (affected by ice).
1905-9, 1913-1940: Maximum discharge, 48,800 second-feet Sept. 10, 1938 (gage height, 23.8 feet); minimum, 0.6 second-foot Aug. 15, 1936 (gage height, 1.84 feet).

Remarks.- Records good except those for periods of ice effect, which are poor.

Rating tables, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 1				Apr. 2 to Sept. 30							
2.4	26	2.4	24	3.3	183	5	909	9	5,020
2.5	37	2.6	46	3.6	264	6	1,560	11	8,620
2.7	64	2.8	76	4.0	402	7	2,440	13	12,800
2.9	98	3.0	114	4.5	630	8	3,520		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	53	63	27	11	28	1,100	286	219	321	42	44
2	40	53	78	24	12	28	2,950	292	190	244	70	46
3	37	53	84	22	12	29	4,220	267	166	193	57	52
4	37	54	91	21	13	30	4,440	232	312	161	54	49
5	36	54	96	21	14	30	3,080	206	207	136	50	44
6	35	54	89	21	15	31	3,610	188	1,620	114	42	39
7	34	54	93	22	16	31	5,350	171	7,190	94	36	34
8	33	53	84	24	17	32	5,350	157	10,600	83	31	30
9	44	53	78	25	18	32	4,040	148	7,940	71	27	26
10	60	57	72	25	19	33	3,460	138	5,430	63	24	24
11	60	58	69	25	20	33	2,510	129	2,960	59	24	21
12	66	61	69	25	20	*34	1,790	118	1,580	63	24	20
13	75	58	64	24	21	35	1,220	116	958	63	24	19
14	78	54	78	20	21	36	909	136	546	53	23	18
15	70	53	63	17	22	37	792	123	364	49	41	18
16	64	51	58	14	22	38	792	181	267	44	33	18
17	61	51	58	12	22	39	792	235	208	42	80	18
18	63	53	60	10	23	40	709	342	3,830	41	356	19
19	58	51	66	10	23	41	620	978	2,500	39	141	20
20	54	51	70	10	23	42	537	3,900	1,390	39	102	22
21	51	51	64	10	24	42	473	4,240	644	36	74	22
22	51	53	62	10	24	42	422	2,880	5,050	32	57	22
23	53	51	64	10	24	41	387	1,970	8,080	35	46	33
24	53	54	64	10	25	41	357	1,250	7,010	32	40	42
25	54	53	61	10	25	42	328	764	6,580	26	40	40
26	54	53	58	10	26	43	305	500	4,430	25	38	33
27	56	56	54	10	26	44	273	406	2,240	25	40	31
28	53	58	47	11	27	45	244	357	1,260	23	46	28
29	53	54	41	11	27	70	247	328	736	25	57	29
30	54	51	36	11	-	110	267	302	456	28	54	27
31	53	-	31	11	-	560	-	258	-	35	49	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,630	78	33	52.6	0.070	0.08
November	1,613	61	51	53.8	.071	.08
December	2,065	96	31	66.6	.088	.10
Calendar year 1939	216,352	14,300	16	593	.784	10.64
January	513	27	10	16.5	.022	.03
February	592	27	11	20.4	.027	.03
March	1,759	560	28	56.7	.075	.09
April	51,574	5,350	244	1,719	2.27	2.53
May	21,598	4,240	116	697	.922	1.06
June	84,963	10,600	166	2,832	3.75	4.18
July	2,294	321	23	74.0	.098	.11
August	1,822	356	23	58.8	.078	.09
September	888	52	18	29.6	.039	.04
Water year 1939-40	171,311	10,600	10	468	.619	8.42

Peak discharge.- May 21 (3 a.m.) 4,860 sec.-ft.; June 18 (4 p.m.) 10,000 sec.-ft.; June 22 (10:30 p.m.) 12,800 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 20 to Apr. 1.

Black River near Galesville, Wis.

Location.- Wire-weight gage, lat. 44°03'45", long. 91°17'30", on line between secs. 1 and 2, T. 18 N., R. 8 W., on State Highway 35, 4½ miles southeast of Galesville and 5 miles downstream from Fleming Creek. Datum of gage is 658.43 feet above mean sea level.

Drainage area.- 2,120 square miles.

Records available.- December 1931 to September 1940.

Extremes.- Maximum discharge observed during year, 16,000 second-feet June 26 (gage height, 10.62 feet); minimum observed, 261 second-feet Dec. 23, Jan. 23.
1931-40: Maximum discharge observed, 58,000 second-feet Sept. 11, 1938 (gage height, 14.31 feet), from rating curve extended above 28,000 second-feet; minimum observed, 180 second-feet Dec. 20, 1932.

Remarks.- Records good except those for periods of ice effect, which are fair. Gage read twice daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	346	407	386	327	327	407	1,930	1,060	1,270	2,500	401	533
2	346	386	365	327	327	407	3,220	1,100	1,180	2,140	401	498
3	327	365	386	*293	310	430	4,760	1,020	943	1,800	465	341
4	407	365	407	327	327	407	*5,390	1,020	1,020	1,580	465	370
5	407	366	407	310	327	407	5,850	906	943	1,470	465	370
6	386	346	430	310	310	*453	6,660	870	943	1,260	341	432
7	365	327	407	327	310	586	6,170	836	870	1,210	370	432
8	365	365	386	327	327	614	6,010	906	2,910	1,110	370	533
9	365	365	365	277	327	586	7,000	736	5,540	1,060	341	370
10	327	386	365	327	327	530	7,520	644	12,000	844	370	401
11	386	365	365	327	327	430	7,000	674	12,200	644	432	370
12	365	365	365	346	327	346	6,010	615	9,270	761	401	370
13	430	365	365	327	310	310	4,930	588	6,700	681	370	370
14	386	327	346	327	*327	293	3,490	560	3,980	605	370	370
15	386	386	346	293	310	407	2,430	588	2,560	568	370	341
16	386	386	346	277	346	478	2,310	644	1,690	498	401	341
17	346	365	346	293	346	503	1,930	674	1,470	533	401	285
18	407	386	346	293	365	586	1,810	674	1,270	533	432	312
19	407	365	346	293	365	614	1,930	705	1,370	568	465	312
20	407	346	365	293	365	614	1,470	801	3,490	533	605	312
21	386	*327	386	310	386	586	1,580	3,220	2,430	533	605	312
22	365	365	277	293	386	430	1,270	5,390	2,060	498	642	312
23	365	365	261	261	365	386	1,140	7,340	2,610	401	568	341
24	310	386	365	*277	310	365	1,270	6,830	6,290	432	533	312
25	386	386	346	293	310	365	1,180	4,780	14,500	432	498	370
26	453	365	310	310	346	386	1,180	2,820	15,400	432	432	341
27	453	346	293	293	346	*407	1,100	1,930	13,300	401	370	341
28	365	327	310	310	365	586	906	1,810	10,300	432	533	341
29	407	327	310	293	386	738	870	1,580	6,780	401	605	312
30	365	365	327	293	-	1,580	1,020	1,580	4,340	341	568	312
31	346	-	365	293	-	1,580	-	1,470	-	401	533	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	11,748	453	310	379	0.179	0.21
November	10,913	407	327	364	.172	.19
December	10,990	430	261	355	.167	.19
Calendar year 1939	506,255	29,500	261	1,387	.654	8.88
January	9,447	346	261	305	.144	.17
February	9,807	386	310	338	.159	.17
March	16,817	1,580	293	542	.256	.30
April	99,356	7,520	870	3,312	1.56	1.74
May	54,371	7,340	560	1,754	.827	.95
June	149,629	15,400	870	4,988	2.35	2.62
July	25,802	2,500	341	832	.392	.45
August	14,123	642	341	456	.215	.25
September	10,957	533	285	365	.172	.19
Water year 1939-40	423,960	15,400	261	1,158	.546	7.43

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 13-17, Dec. 21 to Mar. 31.

La Crosse River near West Salem, Wis.

Location.- Water-stage recorder, lat. 43°54'05", long. 91°07'05", in SE¼ sec. 32, T. 17 N., R. 6 W., at highway bridge 2 miles west of West Salem and 6 miles downstream from Dutch Creek. Datum of gage is 668.0 feet above mean sea level (general adjustment of 1912).

Drainage area.- 412 square miles.

Records available.- December 1913 to September 1940.

Average discharge.- 26 years (1914-40), 298 second-feet.

Extremes.- Maximum discharge during year, 1,140 second-feet June 24, Aug. 4 (gage height, 4.81 feet); minimum, 49 second-feet (regulated) Sept. 21; minimum daily, 129 second-feet Dec. 28.

1913-40: Maximum discharge observed, about 8,200 second-feet Aug. 6, 1935 (gage height, 12.2 feet), from rating curve extended above 3,000 second-feet; minimum discharge, that of Sept. 21, 1940.

Remarks.- Records good except those for periods of ice effect, which are fair. Diurnal fluctuation caused by operation of power plants a few miles above station.

Cooperation.- Observer furnished by Corps of Engineers, U. S. Army.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 16		Mar. 17 to May 21				May 22 to Sept. 30			
1.2	126	1.4	171	2.4	423	1.1	101	2.0	297
1.5	175	1.7	232	2.8	540	1.3	127	2.4	417
1.8	246	2.0	310	3.1	630	1.5	161	2.8	538
						1.7	207	3.2	658

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	195	197	202	160	170	180	570	218	167	265	169	219
2	211	202	207	170	170	180	481	191	154	258	176	225
3	173	199	202	170	170	180	510	180	192	237	216	234
4	169	193	211	*170	170	190	466	180	192	204	613	225
5	169	202	207	170	170	190	466	185	178	219	336	216
6	169	193	216	170	170	*200	380	205	174	222	360	210
7	166	182	204	150	170	200	305	205	197	204	303	222
8	164	193	202	160	170	200	360	211	192	222	264	240
9	186	193	177	160	170	210	327	169	225	210	237	297
10	184	199	193	160	170	210	299	197	300	202	225	246
11	184	202	211	170	170	220	270	197	243	210	243	240
12	184	202	193	*170	170	220	288	187	243	202	225	237
13	167	204	188	170	170	230	288	207	246	204	231	234
14	175	195	197	170	*170	230	267	201	234	207	228	234
15	167	195	171	160	170	240	270	203	225	249	267	197
16	171	193	175	170	170	240	214	214	197	219	297	222
17	171	195	175	170	170	260	218	234	213	219	493	216
18	173	195	184	170	170	352	209	232	225	231	508	228
19	175	197	207	160	170	380	218	240	213	261	258	225
20	179	197	193	170	170	423	227	240	200	267	508	228
21	171	184	211	170	170	366	223	380	197	255	372	178
22	186	195	188	180	170	321	321	432	279	225	187	182
23	184	193	175	170	170	275	227	231	270	197	182	207
24	166	195	166	*170	170	247	211	219	553	192	202	200
25	175	188	150	170	170	247	218	210	553	167	216	200
26	184	179	145	170	170	227	209	187	417	169	297	182
27	186	207	146	170	170	205	205	194	291	159	508	187
28	193	193	129	170	170	205	225	182	291	147	315	202
29	193	193	175	170	170	408	209	182	291	187	225	171
30	199	197	164	170	-	555	223	174	273	178	231	200
31	190	-	160	170	-	615	-	178	-	184	225	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	5,559	211	164	179	0.434	0.50
November	5,852	207	179	195	.473	.53
December	5,724	216	129	185	.449	.52
Calendar year 1939	90,017	1,230	129	247	.600	8.12
January	5,200	180	150	168	.408	.47
February	4,930	170	170	170	.413	.45
March	8,406	615	180	271	.658	.76
April	8,904	570	205	297	.721	.80
May	6,685	432	174	216	.524	.60
June	7,625	553	154	254	.617	.69
July	6,592	285	147	213	.517	.60
August	9,117	613	169	294	.714	.82
September	6,504	297	171	217	.527	.59
Water year 1939-40	81,098	615	129	222	.539	7.33

Peak discharge.- June 24 (5 p.m.) 1,140 sec.-ft.; Aug. 4 (3 p.m.) 1,140 sec.-ft.; Aug. 17 (6 p.m.) 869 sec.-ft.; Aug. 20 (2 p.m.) 749 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 31 to Mar. 16.

Little La Crosse River near Leon, Wis.

Location.- Water-stage recorder, lat. 43°53'45", long. 90°50'25", in NE¼ sec. 3, T. 16 N., R. 4 W., 1½ miles northwest of Leon. Zero of gage is 760.28 feet above mean sea level (general adjustment of 1912).

Drainage area.- 77.1 square miles.

Records available.- March 1934 to September 1940.

Extremes.- Maximum discharge during year, 913 second-feet Aug. 2 (gage height, 8.90 feet); minimum, 23 second-feet Jan. 14 (gage height, 1.62 feet), caused by ice jam above gage; minimum daily discharge, 24 second-feet Jan. 5, 6, July 22, 24, 25.

1934-40: Maximum discharge, 4,620 second-feet Aug. 6, 1935 (gage height, 14.43 feet), from rating curve extended above 4,000 second-feet; minimum, 14 second-feet Feb. 25, 1935, caused by ice jam above gage; minimum daily, 18 second-feet June 2, 3, 1934; minimum gage height, that of Jan. 14, 1940.

Remarks.- Records excellent except those for periods of ice effect, which are good.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	30	35	28	30	*30	55	34	29	32	27	35
2	28	29	36	28	*29	29	170	34	28	30	584	34
3	28	29	32	27	29	31	179	33	28	30	95	34
4	27	29	32	25	29	33	63	32	28	28	54	33
5	27	30	31	*24	29	31	48	31	28	28	171	32
6	28	30	31	24	29	34	44	31	28	27	48	32
7	28	31	32	25	29	38	45	31	51	27	39	32
8	29	30	31	26	29	39	58	34	78	27	35	31
9	34	30	31	27	*28	40	47	32	37	27	33	30
10	32	38	31	27	28	37	49	31	34	27	33	31
11	29	32	31	27	29	35	50	31	32	37	55	30
12	29	31	31	*27	28	33	41	30	34	36	37	30
13	31	31	30	27	28	33	40	30	33	30	34	29
14	30	31	28	27	28	33	39	38	31	28	122	29
15	29	31	*30	30	28	31	39	35	30	27	192	29
16	29	31	30	29	*28	31	38	36	30	27	46	29
17	29	31	31	27	28	32	38	33	29	26	42	29
18	29	31	31	26	29	67	46	32	39	26	41	29
19	28	30	33	*26	30	67	39	88	28	25	35	28
20	28	30	33	26	30	43	37	57	27	25	34	28
21	29	31	30	26	30	38	36	38	27	25	33	28
22	29	31	*29	26	30	35	35	34	51	24	33	28
23	29	31	30	27	*28	35	35	32	174	25	31	30
24	29	32	29	27	28	34	37	31	71	24	30	30
25	29	33	28	27	28	33	35	30	47	24	39	29
26	29	31	28	*27	30	32	34	30	37	25	74	29
27	30	30	28	27	31	31	33	33	34	26	55	29
28	29	29	28	27	31	32	32	35	42	26	44	29
29	30	30	*28	28	30	202	35	32	35	27	40	29
30	31	31	27	28	-	127	35	30	34	26	40	28
31	31	-	28	29	-	95	-	30	-	25	37	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	906	34	27	29.2	0.379	0.44
November	924	38	29	30.8	.399	.45
December	943	36	27	30.4	.394	.45
Calendar year 1939	13,953	246	24	38.2	.495	6.74
January	832	30	24	26.8	.348	.40
February	841	31	25	29.0	.376	.41
March	1,441	202	29	46.5	.603	.70
April	1,512	179	32	50.4	.654	.73
May	1,088	88	30	35.1	.455	.52
June	1,234	174	27	41.1	.533	.59
July	847	37	24	27.3	.354	.41
August	2,213	584	27	71.4	.926	1.07
September	903	35	28	30.1	.390	.44
Water year 1939-40	13,684	584	24	37.4	.485	6.61

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 22, 31, Jan. 1-9, 16-30, Feb. 3, 9, 10, 23-26.

Coon Creek at Coon Valley, Wis.

Location.- Water-stage recorder, lat. 43°42'15", long. 91°01'05", in NE¼ sec. 7, T. 14 N., R. 5 W., 350 feet above abandoned dam in Coon Valley and 700 feet above U. S. Highways 14 and 61. Datum of gage is 716.16 feet above mean sea level (general adjustment of 1912).

Drainage area.- 77.2 square miles.

Records available.- March 1934 to September 1940 (discontinued).

Extremes.- Maximum discharge during year, 3,410 second-feet Aug. 14 (gage height, 8.21 feet); minimum, 12 second-feet Dec. 30, caused by ice jam above gage (gage height, 0.93 foot); minimum daily, 24 second-feet Jan. 5.

1934-40: Maximum discharge, 8,110 second-feet Aug. 6, 1935 (gage height, 12.90 feet), from rating curve extended above 4,700 second-feet; minimum, 4.4 second-feet Feb. 22, 1935, caused by ice jam above gage (gage height, 0.65 foot); minimum daily discharge, 21 second-feet Aug. 26, 1934.

Remarks.- Records excellent except those for periods of ice effect, which are good.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	34	37	31	29	*31	54	34	31	34	51	38
2	31	33	36	29	*32	31	68	34	31	32	496	36
3	31	31	34	27	31	34	126	32	29	32	49	35
4	31	32	34	25	34	33	57	32	30	32	41	34
5	31	32	34	*24	32	32	48	32	30	31	132	34
6	31	33	34	25	31	35	46	31	30	31	44	33
7	31	34	33	25	31	36	48	34	38	31	40	32
8	31	32	32	26	31	*37	50	37	43	31	39	32
9	39	34	33	27	*28	37	45	32	33	30	37	32
10	36	39	33	28	32	35	47	32	33	31	38	32
11	33	33	32	28	34	34	45	31	31	53	43	32
12	31	33	34	*30	31	33	41	31	34	36	38	32
13	36	33	32	30	30	33	40	31	32	32	38	32
14	33	33	30	30	31	34	40	30	31	31	427	31
15	32	34	32	30	31	*32	40	33	29	31	61	31
16	32	31	32	30	*31	31	38	32	29	29	45	31
17	31	33	32	30	31	34	40	30	28	29	101	30
18	33	32	33	30	32	60	41	33	37	29	63	30
19	32	32	34	*31	33	45	38	56	30	28	42	30
20	31	33	34	30	33	40	37	42	29	28	39	30
21	32	33	31	29	32	36	37	36	29	28	40	30
22	32	32	30	30	*32	33	36	34	129	27	43	30
23	32	32	32	28	28	32	37	33	103	27	37	30
24	32	34	31	27	33	32	36	33	92	27	35	30
25	33	33	31	28	33	32	35	33	45	27	40	30
26	33	32	31	*29	33	32	34	32	39	29	40	30
27	33	32	31	29	32	32	34	36	38	29	42	30
28	31	31	31	29	32	34	34	38	45	34	45	30
29	33	32	*30	29	32	271	40	33	37	32	40	32
30	36	33	31	29	-	162	37	31	36	28	41	32
31	34	-	30	29	-	75	-	31	-	27	39	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,008	39	31	32.5	0.421	0.49
November	985	39	31	32.8	.425	.47
December	1,004	37	30	32.4	.420	.48
Calendar year 1939	14,028	166	28	38.4	.497	6.76
January	882	31	24	28.5	.369	.43
February	915	34	28	31.6	.409	.44
March	1,486	271	31	48.0	.622	.72
April	1,349	126	34	45.0	.583	.65
May	1,049	56	30	33.8	.438	.50
June	1,231	129	28	41.0	.531	.59
July	956	53	27	30.8	.399	.46
August	2,306	496	35	74.4	.964	1.11
September	951	38	30	31.7	.411	.46
Water year 1939-40	14,124	496	24	38.6	.500	6.80

Peak discharge.- Mar. 29 (8:30 p.m.) 466 sec.-ft.; Aug. 2 (1:10 a.m.) 3,210 sec.-ft.; Aug. 14 (6 p.m.) 3,410 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Jan. 3 to Feb. 1, Feb. 26, 27, Mar. 13.

Coon Creek near Stoddard, Wis.

Location.- Water-stage recorder and Parshall flume, lat. 43°39'50", long. 91°09'10", in NE¼ sec. 25, T. 14 N., R. 7 W., three-quarters of a mile northwest of Valley View School and 3¼ miles east of Stoddard. Datum of gage is 650.68 feet above mean sea level (general adjustment of 1912).

Drainage area.- 119 square miles.

Records available.- March 1934 to October 1940 (discontinued).

Extremes.- Maximum discharge during period October 1939 to October 1940, 1,670 second-feet Aug. 15 (gage height, 9.00 feet); minimum, 33 second-feet June 20; minimum daily, 40 second-feet June 20.

1934-40: Maximum discharge, 5,160 second-feet Aug. 6, 1935 (gage height, 10.70 feet); minimum, 17 second-feet, Jan. 25, 1938 (ice jam above) by current-meter measurement; minimum daily, 31 second-feet Dec. 23, 1937.

Remarks.- Records good except those for periods of ice effect, which are fair. Slight diurnal fluctuation caused by grist mill 4 miles above station.

Discharge, in second-feet, 1939-40

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50	54	60	50	50	52	92	52	44	48	44	57
2	50	52	60	48	52	52	96	50	44	46	940	55
3	50	52	56	46	54	56	170	50	44	46	127	53
4	50	52	56	43	56	58	94	48	44	46	72	52
5	50	54	56	*42	54	54	76	48	44	46	278	52
6	50	54	56	42	53	58	70	46	44	44	76	52
7	50	54	54	42	52	65	72	48	46	44	63	52
8	50	52	54	44	51	65	79	52	59	44	57	50
9	56	54	54	45	50	60	70	48	48	43	55	48
10	56	62	54	47	52	58	70	46	48	50	55	48
11	52	56	54	48	56	56	70	46	44	82	70	48
12	50	54	54	49	54	54	61	44	46	53	59	50
13	56	54	54	50	52	52	61	46	44	48	65	48
14	54	54	50	50	52	62	59	46	43	46	139	48
15	52	56	56	51	52	54	59	48	43	46	724	48
16	52	54	54	51	52	54	57	50	42	44	89	48
17	52	54	54	51	52	58	57	48	42	44	87	48
18	52	54	56	51	54	105	61	48	46	44	208	48
19	52	54	58	51	56	100	55	84	44	43	72	48
20	52	54	58	50	54	71	53	65	40	43	65	46
21	52	56	54	50	52	60	53	53	42	43	61	46
22	52	54	54	49	52	58	53	52	82	42	70	46
23	52	54	56	48	52	56	53	48	228	42	59	46
24	52	56	56	47	52	60	53	48	106	42	57	46
25	52	56	56	47	52	56	52	48	74	42	63	46
26	52	54	56	*48	52	58	52	48	55	42	63	46
27	52	54	54	49	52	58	50	50	52	43	65	46
28	52	54	54	49	54	58	50	53	61	50	68	44
29	52	54	54	49	54	786	53	50	53	50	63	46
30	56	54	54	49	-	432	53	46	50	44	61	44
31	56	-	52	49	-	174	-	46	-	43	57	-

Peak discharge.- Mar. 29 (9 p.m.) 1,260 sec.-ft.; June 23 (8 a.m.) 495 sec.-ft.; Aug. 2 (5 p.m.) 1,610 sec.-ft.; Aug. 5 (2 p.m.) 572 sec.-ft.; Aug. 15 (8 a.m.) 1,670 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 22-25, Dec. 31 to Feb. 15, Feb. 24-28.

1940

Oct. 1	48	Oct. 4	46	Oct. 7	57	Oct. 10	52
2	44	5	48	8	53	11	50
3	44	6	61	9	52		

Monthly discharge, in second-feet, 1939-40

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October 1939	1,616	56	50	52.1	0.438	0.50
November	1,630	62	52	54.3	.456	.51
December	1,708	60	50	55.1	.463	.53
Calendar year 1939	23,237	484	47	63.7	.535	7.24
January 1940	1,485	51	42	47.9	.403	.46
February	1,530	56	50	52.8	.444	.48
March	3,100	786	52	100	.840	.97
April	2,004	170	50	66.8	.561	.63
May	1,555	84	44	50.2	.422	.49
June	1,702	228	40	56.7	.476	.53
July	1,433	82	42	46.2	.388	.45
August	4,032	940	44	130	1.09	1.26
September	1,455	57	44	48.5	.408	.46
Water year 1939-40	23,250	940	40	63.5	.534	7.27
October 1-11, 1940	555	61	44	50.5	.424	.17

Root River near Lanesboro, Minn.

Location.- Water-stage recorder, lat. 43°44'58", long. 91°58'43", in sec. 1, T. 103 N., R. 10 W., on left bank, half a mile upstream from County Highway No. 3, 1¼ miles upstream from South Branch, and 2½ miles northeast of Lanesboro. Datum of gage is 791.84 feet above mean sea level (general adjustment of 1912).

Drainage area.- 615 square miles.

Records available.- August to September 1940. March 1910 to September 1917 at site half a mile downstream, published as North Branch of Root River near Lanesboro, Minn.

Extremes.- Maximum discharge during period Aug. 1 to Sept. 30, 1940, 665 second-feet Aug. 18 (gage height, 3.92 feet); minimum daily, 71 second-feet Sept. 21, 27.

1910-17, 1940: Maximum discharge observed, 12,000 second-feet Mar. 23, 1917 (gage height, 13.0 feet, affected by ice, site and datum then in use); minimum daily, 38 second-feet July 14, 1911. The date of the minimum daily discharge has been published in error as July 4, 1911.

Remarks.- Records excellent.

Rating table, Aug. 2 to Sept. 30, 1940 (gage height, in feet, and discharge, in second-feet)

1.9	73	2.4	173	3.0	341
2.0	85	2.6	226	3.2	401
2.2	124	2.8	282		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1											80	106
2											80	115
3											101	95
4											128	96
5											106	92
6											86	90
7											82	86
8											80	81
9											82	91
10											87	82
11											89	81
12											86	79
13											190	77
14											137	73
15											190	79
16											160	73
17											289	74
18											377	75
19											212	74
20											154	73
21											128	71
22											126	76
23											112	74
24											102	76
25											103	72
26											123	74
27											115	71
28											134	73
29											141	81
30											133	76
31											125	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April	-	-	-	-	-	-
May	-	-	-	-	-	-
June	-	-	-	-	-	-
July	-	-	-	-	-	-
August	4,138	377	80	133	0.216	0.25
September	2,436	115	71	81.2	.132	.15
Water year	-	-	-	-	-	-

Root River near Houston, Minn.

Location.- Water-stage recorder, lat. 43°46', long. 91°35', in sec. 32, T. 104 N., R. 6 W., 1 mile west of Houston and 2½ miles upstream from South Fork. Datum of gage is 671.86 feet above mean sea level (general adjustment of 1929).
Drainage area.- 1,270 square miles (revised).
Records available.- May 1929 to September 1940. May 1909 to September 1917 at site 1½ miles downstream.
Average discharge.- 19 years, 615 second-feet.
Extremes.- Maximum discharge during year, 7,860 second-feet Mar. 30 (gage height, 9.30 feet); minimum daily, 180 second-feet Jan. 2-5, Feb. 24 (affected by ice).
1909-17, 1929-40: Maximum discharge, 26,600 second-feet Mar. 31, 1933 (gage height, 14.07 feet), from rating curve extended above 18,000 second-feet; minimum, 65 second-feet Dec. 26, 1933, Feb. 25, 1935.
Remarks.- Records fair. Diurnal fluctuation caused by power plant at Rushford.
Corrections.- Corrected figures of discharge, in second-feet, for August 1937 superseding those published in Water-Supply Paper 875 are given herein.

Aug. 19..... 2,210

Month	Second-feet days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
August.....	13,535	2,210	258	437	0.341	0.39
Water year 1936-37..	216,934	11,700	186	594	.466	6.32
Calendar year 1937..	210,199	11,700	62	576	.450	6.13

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	273	304	310	190	260	280	1,800	350	270	270	240	360
2	270	304	301	180	260	300	1,400	330	260	270	240	340
3	273	304	298	180	240	320	950	320	260	250	580	330
4	281	304	298	180	260	340	850	330	270	250	342	310
5	281	304	284	180	260	360	700	320	260	250	342	310
6	284	307	284	190	280	*360	650	310	260	240	402	300
7	287	301	284	190	280	360	650	310	350	240	319	300
8	287	290	281	200	280	340	650	310	800	240	296	290
9	290	298	278	200	260	340	619	300	1,060	240	290	280
10	296	307	281	200	260	320	609	300	760	270	329	270
11	293	298	276	220	260	320	573	300	520	4,800	310	270
12	290	296	260	220	260	300	520	290	440	1,950	313	270
13	293	296	240	220	*280	267	502	290	390	920	655	270
14	298	293	*220	*220	280	280	476	300	350	620	645	260
15	301	290	240	220	280	300	455	300	330	490	935	260
16	298	290	260	220	280	326	440	300	310	390	700	260
17	296	287	293	220	300	348	428	290	250	370	815	250
18	293	293	301	220	300	370	425	290	290	330	965	250
19	298	284	298	220	300	380	398	350	250	300	645	260
20	296	290	290	220	300	380	390	330	250	280	480	250
21	298	296	262	220	280	380	380	320	250	260	410	260
22	296	301	238	220	240	320	380	310	270	260	380	240
23	298	304	220	220	220	280	370	300	410	250	360	245
24	304	304	220	220	160	300	370	290	420	240	350	250
25	307	307	240	220	200	300	360	290	460	230	350	245
26	307	298	240	220	220	320	350	280	340	240	360	250
27	310	304	240	220	240	340	340	280	300	240	400	240
28	310	296	240	220	260	356	330	280	300	240	410	245
29	304	281	220	220	260	1,700	400	280	300	240	480	240
30	313	293	220	240	-	7,000	380	280	280	240	420	245
31	316	-	200	240	-	5,200	-	280	-	240	380	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October.....	9,141	316	270	295	0.232	0.27
November.....	8,924	307	281	297	.234	.26
December.....	8,117	310	200	262	.206	.24
Calendar year 1939.....	199,156	5,650	200	546	†.430	†5.85
January.....	6,550	240	180	211	.166	.19
February.....	7,580	300	180	261	.206	.22
March.....	23,087	7,000	267	745	.587	.68
April.....	17,145	1,800	330	572	.450	.50
May.....	9,410	350	280	304	.239	.28
June.....	11,260	1,060	250	375	.295	.33
July.....	15,650	4,800	230	505	.398	.46
August.....	14,143	965	240	456	.359	.41
September.....	8,150	360	240	272	.214	.24
Water year 1939-40.....	139,157	7,000	180	380	.299	4.08

Peak discharge.- Mar. 30 (9:30 a.m.) 7,860 sec.-ft.; July 11 (8 a.m.) 5,960 sec.-ft.
* Winter discharge measurement made on this day.
† Computed on basis of revised drainage area.
Note.- Stage-discharge relation affected by ice Dec. 12-16, Dec. 23 to Mar. 12, Mar. 14, 15, 19-29.

Root River below South Fork, near Houston, Minn.

Location.- Cantilever chain gage and high-water staff gage, lat. 43°46', long. 91°32', in sec. 34, T. 104 N., R. 6 W., 1½ miles northeast of Houston and 600 feet downstream from South Fork. Datum of gage is 660.00 feet above mean sea level (general adjustment of 1912).
Drainage area.- 1,560 square miles (revised).
Records available.- March 1938 to September 1940.
Extremes.- Maximum discharge observed during year, 12,300 second-feet Mar. 30 (gage height, 14.40 feet on high-water staff gage about 1,000 feet upstream, from graph based on gage readings); minimum daily discharge, 220 second-feet Jan. 7.
1938-40: Maximum discharge observed, 17,300 second-feet Sept. 10, 11, 1938 (gage height, 18.05 feet on high-water staff about 1,000 feet upstream, present datum), from rating curve extended above 14,000 second-feet; minimum daily, that of Jan. 7, 1940.
Remarks.- Records good except those for periods of ice effect, which are poor. Gage read twice daily. Flow regulated by power plants above station.
Cooperation.- Gage-height record furnished by Corps of Engineers, U. S. Army.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Mar. 29)

Oct. 1 to Mar. 28, Aug. 4 to Sept. 30

5.0	213	5.6	363	6.8	880
5.1	235	5.8	426	7.2	1,100
5.2	258	6.0	503	7.6	1,370
5.4	308	6.4	685		

Mar. 29 to Aug. 3

5.2	305	6.0	607	10.0	3,360
5.4	358	7.0	1,166	12.0	5,860
5.6	427	8.0	1,810	14.0	11,000

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	363	378	393	280	340	380	2,220	427	344	358	358	482
2	363	363	378	260	340	400	1,680	427	344	358	984	444
3	363	378	378	240	340	380	1,230	448	344	344	940	444
4	349	363	378	240	360	420	1,040	427	344	330	524	426
5	349	378	363	240	360	420	868	390	344	330	462	410
6	363	378	378	240	360	*420	812	390	330	330	546	410
7	363	378	363	220	340	420	758	390	390	330	444	410
8	363	363	363	240	340	420	758	408	984	330	393	393
9	378	378	378	260	340	420	706	390	1,170	318	393	378
10	363	378	363	260	340	420	706	390	1,170	344	410	363
11	363	363	363	260	340	380	706	390	632	7,670	393	378
12	363	363	363	280	360	400	656	390	584	2,820	410	363
13	363	363	320	280	*360	360	632	358	560	1,100	1,150	349
14	363	363	*260	*280	360	380	584	358	469	868	932	349
15	363	363	300	280	360	400	560	358	427	632	932	335
16	378	363	340	280	360	400	537	344	408	584	880	335
17	363	363	378	280	380	400	537	344	390	537	880	335
18	378	349	378	280	400	400	514	344	427	514	1,160	335
19	363	363	378	280	400	420	492	427	358	469	830	349
20	363	363	378	260	400	500	469	408	358	448	591	349
21	378	363	320	280	400	440	469	374	358	408	546	335
22	363	349	280	280	340	420	469	374	390	390	503	322
23	378	349	280	280	300	340	448	358	514	374	503	335
24	363	378	320	280	280	380	448	358	537	358	462	335
25	363	363	320	280	300	380	448	358	560	358	482	335
26	363	349	300	280	300	400	448	344	408	358	524	335
27	378	349	340	300	320	420	448	344	374	358	568	322
28	363	349	320	300	340	444	427	344	390	344	568	335
29	363	349	320	300	340	4,800	492	344	374	358	638	322
30	378	363	340	320	-	*10,700	469	344	358	344	568	335
31	378	-	280	320	-	6,200	-	344	-	344	482	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	11,345	378	349	366	0.235	0.27
November	10,912	378	349	364	.233	.26
December	10,613	393	260	342	.219	.25
Calendar year 1939	239,259	7,940	260	656	†.421	†5.69
January	8,480	320	220	274	.176	.20
February	10,100	400	280	348	.223	.24
March	33,064	10,700	340	1,067	.684	.79
April	21,031	2,220	427	701	.449	.50
May	11,694	448	344	377	.242	.28
June	14,640	1,170	330	488	.313	.35
July	23,008	7,670	318	742	.476	.55
August	19,456	1,150	358	628	.403	.46
September	10,948	482	322	365	.234	.26
Water year 1939-40	185,291	10,700	220	506	.324	4.41

*Winter discharge measurement made on this day.
† Computed on basis of revised drainage area.
Note.- Stage-discharge relation affected by ice Dec. 13-16, Dec. 21 to Mar. 27.

Upper Iowa River near Decorah, Iowa

Location.- Water-stage recorder, lat. 43°18'20", long. 91°44'50", in E½ sec. 14, T. 98 N., R. 8 W., about 500 feet upstream from highway bridge in village of Freeport, 1.4 miles downstream from Trout Run, and 3 miles downstream from Decorah.

Drainage area.- 560 square miles.

Records available.- August 1913 to November 1914, May 1919 to June 1927, October 1936 to September 1940. July 1933 to September 1936 at upper power plant of Interstate Power Co.

Average discharge.- 14 years (1919-26, 1933-40), 281 second-feet.

Extremes.- Maximum discharge recorded during year, 3,760 second-feet Aug. 25 (gage height, 6.38 feet); minimum discharge, 18 second-feet Dec. 21 (gage height, 0.52 foot).
1913-14, 1919-27, 1933-40: Maximum discharge, 14,700 second-feet Feb. 22, 1922 (gage height, 10.42 feet), from rating curve extended above 11,800 second-feet; minimum, that of Dec. 21, 1939.

Remarks.- Records good except those for periods of ice effect, and those for periods of fragmentary, doubtful, or no gage-height record, all of which are poor.

Cooperation.- Gage-height record furnished by Interstate Power Co.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a64	71	74	52	62	57	500	90	66	62	75	253
2	a64	74	73	52	64	60	350	93	64	58	1,250	232
3	a63	69	74	51	71	60	500	105	62	54	677	202
4	62	67	76	50	73	64	300	110	58	51	294	195
5	69	65	76	46	75	69	240	94	53	50	723	182
6	65	71	74	46	67	74	f225	83	58	f50	250	173
7	64	73	74	43	60	78	205	83	60	f48	192	163
8	65	69	71	51	45	91	195	f83	60	f46	179	160
9	78	71	71	57	*35	108	205	88	66	f45	146	154
10	73	76	69	54	39	114	180	81	62	f129	143	140
11	74	71	71	56	34	122	190	75	64	a1,530	148	132
12	71	69	69	52	50	100	170	73	64	f298	140	126
13	73	69	64	54	45	82	160	73	68	f148	684	129
14	73	71	51	46	46	71	145	71	70	101	260	132
15	73	71	65	48	44	76	135	71	63	79	208	129
16	73	74	71	66	44	76	130	73	58	75	215	126
17	74	73	71	56	48	80	140	70	56	68	170	124
18	74	73	71	44	43	425	130	75	52	64	166	114
19	74	73	69	60	39	596	110	90	44	53	157	116
20	76	73	64	68	38	637	110	92	43	51	132	114
21	78	73	*45	72	35	463	110	88	43	45	118	111
22	71	69	45	74	40	284	100	81	44	45	121	f106
23	69	71	57	75	40	237	95	81	81	43	116	f90
24	69	69	65	74	46	224	92	75	116	40	339	97
25	67	69	64	70	35	192	92	73	129	39	1,740	90
26	74	67	60	66	38	170	92	73	f99	58	386	81
27	73	67	60	68	48	151	90	77	a80	70	294	83
28	71	64	60	60	50	252	86	71	a70	70	443	90
29	73	73	57	70	52	2,430	86	70	f64	68	349	81
30	73	74	52	68	-	2,830	86	68	64	68	302	84
31	71	-	52	66	-	1,000	-	68	-	66	272	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,196	78	62	70.8	0.126	0.15
November	2,119	76	64	70.6	.126	.14
December	2,020	78	45	65.2	.116	.13
Calendar year 1939	89,152	4,000	45	244	.436	5.92
January	1,815	75	43	58.5	.104	.12
February	1,406	75	34	48.5	.087	.09
March	11,278	2,830	57	364	.650	.75
April	5,249	500	86	175	.312	.35
May	2,503	110	68	80.7	.144	.17
June	1,991	129	43	66.4	.119	.13
July	3,677	1,530	40	119	.212	.24
August	10,789	1,740	75	348	.621	.72
September	4,009	253	81	134	.239	.27
Water year 1939-40	49,052	2,830	34	134	.239	3.26

Peak discharge.- Mar. 30 (2 a.m.) 3,560 sec.-ft.; Aug. 3 (1 p.m.) 3,260 sec.-ft.; Aug. 25 (4 a.m.) 3,820 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge interpolated or estimated.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Note.- Stage-discharge relation affected by ice Jan. 1 to Mar. 5. Doubtful or no gage-height record Mar. 31 to May 8; discharge computed on basis of outside gage readings and records for Yellow River at Ion.

Yellow River at Ion, Iowa

Location.- Wire-weight gage, lat. 43°06'35", long. 91°15'45", in SE¼SW¼ sec. 24, T. 96 N., R. 4 W., at highway bridge at Ion, about 7½ miles northwest of McGregor and 8 miles upstream from mouth. Datum of gage is 664.65 feet above mean sea level (general adjustment of 1912).

Drainage area.- 224 square miles.

Records available.- October 1934 to September 1940.

Extremes.- Maximum discharge observed during year, 4,100 second-feet Aug. 3 (gage height, 9.70 feet); minimum observed, 14 second-feet Dec. 30, 31; minimum gage height observed, 2.64 feet Dec. 30, 1939.

1934-40: Maximum discharge observed, 5,400 second-feet Mar. 4, 1935 (gage height, 10.95 feet), from rating curve extended above 4,000 second-feet; minimum observed, that of Dec. 30, 31, 1939.

Highest stage known, about 14.0 feet, date not determined.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read once daily, more often during high stages.

Cooperation.- Records collected in cooperation with Corps of Engineers, U. S. Army.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to July 26						July 27 to Sept. 30					
2.6	12	3.5	82	5.4	585	3.4	32.5	4.7	184	6.2	931
2.7	16	3.8	128	5.8	815	3.6	46	5.0	259	6.5	1,200
2.8	21	4.2	202	6.2	1,090	3.8	63	5.3	362	6.7	1,380
3.0	33	4.6	298	6.7	1,465	4.1	94	5.6	500		
3.2	49	5.0	420			4.4	133	5.9	687		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	28	27	20	25	23	142	33	26	23	45	106
2	27	27	28	20	24	23	96	32	26	22	180	96
3	27	27	26	20	24	23	756	31	26	21	1,320	86
4	26	26	26	20	24	23	110	30	26	22	888	79
5	26	27	26	18	24	22	75	30	26	22	162	73
6	26	28	25	20	23	23	62	30	27	21	99	66
7	27	28	26	20	*22	25	61	33	27	20	76	63
8	27	28	25	22	21	37	64	32	29	20	63	59
9	32	26	25	25	19	67	60	30	28	22	55	58
10	36	33	25	*24	18	56	55	30	27	22	52	54
11	30	29	25	25	19	55	60	29	26	1,080	216	52
12	29	28	25	25	20	43	53	29	26	122	76	49
13	30	28	25	24	21	20	49	28	26	47	59	47
14	29	28	14	25	22	30	46	28	25	33	52	46
15	28	28	23	19	22	20	45	29	23	26	77	45
16	28	27	25	19	22	22	42	28	22	25	52	43
17	28	27	25	20	22	29	39	28	22	23	49	43
18	28	27	25	21	22	427	43	28	21	22	47	42
19	28	26	25	22	21	732	38	35	21	21	45	41
20	28	26	25	22	20	367	38	31	20	20	40	40
21	29	26	18	23	19	150	35	31	20	110	40	40
22	28	26	18	24	18	90	35	30	20	24	39	38
23	28	26	20	25	20	39	35	28	26	63	38	38
24	27	26	19	26	20	35	35	28	28	26	38	38
25	28	26	21	27	20	32	33	30	28	22	1,210	39
26	28	25	23	27	21	41	32	29	29	1,420	271	36
27	29	25	23	27	22	41	32	28	27	343	370	36
28	28	25	21	27	22	38	32	29	27	95	652	36
29	28	26	23	27	23	2,220	32	28	25	71	256	34
30	28	26	14	27	-	479	34	28	24	57	167	34
31	28	-	14	26	-	293	-	26	-	48	133	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	876	36	26	28.3	0.126	0.15
November	810	33	25	27.0	.121	.14
December	710	28	14	22.9	.102	.12
Calendar year 1939	26,030	908	14	71.3	.318	4.33
January	717	27	18	23.1	.103	.12
February	620	25	18	21.4	.096	.10
March	5,525	2,220	20	178	.795	.92
April	2,269	756	32	75.6	.338	.38
May	919	35	26	29.6	.132	.15
June	754	29	20	25.1	.112	.12
July	3,916	1,420	20	126	.562	.65
August	6,866	1,320	38	221	.987	1.14
September	1,557	106	34	51.9	.232	.26
Water year 1939-40	25,539	2,220	14	69.8	.312	4.25

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Jan. 16 to Feb. 21, Feb. 26-28.

Wisconsin River at Rainbow Reservoir, near Lake Tomahawk, Wis.

Location.- Water-stage recorder, lat. 45°50'00", long. 89°32'50", in S½SW¼ sec. 30, T. 39 N., R. 8 E., 800 feet downstream from Rainbow Reservoir Dam, 400 feet upstream from Gilmore Creek, and 2½ miles northeast of Lake Tomahawk. Datum of gage is 1,570.05 feet (revised) above mean sea level (Public Service Commission of Wisconsin bench mark).

Drainage area.- 750 square miles, including that of Gilmore Creek.

Records available.- July 1936 to September 1940 (include flow of Gilmore Creek).

Extremes (regulated).- Maximum discharge during year, 1,700 second-feet May 26 (gage height, 4.77 feet); minimum, 39 second-feet Sept. 30; minimum daily, 293 second-feet May 5.

1936-40: Maximum discharge, 2,650 second-fest June 30, 1939 (gage height, 6.43 feet) result of discharge measurement; minimum, 18 second-feet July 9, 1937 (gage height, 0.93 foot); minimum daily (corrected), 130 second-feet July 4, 1937.

Remarks.- Records good. Flow regulated by Rainbow Reservoir and 12 smaller reservoirs above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	788	636	636	636	595	721	575	303	1,140	1,160	947	595
2	788	636	636	636	636	700	551	300	1,300	1,020	947	595
3	765	657	636	636	657	678	575	329	1,280	700	924	595
4	765	657	657	636	657	678	528	303	1,230	575	924	595
5	765	657	657	636	636	721	575	293	1,200	595	901	636
6	765	657	657	636	636	788	636	300	1,120	828	901	657
7	765	657	657	657	636	743	595	316	1,090	1,020	901	616
8	743	657	657	657	636	765	595	500	1,200	1,020	901	616
9	765	657	636	657	678	765	575	1,130	1,260	993	924	616
10	743	657	616	657	636	721	575	1,280	1,400	947	924	616
11	709	636	636	657	636	721	616	1,230	1,460	947	901	616
12	636	657	636	657	616	765	636	776	1,430	970	924	616
13	652	657	616	657	636	765	512	678	1,200	970	924	595
14	721	657	636	a657	636	636	474	1,040	947	970	924	555
15	721	657	636	a657	636	636	474	1,140	1,040	947	855	543
16	687	657	636	657	788	743	474	1,140	1,160	947	810	532
17	678	636	636	657	765	636	448	908	1,160	924	810	508
18	657	636	636	657	743	555	377	595	1,180	901	810	516
19	657	636	636	657	743	575	313	1,010	1,230	901	810	512
20	657	636	636	657	721	616	313	1,480	1,280	901	700	512
21	657	657	636	657	721	657	300	1,640	1,280	947	575	508
22	657	657	636	657	743	657	313	1,640	1,230	924	575	505
23	616	657	636	657	721	636	461	1,640	1,140	924	575	501
24	657	636	636	657	721	636	555	1,640	810	901	575	501
25	678	616	636	657	700	616	474	1,640	636	924	575	501
26	678	636	636	636	657	616	296	1,540	678	947	575	497
27	678	636	636	636	678	555	303	1,300	832	924	575	551
28	678	636	657	636	678	551	303	1,480	1,170	947	575	498
29	657	636	657	636	765	532	313	1,590	1,480	901	575	622
30	657	636	657	636	-	524	313	1,200	1,380	947	575	449
31	657	-	657	616	-	532	-	1,020	-	993	575	-

Month	Observed				Change in reservoir contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	21,697	788	616	700	-415	545	0.727	0.84
November	19,396	657	616	647	-354	510	.680	.76
December	19,865	657	616	641	-83	610	.813	.94
Calendar year 1939	362,216	2,350	497	992	-1,490	945	1.26	17.09
January	20,095	657	616	648	-346	519	.692	.80
February	19,707	788	595	680	-538	465	.620	.67
March	20,440	788	524	659	-631	423	.564	.65
April	14,048	636	296	468	+2,703	1,511	2.01	2.24
May	31,381	1,640	293	1,012	+1,336	1,511	2.01	2.32
June	34,943	1,480	636	1,165	+72	1,193	1.59	1.77
July	28,515	1,160	575	920	-525	724	.965	1.11
August	23,987	947	575	774	-474	597	.796	.92
September	16,775	657	449	559	-265	457	.609	.68
Water year 1939-40	270,849	1,640	293	740	+480	755	1.01	13.70

a No gage-height record; discharge interpolated.
† Change in contents in 13 reservoirs above station.
Note.- Discharge Feb. 13 to Mar. 5 computed from daily staff gage readings.

Wisconsin River at Whirlpool Rapids, near Rhinelander, Wis.

Location.- Water-stage recorder, lat. 45°33', long. 89°30', in sec. 4, T. 35 N., R. 8 E., at head of Whirlpool Rapids, 1 mile downstream from outlet of Crescent Lake and 10 miles southwest of Rhinelander.

Drainage area.- 1,200 square miles.

Records available.- September 1915 to September 1940. December 1905 to September 1915 at site 3 miles upstream.

Average discharge.- 23 years (1915-26, 1928-40), 1,091 second-feet (unadjusted).

Extremes (regulated).- Maximum discharge during year, 3,400 second-feet June 10 (gage height, 4.50 feet); minimum, 193 second-feet Oct. 9 (gage height, 0.70 foot); minimum daily, 606 second-feet Mar. 24.

1915-40: Maximum discharge, 5,410 second-feet Apr. 10, 1929 (gage height, 5.70 feet); minimum, 123 second-feet July 29, 30, 1934 (gage height, 0.34 foot); minimum daily, 210 second-feet July 30, 1934.

Remarks.- Records good except those for periods of ics effect or no gage-height record, which are fair. Flow regulated by 15 reservoirs and 3 power plants above station.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Aug. 21 to Sept. 30)

1.6	535	2.6	1,200	3.8	2,460
1.9	698	3.0	1,580	4.2	2,970
2.2	893	3.4	1,990		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	750	953	871	860	760	930	873	1,700	1,810	2,640	1,430	a1,160
2	950	820	946	880	750	960	763	1,600	1,360	2,270	1,650	a1,150
3	1,020	827	847	830	730	813	915	1,410	1,680	1,840	1,940	a1,200
4	990	894	832	810	850	852	857	1,480	1,920	1,470	2,010	a1,240
5	990	907	973	910	880	944	881	1,240	1,940	1,020	1,950	a1,380
6	1,040	890	794	950	890	885	949	1,360	2,000	941	1,490	a1,300
7	990	864	995	910	870	910	1,010	1,290	2,100	1,100	1,500	1,160
8	640	891	839	980	850	976	1,180	1,190	2,580	1,650	1,530	1,470
9	975	851	875	960	820	927	1,050	1,390	2,460	1,620	1,400	1,160
10	1,230	855	914	940	860	917	1,280	1,810	2,840	1,260	1,530	990
11	1,130	827	872	930	810	855	1,130	1,880	2,970	1,320	1,080	848
12	1,040	804	894	940	880	938	1,110	1,830	2,970	1,200	1,410	851
13	940	900	903	940	670	932	1,140	1,560	2,840	1,200	1,650	840
14	890	937	825	930	840	910	1,060	1,340	2,580	1,170	1,330	835
15	680	816	748	900	890	832	1,180	1,760	a2,200	1,160	1,480	711
16	930	927	889	820	860	870	1,330	1,990	a1,850	1,160	1,560	764
17	930	897	689	850	880	*733	1,470	1,960	a2,100	1,160	1,440	736
18	940	830	883	880	740	845	1,380	1,800	a2,550	1,130	1,180	851
19	906	893	1,020	820	940	794	1,380	1,650	a2,350	1,200	1,230	847
20	919	864	666	810	970	830	1,590	2,330	a2,200	1,400	1,520	825
21	889	886	935	870	960	735	1,350	2,640	a2,350	1,220	1,240	816
22	932	856	1,040	860	920	906	1,740	2,970	a2,450	1,370	1,280	728
23	786	854	915	840	940	845	1,610	2,910	a2,550	1,640	1,090	624
24	863	867	1,020	*820	*910	606	1,760	2,910	a2,600	1,630	1,020	833
25	844	851	796	850	850	705	1,700	2,780	a2,840	1,630	689	639
26	917	775	908	900	940	864	1,640	2,710	2,520	1,610	899	631
27	920	810	972	960	920	663	1,510	2,640	2,460	1,380	1,030	629
28	873	843	895	860	890	695	1,240	2,330	2,400	1,260	984	667
29	838	808	775	840	860	720	1,400	2,160	2,520	1,520	964	819
30	838	798	979	910	-	748	1,570	2,460	2,580	1,570	962	794
31	925	-	700	840	-	713	-	2,330	-	1,280	1,180	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	28,505	1,230	640	920	-440	756	0.630	0.73
November	25,795	953	775	860	-335	731	.609	.68
December	27,410	1,040	666	884	-67	859	.716	.83
Calendar year 1939	564,904	4,370	540	1,548	-1,433	1,503	1.252	16.99
January	27,400	980	810	884	-495	699	.582	.67
February	25,130	970	730	867	-609	624	.520	.56
March	25,853	976	606	834	-690	576	.480	.55
April	38,048	1,760	763	1,268	+2,888	2,382	1.98	2.21
May	61,410	2,970	1,190	1,981	+1,411	2,508	2.09	2.41
June	70,590	2,970	1,380	2,353	+137	2,406	2.00	2.23
July	43,981	2,640	941	1,419	-537	1,219	1.02	1.18
August	41,648	2,010	689	1,343	-466	1,169	.974	1.12
September	27,498	1,470	624	917	-283	808	.673	.75
Water year 1939-40	443,268	2,970	606	1,211	+514	1,227	1.02	13.92

* Winter discharge measurement made on this day.
† Change in contents in 15 reservoirs above station.
a No gage-height record; discharge computed on basis of records for stations at Rainbow Reservoir near Lake Tomahawk and at Merrill.
Note.- Stage-discharge relation affected by ice Dec. 31 to Mar. 2.

Wisconsin River at Merrill, Wis.

Location.- Water-stage recorder, lat. 45°10'40", long, 89°40'45", on line between secs. 12 and 13, T. 31 N., R. 6 E., 300 feet downstream from highway bridge at east end of Merrill and 0.5 mile downstream from Prairie River.

Drainage area.- 2,780 square miles.

Records available.- November 1902 to September 1940.

Average discharge.- 32 years (1907-11, 1912-40), 2,628 second-feet (unadjusted).

Extremes (regulated).- Maximum discharge during year, 16,500 second-feet June 9 (gage height, 11.07 feet); minimum, 812 second-feet Nov. 26 (gage height, 3.89 feet); minimum daily, 1,240 second-feet Mar. 25.

1902-40: Maximum discharge, 45,000 second-feet July 24, 1912 (gage height, 17.5 feet), from rating curve extended above 20,000 second-feet; minimum, about 90 second-feet Sept. 26, 1908 (gage height, 2.45 feet).

Remarks.- Records excellent except those for May 15-29, which are good. Flow regulated by 20 reservoirs and 9 power plants above station.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

4.3	1,230	5.5	2,740	7.0	5,350	9.0	9,910
4.6	1,560	6.0	3,530	7.5	5,350	10.0	12,900
5.0	2,050	6.5	4,400	8.0	7,410	11.0	16,200

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,600	1,770	1,770	1,360	1,590	1,650	2,180	2,820	3,450	3,470	2,450	2,220
2	1,510	1,810	1,770	1,520	1,690	1,450	2,460	3,270	2,860	3,240	2,180	2,000
3	1,470	1,820	1,630	1,520	1,660	1,470	2,310	2,760	2,600	3,470	2,530	2,180
4	1,970	1,650	1,870	1,820	1,600	1,560	2,700	2,370	3,120	2,700	2,640	2,130
5	1,760	1,570	1,730	1,580	1,600	1,600	2,380	1,930	5,520	1,510	2,890	2,120
6	1,420	1,620	1,720	1,820	1,630	1,530	2,680	2,380	7,630	1,660	2,580	2,180
7	1,560	2,020	1,730	1,790	1,650	1,510	2,890	2,320	7,860	1,690	2,510	2,430
8	1,630	2,010	1,730	1,800	1,550	1,510	3,480	1,940	13,900	2,000	1,960	1,930
9	1,600	1,650	1,700	1,950	1,670	1,760	3,370	1,930	15,500	2,430	1,960	2,080
10	2,080	1,550	1,700	2,190	1,750	1,930	3,330	2,080	12,300	2,340	2,360	2,400
11	2,000	1,520	1,770	2,000	1,690	1,870	3,170	2,200	8,330	2,060	1,760	2,110
12	1,880	1,510	1,740	1,990	1,840	1,830	3,020	1,940	4,440	2,240	1,910	1,990
13	1,820	1,500	1,750	2,070	1,810	1,660	3,000	2,370	5,550	2,030	1,940	1,930
14	1,920	1,650	1,690	1,800	1,640	1,650	2,180	2,500	4,410	1,930	2,420	2,070
15	1,680	1,740	1,610	1,870	1,500	1,790	3,070	2,450	4,060	1,940	2,370	2,060
16	1,580	1,810	1,650	2,040	1,600	1,800	3,300	3,290	2,980	1,960	4,820	1,970
17	1,710	1,740	1,660	1,810	1,560	1,720	4,160	3,780	2,760	1,930	5,070	1,660
18	1,800	2,000	1,710	1,930	1,600	1,680	4,280	3,620	3,030	1,820	3,630	2,270
19	1,700	1,610	1,610	1,690	1,630	1,620	3,700	4,970	4,460	1,790	3,410	3,070
20	1,760	2,150	1,690	1,730	1,650	1,600	3,780	6,330	3,660	2,270	2,840	2,420
21	1,710	1,850	1,640	1,700	1,640	1,550	3,720	10,500	3,370	2,650	2,740	1,980
22	1,600	1,520	1,800	1,650	1,560	1,510	3,310	8,330	3,710	2,360	2,730	1,720
23	1,670	1,600	1,980	1,800	1,680	1,420	3,190	7,860	3,840	2,100	2,700	1,540
24	1,750	1,670	1,770	1,710	1,620	1,400	3,090	5,950	6,300	2,430	2,300	1,810
25	1,660	1,650	1,870	1,720	1,670	1,240	3,000	5,750	10,200	2,350	2,160	1,920
26	1,630	1,360	1,680	1,580	1,650	1,460	2,720	4,500	7,860	2,480	2,080	1,740
27	1,700	1,530	1,610	1,630	1,620	1,510	2,510	4,220	5,640	2,470	2,320	1,740
28	1,810	1,570	1,770	1,680	1,680	1,590	1,960	4,220	5,200	1,970	2,500	1,740
29	1,670	1,610	1,820	1,710	1,690	1,570	2,410	3,870	4,750	2,120	2,440	1,860
30	1,660	1,800	1,920	1,770	-	1,460	2,720	3,560	3,730	2,540	2,360	2,240
31	1,690	-	1,590	1,650	-	1,660	-	3,880	-	2,610	2,260	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	53,020	2,080	1,420	1,710	-890	1,378	0.496	0.57
November	50,890	2,150	1,360	1,696	-1,008	1,307	.470	.52
December	54,080	1,980	1,590	1,745	-825	1,437	.517	.60
Calendar year 1939	1,222,680	15,600	1,140	3,350	-3,664	3,234	1.16	15.79
January	55,480	2,190	1,360	1,790	-1,831	1,106	.398	.46
February	47,920	1,840	1,500	1,652	-953	1,272	.458	.49
March	49,580	1,930	1,240	1,599	-1,064	1,202	.432	.50
April	90,070	4,280	1,960	3,002	+6,138	5,370	1.93	2.15
May	121,890	10,500	1,930	3,932	+3,621	5,284	1.90	2.19
June	173,020	15,500	2,600	5,767	+494	5,958	2.14	2.39
July	70,560	3,470	1,510	2,276	-615	2,046	.736	.85
August	80,820	5,070	1,760	2,607	-551	2,401	.864	1.00
September	61,510	3,070	1,540	2,050	-1,135	1,612	.580	.65
Water year 1939-40	908,840	15,500	1,240	2,483	+1,381	2,527	.909	12.37

Peak discharge.- June 19 (4 p.m.) 6,250 sec.-ft.; Aug. 16 (7 a.m.) 7,910 sec.-ft.

† Change in contents in 20 reservoirs above station.

Note.- Discharge May 15-29, computed from gage heights based on a study of tailwater elevations at the Merrill power plant 800 feet upstream.

Wisconsin River at Knowlton, Wis.

Location.- Water-stage recorder, lat. 44°42', long. 89°42', in N½ sec. 29, T. 26 N., R. 7 E., 50 feet downstream from combination railroad and highway bridge at Knowlton and 1.5 miles downstream from Big Eau Pleine River.
Drainage area.- 4,520 square miles.
Records available.- July 1921 to September 1940.
Average discharge.- 19 years, 4,059 second-feet.
Extremes (regulated).- Maximum discharge during year, 38,100 second-feet June 9 (gage height, 16.17 feet); minimum, 666 second-feet Sept. 29; minimum daily, 1,140 second-feet July 7.
1921-40: Maximum discharge, 51,900 second-feet Sept. 11, 1938 (gage height, 19.91 feet), from rating curve extended above 40,000 second-feet; minimum, 317 second-feet Aug. 8, 1932 (gage height, 0.9 foot); minimum daily, 373 second-feet Aug. 13, 1934.
Remarks.- Records good except those for period of ice effect, which are fair. Flow regulated by 21 storage reservoirs and several power plants above station.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Dec. 30)

2.1	1,160	3.5	3,310	5.5	7,150	10	18,500
2.3	1,430	4.0	4,190	6	8,330	12	24,400
2.6	1,880	4.5	5,130	7	10,700	14	30,500
3.0	2,490	5.0	6,090	8	13,200	16	37,400

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,320	2,330	2,400	2,200	2,080	1,820	4,500	4,210	4,680	5,510	3,480	2,920
2	2,330	2,420	2,310	2,180	2,000	1,840	7,620	4,150	4,150	3,580	3,250	2,800
3	2,300	2,350	1,820	2,200	1,950	1,640	7,850	4,110	4,190	4,550	2,960	2,590
4	2,470	2,320	2,100	2,260	1,550	1,780	7,150	3,710	4,190	3,940	2,430	2,810
5	2,780	1,940	2,080	2,550	1,600	1,780	4,360	3,450	5,320	3,980	3,140	2,730
6	2,410	2,080	2,160	2,200	2,100	1,900	5,170	3,010	9,050	3,030	3,440	2,650
7	2,270	2,170	2,100	1,850	2,150	1,900	6,290	3,320	16,900	1,140	2,990	2,650
8	2,090	2,450	2,050	2,000	2,050	1,900	6,930	3,330	22,600	2,070	2,970	2,380
9	2,570	2,440	2,010	2,200	2,000	1,860	6,500	2,880	36,000	2,910	2,830	2,360
10	2,650	2,120	1,700	2,400	2,050	1,650	6,500	2,690	31,500	2,850	2,540	2,730
11	2,430	1,840	1,940	2,420	1,700	1,880	5,670	2,700	19,400	3,000	1,810	2,730
12	2,660	1,770	1,880	2,300	1,900	2,000	4,960	2,120	12,700	2,880	2,570	2,810
13	2,330	2,130	2,100	2,300	1,900	1,920	4,710	2,390	9,400	2,790	2,670	2,490
14	2,120	2,000	2,010	1,900	2,030	1,900	4,030	2,860	7,850	1,980	2,610	2,730
15	1,860	2,190	1,800	2,150	2,000	1,890	3,850	3,420	6,500	2,620	3,000	1,840
16	2,620	2,290	2,100	2,200	1,920	1,890	4,520	3,730	5,320	2,690	6,500	2,520
17	1,960	2,360	1,960	2,160	2,000	1,700	4,800	4,750	4,660	2,610	10,200	3,140
18	2,260	2,460	2,290	2,200	1,650	1,840	5,400	5,040	9,920	2,500	7,300	2,970
19	2,340	2,340	2,400	2,300	1,800	1,820	5,340	5,890	7,240	2,350	5,840	4,490
20	2,340	2,370	2,400	2,350	1,950	1,820	4,670	12,200	5,890	2,540	4,750	4,940
21	2,420	2,580	2,230	1,800	2,000	1,800	4,380	15,800	4,940	2,250	4,100	3,560
22	2,040	2,220	2,390	2,100	1,900	1,800	4,750	15,600	8,180	3,080	3,630	3,010
23	2,280	1,930	2,410	2,150	1,900	1,600	4,290	11,500	13,200	3,070	3,780	2,570
24	2,230	2,040	1,520	2,100	1,900	1,200	4,070	9,050	14,400	2,860	3,520	2,570
25	2,340	2,170	1,950	2,200	1,750	1,400	3,190	7,610	33,500	2,800	2,750	2,420
26	2,290	1,740	2,830	2,250	1,800	1,450	3,460	6,500	25,900	2,800	3,140	2,570
27	2,380	2,020	3,060	2,000	1,850	1,500	3,350	6,090	15,300	2,850	3,560	2,730
28	2,210	2,090	2,530	1,750	1,880	1,700	2,680	6,290	10,100	2,640	2,610	2,650
29	2,050	2,010	2,490	2,050	1,900	2,000	2,650	6,290	8,090	2,790	2,810	1,540
30	2,460	2,090	2,840	2,000	-	2,200	3,440	5,440	6,150	2,630	3,100	2,660
31	2,240	-	1,800	2,100	-	1,700	-	4,760	-	3,100	3,280	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	72,050	2,780	1,860	2,324	-1,763	1,666	0.369	0.43
November	65,260	2,580	1,740	2,175	-1,599	1,558	.345	.38
December	67,660	3,060	1,520	2,183	-1,121	1,764	.390	.45
Calendar year 1939	1,779,020	35,300	1,450	4,874	-6,708	4,661	1.03	14.01
January	66,620	2,420	1,750	2,149	-2,356	1,269	.281	.32
February	55,260	2,150	1,550	1,906	-1,183	1,434	.317	.34
March	55,080	2,200	1,200	1,777	-1,051	1,385	.306	.35
April	147,080	7,850	2,650	4,903	+8,718	8,266	1.83	2.04
May	174,890	15,800	2,120	5,642	+4,644	7,376	1.63	1.88
June	367,220	36,000	4,150	12,240	+860	12,572	2.78	3.10
July	90,390	5,510	1,140	2,916	-668	2,667	.590	.68
August	113,560	10,200	1,810	3,663	-498	3,477	.769	.89
September	83,560	4,940	1,540	2,785	-1,498	2,207	.488	.54
Water year 1939-40	1,358,630	36,000	1,140	3,712	+2,485	3,791	.839	11.40

Peak discharge.- June 18 (3 p.m.) 14,900 sec.-ft.; June 25 (1 p.m.) 36,900 sec.-ft.; Aug. 17 (12:30 a.m.) 11,300 sec.-ft.
† Change in contents in 21 reservoirs above station.
Note.- Stage-discharge relation affected by ice Dec. 31 to Apr. 1.

Wisconsin River near Nekoosa, Wis.

Location.- Water-stage recorder, lat. 44°18', long. 89°53', in sec. 15, T. 21 N., R. 5 E., 1½ miles downstream from Nekoosa and 4 miles upstream from Ten Mile Creek.
Drainage area.- 5,500 square miles.
Records available.- May 1914 to September 1940.
Average discharge.- 26 years, 4,937 second-feet (unadjusted).
Extremes (regulated).- Maximum discharge during year, 52,100 second-feet June 26 (gage height, 17.00 feet); minimum, 84 second-feet Sept. 3 (gage height, 1.23 feet); minimum daily, 560 second-feet Dec. 25.
1914-40: Maximum discharge, 70,400 second-feet Sept. 12, 1938 (gage height, 19.10 feet), from rating curve extended above 50,000 second-feet; minimum, that of Sept. 3, 1940; minimum daily, 165 second-feet Aug. 12, 1934.
Remarks.- Records good except those for period of ice effect, which are fair. Flow regulated by 21 reservoirs and several power plants above station.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.9	437	2.7	1,220	4.5	4,300	8.0	12,600	16.0	44,500
2.1	602	3.2	1,950	5.0	5,310	10.0	18,000	16.5	48,100
2.3	785	3.6	2,620	6.0	7,590	12.0	25,200	17	52,100
2.5	988	4.0	3,340	7.0	10,100	14.0	33,400		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,710	2,620	2,310	2,650	2,350	2,300	4,300	4,300	5,940	9,590	3,340	5,100
2	2,800	2,620	2,250	2,700	2,300	2,450	7,840	5,000	4,870	11,400	3,620	2,230
3	2,800	2,710	2,450	2,500	2,300	1,210	7,840	4,900	4,800	8,340	4,700	1,740
4	2,890	2,800	2,310	2,450	1,300	2,010	7,840	5,100	5,520	6,610	2,920	3,250
5	2,890	2,270	2,400	2,600	1,700	1,640	8,590	4,400	5,100	6,380	1,930	3,440
6	2,890	1,860	2,420	2,400	2,300	2,300	8,340	4,200	8,220	5,520	3,620	3,340
7	3,160	2,620	2,360	1,900	2,400	2,330	7,980	4,000	12,600	3,010	3,910	3,340
8	2,800	2,540	2,540	2,300	2,300	2,280	10,300	3,910	21,500	2,240	3,340	2,080
9	2,800	2,540	2,540	2,550	2,400	2,620	10,100	3,820	28,800	2,800	3,160	2,500
10	2,890	2,450	1,930	2,500	2,100	1,370	9,840	3,530	40,000	3,250	3,250	3,070
11	2,890	2,450	2,250	2,300	1,750	1,280	9,000	3,250	34,900	4,000	2,670	3,070
12	2,980	2,420	2,540	2,400	1,950	1,940	7,570	2,330	20,600	3,820	2,440	3,070
13	2,890	2,060	2,360	2,500	2,200	*2,430	7,630	3,070	14,100	4,800	2,710	3,070
14	2,890	2,620	2,310	1,700	2,400	2,200	4,660	3,250	9,800	2,880	2,890	3,070
15	2,540	2,450	2,380	2,600	2,500	2,250	5,100	3,910	9,010	2,410	3,070	2,030
16	2,540	2,430	2,710	2,400	2,250	2,430	5,200	4,300	5,520	3,070	4,200	2,520
17	2,710	2,540	1,870	2,350	1,900	1,120	5,730	4,900	5,300	3,160	9,300	3,070
18	2,710	2,430	2,360	2,300	1,400	1,800	5,940	5,520	8,640	3,440	10,500	2,890
19	2,710	2,090	2,620	2,350	*1,700	2,360	6,160	7,620	14,600	3,070	6,020	3,070
20	2,710	*2,400	2,620	2,400	2,200	2,540	6,610	11,000	11,600	3,070	6,160	5,360
21	2,620	2,540	2,540	1,500	2,100	1,950	5,140	16,300	9,340	2,210	5,000	5,310
22	2,540	2,540	2,710	2,200	2,200	2,250	4,870	18,000	13,400	2,540	4,900	3,160
23	2,710	2,450	2,890	2,400	2,300	2,430	5,520	15,700	26,100	3,340	4,000	2,890
24	2,540	2,400	1,100	2,000	2,100	853	4,700	12,100	29,000	3,620	4,100	2,980
25	2,620	2,450	560	2,500	1,500	1,790	5,000	9,550	37,600	3,160	3,250	2,980
26	2,620	2,110	2,280	2,450	2,100	1,670	4,600	8,340	48,900	3,250	3,340	2,980
27	2,620	2,400	2,710	2,300	2,300	1,900	4,300	7,090	35,900	3,340	3,720	2,980
28	2,620	2,400	2,620	1,200	2,200	1,840	3,620	7,090	22,300	2,470	4,000	2,980
29	2,450	2,280	2,620	2,200	2,200	1,950	2,620	8,090	15,400	3,390	3,620	1,930
30	2,380	2,250	2,890	2,500	-	2,230	3,620	6,850	12,000	3,530	3,820	2,800
31	2,540	-	2,000	2,400	-	2,030	-	5,730	-	3,530	4,000	-

Month	Observed				Change in contents (million cubic-feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	84,460	3,160	2,380	2,725	-1,763	2,067	0.376	0.43
November	72,740	2,800	1,860	2,425	-1,599	1,808	.329	.37
December	72,450	2,890	560	2,337	-1,121	1,918	.349	.40
Calendar year 1939	2,066,870	44,200	560	5,663	-6,708	5,450	.991	13.44
January	71,500	2,700	1,200	2,306	-2,356	1,426	.259	.30
February	60,700	2,500	1,300	2,093	-1,183	1,621	.295	.32
March	61,753	2,620	853	1,992	-1,051	1,600	.291	.34
April	190,560	10,300	2,620	6,352	+8,718	9,715	1.77	1.98
May	207,150	18,000	2,330	6,682	+4,644	8,416	1.53	1.76
June	521,360	48,900	4,800	17,380	+860	17,712	3.22	3.59
July	127,240	11,400	2,210	4,105	-668	3,856	.701	.81
August	127,500	10,500	1,930	4,113	-498	3,927	.714	.82
September	92,300	5,360	1,740	3,077	-1,498	2,499	.454	.51
Water year 1939-40	1,689,713	48,900	560	4,617	+2,485	4,696	.854	11.63

* Winter discharge measurement made on this day.
† Change in contents in 21 reservoirs above station.
Note.- Stage-discharge relation affected by ice Dec. 31 to Mar. 1.

Wisconsin River near Wisconsin Dells, Wis.

Location.- Water-stage recorder, lat. 43°36'20", long. 89°45'25", in extreme western part of sec. 14, T. 13 N., R. 6 E., 0.5 mile downstream from Dell Creek and 3 miles downstream from Wisconsin Dells.

Drainage area.- 7,830 square miles.

Records available.- October 1934 to September 1940.

Extremes (regulated).- Maximum discharge during year, 50,700 second-feet June 28 (gage height, 14.90 feet); minimum, 700 second-feet Dec. 26 (gage height, 1.64 feet); minimum daily, 1,540 second-feet Dec. 27.

1934-40: Maximum discharge, 72,200 second-feet Sept. 14, 1938 (gage height, 18.83 feet); minimum, 300 second-feet Aug. 14, 1936; minimum daily, 1,060 second-feet Aug. 19, 1936.

Remarks.- Records good except those for periods of ice effect and that of Sept. 10, which are fair. Diurnal fluctuation caused by Wisconsin Power & Light Co.'s power plant at Wisconsin Dells. Flow regulated by 21 reservoirs above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,400	3,160	3,150	1,670	2,550	2,400	5,700	4,900	9,270	27,400	4,200	5,720
2	3,690	3,400	3,280	2,830	2,480	2,740	5,440	5,200	7,860	20,100	4,580	6,230
3	3,540	3,460	3,140	1,710	2,770	2,720	7,080	6,420	8,520	16,200	4,360	6,560
4	3,160	3,400	3,200	3,120	2,620	2,850	8,870	5,900	7,020	13,900	6,160	3,680
5	3,480	3,550	3,300	2,830	2,520	2,250	9,980	6,340	6,770	12,100	6,210	4,830
6	3,410	3,450	3,170	2,450	2,300	1,900	10,100	6,370	6,850	10,600	3,420	4,460
7	3,320	2,800	3,430	3,100	2,150	3,000	10,900	5,870	6,800	9,550	4,270	4,850
8	3,640	2,940	3,200	2,930	2,480	2,640	11,400	5,550	10,000	8,470	5,350	4,600
9	3,670	3,340	2,980	2,690	2,350	2,830	11,900	5,330	15,400	5,240	4,770	4,370
10	3,660	3,500	3,510	2,620	2,750	2,800	13,500	5,300	21,300	4,950	4,590	a4,230
11	3,600	3,410	3,170	2,830	2,550	2,960	13,900	4,930	25,700	5,550	4,250	4,090
12	3,280	3,110	3,140	3,280	2,300	2,260	13,600	4,630	31,900	5,600	4,390	4,250
13	3,550	3,320	2,990	3,160	2,100	2,560	12,200	4,310	36,300	5,720	3,960	4,520
14	3,680	3,160	2,590	2,590	2,250	2,150	10,900	3,900	28,300	5,860	4,060	4,120
15	3,520	3,100	2,520	2,810	2,300	2,250	10,800	4,610	19,700	5,970	3,910	4,300
16	3,290	3,240	3,740	2,450	*2,500	2,340	8,370	4,570	14,300	3,960	4,130	4,160
17	3,040	3,150	3,730	2,480	2,700	2,550	7,530	5,320	11,800	4,450	5,610	3,260
18	3,420	3,530	3,240	2,840	2,780	3,120	8,000	5,580	8,760	4,580	7,850	3,880
19	3,610	3,290	2,670	2,640	2,600	3,240	8,480	6,920	8,760	4,660	10,200	4,160
20	3,560	3,030	3,320	2,580	2,050	2,930	8,390	7,840	12,100	4,450	11,800	4,190
21	3,400	3,030	2,960	2,460	2,110	3,200	8,330	9,120	15,100	4,640	9,700	4,660
22	3,550	3,450	2,410	2,770	2,690	3,650	8,240	13,600	14,300	4,040	8,890	6,520
23	3,510	3,390	2,910	2,250	2,930	3,250	7,340	17,800	15,400	3,120	8,060	5,580
24	3,420	3,300	3,080	2,310	2,800	3,200	7,060	20,100	22,500	4,260	7,740	4,340
25	3,410	3,520	3,280	2,410	2,730	2,980	6,950	18,200	29,200	4,660	6,480	4,200
26	3,390	3,090	2,460	2,660	2,300	2,600	6,660	15,400	34,300	4,470	6,700	4,140
27	3,500	3,380	1,540	2,630	2,110	3,500	6,420	13,500	42,200	4,120	5,800	4,110
28	3,250	2,980	2,870	2,690	1,720	3,060	6,320	12,500	49,700	4,380	5,810	4,100
29	3,320	3,290	3,280	2,710	2,440	3,570	5,720	10,800	48,700	4,220	6,220	3,880
30	3,650	3,180	2,950	2,160	-	4,640	4,540	10,000	39,700	3,380	6,160	4,040
31	3,330	-	2,300	2,280	-	5,140	-	10,100	-	4,660	5,930	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	107,250	3,690	3,040	3,460	-1,763	2,802	0.358	0.41
November	97,950	3,550	2,800	3,265	-1,599	2,648	.338	.38
December	93,510	3,740	1,540	3,016	-1,121	2,597	.332	.38
Calendar year 1939	2,584,390	47,300	1,540	7,081	-6,708	6,868	.877	11.91
January	80,940	3,280	1,670	2,611	-2,356	1,731	.221	.25
February	70,930	2,930	1,720	2,446	-1,183	1,974	.252	.27
March	91,280	5,140	1,900	2,945	-1,051	2,553	.326	.38
April	264,620	13,900	4,540	8,821	+8,718	12,184	1.56	1.74
May	260,810	20,100	3,900	8,413	+4,644	10,147	1.30	1.50
June	608,510	49,700	6,770	20,280	+860	20,612	2.63	2.93
July	225,230	27,400	3,120	7,265	-668	7,016	.896	1.03
August	185,560	11,800	3,420	5,986	-498	5,800	.741	.85
September	136,030	6,560	3,260	4,534	-1,498	3,956	.505	.56
Water year 1939-40	2,222,620	49,700	1,540	6,073	+2,485	6,152	.786	10.68

* Winter discharge measurement made on this day.
† Change in contents in 21 reservoirs above station.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 29 to Mar. 27.

Wisconsin River at Muscoda, Wis.

Location.- Water-stage recorder, lat. 43°12'00", long. 90°26'25", in sec. 1, T. 8 N., R. 1 W., at highway bridge, 0.5 mile upstream from Eagle Mill Creek and 1 mile north of Muscoda. Datum of gage is 667.05 feet above mean sea level (general adjustment of 1929).

Drainage area.- 10,300 square miles.

Records available.- December 1902 to December 1903, December 1913 to September 1940.

Average discharge.- 26 years (1914-40), 8,669 second-feet (unadjusted).

Extremes (regulated).- Maximum discharge during year, 50,700 second-feet July 1 (gage height, 9.15 feet); minimum daily, 2,700 second-feet Feb. 15.
1902-3, 1913-40: Maximum discharge, 80,800 second-feet Sept. 16, 1938 (gage height, 11.48 feet); minimum daily, 2,000 second-feet Feb. 11, 1918.

Remarks.- Records good except those for period of ice effect, which are fair. Flow regulated by 21 reservoirs and several power plants above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,240	5,130	3,470	3,300	3,400	3,650	9,350	6,060	10,900	49,700	5,190	8,700
2	3,700	4,670	4,220	3,000	3,300	3,800	11,100	6,760	10,600	45,200	6,320	8,950
3	4,230	4,600	4,060	3,700	3,900	3,900	10,800	5,890	10,000	36,200	6,360	8,510
4	4,930	4,860	4,260	3,900	3,600	3,300	11,400	5,780	10,200	26,800	6,240	6,060
5	4,820	4,860	4,750	3,500	4,000	*3,900	12,100	6,680	8,240	18,600	7,140	7,360
6	5,000	4,600	4,430	3,700	3,300	3,900	12,800	7,400	7,660	15,700	8,530	8,640
7	5,070	5,010	4,130	3,850	3,600	3,300	13,900	7,500	8,760	13,800	7,030	5,400
8	4,640	5,310	*3,860	3,900	3,100	3,150	13,500	7,280	7,340	11,500	6,370	5,310
9	4,490	4,680	4,140	3,400	3,500	3,500	12,700	7,180	9,460	11,000	5,500	4,860
10	6,020	5,090	4,500	3,300	3,600	4,150	13,200	7,290	9,750	10,200	6,290	6,040
11	6,060	4,630	4,090	3,500	4,000	3,700	15,500	7,060	14,900	8,250	6,950	6,280
12	5,100	5,040	4,380	3,200	3,400	3,650	14,200	6,000	19,100	8,500	6,160	5,510
13	4,890	4,220	4,520	4,000	3,800	4,000	16,000	5,160	21,200	7,180	6,050	5,020
14	5,220	4,740	4,360	4,100	3,200	4,000	15,600	6,140	24,200	6,380	7,440	5,450
15	4,520	4,690	4,390	3,400	2,700	3,700	12,200	6,200	29,600	7,220	7,600	6,100
16	4,850	4,280	4,340	3,200	2,900	3,450	11,900	6,190	33,900	8,640	5,650	6,170
17	5,490	4,120	4,060	3,100	3,400	3,800	11,600	5,650	26,800	6,600	5,690	5,400
18	5,450	4,460	3,300	3,050	3,500	3,800	10,100	5,080	17,000	5,620	7,280	5,580
19	5,020	4,780	4,000	3,000	3,700	4,200	9,780	6,140	12,400	6,390	8,680	5,250
20	4,730	4,580	4,700	3,400	3,500	4,300	10,400	6,560	11,800	6,160	11,600	5,000
21	5,140	5,160	4,400	3,500	3,500	4,400	9,800	8,550	11,200	6,000	10,800	6,020
22	4,750	4,960	4,200	3,500	3,500	4,100	8,960	9,840	12,100	5,860	13,300	6,410
23	4,230	4,430	3,900	3,750	3,000	5,400	10,200	10,100	18,000	6,190	10,300	5,780
24	5,320	4,300	3,650	4,000	3,500	5,900	9,420	13,500	16,800	5,840	11,100	7,880
25	5,500	4,540	3,000	3,500	4,000	5,000	9,290	17,000	17,400	4,750	11,100	7,060
26	5,380	4,420	2,750	3,100	3,400	5,500	9,300	18,000	20,600	5,400	10,400	6,160
27	5,100	3,820	3,500	3,300	3,600	8,000	8,120	18,000	23,600	7,140	10,700	5,860
28	5,660	4,100	4,150	3,200	3,600	7,600	6,380	16,200	29,600	6,880	10,300	5,690
29	4,350	4,240	3,800	3,000	3,400	8,800	8,000	14,600	37,700	5,090	8,360	5,960
30	3,970	4,400	3,500	*4,000	-	8,560	7,700	12,600	44,300	5,430	7,850	5,400
31	4,980	-	4,000	4,200	-	8,900	-	11,200	-	5,880	7,380	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	152,950	6,060	3,700	4,934	-1,763	4,276	0.415	0.48
November	138,720	5,310	3,820	4,624	-1,599	4,007	.389	.43
December	124,830	4,750	2,750	4,027	-1,121	3,608	.350	.40
Calendar year 1939	3,234,870	47,900	2,750	8,863	-6,708	8,650	.840	11.39
January	108,550	4,200	3,000	3,502	-2,356	2,622	.255	.29
February	100,900	4,000	2,700	3,479	-1,183	3,007	.292	.31
March	147,310	8,900	3,150	4,752	-1,051	4,360	.423	.49
April	335,300	16,000	6,380	11,180	+8,718	14,543	1.41	1.57
May	277,590	18,000	5,080	8,955	+4,644	10,689	1.04	1.20
June	535,110	44,300	7,340	17,840	+860	18,172	1.76	1.96
July	374,100	49,700	4,750	12,070	-668	11,821	1.15	1.33
August	249,660	13,300	5,190	8,054	-498	7,868	.764	.88
September	187,840	8,980	4,860	6,261	-1,498	5,683	.552	.62
Water year 1939-40	2,732,860	49,700	2,700	7,467	+2,485	7,546	.733	9.96

* Winter discharge measurement made on this day.
† Change in contents in 21 reservoirs and several power plants above station.
Note.- Stage-discharge relation affected by ice Dec. 19 to Mar. 29.

Anvil Lake near Eagle River, Wis.

Location.- Staff gage, lat. 45°57', long. 89°04', in SE¼ sec. 14, T. 40 N., R. 11 E., attached to south side of south boat pier in Camp Glen Eden, on west side of lake, 10 miles northeast of town of Eagle River.

Drainage area.- 3 square miles.

Lake-surface area.- 630 acres.

Records available.- August 1936 to September 1940 (fragmentary).

Extremes.- Maximum gage height observed during year, 6.78 feet June 7; minimum, 5.90 feet Nov. 10 to Feb. 9.
1936-40: Maximum gage height observed, that of June 7, 1940; minimum, 3.38 feet Oct. 15, 1938.

Remarks.- Lake has no surface outlet.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	-	5.90	-	6.10	6.22	-	-	6.72	-	-
2	6.16	-	-	-	5.90	-	-	-	-	-	6.60	6.42
3	-	5.94	-	-	-	-	-	6.40	6.72	-	-	-
4	-	-	5.90	-	-	6.12	-	-	-	-	-	-
5	-	-	-	5.90	5.90	-	6.22	-	-	6.68	6.58	-
6	6.14	5.92	-	-	-	-	-	6.38	-	-	-	6.42
7	-	-	-	-	-	-	-	-	6.78	-	-	-
8	-	-	5.90	5.90	-	6.16	6.24	-	-	6.60	-	-
9	6.08	-	-	-	5.90	-	-	-	-	-	6.52	6.40
10	-	5.90	-	-	-	-	-	6.36	6.72	-	-	-
11	-	-	-	-	-	6.18	-	-	-	-	-	-
12	-	-	-	5.90	5.95	-	6.24	-	-	6.52	6.52	-
13	6.06	5.90	-	-	-	-	-	6.42	-	-	-	6.38
14	-	-	-	-	-	-	-	-	6.64	-	-	-
15	-	-	-	5.90	-	6.18	6.24	-	-	6.50	-	-
16	6.04	-	-	-	5.95	-	-	-	-	-	6.50	6.38
17	-	5.90	-	-	-	-	-	6.60	6.66	-	-	-
18	-	-	5.90	-	-	6.18	-	-	-	-	-	-
19	-	-	-	5.90	5.95	-	6.26	-	-	6.46	6.50	-
20	6.02	-	-	-	-	-	-	6.58	-	-	-	6.38
21	-	-	-	-	-	-	-	-	6.70	-	-	-
22	-	-	5.90	5.90	-	6.18	6.26	-	-	6.56	-	-
23	6.00	-	-	-	5.95	-	-	-	-	-	6.48	6.36
24	-	-	-	-	-	-	-	6.56	6.72	-	-	-
25	-	-	5.90	-	-	6.20	-	-	-	-	-	-
26	-	-	-	5.90	6.03	-	6.26	-	-	6.70	6.46	-
27	5.98	-	-	-	-	-	-	6.62	-	-	-	6.36
28	-	-	-	-	-	-	-	-	6.74	-	-	-
29	-	-	5.90	5.90	-	6.22	-	-	-	6.64	-	-
30	5.96	-	-	-	-	-	6.38	-	-	-	6.44	6.32
31	-	-	-	-	-	-	-	6.68	-	-	-	-

Note.- Add 90.00 feet to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

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Tomahawk River at Tomahawk, Wis.

Location.- Lat. 45°29', long. 89°45', in sec. 28, T. 35 N., R. 6 E., at Jersey power plant of Wisconsin Public Service Corporation, 1 mile north of Tomahawk.

Drainage area.- 547 square miles.

Records available.- January 1930 to September 1940

Average discharge.- 10 years, 548 second-feet (unadjusted).

Extremes (regulated).- Maximum daily discharge during year, 1,410 second-feet June 10; no flow at times.
1930-40: Maximum daily discharge, 2,100 second-feet June 14, 15, 1939; no flow at times in 1931, 1934, and 1940.

Remarks.- Records good. Discharge computed from power-plant records. Flow completely regulated by four reservoirs operated by the Wisconsin Valley Improvement Co. Three discharge measurements by the Geological Survey in November 1940 checked the power plant rating closely.

Cooperation.- Power-plant records furnished by Wisconsin Public Service Corporation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	498	702	695	732	616	445	464	22	357	458	587	654
2	549	665	676	724	628	445	482	0	600	442	670	716
3	567	778	676	673	595	436	498	134	561	454	537	833
4	510	813	678	708	614	440	390	66	489	426	510	1,020
5	491	852	678	721	614	431	298	0	538	443	513	1,150
6	508	793	678	707	614	500	288	12	849	423	532	985
7	494	835	684	708	612	526	280	25	1,090	447	518	743
8	557	672	663	721	566	579	244	23	1,380	450	510	732
9	723	537	684	714	588	640	150	137	1,250	437	510	807
10	426	463	694	710	578	642	143	63	1,410	432	522	885
11	434	711	687	722	560	613	195	0	1,330	765	527	885
12	663	711	684	721	552	564	151	0	983	692	528	1,010
13	658	684	704	706	543	588	151	97	730	437	528	1,080
14	614	688	701	710	523	571	146	137	636	389	528	1,050
15	614	775	673	716	531	537	156	80	689	442	545	915
16	674	111	695	699	557	510	151	0	658	450	807	825
17	658	214	721	677	600	517	257	0	649	447	882	814
18	630	282	707	682	570	506	188	0	676	578	923	816
19	676	447	702	688	543	476	301	139	666	640	882	581
20	640	506	775	676	475	468	331	89	653	643	846	459
21	658	514	744	669	454	475	196	122	636	635	866	436
22	662	601	755	669	494	539	63	424	662	638	882	423
23	702	648	768	669	460	512	0	595	688	541	852	454
24	621	619	742	657	467	493	0	678	1,020	497	862	586
25	689	610	787	652	456	503	0	513	1,090	515	806	658
26	671	625	761	661	468	499	0	366	1,060	509	697	763
27	702	630	732	663	459	466	0	410	1,190	512	726	862
28	662	650	721	652	471	470	0	373	1,010	658	832	854
29	691	682	751	652	445	480	0	415	665	743	945	861
30	696	665	737	646	-	472	45	399	464	873	932	844
31	670	-	730	630	-	472	-	390	-	848	899	-

Month	Observed				Change in contents (million cubic feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Run-off in inches
October	19,008	723	426	613	-475	436	0.797	0.92
November	18,483	852	111	616	-494	425	.777	.87
December	22,103	787	673	713	-824	405	.740	.85
Calendar year 1939	296,260	2,100	111	812	-2,143	744	1.36	18.46
January	21,335	732	630	688	-1,102	277	.506	.58
February	15,653	628	445	540	-344	403	.737	.79
March	15,815	642	431	510	-374	370	.676	.78
April	5,568	498	0	186	+2,783	1,260	2.30	2.57
May	5,711	678	0	184	+2,177	997	1.82	2.10
June	24,899	1,410	357	823	+357	961	1.76	1.96
July	16,866	873	389	544	+10	548	1.00	1.15
August	22,024	945	510	710	-134	660	1.21	1.40
September	23,701	1,150	423	790	-773	492	.899	1.00
Water year 1939-40	210,966	1,410	0	576	+807	602	1.10	14.97

† Change in contents in four reservoirs above station.

Prairie River near Merrill, Wis.

Location.- Wire-weight gage, lat. 45°14'10", long. 89°38'50", on line between secs. 20 and 29, T. 32 N., R. 7 E., at highway bridge 1½ miles upstream from Meadow Creek, 4½ miles northeast of Merrill, and 8 miles upstream from mouth.

Drainage area.- 164 square miles.

Records available.- January 1914 to June 1931, August 1939 to September 1940.

Average discharge.- 17 years, 194 second-feet.

Extremes.- Maximum discharge observed during year, 1,810 second-feet June 8 (gage height, 5.56 feet); minimum observed, 70 second-feet Jan. 15.
1914-31, 1939-40: Maximum discharge observed, 3,580 second-feet Aug. 21, 1926 (gage height, 7.4 feet), from rating curve extended above 2,200 second-feet; minimum observed, 55 second-feet Jan. 21, 1925 (affected by ice).

Remarks.- Records good except those for periods of ice effect, which are fair. Gage read twice daily.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.5	50	2.9	344	4.5	1,060
1.7	80	3.2	479	5.0	1,370
2.0	138	3.6	628	5.6	1,810
2.4	232	4.0	794		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	87	98	94	86	73	80	149	329	207	220	149	172
2	85	98	106	90	73	80	220	285	220	183	160	160
3	84	96	106	88	73	81	232	245	220	172	183	149
4	84	96	98	87	73	82	245	258	232	149	195	132
5	84	94	102	87	73	84	220	232	329	138	195	122
6	85	94	102	87	73	82	300	232	571	130	172	114
7	84	94	102	86	73	80	392	220	794	124	149	110
8	85	94	94	86	72	78	344	195	1,510	118	128	104
9	94	94	98	85	72	76	314	172	1,650	106	106	106
10	126	96	96	83	72	78	344	160	1,180	104	102	106
11	138	100	94	82	72	80	272	149	749	116	98	104
12	128	100	93	80	72	75	285	149	515	110	94	102
13	120	98	91	78	72	71	220	149	375	100	91	98
14	112	96	93	77	72	74	207	195	285	100	112	96
15	106	94	89	70	74	80	220	245	232	91	126	96
16	102	91	106	71	76	*84	245	300	195	91	1,060	93
17	98	91	94	71	80	86	245	329	160	91	945	91
18	94	89	94	71	80	83	258	314	195	89	497	329
19	94	87	102	74	80	80	245	422	245	85	408	497
20	94	89	93	74	81	80	258	749	232	94	329	344
21	94	89	93	74	*81	80	258	794	195	122	245	245
22	94	87	92	74	81	80	258	707	195	134	207	183
23	91	87	91	74	80	82	245	534	207	118	195	160
24	91	94	90	74	71	90	245	408	628	102	160	149
25	91	91	89	73	74	100	232	329	1,440	114	172	138
26	93	91	88	73	76	84	207	272	1,240	134	183	136
27	96	91	87	*73	78	80	183	272	842	128	183	122
28	96	91	91	73	80	80	183	329	571	114	183	128
29	98	91	89	73	80	85	195	329	392	118	183	128
30	96	85	87	73	-	98	285	272	285	172	172	122
31	98	-	86	73	-	130	-	232	-	160	172	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	3,022	138	84	97.5	0.595	0.69
November	2,790	100	85	93.0	.567	.63
December	2,932	106	87	94.6	.577	.67
Calendar year	-	-	-	-	-	-
January	2,420	90	70	78.1	.476	.55
February	2,189	81	71	75.5	.460	.50
March	2,583	130	71	83.3	.508	.59
April	7,506	392	149	250	1.52	1.70
May	9,807	794	149	316	1.93	2.22
June	16,091	1,650	160	536	3.27	3.65
July	3,827	220	85	123	.750	.86
August	7,354	1,060	91	237	1.45	1.67
September	4,636	497	91	155	.945	1.05
Water year 1939-40	65,157	1,650	70	178	1.09	14.78

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 22-26, Dec. 31 to Mar. 28.

Rib Lake at Rib Lake, Wis.

Location.- Staff gage, lat. 45°19', long. 90°12', in sec. 26, T. 33 N., R. 2 E., attached to pile support of log hoist of Rib Lake Lumber Co.'s sawmill, in town of Rib Lake.

Drainage area.- 33 square miles.

Lake-surface area.- 400 acres.

Records available.- September 1936 to September 1940 (fragmentary).

Extremes.- Maximum gage height observed during year, 2.00 feet June 10; minimum observed, 0.36 foot Sept. 15-17.
1936-40: Maximum gage height observed, 2.98 feet Apr. 2, 1937; minimum observed, that of Sept. 15-17, 1940.

Remarks.- Low dam, consisting of wood sheet piling, at outlet.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	0.54	0.44	-	-	0.52	0.72	-	-	1.06	0.46	-
2	0.58	.54	-	0.48	0.40	-	.74	-	-	.96	.46	0.44
3	.56	.54	-	.46	-	-	-	1.09	-	.86	-	.44
4	.56	-	.52	.46	-	.52	-	-	1.06	-	-	.44
5	.56	-	.52	.44	.42	-	-	-	1.20	.80	.40	.44
6	.56	.52	.52	-	-	.52	1.20	-	1.32	-	.40	.44
7	-	.52	.52	-	.42	-	-	.98	1.42	-	.40	-
8	-	.54	.52	-	-	-	-	-	-	.70	.40	.42
9	.56	.54	-	.42	.42	.54	1.82	-	-	.66	.40	.42
10	.62	.54	-	-	-	-	-	.92	2.00	.62	-	.40
11	.62	-	.52	-	-	-	-	-	1.88	.62	-	.38
12	.60	-	.50	-	.44	.54	1.86	-	1.72	.58	.40	.38
13	.60	.52	.50	.45	-	-	-	-	1.60	-	.40	.38
14	-	.50	.50	-	.42	.54	-	.88	1.46	-	.38	.38
15	-	.48	.50	-	-	-	-	.88	-	.52	.38	.36
16	.60	.48	-	.44	.42	.62	1.80	-	-	.52	.42	.36
17	.58	.48	-	-	-	-	-	1.02	1.22	.52	-	.36
18	.58	-	.48	-	-	.64	-	-	1.12	.50	.44	.48
19	.58	-	.52	.44	-	-	1.52	-	1.04	.50	.44	.48
20	.58	.46	.54	.44	-	.64	-	1.64	1.00	-	.44	.46
21	-	.46	.54	-	.44	-	-	1.90	.90	-	.40	-
22	-	.46	.54	.44	-	.64	-	1.86	-	.50	.40	-
23	.56	.44	-	-	.46	-	1.38	1.86	-	.50	.38	.52
24	.56	.44	-	.44	-	-	-	1.64	-	.48	-	.52
25	.54	-	.52	-	-	.62	-	-	1.10	.48	.38	.52
26	.54	-	.52	.42	-	-	1.38	-	1.10	.48	.40	.52
27	.54	.44	.52	-	-	.64	-	1.62	1.10	-	.40	.52
28	-	.44	.52	-	.46	-	-	1.64	1.10	-	.42	-
29	-	.44	.50	.41	-	.64	-	1.30	-	.48	.42	.50
30	.54	.44	-	-	-	-	1.14	-	-	.48	.44	.50
31	.54	-	-	.41	-	-	-	1.18	-	.46	-	-

Note.- Add 98 feet to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

Rib River at Rib Falls, Wis.

Location.- Wire-weight gage, lat. 44°58'25", long. 89°54'15", in NW¼ sec. 27, T. 29 N., R. 5 E., at highway bridge in village of Rib Falls, 6 miles downstream from Black Creek. Prior to Sept. 10, chain gage at same site and datum.

Drainage area.- 309 square miles.

Records available.- May 1925 to September 1940.

Average discharge.- 15 years, 310 second-feet.

Extremes.- Maximum discharge observed during year, 8,580 second-feet June 8 (gage height, 10.20 feet); minimum observed, 10 second-feet Jan. 17, 18.
1925-40: Maximum discharge observed, 23,800 second-feet Aug. 31, 1938 (gage height, 16.2 feet from floodmarks), from rating curve extended above 12,000 second-feet; minimum, 3 second-feet (estimated) Jan. 23, 1930.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read once daily during low and medium stages and twice daily during high stages.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 14 to Nov. 2)

Oct. 1 to Apr. 2

1.9	7
2.0	16
2.2	39
2.4	72
2.7	142

Apr. 3 to Sept. 30

1.9	9	2.6	122	4.5	930	8.0	4,670
2.0	20	2.8	175	5.0	1,260	9.0	6,300
2.1	32	3.0	240	5.5	1,650	10.0	8,180
2.2	46	3.5	423	6.0	2,130		
2.4	80	4.0	640	7.0	3,280		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	33	45	23	13	21	300	240	127	140	26	49
2	28	33	58	22	14	21	900	184	311	107	28	43
3	28	31	126	20	14	21	1,650	172	276	94	26	40
4	26	28	25	19	13	22	1,930	140	240	78	26	32
5	26	31	51	18	14	22	1,560	124	1,930	67	26	27
6	28	31	29	17	14	22	1,400	120	3,540	60	31	25
7	28	32	45	17	14	22	1,560	111	4,080	48	24	25
8	28	32	27	18	14	23	1,650	98	7,020	45	19	25
9	40	32	27	18	15	23	1,260	94	5,140	45	17	27
10	67	34	42	18	15	23	1,260	86	1,830	42	17	27
11	74	34	37	18	15	24	840	86	900	39	19	22
12	67	32	34	18	15	24	640	75	568	39	19	21
13	46	32	37	18	16	25	502	71	385	36	24	20
14	40	32	39	16	16	*25	524	115	275	36	21	20
15	38	18	42	14	16	26	545	184	206	33	43	18
16	38	16	34	12	17	26	545	293	153	36	568	18
17	35	18	34	10	18	27	502	423	127	31	155	18
18	35	18	29	10	18	28	404	423	545	36	86	64
19	33	23	34	11	18	28	385	1,260	442	33	67	111
20	33	32	45	11	*18	29	330	3,540	118	28	51	60
21	33	32	39	11	18	29	293	2,450	76	26	40	42
22	33	14	37	11	18	29	258	1,190	311	48	38	31
23	31	18	39	*11	18	29	258	640	591	31	35	28
24	31	18	32	11	18	28	237	462	3,670	24	32	32
25	31	18	33	12	17	28	203	330	3,030	24	38	40
26	31	16	31	12	17	29	190	275	990	24	38	35
27	33	16	35	12	18	29	161	258	442	24	46	28
28	33	18	26	12	19	29	150	366	311	21	43	28
29	35	a22	26	12	20	31	130	275	240	26	69	28
30	33	25	25	12	-	35	275	194	169	26	62	31
31	33	-	24	12	-	60	-	169	-	26	52	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,123	74	26	36.2	0.117	0.13
November	769	34	14	25.6	.083	.09
December	1,187	126	24	38.3	.124	.14
Calendar year 1939	100,465	6,840	14	275	.890	12.10
January	456	23	10	14.7	.048	.06
February	470	20	13	16.2	.052	.06
March	838	60	21	27.0	.087	.10
April	20,742	1,830	130	691	2.24	2.50
May	14,448	3,540	71	466	1.51	1.74
June	38,042	7,020	76	1,268	4.10	4.57
July	1,373	140	21	44.3	.143	.16
August	1,786	568	17	57.6	.186	.21
September	1,015	111	18	33.8	.109	.12
Water year 1939-40	82,249	7,020	10	225	.728	9.88

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 29 to Apr. 2.

Eau Claire River at Kelly, Wis.

Location.- Wire-weight gage, lat. 44°55'05", long. 89°33'00", on line between secs. 9 and 10, T. 28 N., R. 8 E., at highway bridge three-quarters of a mile northeast of Kelly, 1 mile upstream from Big Sandy Creek, 4½ miles upstream from mouth, and 5 miles southeast of Wausau.

Drainage area.- 326 square miles.

Records available.- January 1914 to November 1926, August 1939 to September 1940.

Average discharge.- 13 years, 248 second-feet.

Extremes.- Maximum discharge observed during year, 4,780 second-feet June 8 (gage height, 6.45 feet); minimum observed, 35 second-feet Nov. 11 (gage height, 0.34 foot).
1914-26, 1939-40: Maximum discharge observed, 7,340 second-feet Aug. 21, 1926 (gage height, 7.85 feet), from rating curve extended above 3,500 second-feet; minimum observed, 25 second-feet several days in January 1926 (affected by ice).

Remarks.- Records good except those for period of ice effect, which are fair. Gage read twice daily.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Dec. 13)

0.4	44	1.8	475	4	2,110
.6	72	2.2	680	5	3,200
.8	111	2.6	924	6	4,300
1.0	164	3.0	1,200		
1.4	300	3.5	1,610		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	98	98	43	47	49	700	384	227	227	320	244
2	86	98	103	42	47	49	1,200	362	262	210	227	227
3	85	86	103	40	47	49	1,270	300	341	147	194	210
4	85	77	90	39	47	49	1,130	362	300	164	194	194
5	81	76	79	39	47	49	1,130	362	341	156	194	179
6	85	81	103	40	47	49	1,200	341	767	132	164	164
7	83	98	98	40	47	49	797	281	1,610	131	158	158
8	83	98	85	40	47	49	767	262	4,300	124	147	153
9	98	86	98	41	47	49	625	227	4,300	121	134	158
10	131	100	90	42	47	49	573	210	2,540	111	126	150
11	134	72	79	43	48	49	499	194	1,200	111	121	142
12	116	111	74	44	48	49	384	179	680	111	116	136
13	107	126	54	45	48	50	300	179	475	107	111	131
14	107	107	70	45	48	50	320	194	341	107	126	124
15	103	94	60	45	48	51	320	262	281	103	158	121
16	94	68	110	45	48	*52	300	300	244	98	362	116
17	98	86	100	46	48	52	300	384	210	98	599	111
18	98	81	95	*46	48	52	300	384	548	90	991	281
19	90	76	92	46	48	52	281	452	320	96	924	1,060
20	92	72	89	46	48	52	262	1,060	244	76	548	797
21	94	65	83	46	48	52	262	1,130	194	126	452	499
22	92	69	76	46	48	52	262	991	210	158	341	384
23	98	63	71	46	49	52	262	680	320	153	320	281
24	98	94	66	46	49	54	262	475	1,430	118	300	262
25	90	90	62	46	*49	55	244	362	2,320	103	262	244
26	90	74	59	46	49	56	244	300	1,910	147	281	210
27	98	54	55	46	49	56	227	281	1,200	142	300	179
28	96	79	52	46	49	58	210	384	573	126	281	179
29	94	107	49	46	49	80	210	406	364	156	262	164
30	103	88	47	47	-	150	262	320	300	281	262	164
31	98	-	45	47	-	400	-	262	-	452	262	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	3,003	134	81	96.9	0.297	0.34
November	2,594	126	54	86.5	.265	.30
December	2,435	110	45	78.5	.241	.28
Calendar year	-	-	-	-	-	-
January	1,365	47	39	44.0	.135	.16
February	1,389	49	47	47.9	.147	.16
March	2,064	400	49	66.6	.204	.24
April	15,103	1,270	210	503	1.54	1.72
May	12,270	1,130	179	396	1.21	1.40
June	28,572	4,300	194	952	2.92	3.26
July	4,486	452	76	145	.445	.51
August	9,237	991	111	298	.914	1.05
September	7,422	1,060	111	247	.758	.85
Water year 1939-40	89,940	4,300	39	246	.755	10.27

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 14 to Apr. 1.

Big Eau Pleine River near Stratford, Wis.

Location.- Water-stage recorder, lat. 44°49'15", long. 90°04'35", on line between sec. 13, T. 27 N., R. 3 E., and sec. 18, T. 27 N., R. 4 E., 1 mile north of Stratford.

Drainage area.- 224 square miles.

Records available.- April 1937 to September 1940. July 1914 to December 1925 at site half a mile upstream.

Extremes.- Maximum discharge during year, 10,200 second-feet June 24 (gage height, 16.35 feet); minimum, 1 second-foot Jan. 16-29.
1914-25, 1937-40: Maximum discharge observed, 41,000 second-feet Sept. 9, 1938 (gage height, 24.5 feet, from floodmarks), from rating curve extended above 24,000 second-feet; minimum observed, 1 second-foot Sept. 8. 9, 1937, Jan. 16-29, 1940.

Remarks.- Records good except those for period of ice effect, which are poor, and those under 10 second-feet for other periods, which are fair.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5	8	10	2	2	3	1,500	93	39	56	3	12
2	4	8	19	2	2	3	2,000	68	41	42	3	10
3	4	7	24	2	2	3	2,210	60	38	34	3	9
4	4	7	30	2	2	4	2,750	47	31	27	3	8
5	4	7	16	2	2	5	1,930	39	138	21	4	6
6	4	7	14	2	2	6	2,450	33	1,300	16	7	6
7	4	7	12	2	2	6	1,770	27	2,180	14	4	5
8	4	7	12	3	2	7	1,580	25	3,780	13	3	4
9	7	7	10	3	2	8	1,180	25	1,740	12	3	4
10	14	8	10	3	2	8	841	23	564	10	3	3
11	13	9	10	3	2	8	503	19	236	18	3	3
12	13	10	10	3	2	7	270	16	209	16	3	2
13	12	8	10	3	2	6	185	15	154	12	5	2
14	13	8	9	2	2	5	154	19	59	10	10	2
15	13	7	9	2	2	*5	156	36	43	9	13	2
16	12	7	9	1	2	5	156	80	32	8	46	2
17	11	7	9	1	2	5	133	146	25	7	39	2
18	10	7	9	1	2	6	115	122	875	6	47	2
19	10	7	9	1	2	6	101	910	210	6	30	6
20	9	8	8	1	*2	6	89	2,860	61	6	22	6
21	8	8	6	1	2	7	78	1,110	61	6	14	4
22	8	8	6	*1	2	7	69	440	2,580	5	12	3
23	8	8	6	1	2	7	63	209	2,210	5	10	3
24	8	8	5	1	2	7	60	128	5,990	4	8	3
25	8	9	5	1	2	7	57	90	3,180	4	8	2
26	8	9	4	1	2	7	50	68	823	3	11	2
27	8	9	4	1	2	7	43	85	292	3	12	2
28	8	8	4	1	2	7	38	124	158	3	14	3
29	8	8	3	1	2	9	45	102	106	4	14	3
30	8	8	3	2	-	40	149	65	73	4	15	3
31	8	-	3	2	-	400	-	48	-	4	14	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	258	14	4	8.3	0.037	0.04
November	234	10	7	7.8	.035	.04
December	298	30	3	9.6	.043	.05
Calendar year 1939	61,902	6,530	3	170	.759	10.24
January	54	3	1	1.7	.0076	.009
February	58	2	2	2.0	.0089	.01
March	617	400	3	19.9	.089	.10
April	20,725	2,750	38	691	3.08	3.44
May	7,132	2,860	15	230	1.03	1.19
June	27,228	5,990	25	908	4.05	4.52
July	388	56	3	12.5	.056	.06
August	386	47	3	12.5	.056	.06
September	124	12	2	4.1	.018	.02
Water year 1939-40	57,502	5,990	1	157	.701	9.539

Peak discharge.- Apr. 4 (1 a.m.) 3,290 sec.-ft.; May 20 (9 a.m.) 3,550 sec.-ft.; June 8 (11:30 a.m.) 4,180 sec.-ft.; June 18 (9 a.m.) 1,960 sec.-ft.; June 24 (5 p.m.) 10,200 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 11-15, Dec. 19 to Apr. 2.

Yellow River at Sprague, Wis.

Location.- Chain gage, lat. 44°08', long. 90°06', in NW¼ sec. 11, T. 19 N., R. 3 E., 1 mile southeast of Sprague and 10 miles upstream from Necedah Dam.

Drainage area.- 420 square miles.

Records available.- September 1926 to October 1940 (discontinued).

Average discharge.- 14 years, 227 second-feet.

Extremes.- Maximum discharge during period October 1939 to October 1940, 2.260 second-feet June 26 (gage height, 11.30 feet, from graph based on gage readings); minimum, 7 second-feet Jan. 23 to Feb. 11, Feb. 25-27.

1926-40: Maximum discharge observed, 5,920 second-feet Sept. 11, 1938 (gage height, 13.4 feet, from floodmarks), from rating curve extended above 2,300 second-feet; maximum gage height, 14.00 feet Sept. 17, 1928; minimum discharge observed, 5.4 second-feet Sept. 9, 1933.

Remarks.- Records fair except those for period of ice effect or no gage-height record, which are poor. Gage read once daily.

Discharge, in second-feet, 1939-40

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	17	19	14	7	8	45	103	292	623	34	66
2	20	18	20	13	7	9	264	129	237	458	35	59
3	19	19	20	12	7	9	669	152	212	353	42	56
4	18	17	20	11	7	10	959	146	200	292	48	48
5	20	27	16	10	7	11	1,190	129	164	237	45	45
6	17	23	18	10	7	15	1,480	118	140	188	39	45
7	16	21	26	9	7	12	1,540	103	164	176	34	42
8	15	21	24	10	7	13	a1,380	98	278	152	32	39
9	17	20	25	10	7	12	a1,300	94	623	129	31	38
10	19	19	24	10	7	12	1,220	85	909	118	29	36
11	20	18	23	11	7	12	1,110	81	1,010	108	29	34
12	20	20	22	11	8	12	984	73	959	108	28	35
13	22	18	22	12	8	12	812	73	692	98	28	42
14	19	19	22	12	8	13	623	66	439	89	27	36
15	23	19	24	12	8	13	458	85	292	81	28	33
16	22	18	22	12	8	13	353	98	212	77	27	32
17	24	19	21	12	8	11	307	89	164	70	45	31
18	24	18	20	11	8	11	292	94	146	66	81	30
19	23	18	20	10	8	12	264	118	250	66	224	29
20	26	18	20	9	8	12	237	278	934	62	224	28
21	23	18	20	8	8	12	224	623	1,380	56	164	26
22	22	18	19	*8	8	12	200	1,010	1,380	59	124	45
23	20	17	19	7	8	12	188	1,260	1,110	52	98	45
24	20	18	19	7	8	11	176	1,190	1,620	48	81	42
25	18	a18	19	7	7	11	152	812	a2,110	45	77	38
26	25	18	18	7	7	11	140	497	a2,260	42	77	39
27	24	13	18	7	7	12	129	369	a2,110	39	85	39
28	19	14	18	7	8	12	118	353	a2,110	39	81	34
29	18	21	17	7	8	12	108	369	1,720	42	81	32
30	21	18	16	7	-	12	103	353	1,080	38	73	31
31	18	-	15	7	-	17	-	322	-	35	70	-

* Winter discharge measurement made on this day.

a No gage-height record; discharge interpolated or computed on basis of graph drawn between gage heights on days for which gage readings are available.

Note.- Stage-discharge relation affected by ice Dec. 21 to Mar. 4, Mar. 10, 11, 13, 14, 21-29.

1940

Oct. 1	30	Oct. 4	28	Oct. 7	29	Oct. 10	28
2	29	5	27	8	29	11	27
3	28	6	28	9	28		

Monthly discharge, in second-feet, 1939-40

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October 1939	634	26	15	20.5	0.049	0.06
November	559	27	13	18.6	.044	.05
December	626	26	15	20.2	.048	.06
Calendar year 1939	62,255	2,930	13	171	.407	5.52
January 1940	300	14	7	9.7	.023	.03
February	218	8	7	7.5	.018	.02
March	366	17	8	11.8	.028	.03
April	17,025	1,540	45	568	1.35	1.51
May	9,370	1,260	66	302	.719	.83
June	25,197	2,260	140	840	2.00	2.23
July	4,046	623	35	131	.312	.36
August	2,121	224	27	68.4	.163	.19
September	1,175	66	26	39.2	.093	.10
Water year 1939-40	61,637	2,260	7	168	.400	5.47
October 1-11, 1940	311	30	27	28.3	.067	.03

Devils Lake near Baraboo, Wis.

Location.- Staff gage, lat. 43°25'20", long. 89°43'30", in S½ sec. 13, T. 11 N., R. 6 E., in Devils Lake State Park.

Drainage area.- 5.64 square miles.

Lake-surface area.- 361 acres.

Records available.- June 1922 to August 1930, June to August 1932, and June 1934 to September 1940 (fragmentary prior to Aug. 11, 1936).

Extremes.- Maximum gage height observed during year, 5.50 feet June 9-15; minimum observed, 3.67 feet Mar. 10-25.
1922-40: Maximum gage height observed, 10.6 feet June 1, 1927; minimum observed, 2.12 feet Dec. 21-26, 1936.

Remarks.- Lake has no surface outlet.

Cooperation.- Gage readings furnished by R. J. Vanderwall, Custodian, Devils Lake State Park.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.16	4.71	4.36	4.11	3.92	3.76	3.90	4.40	5.45	5.30	4.80	4.80
2	5.16	4.66	4.36	4.11	3.92	3.76	3.95	4.40	5.45	5.30	4.75	4.75
3	5.16	4.66	4.36	4.11	3.92	3.72	3.95	4.40	5.45	5.30	4.75	4.75
4	5.11	4.66	4.36	4.11	3.88	3.72	4.07	4.40	5.45	5.30	4.75	4.75
5	5.11	4.66	4.36	4.06	3.88	3.72	4.10	4.40	5.45	5.25	4.70	4.75
6	5.06	4.66	4.31	4.06	3.80	3.72	4.10	4.35	5.45	5.27	4.70	4.73
7	5.06	4.66	4.31	4.06	3.88	3.72	4.15	4.35	5.45	5.25	4.65	4.70
8	5.06	4.66	4.31	4.06	3.88	3.72	4.20	4.35	5.47	5.20	4.65	4.70
9	5.06	4.61	4.31	4.06	3.88	3.72	4.20	4.35	5.50	5.20	4.60	4.67
10	5.06	4.61	4.31	4.06	3.88	3.67	4.23	4.35	5.50	5.20	4.60	4.65
11	5.04	4.61	4.26	4.06	3.84	3.67	4.30	4.35	5.50	5.20	4.57	4.65
12	5.01	4.58	4.26	4.04	3.84	3.67	4.30	4.35	5.50	5.15	4.55	4.60
13	5.01	4.56	4.26	4.01	3.84	3.67	4.30	4.35	5.50	5.15	4.53	4.60
14	5.01	4.56	4.26	4.01	3.84	3.67	4.35	4.35	5.50	5.15	4.50	4.60
15	5.01	4.56	4.26	4.01	3.84	3.67	4.35	4.35	5.50	5.10	4.50	4.55
16	4.96	4.54	4.26	4.01	3.84	3.67	4.40	4.35	5.45	5.10	4.50	4.57
17	4.96	4.51	4.21	4.01	3.84	3.67	4.40	4.35	5.43	5.05	4.45	4.50
18	4.96	4.51	4.21	4.01	3.80	3.67	4.40	4.35	5.40	5.05	4.47	4.47
19	4.91	4.51	4.21	4.01	3.80	3.67	4.40	4.57	5.40	5.03	4.55	4.45
20	4.91	4.51	4.21	3.96	3.80	3.67	4.40	4.65	5.35	5.00	4.60	4.40
21	4.91	4.51	4.21	3.96	3.80	3.67	4.40	4.70	5.35	5.00	4.60	4.37
22	4.86	4.46	4.16	3.96	3.80	3.67	4.35	4.85	5.35	4.97	4.67	4.35
23	4.86	4.46	4.16	3.96	3.80	3.67	4.35	4.90	5.40	4.95	4.70	4.35
24	4.86	4.46	4.16	3.96	3.80	3.67	4.35	4.90	5.40	4.95	4.70	4.35
25	4.81	4.46	4.16	3.96	3.76	3.67	4.35	5.15	5.40	4.93	4.75	4.35
26	4.81	4.41	4.16	3.96	3.76	3.69	4.35	5.20	5.40	4.90	4.75	4.35
27	4.76	4.41	4.16	3.96	3.76	3.73	4.35	5.30	5.37	4.90	4.75	4.35
28	4.76	4.41	4.14	3.92	3.77	3.77	4.35	5.40	5.35	4.85	4.75	4.30
29	4.74	4.41	4.11	3.92	3.76	3.85	4.35	5.45	5.35	4.85	4.80	4.30
30	4.71	4.38	4.11	3.92	-	3.90	4.40	5.45	5.35	4.83	4.80	4.30
31	4.71	-	4.11	3.92	-	3.90	-	5.45	-	4.80	4.80	-

Note.- Add 955 feet to obtain elevation above mean sea level.

Mud Lake near Poynette, Wis.

Location.- Staff gage, lat. 43°24'30", long. 89°18'25", in NW¼NE¼ sec. 21, T. 11 N., R. 10 E., 5 miles northeast of Poynette.

Drainage area.- 10 square miles.

Lake-surface area.- About 700 acres.

Records available.- May to September 1940.

Extremes.- Maximum gage height observed during period, 2.30 feet June 25; minimum, 1.56 feet Aug. 5.

Remarks.- Lake level not artificially regulated.

Cooperation.- Gage heights furnished by Wisconsin Conservation Commission.

Gage height, in feet, May to September 1940

Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height
May 7	2.00	June 11	1.74	July 15	1.88	Aug. 21	1.94	Sept. 23	1.80
13	1.91	17	1.64	22	1.70	27	2.10	29	1.80
20	1.96	25	2.30	30	1.60	Sept. 3	2.04		
27	1.96	July 1	2.14	Aug. 5	1.56	11	1.94		
June 3	1.88	8	1.98	13	1.70	17	1.84		

Kickapoo River at La Farge, Wis.

Location.- Water-stage recorder, lat. 43°34'30", long. 90°38'35", on east-west quarter-section line, in west half of sec. 29, T. 13 N., R. 2 W., at bridge on State Highway 82 in La Farge, 0.3 mile upstream from Otter Creek and 1 mile downstream from power plant. Datum of gage is 782.00 feet above mean sea level (general adjustment of 1912). Prior to Dec. 4, 1939, chain gage at same site. Prior to Nov. 9, 1939, datum of gage 0.11 foot higher.

Drainage area.- 266 square miles.

Records available.- October 1938 to September 1940.

Extremes.- Maximum discharge during year, 2,860 second-feet June 23 (gage height, 10.26 feet); minimum, 10 second-feet July 22 (gage height, 0.45 foot).
1938-40: Maximum, that of June 23, 1940; minimum, that of July 22, 1940.

Remarks.- Records good after Mar. 30, fair before, except those for which only chain gage readings are available, which are poor. Chain gage read twice daily Oct. 1 to Dec. 3. Considerable diurnal fluctuation caused by power plant 1 mile above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	85	38	127	70	70	82	364	109	85	119	70	100
2	105	67	119	*64	74	80	544	99	80	100	236	82
3	69	36	131	60	72	90	755	92	81	102	210	78
4	89	69	88	64	69	100	350	90	77	86	197	82
5	93	65	102	70	74	*100	194	90	75	85	150	70
6	114	105	121	64	76	110	177	85	77	82	124	77
7	109	109	124	90	76	120	167	87	83	78	90	70
8	96	58	109	70	78	127	202	103	305	75	75	75
9	188	78	110	68	76	130	192	96	121	63	76	72
10	172	134	131	80	76	115	173	92	94	85	77	74
11	116	116	155	65	80	100	187	82	86	128	80	67
12	102	72	99	75	80	90	143	75	90	136	90	70
13	105	72	110	85	*80	80	131	85	94	99	60	67
14	105	69	62	90	80	84	125	82	81	83	98	71
15	94	75	*88	78	76	90	132	90	82	74	270	63
16	119	47	119	70	78	100	122	96	61	88	96	69
17	89	85	110	64	80	120	119	87	68	67	290	68
18	99	61	114	80	80	270	160	95	194	75	584	71
19	121	75	139	78	80	350	145	210	118	74	108	70
20	112	89	121	76	80	200	125	206	62	68	95	67
21	119	114	97	72	80	100	111	139	66	77	86	66
22	97	89	94	68	80	90	108	104	86	68	104	62
23	109	85	100	*80	74	96	109	96	1,790	70	103	77
24	64	70	86	80	72	92	108	92	1,080	67	82	94
25	112	75	92	78	74	94	105	96	403	66	91	75
26	109	88	65	70	82	*100	100	92	165	70	112	69
27	112	88	94	62	82	130	103	98	137	81	121	67
28	110	85	78	68	82	100	88	111	168	70	116	71
29	67	69	84	72	82	*730	100	99	163	87	108	77
30	114	75	88	72	-	1,040	125	88	114	78	98	60
31	109	-	96	68	-	826	-	*86	-	75	96	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	3,304	188	64	107	0.402	0.46
November	2,356	134	36	78.5	.295	.33
December	3,273	155	62	106	.398	.46
Calendar year 1939	48,347	1,280	36	132	.496	6.76
January	2,251	90	60	72.6	.273	.31
February	2,243	82	69	77.3	.291	.31
March	5,936	1,040	80	191	.718	.83
April	5,564	755	88	185	.695	.78
May	3,154	210	75	102	.383	.44
June	6,186	1,790	61	206	.774	.86
July	2,576	136	63	83.1	.312	.36
August	4,214	584	70	136	.511	.59
September	2,181	100	60	72.7	.273	.30
Water year 1939-40	43,238	1,790	36	118	.444	6.03

Peak discharge.- Mar. 30 (12:30 a.m.) 1,500 sec.-ft.; June 8 (11 a.m.) 535 sec.-ft.; June 23 (7 p.m.) 2,860 sec.-ft.; Aug. 2 (7 p.m.) 605 sec.-ft.; Aug. 18 (3 a.m.) 1,210 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 22 to Mar. 29. Discharge based on twice-daily gage readings Oct. 1 to Dec. 3, Dec. 6, 7, 11, and once-daily readings Jan. 5-22, June 19, 20, and July 11.

Kickapoo River at Steuben, Wis.

Location.- Water-stage recorder, lat. 43°11'25", long. 90°52'30", in NW¼ sec. 8, T. 8 N., R. 4 W., three-quarters of a mile upstream from Duffy Creek, 1 mile northwest of Steuben and 14 miles upstream from mouth. Datum of gage is 657.49 feet above mean sea level (general adjustment of 1912).

Drainage area.- 690 square miles.

Records available.- May 1933 to September 1940

Extremes.- Maximum discharge during year, 2,230 second-feet Mar. 31 (gage height, 8.38 feet); minimum, 210 second-feet July 24 (gage height, 1.58 feet).
1933-40: Maximum discharge, 8,600 second-feet Aug. 8, 1935 (gage height, 12.30 feet, site and datum then in use); minimum observed, 161 second-feet Aug. 9, 1936 (gage height, 0.76 foot, site and datum then in use).

Remarks.- Records good except those for period of ice effect, which are fair. Slight diurnal fluctuation caused by power plant at Gays Mills, 15 miles above station.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

1.6	212	3.0	392	6.0	987	7.8	1,490
2.0	254	4.0	555	7.0	1,210	8.0	1,640
2.5	319	5.0	764	7.6	1,390	8.3	2,020

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	265	284	284	230	237	263	2,020	334	265	363	228	297
2	254	277	297	230	237	276	1,860	334	260	319	326	284
3	248	271	304	225	244	283	1,560	312	254	304	348	277
4	254	271	304	*221	230	290	1,290	297	248	290	638	265
5	254	271	290	220	250	*290	1,170	297	248	271	392	254
6	248	271	284	220	250	304	720	290	243	265	392	254
7	260	265	284	220	256	334	575	290	248	260	319	248
8	254	277	277	220	256	348	555	297	265	254	271	243
9	271	277	277	220	256	356	555	297	334	248	243	243
10	304	312	277	230	250	363	536	297	378	243	238	238
11	326	312	277	240	244	348	517	284	290	604	254	238
12	304	312	271	250	250	326	482	277	265	499	265	238
13	290	290	277	250	*250	290	466	271	260	348	422	238
14	284	277	271	250	250	248	422	265	260	304	559	233
15	284	277	260	245	244	304	407	265	254	271	530	233
16	284	284	265	238	250	348	392	271	243	254	392	228
17	277	271	271	232	244	319	392	271	238	248	422	228
18	271	277	277	230	256	467	392	277	228	248	348	228
19	271	277	277	230	263	809	407	326	248	233	698	228
20	277	277	284	228	265	742	407	392	319	233	454	228
21	277	277	284	226	265	517	392	436	260	233	363	228
22	271	277	254	224	260	392	363	378	238	243	304	228
23	271	277	243	*220	245	326	356	326	389	233	271	222
24	271	277	250	220	230	304	348	297	942	222	277	233
25	277	284	270	220	260	312	341	304	1,050	217	779	248
26	271	284	270	220	260	319	334	297	1,140	222	422	243
27	277	277	260	220	260	290	326	290	1,010	222	378	233
28	277	277	260	220	260	326	312	290	503	228	378	228
29	277	271	260	220	260	1,060	319	304	422	233	363	222
30	277	271	250	224	-	1,420	326	290	407	238	334	228
31	277	-	225	237	-	2,020	-	277	-	238	312	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	8,503	326	248	274	0.397	0.46
November	8,402	312	265	280	.406	.45
December	8,434	304	225	272	.394	.45
Calendar year 1939	130,617	1,740	225	358	.519	7.05
January	7,080	250	220	228	.330	.38
February	7,282	265	230	251	.364	.39
March	14,594	2,020	248	471	.683	.79
April	18,542	2,020	312	618	.896	1.00
May	9,433	436	265	304	.441	.51
June	11,709	1,140	228	390	.565	.63
July	8,588	604	217	277	.401	.46
August	11,920	779	228	385	.558	.64
September	7,236	297	222	241	.349	.39
Water year 1939-40	121,723	2,020	217	333	.483	6.55

Peak discharge.- Mar. 31 (7 p.m.) 2,230 sec.-ft.; June 27 (5 a.m.) 1,190 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 24 to Mar. 7.

Turkey River at Elkader, Iowa

Location.- Wire-weight gage, lat. 42°51'15", long. 91°24'15", in sec. 23, T. 93 N., R. 5 W., in tailrace of Central States Power and Light Corporation's hydroelectric plant in Elkader. Datum of gage is 701.61 feet above mean sea level (general adjustment of 1929).

Drainage area.- 892 square miles.

Records available.- July 1933 to September 1940.

Extremes.- Maximum discharge during year, 19,000 second-feet July 27 (head gage height, 29.1 feet); minimum daily, 21 second-feet Jan. 23, 26, 29, 31.

1933-40: Maximum discharge, that of July 27, 1940; minimum daily, that of Jan. 23, 26, 29, 31, 1940.

The flood of June 1916 reached a stage of 34.3 feet on head gage, from floodmark.

Remarks.- Records fair. Gage read hourly. Flow regulated by power plant at gaging station.

Cooperation.- Gage-height record and computations of daily discharge furnished by Central States Power and Light Corporation.

Rating table, water year 1939-40, except period July 26, 27 (gage height, in feet, and discharge, in second-feet)

(Shifting-control method used July 28 to Sept. 30)

6.9	16	7.2	60	7.7	220	8.7	824	10.4	2,840	13.0	9,200
7.0	26	7.3	84	8.0	361	9.1	1,170	11.2	4,310	13.9	12,500
7.1	41	7.5	144	8.3	537	9.8	1,930	12.0	6,230		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	91	91	53	32	69	1,160	191	91	75	1,020	995
2	80	91	98	43	27	64	708	181	101	85	3,570	851
3	80	80	80	37	32	64	639	171	85	69	1,840	811
4	80	85	85	37	37	69	468	163	91	75	1,860	747
5	75	80	80	37	37	69	392	160	85	69	1,280	609
6	69	91	86	37	37	69	309	138	91	64	1,140	540
7	80	85	85	32	37	75	299	145	87	59	868	471
8	75	85	96	37	37	107	303	163	85	49	669	415
9	85	96	69	32	37	136	302	145	104	75	548	399
10	96	96	80	37	32	145	311	139	92	43	619	361
11	117	101	85	37	37	154	277	136	107	214	626	361
12	101	96	85	37	37	123	262	132	85	180	425	346
13	91	80	85	37	32	101	237	122	80	113	355	361
14	85	91	48	37	48	92	220	117	87	96	377	361
15	91	91	80	32	37	96	220	128	75	64	726	361
16	96	91	91	37	37	87	220	112	75	75	388	332
17	80	59	75	37	48	165	220	112	69	101	361	320
18	85	64	85	32	37	798	220	123	75	64	346	285
19	91	69	91	37	43	1,250	220	145	64	75	332	279
20	80	107	80	37	43	734	203	140	59	59	301	279
21	96	101	59	32	48	450	207	165	59	308	284	267
22	91	85	48	37	37	253	220	144	55	111	264	267
23	91	80	59	21	37	476	196	123	1,450	129	264	243
24	80	91	80	32	32	501	180	127	234	64	227	238
25	85	85	80	32	48	401	171	123	129	64	1,910	240
26	85	75	59	21	53	376	162	112	70	d7,300	3,510	252
27	96	91	69	27	53	311	160	120	68	d9,110	5,210	217
28	91	85	64	27	53	336	160	112	349	1,280	5,030	200
29	85	69	64	21	64	1,920	154	112	173	941	2,850	203
30	85	91	59	37	-	3,190	154	117	88	716	1,870	200
31	91	-	37	21	-	2,670	-	101	-	499	1,260	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,688	117	69	86.7	0.097	0.11
November	2,582	107	59	86.1	.097	.11
December	2,333	98	37	75.3	.084	.10
Calendar year 1939	110,972	3,680	37	304	.341	4.62
January	1,050	53	21	33.9	.038	.04
February	1,169	64	27	40.3	.045	.05
March	15,341	3,190	59	495	.555	.64
April	8,954	1,160	154	298	.334	.37
May	4,219	191	101	136	.152	.18
June	4,363	1,450	55	145	.163	.18
July	22,225	9,110	43	717	.804	.93
August	40,330	5,210	227	1,301	1.46	1.68
September	11,811	995	200	394	.442	.49
Water year 1939-40	117,065	9,110	21	320	.359	4.88

d Doubtful gage-height record; discharge computed on basis of rating for head gage above power dam.

Turkey River at Garber, Iowa

Location.- Water-stage recorder, lat. 42°44'25", long. 91°15'45", in sec. 36 T. 92 N., R. 4 W., at highway bridge at Garber, 2,000 feet downstream from Elk Creek. Datum of gage is 635.34 feet above mean sea level (general adjustment of 1912).

Drainage area.- 1,530 square miles.

Records available.- August 1913 to November 1916, May 1919 to September 1927 and November 1932 to September 1940 in reports of U. S. Geological Survey. August 1913 to November 1916, May 1919 to September 1927 and April 1929 to September 1930 in report of Iowa State Planning Board entitled "Stream Flow Records of Iowa, 1873-1932."

Average discharge.- 19 years (1913-16, 1919-27, 1929-30, 1933-40), 784 second-feet.

Extremes.- Maximum discharge during year, 26,100 second-feet July 27 (gage height, 25.29 feet), from rating curve extended above 9,000 second-feet on basis of measurement at peak of flood, made near Millville, 14 miles below; minimum, 49 second-feet Jan. 28, 29; minimum gage height observed, 3.52 feet Dec. 22.

1913-16, 1919-27, 1929-30, 1932-40: Maximum discharge observed, 26,600 second-feet Feb. 23, 1922 (gage height, 28.06 feet, from floodmarks) from rating curve extended above 11,000 second-feet; minimum observed, 46 second-feet June 29, 1934.

Remarks.- Records good except those for periods of ice effect and those for periods when the gage height was partly or wholly estimated, which are poor. Slight diurnal fluctuation caused by hydroelectric plant at Elkader.

Cooperation.- Results of two discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	118	127	143	100	60	100	2,150	265	136	153	1,960	1,820
2	120	120	133	90	64	100	1,500	288	131	153	4,810	1,530
3	113	122	131	80	68	100	1,440	f250	127	141	3,390	1,340
4	105	120	124	70	70	100	1,110	f223	127	127	2,820	1,240
5	105	124	129	68	71	100	f780	f204	122	124	1,990	1,130
6	101	127	120	68	72	103	f568	f201	124	124	1,780	989
7	105	131	131	68	*73	125	568	226	210	118	1,270	930
8	99	129	129	68	74	150	599	250	150	109	964	882
9	124	136	131	66	74	185	549	f233	656	101	800	868
10	129	176	127	64	75	245	536	f196	863	105	785	863
11	138	153	122	*62	76	260	489	f184	213	184	915	839
12	138	143	127	61	77	250	422	178	176	327	727	795
13	131	136	113	60	79	220	401	173	f138	160	967	705
14	129	131	99	60	80	190	369	173	f120	138	815	665
15	127	129	120	59	81	*189	355	173	f111	124	1,370	630
16	124	129	138	59	82	184	350	171	129	120	849	606
17	129	127	148	59	83	250	331	163	133	113	759	562
18	120	129	127	59	84	1,500	341	178	129	109	677	529
19	120	127	129	59	84	2,500	336	213	124	109	606	502
20	124	118	127	58	84	1,960	318	213	f103	109	516	476
21	122	131	103	58	83	1,250	284	193	f87	480	470	458
22	122	133	97	57	74	930	276	198	f89	322	434	452
23	122	118	131	56	66	716	273	181	2,920	210	406	446
24	122	129	129	55	66	659	265	176	844	127	369	509
25	124	120	145	54	76	618	254	176	401	116	2,370	434
26	122	118	184	52	92	536	254	160	269	7,080	4,250	434
27	133	113	127	50	97	458	f230	158	226	20,800	7,180	396
28	127	122	125	49	99	555	230	165	957	2,920	7,460	322
29	120	131	125	49	100	f2,960	236	150	322	1,620	4,340	309
30	124	120	120	50	-	3,650	250	148	173	1,300	3,100	309
31	116	-	110	54	-	3,400	-	145	-	1,025	2,260	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	3,753	138	99	121	0.079	0.09
November	3,869	176	113	129	.084	.09
December	3,944	184	97	127	.083	.10
Calendar year 1939	178,967	6,500	95	490	.320	4.38
January	1,922	100	49	62.0	.041	.05
February	2,264	100	60	78.1	.051	.06
March	24,543	3,650	100	792	.518	.60
April	16,064	2,150	230	535	.350	.39
May	6,005	288	145	194	.127	.15
June	10,310	2,920	87	344	.225	.25
July	38,748	20,800	101	1,250	.817	.94
August	61,409	7,460	369	1,981	1.29	1.49
September	21,970	1,820	309	732	.478	.53
Water year 1939-40	194,801	20,800	49	532	.348	4.74

Peak discharge.- June 23 (6:30 a.m.) 5,750 sec.-ft.; July 27 (10:30 a.m.) 26,100 sec.-ft.; Aug. 2 (5 p.m.) 7,650 sec.-ft.; Aug. 27 (9 p.m.) 10,600 sec.-ft.

* Winter discharge measurement made on this day.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Note.- Discharge Mar. 22-25, June 29 to July 1, July 3-10, 23, Aug. 19-25, Sept. 13-27 determined from twice-daily gage readings. Stage-discharge relation affected by ice Dec. 28 to Mar. 19.

Grant River near Burton, Wis.

Location.- Wire-weight gage, lat. 42°44'20", long. 90°52'00", in NE¼ sec. 17, T. 3 N., R. 4 W., 2 miles downstream from Rattlesnake Creek, 3 miles northwest of Burton, 8½ miles northwest of Potosi, and 16 miles upstream from mouth. Datum of gage is 639.64 feet above mean sea level (general adjustment of 1912).

Drainage area.- 257 square miles.

Records available.- October 1934 to September 1940.

Extremes.- Maximum discharge observed during year, 23,800 second-feet July 27 (gage height, 16.3 feet, from floodmarks); minimum observed, 44 second-feet Oct. 6, Jan. 3.
1934-40: Maximum discharge observed, that of July 27, 1940; minimum observed, 30 second-feet Aug. 5, 8, 9, 1936, Sept. 22, 1937; minimum gage height observed, 2.60 feet Aug. 5, 8, 9, 1936.

Remarks.- Records fair. Gage read once daily during low and medium stages, more often during high stages.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-24, Mar. 29, 30, Apr. 16 to June 9, Aug. 5-24)

Oct. 25 to July 26

2.9	41	4.5	410	7	2,650
3.1	59	4.8	559	8	4,120
3.4	96	5.0	692	9	5,420
3.7	153	5.3	973	10	7,030
4.1	259	6	1,710		

July 27 to Sept. 30

3.6	44	4.4	251
3.8	70	4.7	422
4.0	108	5.0	664
4.2	166	5.4	1,080

Note.- Same as preceding table above 5.4 feet.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50	60	69	48	48	56	132	59	56	53	108	166
2	46	59	67	45	*49	57	104	56	55	51	56	153
3	47	58	62	44	51	58	111	55	52	49	55	137
4	46	59	61	46	53	57	95	56	53	49	3,620	124
5	48	60	61	47	54	56	86	55	52	49	304	116
6	44	61	60	47	53	70	82	55	51	47	223	108
7	51	59	59	48	52	98	88	76	62	47	116	108
8	54	60	59	48	51	122	101	68	78	48	102	104
9	76	59	60	49	50	165	83	61	76	49	95	108
10	61	106	60	50	53	229	95	61	293	47	95	95
11	57	69	59	52	55	177	101	58	96	345	160	93
12	54	63	60	53	54	101	80	54	82	110	102	93
13	55	60	58	54	53	71	80	54	75	53	166	91
14	54	59	53	54	53	67	78	53	70	54	144	89
15	52	60	54	53	53	59	77	57	63	49	332	87
16	54	60	56	52	54	58	69	57	60	48	147	85
17	54	59	64	51	54	369	74	54	59	47	169	82
18	52	60	62	50	55	1,160	82	59	57	47	153	80
19	51	60	61	50	56	456	70	132	54	47	121	80
20	59	59	61	50	56	216	69	74	51	46	100	78
21	61	59	51	50	57	113	68	66	51	43	85	75
22	57	59	62	50	57	88	61	61	50	43	84	73
23	55	60	60	50	58	92	63	59	244	43	84	80
24	54	68	58	50	57	108	63	58	92	45	87	89
25	897	64	55	50	59	111	58	93	76	43	1,270	78
26	132	62	53	50	60	106	59	69	64	4,490	1,130	75
27	103	59	56	50	a56	76	57	70	60	6,900	760	77
28	66	57	55	49	57	153	56	71	165	150	361	72
29	67	58	54	49	58	1,850	67	67	69	67	267	70
30	64	60	51	49	-	312	70	61	58	83	214	72
31	63	-	46	49	-	153	-	58	-	54	178	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,686	897	44	86.6	0.337	0.39
November	1,856	106	57	61.9	.241	.27
December	1,807	69	46	58.3	.227	.26
Calendar year 1939	37,794	1,160	44	104	.405	5.45
January	1,537	54	44	49.6	.193	.22
February	1,578	60	48	54.4	.212	.23
March	6,884	1,850	56	222	.864	1.00
April	2,379	132	56	79.3	.309	.34
May	1,987	132	53	64.1	.249	.29
June	2,424	293	50	80.8	.314	.35
July	13,313	6,900	45	429	1.67	1.92
August	10,908	3,620	55	352	1.37	1.58
September	2,838	166	70	94.6	.368	.41
Water year 1939-40	50,197	6,900	44	137	.533	7.26

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Jan. 9 to Feb. 21.

Platte River near Rockville, Wis.

Location.- Wire-weight gage, lat. 42°07'00", long. 90°03'20", in NW¼ sec. 17, T. 3 N., R. 2 W., 2 miles upstream from Blakely Branch, 2½ miles northeast of Rockville, 5 miles northeast of Potosi, and 16.7 miles upstream from mouth. Datum of gage is 655.50 feet above mean sea level (general adjustment of 1912).

Drainage area.- 137 square miles.

Records available.- November 1934 to September 1940.

Extremes.- Maximum discharge during year, 13,100 second-feet July 26 (gage height, 12.4 feet, from floodmark), from rating curve extended above 3,500 second-feet; minimum observed, 7 second-feet Dec. 22 (gage height, 3.09 feet).
1934-40: Maximum discharge observed, that of July 26, 1940; minimum observed, that of Dec. 22, 1939.

Remarks.- Records fair. Gage read once daily during low stages, oftener during medium and high stages.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	34	40	37	29	34	80	36	29	30	66	98
2	34	32	42	29	*30	35	66	34	28	29	71	90
3	35	31	36	28	30	35	60	31	27	28	1,160	84
4	35	32	36	28	31	35	56	31	26	27	1,130	81
5	34	32	36	28	32	35	46	30	26	27	122	78
6	35	34	36	29	32	37	42	30	26	27	100	74
7	40	34	35	29	31	41	48	38	31	26	84	73
8	39	31	35	29	31	45	55	49	42	25	76	70
9	43	31	35	29	30	50	45	37	37	25	73	68
10	49	*48	35	30	31	51	43	40	203	24	73	65
11	40	34	35	31	32	53	56	34	63	522	297	62
12	39	35	34	32	32	49	45	32	48	64	76	60
13	39	34	34	32	31	32	43	31	48	39	125	58
14	38	35	38	32	32	31	43	29	42	36	84	57
15	38	35	39	32	32	19	40	31	36	30	115	56
16	37	37	37	32	32	35	38	31	32	27	86	54
17	36	37	31	31	32	63	37	30	30	26	240	51
18	38	36	34	31	33	*409	43	29	30	25	89	52
19	38	36	34	30	34	314	38	89	29	24	84	56
20	37	36	35	30	34	171	36	55	28	23	74	52
21	46	37	36	30	33	90	36	44	29	22	68	52
22	40	36	7	30	32	70	36	40	28	21	68	51
23	38	36	21	30	30	55	35	35	171	21	62	52
24	38	39	24	30	33	36	35	34	58	20	60	63
25	134	42	22	30	34	38	34	49	38	26	778	57
26	51	36	34	30	34	39	31	35	35	3,870	771	52
27	50	37	*35	30	33	38	31	34	32	1,850	345	45
28	43	37	36	30	*33	63	30	37	39	125	213	51
29	38	36	35	29	33	793	34	34	35	108	154	48
30	39	37	34	29	-	171	44	31	31	110	122	48
31	36	-	9	29	-	110	-	30	-	74	108	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,312	134	34	42.3	0.309	0.36
November	1,067	48	31	35.6	.260	.29
December	1,009	42	7	32.5	.237	.27
Calendar year 1939	26,033	1,420	7	71.3	.520	7.07
January	936	37	28	30.2	.220	.25
February	926	34	29	31.9	.233	.25
March	3,077	793	19	99.3	.725	.84
April	1,306	80	30	43.5	.318	.35
May	1,150	89	29	37.1	.271	.31
June	1,357	203	26	45.2	.330	.37
July	7,331	3,870	20	236	1.72	1.98
August	6,974	1,160	60	225	1.64	1.89
September	1,858	98	45	61.9	.452	.52
Water year 1939-40	28,303	3,870	7	77.3	.564	7.68

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Jan. 3 to Mar. 8.

Little Maquoketa River near Durango, Iowa

Location.- Water-stage recorder, lat. 42°33'20", long. 90°44'40", in NE¼ sec. 5, T. 89 N., R. 2 E., at bridge on county road, 500 feet southwest of U. S. Highway 52, 1½ miles east of Durango, 5 miles northwest of Dubuque, and 7.5 miles upstream from mouth. Datum of gage is 612.62 feet above mean sea level (general adjustment of 1912).

Drainage area.- 130 square miles.

Records available.- October 1934 to September 1940.

Extremes.- Maximum discharge during year, 4,450 second-feet Aug. 15 (gage height, 13.33 feet); minimum, 8 second-feet Jan. 8; minimum gage height, 2.69 feet July 25.
1934-40: Maximum discharge, 14,800 second-feet June 21, 1937 (gage height, 20.75 feet, from floodmarks), from rating curve extended above 5,000 second-feet on basis of velocity-area and slope-area studies; minimum observed, 5 second-feet July 12, 13, 1936; minimum gage height observed, 2.64 feet Dec. 10, 1937.

Remarks.- Records good except those for June 18-23 and those for period of ice effect, which are poor.

Cooperation.- Records collected in cooperation with Corps of Engineers, U. S. Army.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

2.7	9	3.2	45	4.0	161	5.2	453	6.5	884	9.0	1,880
2.8	12	3.4	68	4.4	243	5.6	576	7.0	1,070	10.0	2,380
3.0	26	3.7	110	4.8	341	6.0	708	8.0	1,470		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	17	18	10	13	13	56	23	15	24	57	50
2	15	16	20	10	13	13	44	19	14	20	26	44
3	15	16	17	10	13	14	44	17	12	17	101	40
4	16	14	16	10	13	16	36	16	12	16	205	35
5	16	14	16	10	13	16	30	16	12	14	26	33
6	16	15	16	9	13	17	25	15	12	13	18	31
7	17	15	16	9	13	20	30	16	17	14	17	31
8	17	15	15	*8	13	28	42	35	22	18	14	30
9	20	15	15	9	14	47	33	25	95	19	13	34
10	21	24	16	10	13	49	30	20	215	19	19	36
11	19	20	15	10	13	45	45	18	34	29	72	30
12	17	17	15	11	13	35	30	16	25	30	25	27
13	17	16	14	11	13	25	28	16	21	22	1,990	25
14	17	16	12	12	13	23	27	16	17	18	274	24
15	17	16	13	12	12	*19	27	15	16	16	749	24
16	17	15	14	11	12	20	25	16	14	16	113	23
17	17	15	15	11	13	166	23	15	13	14	92	23
18	17	16	15	10	14	439	30	16	f140	14	68	23
19	17	16	16	10	16	309	27	56	f46	16	54	22
20	20	15	16	12	15	172	24	36	f20	13	45	22
21	25	15	13	12	14	81	20	43	f15	12	39	20
22	21	15	12	12	13	47	20	44	f13	10	35	20
23	18	15	12	12	13	42	20	26	f1,000	10	31	20
24	20	17	12	12	13	33	20	24	71	10	31	214
25	85	17	12	12	13	29	19	25	44	9	88	33
26	26	16	12	12	13	27	17	21	32	213	244	24
27	55	15	12	12	14	25	16	20	26	136	305	20
28	25	15	12	12	14	59	16	23	402	26	133	18
29	19	15	12	11	14	363	19	21	43	17	94	17
30	17	16	11	11	-	123	34	18	29	48	71	17
31	17	-	11	12	-	80	-	16	-	25	60	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	672	85	15	21.7	0.167	0.19
November	479	24	14	16.0	.123	.14
December	441	20	11	14.2	.109	.13
Calendar year 1939	20,065	1,770	11	55.0	.423	5.72
January	335	12	8	10.8	.083	.10
February	386	16	12	13.3	.102	.11
March	2,395	439	13	77.3	.595	.69
April	857	56	16	28.6	.220	.25
May	703	56	15	22.7	.175	.20
June	2,447	1,000	12	81.6	.628	.70
July	878	213	9	28.3	.218	.25
August	5,109	1,990	13	165	1.27	1.46
September	1,010	214	17	33.7	.259	.29
Water year 1939-40	15,712	1,990	8	42.9	.330	4.51

Peak discharge.- June 23 (6 a.m.) 4,350 sec.-ft.; Aug. 13 (6 a.m.) 4,160 sec.-ft.; Aug 15 (2 a.m.) 4,450 sec.-ft.
* Winter discharge measurement made on this day.
f Computed on basis of partly estimated gage-height record.
Note.- Stage-discharge relation affected by ice Jan. 8 to Feb. 7.

Galena River at Buncombe, Wis.

Location.- Water-stage recorder, lat. 42°30'50", long. 90°23'40", near center of sec. 33, T. 1 N., R. 1 E., at Buncombe, 1½ miles upstream from Scrabble Branch, 2 miles upstream from Illinois-Wisconsin state line, and 3½ miles southeast of Hazel Green, Wis. Datum of gage is 682.77 feet above mean sea level (general adjustment of 1912; Corps of Engineers, U. S. Army, bench mark). Prior to Dec. 1, 1939, wire-weight gage at same site and datum.

Drainage area.- 128 square miles.

Records available.- September 1939 to September 1940.

Extremes.- Maximum discharge during period, 3,860 second-feet Mar. 18 (gage height, 11.60 feet), from rating curve extended above 1,000 second-feet; minimum, 10 second-feet Dec. 13 (gage height, 2.40 feet), but may have been less during period of ice effect.

Flood in February 1937 reached a stage of about 17.1 feet.

Remarks.- Records good except those for period of ice effect and days of no gage-height record, which are fair, and those above 1,000 second-feet, which are poor. Gage read once daily Sept. 14 to Nov. 30, 1939.

Discharge, in second-feet, 1939-40

1939

Sept. 14	16	Sept. 20	18	Sept. 26	19
15	17	21	17	27	17
16	16	22	17	28	18
17	16	23	17	29	19
18	17	24	17	30	21
19	17	25	20		

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	23	30	14	14	23	49	29	21	26	36	39
2	19	19	28	13	14	22	41	27	17	25	47	37
3	19	20	25	12	14	25	41	23	19	22	53	36
4	18	19	25	11	14	26	41	25	18	27	43	30
5	21	20	23	11	14	28	37	22	18	22	36	28
6	18	24	24	13	*14	30	31	26	18	18	34	27
7	18	20	24	12	13	32	38	26	20	18	26	25
8	18	21	23	13	13	37	48	32	20	20	26	a24
9	23	20	22	14	13	45	43	a33	a24	19	26	a22
10	21	30	23	15	13	60	38	34	41	20	83	21
11	21	31	24	15	14	56	51	28	24	60	140	21
12	20	25	22	15	15	50	36	26	20	38	43	21
13	19	24	23	13	15	40	32	25	21	22	58	21
14	20	27	22	14	15	*35	32	24	20	18	180	20
15	18	20	25	15	16	35	33	24	18	20	60	20
16	22	20	22	14	17	35	31	24	17	22	37	21
17	19	21	22	13	18	279	31	24	17	20	34	18
18	19	20	24	13	20	2,140	38	22	38	18	30	18
19	20	19	22	12	21	882	36	39	41	18	28	18
20	22	23	21	13	20	128	30	32	17	17	27	18
21	23	19	22	13	19	73	28	28	18	17	26	18
22	21	22	*24	13	18	60	28	27	16	17	25	18
23	25	16	20	13	18	62	28	24	578	16	22	20
24	20	21	20	13	18	76	28	22	53	16	23	46
25	24	26	21	13	18	73	26	23	33	17	43	27
26	22	19	22	13	25	62	27	21	26	101	219	18
27	31	20	21	*13	26	36	26	24	25	395	655	18
28	30	15	18	13	25	49	21	24	434	41	108	17
29	22	20	21	13	25	*232	31	24	45	39	65	16
30	25	19	16	13	-	84	34	21	29	31	51	18
31	24	-	15	14	-	62	-	20	-	30	48	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
September 14-30, 1939	299	21	16	17.6	0.138	0.09
Water year	-	-	-	-	-	-
October 1939	660	*31	18	21.3	.166	.19
November	643	31	15	21.4	.167	.19
December	694	30	15	22.4	.175	.20
Calendar year	-	-	-	-	-	-
January 1940	409	15	11	13.2	.103	.12
February	499	26	13	17.2	.134	.14
March	4,877	2,140	22	157	1.23	1.42
April	1,034	51	21	34.5	.270	.30
May	803	39	20	25.9	.202	.23
June	1,706	578	16	56.9	.445	.50
July	1,190	395	16	38.4	.300	.35
August	2,332	655	22	75.2	.588	.68
September	701	46	16	23.4	.183	.20
Water year 1939-40	15,548	2,140	11	42.5	.332	4.52

Peak discharge.- Mar. 18 (3 p.m.), 3,860 sec.-ft.; June 23 (7:30 a.m.), 2,400 sec.-ft.; June 28 (6:30 a.m.), 1,600 sec.-ft.; July 27 (12:30 a.m.), 1,700 sec.-ft.; Aug. 10 (11 p.m.), 1,070 sec.-ft.; Aug. 27 (9 a.m.), 2,340 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge interpolated or computed on basis of weather records and records for Pecatonica River at Darlington.

Note.- Stage-discharge relation affected by ice Dec. 31 to Mar. 16.

East Fork of Galena River at Council Hill, Ill.

Location.- Water-stage recorder, lat. 42°28'05", long. 90°20'20", in W½ sec. 31, T. 29 N., R. 2 E., at Council Hill, 3 miles upstream from mouth and 6 miles northeast of Galena. Datum of gage is 686.59 feet above mean sea level (general adjustment of 1912; Corps of Engineers, U. S. Army, bench mark). Prior to Dec. 1, 1939, wire-weight gage at same site and datum.

Drainage area.- 20.1 square miles.

Records available.- September 1939 to September 1940.

Extremes.- Maximum discharge during period, 565 second-feet Aug. 10 (gage height, 5.83 feet), from rating curve extended above 250 second-feet; minimum, 0.3 second-foot June 22 (gage height, 2.14 feet).

Remarks.- Records fair. Gage read once daily Sept. 15 to Nov. 30, 1939.

Discharge, in second-feet, 1939-40

1939

Sept. 15	1.9	Sept. 19	1.7	Sept. 23	2.2	Sept. 27	2.8
16	1.6	20	2.0	24	2.3	28	2.6
17	1.6	21	1.6	25	2.5	29	2.6
18	2.0	22	2.0	26	2.8	30	2.8

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.3	2.2	3.2	1.5	1.8	2.6	5.1	3.5	0.9	1.9	1.0	2.6
2	2.3	2.0	2.6	1.3	1.7	2.7	4.4	2.6	.8	1.7	1.6	2.2
3	2.5	2.0	2.0	1.1	2.0	2.8	4.7	2.6	.7	1.7	1.2	2.0
4	2.2	2.0	1.9	1.3	2.2	3.0	4.0	2.5	.7	1.6	.9	1.7
5	2.2	2.3	1.9	1.0	2.2	2.7	4.0	2.8	.7	1.5	.8	1.3
6	2.0	2.0	1.9	1.1	*2.3	3.0	3.8	2.6	.7	1.2	.7	1.2
7	2.0	2.5	2.0	1.3	2.3	4.1	5.8	3.7	.6	1.2	.7	1.3
8	2.5	2.6	2.0	1.4	2.2	5.2	9.0	3.7	.7	1.2	.7	.9
9	3.2	2.5	1.9	1.5	2.2	5.8	6.5	2.6	.7	1.2	.7	1.5
10	3.3	5.3	2.3	1.8	2.2	4.7	7.3	3.2	1.2	1.0	31	1.2
11	2.3	2.8	2.2	2.0	2.3	4.1	8.4	2.8	.8	19	9.4	.8
12	2.0	2.6	2.2	2.2	2.5	3.6	5.6	2.3	.9	2.2	1.9	.9
13	2.3	2.5	2.2	2.1	2.7	3.5	5.3	2.2	.8	1.5	3.3	1.0
14	2.6	2.0	1.7	2.1	2.8	*3.4	4.4	1.7	.7	1.2	17	.9
15	3.2	1.9	1.6	2.5	2.8	3.4	4.4	1.7	.6	1.0	3.0	.9
16	3.0	2.5	1.9	2.4	2.8	7.3	3.7	1.7	.5	.9	2.2	.9
17	2.6	2.2	1.9	2.3	3.0	39	4.9	1.5	.4	.8	1.7	.9
18	3.3	2.3	1.9	2.3	3.1	23	7.3	1.5	.5	.8	1.6	.8
19	2.8	2.0	1.9	2.3	2.9	13	5.5	3.0	1.9	.8	1.3	.8
20	2.8	2.3	1.8	2.2	2.8	9.0	4.2	2.3	.5	.7	1.2	.9
21	3.7	2.0	1.9	2.2	2.7	7.0	3.8	2.0	.4	.6	1.0	1.3
22	3.2	2.0	*2.0	2.2	2.6	5.3	3.8	1.6	.3	.6	1.0	1.5
23	2.5	1.9	2.1	2.1	2.6	4.2	3.5	1.3	65	.6	1.0	2.6
24	2.6	2.6	2.1	2.0	2.6	3.8	3.2	1.2	6.2	.6	1.5	7.6
25	4.4	3.5	2.1	2.0	2.6	3.7	3.2	1.3	4.0	.5	3.5	1.7
26	3.0	2.2	2.2	1.9	2.7	3.8	3.0	1.5	3.2	32	157	1.2
27	6.5	2.2	2.5	*1.9	2.7	4.4	2.8	1.6	2.6	12	16	.9
28	2.3	2.2	2.4	1.9	2.7	6.8	2.8	1.7	4.0	1.7	10	.8
29	2.0	2.3	2.3	1.8	2.6	14	4.2	1.6	2.3	1.2	5.5	.8
30	2.0	2.3	2.1	1.8	-	8.4	4.4	1.5	2.2	1.9	4.0	.9
31	2.2	-	1.7	1.8	-	6.5	-	1.0	-	1.5	3.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
September 15-30, 1939	35.0	2.8	1.6	2.19	0.109	0.06
Water year	-	-	-	-	-	-
October 1939	85.8	6.5	2.0	2.77	.138	.16
November	71.7	5.3	1.9	2.39	.119	.13
December	64.4	3.2	1.6	2.08	.103	.12
Calendar year	-	-	-	-	-	-
January 1940	57.3	2.5	1.0	1.85	.092	.11
February	72.6	3.1	1.7	2.50	.124	.13
March	213.8	39	2.6	6.90	.343	.40
April	143.2	9.0	2.8	4.77	.237	.26
May	66.8	3.7	1.0	2.15	.107	.12
June	105.5	65	.3	3.52	.175	.20
July	96.3	32	.5	3.11	.155	.18
August	285.6	157	.7	9.21	.458	.53
September	44.0	7.6	.8	1.47	.073	.08
Water year 1939-40	1,307.0	157	.3	3.57	.178	2.42

Peak discharge.- Mar. 17 (5 p.m.) 140 sec.-ft.; June 23 (4:20 a.m.) 502 sec.-ft.; July 26 (7:30 p.m.) 175 sec.-ft.; Aug. 10 (9 p.m.) 565 sec.-ft.; Aug. 14 (10 a.m.) 127 sec.-ft.; Aug. 26 (9:30 a.m.) 552 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 19 to Mar. 15.

Maquoketa River near Manchester, Iowa

Location.- Water-stage recorder and concrete control, lat. 42°27'20", long. 91°25'50", in sec. 9, T. 88 N., R. 5 W., 2 miles southwest of Manchester and 5 miles downstream from Honey and Prairie Creeks. Datum of gage is 895.06 feet above mean sea level (general adjustment of 1912).

Drainage area.- 306 square miles.

Records available.- April 1933 to September 1940.

Extremes.- Maximum discharge during year, 2,770 second-feet June 23 (gage height, 8.92 feet); minimum, 7 second-feet Feb. 15 (gage height, 3.72 feet); minimum daily, 22 second-feet (estimated) Jan. 19, 26, 29.
1933-40: Maximum discharge, 8,150 second-feet Mar. 4, 1937 (gage height, 14.20 feet); minimum daily, 6 second-feet June 8, 29, 1934.

Remarks.- Records good except those for period of ice effect, which are fair. Large diurnal fluctuations caused by power plant 3 miles above station.

Cooperation.- Gage-height record collected in cooperation with Iowa Electric Co. which also furnished gage-height record at hydroelectric plant 2 miles above station.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

4.2	22	4.6	50	5.2	185	6.0	550
4.3	27	4.7	64	5.4	253	6.5	865
4.4	33	4.8	81	5.6	340	7.0	1,200
4.5	40	5.0	128	5.8	438	8.0	1,980

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48	51	50	38	26	52	93	36	38	90	335	182
2	58	37	50	32	28	63	92	56	40	71	238	161
3	39	37	38	34	26	57	104	42	40	70	246	135
4	24	46	42	34	24	32	148	48	30	47	135	130
5	46	46	42	37	28	38	117	38	34	68	180	129
6	30	36	38	36	36	38	87	54	36	52	160	118
7	50	41	42	32	43	36	81	56	37	54	124	96
8	44	50	47	30	34	39	146	84	28	60	68	98
9	62	49	47	31	33	46	150	76	30	38	120	162
10	35	62	55	36	27	64	100	72	64	39	92	204
11	52	57	38	37	57	56	117	63	45	70	89	118
12	38	49	41	36	26	56	96	38	38	58	84	117
13	43	44	33	34	45	51	94	44	38	41	582	106
14	47	52	37	33	36	42	61	42	40	48	350	102
15	41	50	34	36	45	46	76	54	36	54	248	97
16	32	46	52	34	36	72	68	40	30	43	283	94
17	49	46	31	30	57	38	61	34	46	42	217	92
18	34	52	47	26	26	373	60	54	30	53	120	96
19	40	40	38	22	47	344	64	60	26	38	122	82
20	54	48	44	24	47	262	58	71	26	40	104	89
21	44	44	40	27	46	177	48	56	26	36	97	69
22	46	44	38	27	40	72	63	58	33	45	81	93
23	54	44	47	29	33	84	55	39	1,180	27	84	114
24	43	45	53	24	28	92	45	48	640	40	83	227
25	38	47	34	24	30	52	52	49	160	34	123	134
26	28	39	40	22	40	51	39	42	108	608	667	115
27	68	48	37	26	32	84	54	49	84	1,590	1,300	106
28	44	41	38	24	56	88	40	37	290	494	903	92
29	50	44	36	22	60	150	38	37	242	249	490	87
30	46	34	40	26	-	130	56	38	74	540	325	84
31	35	-	35	26	-	151	-	42	-	630	200	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,362	68	24	43.9	0.143	0.16
November	1,369	62	34	45.6	.149	.17
December	1,284	55	31	41.4	.135	.16
Calendar year 1939	38,514	1,370	15	106	.346	4.69
January	928	38	22	29.9	.098	.11
February	1,090	60	24	37.6	.123	.13
March	2,936	373	32	94.7	.309	.36
April	2,363	150	38	78.8	.258	.29
May	1,557	84	34	50.2	.164	.19
June	3,569	1,180	26	119	.389	.43
July	5,369	1,590	27	173	.565	.65
August	8,250	1,300	68	266	.869	1.00
September	3,529	227	69	118	.386	.43
Water year 1939-40	33,606	1,590	22	91.8	.300	4.08

Peak discharge.- June 23 (8 a.m.) 2,770 sec.-ft.; July 27 (4 a.m.) 2,300 sec.-ft.; July 30 (7 p.m.) 976 sec.-ft.; Aug. 13 (12 m) 976 sec.-ft.; Aug. 26 (5 p.m.) 1,280 sec.-ft.; Aug. 27 (7 p.m) 1,650 sec.-ft.

Note.- Stage-discharge relation affected by ice Jan. 6 to Feb. 19.

Maquoketa River near Delhi, Iowa

Location.- Water-stage recorder, lat. 42°24'40", long. 91°20'40", in NW¼ sec. 29, T. 88 N., R. 4 W., in tailrace of Interstate Power Co.'s hydroelectric plant, 1½ miles south of Delhi and 6 miles upstream from Plum Creek. Datum of gage is 774.32 feet above mean sea level (general adjustment of 1912).

Drainage area.- 348 square miles.

Records available.- July 1933 to September 1940.

Extremes.- Maximum discharge during year, 3,330 second-feet June 23 (gage height, 86.10 feet); minimum, 7 second-feet at times when plant was shut down.

1933-40: Maximum discharge, 6,130 second-feet Mar. 4, 1937 (gage height, 89.2 feet); minimum, 5 second-feet at times when plant was shut down; minimum daily, 5 second-feet Apr. 16, Aug. 27, Sept. 10, 17, 1939.

A discharge of 7,360 second-feet was measured Mar. 14, 1929.

Remarks.- Records fair. Flow regulated by reservoir appurtenant to power plant.

Cooperation.- Records of daily discharge furnished by Interstate Power Co.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

80.4	5	81.0	51	82.5	334	84.5	1,660
80.5	10	81.3	87	83.0	500	85.0	2,160
80.6	16	81.6	134	83.5	800	86.0	3,220
80.8	32	82.0	214	84.0	1,200	87.0	4,380

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7	41	52	7	24	57	70	34	44	113	692	284
2	37	48	57	38	24	49	65	52	7	109	670	246
3	41	60	7	38	25	7	151	36	35	105	350	171
4	37	68	67	38	7	47	62	63	42	8	324	102
5	37	7	55	45	43	50	97	7	97	100	157	208
6	37	50	52	41	25	47	124	35	247	65	155	120
7	45	74	55	7	25	47	134	83	42	S	153	102
8	7	48	55	41	25	52	129	61	42	70	115	60
9	73	57	70	41	25	38	129	35	16	53	66	150
10	65	59	7	41	46	7	131	59	37	68	124	150
11	47	67	57	41	7	57	144	61	32	90	31	259
12	43	7	59	41	43	55	130	7	42	87	128	168
13	41	57	57	50	44	71	80	44	42	100	519	150
14	52	57	54	7	44	55	7	56	47	S	552	169
15	7	57	150	38	44	59	121	41	64	60	470	S
16	42	59	54	38	93	59	104	60	308	32	270	141
17	54	57	7	42	44	106	90	30	45	60	201	141
18	42	61	50	38	7	252	65	59	49	60	226	122
19	42	7	54	38	44	260	93	42	42	32	141	135
20	51	61	78	38	71	236	128	90	32	37	136	145
21	44	57	70	40	66	217	7	63	27	8	109	61
22	7	57	52	41	66	122	124	59	16	51	130	133
23	43	88	63	41	66	62	64	59	1,570	54	94	123
24	46	77	9	41	66	7	166	35	940	50	44	218
25	58	57	7	41	7	80	34	40	348	29	15	204
26	95	7	55	33	62	101	34	7	74	812	430	180
27	53	55	55	24	62	60	47	67	74	1,750	1,490	193
28	54	73	55	7	60	155	7	86	319	913	1,130	131
29	7	57	56	24	73	241	48	60	246	643	640	8
30	44	7	58	24	-	123	30	7	165	583	510	191
31	44	-	50	24	-	7	-	60	-	765	480	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,302	95	7	42	0.121	0.14
November	1,537	88	7	51.2	.147	.16
December	1,627	150	7	52.5	.151	.17
Calendar year 1939	42,095	1,040	5	115	.330	4.49
January	1,048	50	7	33.8	.097	.11
February	1,238	93	7	42.7	.123	.13
March	2,786	260	7	89.9	.258	.30
April	2,615	151	7	87.2	.251	.28
May	1,498	90	7	48.3	.139	.16
June	5,091	1,570	7	170	.488	.54
July	6,923	1,750	8	223	.641	.74
August	10,552	1,490	15	340	.977	1.13
September	4,473	284	8	149	.428	.48
Water year 1939-40	40,690	1,750	7	111	.319	4.34

Maquoketa River near Maquoketa, Iowa
(Formerly published as Maquoketa River below North Fork of Maquoketa River, near Maquoketa, Iowa)

Location.- Water-stage recorder, lat. 42°05'10", long. 90°38'20", in SW¼NE¼ sec. 17, T. 84 N., R 3 E., at Bridgeport Bridge, 1,200 feet upstream from Mill Creek, 2 miles downstream from North Fork, and 3 miles northeast of Maquoketa. Datum of gage is 636.52 feet above mean sea level (general adjustment of 1912).

Drainage area.- 1,550 square miles.

Records available.- September 1913 to September 1940.

Average discharge.- 27 years, 900 second-feet.

Extremes.- Maximum discharge during year, 17,600 second-feet June 23 (gage height, 18.30 feet); minimum, 112 second-feet Dec. 22 (gage height, 1.07 feet).
1913-40: Maximum discharge, 27,500 second-feet Mar. 6, 1937; maximum gage height, 22.18 feet Feb. 21, 1937, affected by backwater from ice; minimum discharge, 39 second-feet Sept. 15, 1931 (gage height, 0.81 foot); minimum daily, about 105 second-feet Feb. 11-20, 1936.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are poor. Diurnal fluctuation Jan. 14 to Sept. 30 caused by power plant 4 miles above station.

Cooperation.- Results of one discharge measurement furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	282	282	293	145	205	348	728	399	260	852	994	1,140
2	306	278	290	145	210	347	543	364	306	592	928	1,070
3	288	275	272	140	220	352	546	350	300	706	899	818
4	261	272	272	140	210	358	624	574	260	490	872	804
5	264	278	261	145	260	373	502	683	231	469	950	700
6	257	286	254	150	240	340	415	448	352	459	715	608
7	257	275	268	150	230	493	540	338	172	458	560	a580
8	254	258	268	*145	205	599	619	375	262	390	456	a560
9	268	272	261	135	235	746	588	476	302	395	434	a570
10	261	297	268	135	250	790	644	429	316	298	534	a590
11	240	320	268	130	275	678	649	376	342	432	477	a600
12	268	312	261	130	270	526	644	420	308	380	416	607
13	264	305	206	135	285	410	613	351	258	423	698	621
14	250	293	*165	140	270	376	527	326	266	417	2,600	576
15	247	272	228	145	260	376	564	334	226	356	7,250	522
16	247	278	305	150	270	529	430	317	236	350	4,120	506
17	244	282	349	150	285	894	489	281	222	277	1,620	432
18	233	278	345	150	290	3,040	518	238	510	297	1,280	420
19	247	278	297	160	290	3,200	546	232	950	274	922	427
20	250	278	200	155	280	1,850	489	209	288	324	820	452
21	261	268	127	160	275	1,320	463	427	256	274	699	460
22	274	258	114	165	265	1,060	525	418	248	282	611	463
23	268	272	120	150	260	740	424	328	8,590	295	a632	413
24	250	286	125	165	255	676	426	346	8,760	240	a622	454
25	672	297	135	160	240	546	422	442	2,412	254	a498	556
26	748	290	130	155	270	556	414	456	1,440	581	528	643
27	452	278	130	165	300	550	440	348	1,220	882	1,190	538
28	408	254	135	145	330	603	363	350	1,000	1,750	2,850	540
29	340	258	140	160	345	1,060	454	426	1,130	1,260	2,610	494
30	320	278	145	175	-	1,120	422	360	1,140	1,370	1,550	450
31	301	-	145	190	-	881	-	285	-	1,130	1,280	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	9,482	748	233	306	0.197	0.23
November	8,408	320	254	280	.181	.20
December	6,777	349	114	219	.141	.16
Calendar year 1939	245,886	6,040	114	674	.435	5.90
January	4,665	190	130	150	.097	.11
February	7,580	345	205	261	.168	.18
March	25,737	3,200	340	830	.535	.62
April	15,571	726	363	519	.335	.37
May	11,706	683	209	378	.244	.28
June	32,563	8,760	172	1,085	.700	.78
July	16,957	1,750	240	547	.353	.41
August	40,615	7,250	416	1,310	.845	.97
September	17,614	1,140	413	587	.379	.42
Water year 1939-40	197,675	8,760	114	540	.348	4.73

Peak discharge.- June 23 (9 p.m.) 17,600 sec.-ft.; Aug. 15 (8 p.m.) 8,490 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for station near Manchester and weather records.
Note.- Stage-discharge relation affected by ice Dec. 23 to Feb. 29.

Apple River near Hanover, Ill.

Location.- Wire-weight gage, lat. 42°14', long. 90°16', in SW¼ sec. 22, T. 26 N., R. 2 E., at bridge a third of a mile west of State Highway 80, 1½ miles south of Hanover, and 9 miles upstream from mouth. Datum of gage is 581.52 feet above mean sea level (general adjustment of 1912).

Drainage area.- 267 square miles.

Records available.- November 1934 to September 1940.

Extremes.- Maximum discharge during year, 3,170 second-feet June 23 (gage height, 16.40 feet), from reading at flood crest; minimum observed, 5 second-feet Sept. 8 (gage height, 2.60 feet).

1934-40: Maximum discharge, 10,400 second-feet Feb. 21, 1937 (gage height, 30.67 feet, from reading at flood crest); minimum observed, 5 second-feet Dec. 2, 1937, Sept. 8, 1940.

Remarks.- Records fair above 100 second-feet and poor below. Gage read twice daily. Diurnal fluctuation during low flow caused by hydroelectric plant at Hanover.

Cooperation.- Results of three discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	44	47	6	32	10	80	38	17	c35	42	41
2	33	36	21	13	20	10	c59	32	12	c30	23	41
3	32	27	28	7	17	8	c50	46	23	c25	14	55
4	29	20	56	21	13	40	c40	14	22	c25	9	30
5	28	30	49	19	27	38	c40	13	19	c30	41	22
6	25	60	42	7	20	35	c25	53	12	c20	13	20
7	24	43	43	8	28	34	c30	41	31	c10	40	11
8	22	40	29	17	21	32	c50	46	12	22	20	5
9	32	38	21	17	16	30	c45	22	14	10	10	47
10	41	31	28	12	16	43	c50	22	c35	10	24	31
11	38	22	42	10	18	56	c45	13	c45	10	12	24
12	38	41	46	10	32	*68	c25	13	c30	76	39	12
13	27	58	38	10	25	65	c20	52	c30	20	41	10
14	30	42	42	8	20	*58	c25	45	c25	8	22	13
15	20	30	44	21	18	50	c60	31	c15	21	56	9
16	44	35	19	17	17	49	c40	20	c15	23	35	16
17	45	31	21	15	17	30	c60	29	c30	10	35	10
18	28	21	54	13	10	125	c60	14	c40	14	11	8
19	37	31	46	10	25	75	c60	13	50	9	29	21
20	31	57	39	12	25	65	c30	46	95	16	18	12
21	21	30	*43	21	18	50	c25	55	28	9	22	10
22	30	46	36	28	14	40	c40	52	22	14	13	10
23	56	22	22	17	20	30	c45	43	1,700	9	33	20
24	40	22	21	13	11	25	c35	20	242	19	12	20
25	32	43	19	17	11	45	c25	c14	c120	9	9	33
26	46	37	25	21	28	40	c20	c16	c60	12	124	26
27	49	56	20	*12	18	37	c15	c35	c40	242	884	29
28	26	36	15	21	15	38	10	c40	c40	128	169	10
29	43	33	12	28	12	44	48	c30	c45	69	91	7
30	58	39	10	17	-	134	50	c20	c40	54	60	28
31	43	-	8	24	-	78	-	c30	-	56	19	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,069	58	20	34.5	0.129	0.15
November	1,101	60	20	36.7	.137	.15
December	986	56	8	31.8	.119	.14
Calendar year 1939	38,866	1,590	8	107	.401	5.41
January	472	28	6	15.2	.057	.07
February	564	32	10	19.4	.073	.08
March	1,482	134	8	47.8	.179	.21
April	1,207	80	10	40.2	.151	.17
May	958	55	13	30.9	.116	.13
June	2,909	1,700	12	97.0	.363	.41
July	1,044	242	8	33.7	.126	.15
August	1,970	884	9	63.5	.238	.27
September	631	55	5	21.0	.079	.09
Water year 1939-40	14,393	1,700	5	39.3	.147	2.02

* Winter discharge measurement made on this day.

c Stage-discharge relation affected by backwater from Mississippi River; discharge computed on basis of records of operation of hydroelectric plant at Hanover, weather records, and records for Plum River near Savanna.

Note.- Stage-discharge relation affected by ice Dec. 24 to Mar. 27.

Plum River near Savanna, Ill.

Location.- Wire-weight gage, lat. 42°07'00", long. 90°03'20", in NW¼ sec. 33, T. 25 N., R. 4 E., 0.9 mile upstream from Carroll Creek, 5 miles northeast of Savarna, and 15 miles upstream from mouth. Datum of gage is 582.54 feet above mean sea level (general adjustment of 1912).

Drainage area.- 164 square miles (revised).

Records available.- November 1934 to September 1940.

Extremes.- Maximum daily discharge during year, 400 second-feet June 24; maximum gage height observed, 18.30 feet June 24 (backwater from Carroll Creek); minimum daily discharge, 3 second-feet Jan. 17; minimum gage height observed, 11.12 feet June 19.
1934-40: Maximum discharge observed, 5,820 second-feet June 24, 1938 (gage height, 27.02 feet); minimum observed, that of Jan. 17, 1940.
Maximum stage known, 29.3 feet, date unknown, from floodmarks.

Remarks.- Records poor. Gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7	10	10	5	8	6	27	18	11	10	15	9
2	7	10	11	5	7	8	22	16	10	10	7.5	6
3	7	10	11	5	7	10	24	18	9	9	5.5	5.5
4	6.5	9	10	5	6	11	23	15	9	10	41	5
5	6.5	8	10	5	6	12	20	14	8	8	14	4.5
6	6.5	9	10	5	6	20	17	14	8	8	6	4.5
7	7	10	10	5	6	22	16	14	8	7.5	5.5	4.5
8	8	10	9	5	5	23	23	14	8	7	4	4.5
9	8	10	9	5	5	24	28	15	8	6.5	4.5	5.5
10	9	11	9	5	5	25	23	14	8	6.5	4.5	5
11	10	12	10	5	6	20	23	17	7.5	7	5	6.5
12	9	11	10	6	6	*14	32	16	8	8	5	5
13	9	10	9	6	6	15	21	14	16	9	29	5
14	9	10	9	7	5	*16	21	13	10	7.5	5.5	4.5
15	9	10	9	5	5	20	21	12	10	8	5.5	4.5
16	9	10	9	4	5	13	21	11	8	7	10	4.5
17	9	10	9	3	5	18	17	11	8	5.5	7	4.5
18	9	10	9	4	5	110	23	11	6.5	5	5.5	4.5
19	9	10	10	5	5	60	32	13	38	5	5	4.5
20	10	10	10	6	5	40	23	24	17	5	4.5	4
21	10	10	*9	6	5	30	18	18	10	5	4	4
22	11	10	9	6	5	20	18	14	8	4.5	4	4.5
23	10	10	8	5	5	21	18	15	c250	4.5	4	4
24	9	10	8	5	5	20	17	12	c400	4	4	4.5
25	10	10	8	5	5	20	16	11	28	4	4	4.5
26	14	10	8	5	5	19	15	11	19	5.5	5.5	4.5
27	15	10	8	*4.5	5	17	14	12	14	9	9	4.5
28	14	10	8	4	5	17	14	15	27	22	70	4.5
29	13	9	7	5	5	23	14	14	53	9	19	4.5
30	10	10	6	5	-	*54	16	13	13	10	16	4
31	10	-	5	7	-	54	-	11	-	8	14	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	290.5	15	6.5	9.37	0.057	0.07
November	299	12	8	10.0	.061	.07
December	277	11	5	8.9	.054	.06
Calendar year 1939	21,215.5	1,130	4.5	58.1	†.354	†4.81
January	158.5	7	3	5.11	.031	.04
February	159	e	5	5.5	.034	.04
March	782	110	6	25.2	.154	.18
April	617	32	14	20.6	.126	.14
May	440	24	11	14.2	.087	.10
June	1,038.0	400	6.5	34.6	.211	.24
July	235.0	22	4	7.58	.046	.05
August	343.0	70	4	11.1	.068	.08
September	145.0	9	4	4.83	.029	.03
Water year 1939-40	4,784.0	400	3	13.1	.080	1.10

* Winter discharge measurement made on this day.
† Computed on basis of revised drainage area.
c Backwater from Carroll Creek; discharge computed on basis of precipitation records.
Note.- Stage-discharge relation affected by ice Dec. 21 to Mar. 16, Mar. 20-26.

Wapsipinicon River at Independence, Iowa

Location.- Staff gage, lat. 42°28'10", long. 91°53'40", in SW¼SE¼ sec. 34, T. 89 N., R. 9 W., in tailrace of Interstate Power Co.'s hydroelectric plant at Independence, three-quarters of a mile downstream from Harte Creek and 4¼ miles downstream from Otter Creek.

Drainage area.- 1,060 square miles.

Records available.- July 1933 to September 1940.

Extremes.- Maximum discharge during year, 2,300 second-feet Sept. 1 (gage height, 88.15 feet); minimum, about 10 second-feet frequently when power plant was shut down.
1933-40: Maximum discharge, 7,900 second-feet Mar. 8, 1937 (gage height, 93.2 feet); minimum, about 7 second-feet many times in period 1933-34.

Remarks.- Records fair.

Cooperation.- Record of daily discharge furnished by Interstate Power Co.

Rating table, water year 1939-40, except periods Oct. 1-9 and July 11, 12 (gage height, in feet, and discharge in second-feet)

84.3	9	85.0	184	87.0	1,320
84.4	20	85.3	312	88.0	2,160
84.5	36	85.6	459	89.0	3,100
84.6	57	86.0	676		
84.8	113	86.5	975		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	e20	63	105	44	16	29	556	136	111	60	861	2,220
2	e20	20	81	44	23	35	620	174	10	60	611	1,870
3	e54	44	20	20	10	10	704	98	73	10	645	1,560
4	e20	57	57	38	10	35	756	200	60	60	872	1,080
5	e54	20	57	20	23	10	708	10	60	10	878	769
6	e20	57	57	32	10	41	612	137	60	60	975	522
7	e65	63	57	20	23	41	416	263	60	10	968	427
8	e20	57	44	20	10	73	352	150	98	10	846	363
9	e105	57	69	32	23	104	326	200	10	10	720	452
10	20	106	20	20	10	60	352	168	60	10	466	466
11	51	69	81	32	10	67	275	236	60	e251	363	402
12	62	20	63	20	23	60	302	10	60	e67	350	415
13	57	69	63	32	10	60	302	111	60	10	276	339
14	57	57	44	20	23	35	186	111	60	10	275	339
15	20	69	44	20	10	35	238	118	60	60	149	211
16	57	57	57	32	23	73	174	103	10	10	271	226
17	57	57	20	20	35	110	212	60	60	10	440	212
18	57	75	63	38	10	312	186	174	10	10	573	187
19	20	20	69	20	35	373	175	10	60	35	466	187
20	57	81	63	32	10	300	225	184	35	35	350	187
21	57	63	63	20	35	287	73	144	10	10	226	277
22	20	63	57	32	10	287	123	98	10	10	251	10
23	57	57	63	20	35	312	174	98	530	35	148	188
24	57	63	20	20	35	268	149	111	98	10	186	208
25	57	69	20	20	10	350	111	175	47	35	186	291
26	57	20	44	50	35	396	111	10	10	315	422	149
27	57	57	44	20	10	376	150	98	47	877	714	302
28	57	57	50	20	35	363	60	98	250	752	884	149
29	20	57	50	26	10	364	174	60	10	935	1,170	98
30	69	20	57	20	-	416	136	60	10	1,095	1,460	175
31	69	-	20	26	-	480	-	73	-	997	2,060	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,470	105	20	47.4	0.045	0.05
November	1,644	106	20	54.8	.052	.06
December	1,622	105	20	52.3	.049	.06
Calendar year 1939	92,893	1,920	8	255	.241	3.27
January	830	50	20	26.8	.025	.03
February	562	35	10	19.4	.018	.02
March	5,762	480	10	186	.175	.20
April	8,938	756	60	298	.281	.31
May	3,680	263	10	119	.112	.13
June	2,099	530	10	70.0	.066	.07
July	5,870	1,093	10	189	.178	.21
August	19,062	2,060	148	615	.580	.67
September	14,281	2,220	10	476	.449	.50
Water year 1939-40	65,820	2,220	10	180	.170	2.31

e Stage-discharge relation indefinite; discharge computed on basis of two discharge measurements.

Wapsipinicon River near Dewitt, Iowa

Location.- Water-stage recorder, lat. 41°46', long. 90°32', in sec. 31, T. 81 N., R. 4 E., at bridge on U. S. Highway 61, 3 miles south of Dewitt and 18 miles upstream from mouth. Datum of gage is 599.73 feet above mean sea level (general adjustment of 1912).

Drainage area.- 2,300 square miles.

Records available.- June 1934 to September 1940.

Extremes.- Maximum discharge during year, 3,520 second-feet June 27 (gage height, 6.84 feet); minimum daily, 70 second-feet Jan. 17-24.
1934-40: Maximum discharge, 12,900 second-feet Mar. 6, 1937; maximum gage height, 11.65 feet Feb. 21, 1937 (affected by ice); minimum discharge, that of Jan. 17-24, 1940; minimum gage height, 0.94 foot Oct. 3, 1937.

Remarks.- Records good except those for period of ice effect, which are poor, and those for April and May, which are fair.

Cooperation.- Results of two discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	150	174	h160	95	95	140	1,050	502	289	751	1,020	1,050
2	152	170	157	90	100	150	988	483	232	741	1,300	1,190
3	150	162	155	80	100	200	964	460	261	650	1,280	1,370
4	146	155	150	*80	100	300	970	445	249	566	1,130	1,650
5	148	155	148	80	100	400	1,020	433	240	506	1,040	1,910
6	143	157	146	80	100	600	1,060	433	240	456	886	2,040
7	143	157	152	80	100	800	1,110	426	237	415	1,070	1,930
8	136	152	155	85	100	900	1,160	415	226	375	1,070	1,530
9	136	150	148	85	95	1,000	1,200	415	226	357	982	1,300
10	150	164	146	90	100	1,100	1,160	404	215	330	994	1,200
11	143	164	148	90	100	1,050	1,120	426	d237	330	988	1,120
12	141	164	146	90	100	1,000	1,080	437	d249	337	934	1,040
13	139	170	141	85	100	950	988	415	d246	324	886	1,020
14	152	167	*120	80	100	900	928	396	d217	295	1,040	869
15	157	172	120	75	110	800	869	382	d209	286	1,480	785
16	146	170	130	75	110	741	815	364	d212	304	1,310	727
17	148	167	135	70	115	709	800	327	d190	267	988	677
18	150	160	135	70	115	1,360	874	330	d193	237	815	641
19	152	157	130	70	115	2,090	886	347	d229	220	699	587
20	155	157	125	70	115	1,900	805	361	d270	204	641	550
21	155	157	110	70	110	1,620	741	375	d226	190	637	518
22	155	157	100	70	110	1,510	699	898	196	177	672	487
23	148	157	90	70	*105	1,140	663	668	332	164	650	471
24	162	h157	90	70	100	964	633	510	690	157	583	456
25	172	h162	90	75	100	830	591	467	d2,200	152	546	464
26	174	h160	90	80	100	858	554	426	d3,250	152	518	437
27	237	h160	90	80	105	*928	534	382	d2,690	177	494	422
28	226	h164	90	85	110	1,000	510	361	1,380	172	506	426
29	217	h170	95	85	120	1,100	494	347	1,010	397	650	422
30	190	h167	100	90	-	1,220	510	333	815	964	880	404
31	187	-	100	90	-	1,150	-	304	-	1,030	976	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	4,960	237	136	160	0.070	0.08
November	4,855	174	150	162	.070	.08
December	3,892	160	90	126	.055	.06
Calendar year 1939	281,919	8,030	90	772	.336	4.54
January	2,485	95	70	80.1	.035	.04
February	3,030	120	95	104	.045	.05
March	29,410	2,090	140	949	.413	.48
April	25,776	1,200	494	859	.373	.42
May	13,272	898	304	428	.186	.21
June	17,506	3,250	190	584	.254	.28
July	11,683	1,030	152	377	.164	.19
August	27,665	1,480	506	892	.388	.45
September	27,693	2,040	404	923	.401	.45
Water year 1939-40	172,227	3,250	70	471	.205	2.79

* Winter discharge measurement made on this day.
d Doubtful gage-height record; discharge computed from graph based on daily readings of outside gage.
h Discharge computed from once-daily reading of outside gage.
Note.- Stage-discharge relation affected by ice Dec. 16 to Mar. 15.

Rock River at Watertown, Wis.

Location.- Water-stage recorder, lat. 43°11'25", long. 88°43'35" in sec. 4, T. 8 N., R. 15 E., at Watertown, 700 feet downstream from Milwaukee Street Bridge and 1.1 miles downstream from Silver Creek.

Records available.- June 1931 to September 1940.

Drainage area.- 971 square miles.

Extremes.- Maximum discharge during year, 2,800 second-feet June 28 (gage height, 4.76 feet), from rating curve extended above 2,400 second-feet; minimum daily, 0.9 second-foot (regulated), Oct. 15.

1931-40: Maximum discharge, 3,810 second-feet Feb. 13, 1938 (gage height, 4.84 feet), from rating curve extended above 2,400 second-feet; minimum daily, that of Oct. 15, 1939.

Remarks.- Records good except those for periods of ice effect, which are poor. Slight intermittent regulation caused by small feed mill a quarter of a mile above station; considerable diurnal regulation caused by power plant 2½ miles above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	59	29	3	71	46	476	284	487	2,540	443	465
2	23	26	86	3	128	46	505	316	422	2,480	432	443
3	27	70	14	7	64	32	568	382	392	2,360	427	392
4	24	32	86	7	93	60	673	432	405	2,300	417	380
5	27	55	82	35	42	48	743	427	337	2,240	407	386
6	22	44	118	8	42	52	595	387	366	2,120	402	372
7	1.0	25	82	1.0	84	50	443	382	303	2,000	402	366
8	1.1	22	99	1.0	110	74	373	368	334	1,940	397	368
9	28	101	96	2	110	84	387	359	320	1,820	382	375
10	23	36	94	42	105	60	432	326	368	1,760	364	353
11	25	58	74	28	52	136	448	361	345	1,680	336	355
12	26	26	46	2.4	50	52	470	304	298	1,600	348	350
13	1.2	53	24	2.4	79	112	487	287	292	1,510	325	322
14	24	43	90	10	52	100	476	217	262	1,420	365	305
15	.9	22	76	28	52	113	448	268	274	1,340	348	293
16	29	72	99	30	19	118	427	274	249	1,250	352	214
17	22	48	25	*30	17	87	407	288	207	1,210	303	226
18	23	92	106	3	5	124	417	290	218	1,150	338	226
19	44	69	43	3	11	108	443	327	230	1,070	284	207
20	25	72	34	35	12	142	443	343	303	983	294	125
21	1.6	72	36	2	25	155	448	413	362	902	273	150
22	3.9	50	10	30	22	200	432	368	768	775	312	165
23	67	88	2.4	30	42	189	402	368	2,180	712	290	136
24	35	73	1.8	35	36	196	382	355	2,060	644	275	120
25	20	62	3.2	35	12	206	373	365	2,180	588	364	182
26	57	26	37	35	84	158	368	310	2,420	555	374	148
27	36	108	30	35	45	137	364	402	2,610	511	417	220
28	53	40	32	2.2	*35	114	308	398	2,680	505	523	180
29	32	53	32	37	48	162	329	428	2,610	487	542	196
30	84	32	39	50	-	244	274	493	2,610	465	505	154
31	34	-	4	60	-	404	-	499	-	454	487	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	820.7	84	0.9	26.5	0.027	0.03
November	1,629	108	22	54.3	.056	.06
December	1,630.4	118	1.8	52.6	.054	.06
Calendar year 1939	147,186.1	1,400	.9	403	.415	5.63
January	632	60	1.0	20.4	.021	.02
February	1,547	128	5	53.3	.055	.06
March	3,809	404	32	123	.127	.15
April	13,341	743	274	445	.458	.51
May	11,021	499	217	356	.367	.42
June	26,892	2,680	207	896	.923	1.03
July	41,371	2,540	454	1,335	1.37	1.58
August	11,728	542	273	378	.389	.45
September	8,174	465	120	272	.280	.31
Water year 1939-40	122,595.1	2,680	.9	335	.345	4.68

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 31 to Jan. 9, Jan. 14-27, Jan. 30 to Feb. 28.

Rock River at Afton, Wis.

Location.- Water-stage recorder, lat. 42°36'40", long. 89°04'10", on line between secs. 22 and 27, T. 2 N., R. 12 E., at highway bridge in Afton, three-quarters of a mile upstream from Bass Creek. Datum of gage is 742.18 feet above mean sea level.

Drainage area.- 3,300 square miles.

Records available.- February 1914 to September 1940.

Average discharge.- 26 years, 1,789 second-feet.

Extremes (regulated).- Maximum discharge during year, 10,700 second-feet Aug. 26 (gage height, 10.80 feet); minimum, 54 second-feet Oct. 15 (gage height, 0.33 foot); minimum daily, 104 second-feet Nov. 12.

1914-40: Maximum discharge observed, 13,000 second-feet Mar. 23, 24, 1929 (gage height, 11.8 feet); maximum gage height observed, 13.38 feet Feb. 21, 1937 (ice jam); minimum discharge, 36 second-feet Aug. 26, 1934, July 9, 1936; minimum daily, 42 second-feet Aug. 25, 26, 1934; minimum gage height, 0.09 foot Aug. 26, 1934.

Remarks.- Records good except those for periods of ice effect, which are poor. Flow regulated by power plants above station.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

0.6	87	2.5	757	5.0	2,400
.8	129	3.0	1,010	6.0	3,400
1.0	184	3.5	1,280	7.0	4,490
1.5	352	4.0	1,600	8.0	5,800
2.0	537	4.5	1,960		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	152	455	331	120	580	598	1,110	1,220	1,010	3,830	1,400	2,600
2	256	281	320	290	550	328	1,310	1,220	807	3,940	1,280	2,500
3	225	417	163	560	360	204	1,430	1,190	857	3,940	1,060	2,260
4	203	447	408	500	160	391	1,370	1,140	882	3,940	1,110	2,080
5	244	355	665	470	400	598	1,530	908	857	3,830	1,280	1,780
6	210	399	528	350	560	577	1,670	984	782	3,830	1,250	1,740
7	152	598	544	110	590	663	2,260	1,190	757	3,720	1,040	1,640
8	128	536	535	450	580	557	2,400	1,280	782	3,610	882	1,640
9	273	319	327	480	570	416	2,080	1,190	733	3,610	709	1,560
10	278	244	191	430	350	132	1,530	1,190	782	3,500	709	1,530
11	320	174	436	490	140	354	1,700	1,140	908	3,610	619	1,460
12	253	104	695	400	300	628	1,740	857	934	3,500	709	1,400
13	206	436	*460	390	560	686	1,700	757	832	3,200	782	1,310
14	135	671	368	135	686	674	1,740	1,140	782	3,000	882	1,160
15	136	489	235	320	686	734	1,670	1,040	709	2,900	1,060	1,190
16	243	328	274	500	598	310	1,640	984	663	2,800	1,190	1,190
17	245	340	303	600	424	197	1,700	984	686	2,600	908	908
18	237	261	520	480	111	494	1,700	757	641	2,260	959	709
19	187	415	634	400	449	825	1,560	857	832	2,180	1,310	857
20	182	651	527	350	663	818	1,500	1,010	782	2,080	1,080	709
21	141	651	444	120	588	694	1,530	1,140	709	2,000	782	733
22	133	394	193	*400	619	724	1,500	1,080	619	1,880	882	757
23	294	367	154	390	598	606	1,460	984	1,250	1,640	1,010	642
24	356	259	338	290	330	724	1,460	984	1,670	1,530	908	908
25	435	290	274	280	327	796	1,370	1,040	1,600	1,430	1,400	857
26	410	271	391	190	487	790	1,370	1,060	1,960	1,530	4,600	757
27	317	484	623	210	619	702	1,310	984	2,700	1,740	5,770	558
28	278	611	418	160	619	850	1,280	1,160	3,100	1,560	2,600	807
29	153	556	196	300	*598	934	1,110	1,060	3,300	1,500	2,500	733
30	417	307	283	450	-	959	1,160	1,040	3,610	1,500	2,400	542
31	682	-	110	620	-	959	-	1,140	-	1,430	2,400	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	7,881	682	128	254	0.077	0.09
November	12,140	671	104	405	.123	.14
December	11,888	695	110	383	.116	.13
Calendar year 1939	524,062	4,850	64	1,436	.435	5.91
January	11,235	620	110	362	.110	.13
February	14,102	686	111	486	.147	.16
March	18,922	959	132	610	.185	.21
April	46,890	2,400	1,110	1,563	.474	.53
May	32,710	1,280	757	1,055	.320	.37
June	36,536	3,610	610	1,218	.369	.41
July	83,620	3,940	1,430	2,697	.817	.94
August	45,471	5,770	619	1,467	.445	.51
September	37,517	2,600	542	1,251	.379	.42
Water year 1939-40	358,912	5,770	104	981	.297	4.04

Peak discharge.- Aug. 26 (11 p.m.) 10,700 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 31 to Feb. 13.

Rock River at Rockton, Ill.

(Formerly published as Rock River below mouth of Pecatonica River, at Rockton, Ill.)

Location.- Water-stage recorder, lat. 42°27'05", long. 89°04'20", in SE¼NW¼ sec. 24, T. 46 N., R. 12 E., at highway bridge in Rockton and three-quarters of a mile downstream from Pecatonica River. Datum of gage is 707.94 feet above mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army). Former gage at same site.

Drainage area.- 6,290 square miles.

Records available.- June 1903 to March 1909 (revised monthly figures in Water-Supply Paper 325), March to September 1940.

Extremes.- Maximum discharge during period, 15,800 second-feet Aug. 27 (gage height, 10.53 feet); minimum, 567 second-feet Aug. 12 (gage height, 2.18 feet); minimum daily, 1,060 second-feet Mar. 17.

1903-9, 1940: Maximum discharge, 28,500 second-feet (revised) Mar. 22, 1904 (gage height, 13.8 feet, datum then in use); minimum, that of Aug. 12, 1940; minimum daily, 950 second-feet Aug. 16, 1904.

Flood of February 1937 reached a stage of 14.6 feet, from painted floodmark. Flood of March 1904 probably at somewhat lower stage.

Remarks.- Records good. Low flow regulated by power plants above station.

Cooperation.- Results of three discharge measurements furnished by Corps of Engineers, U. S. Army.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

2.6	1,000	4.0	3,070	8.0	10,300
2.8	1,250	5.0	4,740	9.0	12,400
3.0	1,520	6.0	6,490	10.0	14,600
3.5	2,260	7.0	8,320		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	3,400	2,100	1,950	4,910	4,040	8,320
2						-	3,730	2,260	1,380	4,740	3,240	6,850
3						-	3,400	2,260	1,550	4,740	2,420	5,280
4						-	3,070	2,100	1,550	4,570	1,950	4,230
5						-	2,740	1,880	1,520	4,570	2,100	3,730
6						-	2,740	1,800	1,450	4,400	2,260	3,400
7						-	3,240	1,950	1,250	4,400	2,260	3,070
8						-	3,560	2,100	1,520	4,230	2,040	2,900
9						-	3,400	2,100	1,320	4,230	1,520	2,900
10						-	2,900	1,950	1,450	4,060	1,590	2,740
11						-	2,740	1,950	1,480	4,230	1,320	2,580
12						-	2,900	1,800	1,860	4,230	1,360	2,580
13						-	2,900	1,590	1,800	4,060	1,590	2,420
14						-	2,740	1,730	1,590	4,060	2,100	2,420
15						1,520	2,900	1,880	1,590	3,900	2,900	2,100
16						1,590	2,580	1,800	1,320	3,560	3,070	2,260
17						1,060	2,740	1,660	1,250	3,400	2,740	2,100
18						1,520	2,740	1,590	1,660	3,070	3,070	1,590
19						2,260	2,740	1,450	2,100	2,740	2,740	1,730
20						2,580	2,580	1,800	1,950	2,740	2,420	1,660
21						2,420	2,420	1,880	1,880	2,580	1,950	1,660
22						2,580	2,580	2,100	1,660	2,580	1,680	1,450
23						2,580	2,420	1,950	2,580	2,260	1,730	1,520
24						2,580	2,420	1,880	4,740	2,100	1,680	1,800
25						2,420	2,260	1,660	4,570	1,950	1,950	1,880
26						2,420	2,100	1,800	4,230	2,260	5,080	1,800
27						2,100	2,100	1,880	4,060	3,070	14,400	1,450
28						2,260	1,950	1,950	4,230	3,240	12,200	1,800
29						2,420	1,950	1,950	4,400	3,560	11,600	1,590
30						2,580	1,950	1,730	4,570	4,400	10,500	1,380
31						2,580	-	1,950	-	4,570	9,300	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March 15-31	37,470	2,580	1,060	2,204	0.350	0.22
April	81,890	3,730	1,950	2,730	.434	.48
May	58,480	2,260	1,450	1,886	.300	.35
June	68,460	4,740	1,250	2,282	.363	.40
July	113,410	4,910	1,950	3,658	.582	.67
August	119,220	14,400	1,320	3,846	.611	.70
September	81,170	8,320	1,380	2,706	.430	.48
Water year	-	-	-	-	-	-

Rock River at Oregon, Ill.

Location.- Staff gage, lat. 42°01', long. 89°20', near center of sec. 3, T. 23 N., R. 10 E., in tailrace of plant of Illinois Northern Utilities Co. plant in town of Oregon, 1,000 feet upstream from bridge on State Highway 64, 2 miles upstream from Kyte River, and 110 miles upstream from mouth. Datum of gage is 0.76 foot below mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army).

Drainage area.- 8,120 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 15,400 second-feet Aug. 28 (gage height, 667.21 feet); minimum daily, 1,010 second-feet Dec. 31.
Highest stage known, 678.70 feet, sometime in February 1937, from floodmark.

Remarks.- Records good. Some diurnal regulation from power plants above station. Gage read twice hourly.

Cooperation.- Mean daily gage height computed and furnished by Illinois Northern Utilities Co. Results of four discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,600	1,840	1,670	1,080	1,460	1,520	3,240	3,030	2,610	5,140	4,360	9,630
2	1,600	1,840	1,520	1,080	1,600	1,670	3,890	3,450	2,610	5,420	3,890	7,750
3	1,930	1,520	1,520	1,340	1,340	1,670	4,120	3,450	2,020	5,420	3,450	6,850
4	1,340	1,670	1,520	1,460	1,460	2,020	3,890	3,450	2,020	5,140	3,030	5,420
5	1,150	1,280	1,520	1,340	1,340	2,820	3,890	3,450	2,210	5,140	2,310	4,360
6	1,240	1,520	1,670	1,340	1,340	2,820	3,450	3,030	2,020	4,870	2,510	4,120
7	1,240	1,520	1,670	1,280	1,600	3,240	3,450	3,030	2,020	4,870	2,410	3,450
8	1,150	1,520	1,670	1,110	1,340	3,450	3,890	3,030	2,020	4,870	2,410	3,450
9	1,240	1,670	1,670	1,280	1,760	3,670	4,360	3,030	2,020	4,870	2,210	3,450
10	1,190	1,670	1,670	1,190	1,600	3,450	3,890	3,030	1,840	4,870	1,840	3,450
11	1,390	1,520	1,460	1,280	1,460	2,820	3,670	3,030	2,020	4,610	1,520	3,030
12	1,280	1,390	1,600	1,280	1,340	2,410	3,670	3,030	2,410	4,870	1,840	2,720
13	1,390	1,390	1,760	1,390	1,240	1,840	3,670	2,720	2,610	4,610	2,210	3,030
14	1,280	1,390	1,760	1,280	1,460	1,520	3,670	2,310	2,410	4,610	2,610	2,310
15	1,280	1,520	1,600	1,110	1,600	1,840	3,670	2,510	2,410	4,610	3,890	2,510
16	1,280	1,670	1,600	1,190	1,600	2,410	3,890	2,720	2,020	4,360	3,240	2,510
17	1,390	1,670	1,460	1,190	1,600	2,820	3,450	2,510	2,020	4,120	3,030	2,510
18	1,190	1,520	1,460	1,280	1,600	3,030	3,890	2,210	2,020	3,890	3,890	2,310
19	1,280	1,520	1,460	1,390	1,340	3,450	3,890	2,210	6,270	3,450	3,450	2,120
20	1,390	1,390	1,760	1,460	1,240	3,450	3,890	2,210	4,120	3,030	3,030	1,930
21	1,390	1,520	1,600	1,340	1,520	3,450	3,890	2,820	3,030	3,030	2,610	1,930
22	1,190	1,670	1,600	1,340	1,520	3,030	3,890	2,820	2,820	3,030	2,210	1,930
23	1,280	1,670	1,460	1,240	1,520	2,820	3,890	3,030	5,140	3,030	2,020	1,760
24	1,280	1,520	1,340	1,340	1,390	2,410	3,670	2,820	7,450	2,720	1,840	1,930
25	1,670	1,520	1,340	1,240	1,280	3,030	3,240	2,820	6,850	2,410	2,210	1,930
26	2,020	1,390	1,240	1,340	1,280	2,720	3,240	2,610	5,980	2,210	2,610	1,930
27	2,210	1,390	1,460	1,240	1,520	2,720	3,030	2,410	5,140	3,030	10,600	1,930
28	1,840	1,520	1,600	1,150	1,390	2,310	2,820	2,820	5,420	3,450	15,100	1,930
29	1,840	1,520	1,600	1,150	1,670	2,510	2,720	2,820	5,420	3,670	13,700	1,930
30	1,670	1,670	1,150	1,240	-	3,030	3,030	2,820	5,140	4,360	12,300	1,930
31	1,670	-	1,010	1,150	-	3,240	-	2,610	-	4,870	10,900	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	44,890	2,210	1,150	1,448	0.178	0.21
November	46,420	1,840	1,280	1,547	.191	.21
December	47,420	1,760	1,010	1,530	.188	.22
Calendar year	-	-	-	-	-	-
January	39,120	1,460	1,080	1,262	.155	.18
February	42,410	1,760	1,240	1,462	.180	.19
March	83,190	3,670	1,520	2,684	.331	.38
April	108,850	4,360	2,720	3,628	.447	.50
May	87,840	3,450	2,210	2,834	.349	.40
June	102,090	7,450	1,840	3,403	.419	.47
July	128,580	5,420	2,210	4,148	.511	.59
August	133,230	15,100	1,520	4,298	.529	.61
September	96,040	9,630	1,760	3,201	.394	.44
Water year 1939-40	960,080	15,100	1,010	2,623	.323	4.40

Rock River at Como, Ill.

Location.- Water-stage recorder, lat. 41°47'00", long. 89°44'58", in NE¼ sec. 25, T. 21 N., R. 6 E., fourth principal meridian, 1 mile upstream from Como, 3 miles downstream from Rock Falls, and 3½ miles upstream from Elkhorn Creek.
Drainage area.- 8,700 square miles.
Records available.- December 1933 to September 1940. November 1914 to September 1934 at Lyndon, 16½ miles downstream (drainage area, 9,010 square miles).
Average discharge.- 26 years, 5,287 second-feet (discharge for site at Lyndon adjusted for difference in drainage area).
Extremes.- Maximum discharge during year, 17,200 second-feet Aug. 28 (gage height, 7.50 feet); minimum daily, 530 second-feet Jan. 1.
1914-40: Maximum discharge, 51,000 second-feet Feb. 22, 1937, at lower dam at Rock Falls, from rating curve extended above 21,000 second-feet by logarithmic plotting; minimum daily, 440 second-feet Aug. 20, 1934.
Remarks.- Records excellent except those for periods of ice effect or no gage-height record, which are good. About 100 second-feet diverted above gage to Illinois and Mississippi Canal. Some diurnal fluctuations caused by power plants above station.
Cooperation.- Results of one discharge measurement furnished by Corps of Engineers, U. S. Army.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.6	500	2.6	1,910	5.0	8,770
1.8	685	3.0	2,810	6.0	12,100
2.0	900	3.5	4,120	7.0	15,500
2.2	1,180	4.0	5,560	8.0	18,900

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,200	1,600	1,770	530	1,000	1,980	3,010	2,680	1,940	4,820	4,620	10,400
2	1,150	1,850	1,480	1,000	1,520	2,060	3,590	2,760	2,320	4,970	4,170	8,860
3	1,040	1,620	1,530	860	1,240	3,100	3,900	2,860	2,140	4,970	2,600	7,650
4	1,290	1,400	1,510	1,070	1,400	2,820	4,850	3,030	1,750	4,820	2,880	6,170
5	1,230	1,480	1,520	1,000	*1,310	3,390	3,150	3,050	1,800	4,680	2,490	5,110
6	1,080	1,240	1,640	1,090	1,060	3,730	3,130	2,900	1,670	4,680	2,090	4,260
7	1,150	1,580	1,590	1,070	1,280	3,780	3,420	2,610	1,600	4,540	2,320	3,850
8	1,130	1,530	1,700	1,090	1,480	4,450	3,510	2,460	1,870	4,540	2,280	3,580
9	1,170	1,570	1,570	1,100	1,390	4,800	4,200	2,590	1,970	4,400	2,170	3,580
10	1,180	1,600	1,720	1,080	1,600	4,280	4,060	2,480	1,440	4,540	1,930	3,360
11	1,110	1,420	1,600	1,060	1,530	3,640	3,780	2,490	2,080	4,540	1,700	3,200
12	1,480	1,520	1,370	1,070	1,470	2,930	3,100	2,310	2,110	4,400	1,650	3,000
13	1,070	1,390	1,490	1,090	1,160	2,580	3,450	2,410	2,460	4,200	3,640	3,000
14	1,020	1,290	1,790	1,240	1,210	2,030	3,290	2,070	1,860	4,060	2,930	2,800
15	1,240	1,420	1,550	1,110	1,480	1,960	3,290	1,820	1,850	4,220	5,130	2,500
16	1,290	1,660	1,410	880	1,530	2,700	3,520	2,250	1,910	4,160	3,880	2,450
17	1,240	1,610	1,440	1,030	1,330	3,020	3,390	2,200	1,540	3,810	3,520	2,600
18	1,240	1,470	1,370	930	1,450	3,750	3,350	2,160	1,500	3,560	3,930	2,500
19	1,140	1,630	1,310	1,080	1,390	4,350	3,520	1,950	3,550	3,190	5,300	2,450
20	1,260	1,220	*1,440	1,190	1,040	3,870	3,560	2,160	5,520	3,100	3,280	1,600
21	1,310	1,360	1,860	1,270	1,010	3,690	3,300	2,640	2,860	2,810	2,740	2,300
22	1,410	1,690	1,730	1,060	1,360	3,440	2,960	2,460	2,480	2,550	2,610	1,800
23	1,280	1,660	1,410	1,090	1,400	2,890	3,340	2,620	3,770	2,810	2,170	1,950
24	1,300	1,480	1,040	1,060	1,170	2,610	2,970	2,610	6,430	2,460	1,950	2,050
25	1,180	1,650	976	1,200	1,090	*2,460	2,840	2,700	6,770	2,260	2,140	1,900
26	2,190	1,510	1,230	1,180	1,400	3,000	2,670	2,420	6,220	2,180	2,380	2,050
27	2,210	1,160	1,250	1,060	1,480	2,850	2,570	2,310	5,260	2,620	5,420	2,000
28	2,130	1,290	1,210	1,130	1,640	2,660	2,390	2,300	4,640	3,160	15,800	1,950
29	1,760	1,480	1,660	900	*1,830	1,820	2,380	2,550	5,000	3,320	15,800	1,850
30	1,750	1,670	920	890	-	2,700	2,800	2,540	4,970	3,740	12,800	2,100
31	1,640	-	610	1,040	-	3,240	-	2,460	-	4,700	11,400	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	41,880	2,210	1,020	1,351		
November	45,050	1,850	1,160	1,502		
December	44,696	1,860	610	1,442		
Calendar year 1939	1,452,224	17,500	610	3,979		
January	32,450	1,270	530	1,047		
February	39,250	1,830	1,000	1,353		
March	96,580	4,800	1,820	3,115		
April	99,290	4,850	2,380	3,310		
May	76,850	3,050	1,820	2,479		
June	91,280	6,770	1,440	3,043		
July	118,810	4,970	2,180	3,833		
August	137,720	15,800	1,650	4,443		
September	102,870	10,400	1,600	3,429		
Water year 1939-40	926,726	15,800	530	2,532		

Peak discharge.- Mar. 9 (10 a.m.) 5,860 sec.-ft.; Apr. 4 (9 a.m.) 10,100 sec.-ft.; May 17 (1 p.m.) 6,640 sec.-ft.; June 20 (9 a.m.) 7,780 sec.-ft.; June 24 (8 p.m.) 8,110 sec.-ft.; Aug. 19 (10 a.m.) 6,320 sec.-ft.
* Winter discharge measurement made on this day.
Note.- No gage-height record Jan. 19, 20, May 23-28, June 9-12, Sept. 11-29, and stage-discharge relation affected by ice Dec. 30 to Mar. 7, Mar. 11-15; discharge computed on basis of records for Sterling power plant.

Rock River near Joslin, Ill.

Location.- Water-stage recorder, lat. 41°33'35", long. 90°10'55", in NE¼ sec. 18, T. 18 N., R. 3 E., at highway bridge 1¾ miles east of Joslin, 12 miles downstream from Rock Creek, and 27 miles upstream from mouth. Datum of gage is 564.06 feet above mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army). Prior to Apr. 6, wire-weight gage at same site and datum.

Drainage area.- 9,520 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 15,700 second-feet Aug. 30 (gage height, 10.41 feet); minimum daily observed, 834 second-feet Jan. 3.

Remarks.- Records excellent since Apr. 6, fair prior to that time except those for period of ice effect, which are poor. Prior to Apr. 6, gage read once daily.

Cooperation.- Gage-height record and results of five discharge measurements furnished by Corps of Engineers, U. S. Army.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

2.2	800	5.0	4,180	9.0	12,200
2.8	1,340	6.0	5,870	10.0	14,700
3.4	1,980	7.0	7,770	10.5	16,000
4.0	2,730	8.0	9,900		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,290	1,820	1,820	1,020	1,290	1,650	3,730	3,220	2,600	5,340	4,830	12,700
2	1,340	1,760	1,870	988	1,240	1,870	3,360	3,220	2,280	5,170	4,830	11,200
3	1,340	1,870	1,650	834	1,340	2,160	4,180	3,290	2,540	5,340	4,340	9,680
4	1,200	1,820	1,920	1,110	1,490	2,730	4,180	3,360	2,220	5,340	3,730	8,190
5	1,390	1,700	1,650	851	1,440	4,830	5,340	3,430	1,980	5,170	3,080	6,780
6	1,340	1,820	1,760	979	1,540	4,500	3,880	3,430	2,160	5,000	2,660	5,510
7	1,200	1,490	1,760	1,060	*1,490	4,830	3,730	3,290	1,870	5,000	2,340	4,660
8	1,240	1,760	1,700	1,120	1,240	4,830	4,030	3,010	1,870	4,830	2,540	4,180
9	1,290	1,650	1,760	1,150	1,540	5,000	4,340	2,870	1,980	4,830	2,470	4,030
10	1,290	1,620	1,870	1,150	1,490	5,170	4,660	3,010	1,980	4,660	2,400	3,880
11	1,390	1,820	1,920	1,150	1,600	5,170	4,500	3,010	1,760	4,830	2,220	3,730
12	1,200	1,870	1,820	1,150	1,600	4,660	4,180	2,870	2,220	4,830	1,980	3,430
13	1,600	1,760	1,490	1,120	1,600	3,880	3,880	2,730	2,220	4,660	2,540	3,290
14	1,240	1,650	1,600	1,150	1,440	3,150	4,030	2,730	2,600	4,500	4,180	3,220
15	1,200	1,540	1,820	1,200	1,340	2,660	3,880	2,470	2,160	4,340	3,730	3,010
16	1,440	1,440	1,820	1,290	1,600	2,730	3,880	2,340	2,040	4,500	5,340	2,730
17	1,440	1,700	1,760	1,200	1,600	3,220	4,030	2,600	2,040	4,340	4,030	2,660
18	1,390	1,700	1,600	1,070	1,760	4,500	4,030	2,540	1,760	4,030	3,880	2,730
19	1,440	1,650	1,490	1,150	1,760	5,000	4,030	2,470	1,760	3,880	4,660	2,660
20	1,290	1,760	1,490	1,200	1,760	5,170	4,180	2,340	4,030	3,430	5,170	2,540
21	1,440	1,440	1,490	1,240	1,760	4,660	4,180	2,470	5,000	3,220	3,580	2,470
22	1,490	*1,490	1,700	1,340	1,600	4,340	3,880	2,660	3,150	3,010	3,010	2,340
23	1,540	1,700	1,700	1,440	1,600	4,180	3,580	2,600	2,940	2,800	2,730	1,980
24	1,390	1,920	1,760	1,340	1,760	3,580	3,730	2,730	5,000	3,010	2,400	2,040
25	1,440	1,820	1,600	1,290	1,760	3,150	3,500	2,800	7,370	2,600	2,220	2,100
26	1,390	1,760	1,290	1,240	1,700	*2,940	3,290	2,800	7,570	2,470	2,470	2,100
27	2,220	1,870	1,760	1,340	1,600	3,660	3,150	2,600	6,410	2,470	3,010	2,220
28	2,280	1,390	1,980	1,290	1,600	3,500	3,010	2,660	5,690	2,940	8,420	2,160
29	2,280	1,390	1,980	1,290	1,540	3,360	2,940	2,600	5,170	3,360	14,700	2,040
30	1,980	1,540	1,490	1,390	-	2,340	3,010	2,800	5,510	3,500	15,700	2,040
31	1,920	-	1,090	1,200	-	3,290	-	2,730	-	4,030	14,200	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	45,920	2,280	1,200	1,481	0.156	0.18
November	50,720	1,920	1,390	1,691	.178	.20
December	52,410	1,980	1,090	1,691	.178	.20
Calendar year	-	-	-	-	-	-
January	36,342	1,440	834	1,172	.123	.14
February	45,080	1,760	1,240	1,554	.163	.18
March	116,710	5,170	1,650	3,765	.395	.46
April	116,320	5,340	2,940	3,877	.407	.45
May	87,680	3,430	2,340	2,828	.297	.34
June	97,880	7,570	1,760	3,263	.343	.38
July	127,430	5,340	2,470	4,111	.432	.50
August	143,390	15,700	1,980	4,625	.486	.56
September	122,300	12,700	1,980	4,077	.428	.48
Water year 1939-40	1,042,182	15,700	834	2,847	.299	4.07

Peak discharge.- June 21 (3:30 to 5 a.m.) 6,050 sec.-ft.; June 25 (6 p.m.) 7,980 sec.-ft.; Aug. 20 (4:30 a.m.) 5,050 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 30 to Mar. 17.

Crawfish River at Milford, Wis.

Location.- Chain gage, lat. 43°06'00", long. 88°51'00", in sec. 4, T. 7 N., R. 14 E., at highway bridge on County Trunk Highway A in Milford, 1 mile downstream from Rock Creek and 8 miles upstream from mouth.

Drainage area.- 732 square miles.

Records available.- June 1931 to September 1940.

Extremes.- Maximum discharge observed during year, 1,780 second-feet June 28 (gage height, 5.22 feet); minimum observed, 5 second-feet Oct. 5 (gage height, 1.16 feet).
1931-40: Maximum discharge observed, 3,700 second-feet Sept. 22, 1938 (gage height, 7.52 feet), from rating curve extended above 2,600 second-feet; minimum observed, 5 second-feet Aug. 18, 1936, Oct. 17, 1937, Oct. 5, 1939.

Remarks.- Records good except those for period of ice effect, which are poor. Gage read twice daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	46	21	22	33	30	361	158	112	1,480	53	232
2	14	44	67	21	35	29	522	198	94	1,420	32	209
3	12	32	53	16	32	31	717	192	84	1,300	53	188
4	18	31	38	15	35	31	829	124	65	1,120	77	174
5	7	28	35	14	34	32	829	96	77	1,000	81	162
6	22	31	32	13	32	32	773	162	72	886	90	138
7	24	29	48	7	30	33	689	127	81	829	59	121
8	22	44	31	6	27	34	661	149	94	745	59	127
9	22	12	23	7	26	35	605	135	73	689	52	138
10	47	18	34	7	26	36	466	143	62	661	54	135
11	36	24	24	8	26	38	549	124	59	661	46	77
12	43	25	*26	7	22	40	494	86	62	605	40	72
13	36	23	54	17	17	39	412	107	56	522	43	29
14	28	24	23	16	20	38	336	56	38	466	53	72
15	18	21	25	15	19	36	313	103	59	494	50	61
16	15	32	30	12	21	37	269	119	43	412	54	50
17	22	35	32	*10	23	38	248	98	46	336	72	34
18	11	39	36	8	22	40	236	72	50	248	121	28
19	18	52	22	13	22	48	221	81	62	232	124	44
20	24	50	35	15	20	56	232	92	69	198	138	43
21	22	50	34	16	19	80	244	83	53	158	103	52
22	39	46	30	16	18	82	228	140	62	135	105	50
23	35	29	28	18	18	75	232	132	386	116	119	43
24	21	30	30	20	18	66	228	130	1,120	81	101	73
25	28	47	28	18	19	60	213	132	1,480	67	116	75
26	30	35	28	17	26	56	155	135	1,660	77	162	52
27	40	30	28	16	38	60	103	119	1,780	84	217	52
28	72	26	27	18	*38	*73	67	124	1,780	90	232	50
29	16	22	26	25	38	90	47	138	1,720	84	244	53
30	48	22	25	28	-	149	101	143	1,600	88	236	54
31	30	-	23	31	-	217	-	127	-	75	244	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	837	72	7	27.0	0.037	0.04
November	977	52	12	32.6	.045	.05
December	996	67	21	32.1	.044	.05
Calendar year 1939	119,617	1,680	7	328	.448	6.08
January	472	31	6	15.2	.021	.02
February	754	38	17	26.0	.036	.04
March	1,741	217	29	56.2	.077	.09
April	11,380	829	47	379	.518	.58
May	3,825	198	56	123	.168	.19
June	12,999	1,780	38	433	.592	.66
July	15,359	1,480	67	495	.676	.78
August	3,230	244	32	104	.142	.16
September	2,688	232	28	89.6	.122	.14
Water year 1939-40	55,258	1,780	6	151	.206	2.80

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 20 to Mar. 29.

Yahara River near McFarland, Wis.

Location.- Water-stage recorder, lat. 43°00'30", long. 89°18'15", in SW¼ sec. 3, T. 6 N., R. 10 E., at upstream side of bridge on U. S. Highway 51, about 400 feet downstream from outlet of Lake Waubesa and 1 mile southwest of McFarland. Datum of gage is 840.2 feet above mean sea level (Public Service Commission of Wisconsin bench mark).

Drainage area.- 351 square miles.

Records available.- September 1930 to September 1940.

Average discharge.- 10 years, 138 second-feet.

Extremes.- Maximum discharge during year, 258 second-feet Apr. 11 (gage height, 4.01 feet); minimum, 20 second-feet Oct. 16.

1930-40: Maximum discharge, 672 second-feet Mar. 13-18, 1937; maximum gage height, 6.10 feet Mar. 13, 14, 1937; minimum discharge, 6 second-feet June 29, 30, 1936, Nov. 19, 1937.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Stage-discharge relation affected by weeds or ice most of the year.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	27	34	36	56	82	118	105	87	157	82	196
2	28	26	34	26	56	*80	131	101	82	149	82	186
3	29	26	34	22	57	80	a145	99	80	147	82	167
4	26	26	34	24	58	77	a161	99	80	125	89	151
5	27	26	34	28	61	77	a182	105	74	114	91	149
6	25	26	35	32	61	79	a203	92	74	112	91	137
7	26	26	34	35	62	79	226	112	76	107	79	118
8	24	26	40	35	65	76	a234	133	77	108	80	112
9	26	34	34	35	72	77	a241	133	79	103	79	107
10	26	26	34	32	76	77	a245	133	82	105	79	101
11	26	27	36	28	74	79	249	127	80	110	80	91
12	26	26	36	33	72	79	247	123	82	107	80	74
13	26	26	36	34	76	80	228	125	84	96	84	49
14	25	26	37	53	94	84	200	123	80	91	98	40
15	28	26	38	65	99	80	198	114	77	87	98	41
16	22	27	37	64	101	87	184	110	79	86	92	42
17	23	28	30	59	101	89	182	107	76	80	92	45
18	27	28	44	62	98	87	194	105	79	77	127	46
19	22	29	44	65	101	87	190	116	79	72	135	45
20	25	28	38	64	103	92	182	127	76	71	120	46
21	26	28	34	64	103	92	177	127	71	65	98	47
22	26	28	35	*61	92	91	169	122	79	64	92	49
23	24	28	36	62	91	96	159	110	141	61	99	53
24	25	28	36	62	96	87	155	92	190	61	107	72
25	28	28	38	64	91	87	151	a91	190	57	125	77
26	28	28	38	65	87	89	139	a92	171	68	173	74
27	28	28	38	65	84	*98	122	a94	161	89	219	71
28	27	28	38	65	82	99	118	a94	161	91	230	70
29	27	28	38	66	87	103	118	96	167	91	234	68
30	26	30	38	66	-	114	108	96	177	91	226	68
31	27	-	38	62	-	116	-	96	-	86	205	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	807	29	22	26.0	0.074	0.09
November	822	34	26	27.4	.078	.09
December	1,130	44	30	36.5	.104	.12
Calendar year 1939	46,866	416	22	128	.365	4.97
January	1,534	66	22	49.5	.141	.16
February	2,356	103	56	81.2	.231	.25
March	2,700	116	76	87.1	.248	.29
April	5,356	249	108	179	.510	.57
May	3,399	133	91	110	.313	.36
June	3,091	190	71	103	.293	.33
July	2,928	157	57	94.5	.269	.31
August	3,648	234	79	118	.336	.39
September	2,592	196	40	86.4	.246	.27
Water year 1939-40	30,363	249	22	83.0	.236	3.23

* Winter discharge measurement made on this day.
a No gage-height record; discharge based on recorded range of stage and weather records.
Note.- Stage-discharge relation affected by ice Dec. 17 to Apr. 2.

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Turtle Creek near Clinton, Wis.

Location.- Water-stage recorder, lat. 42°35'55", long. 88°51'50", in SE¼ sec. 29, T. 2 N., R. 14 E., 2½ miles north of Clinton, 13 miles northeast of Beloit, and 14 miles upstream from mouth. Prior to Jan. 17, 1940, wire-weight gage at same site and datum.
Drainage area.- 186 square miles.
Records available.- September 1939 to September 1940.
Extremes.- Maximum discharge during period, 1,660 second-feet Aug. 26 (gage height, 7.18 feet), from rating curve extended above 1,100 second-feet; minimum, 21 second-feet July 25 (gage height, 2.32 feet).
Maximum stage known, 12.09 feet during high water of February 1938, from floodmark.
Remarks.- Records good except those for period of ice effect, which are poor. Prior to Jan. 17, wire-weight gage read twice daily.

Rating table, Sept. 25, 1939, to Sept. 30, 1940, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used July 26 to Aug. 1, Aug. 30 to Sept. 30)

2.3	19	2.9	89	4.0	357	5.5	930
2.5	38	3.2	141	4.5	530	6.0	1,140
2.7	61	3.6	236	5.0	725		

Discharge, in second-feet, 1939-40

1939

Sept. 25	40	Sept. 28	40
26	40	29	45
27	40	30	48

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	49	47	31	45	50	112	114	42	45	38	256
2	45	50	47	29	44	52	103	160	41	42	61	169
3	45	47	59	27	44	54	112	178	41	40	55	88
4	46	48	56	26	45	56	105	137	37	39	55	77
5	46	47	49	*25	46	56	89	115	33	38	50	86
6	49	47	49	26	46	56	70	97	30	38	46	91
7	55	47	49	41	45	56	64	86	32	36	45	84
8	54	47	49	43	44	55	95	80	57	35	39	86
9	53	47	49	43	*43	54	95	71	56	35	36	83
10	51	49	47	43	43	52	78	64	45	38	33	77
11	51	49	49	46	44	50	103	59	47	62	33	71
12	54	49	45	46	45	48	84	51	143	51	34	68
13	62	48	45	48	46	70	73	48	110	45	38	65
14	62	47	46	51	46	105	66	47	105	40	40	62
15	65	47	*47	44	47	100	57	56	107	38	42	62
16	80	46	44	43	51	90	54	64	89	41	39	62
17	99	46	46	43	53	200	64	59	61	41	37	60
18	107	47	47	42	52	250	119	54	53	41	68	57
19	99	49	47	42	51	160	92	68	55	39	62	56
20	100	49	46	42	50	120	74	64	42	38	49	51
21	100	47	46	42	49	86	68	59	38	37	41	59
22	91	46	47	42	47	70	57	61	155	35	36	70
23	88	46	49	42	40	78	49	59	489	32	34	73
24	86	47	42	43	46	63	56	51	466	31	34	92
25	119	49	45	43	51	60	53	47	279	33	363	107
26	108	49	42	43	51	61	51	54	190	163	716	92
27	97	47	44	43	51	61	48	59	137	392	1,050	86
28	77	46	45	44	49	109	40	61	139	256	728	82
29	55	46	45	44	48	*356	45	60	99	213	766	78
30	47	47	21	44	-	176	120	53	54	300	605	76
31	49	-	27	45	-	139	-	47	-	171	480	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
September 25-30, 1939	253	48	40	42.2	0.227	0.05
October 1939	2,185	119	45	70.5	0.379	0.44
November	1,425	50	46	47.5	.255	.28
December	1,416	59	21	45.7	.246	.28
Calendar year	-	-	-	-	-	-
January 1940	1,256	51	25	40.5	.218	.25
February	1,362	53	40	47.0	.253	.27
March	2,993	356	48	96.5	.519	.60
April	2,296	120	40	76.5	.411	.46
May	2,283	178	47	73.6	.396	.46
June	3,272	489	30	109	.586	.65
July	2,485	392	31	80.2	.431	.50
August	5,803	1,050	33	187	1.01	1.16
September	2,526	256	51	84.2	.453	.51
Water year 1939-40	29,302	1,050	21	80.1	.431	5.86

Peak discharge.- Mar. 29 (9 a.m.) 434 sec.-ft.; June 23 (4 p.m.) 766 sec.-ft.; July 27 (4 a.m.) 548 sec.-ft.; Aug. 26 (9 p.m.) 1,660 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 14, 21, 22, Dec. 31 to Mar. 26.

Pecatonica River at Darlington, Wis.

Location.- Water-stage recorder, lat. 42°40'30", long. 90°06'55", in NE¼ sec. 1, T. 2 N., R. 3 E., in Darlington, 3 miles upstream from Otter Creek. Datum of gage is 866.12 feet above mean sea level (general adjustment of 1912). Prior to Dec. 19, staff gage at same site and datum.
Drainage area.- 274 square miles.
Records available.- September 1939 to September 1940.
Extremes.- Maximum discharge during period, 1,930 second-feet Aug. 27 (gage height, 11.0 feet); minimum, 41 second-feet July 24, 25 (gage height, 2.01 feet).
Remarks.- Records good except those for periods of ice effect or days of backwater from overbank vegetation, which are fair. Staff gage read twice daily Sept. 27 to Dec. 19.

Rating table, Sept. 27, 1939, to Sept. 30, 1940, except periods of ice effect or backwater from vegetation (gage height, in feet, and discharge, in second-feet)

2.0	41	3.0	176	6.0	801
2.2	48	3.5	278	7.0	1,040
2.4	68	4.0	380	8.0	1,290
2.7	117	5.0	586	9.0	1,560

Discharge, in second-feet, 1939-40

1939

Sept. 27	57	Sept. 29	55
28	54	30	58

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	60	64	43	49	57	164	75	53	45	90	166
2	54	57	71	42	50	56	140	63	51	44	87	152
3	54	57	64	42	50	57	132	61	50	44	84	140
4	54	55	57	42	51	62	128	56	48	44	c547	128
5	54	62	58	42	52	63	108	56	48	43	c275	119
6	54	60	60	42	52	62	94	56	47	43	132	112
7	52	60	58	42	52	75	96	64	46	42	96	108
8	54	60	57	42	53	87	121	87	51	42	81	103
9	57	58	56	43	54	87	108	79	51	42	74	99
10	64	75	57	44	54	97	99	78	61	42	72	96
11	61	76	55	47	54	96	134	69	66	c257	90	90
12	55	63	56	49	55	79	103	58	54	c190	96	87
13	55	60	55	51	55	72	89	57	53	6[illegible]	119	84
14	55	60	44	50	55	66	84	56	50	50	273	82
15	54	60	54	45	56	64	81	54	48	46	142	79
16	55	60	57	44	56	63	78	55	46	45	103	79
17	55	60	57	44	56	130	75	55	45	44	152	76
18	55	58	57	43	58	485	87	54	44	43	125	75
19	57	58	56	43	58	*713	87	108	46	43	85	76
20	56	57	*60	43	58	495	79	117	44	42	75	72
21	76	57	43	43	*57	223	71	76	43	42	69	69
22	69	56	50	43	57	132	68	68	44	42	66	68
23	60	55	55	43	56	121	67	63	125	42	63	69
24	58	55	52	43	56	101	67	60	79	42	63	97
25	67	62	52	43	56	85	63	67	56	51	c366	94
26	112	61	52	43	55	84	61	66	48	c398	c657	74
27	79	57	52	43	56	79	60	63	46	c1,410	c1,380	68
28	71	50	50	43	56	110	56	71	55	c489	c380	67
29	61	60	51	*44	57	918	61	69	50	146	262	64
30	62	62	48	45	-	796	87	61	46	158	213	63
31	62	-	44	48	-	225	-	55	-	115	184	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
September 27-30, 1939	224	58	54	56.0	0.205	0.01
October 1939	1,888	112	52	60.9	.222	.26
November	1,791	76	50	59.7	.218	.24
December	1,702	71	43	54.9	.200	.23
Calendar year	-	-	-	-	-	-
January 1940	1,364	51	42	44.0	.161	.19
February	1,584	84	49	54.6	.199	.21
March	5,840	918	56	188	.686	.79
April	2,748	164	56	91.6	.334	.37
May	2,077	117	54	67.0	.245	.28
June	1,594	125	43	53.1	.194	.22
July	4,187	1,410	42	135	.493	.57
August	6,501	1,380	63	210	.766	.88
September	2,756	166	63	91.9	.335	.37
Water year 1939-40	34,032	1,410	42	93.0	.339	4.61

Peak discharge.- Mar. 29 (11:30 p.m.) 1,450 sec.-ft.; July 11 (8:30 p.m.) 523 sec.-ft.; July 26 (9 p.m.) 1,500 sec.-ft.; Aug. 4 (5 p.m.) 964 sec.-ft.; Aug. 14 (10 a.m.) 390 sec.-ft.; Aug. 27 (6:30 a.m.) 1,930 sec.-ft.

* Winter discharge measurement made on this day.

c Backwater from vegetation; discharge computed on basis of gage-height record and two discharge measurements.

Note.- Stage-discharge relation affected by ice Jan. 17 to Feb. 14, Feb. 22-29.

Pecatonica River at Martintown, Wis.

Location.- Water-stage recorder, lat. 42°30'35", long. 89°48'00", in SE¼ sec. 32, T. 1 N., R. 6 E., in Martintown, 600 feet downstream from Wisconsin Power and Light Co. dam and power plant, three-eights of a mile upstream from Illinois-Wisconsin State line, and 9 miles downstream from Skinner Creek. Datum of gage is 757.9 feet above mean sea level (general adjustment of 1929). Prior to Jan. 6, 1940, wire-weight gage at same site and datum.

Drainage area.- 1,040 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 3,680 second-feet Aug. 26 (gage height, 13.11 feet); no flow Dec. 14 (result of regulation); minimum daily, 135 second-feet Dec. 30.

Remarks.- Records good except those for period of ice effect, which are fair. Diurnal fluctuation caused by power plant above station. Discharge for high stages computed from stage-discharge relation at Lattice Bridge near Browntown, 4¾ miles upstream. Gage read twice daily Oct. 6, 1939, to Jan. 5, 1940.

Cooperation.- Results of one discharge measurement furnished by Rock Island office of Corps of Engineers, U. S. Army.

Rating table, water year 1939-40, except period of ice effect (gage height in feet, and discharge, in second-feet)

1.0	26	1.7	90	2.6	215	3.6	453	4.8	791
1.2	40	2.0	121	2.9	275	4.0	560	5.2	915
1.4	60	2.3	164	3.2	350	4.4	673	5.4	978

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a240	248	257	168	220	260	945	300	229	208	453	716
2	a240	242	250	168	240	260	578	285	222	204	362	600
3	a235	242	275	155	235	265	492	261	211	200	350	519
4	a235	233	259	150	240	265	453	241	215	199	362	476
5	a230	252	259	140	245	270	427	239	210	184	658	456
6	228	257	261	138	247	280	388	235	199	186	673	401
7	233	248	241	137	248	290	362	231	184	192	350	388
8	226	239	233	145	250	320	401	270	213	186	273	375
9	233	244	237	155	250	315	440	298	210	189	254	362
10	241	280	252	180	245	310	414	292	222	186	246	350
11	231	268	248	185	250	320	427	295	233	435	252	328
12	248	280	244	190	250	310	440	252	241	673	252	325
13	248	248	254	195	250	290	388	248	226	536	275	312
14	228	259	187	195	250	270	350	235	222	242	362	300
15	226	239	250	190	250	260	325	229	217	198	673	300
16	239	224	257	140	250	280	312	229	208	202	393	295
17	254	244	254	155	250	310	300	231	197	195	347	292
18	233	248	248	190	255	430	325	233	193	192	533	266
19	220	239	257	209	259	720	362	254	364	190	498	285
20	219	239	252	210	259	1,000	350	328	250	187	300	268
21	244	239	252	211	*259	1,000	325	362	199	183	246	264
22	290	237	248	212	259	650	288	290	176	181	248	257
23	259	228	235	*213	257	440	278	242	738	173	233	246
24	237	226	278	212	255	390	275	231	869	177	229	325
25	252	233	231	211	240	350	275	316	401	188	414	362
26	261	233	242	210	245	330	250	268	252	478	e1,590	325
27	388	244	241	200	255	335	250	261	212	e1,320	e2,460	280
28	325	233	*203	197	260	362	248	261	427	e2,040	e2,520	248
29	257	244	180	197	260	506	244	278	592	e1,760	e2,520	257
30	252	242	135	197	-	e1,590	300	252	239	e970	e1,930	257
31	242	-	160	200	-	e1,650	-	241	-	720	978	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	7,694	388	219	248	0.238	0.27
November	7,332	280	224	244	.235	.26
December	7,380	278	135	238	.229	.26
Calendar year	-	-	-	-	-	-
January	5,655	213	137	182	.175	.20
February	7,233	260	220	249	.239	.26
March	14,628	1,650	260	472	.454	.52
April	11,212	945	244	374	.360	.40
May	8,188	362	229	264	.254	.29
June	8,571	869	176	286	.275	.31
July	13,174	2,040	173	425	.409	.47
August	21,234	2,520	229	685	.659	.76
September	10,437	716	246	348	.335	.37
Water year 1939-40	122,738	2,520	135	335	.322	4.37

Peak discharge.- June 23 (11:30 p.m.) 1,070 sec.-ft.; June 29 (5 a.m.) 761 sec.-ft.; July 28 (10 p.m.) 2,310 sec.-ft.; Aug. 26 (9 p.m.) 3,680 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of record for station at Freeport, Ill.

e Computed on basis of stage-discharge relation at Lattice Bridge near Browntown.

Note.- Stage-discharge relation affected by ice Dec. 28 to Mar. 27.

Pecatonica River at Freeport, Ill.

Location.- Water-stage recorder, lat. 42°18'13", long. 89°36'57" in SE¼ sec. 30, T. 27 N., R. 8 E., on property of Illinois Northern Utilities Co. at extension of North Adams Street in Freeport. Datum of gage is 743.18 feet above mean sea level (general adjustment of 1929).

Drainage area.- 1,330 square miles.

Records available.- September 1914 to September 1940.

Average discharge.- 26 years, 901 second-feet.

Extremes.- Maximum discharge during year, 3,080 second-feet Aug. 29 (gage height, 10.72 feet); minimum daily, 173 second-feet July 25.

1914-40: Maximum discharge observed, 18,400 second-feet Mar. 16, 1929 (gage height, 19.76 feet, site and datum then in use); minimum observed, 98 second-feet July 3, 1934 (gage height, 2.84 feet, site and datum then in use).

Remarks.- Records good. Some diurnal regulations caused by power plants above station.

Cooperation.- Results of one discharge measurement furnished by Corps of Engineers, U. S. Army.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.6	122	2.5	496	5.0	1,190	9.0	2,330
1.8	170	3.0	580	5.5	1,320	10.0	2,700
2.0	225	3.5	760	6.0	1,450	10.5	2,960
2.4	348	4.0	907	7.0	1,730	11.0	3,290
2.6	418	4.5	1,050	8.0	2,020		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	284	325	322	231	d260	322	1,400	393	290	293	790	1,240
2	284	322	345	234	d290	328	878	372	272	23[illegible]	464	820
3	284	312	351	219	318	332	620	351	263	228	393	658
4	290	309	351	205	312	328	530	325	245	225	422	580
5	278	306	328	f194	318	335	488	303	f248	219	426	530
6	278	309	322	f186	315	345	452	303	f242	205	711	488
7	272	318	*325	f181	312	355	426	300	217	203	538	452
8	275	325	325	f178	315	375	433	300	242	200	365	441
9	278	312	300	*f194	318	411	468	338	251	197	315	426
10	293	316	312	203	312	418	476	355	245	200	300	411
11	306	341	309	240	306	414	480	355	260	269	296	393
12	296	348	309	248	315	418	476	341	303	600	293	379
13	293	341	306	251	306	414	472	309	309	639	338	372
14	293	322	303	257	309	386	426	303	275	443	525	362
15	278	335	275	254	f306	362	404	284	260	272	639	355
16	272	306	275	242	f306	345	389	278	251	225	658	348
17	287	306	322	178	f309	365	389	278	234	222	414	345
18	300	309	322	205	f306	b400	393	278	217	214	418	338
19	266	312	312	266	309	b559	414	312	275	205	538	322
20	245	312	318	278	312	b907	422	348	422	200	464	332
21	263	309	284	278	309	b1,130	407	400	284	194	335	322
22	300	312	183	281	312	b1,130	379	396	214	183	290	318
23	332	306	254	281	315	*b878	355	332	497	184	303	309
24	315	306	260	d280	306	b580	348	296	1,160	178	281	325
25	309	309	312	d280	300	b517	341	293	820	173	284	422
26	325	318	290	d280	284	468	338	358	407	254	720	393
27	335	315	293	d280	296	433	315	328	309	730	2,370	358
28	445	312	275	d260	309	437	315	322	278	1,480	2,960	328
29	375	303	272	d260	315	509	328	318	600	1,880	3,080	303
30	345	306	231	d260	-	913	341	325	472	1,790	2,960	306
31	325	-	175	d260	-	1,510	-	300	-	1,370	2,110	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	9,321	445	245	301	0.226	0.26
November	9,481	348	303	316	.238	.27
December	9,161	351	175	296	.223	.26
Calendar year 1939	231,185	3,350	175	633	.476	6.48
January	7,444	281	178	240	.180	.21
February	8,900	318	260	307	.231	.25
March	16,624	1,510	322	536	.403	.46
April	13,903	1,400	315	463	.348	.39
May	10,094	400	278	326	.245	.28
June	10,362	1,160	214	345	.259	.29
July	13,907	1,880	173	449	.338	.39
August	25,000	3,080	281	806	.606	.70
September	12,976	1,240	303	433	.326	.36
Water year 1939-40	147,173	3,080	173	402	.302	4.12

* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.
d Gage-height record doubtful; discharge computed on basis of records for power plant at Martintown, Wis.
f Computed from partly estimated gage-height record.

Pecatonica River at Shirland, Ill.

Location.- Wire-weight gage, lat. 42°06'10", long. 89°11'50", in SW¼ sec. 11, T. 28 N., R. 11 E., at highway bridge over mouth of Sugar River half a mile south of Shirland, and 7½ miles upstream from mouth of Pecatonica River. Datum of gage is 711.78 feet above mean sea level (general adjustment of 1929, levels by Corps of Engineers, U. S. Army).

Drainage area.- 2,540 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 7,900 second-feet Aug. 28 (gage height, 13.54 feet); minimum observed, 350 second-feet Jan. 18; minimum gage height, 2.44 feet July 24.

Remarks.- Records fair. Gage read once daily except during freshets when it was read hourly.

Cooperation.- Gage-height record and results of six discharge measurements furnished by Corps of Engineers, U. S. Army.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Aug. 28

2.4	360	5.5	1,060
2.7	472	6.0	2,150
3.0	594	7.0	2,790
3.3	724	8.0	3,460
3.6	862	9.0	4,200
4.0	1,050	10.0	4,970
4.5	1,300	12.0	6,630
5.0	1,580	14.0	8,340

Aug. 29 to Sept. 30

3.2	577	5.5	1,770
3.6	760	6.0	2,070
4.0	960	7.0	2,720
4.5	1,210	8.0	3,430
5.0	1,480	9.0	4,180

Note.- Same as preceding table above 9.6 feet.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a520	680	636	400	650	750	2,150	724	636	1,150	2,460	5,370
2	a520	594	594	450	650	750	2,460	770	594	862	1,800	3,080
3	a520	636	594	450	650	750	1,970	770	552	724	1,150	2,720
4	a520	594	680	425	650	750	1,520	770	552	636	862	1,890
5	a520	594	680	400	650	750	1,250	724	512	594	770	1,540
6	512	594	594	400	650	750	1,200	680	472	594	770	1,320
7	492	552	636	375	650	750	1,050	636	492	552	862	1,210
8	472	552	636	375	650	800	1,000	636	492	512	954	1,110
9	492	594	636	375	650	850	1,000	636	492	512	770	1,010
10	512	594	594	400	650	900	1,050	636	512	552	636	960
11	512	594	594	450	650	900	1,050	724	512	552	594	910
12	512	594	594	500	650	900	1,100	724	492	594	552	860
13	512	636	594	500	650	900	1,100	680	552	862	594	810
14	552	636	552	500	650	850	1,050	680	594	1,000	1,100	810
15	552	636	552	500	650	800	954	636	636	908	1,910	760
16	552	594	552	500	650	750	908	594	512	680	1,860	760
17	512	594	552	500	650	750	816	594	453	512	1,520	760
18	512	594	594	350	650	850	862	552	453	472	1,910	665
19	512	594	594	400	650	1,100	862	636	954	434	1,200	665
20	552	594	594	500	650	1,470	862	680	816	434	1,000	665
21	552	636	594	550	650	*1,580	908	680	1,050	415	954	620
22	552	594	552	550	650	1,300	862	816	908	396	770	620
23	552	594	512	550	650	1,800	816	816	862	396	724	620
24	594	594	552	550	650	1,580	770	724	2,150	378	594	620
25	594	594	552	550	650	1,360	724	636	2,460	378	680	665
26	594	594	594	550	650	1,150	680	636	2,150	472	1,000	665
27	594	594	680	550	650	1,050	680	594	1,420	724	4,580	760
28	680	594	594	550	650	954	680	636	954	1,100	7,820	710
29	680	594	594	550	650	954	636	636	1,000	1,690	7,480	665
30	724	594	500	550	-	1,050	636	636	908	2,400	6,800	620
31	724	-	450	600	-	1,420	-	636	-	2,660	6,200	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	17,200	724	472	555	0.219	0.25
November	18,032	680	552	601	.237	.26
December	18,226	680	450	588	.231	.27
Calendar year	-	-	-	-	-	-
January	14,850	600	350	479	.189	.22
February	18,850	650	650	650	.256	.28
March	31,768	1,800	750	1,025	.404	.47
April	31,606	2,460	636	1,054	.415	.46
May	20,928	816	552	675	.266	.31
June	25,142	2,460	453	838	.330	.37
July	24,145	2,660	378	779	.307	.35
August	60,876	7,820	552	1,964	.773	.89
September	35,240	5,370	620	1,175	.463	.52
Water year 1939-40	316,863	7,820	350	866	.341	4.65

* Winter discharge measurement made on this date.
a No gage-height record; discharge computed on basis of records for station at Freeport.
Note.- Stage-discharge relation affected by ice Dec. 30 to Mar. 19.

East Branch of Pecatonica River near Blanchardville, Wis.

Location.- Water-stage recorder, lat. 42°47'10", long. 89°51'40", in SE¼ sec. 26, T. 4 N., R. 5 E., 1½ miles south of Blanchardville and 3½ miles upstream from Sawmill Creek. Datum of gage is 796.8 feet above mean sea level (unadjusted). Prior to Dec. 20, wire-weight gage at same site and datum.

Drainage area.- 221 square miles.

Records available.- September 1939 to September 1940.

Extremes.- Maximum discharge during period, 965 second-feet Aug. 27 (gage height, 9.76 feet); minimum (regulated), 24 second-feet Dec. 21 (gage height, 1.55 feet).

Remarks.- Records good except those for periods of ice effect and those for period when wire-weight gage was used, which are fair. Diurnal fluctuation caused by operation of Wisconsin Power & Light Co. plant at Blanchardville. Wire-weight gage read twice daily.

Daily discharge, in second-feet, 1939-40

1939

Sept. 28.....82
29.....70
30.....77

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	65	65	54	55	67	118	77	64	56	54	83
2	66	66	72	54	61	66	110	73	65	53	55	83
3	66	73	74	54	61	66	110	72	65	51	54	75
4	71	77	62	51	62	65	106	70	63	54	67	72
5	78	69	73	48	62	64	96	70	64	52	65	70
6	71	65	60	46	62	*63	89	70	63	50	52	68
7	67	63	67	45	62	64	89	74	65	50	52	69
8	67	78	87	46	62	67	103	82	68	50	48	66
9	73	66	66	50	62	69	96	74	66	51	51	67
10	68	82	63	55	60	70	89	74	67	50	50	63
11	70	73	54	56	63	70	110	68	69	102	52	62
12	70	78	60	58	65	69	94	68	67	82	52	63
13	68	64	80	60	66	67	87	65	66	54	55	62
14	55	63	51	59	66	66	84	66	65	52	60	62
15	74	64	81	45	66	64	84	65	63	52	54	60
16	67	62	68	51	67	67	80	63	62	50	66	59
17	73	65	70	54	67	74	83	66	60	49	80	59
18	74	71	73	57	67	110	91	68	62	48	57	60
19	70	72	66	56	68	212	90	94	62	47	50	61
20	68	60	68	55	68	164	83	87	58	45	53	60
21	81	61	60	55	68	107	77	73	59	46	54	60
22	66	78	80	55	66	88	80	69	57	44	50	59
23	66	65	73	*55	63	78	78	66	101	45	53	61
24	62	64	70	55	66	73	78	66	79	43	52	68
25	86	78	78	55	67	70	75	68	64	48	298	65
26	68	67	68	55	67	68	75	66	61	116	590	59
27	71	63	*72	53	67	70	75	67	62	422	631	60
28	68	81	67	52	67	83	75	71	60	84	174	58
29	61	78	70	52	67	*558	77	70	60	62	118	57
30	73	69	50	52	-	473	92	65	54	60	102	57
31	68	-	53	52	-	160	-	65	-	58	93	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,155	86	55	69.5	0.314	0.36
November	2,080	82	60	69.3	.314	.35
December	2,101	87	50	67.8	.307	.35
Calendar year	-	-	-	-	-	-
January	1,645	60	45	53.1	.240	.28
February	1,870	68	55	64.5	.292	.31
March	3,452	558	63	111	.502	.58
April	2,674	118	75	89.1	.403	.45
May	2,192	94	63	70.7	.320	.37
June	1,941	101	54	64.7	.293	.33
July	2,126	422	43	68.6	.310	.36
August	3,342	631	48	108	.489	.56
September	1,928	83	57	64.3	.291	.32
Water year 1939-40	27,506	631	43	75.2	.340	4.62

Peak discharge.- Mar. 29 (8:30 p.m.) 960 sec.-ft.; July 27 (10 a.m.) 550 sec.-ft.; Aug. 27 (2 a.m.) 965 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 22 to Mar. 18 and Mar. 23-27.

Sugar River near Brodhead, Wis.

Location.- Water-stage recorder, lat. 42°36'40", long. 89°23'50", in SW¼ sec. 26, T. 2 N., R. 9 E., at highway bridge 2 miles upstream from Jordan Creek and 2 miles southwest of Brodhead.

Drainage area.- 529 square miles.

Records available.- February 1914 to September 1940.

Average discharge.- 26 years, 352 second-feet.

Extremes.- Maximum discharge during year, 4,480 second-feet Aug. 26 (gage height, 7.80 feet); minimum, 67 second-feet July 23-25; minimum daily, 97 second-feet July 25.
1914-40: Maximum discharge, 13,000 second-feet Sept. 13, 1915 (gage height, 11.4 feet, from floodmarks), from rating curve extended above 7,500 second-feet; minimum observed, 45 second-feet Aug. 26, 1934.

Remarks.- Records good except those for period of ice effect or no gage-height record, which are fair. Considerable diurnal fluctuation caused by power plant at Brodhead.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Mar. 7-29, Aug. 1-24)

0.5	108	2.5	634	5.0	1,800
.8	156	3.0	852	6.0	2,460
1.2	247	3.5	1,070	7.0	3,400
1.6	353	4.0	1,300		
2.0	465	4.5	1,530		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	134	149	150	105	130	170	525	169	168	157	251	552
2	134	161	162	130	130	165	367	190	147	144	174	380
3	129	164	161	120	130	160	312	169	159	133	164	327
4	129	149	165	115	130	170	283	170	133	126	151	303
5	148	138	161	*115	130	165	258	153	130	138	165	296
6	144	147	147	115	135	170	222	166	134	115	152	267
7	143	140	146	115	135	178	159	162	136	131	143	257
8	143	141	157	120	*135	183	223	162	139	130	138	203
9	157	165	148	120	135	188	244	169	153	108	140	247
10	144	168	153	125	140	201	250	195	146	125	150	199
11	134	142	144	130	140	222	257	165	127	140	129	197
12	150	152	158	135	140	258	265	152	148	138	123	212
13	176	165	*139	140	145	240	249	166	163	157	195	187
14	146	158	151	140	145	205	199	163	133	138	359	193
15	123	146	142	135	150	209	196	155	101	145	321	177
16	139	142	152	125	150	173	182	160	124	132	217	196
17	127	149	144	125	156	176	171	139	122	124	171	163
18	128	166	166	120	160	250	177	163	155	122	172	201
19	141	146	145	125	160	335	207	156	321	115	179	180
20	162	161	138	125	160	391	220	202	352	110	167	185
21	158	154	a125	125	160	387	211	237	179	102	153	192
22	150	139	a130	125	160	338	208	171	154	106	150	150
23	160	156	a140	125	155	241	162	172	263	103	151	197
24	144	145	a145	125	150	216	159	168	468	103	155	203
25	144	153	a150	125	150	218	155	151	405	97	352	196
26	148	157	a150	125	150	227	154	141	182	137	1,860	174
27	226	149	140	125	150	*187	157	150	174	211	3,020	177
28	153	139	130	130	160	194	142	173	171	310	2,320	202
29	168	148	130	135	*165	254	148	172	167	365	1,870	155
30	166	148	125	130	-	376	199	141	152	462	1,180	181
31	157	-	120	130	-	496	-	168	-	392	807	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	4,605	226	123	149	0.282	0.33
November	4,537	168	138	151	.285	.32
December	4,514	166	120	146	.276	.32
Calendar year 1939	100,667	2,290	117	276	.522	7.09
January	3,880	140	105	125	.236	.27
February	4,235	165	130	146	.276	.30
March	7,343	496	160	237	.448	.52
April	6,661	525	142	222	.420	.47
May	5,170	237	139	167	.316	.36
June	5,506	468	101	184	.348	.39
July	5,016	462	97	162	.306	.35
August	15,679	3,020	123	506	.957	1.10
September	6,749	552	150	225	.425	.47
Water year 1939-40	73,896	3,020	97	202	.382	5.20

Peak discharge.- Aug. 26 (11 p.m.) 4,480 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for Kickapoo River at Steuben.
Note.- Stage-discharge relation affected by ice Dec. 27 to Mar. 6.

Kishwaukee River at Belvidere, Ill.

Location.- Wire-weight gage, lat. 42°15'35", long. 88°50'35", near southeast corner of NE¼SE¼ sec. 26, T. 44 N., R. 3 E., at State Street bridge in Belvidere, half a mile upstream from concrete dam control and 1¾ miles downstream from Piscasaw Creek. Datum of gage is 742.33 feet above sea level (general adjustment of 1929; Corps of Engineers, U. S. Army, bench mark).

Drainage area.- 525 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 1,000 second-feet June 19 (gage height, 9.94 feet), from rating curve extended above 700 second-feet; minimum observed, 14 second-feet Jan. 28.

Flood of March 1938 reached a stage of 16.7 feet, from information furnished by Illinois Division of Highways.

Remarks.- Records poor because of debris and incomplete record of gate openings of control. Gage read once daily.

Cooperation.- Results of three discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	63	65	78	34	23	78	195	140	176	169	120	146
2	63	51	75	27	21	99	189	258	176	140	73	e135
3	60	70	78	27	24	135	189	267	120	125	95	e128
4	60	85	70	30	23	210	189	443	111	111	88	e123
5	60	63	68	17	42	412	115	361	111	115	75	120
6	58	65	68	23	40	313	157	284	88	99	63	107
7	54	81	68	15	40	294	157	225	81	99	42	99
8	65	70	60	21	37	474	176	202	81	85	60	51
9	65	58	60	27	42	485	182	202	73	81	e58	111
10	60	54	35	28	51	370	182	163	63	81	49	81
11	58	70	56	40	27	303	182	169	60	95	60	73
12	63	73	58	34	47	284	182	125	107	107	58	60
13	58	65	49	37	51	189	88	99	88	70	73	70
14	58	65	23	49	54	95	95	107	65	60	65	60
15	54	63	51	d46	47	135	103	146	60	56	380	60
16	58	65	63	d47	54	182	78	125	44	49	78	51
17	56	65	60	28	54	275	e74	140	47	65	78	63
18	63	65	56	d18	51	551	182	125	210	73	75	56
19	63	68	42	d17	54	551	313	146	705	53	107	56
20	54	70	54	d16	63	496	202	120	650	51	85	49
21	60	d67	e48	18	63	370	163	225	361	51	73	49
22	58	d68	e54	18	63	258	99	258	169	40	68	49
23	51	d70	58	16	73	81	157	250	422	40	56	54
24	54	d71	32	18	60	92	125	218	705	49	60	63
25	313	d74	42	e18	40	111	92	195	443	40	95	63
26	189	d70	47	18	58	152	85	202	361	49	182	51
27	241	d69	39	19	58	130	85	225	195	85	152	54
28	189	d69	35	14	63	125	58	250	303	97	258	49
29	49	d70	56	18	68	189	81	225	241	73	225	47
30	111	d76	15	18	-	241	75	225	225	127	474	47
31	88	-	39	15	-	135	-	182	-	185	218	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,596	313	49	83.7	0.159	0.18
November	2,035	85	51	67.8	.129	.14
December	1,637	78	15	52.8	.101	.12
Calendar year	-	-	-	-	-	-
January	773	49	14	24.9	.047	.05
February	1,391	73	21	48.0	.091	.10
March	7,815	551	78	252	.480	.55
April	4,250	313	74	142	.270	.30
May	6,302	443	99	203	.387	.45
June	6,541	705	44	218	.415	.46
July	2,622	182	40	84.6	.161	.19
August	3,643	474	42	118	.225	.26
September	2,225	146	47	74.2	.141	.16
Water year 1939-40	41,830	705	14	114	.217	2.96

d Doubtful gage-height record; discharge computed on basis of records of Kishwaukee River near Perryville.

e Stage-discharge relation indefinite; discharge computed on basis of records of Kishwaukee River near Perryville.

Kishwaukee River near Perryville, Ill.

Location.- Water-stage recorder, lat. 42°11'45", long. 88°59'55", in northeast corner of sec. 21, T. 43 N., R. 2 E., at Forest Preserve road bridge, 1¼ miles downstream from South Branch, 2 miles southwest of Perryville, 7½ miles upstream from Kilbuck Creek, and 9½ miles upstream from mouth. Datum of gage is 692.13 feet above mean sea level (general adjustment of 1929). Prior to Apr. 30, wire-weight gage at same site and datum.

Drainage area.- 1,090 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 3,240 second-feet June 18 (gage height, 10.21 feet), from rating curve extended above 2,200 second-feet; minimum observed, 53 second-feet Jan. 20; minimum gage height, 5.18 feet Oct. 2.

Remarks.- Records good except those for periods of ice effect, which are fair. Prior to Apr. 30, gage read once daily.

Cooperation.- Results of one discharge measurement furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	103	154	123	76	81	125	276	357	301	256	170	385
2	85	148	133	70	72	146	267	399	270	229	133	324
3	97	137	133	72	78	265	279	590	245	209	125	273
4	95	133	129	62	89	960	292	680	219	193	135	232
5	91	133	125	68	91	*1,420	279	596	200	181	127	207
6	89	127	123	66	99	1,390	251	478	184	170	113	195
7	91	131	119	68	97	1,390	229	376	168	159	103	184
8	87	127	*121	*72	97	1,640	259	321	161	152	101	172
9	91	127	119	76	103	1,570	298	301	159	146	101	174
10	97	131	119	83	105	1,350	298	276	161	146	91	168
11	101	135	117	91	89	1,060	285	259	157	177	99	157
12	103	131	117	97	*99	569	276	237	184	184	134	150
13	103	129	115	93	91	417	256	224	193	163	148	144
14	97	125	107	119	78	219	235	219	174	146	351	135
15	101	121	105	107	91	367	229	222	152	137	601	133
16	99	115	117	91	93	381	217	229	140	131	237	129
17	95	115	115	76	99	536	202	224	129	123	170	125
18	97	123	115	59	101	1,140	357	222	1,060	125	155	121
19	99	117	113	59	105	1,100	715	240	2,010	125	190	115
20	101	119	109	53	107	*785	576	259	995	117	168	111
21	111	117	107	66	109	562	408	346	529	111	146	109
22	105	113	121	68	111	353	331	399	331	103	137	103
23	107	115	125	*68	103	174	285	428	1,400	99	131	103
24	107	117	113	70	111	202	262	357	1,830	93	129	109
25	304	123	103	68	109	217	240	304	1,280	85	148	109
26	404	117	107	68	*121	276	222	288	806	91	354	107
27	523	115	109	68	111	242	207	357	510	142	556	105
28	321	115	115	68	107	224	186	450	545	174	1,030	103
29	219	117	115	72	117	237	188	450	372	131	960	101
30	184	121	107	76	-	335	232	390	298	159	960	99
31	159	-	68	80	-	304	-	335	-	212	536	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	4,466	523	85	144	0.132	0.15
November	3,748	154	113	125	.115	.13
December	3,564	133	68	115	.106	.12
Calendar year	-	-	-	-	-	-
January	2,330	119	53	75.2	.069	.08
February	2,864	121	72	98.8	.091	.10
March	19,946	1,640	125	643	.590	.68
April	8,637	715	186	288	.264	.29
May	10,613	680	219	349	.320	.37
June	15,163	2,010	129	505	.463	.52
July	4,669	256	85	151	.139	.16
August	8,549	1,030	91	276	.253	.29
September	4,682	385	99	156	.143	.16
Water year 1939-40	89,431	2,010	53	244	.224	3.05

Peak discharge.- June 18 (11:30 p.m.) 3,240 sec.-ft.; June 23 (12 p.m.) 2,200 sec.-ft.; Aug. 15 (2 a.m.) 1,240 sec.-ft.; Aug. 28 (10 a.m.) 1,350 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 22-24 and Dec. 28 to Mar. 1.

South Branch of Kishwaukee River near Fairdale, Ill.

Location.- Water-stage recorder, lat. 42°06'40", long. 88°54'00", on line between and near south boundary of secs. 16 and 17, T. 42 N., R. 3 E., 1.2 miles downstream from Owens Creek, 1¾ miles northeast of Fairdale, 9½ miles upstream from mouth. Prior to May 1, wire-weight gage at same site and datum.

Drainage area.- 386 square miles.

Records available.- November 1939 to September 1940.

Extremes.- Maximum discharge observed during period, 1,350 second-feet Mar. 8 (gage height, 6.67 feet, affected by ice, from rating curve extended above 211 second-feet; minimum observed, 2.1 second-feet Jan. 20.

A stage of 11.9 feet occurred in March 1937 according to information furnished by local resident.

Remarks.- Records good except those for periods of ice effect, which are fair. Prior to May 1 gage read twice daily.

Cooperation.- Results of one discharge measurement furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		-	20	8.1	32	30	32	56	90	54	11	72
2		-	20	7.1	25	56	36	109	78	43	9.1	51
3		-	20	7.1	21	408	56	197	69	36	9.1	39
4		-	18	8.1	23	*826	62	207	59	32	10	30
5		-	20	7.1	21	1,100	51	161	51	28	9.1	26
5		-	18	5.4	20	933	41	128	43	25	8.1	21
7		-	16	5.4	17	966	46	109	39	23	8.1	20
8		-	*18	*6.2	11	1,000	54	93	36	21	7.1	18
9		-	18	5.4	13	933	67	81	39	21	8.1	17
10		-	18	5.4	14	640	72	75	46	25	9.1	15
11		-	17	4.1	13	468	36	67	39	32	9.1	15
12		-	18	5.4	*11	230	62	62	41	25	15	14
13		-	15	5.4	9.1	353	51	56	43	20	23	13
14		-	25	5.2	9.1	302	49	54	39	20	41	13
15		-	15	4.7	10	258	36	59	32	17	78	11
16		-	15	8.1	9.1	312	39	56	28	15	56	11
17		-	17	5.4	10	364	32	54	27	15	34	11
18		-	18	5.4	10	*317	34	51	32	17	30	10
19		-	16	3.5	7.1	109	292	54	402	15	25	10
20		-	18	3.0	9.1	78	292	59	263	14	20	10
21		-	20	3.5	9.1	64	188	75	139	14	17	9.1
22		-	25	*4.7	10	39	102	135	93	11	15	8.1
23		-	17	4.7	43	46	84	128	762	11	14	9.1
24		-	21	4.7	21	54	67	102	652	10	13	11
25		-	20	4.7	11	59	62	87	353	9.1	17	11
26		17	25	5.4	16	59	51	84	197	10	17	10
27		*17	25	6.2	*18	39	41	109	128	14	78	9.1
28		15	36	6.2	10	36	36	148	109	15	468	9.1
29		17	34	7.1	14	51	32	148	81	15	307	9.1
30		17	32	8.1	-	49	34	125	62	15	197	8.1
31		-	10	20	-	51	-	105	-	13	105	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	-	-	-	-	-	-
November 26-30	83	17	15	16.6	0.043	0.008
December	629	36	10	20.3	.053	.06
Calendar year	-	-	-	-	-	-
January	191.8	20	3.0	6.19	.016	.02
February	448.6	43	7.1	15.5	.040	.04
March	10,250	1,100	30	331	.858	.99
April	2,137	292	32	71.2	.184	.21
May	3,034	207	51	97.9	.254	.29
June	4,072	762	27	136	.352	.39
July	635.1	54	9.1	20.5	.053	.06
August	1,667.9	458	7.1	53.8	.139	.16
September	519.7	72	8.1	17.3	.045	.05
Water year	-	-	-	-	-	-

Peak discharge.- June 23 (12 m.) 1,320 sec.-ft.; Aug. 31 (4 a.m.) 1,280 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 21-26 and Dec. 29 to Mar. 26.

Kilbuck Creek near Monroe Center, Ill.

Location.- Water-stage recorder, lat. 42°05'55", long. 89°03'10", in SW¼ sec. 19, T. 42 N., R. 2 E., 800 feet downstream from Chicago, Milwaukee and St. Paul R. R. bridge, 800 feet upstream from bridge on State Highway No. 72, 3 miles west of Monroe Center and 8 miles upstream from mouth. Prior to May 1, staff gage at same site and datum.

Drainage area.- 114 square miles.

Records available.- December 1939 to September 1940.

Extremes.- Maximum discharge observed during period, 623 second-feet Mar. 4 (gage height, 4.46 feet, affected by ice), from rating curve extended above 340 second-feet; minimum, 2.0 second-feet July 25; minimum gage height observed, 0.24 feet Dec. 20.

Remarks.- Records good except those for period of ice effect, which are fair. Prior to May 1, gage read twice daily.

Cooperation.- Results of one discharge measurement furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			-	*2.9	4.8	5.0	12	11	7.1	6.8	2.9	25
2			-	3.1	4.8	6.8	22	16	6.4	5.9	2.4	18
3			-	3.5	5.0	306	21	17	5.3	5.0	2.9	14
4			-	3.5	5.3	*408	16	14	5.0	4.5	3.1	10
5			-	3.3	5.0	255	13	11	4.8	4.0	2.9	9.3
6			-	2.8	4.8	167	10	10	4.5	3.5	2.6	7.5
7			-	3.1	4.2	366	13	9.3	4.8	3.5	2.4	6.8
8			-	3.7	4.8	357	20	8.6	5.0	3.3	2.8	6.1
9			-	3.5	*5.0	264	18	8.6	4.8	20	2.8	6.1
10			-	3.3	4.2	151	16	7.8	4.8	9.3	2.9	5.6
11			-	*3.5	4.2	88	17	8.6	5.0	5.3	3.5	5.3
12			-	3.3	5.0	44	8.2	7.1	8.2	4.0	4.0	a4.9
13			5.9	3.5	6.1	47	12	6.4	6.4	3.5	40	a4.5
14			7.5	4.0	6.1	57	10	6.4	5.3	3.1	106	a4.5
15			4.8	5.3	5.9	30	12	6.4	5.0	2.9	49	a4.4
16			*5.3	4.8	5.0	32	9.3	7.1	4.8	2.9	18	a4.4
17			5.3	4.5	4.8	81	12	7.8	4.5	2.9	9.6	a4.4
18			4.8	4.2	4.8	*167	28	6.4	8.6	3.5	22	a4.2
19			4.8	3.7	4.0	38	24	7.8	77	3.1	16	a4.3
20			3.5	4.0	3.7	24	19	7.1	31	2.8	9.6	a4.3
21			5.9	3.7	3.7	19	15	9.3	16	2.6	7.5	a4.2
22			4.8	3.7	5.3	20	12	16	10	2.6	6.4	a3.8
23			4.8	3.5	4.2	20	10	14	182	2.4	5.6	a4.0
24			5.6	3.5	5.9	15	10	9.6	110	2.4	5.9	5.0
25			5.3	3.5	5.9	17	8.6	7.8	44	2.0	6.8	4.5
26			4.5	3.3	5.9	8.6	7.8	8.6	25	2.9	6.8	4.2
27			5.9	3.1	*5.3	9.6	7.1	9.3	17	4.8	50	4.2
28			9.6	2.9	5.0	10	6.4	a14	14	3.1	272	4.0
29			8.2	3.1	4.8	15	6.8	14	9.6	2.8	150	4.0
30			3.7	3.3	-	12	6.8	10	7.5	5.0	71	3.7
31			3.5	4.0	-	14	-	8.2	-	4.2	38	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	-	-	-	-	-	-
November	-	-	-	-	-	-
December 13-31	103.7	9.6	3.5	5.46	0.048	0.03
Calendar year	-	-	-	-	-	-
January	111.1	5.3	2.8	3.58	.031	.04
February	143.5	6.1	3.7	4.95	.043	.05
March	3,054.0	408	5.0	98.5	.864	1.00
April	403.0	28	6.4	13.4	.118	.13
May	305.2	17	6.4	9.85	.086	.10
June	643.4	182	4.5	21.4	.188	.21
July	134.6	20	2.0	4.34	.038	.04
August	925.4	272	2.4	29.9	.262	.30
September	195.2	25	3.7	6.51	.057	.06
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for South Branch of Kishwaukee River near Fairdale.
Note.- Stage-discharge relation affected by ice Dec. 31 to Mar. 4.

Leaf River near Leaf River, Ill.

Location.- Wire-weight gage, lat. 42°07'35", long. 89°23'25", in northwest corner sec. 31, T. 25 N., R. 10 E., at highway bridge a quarter of a mile upstream from unnamed tributary which enters from left, half a mile downstream from Chicago, Milwaukee and St. Paul R. R. bridge, three-quarters of a mile east of Leaf River and 1¼ miles downstream from Mud Creek.

Drainage area.- 102 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 2,160 second-feet June 23 (gage height, 11.85 feet); minimum observed, 7.6 second-feet Jan. 5.
Maximum stage known, about 15.9 feet Feb. 4, 1938, according to information furnished by local residents.

Remarks.- Records fair. Gage read once daily, more often during floods.

Cooperation.- Gage-height record and results of four discharge measurements furnished by Corps of Engineers, U. S. Army.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to June 12				June 13 to Sept. 30					
2.3	4.5	3.5	74	2.4	10.0	4.0	133	7.0	600
2.4	8.0	4.0	120	2.5	15.8	4.5	184	8.0	840
2.6	17.0	4.4	165	2.6	22	5.0	241	9.0	1,090
2.8	27	4.7	201	3.0	50	5.5	310	10	1,390
3.0	39			3.5	89	6.0	391	12	2,230

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14.1	15.6	*19.0	8.4	12.2	12.7	21	20	18.0	26	17.0	28
2	14.6	15.1	18.5	8.4	11.8	13.2	29	20	17.5	26	16.8	24
3	14.1	15.1	17.0	8.4	11.8	19.0	27	17.5	17.5	22	13.5	18.9
4	13.6	15.1	16.5	9.3	12.7	16.0	25	16.0	15.1	13.5	22	21
5	13.6	14.6	16.5	7.6	11.8	15.6	20	16.0	14.6	12.9	13.5	20
6	12.7	14.6	14.6	*9.3	10.9	*15.1	18.0	15.6	14.6	18.9	11.2	18.9
7	13.6	16.0	13.6	9.3	10.9	20	19.5	15.1	13.2	17.0	10.6	21
8	13.2	15.1	13.6	10.5	10.5	22	35	15.1	22	16.4	11.2	18.9
9	14.1	15.1	14.1	9.7	*13.2	23	28	15.1	12.7	15.8	11.2	21
10	13.6	18.0	14.6	9.3	10.9	22	22	14.6	10.5	30	10.6	17.7
11	13.2	16.0	13.6	9.3	10.9	28	29	16.0	12.2	26	11.2	13.5
12	12.7	16.0	*13.6	8.0	13.2	27	22	14.6	133	23	11.2	17.7
13	13.6	15.6	14.1	8.4	10.1	43	22	14.1	30	18.9	29	17.0
14	12.7	15.1	11.8	8.8	10.9	51	20	12.7	22	16.4	742	14.6
15	13.2	14.6	14.1	8.8	12.7	33	20	12.7	17.0	16.4	92	15.2
16	13.2	15.1	14.6	10.5	14.6	26	18.0	12.2	15.8	15.8	36	14.6
17	13.2	15.6	15.1	10.5	11.4	36	16.0	13.6	16.4	11.2	20	14.1
18	14.1	15.6	15.1	9.7	11.8	195	41	13.2	12.9	12.9	124	15.2
19	14.1	15.1	14.6	11.8	12.2	*65	29	19.0	44	10.6	17.0	14.6
20	13.6	15.1	14.1	13.6	11.8	48	23	15.1	18.3	12.9	23	14.1
21	15.6	15.6	38	*12.7	11.4	38	21	67	11.2	11.2	21	14.1
22	14.1	15.1	17.5	13.6	10.1	16.5	19.5	27	12.9	10.0	19.5	13.5
23	13.2	15.1	12.2	13.6	10.5	37	18.5	19.5	1,000	10.6	17.0	12.9
24	15.6	17.0	22	12.2	10.9	37	17.5	17.5	120	10.6	18.3	26
25	78	16.0	12.2	11.4	14.1	24	16.5	121	67	10.6	23	17.0
26	23	15.6	13.2	11.4	15.1	17.0	15.6	48	47	194	21	14.6
27	59	15.1	12.7	14.6	*11.4	20	14.6	31	37	47	76	14.1
28	21	14.1	17.5	14.6	12.2	19.5	13.6	45	349	23	200	12.9
29	17.0	16.0	11.4	15.6	13.2	35	14.6	28	54	16.4	94	13.5
30	16.0	17.0	33	14.6	-	37	24	25	36	577	36	14.6
31	16.0	-	11.8	11.8	-	26	-	22	-	30	33	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	559.3	78	12.7	18.0	0.176	0.20
November	464.7	18.0	14.1	15.5	.152	.17
December	500.2	38	11.4	16.1	.158	.18
Calendar year	-	-	-	-	-	-
January	335.7	15.6	7.6	10.8	.106	.12
February	345.2	15.1	10.1	11.9	.117	.13
March	1,037.6	195	12.7	33.5	.328	.38
April	659.9	41	13.6	22.0	.216	.24
May	759.2	121	12.2	24.5	.240	.28
June	2,211.4	1,000	10.5	73.7	.723	.81
July	1,293.0	577	10.0	41.7	.409	.47
August	1,800.8	742	10.6	58.1	.570	.66
September	513.2	28	12.9	17.1	.168	.19
Water year 1939-40	10,480.2	1,000	7.6	28.6	.280	3.83

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Jan. 1 to Feb. 4.

Kyte River near Flagg Center, Ill.

Location.- Wire-weight gage, lat. 41°56', long. 89°09', in sec. 18, T. 40 N., R. 1 E., at bridge on county highway 2 miles west of Flagg Center and 3 miles downstream from the Chicago and Northwestern R. R. bridge.

Drainage area.- 125 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 1,110 second-feet Mar. 4 (gage height, 4.84 feet), from rating curve extended above 50 second-feet; minimum observed, 1.8 second-feet Jan. 2.

Flood of February 1939 reached a stage of about 8.5 feet, according to information furnished by local residents.

Remarks.- Records good except those above 100 second-feet, which are poor. Gage read once daily.

Cooperation.- Gage-height record and results of three discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.0	e6	6.2	2.2	*2.6	3.2	12	9.0	7.0	7.4	3.e	39
2	2.4	e6	6.2	1.8	4.3	38	11	17	5.5	5.2	3.8	29
3	3.S	e5	5.5	2.0	4.9	640	11	e.6	5.2	6.2	10	18
4	4.0	e5	4.6	2.4	3.5	1,110	10	9.5	5.5	5.2	2.S	16
5	5.5	e5	4.6	2.S	3.0	418	9.0	10	5.5	4.9	2.6	12
6	5.5	e5	4.9	2.4	3.0	S0	8.6	7.8	5.9	4.3	2.2	12
7	6.2	5.2	4.9	2.6	3.2	*335	9.5	12	7.4	4.9	2.6	11
8	6.6	5.5	4.9	3.0	3.5	216	15	8.6	8.2	4.3	2.6	7.4
9	6.2	5.9	4.6	3.2	3.0	96	14	S.2	5.9	5.9	2.S	10
10	8.2	S.2	4.6	3.2	3.2	41	11	8.2	5.5	7.8	3.5	9.0
11	7.8	7.8	4.0	*3.8	3.5	10	11	7.0	7.4	6.6	3.8	7.4
12	6.6	5.9	4.6	4.0	2.S	9.0	7.0	5.9	11	4.9	3.0	6.2
13	7.4	6.2	4.3	3.8	2.6	17	8.2	6.2	8.2	4.0	152	6.6
14	7.0	5.5	3.S	4.0	3.2	17	8.6	6.2	7.4	4.0	335	6.6
15	7.0	7.0	4.9	5.5	3.2	15	9.5	6.2	7.4	4.3	104	5.9
16	5.9	6.2	5.2	4.6	3.5	14	8.6	6.2	7.4	4.9	14	5.2
17	5.9	6.6	4.9	4.0	3.5	27	6.6	6.2	7.4	4.9	7.S	6.2
18	5.5	7.0	4.6	3.2	3.8	*38	21	5.2	9.0	5.2	26	7.0
19	5.2	5.5	4.6	3.0	3.5	15	17	7.8	231	6.2	35	4.6
20	5.5	5.9	4.9	3.5	3.5	17	14	7.4	6.6	6.2	16	5.2
21	5.9	5.9	5.2	3.S	3.5	14	10	9.5	11	5.2	9.5	4.9
22	5.2	5.9	4.3	2.8	3.2	7.8	S.6	13	9.5	5.5	9.0	4.9
23	4.6	5.5	3.5	2.6	3.2	11	10	12	64	5.5	7.4	4.6
24	4.6	5.5	3.5	2.6	*3.8	11	7.8	9.5	131	5.9	7.0	6.2
25	S.6	5.9	3.2	3.0	2.8	11	8.2	8.6	34	4.9	8.2	4.6
26	6.2	5.5	3.2	4.0	2.S	10	7.8	11	20	6.6	7.4	4.9
27	16	4.6	3.5	4.3	2.8	12	5.9	10	14	7.8	12	4.9
28	e11	4.3	3.5	2.8	3.0	10	7.0	10	12	4.3	960	4.6
29	e8	5.5	3.8	2.6	3.2	11	5.5	9.5	9.5	3.8	585	4.0
30	e7	5.2	4.0	2.6	-	12	7.0	8.2	8.6	4.0	202	4.9
31	e6	-	2.8	2.6	-	12	-	7.4	-	4.3	78	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	198.3	16	2.4	6.40	0.051	0.06
November	174.2	8.2	4.3	5.81	.046	.05
December	137.3	6.2	2.8	4.43	.035	.04
Calendar year	-	-	-	-	-	-
January	98.7	5.5	1.8	3.18	.025	.03
February	95.6	4.9	2.6	3.30	.026	.03
March	3,278.0	1,110	3.2	106	.848	.98
April	300.4	21	5.5	10.0	.080	.09
May	271.9	17	5.2	8.77	.070	.08
June	678.0	231	5.2	22.6	.181	.20
July	165.1	7.8	3.8	5.33	.043	.05
August	2,618.8	960	2.2	84.5	.676	.78
September	272.8	39	4.0	9.09	.073	.08
Water year 1939-40	8,289.1	1,110	1.8	22.6	.181	2.47

* Winter discharge measurement made on this day.
e Computed on basis of records for Kishwaukee River near Perryville.
Note.- Stage-discharge relation affected by ice Jan. 3 to Mar. 18.

Elkhorn Creek near Penrose, Ill.

Location.- Water-stage recorder, lat. 41°55', long. 89°42', in sec. 9, T. 22 N., R. 7 E., at county highway bridge, 1½ miles downstream from unnamed creek which enters from the left, 2 miles northwest of Penrose, and 5 miles upstream from Sugar Creek. Prior to Nov. 27, 1939, staff gage at same site but at datum 1.98 feet lower. Nov. 27, 1939, to Apr. 5, 1940, staff gage at same site and present datum.

Drainage area.- 153 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 425 second-feet June 23 (gage height, 5.75 feet), from rating curve extended above 50 second-feet; minimum observed, 10 second-feet Dec. 30 (gage height, 2.16 feet).

Remarks.- Records good below 50 second-feet, poor above 100 second-feet. Prior to Apr. 6, 1940, gage read twice daily.

Cooperation.- Results of one discharge measurement furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a23	24	26	21	31	26	35	34	22	27	19	21
2	a23	27	25	18	29	37	40	33	22	25	15	19
3	a23	25	22	19	29	115	42	31	20	24	16	19
4	a22	25	22	19	26	68	40	28	20	22	18	17
5	22	22	22	19	26	57	34	27	19	21	19	18
6	22	26	22	20	*19	48	33	28	19	20	15	16
7	24	26	23	20	18	76	37	26	19	19	15	18
8	23	26	20	21	19	73	47	25	20	19	14	17
9	26	26	22	21	29	65	42	25	19	19	15	18
10	25	29	*21	20	29	51	39	26	44	19	20	18
11	26	27	21	20	25	42	40	27	26	20	17	17
12	26	24	19	20	18	51	37	26	43	20	23	16
13	26	26	19	*20	18	35	35	25	35	19	38	16
14	25	24	19	21	19	*48	34	25	26	17	37	16
15	26	23	18	26	*21	47	33	25	22	17	32	16
16	21	25	21	28	21	32	32	24	21	18	20	16
17	23	25	21	25	21	70	36	23	21	16	20	16
18	26	25	21	28	22	150	46	24	24	17	20	17
19	23	25	21	31	23	79	43	27	28	18	19	16
20	26	25	20	33	21	54	37	27	27	16	18	14
21	30	26	21	33	21	47	34	25	21	15	16	15
22	25	25	31	33	25	39	33	26	20	15	16	16
23	25	22	18	33	24	36	32	25	246	14	16	16
24	24	25	18	33	25	37	31	23	144	15	17	18
25	30	24	18	33	36	36	30	21	50	14	18	18
26	44	23	19	33	21	37	29	24	37	17	22	18
27	34	23	21	35	22	34	27	25	33	26	74	17
28	34	21	21	35	*22	*34	26	24	93	18	85	18
29	30	21	21	36	24	40	44	23	64	16	45	16
30	27	24	15	33	-	43	43	22	32	22	24	16
31	26	-	30	35	-	37	-	22	-	30	21	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	810	44	21	26.1	0.171	0.20
November	739	29	21	24.6	.161	.18
December	658	31	15	21.2	.139	.16
Calendar year	-	-	-	-	-	-
January	822	36	18	26.5	.173	.20
February	684	36	18	23.6	.154	.17
March	1,644	150	26	53.0	.346	.40
April	1,091	47	26	36.4	.238	.27
May	796	34	21	25.7	.168	.19
June	1,237	246	19	41.2	.269	.30
July	595	30	14	19.2	.125	.14
August	764	85	14	24.6	.161	.19
September	509	21	14	17.0	.111	.12
Water year 1939-40	10,349	246	14	28.3	.185	2.52

Peak discharge.- June 23 (4 p.m.) 425 sec.-ft.; June 28 (8:30 a.m.) 171 sec.-ft.; Aug. 27 (8 p.m.) 171 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for Leaf River at Leaf River.

Note.- Stage-discharge relation affected by ice Jan. 6 to Feb. 21.

Rock Creek near Coleta, Ill.

Location.- Water-stage recorder, lat. 41°55'00", long. 89°52'50", in NE¼NE¼ sec. 11, T. 22 N., R. 5 E., at county highway bridge, 1 mile upstream from mouth of unnamed tributary which enters from left, 2 miles downstream from Otter Creek, and 5 miles west of Coleta. Datum of gage is 657.99 feet above mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army). Prior to May 14, wire-weight gage at same site and datum.

Drainage area.- 81.6 square miles.

Records available.- December 1939 to September 1940.

Extremes.- Maximum discharge during period, 315 second-feet June 23 (gage height, 7.93 feet); minimum, 3.8 second-feet Sept. 20.

Remarks.- Records fair except those above 80 second-feet, which are poor. Prior to May 14, gage read twice daily.

Cooperation.- Results of two discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			9.1	5.4	5.5	*8.6	16.2	12.7	8.6	12.0	6.4	5.7
2			9.1	5.5	5.7	9.0	28	13.0	7.9	11.0	5.7	5.4
3			8.3	6.1	5.4	17.6	26	11.6	7.3	9.8	5.7	5.1
4			7.6	7.6	5.7	28	28	10.1	6.7	9.1	6.5	5.1
5			7.9	7.5	5.7	30	18.0	10.2	6.7	8.4	5.9	5.0
6			7.5	7.5	5.7	27	15.4	18.6	6.5	7.5	5.2	4.9
7			8.0	7.5	5.5	29	15.1	9.4	6.2	7.0	4.9	4.9
8			7.5	7.5	5.8	30	38	9.1	6.1	6.8	4.9	4.9
9			8.0	7.4	5.5	30	28	8.8	5.8	6.4	6.5	6.7
10			8.0	7.4	6.4	25	23	11.1	6.5	6.2	13.4	6.5
11			7.8	6.6	5.7	24	34	10.8	6.7	6.9	6.9	5.2
12			7.8	7.9	6.1	21	23	7.6	49	6.8	65	4.6
13			7.8	7.6	6.9	*21	20	6.8	37	5.8	91	4.5
14			7.5	8.3	6.7	19.0	18.4	7.6	9.7	5.4	29	4.5
15			8.0	7.5	6.9	16.2	17.6	7.5	7.6	5.3	15.4	4.4
16			7.8	6.4	*7.5	15.8	16.2	7.9	6.6	5.1	9.7	4.5
17			8.0	5.4	8.1	50	18.8	7.9	6.1	4.9	10.5	4.5
18			7.5	5.4	8.7	67	44	8.0	6.8	5.0	52	4.4
19			*7.4	5.4	9.3	67	28	10.4	32	5.1	10.5	4.2
20			7.5	5.4	9.5	42	21	10.2	10.8	4.8	7.5	4.0
21			7.8	5.5	8.8	28	17.4	8.7	5.9	4.6	6.7	4.0
22			6.4	5.5	7.9	21	16.2	10.2	5.4	4.6	5.9	4.0
23			6.6	5.5	7.0	19.0	14.7	9.3	162	4.7	5.5	4.0
24			7.0	5.5	6.8	24	14.4	8.8	264	4.7	5.7	4.9
25			6.8	5.7	5.8	19.2	13.0	8.6	118	4.5	6.5	6.7
26			7.5	5.7	5.4	15.1	12.2	10.0	42	10.8	7.4	5.0
27			7.8	*5.7	6.0	14.4	11.1	10.8	27	40	19.7	4.4
28			7.2	5.5	6.7	*16.2	10.7	10.5	55	8.3	43	4.4
29			7.3	5.5	7.5	26	12.2	9.8	36	6.0	23	4.3
30			5.1	5.5	-	22	16.9	9.3	15.3	18.8	14.2	4.1
31			4.6	5.8	-	17.2	-	10.0	-	8.3	6.4	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	-	-	-	-	-	-
November	-	-	-	-	-	-
December	232.2	9.1	4.6	7.49	0.092	0.11
Calendar year	-	-	-	-	-	-
January	196.7	8.3	5.4	6.35	.078	.09
February	194.2	9.5	5.4	6.70	.082	.09
March	799.3	67	8.6	25.8	.316	.36
April	615.5	44	10.7	20.5	.251	.28
May	305.3	18.6	6.8	9.85	.121	.14
June	971.2	264	5.4	32.4	.397	.44
July	255.5	40	4.5	8.24	.101	.12
August	506.6	91	4.9	16.3	.200	.23
September	144.8	6.7	4.0	4.83	.059	.07
Water year	-	-	-	-	-	-

Peak discharge.- June 12 (12 p.m.) 81 sec.-ft.; June 23 (12 p.m.) 315 sec.-ft.; June 28 (6 p.m.) 91 sec.-ft.; July 27 (4 a.m.) 87 sec.-ft.; Aug. 13 (6 a.m.) 128 sec.-ft.; Aug. 18 (9:30 a.m.) 97 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Jan. 5 to Mar. 18.

Rock Creek at Morrison, Ill.

Location.- Water-stage recorder, lat. 41°47'50", long. 89°58'20", in NW¼ sec. 19, T. 21 N., R. 5 E., at highway bridge 0.15 mile upstream from French Creek, three-quarters of a mile southwest of Morrison, and 7½ miles downstream from Little Rock Creek. Datum of gage is 606.91 feet above mean sea level (general adjustment of 1929; Illinois Division of Waterways bench mark).

Drainage area.- 169 square miles.

Records available.- March to September 1940.

Extremes.- Maximum discharge during period, 876 second-feet Aug. 13 (gage height, 12.58 feet); minimum, 9.3 second-feet (regulated) Sept. 21.

Remarks.- Records good. Diurnal fluctuation below 150 second-feet caused by mills above station.

Cooperation.- Results of two discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	41	34	24	30	15.7	16.4
2						-	40	32	22	27	13.9	16.4
3						-	57	30	20.6	24	13.6	15.0
4						-	54	27	20.2	23	12.2	14.3
5						-	44	26	19.8	22	12.6	14.3
6						-	37	26	20.2	21	11.9	13.9
7						144	43	25	18.3	19.8	10.9	14.3
8						129	63	25	17.9	19.4	11.3	13.6
9						141	61	27	19.4	18.3	21	19.8
10						123	50	27	21	18.3	44	19.8
11						96	58	30	23	19.8	19.4	14.6
12						66	53	27	44	18.7	263	13.9
13						62	43	25	77	17.5	596	12.9
14						54	39	24	36	15.9	118	12.9
15						48	37	23	24	15.9	49	11.9
16						45	33	25	22	15.9	32	12.6
17						58	44	24	21	15.5	28	13.6
18						160	76	26	19.8	14.8	113	12.9
19						129	75	32	27	15.3	46	11.9
20						78	51	32	36	14.6	25	13.6
21						58	43	28	21	14.3	19.8	10.9
22						44	40	27	22	14.3	19.4	12.6
23						40	38	27	132	13.9	17.2	13.3
24						35	38	24	335	13.6	17.2	15.0
25						37	36	24	310	12.9	18.6	16.8
26						38	34	26	85	14.6	23	15.7
27						35	32	30	52	63	101	14.6
28						37	30	27	45	28	77	15.7
29						46	32	27	72	16.4	45	15.3
30						51	36	25	38	23	36	16.4
31						45	-	27	-	24	24	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March 7-31	1,799	160	35	72.0	0.426	0.40
April	1,358	76	30	45.3	.268	.30
May	839	34	23	27.1	.160	.18
June	1,645.2	335	17.9	54.8	.324	.36
July	624.7	63	12.9	20.2	.120	.14
August	1,854.7	596	10.9	59.8	.354	.41
September	434.9	19.8	10.9	14.5	.086	.10
Water year	-	-	-	-	-	-

Peak discharge.- June 23 (7 p.m.) 409 sec.-ft.; June 24 (11 p.m.) 441 sec.-ft.; Aug. 13 (2 a.m.) 876 sec.-ft.

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Green River at Amboy, Ill.

Location.- Water-stage recorder, lat. 41°42', long. 89°19', in sec. 22, T. 20 N., R. 10 E. at bridge on U. S. Highway 52 at south edge of Amboy. Datum of gage is 724.14 feet above mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army). Prior to Apr. 3, wire-weight gage at same site and datum.

Drainage area.- 199 square miles.

Records available.- December 1939 to September 1940.

Extremes.- Maximum discharge observed during period, 2,030 second-feet Mar. 3 (gage height, 7.65 feet, affected by ice); minimum observed, 2.0 second-feet on several days in February; minimum gage height, 1.20 feet Sept. 23.

Remarks.- Records good except those for period of ice effect, which are fair. Gage read once or twice daily Dec. 1 to Apr. 2.

Cooperation.- Result of one discharge measurement furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			5.7	3.6	*3.1	110	18.5	42	17.4	21	6.3	21
2			11.0	4.0	3.1	485	18.5	50	15.2	17.4	5.7	15.2
3			10.1	5.2	3.1	*1,520	18.5	35	14.1	16.3	7.0	11.9
4			10.1	5.2	2.7	736	17.4	29	11.9	15.2	13.0	10.1
5			10.1	5.2	2.3	338	15.2	26	11.9	14.1	e.5	9.3
6			10.1	5.2	2.7	224	14.1	24	11.9	13.0	6.3	7.7
7			11.0	6.3	2.3	210	21	21	13.0	11.9	5.7	7.7
8			13.0	9.3	3.1	78	34	21	17.4	10.1	5.7	7.0
9			11.0	7.0	2.3	103	26	19.6	13.0	10.1	6.3	10.1
10			*11.0	7.7	2.3	35	22	21	13.0	10.1	7.0	8.5
11			10.1	5.2	2.3	21	24	19.6	13.0	10.1	7.7	7.0
12			13.0	7.0	2.7	10.1	18.5	17.4	29	9.3	36	7.0
13			9.3	*6.3	2.3	35	19.6	17.4	22	7.7	33	6.3
14			14.1	6.3	2.0	*56	18.5	16.3	21	7.7	96	7.0
15			13.0	7.0	2.3	34	18.5	17.4	22	8.5	37	7.0
16			11.0	5.7	*4.6	32	16.3	17.4	21	8.5	16.3	7.0
17			11.9	d5.0	16.3	38	26	16.3	21	7.7	11.9	7.0
18			11.0	d4.5	24	32	58	16.3	34	7.7	29	6.3
19			11.9	d4.0	14.1	26	40	21	82	7.7	24	6.3
20			10.1	d3.5	7.0	26	30	16.5	37	7.7	11.9	6.3
21			e.5	d3.5	3.6	23	26	17.4	22	7.7	9.3	6.3
22			9.3	d3.0	2.7	18.5	23	18.5	18.5	7.7	9.3	6.3
23			9.3	d3.0	2.0	18.5	23	14.1	218	7.7	e.5	6.3
24			8.5	d3.0	2.0	21	22	14.1	167	6.3	7.7	6.3
25			e.5	d3.0	3.1	23	19.6	14.1	64	6.3	9.3	5.7
26			7.7	d3.0	3.1	14.1	18.5	27	38	7.7	27	5.7
27			7.7	d3.0	2.0	17.4	17.4	24	29	10.1	135	5.7
28			7.7	d2.5	2.3	15.2	16.3	29	50	8.5	240	5.7
29			7.7	d2.5	17.4	*22	17.4	22	37	7.7	199	5.7
30			5.7	2.3	-	18.5	21	18.5	24	6.3	78	5.7
31			5.7	2.3	-	17.4	-	18.5	-	7.7	32	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	-	-	-	-	-	-
November	-	-	-	-	-	-
December	304.8	14.1	5.7	9.83	0.049	0.06
Calendar year	-	-	-	-	-	-
January	144.3	9.3	2.3	4.65	.023	.03
February	142.8	24	2.0	4.92	.025	.03
March	4,357.7	1,520	10.1	141	.709	.81
April	678.8	58	14.1	22.6	.114	.13
May	683.4	50	14.1	22.0	.111	.13
June	1,108.3	218	11.9	36.9	.185	.21
July	305.5	21	6.3	9.85	.049	.06
August	1,129.4	240	5.7	36.4	.183	.21
September	235.1	21	5.7	7.84	.039	.04
Water year	-	-	-	-	-	-

Peak discharge.- June 23 (9 p.m.) 389 sec.-ft.; Aug. 12 (6 p.m.) 162 sec.-ft.; Aug. 14 (5 p.m.) 156 sec.-ft.; Aug. 26 (11 p.m.) 174 sec.-ft.; Aug. 28 (10 p.m.) 382 sec.-ft.

* Winter discharge measurement made on this day.

d Doubtful gage-height record; discharge computed on basis of records for station near Geneseo.

Note.- Stage-discharge relation affected by ice Dec. 22 to Mar. 3, Mar. 7-15.

Green River near Geneseo, Ill.

Location.- Water-stage recorder, lat. 41°29'20", long. 90°09'30", at highway bridge in west-central part of sec. 4, T. 17 N., R. 3 E., 3 miles north of Geneseo. Datum of gage is 580.66 feet above mean sea level (general adjustment of 1929). Prior to Apr. 4, wire-weight gage at same site and datum. Prior to Oct. 1, datum 30.00 feet lower.

Drainage area.- 958 square miles.

Records available.- March 1936 to September 1940.

Extremes.- Maximum discharge observed during year, 3,690 second-feet Mar. 4 (gage height, 11.34 feet); minimum daily observed, 27 second-feet Jan. 2 (caused by rapid accumulation of ice storage).

1936-40: Maximum discharge observed, 6,850 second-feet Jan. 24, 1938; maximum gage height, 14.27 feet Jan. 30, 1938 (affected by backwater from ice); minimum discharge observed, that of Jan. 2, 1940.

Maximum stage known, about 14.8 feet sometime after 1931.

Remarks.- Records good except those for periods of ice effect or doubtful or no gage-height record, which are fair.

Cooperation.- Gage-height record collected in cooperation with Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	90	158	118	28	42	295	194	192	141	93	43	95
2	88	157	121	27	42	935	184	204	132	84	41	72
3	84	150	116	28	42	3,350	196	226	120	80	40	61
4	81	145	109	28	42	3,690	200	206	114	77	42	55
5	80	143	106	28	45	2,800	188	188	112	75	44	51
6	79	138	104	29	*48	1,820	178	176	111	74	48	45
7	77	137	102	31	48	1,110	182	171	106	69	44	44
8	78	141	102	32	47	830	211	167	133	66	39	a43
9	78	141	97	32	48	706	226	162	137	65	37	50
10	80	141	95	30	48	598	217	160	132	63	43	97
11	85	157	93	32	47	*523	219	164	141	66	55	53
12	81	129	90	32	48	418	213	155	219	66	54	43
13	80	133	81	36	51	313	208	148	265	61	52	40
14	81	130	61	40	75	263	198	143	215	58	68	40
15	85	130	85	39	63	523	190	143	178	57	80	36
16	88	127	92	*37	98	319	182	148	155	56	94	37
17	89	133	86	*38	211	347	202	145	141	54	79	36
18	a90	127	85	39	171	388	391	143	145	53	258	35
19	a90	124	81	37	121	353	373	150	137	53	135	34
20	a100	121	88	37	92	306	322	152	133	52	71	35
21	a110	118	*50	38	86	293	275	140	143	48	63	35
22	a100	116	105	36	69	243	251	135	129	48	53	35
23	a95	116	99	39	62	223	234	129	124	46	48	d35
24	a90	121	81	39	56	219	253	126	133	46	47	d37
25	a90	120	81	39	55	246	226	127	221	47	46	d39
26	90	116	73	39	50	230	208	152	169	44	46	d41
27	848	111	70	40	50	219	196	178	127	122	322	d42
28	403	108	57	40	56	206	184	173	105	78	108	d42
29	a275	*114	48	40	83	215	184	167	108	53	150	d43
30	a200	111	32	40	-	206	204	157	94	50	164	d45
31	a170	-	35	42	-	200	-	150	-	47	138	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	4,155	848	77	134	0.140	0.16
November	3,913	158	108	130	.136	.15
December	2,643	121	32	85.3	.089	.10
Calendar year 1939	164,411	5,040	32	450	.470	6.37
January	1,092	42	27	35.2	.037	.04
February	1,996	211	42	68.8	.072	.08
March	22,387	3,690	200	722	.754	.87
April	6,689	391	178	223	.233	.26
May	4,977	226	126	161	.168	.19
June	4,320	265	94	144	.150	.17
July	1,951	122	44	62.9	.066	.08
August	2,552	322	37	82.3	.086	.10
September	1,396	97	34	46.5	.049	.05
Water year 1939-40	58,071	3,690	27	159	.166	2.25

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Green River at Amboy and Elkhorn Creek near Penrose.
d Doubtful gage-height record caused by clogged intake.
Note.- Stage-discharge relation affected by ice Dec. 20 to Mar. 2, Mar. 25. Discharge Aug. 27 to Sept. 20 determined from once-daily readings of outside gage.

Mill Creek at Milan, Ill.

Location.- Water-stage recorder, lat. 41°26'35", long. 90°33'15", in SW¼SE¼ sec. 24, T. 17 N., R. 2 W., 1 mile southeast of Milan. Datum of gage is 566.23 feet above mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army). Prior to Apr. 5, wire-weight gage at same site and datum.

Drainage area.- 62.5 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 278 second-feet Mar. 3 (gage height, 3.31 feet), from rating curve extended above 70 second-feet; no flow on many days.

Remarks.- Records fair to Apr. 3, poor thereafter.

Cooperation.- Gage-height record and results of three discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.4	3.9	4.3		0	8.8	22	18	3.8		-	-
2	2.7	4.1	13		0	12	14	18	3.7		-	-
3	2.3	3.8	4.4		0	278	14	15	3.4		-	-
4	2.0	3.5	2.9		0	214	11	14	3.3		-	-
5	2.0	3.7	4.3		0	130	9.2	15	3.2		-	-
6	1.7	3.5	2.9		0	100	7.6	13	3.2		-	-
7	1.7	3.9	4.3		0	160	17	12	-		-	-
8	1.7	4.4	4.1		0	*78	24	12	3.4		-	-
9	3.2	3.9	2.4		0	64	18	12	3.2		-	24
10	6.6	5.9	2.7		0	28	16	11	-		-	11
11	4.4	9.4	3.9		0	*31	22	8.8	3.4		-	-
12	2.9	5.9	2.7		1.4	50	15	7.4	28	5.4	-	-
13	2.6	5.0	3.5		1.5	22	17	6.8	11		25	-
14	2.9	5.0	1.5		1.5	29	17	6.6	5.2		39	-
15	3.0	4.8	3.5		1.5	25	16	5.8	3.6		8.2	-
16	3.2	3.9	2.3		1.6	14	14	7.0	3.3		-	-
17	3.2	3.7	4.6		1.9	78	26	5.8	-		-	-
18	2.9	5.7	3.7		2.2	96	41	6.0	-		24	-
19	3.2	3.7	7.3		9.7	60	31	11	9.0		9.0	-
20	3.7	5.2	3.5		16	50	28	7.8	3.9		-	-
21	3.9	*3.4	*1.0		*12	45	26	6.0	-		-	-
22	3.5	3.4	.6		12	4.1	24	6.4	-		-	-
23	3.7	3.7	.6		10	14	26	6.4	-		-	-
24	5.9	5.0	.6		9.7	12	27	5.2	-		-	-
25	20	4.4	.5		10	64	23	6.8	-		-	-
26	5.9	4.1	.5		7.0	*23	22	22	-		-	-
27	28	1.7	1.7		6.6	33	20	8.2	-		31	-
28	5.9	2.0	.7		6.6	32	19	7.0	-		22	-
29	6.6	2.9	.3		4.6	42	24	6.4	-		33	-
30	5.9	2.7	0		-	25	22	4.4	-		-	-
31	5.0	-	0		-	16	-	3.8	-		-	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	153.6	28	1.7	4.95	0.079	0.09
November	131.2	9.4	1.7	4.37	.070	.08
December	88.3	13	0	2.85	.046	.05
Calendar year	-	-	-	-	-	-
January	0	0	0	0	0	0
February	115.8	16	0	3.99	.064	.07
March	1,837.9	278	4.1	59.3	.949	1.09
April	612.8	41	7.6	20.4	.326	.36
May	295.6	22	3.8	9.54	.153	.18
June	-	-	-	-	-	-
July	-	-	-	-	-	-
August	-	-	-	-	-	-
September	-	-	-	-	-	-
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 21 to Mar. 2.

Lakes in Rock River Basin

Beaver Lake near Hartland, Wis.

Location.- Staff gage, lat. 43°07'30", long. 88°22'00", in E½ sec. 28, T. 8 N., R. 18 E., 15 feet east of outlet and 1¾ miles northwest of Hartland. Prior to Sept. 17, 1940, staff gage 60 feet east of outlet.
Drainage area.- 3 square miles.
Lake-surface area.- 305 acres.
Records available.- April 1933 to September 1940 (fragmentary).
Extremes.- Maximum gage height observed during year, 10.94 feet June 22; minimum observed, 9.38 feet Jan. 31 to Feb. 24.
1933-40: Maximum gage height observed, that of June 22, 1940; minimum observed, 9.08 feet Apr. 17, 1933.
Remarks.- Concrete dam with I-beam crest at lake outlet lowered 6½ inches on Sept. 17, 1940, to elevation 909.86 feet.
Cooperation.- Gage-height record furnished by chief of police of village of Chenequa.

Gage height, in feet, water year October 1939 to September 1940

Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height
Oct. 4	9.52	Dec. 16	9.44	Feb. 28	9.42	May 11	10.12	July 24	10.46
7	9.50	20	9.44	Mar. 2	9.46	15	10.12	27	10.52
11	9.48	23	9.44	6	9.52	18	10.12	31	10.46
14	9.48	27	9.44	9	9.56	22	10.16	Aug. 3	10.46
18	9.46	30	9.42	13	9.60	25	10.24	7	10.46
21	9.42	Jan. 3	9.42	16	9.64	29	10.26	10	10.44
25	9.54	6	9.40	20	9.64	June 1	10.28	14	10.44
28	9.56	10	9.40	23	9.66	5	10.32	17	10.42
Nov. 1	9.56	13	9.40	27	9.72	8	10.38	21	10.40
4	9.52	17	9.40	30	9.76	12	10.38	24	10.38
8	9.50	20	9.40	Apr. 3	9.82	15	10.38	28	10.60
11	9.48	24	9.40	6	9.86	19	10.38	31	10.62
15	9.48	27	9.40	10	9.90	22	10.94	Sept. 4	10.58
18	9.46	31	9.38	13	9.94	26	10.92	7	10.54
22	9.46	Feb. 3	9.38	17	9.94	29	10.62	11	10.50
25	9.46	7	9.38	20	9.96	July 3	10.68	14	10.48
29	9.46	10	9.38	24	9.96	6	10.64	18	10.42
Dec. 2	9.48	14	9.38	27	9.98	10	10.60	21	10.30
6	9.48	17	9.38	May 1	10.02	13	10.56	28	10.14
9	9.46	21	9.38	4	10.08	17	10.52		
13	9.46	24	9.38	8	10.10	20	10.50		

Note.- Add 900.00 feet to obtain elevation above mean sea level.

Pine Lake near Hartland, Wis.

Location.- Staff gage, lat. 43°07'30", long. 88°23'25", SE¼ sec. 29, T. 8 N., R. 18 E., attached to concrete wall of boathouse slip, 2½ miles northwest of Hartland. Datum of gage is 890.00 feet above mean sea level.
Drainage area.- 6 square miles.
Lake-surface area.- 760 acres.
Records available.- March 1931 to September 1940 (fragmentary).
Extremes.- Maximum gage height observed during year, 12.55 feet June 29, July 3; minimum observed, 10.85 feet Jan. 6 to Feb. 28.
1931-40: Maximum gage height observed, 12.80 feet Sept. 21, 1938; minimum observed, 8.86 feet Oct. 14, 1934.
Remarks.- Lake level not artificially regulated.
Cooperation.- Gage-height record furnished by chief of police of village of Chenequa.

Gage height, in feet, water year October 1939 to September 1940

Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height
Oct. 4	11.20	Dec. 16	10.95	Feb. 28	10.85	May 11	11.35	July 24	12.35
7	11.15	20	10.95	Mar. 2	10.90	15	11.35	27	12.40
11	11.15	23	10.90	6	10.95	18	11.40	31	12.35
14	11.15	27	10.90	9	10.95	22	11.45	Aug. 3	12.35
18	11.10	30	10.90	13	10.95	25	11.50	7	12.30
21	11.05	Jan. 3	10.90	16	10.95	29	11.55	10	12.25
25	11.20	6	10.85	20	10.95	June 1	11.55	14	12.25
28	11.20	10	10.85	23	11.00	5	11.60	17	12.25
Nov. 1	11.20	13	10.86	27	11.05	8	11.65	21	12.20
4	11.15	17	10.85	30	11.10	12	11.65	24	12.15
8	11.16	20	10.85	Apr. 3	11.10	15	11.65	28	12.30
11	11.10	24	10.85	6	11.15	19	11.65	31	12.40
15	11.10	27	10.85	10	11.15	22	12.20	Sept. 4	12.45
18	11.05	31	10.85	13	11.20	26	12.50	7	12.40
22	11.05	Feb. 3	10.85	17	11.20	29	12.55	11	12.35
25	11.05	7	10.85	20	11.25	July 3	12.55	14	12.30
29	11.00	10	10.85	24	11.25	6	12.50	18	12.30
Dec. 2	11.00	14	10.85	27	11.25	10	12.50	21	12.30
6	11.00	17	10.85	May 1	11.30	13	12.45	28	12.35
9	10.95	21	10.85	4	11.35	17	12.45		
13	10.95	24	10.85	8	11.35	20	12.40		

Note.- Add 890 feet to obtain elevation above mean sea level.

Lakes in Rock River Basin

Lake Ripley near Cambridge, Wis.

Location.- Staff gage, lat. 43°00'20", long. 89°00'05", in sec. 7, T. 6 N., R. 13 E., attached to post set in lake bed, 25 feet from dam in outlet stream.
Drainage area.- 1.5 square miles.
Lake-surface area.- 416 acres.
Records available.- August 1936 to September 1940 (fragmentary).
Extremes.- Maximum gage height observed during year, 6.38 feet May 8; minimum observed, 5.90 feet July 27, Aug. 10.
1936-40: Maximum gage height observed, 6.70 feet Sept. 18-21, 1938; minimum observed, 5.40 feet Aug. 20, 1936.
Remarks.- Small concrete dam with crest at elevation 95.72 feet at lake outlet. Lake level not artificially regulated.

Gage height, in feet, water year October 1939 to September 1940

Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height
Apr. 15	6.27	May 16	6.17	June 22	6.21	July 27	5.90	Aug. 31	5.94
19	6.35	21	6.23	26	6.22	31	5.96	Sept. 3	5.94
24	6.35	25	6.15	28	6.13	Aug. 3	5.95	7	5.95
27	6.31	30	6.16	July 5	6.07	5	5.93	12	5.97
28	6.30	June 1	6.14	6	6.06	10	5.90	14	5.95
May 2	6.35	4	6.09	9	6.04	14	5.95	16	5.94
4	6.36	7	6.10	13	6.00	17	5.94	20	5.92
8	6.38	12	6.15	14	5.99	21	5.94	24	5.94
11	6.34	15	6.10	20	5.94	24	5.91	28	5.92
15	6.24	20	6.06	22	5.95	25	5.96		

Note.- Add 90 feet to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

Lake Mendota at Madison, Wis.

Location.- Staff gage, lat. 43°05'40", long. 89°22'10", SE¼ sec. 12, T. 7 N., R. 9 E., attached to face of dam at outlet, in Madison. Datum of gage is 847.40 feet above mean sea level, or 2.00 feet above city of Madison datum.
Drainage area.- 254 square miles.
Lake-surface area.- 15.2 square miles.
Records available.- December 1902 to May 1903, January 1916 to September 1940 (incomplete).
Extremes.- Maximum gage height observed during year, 2.40 feet June 26; minimum, 0.84 foot Nov. 28-30, Jan. 8-10.
1916-40: Maximum gage height observed, 3.70 feet Mar. 7, 8, 1937; minimum observed, 0.20 foot Feb. 24 to Mar. 10, 1920.
Remarks.- Lake regulated by concrete dam with one 20-foot stop-log section and 12-foot lock at outlet.
Cooperation.- Gage-height record furnished by city engineer of Madison.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.04	0.94	0.88	-			1.44	-	2.12	2.33	2.05	-
2	1.00	.94	-	-			1.45	-	2.10	2.33	2.02	2.26
3	1.00	.90	-	0.85			1.46	1.80	2.10	2.33	2.04	2.24
4	1.00	.90	.88	.85			1.48	1.80	2.08	2.30	2.08	2.24
5	-	.90	.88	.85			1.52	1.80	2.10	2.23	2.12	2.23
6	.98	.88	.88	.85			1.52	-	2.10	2.23	2.08	2.23
7	1.04	.88	-	-			-	1.90	2.10	2.23	2.04	2.22
8	-	-	.88	.84			-	1.92	-	2.21	2.02	2.22
9	1.02	.92	-	.84			1.58	1.92	2.10	2.19	2.06	-
10	-	-	-	.84			1.64	1.92	-	2.18	2.02	-
11	-	.85	.92	.86			1.72	1.92	2.10	2.22	1.98	-
12	-	-	.92	.86			1.72	1.92	2.10	2.21	1.98	-
13	1.00	.85	-	.86			-	1.90	2.10	2.13	1.98	2.08
14	1.00	.85	.92	-			-	1.90	2.10	-	1.98	2.06
15	.88	.85	.92	-			1.66	1.91	2.06	2.14	2.00	2.04
16	.88	.85	-	-			-	1.91	2.06	2.13	2.00	2.02
17	.85	.85	.92	-			1.66	-	2.06	2.03	2.00	2.00
18	.85	.85	.95	-			-	1.90	2.05	2.03	-	1.98
19	-	.85	-	-			1.68	-	-	2.04	-	2.00
20	.87	.85	-	-			1.68	2.02	2.04	2.04	2.08	-
21	.88	.85	-	-			-	2.02	2.03	2.03	-	1.98
22	-	.85	-	-			1.70	2.02	2.06	2.03	2.04	1.98
23	.90	.85	-	-			1.72	2.02	2.34	2.03	2.00	1.98
24	.86	.85	-	-			1.72	2.02	-	-	2.00	-
25	.92	.85	-	-			1.74	-	-	2.00	2.10	-
26	.92	.85	-	-			1.74	-	2.40	2.00	2.24	-
27	-	-	-	-			1.74	-	2.38	2.12	2.24	-
28	-	.84	-	-			1.72	2.10	-	2.12	2.25	1.94
29	.92	.84	-	-			1.72	2.10	-	2.10	2.28	1.94
30	.94	.84	-	-			1.78	2.10	2.38	2.10	2.28	1.92
31	.94	-	-	-			-	2.10	-	2.10	2.30	-

Lakes in Rock River Basin

Lake Monona at Madison, Wis.

Location.- Reference point, lat. 43°03'50", long. 89°23'45", in NW¼ sec. 23, T. 7 N., R. 9 E., at end of concrete storm sewer in Brittingham Park, Madison. Datum of gage is 843.40 feet above mean sea level, or 2.00 feet below city of Madison datum.
Drainage area.- 273 square miles.
Lake-surface area.- 4.40 square miles.
Records available.- September 1915 to September 1940 (fragmentary). 1856 to March 1917 (water surface elevations) in Wisconsin Railroad Commission Report.
Extremes.- Maximum gage height observed during year, 1.61 feet Apr. 3, 8, 9; minimum observed, 0.81 foot Oct. 8, 17, 19.
1917-40: Maximum gage height observed, 3.66 feet July 28, 1929; minimum observed, 0.03 foot Oct. 15, 16, 1935.
Remarks.- Lake regulated by concrete dam with four 12-foot stop-log sections and 12-foot lock at outlet of Lake Waubesa.
Cooperation.- Gage-height record furnished by city engineer of Madison.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	0.94	-	0.97	1.10	1.33	1.56	1.30	1.29	1.42	1.36	1.40
2	0.83	-	-	.97	1.10	1.33	1.58	-	1.30	1.42	1.34	1.37
3	-	-	0.97	.97	1.11	1.33	1.61	1.28	-	1.40	1.34	1.33
4	.82	.92	-	.97	1.14	1.33	-	1.28	1.30	1.38	1.34	1.30
5	-	.92	.99	.97	1.14	1.33	1.59	1.26	1.28	1.37	1.30	1.27
6	.84	.90	.99	.97	1.14	1.34	-	1.26	1.28	1.36	1.28	1.25
7	-	-	-	.96	1.14	1.34	-	1.30	-	1.35	1.27	1.20
8	.81	.89	.99	.96	1.15	1.34	1.61	1.31	1.26	1.35	1.28	1.14
9	-	.89	-	.96	1.15	1.34	1.61	1.29	1.26	-	-	1.05
10	-	1.00	-	.96	1.15	1.34	1.56	1.29	1.24	1.34	-	1.01
11	-	1.00	-	.97	1.15	1.34	1.55	1.28	1.24	1.40	-	1.12
12	-	.99	.99	.97	1.15	1.34	1.53	1.28	1.24	-	1.24	1.10
13	-	.97	.99	.97	1.15	1.33	1.49	1.25	1.23	1.35	1.24	1.10
14	-	.97	.99	.91	1.16	1.33	1.45	1.25	-	-	1.24	1.10
15	-	.95	.98	.97	1.16	1.32	1.40	1.25	1.23	1.33	1.26	1.10
16	-	.95	.98	.97	1.18	1.31	-	1.29	1.23	1.33	1.29	1.10
17	.81	.94	.97	.96	1.18	1.31	-	1.29	1.24	1.31	-	1.11
18	-	.94	.97	.98	1.18	1.32	1.38	1.29	-	1.30	-	1.12
19	.81	.93	-	.96	1.19	1.33	1.38	1.28	1.27	1.28	-	1.12
20	-	.93	.97	.98	1.23	1.34	1.35	1.28	1.22	1.28	1.31	1.12
21	-	-	.98	.98	1.28	1.35	1.33	1.28	1.20	1.26	-	1.11
22	.85	-	.98	.98	1.31	-	1.31	1.30	1.22	1.25	1.29	1.11
23	-	.93	-	.97	1.35	-	1.30	1.30	1.52	1.24	1.31	1.19
24	-	.93	-	.99	1.35	1.34	1.25	1.29	1.55	1.23	1.36	-
25	.93	.93	-	.99	1.35	1.34	1.25	-	1.50	1.23	1.41	-
26	.93	.95	-	.99	1.34	1.34	1.25	1.30	1.46	-	1.41	-
27	-	.95	-	1.00	1.34	1.34	1.26	1.30	1.46	1.40	1.50	1.18
28	.93	.95	-	1.03	1.34	1.45	-	1.30	1.46	1.37	1.50	-
29	-	.95	-	1.05	1.34	1.48	1.26	1.28	1.43	1.37	1.50	1.14
30	.94	.95	-	1.05	-	-	1.30	1.28	1.43	1.37	1.47	1.14
31	-	-	-	-	-	-	-	-	-	1.37	1.44	-

Turtle Lake near Delavan, Wis.

Location.- Staff gage, lat. 42°43'27", long. 88°41'12", in sec. 14, T. 3 N., R. 15 E., attached to post in lake at end of pier at Earl Knilan's resort, 7 miles north of Delavan, Wis.
Drainage area.- 1.3 square miles.
Lake-surface area.- 173 acres.
Records available.- August to November 1936, April 1938 to September 1940 (fragmentary).
Extremes.- Maximum gage height observed during year, 10.40 feet Aug. 27; minimum observed, 8.20 feet Oct. 7.
1936, 1938-40: Maximum gage height observed, that of Aug. 27, 1940; minimum observed, 8.02 feet Aug. 21, 25, 1936.
Remarks.- Lake level artificially controlled by a 30-inch culvert pipe at outlet with invert at elevation 88.31 feet.
Cooperation.- Gage-height record furnished by Earl Knilans.

Gage height, in feet, water year October 1939 to September 1940

Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height
Oct. 7	8.20	July 6	8.95	Aug. 17	9.10	Sept. 14	9.25
Apr. 15	9.02	13	8.85	24	9.30	21	9.15
June 10	8.70	20	8.70	25	9.60	28	8.95
14	8.70	25	9.40	27	10.40	29	8.90
22	9.10	27	9.60	29	10.10		
23	9.00	Aug. 3	9.00	31	9.90		
29	9.10	10	8.70	Sept. 7	9.40		

Note.- Add 80.00 feet to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

Iowa River at Marshalltown, Iowa

Location.- Water-stage recorder and concrete control, lat. 42°04', long. 92°54', in SW¼ sec. 24, T. 84 N., R. 18 W., in city park at Marshalltown. Burnett Creek enters from left between gage and control. Datum of gage is 852.7 feet above mean sea level (general adjustment of 1912).

Drainage area.- 1,500 square miles (not including that of Burnett Creek).

Records available.- May 1915 to September 1927, February 1933 to September 1940. February to August 1903 at old dam site 1 mile upstream (gage heights only).

Average discharge.- 19 years, 621 second-feet.

Extremes.- Maximum discharge during year, 2,200 second feet June 23 (gage height, 7.92 feet); minimum daily, 9 second-feet Jan. 9, 10; minimum gage height, 2.46 feet Jan. 11.

1915-27, 1933-40: Maximum discharge observed, 42,000 second-feet June 4, 1918 (gage height, 17.74 feet), from rating curve extended above 18,700 second-feet; minimum, about 2 second-feet (regulated) Nov. 24, 1917.

Remarks.- Records good except those for periods of ice effect, which are poor. Discharge of Burnett Creek not included in records except during periods of low flow, when it is usually negligible.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	47	55	22	14	28	565	164	94	93	724	666
2	31	41	55	17	14	30	600	151	87	83	1,040	507
3	26	49	40	17	13	32	560	141	83	73	1,430	444
4	25	42	37	16	12	34	414	134	73	73	1,060	354
5	26	44	51	14	12	39	305	129	72	63	853	314
6	28	45	51	13	12	52	270	126	70	53	714	266
7	29	46	49	12	12	62	282	141	69	58	524	239
8	31	44	53	11	12	100	318	181	69	55	414	212
9	43	49	51	*9	12	360	305	193	66	49	402	212
10	50	55	60	9	12	400	296	175	70	45	408	187
11	55	47	53	10	12	300	310	167	100	53	369	184
12	52	50	53	11	13	220	292	143	106	55	333	172
13	42	45	32	11	13	170	258	136	100	49	314	164
14	46	42	28	12	13	146	239	122	92	43	476	282
15	42	47	35	13	16	129	247	111	81	41	809	343
16	43	45	55	12	21	151	187	120	66	33	775	300
17	38	43	54	11	26	348	193	111	64	33	794	262
18	34	47	50	12	31	1,090	184	120	58	24	682	205
19	39	47	50	12	*33	1,120	175	196	51	22	489	199
20	42	47	34	12	29	928	159	310	46	25	374	170
21	44	49	28	13	27	760	148	208	42	25	300	141
22	42	42	26	13	28	605	156	181	42	25	251	138
23	40	46	33	14	30	469	143	164	1,480	25	212	138
24	39	49	36	15	33	457	148	151	937	26	193	136
25	39	52	38	16	35	402	138	138	414	33	247	156
26	42	46	35	16	33	374	138	138	255	33	266	134
27	41	41	34	17	30	343	138	131	225	190	507	124
28	44	37	35	17	29	348	124	122	162	146	719	117
29	44	49	36	17	28	582	156	113	134	554	895	113
30	44	52	33	16	-	530	170	106	115	1,240	946	106
31	45	-	27	15	-	482	-	102	-	890	794	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,214	55	25	39.2	0.026	0.03
November	1,385	55	37	46.2	.031	.03
December	1,307	60	26	42.2	.028	.03
Calendar year 1939	142,860	8,610	17	391	.261	3.55
January	425	22	9	13.7	.009	.01
February	605	35	12	20.9	.014	.02
March	11,091	1,120	28	358	.239	.28
April	7,618	600	124	254	.169	.19
May	4,625	310	102	149	.099	.11
June	5,323	1,480	42	177	.118	.13
July	4,239	1,240	22	137	.091	.10
August	18,314	1,430	193	591	.394	.45
September	6,985	666	106	233	.155	.17
Water year 1939-40	63,131	1,480	9	172	.115	1.55

Peak discharge.- June 23 (2:00 p.m.) 2,200 sec.-ft.; Aug. 3 (1:00 a.m.) 1,640 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 30 to Feb. 17, Feb. 21 to Mar. 13.

Iowa River near Belle Plaine, Iowa

Location.- Water-stage recorder, lat. 41°51'20", long. 92°14'20", in NW¼ sec. 5, T. 81 N., R. 12 W., at bridge on State Highway 212, half a mile downstream from Walnut Creek and 2¾ miles south of Belle Plaine. Prior to Mar. 13, 1940, wire-weight gage at same site and datum.

Drainage area.- 2,420 square miles.

Records available.- September 1939 to September 1940.

Extremes.- Maximum daily discharge during period, 1,920 second-feet Mar. 19; maximum gage height, 9.67 feet Mar. 18, backwater from ice; minimum daily discharge, 19 second-feet Jan. 5.

A discharge of 38,600 second-feet was measured on June 5, 1918, at railroad bridge 1 mile above gage and at a stage somewhat below crest of that flood.

Remarks.- Records good except those for periods of ice effect, which are poor. Gage read once daily Sept. 18, 1939, to Mar. 12, 1940.

Discharge, in second-feet, 1939-40

1939

Sept. 18	74	Sept. 23	68	Sept. 28	64
19	75	24	64	29	68
20	71	25	61	30	65
21	68	26	70		
22	70	27	64		

Note.- Mean discharge Sept. 18-30, 67.8 second-feet (per square mile, 0.028 second-foot; run-off, 0.01 inch).

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	74	89	56	29	53	779	471	203	178	753	706
2	68	77	88	47	29	55	664	413	192	160	660	641
3	65	74	99	36	29	64	714	376	187	145	548	563
4	64	75	164	28	29	69	695	344	178	136	841	455
5	63	77	86	23	28	106	634	322	173	125	912	397
6	64	77	82	19	27	164	541	307	165	117	781	344
7	64	78	82	20	23	219	509	317	157	111	660	307
8	61	76	84	*24	24	278	534	367	159	105	556	273
9	64	78	83	24	24	805	537	370	159	99	455	250
10	67	107	85	24	23	921	541	364	157	93	416	225
11	71	113	85	25	26	753	530	353	144	99	461	205
12	85	100	84	25	31	619	502	328	142	96	448	189
13	77	94	96	25	32	*425	492	314	157	93	461	184
14	74	90	159	25	33	347	471	290	173	88	429	177
15	75	88	132	27	32	312	452	275	162	86	373	175
16	73	87	85	25	34	280	425	259	148	78	520	219
17	74	84	79	27	35	556	409	246	142	75	660	255
18	74	85	80	27	36	1,580	394	250	129	74	676	238
19	74	82	79	25	*37	1,920	385	294	117	69	644	215
20	73	83	80	26	38	1,880	358	320	110	64	541	189
21	70	82	88	25	37	*1,470	336	350	106	61	442	177
22	72	81	89	26	35	1,050	317	391	106	59	370	164
23	71	81	88	26	36	861	317	325	122	58	310	154
24	72	82	82	25	38	699	328	294	187	56	273	151
25	72	82	83	24	42	676	314	273	1,010	54	253	148
26	74	82	83	25	44	622	310	257	660	55	246	145
27	78	81	80	25	43	619	302	248	406	56	270	144
28	81	89	80	26	47	645	290	244	297	61	312	142
29	83	83	80	26	53	749	310	236	240	81	422	139
30	79	82	77	27	-	761	559	225	200	187	570	131
31	78	-	64	27	-	758	-	217	-	394	668	-

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 29 to Mar. 19.

Monthly discharge, in second-feet, water year October 1939 to September 1940

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,226	85	61	71.8	0.030	0.03
November	2,524	113	74	84.1	.035	.04
December	2,795	164	64	90.2	.037	.04
Calendar year	-	-	-	-	-	-
January	840	56	19	27.1	.011	.01
February	974	53	23	33.6	.014	.01
March	20,316	1,920	53	655	.271	.31
April	13,949	779	290	465	.192	.21
May	9,640	471	217	311	.129	.15
June	6,488	1,010	106	216	.089	.10
July	3,213	394	54	104	.043	.05
August	15,931	912	246	514	.212	.24
September	7,702	706	131	257	.106	.12
Water year 1939-40	86,598	1,920	19	237	.098	1.31

Iowa River at Iowa City, Iowa

Location.- Water-stage recorder, lat. 41°39'30", long. 91°32'20", in SE¼ sec. 9, T. 79 N., R. 6 W., in Iowa City, 25 feet downstream from University of Iowa hydraulic laboratory, 175 feet downstream from dam of the university, 1.5 miles upstream from Ralston Creek, and 3.3 miles downstream from Clear Creek. Datum of gage is 39.00 feet above Iowa City datum and 627.27 feet above mean sea level (general adjustment of 1929).

Drainage area.- 3,230 square miles.

Records available.- June 1903 to July 1906 and October 1913 to September 1940 in reports of U. S. Geological Survey. June 1903 to December 1932 in report of Iowa State Planning Board entitled "Stream-flow records of Iowa, 1873-1932."

Average discharge.- 37 years, 1,424 second-feet.

Extremes.- Maximum discharge during year, 3,020 second-feet Mar. 21 (gage height, 4.20 feet); minimum, 30 second-feet Jan. 21; minimum gage height observed, -1.47 feet Nov. 17.

1903-40: Maximum discharge, 36,200 second-feet June 7, 1918 (gage height, 19.45 feet, site and datum then in use), from rating curve extended above 26,000 second-feet; minimum daily, about 10 second-feet Dec. 26, 1916; practically no flow Sept. 3, 1925 (result of regulation).

Remarks.- Records good except those for periods of fragmentary gage-height record, which are fair. Considerable regulation during low stages caused by power plants above station.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet) (Shifting-control method used Dec. 11 to Mar. 9)

Oct. 1 to Mar. 19

-1.9	30	-0.4	170	2.0	1,180
-1.7	42	-.1	223	2.5	1,580
-1.5	56	.3	319	3.0	2,010
-1.3	72	.7	451	4.0	2,910
-1.0	98	1.1	622		
-.7	129	1.5	844		

Mar. 20 to Sept. 30

-0.6	63	0.7	319	2.5	1,450
-.4	78	1.1	495	3.0	1,900
-.1	114	1.5	710	4.0	2,820
.3	193	2.0	1,050		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	133	128	176	82	37	63	1,030	550	338	364	121	578
2	75	131	186	81	36	67	978	764	350	313	202	660
3	133	120	86	74	37	343	1,030	627	296	318	424	699
4	82	152	178	74	37	947	1,060	611	312	262	505	694
5	92	72	142	72	37	682	1,020	505	307	223	464	644
6	130	142	150	69	37	470	956	553	277	212	587	532
7	84	117	172	66	37	684	956	576	270	211	693	459
8	90	128	137	60	38	1,040	978	572	261	219	620	470
9	128	140	181	55	39	1,220	893	523	298	192	572	663
10	106	163	110	52	41	1,090	872	556	248	181	531	450
11	77	162	155	50	40	1,120	935	538	312	223	475	243
12	94	147	150	48	40	1,250	770	530	244	175	422	283
13	145	166	137	41	40	1,050	752	525	256	178	678	250
14	77	151	122	41	44	832	716	510	221	140	476	241
15	106	160	86	36	47	722	722	480	247	102	515	247
16	117	163	169	34	48	678	660	450	203	110	510	257
17	106	141	100	32	52	1,290	716	422	217	76	422	242
18	114	167	162	36	53	2,040	828	422	237	114	450	180
19	117	99	154	35	58	2,060	767	400	334	103	550	283
20	130	192	139	34	64	2,520	684	392	187	104	582	301
21	134	146	99	34	59	2,760	622	427	192	69	572	312
22	74	134	104	40	83	2,800	586	465	183	130	535	182
23	147	149	96	38	49	2,150	565	475	473	75	455	233
24	125	144	101	37	58	1,510	544	490	180	155	455	290
25	127	148	118	39	60	1,020	550	470	148	91	424	178
26	136	64	117	50	62	900	560	434	159	106	288	191
27	200	186	122	50	60	950	537	422	647	100	325	182
28	138	130	119	49	59	1,150	531	392	646	90	382	182
29	95	133	108	43	63	1,390	550	375	514	91	298	221
30	192	130	111	41	-	1,140	530	371	444	103	436	174
31	112	-	97	39	-	1,140	-	323	-	78	465	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	3,616	200	74	117	0.036	0.04
November	4,205	192	64	140	.043	.05
December	4,084	186	86	132	.041	.05
Calendar year 1939	332,905	8,860	74	912	.282	3.85
January	1,532	82	32	49.4	.015	.02
February	1,415	70	36	48.8	.015	.02
March	37,078	2,800	63	1,196	.370	.43
April	22,898	1,060	530	763	.236	.26
May	15,150	764	323	489	.151	.17
June	9,001	647	148	300	.093	.10
July	4,908	364	69	158	.049	.06
August	14,434	693	121	466	.144	.17
September	10,521	699	174	351	.109	.12
Water year 1939-40	128,842	2,800	32	352	.109	1.49

Peak discharge.- Mar. 18 (6 a.m.) 2,120 sec.-ft.; Mar. 20 (12 m.) 2,710 sec.-ft.; Mar. 21 (8:30 a.m.) 3,020 sec.-ft.; Mar. 22 (5 a.m.) 3,010 sec.-ft.

Note.- Fragmentary gage-height record Oct. 1 to Dec. 10, Oct. 24, 25, May 4-6, 18, 19, June 18, July 8, 9, 15, Sept. 9, 10; discharge computed on basis of partly estimated gage-height record.

Iowa River at Wapello, Iowa

Location.- Water-stage recorder, lat. 41°11', long. 91°11', in sec. 27, T. 74 N., R. 3 W., at bridge on State Highway 99 at east edge of Wapello, 13 miles downstream from Cedar River and 15.4 miles upstream from mouth. Datum of gage is 548.98 feet above mean sea level (general adjustment of 1912).

Drainage area.- 12,480 square miles.

Records available.- February 1915 to September 1940.

Average discharge 25 years, 5,644 second-feet.

Extremes.- Maximum daily discharge during year, 7,780 second-feet Mar. 21; maximum gage height, 4.14 feet Mar. 20 (backwater from ice); minimum daily discharge, 430 second-feet Jan. 24-30; minimum gage height, -0.68 foot July 25.

1915-40: Maximum discharge, 67,500 second-feet Mar. 19, 1929 (gage height, 16.22 feet), from rating curve extended above 56,000 second-feet; minimum, about 400 second-feet Dec. 15-17, 1916.

Remarks.- Records good except those for periods of ice effect, which are fair.

Cooperation.- Results of seven discharge measurements furnished by Corps of Engineers, U. S. Army, and of two by Mississippi River Power Co. Gage-height record collected in cooperation with U. S. Weather Bureau.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	981	1,010	1,050	610	450	480	4,320	2,670	1,670	2,720	2,800	5,060
2	900	954	1,050	610	460	627	4,040	2,590	1,670	2,320	3,580	5,370
3	918	963	1,090	610	470	1,520	4,040	2,750	1,630	2,020	3,670	5,810
4	900	972	1,070	600	480	2,750	5,290	2,590	1,570	1,780	4,050	5,480
5	900	936	1,050	600	490	3,460	6,550	2,510	1,530	1,640	4,050	4,850
6	884	972	1,070	590	500	2,880	6,460	2,440	1,470	1,470	3,860	4,350
7	876	945	1,040	580	*510	2,500	5,490	2,360	1,470	1,340	5,060	3,950
8	884	963	1,040	570	510	3,220	4,990	2,280	1,410	1,260	5,590	3,490
9	852	963	1,060	560	510	4,650	4,790	2,280	1,380	1,230	4,950	3,140
10	876	1,020	1,030	550	500	5,550	4,700	2,280	1,340	1,150	4,150	3,400
11	892	1,040	1,040	530	500	*5,200	4,500	2,210	1,530	1,110	3,670	3,760
12	876	1,100	1,010	520	510	5,050	4,500	2,210	1,610	1,140	3,220	3,490
13	892	1,080	*1,040	*500	*500	4,550	4,320	2,140	1,570	1,350	4,650	3,310
14	918	1,070	1,010	500	510	4,360	4,040	2,070	1,470	1,110	4,750	3,400
15	945	1,070	1,040	500	510	4,750	3,860	2,000	1,490	999	3,760	3,490
16	884	1,070	1,010	490	520	4,360	3,770	2,000	1,530	977	3,400	3,400
17	900	1,050	918	490	520	3,640	3,680	1,930	1,500	955	3,580	3,310
18	909	1,040	972	480	530	4,850	4,040	1,930	1,440	890	3,310	3,220
19	900	1,030	972	480	520	6,780	4,320	2,000	2,480	860	2,720	2,880
20	900	*1,050	972	470	520	7,220	4,040	2,000	2,640	840	2,560	2,560
21	909	1,040	972	460	520	7,780	3,680	1,930	1,620	760	2,640	2,400
22	936	1,040	905	450	510	7,690	3,420	1,800	1,250	740	2,560	2,240
23	954	1,020	690	440	500	6,890	3,330	2,070	1,120	691	2,560	2,160
24	954	1,030	650	430	490	5,830	3,330	2,000	1,570	691	2,320	2,020
25	981	1,020	640	430	480	5,070	3,330	2,000	2,240	655	2,160	1,940
26	1,010	1,040	630	430	470	4,770	3,240	2,000	3,860	682	2,090	1,940
27	1,070	1,030	630	430	470	4,330	3,080	1,930	3,050	880	2,240	1,850
28	1,100	981	620	430	480	4,390	2,830	1,860	2,720	820	2,240	1,790
29	1,110	1,020	620	430	480	4,680	2,830	1,800	3,580	933	2,240	1,800
30	1,040	1,020	610	430	-	5,070	2,750	1,800	3,220	1,210	2,640	1,800
31	963	-	610	440	-	4,660	-	1,740	-	1,440	3,950	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	29,014	1,110	852	936	0.075	0.09
November	30,539	1,100	936	1,018	.082	.09
December	28,011	1,090	610	904	.072	.08
Calendar year 1939	1,496,247	36,100	610	4,099	.328	4.46
January	15,640	610	430	505	.040	.05
February	14,420	530	450	497	.040	.04
March	139,457	7,780	480	4,499	.360	.42
April	123,560	6,550	2,750	4,119	.330	.37
May	66,170	2,750	1,740	2,135	.171	.20
June	56,630	3,860	1,120	1,888	.151	.17
July	36,663	2,720	655	1,183	.095	.11
August	105,020	5,590	2,090	3,388	.271	.31
September	97,660	5,810	1,790	3,255	.261	.29
Water year 1939-40	742,784	7,780	430	2,029	.163	2.22

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 23 to Mar. 20.

Rapid Creek near Iowa City, Iowa

Location.- Water-stage recorder and concrete control with 90° V-notch weir, lat. 41°42', long. 91°29', in NE¼ sec. 36, T. 80 N., R. 6 W., on left bank about 80 feet upstream from bridge on State Highway 261, 3 miles northeast of Iowa City, and 3 miles upstream from mouth.

Drainage area.- 24.5 square miles.

Records available.- January 1938 to September 1940.

Extremes.- Maximum discharge during year, 372 second-feet Mar. 17 (gage height, 8.52 feet); no flow at times during several months.
1938-40: Maximum discharge, 1,800 second-feet Mar. 12, 1939 (gage height, 12.05 feet, affected by backwater from ice), from rating curve extended above 600 second-feet; no flow at times during 1940.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are poor. Discharges below 4.6 second-feet obtained by weir formula.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.7	0	2.4	1.01	3.2	7.10	4.3	50.0
2.0	.12	2.5	1.41	3.4	10.7	4.6	72.0
2.1	.25	2.6	1.89	3.6	15.7	5.0	104
2.2	.43	2.8	3.12	3.8	22.6	5.5	143
2.3	.68	3.0	4.73	4.0	31.6	6.0	170

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.66	0.77	1.8	0.1	0	0.5	7.3	6.6	1.1	0.58	0.01	0
2	.66	.77	1.5	0	0	4	6.8	5.6	1.0	.39	0	0
3	.52	.71	.94	0	0	140	6.4	4.7	.84	.26	0	0
4	.50	.77	.77	0	.1	60	5.1	4.6	.74	.20	0	0
5	.46	.71	.94	0	.5	30	4.6	5.3	.84	.16	0	0
6	.43	.74	1.1	0	.5	70	4.1	4.5	.74	.11	0	0
7	.43	.77	1.0	0	.5	100	7.6	5.6	.71	.07	0	0
8	.39	.77	.77	0	.5	90	11	5.6	.68	.04	0	0
9	1.74	.77	.84	0	.5	50	9.3	4.6	.66	.02	0	25
10	.80	3.0	1.0	0	.5	25	13	4.5	1.5	0	0	1.2
11	.60	1.6	.94	0	1.0	15	16	3.9	1.0	.31	0	.15
12	.46	1.1	.84	0	1.0	12	12	3.6	1.6	.46	0	.03
13	.46	1.1	.80	0	.5	10	10	3.3	1.2	.22	4.3	0
14	.48	1.1	.55	0	.5	9	10	3.2	.84	.05	1.2	0
15	.48	1.1	.66	0	.5	6	8.4	3.3	.58	.01	.16	0
16	.48	1.0	.97	0	1.5	25	6.8	3.0	.41	0	.25	0
17	.55	1.0	.94	0	1.5	164	18	2.7	.30	0	1.1	0
18	.52	1.0	.90	0	1.2	93	23	3.4	21	0	.19	0
19	.52	.97	.94	0	1.2	36	17	6.3	10	0	.03	0
20	.63	.94	.71	0	1.2	34	14	3.2	1.5	0	0	0
21	.77	.87	.60	0	1.0	28	12	2.9	.84	0	0	0
22	.71	.84	.35	0	.7	19	11	2.4	.74	0	0	0
23	.58	.87	.41	0	.7	14	10	2.0	45	0	0	0
24	.55	.97	.46	0	.5	9.9	9.1	1.9	5.1	0	0	0
25	2.9	1.0	.55	0	.3	5.8	8.1	2.0	2.6	0	0	0
26	1.5	.84	.74	0	.5	5.6	7.3	2.3	1.9	0	0	0
27	7.1	.66	.84	0	.5	6.3	6.3	2.3	1.5	0	3.5	0
28	2.3	.71	.94	0	.5	11	5.7	2.0	1.1	0	5.3	0
29	1.1	.84	.60	0	.5	17	7.9	1.8	.74	0	.37	0
30	1.1	1.0	.63	0	-	11	7.9	1.5	.63	.01	.08	0
31	.90	-	.18	0	-	8.8	-	1.3	-	0	.03	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	31.28	7.1	0.39	1.01	0.041	0.05
November	29.29	3.0	.66	.976	.040	.04
December	25.21	1.8	.18	.813	.033	.04
Calendar year 1939	4,315.89	473	.18	11.82	.482	6.55
January	.1	.1	0	0	0	0
February	18.4	1.5	0	.634	.026	.03
March	1,111.9	164	.5	35.9	1.47	1.69
April	295.7	23	4.1	9.86	.402	.45
May	109.9	6.6	1.3	3.55	.145	.17
June	107.39	45	.30	3.58	.146	.16
July	2.91	.58	0	.094	.0038	.004
August	16.52	5.3	0	.533	.022	.03
September	26.38	25	0	.879	.036	.04
Water year 1939-40	1,774.98	164	0	4.85	.198	2.70

Note.- Stage-discharge relation affected by ice Jan. 1, Mar. 9-16. No gage-height record Feb. 4 to Mar. 8; discharge computed on basis of five estimates of flow, weather records, and records for Ralston Creek at Iowa City.

Ralston Creek at Iowa City, Iowa

Location.- Water-stage recorder and concrete control with 90° V-notch weir, lat. 41°40'10", long. 91°30'40", in SE¼NW¼ sec. 11, T. 79 N., R. 6 W., at bridge on State Highway 1, at east edge of Iowa City, and 2.8 miles upstream from mouth.

Drainage area.- 3.01 square miles.

Records available.- October 1932 to September 1940 in reports of U. S. Geological Survey. September 1924 to December 1935 in University of Iowa Engineering Bulletin No. 9.

Extremes.- Maximum discharge during year, 121 second-feet Aug. 13 (gage height, 3.00 feet); no flow at times in several months.
1924-40: Maximum discharge, 851 second-feet Aug. 1, 1932 (gage height, 8.18 feet); no flow at times in almost every year.

Remarks.- Records fair except those for periods of ice effect, no gage-height record or obstructed channel conditions, and those below 0.1 second-foot, all of which are poor. Discharges below 0.94 second-foot obtained from weir formula.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.02	0.06	0.15		0	0.2	0.41	0.63	0.06	0	0	0
2	.01	.06	.09		0	2.5	.37	.48	.06	0	0	0
3	0	.05	.07		0	*30	.37	.41	.04	0	0	0
4	0	.05	.06		0	11	.26	c.40	.04	0	0	0
5	0	.06	.07		0	6	.23	c.40	.05	0	0	0
6	0	.05	.07		0	15	.25	c.40	.03	0	0	0
7	0	.05	.08		0	20	1.1	c.45	.04	0	0	0
8	0	.06	.07		0	17	1.2	c.45	.03	0	0	0
9	.12	.06	.07		0	11	.71	c.35	.03	0	0	a.70
10	.05	.35	c.08		0	3	1.9	c.30	.13	0	0	0
11	.03	.09	c.07		0	1.8	1.7	c.25	.05	.32	0	0
12	.01	.07	c.06		0	.80	.90	.23	.10	.09	0	0
13	.01	.06	c.05		0	.68	.79	.19	.06	0	5.1	0
14	0	.06	c.03		0	.55	.68	.20	.04	0	.01	0
15	0	.06	c.04		0	.46	.66	.22	.02	0	0	0
16	0	.06	c.04		1.0	12	.50	.19	0	0	2.1	0
17	0	.05	.04		1.0	13	4.6	.18	0	0	.18	0
18	.01	.06	.04		.8	*4.3	3.2	.46	1.5	0	.01	0
19	.02	.07	.04		.8	2.0	2.4	.61	.27	0	0	0
20	.02	.07	.03		.8	1.4	1.4	.19	.01	0	0	0
21	.04	.06	.02		.6	.94	.81	.22	0	0	0	0
22	.03	.06	.01		.4	.58	.94	.18	0	0	0	0
23	.03	.06	0		.4	a.45	1.1	.12	3.1	0	0	0
24	.04	.07	0		.3	a.40	.90	.12	.22	0	0	0
25	.06	.07	0		.1	a.35	.84	.12	.06	0	0	0
26	.07	.06	0		.2	a.35	.84	.13	.04	0	0	0
27	.95	.06	0		.2	a.40	.61	.13	.03	0	0	0
28	.08	.05	0		.2	.80	.41	.13	.02	0	.04	0
29	.07	.07	0		.2	.67	1.4	.11	0	0	0	0
30	.07	.08	0		-	.58	.74	.08	0	.07	0	0
31	.06	-	0		-	.52	-	.07	-	0	0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1.80	0.95	0	0.058	0.019	0.02
November	2.14	.35	.05	.071	.024	.03
December	1.28	.15	0	.041	.014	.02
Calendar year 1939	496.90	77	0	1.36	.452	6.16
January	0	0	0	0	0	0
February	7.0	1.0	0	.24	.080	.09
March	158.93	30	.20	5.13	1.70	1.96
April	32.22	4.6	.23	1.07	.355	.40
May	8.40	.63	.07	.271	.090	.10
June	6.03	3.1	0	.201	.067	.07
July	.48	.32	0	.015	.005	.006
August	7.44	5.1	0	.24	.080	.09
September	.70	.70	0	.023	.008	.009
Water year 1939-40	226.42	30	0	.619	.206	2.80

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Rapid Creek near Iowa City.
c Backwater from debris on control; discharge computed on basis of records for Rapid Creek near Iowa City.

English River at Kalona, Iowa

Location.- Water-stage recorder, lat. 41°28'10", long. 91°42'40", in SE¼ sec. 13, T. 77 N., R. 8 W., at bridge on State Highway 1, 1 mile south of Kalona, 4 miles downstream from Smith Creek, and 12 miles upstream from mouth. Datum of gage is 633.45 feet above mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army). Prior to Dec. 27, 1939, wire-weight gage at same site and datum.

Drainage area.- 580 square miles.

Records available.- September 1939 to September 1940.

Extremes.- Maximum daily discharge during period, 1,230 second-feet Mar. 19; maximum gage height, 7.38 feet Mar. 3, backwater from ice; minimum daily discharge, 2 second-feet (occurred during period of ice effect) Jan. 25-29.

Flood of June 1930 reached a stage of 19.9 feet, from floodmark pointed out by observer.

Remarks.- Records good except those for period of ice effect, which are poor. Gage read once daily prior to Dec. 27, 1939.

Rating table, Sept. 13, 1939, to Sept. 30, 1940, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Jan. 14)

2.4	2.0	3.4	94	5.1	695
2.5	3.3	3.6	135	5.6	820
2.6	5.0	3.8	188	6.0	930
2.8	20	4.0	260	6.5	1,100
3.0	39	4.3	410	7.0	1,280
3.2	64	4.7	585		

Discharge, in second-feet, 1939-40
1939

Sept. 13	18	Sept. 19	6.5	Sept. 25	5.0
14	14	20	5.0	26	6.5
15	11	21	5.8	27	5.8
16	6.8	22	6.5	28	5.8
17	5.0	23	5.8	29	8.0
18	5.8	24	5.0	30	5.0

Note.- Mean discharge for period Sept. 13-30, 7.41 second-feet (0.013 second-foot per square mile, 0.01 inch run-off).

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.0	7.2	12	3.2	4	15	142	229	39	5.0	460	38
2	7.2	6.5	12	3.0	3	100	117	182	36	4.7	211	26
3	7.2	5.8	12	3.3	*2.8	750	208	152	32	4.7	81	21
4	8.0	4.5	11	3.3	3	750	211	131	29	4.2	46	16
5	8.0	4.7	*7.2	2.9	3	400	128	122	25	4.0	37	12
6	8.0	4.7	6.5	2.8	3	300	105	124	24	4.0	44	10
7	8.8	4.8	4.8	2.8	3	400	100	111	24	4.0	58	8.0
8	8.0	4.8	5.8	3.0	2.5	650	155	117	23	4.0	28	6.5
9	13	4.7	7.2	3.3	2.5	700	204	120	22	7.2	25	5.8
10	9.5	14	5.8	3.3	2.5	600	180	111	29	5.0	18	4.7
11	5.0	12	5.8	3.3	3	350	218	98	29	4.7	17	4.3
12	7.2	14	6.5	3.5	3	200	188	89	32	14	94	4.0
13	6.5	13	5.0	3.5	2.5	150	158	83	47	7.2	188	4.0
14	5.0	15	5.0	3.8	2.5	100	142	77	34	4.8	225	4.2
15	4.8	12	5.0	3.5	3	100	133	70	29	4.0	88	4.2
16	4.7	9.5	4.7	3	10	150	115	64	24	3.6	59	4.0
17	4.8	8.0	4.5	3	22	550	150	64	21	3.5	39	3.6
18	4.8	8.0	4.8	3	100	1,100	355	63	20	3.3	43	3.2
19	5.0	6.5	5.0	3	45	*1,230	287	74	17	3.0	39	3.2
20	6.5	6.5	4.8	3	37	885	214	88	13	2.9	32	3.0
21	6.5	5.8	4.0	3	32	633	171	84	10	2.8	21	3.0
22	6.5	5.8	3.8	2.5	28	420	148	71	9.5	2.8	17	2.9
23	7.2	5.0	3.6	2.5	25	233	229	59	11	2.6	13	2.9
24	8.0	5.8	3.6	2.5	22	163	537	52	15	2.6	10	2.9
25	17	6.5	3.6	2	20	152	464	55	16	2.6	9.5	2.9
26	7.2	6.5	4.0	2	18	168	305	89	12	3.2	9.5	2.9
27	12	5.8	3.8	2	16	142	244	71	9.5	13	32	3.0
28	9.5	5.0	4.0	2	16	166	204	60	8.0	4.2	117	3.5
29	14	5.8	4.0	2	15	260	182	56	6.5	4.0	233	3.6
30	11	4.8	3.6	2.5	-	300	204	51	5.8	28	150	3.3
31	8.8	-	3.3	3	-	201	-	44	-	450	64	-

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Jan. 15 to Mar. 18.

Monthly discharge, in second-feet, water year October 1939 to September 1940

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	248.5	17	4.7	8.02	0.014	0.02
November	223.8	15	4.5	7.46	.013	.01
December	176.7	12	3.3	5.70	.0098	.01
Calendar year	-	-	-	-	-	-
January	89.5	3.8	2	2.89	.0050	.006
February	449.3	100	2.5	15.5	.027	.03
March	12,318	1,230	15	397	.684	.79
April	6,198	537	100	207	.357	.40
May	2,861	229	44	92.3	.159	.18
June	652.3	47	5.8	21.7	.037	.04
July	613.6	450	2.6	19.8	.034	.04
August	2,508	460	9.5	80.9	.139	.16
September	216.6	38	2.9	7.22	.012	.01
Water year 1939-40	26,555.3	1,230	2	72.6	.125	1.70

Cedar River at Mitchell, Iowa

Location.- Staff gage, lat. 43°19', long. 92°52', in sec. 8, T. 98 N., R. 17 W., in tail-race of hydroelectric plant of Central States Power & Light Corporation at Mitchell, 8 miles downstream from Deer Creek and 10 miles upstream from Rock Creek.

Drainage area.- 845 square miles.

Records available.- July 1933 to September 1940.

Extremes.- Maximum discharge observed during year, 4,130 second-feet Mar. 30 (gage height, 85.7 feet); minimum observed, about 7 second-feet many times during February and March when power plant was shut down.

1933-40: Maximum discharge observed, 13,000 second-feet Apr. 4, 1934 (gage height, 89.7 feet); minimum observed, about 5 second-feet many times in period 1933-35 when power plant was shut down.

Remarks.- Records fair. Flow regulated by power plant at station. Gage read hourly.

Cooperation.- Gage-height record furnished by Central States Power & Light Corporation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to July 11						July 12 to Sept. 30			
78.8	8	80.0	139	82.5	994	79.2	12	80.6	168
78.9	12	80.3	200	83.0	1,300	79.4	20	81.0	253
79.1	24	80.7	287	84.0	2,100	79.6	37	81.5	383
79.3	41	81.1	390	85.0	3,170	79.8	54	82.0	555
79.5	62	81.5	523			80.0	75	82.5	820
79.7	88	82.0	734			80.3	117	83.0	1,190

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	41	66	83	63	62	103	878	106	79	80	112	118
2	70	95	137	78	62	89	607	134	79	66	51	115
3	70	99	38	64	89	48	410	93	106	66	124	103
4	80	106	61	64	48	89	279	106	52	39	20	98
5	92	31	88	91	76	103	260	78	134	66	114	84
6	92	93	88	91	76	89	214	110	52	93	63	81
7	114	76	92	36	76	117	169	147	134	12	64	171
8	50	72	93	64	48	103	211	106	503	52	62	16
9	104	89	106	64	63	103	210	93	276	66	90	103
10	92	49	38	77	89	89	210	134	337	66	119	70
11	104	188	114	77	48	117	241	106	142	80	20	70
12	128	31	106	77	62	103	178	69	160	62	97	58
13	105	112	80	104	76	96	201	93	120	107	75	69
14	116	80	93	35	76	89	77	79	80	37	78	112
15	41	66	80	76	76	103	242	79	93	80	76	13
16	118	39	106	90	89	130	120	93	60	63	89	79
17	110	78	29	117	103	77	147	52	66	60	211	43
18	70	131	95	76	48	193	120	161	93	58	176	67
19	114	50	93	90	89	407	120	64	52	58	264	55
20	92	93	97	104	103	512	147	106	52	100	173	56
21	185	66	93	35	62	453	73	93	52	23	118	102
22	39	76	160	63	76	353	151	120	93	64	89	23
23	115	84	120	90	76	268	106	106	64	66	84	46
24	96	66	12	90	103	154	147	120	79	63	156	77
25	104	155	52	76	48	149	120	160	106	64	1,000	46
26	95	56	66	63	62	151	120	60	52	83	255	66
27	104	124	83	104	89	122	106	93	52	123	296	45
28	108	80	80	35	76	206	73	93	134	28	252	85
29	31	106	92	49	76	1,730	146	93	118	68	296	12
30	144	52	119	76	-	2,470	160	66	47	98	197	54
31	65	-	64	63	-	2,940	-	66	-	72	179	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,889	185	31	93.2	0.110	0.13
November	2,509	188	31	83.6	.099	.11
December	2,658	160	12	85.7	.101	.12
Calendar year 1939	86,218	5,920	12	236	.279	3.80
January	2,282	117	35	73.6	.087	.10
February	2,127	103	48	73.3	.087	.09
March	11,756	2,940	48	379	.449	.52
April	6,243	878	73	208	.246	.27
May	3,079	161	52	99.3	.118	.14
June	3,467	503	47	116	.137	.15
July	2,061	123	12	66.5	.079	.09
August	5,000	1,000	20	161	.191	.22
September	2,137	171	12	71.2	.084	.09
Water year 1939-40	46,208	2,940	12	126	.149	2.03

Cedar River at Janesville, Iowa

Location.- Chain gage, lat. 42°39', long. 92°28', in sec. 35, T. 91 N., R. 14 W., at highway bridge at Janesville, 3 miles upstream from Shell Rock River.

Drainage area.- 1,660 square miles.

Records available.- April 1905 to September 1906, May 1915 to September 1927, November 1932 to September 1940.

Average discharge.- 19 years (1915-27, 1933-40), 624 second-feet.

Extremes.- Maximum discharge observed during year, 4,230 second-feet Apr. 1 (gage height, 5.85 feet); minimum observed, 60 second-feet July 19 (gage height, 1.10 feet).
1905-6, 1915-27, 1932-40: Maximum discharge observed, 27,700 second-feet Apr. 1, 1933 (gage height, 15.43 feet); minimum observed, 28 second-feet Oct. 21, 1922.

Remarks.- Records fair except those for periods of ice effect, which are poor. Diurnal fluctuation during low water caused by power plant at Waverly 9 miles above station. Gage read twice daily.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.1	60	1.8	345	4.0	2,300
1.2	86	2.0	470	4.5	2,780
1.3	116	2.4	765	5.0	3,290
1.4	150	2.8	1,110	6.0	4,410
1.5	188	3.2	1,560		
1.6	233	3.6	1,950		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	130	202	169	150	90	150	3,970	254	165	113	363	1,070
2	158	161	158	130	90	160	2,820	233	158	92	498	994
3	140	150	173	130	95	165	1,570	269	158	143	1,070	884
4	188	165	165	130	105	170	1,170	228	173	143	725	662
5	143	158	123	130	115	175	867	254	173	107	412	670
6	154	188	165	135	115	190	816	165	119	81	484	484
7	158	180	143	140	115	200	610	275	180	104	387	477
8	143	184	143	140	110	220	655	233	173	98	280	464
9	192	173	136	135	110	225	554	210	165	101	215	484
10	202	158	136	130	110	230	554	173	275	86	285	561
11	180	158	150	130	115	220	589	206	357	104	243	457
12	158	154	158	130	115	180	526	254	315	165	192	431
13	165	165	158	130	120	185	505	165	285	116	254	438
14	150	161	197	130	120	190	470	184	254	110	275	339
15	136	169	136	125	125	200	339	215	206	95	233	418
16	158	154	150	125	125	220	351	192	126	104	215	297
17	173	143	158	125	130	245	321	165	165	86	224	369
18	184	143	136	120	140	265	280	202	143	76	309	375
19	177	130	*154	120	145	285	269	188	165	65	180	333
20	215	150	165	120	155	431	297	180	150	73	202	345
21	180	143	168	110	160	892	321	180	130	81	243	309
22	136	140	170	100	150	901	169	220	136	95	206	393
23	154	158	185	100	145	901	303	197	165	76	249	264
24	136	143	205	100	140	850	269	158	140	76	280	345
25	206	154	190	110	130	701	249	192	123	83	333	333
26	180	143	180	110	135	670	233	210	158	154	1,710	321
27	158	150	165	100	140	431	249	180	133	765	3,640	321
28	154	161	160	100	145	387	197	233	158	808	2,360	309
29	136	169	175	90	145	457	188	220	143	351	2,050	264
30	158	165	170	90	-	850	275	161	130	618	2,120	206
31	165	-	160	*90	-	2,130	-	173	-	431	1,370	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	5,067	215	130	163	0.098	0.11
November	4,772	202	130	159	.096	.11
December	5,001	205	123	161	.097	.11
Calendar year 1939	184,063	7,000	123	504	.304	4.11
January	3,705	150	90	120	.072	.08
February	3,635	160	90	125	.075	.08
March	13,476	2,130	150	435	.262	.30
April	19,986	3,970	169	666	.401	.45
May	6,369	275	158	205	.123	.14
June	5,321	357	119	177	.107	.12
July	5,600	808	65	181	.109	.13
August	21,607	3,640	180	697	.420	.48
September	13,617	1,070	206	454	.273	.30
Water year 1939-40	108,156	3,970	65	296	.178	2.41

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 21 to Mar. 18.

Cedar River at Cedar Rapids, Iowa

Location.- Water-stage recorder, lat. 41°58'15", long. 91°40'05", in sec. 28, T. 83 N., R. 7 W., in Cedar Rapids, 500 feet upstream from Eighth Avenue Bridge and 2.7 miles upstream from Prairie Creek. Datum of gage is 700.33 feet above mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army).
Drainage area.- 6,640 square miles.
Records available.- February 1903 to September 1940.
Average discharge.- 37 years, 2,931 second-feet.
Extremes.- Maximum discharge during year, 5,540 second-feet Apr. 4 (gage height, 4.86 feet); minimum daily, 280 second-feet Jan. 30 to Feb. 1.
1903-40: Maximum discharge, 72,000 second-feet Mar. 19, 1929 (gage height, 20.1 feet); minimum, 178 second-feet (regulated) Sept. 25, 1935; minimum daily, 236 second-feet July 1, 1934.
Flood of June 1851 reached a stage of about 20 feet.
Remarks.- Records good except those for period of ice effect, which are poor. Diurnal fluctuation caused by power plant half a mile above station.
Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

2.3	278	3.3	1,470
2.4	346	3.6	2,050
2.6	518	4.0	2,990
2.8	735	4.5	4,390
3.0	995	5.0	6,000

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	570	621	621	450	280	300	2,230	1,080	900	1,130	3,040	5,150
2	559	580	580	440	281	360	4,000	1,070	809	1,010	3,280	4,480
3	549	559	549	420	282	430	5,120	1,070	735	941	2,790	3,740
4	559	621	481	415	283	500	5,150	968	678	809	2,920	3,250
5	549	559	518	410	284	560	3,720	1,020	689	760	5,120	2,820
6	528	600	611	410	286	621	3,020	981	655	667	5,020	2,450
7	559	539	559	405	287	735	2,720	995	632	735	3,550	2,090
8	570	611	549	405	288	968	2,450	1,080	621	590	2,640	1,840
9	549	600	644	400	289	1,380	2,270	1,100	611	644	2,200	2,480
10	611	655	611	400	290	1,650	2,200	1,160	621	570	1,900	2,670
11	644	644	580	400	293	1,730	2,160	1,110	611	621	1,670	2,690
12	644	655	632	400	298	1,420	2,050	1,110	689	580	1,600	2,600
13	600	621	580	390	300	1,110	2,030	1,070	730	621	1,730	3,070
14	621	611	518	380	310	968	1,840	1,070	740	528	1,800	2,940
15	632	600	509	370	320	941	1,690	1,040	747	570	1,670	2,820
16	611	600	655	365	330	834	1,630	1,170	735	549	1,600	2,620
17	590	621	590	355	335	1,170	1,520	1,050	735	500	1,450	2,140
18	611	621	570	350	340	2,140	1,490	1,040	644	500	1,560	1,840
19	621	559	580	345	340	2,600	1,440	822	611	490	1,600	1,690
20	632	539	549	335	340	3,170	1,250	913	580	509	1,520	1,600
21	621	600	444	330	330	3,300	1,300	1,070	549	454	1,400	1,400
22	621	528	*370	320	320	2,940	1,190	1,240	539	444	1,200	1,380
23	621	600	346	315	315	2,940	1,160	1,100	2,410	444	1,160	1,350
24	570	611	346	305	310	2,600	1,140	1,020	4,420	435	1,140	1,370
25	621	570	402	300	300	2,050	1,080	1,130	1,840	426	1,110	1,300
26	621	570	549	295	295	2,230	1,040	1,040	2,360	509	1,110	1,320
27	611	549	518	290	295	2,290	1,020	1,020	3,020	1,160	1,330	1,350
28	559	570	528	288	296	2,360	968	995	2,360	1,190	2,270	1,330
29	600	549	500	283	297	2,030	954	1,020	1,580	1,630	4,180	1,300
30	611	539	480	*280	-	1,760	1,050	954	1,300	3,550	4,830	1,170
31	570	-	470	280	-	1,800	-	941	-	3,150	4,920	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	18,435	644	528	595	0.090	0.10
November	17,702	655	528	590	.089	.10
December	16,439	655	346	530	.080	.09
Calendar year 1939	697,919	18,800	346	1,912	.288	3.91
January	11,131	450	280	359	.054	.06
February	8,814	340	280	304	.046	.05
March	49,887	3,300	300	1,609	.242	.28
April	60,882	5,150	954	2,029	.306	.34
May	32,449	1,240	822	1,047	.158	.18
June	34,151	4,420	539	1,138	.171	.19
July	26,716	3,550	426	862	.130	.15
August	73,310	5,120	1,110	2,365	.356	.41
September	68,250	5,150	1,170	2,275	.343	.38
Water year 1939-40	418,166	5,150	280	1,143	.172	2.33

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 30 to Mar. 5; gage-height record missing Jan. 5-21 and of doubtful accuracy Jan. 22 to Mar. 5.

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Cedar River near Conesville, Iowa

Location.- Water-stage recorder, lat. 41°24'30", long. 91°17'25", in NW¼ sec. 11, T. 76 N., R. 4 W., at county road bridge, 3½ miles northeast of Conesville, 5 miles downstream from Wapsipinonoc Creek and 9½ miles upstream from mouth. Datum of gage is 581.85 feet above mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army). Prior to Feb. 2, 1940, wire-weight gage at same site and datum.

Drainage area.- 7,840 square miles.

Records available.- September 1939 to September 1940.

Extremes.- Maximum discharge during period, 5,490 second-feet Mar. 19 (gage height, 7.11 feet); minimum daily, 323 second-feet Feb. 2; minimum gage height observed, 3.20 feet July 25, 26, 28.

Maximum stage known, 16.0 feet in March 1929, from information furnished by local residents to Corps of Engineers, U. S. Army.

Remarks.- Records excellent except those for periods of ice effect, which are poor, and those for the period Sept. 16 to Dec. 30, 1939, which are good. Gage read once daily prior to Feb. 2, 1940.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

3.2	620	4.0	1,100	5.0	2,000	6.0	3,450	7.0	5,280
3.5	780	4.5	1,480	5.5	2,650	6.5	4,340	7.5	6,270

Discharge, in second-feet, 1939-40

1939

Sept. 16	846	Sept. 21	774	Sept. 26	744
17	822	22	780	27	732
18	762	23	762	28	700
19	762	24	726	29	720
20	786	25	710	30	756

Note.- Mean discharges Sept. 16-30, 759 second-feet (0.097 second-feet per square mile; run-off, 0.05 inch).

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	792	762	822	640	325	365	2,280	1,400	988	1,650	2,880	4,560
2	732	762	822	620	*323	410	2,250	1,400	974	1,420	2,720	4,860
3	715	774	822	600	328	640	3,160	1,390	960	1,270	2,860	4,690
4	715	786	822	580	333	1,040	4,710	1,360	930	1,170	2,940	4,180
5	720	780	816	565	338	1,620	5,380	1,340	900	1,090	2,620	3,670
6	710	780	798	545	340	2,250	4,620	1,310	870	1,020	3,450	3,250
7	715	780	774	535	342	2,830	3,820	1,310	870	954	4,820	2,830
8	650	780	774	530	345	3,480	3,450	1,300	864	906	4,340	2,520
9	635	780	774	520	347	3,750	3,180	1,290	840	906	3,350	2,400
10	650	834	798	515	350	3,600	2,970	1,300	834	852	2,740	3,010
11	650	834	798	510	355	3,140	2,830	1,310	906	846	2,380	2,900
12	670	834	798	505	363	2,860	2,770	1,300	954	974	2,100	2,800
13	665	834	786	495	370	2,610	2,650	1,260	900	876	2,140	2,080
14	660	834	786	485	380	2,500	2,540	1,230	900	798	2,410	2,920
15	660	834	792	470	388	2,350	2,400	1,180	954	780	2,100	2,980
16	670	834	774	460	395	2,190	2,250	1,160	960	750	1,980	2,890
17	665	834	768	450	397	1,910	2,200	1,140	930	732	1,970	2,770
18	756	840	768	440	398	3,330	2,320	1,190	906	720	1,800	2,500
19	780	840	780	425	394	*5,090	2,250	1,190	1,460	690	1,640	2,180
20	762	840	780	410	390	4,340	2,070	1,190	1,200	680	1,650	1,940
21	762	840	780	400	382	4,340	1,960	1,090	858	658	1,650	1,810
22	756	834	715	390	376	4,290	1,800	1,200	798	660	1,590	1,720
23	774	834	715	380	363	3,600	1,770	1,260	828	648	1,490	1,610
24	774	834	695	370	353	3,450	1,670	1,210	1,340	638	1,380	1,560
25	786	834	695	365	348	3,030	1,600	1,140	2,720	630	1,340	1,540
26	780	816	685	355	347	2,610	1,560	1,100	2,890	630	1,330	1,510
27	840	816	690	350	348	2,580	1,480	1,100	1,900	630	1,380	1,480
28	834	816	655	345	349	2,650	1,420	1,060	2,450	710	1,460	1,480
29	834	816	655	340	350	2,970	1,410	1,040	2,570	981	1,550	1,500
30	792	822	670	330	-	2,760	1,420	1,020	2,050	1,090	2,560	1,480
31	756	-	660	325	-	2,470	-	1,010	-	1,650	4,160	-

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 31 to Mar. 6, Mar. 14, 15.

Monthly discharge, in second-feet, water year October 1939 to September 1940

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	22,660	840	635	731	0.093	0.11
November	24,438	840	762	815	.104	.12
December	23,467	822	655	757	.097	.11
Calendar year	-	-	-	-	-	-
January	14,250	640	325	460	.059	.07
February	10,417	398	323	359	.046	.05
March	85,055	5,090	365	2,744	.350	.40
April	76,190	5,380	1,410	2,540	.324	.36
May	37,780	1,400	1,010	1,219	.155	.18
June	37,504	2,090	798	1,250	.159	.18
July	28,000	1,650	630	903	.115	.13
August	72,800	4,820	1,330	2,348	.299	.34
September	78,440	4,860	1,480	2,615	.334	.37
Water year 1939-40	511,001	5,380	323	1,396	.178	2.42

Shell Rock River at Greene, Iowa

Location.- Wire-weight gage, lat. 42°54', long. 92°48', in sec. 1, T. 93 N., R. 17 W., in tail water of Central States Power & Light Corporation's hydroelectric plant at Greene, about 5 miles upstream from Coldwater Creek.

Drainage area.- 1,375 square miles.

Records available.- July 1933 to September 1940.

Extremes.- Maximum discharge during year, 2,720 second-feet Aug. 26, 28 (gage height, 93.20 feet); minimum, about 15 second-feet on many days when power plant was shut down.

1933-40: Maximum discharge, 12,400 second-feet Mar. 5, 1935 (gage height, 97.5 feet, on staff gage); minimum, about 6 second-feet on many days in period 1935-36 when power plant was shut down.

Remarks.- Records fair. Flow regulated by power plant at station.

Cooperation.- Gage-height record furnished by Central States Power & Light Corporation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	105	95	62	62	84	1,380	176	107	48	336	912
2	62	94	109	40	51	78	993	176	96	70	1,064	757
3	51	94	84	51	62	73	781	155	64	70	483	617
4	72	105	95	79	73	73	645	155	107	70	431	484
5	73	95	95	20	62	94	496	146	96	59	245	454
6	84	94	95	18	62	83	405	138	86	26	220	408
7	94	94	129	29	74	116	417	138	107	37	161	327
8	62	94	109	51	61	113	427	142	291	37	150	206
9	94	94	106	40	62	118	449	155	399	59	164	665
10	94	106	110	62	63	63	449	121	298	37	161	999
11	105	106	95	73	73	114	427	113	161	148	140	963
12	94	95	95	62	64	114	353	138	201	37	150	725
13	94	96	84	51	62	114	346	52	172	48	161	560
14	105	95	40	38	84	86	277	78	139	70	172	511
15	117	96	51	51	62	103	288	114	139	59	303	394
16	105	74	85	62	84	140	286	66	75	59	129	342
17	84	145	84	51	84	98	265	66	96	37	147	291
18	105	84	84	15	73	201	281	155	96	48	130	281
19	94	73	84	40	84	597	226	112	96	48	118	308
20	94	128	95	50	84	731	226	113	53	48	182	356
21	127	94	61	51	73	700	200	130	96	48	129	218
22	94	73	70	50	72	525	210	135	86	48	150	307
23	73	95	84	50	62	432	142	149	86	48	107	321
24	84	95	87	40	84	373	176	139	156	37	207	401
25	105	105	50	40	73	359	176	160	75	26	1,000	334
26	105	95	73	40	84	329	168	106	86	915	1,680	243
27	116	95	72	51	84	254	146	128	86	743	1,560	218
28	116	95	73	50	72	260	129	149	86	250	2,600	227
29	95	95	73	50	72	756	163	106	74	435	2,300	172
30	84	95	51	51	-	1,750	176	117	53	206	1,690	193
31	94	-	39	51	-	1,210	-	107	-	130	1,140	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,849	127	51	91.9	0.067	0.08
November	2,904	145	73	96.8	.070	.08
December	2,557	129	39	82.5	.060	.07
Calendar year 1939	139,710	7,770	39	383	.279	3.78
January	1,469	79	15	47.4	.034	.04
February	2,062	84	51	71.1	.052	.06
March	10,141	1,750	63	327	.238	.27
April	11,113	1,380	129	370	.269	.30
May	3,935	176	52	127	.092	.11
June	3,763	399	53	125	.091	.10
July	4,002	802	26	129	.094	.11
August	17,606	2,600	107	568	.413	.48
September	13,192	999	172	440	.320	.36
Water year 1939-40	75,589	2,600	15	207	.151	2.05

Lime Creek at Mason City, Iowa

Location.- Water-stage recorder and concrete control, lat. 43°10', long. 93°11', in sec. 3, T. 97 N., R. 20 W., at Fourteenth Street Bridge in Mason City, about half a mile upstream from Willow Creek.

Drainage area.- 535 square miles.

Records available.- December 1932 to September 1940.

Extremes.- Maximum discharge during year, 980 second-feet Mar. 29 (gage height, 3.38 feet); minimum, 6.9 second-feet July 24 (gage height, 0.82 foot).
1932-40: Maximum discharge, about 9,400 second-feet Mar. 30, 1933 (gage height, 22.15 feet, datum then in use, from gage reading at flood crest); practically no flow Aug. 30 to Sept. 1, 1933.

Remarks.- Records good.

Cooperation.- Water-stage recorder inspected by employee of Decker Packing Co.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

0.8	6.5	1.4	41	2.4	413
.9	8.5	1.5	55	2.6	563
1.0	11.5	1.6	72	2.8	686
1.1	15	1.8	119	3.0	790
1.2	21	2.0	186	3.3	940
1.3	30	2.2	281		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12.5	19	27	14.5	8.1	14.5	615	62	23	13.5	157	245
2	10.5	18.5	21	13	8.5	14.5	350	60	23	12	216	199
3	12	19	13	12.5	8.8	14.5	287	52	18.5	12.5	114	168
4	15	20	20	11.5	8.3	14.5	234	49	27	12	76	138
5	20	18.5	26	11.5	9.1	14.5	190	48	27	11	62	119
6	14.5	19	23	11.5	9.4	15	172	45	27	11	52	103
7	15.5	23	25	10.5	9.4	15.5	161	45	196	11.5	44	93
8	18.5	19	19	11	10	17	179	45	239	11	38	87
9	19	22	23	11	a10	18.5	245	42	114	10.5	34	208
10	26	21	23	11	a11	20	234	40	74	10.5	34	357
11	20	18	19	11	a11	33	186	38	54	18	39	312
12	20	19	26	11	a11	27	144	34	49	15	52	260
13	22	22	12.5	11	a12	25	119	31	44	14	30	199
14	21	30	14.5	11	a12	21	114	31	36	12	25	157
15	19	16	17.5	12	a12	22	98	34	29	11.5	25	131
16	20	19	20	12	a12	22	89	33	26	10.5	26	116
17	18.5	22	20	12	13	22	87	30	22	10	28	103
18	18.5	24	21	12	13	42	78	36	21	10.5	34	89
19	22	23	30	11	13	172	76	42	17.5	10	34	80
20	18	23	14.5	9.7	14.5	281	72	40	17	9.4	28	76
21	20	23	14	h9.4	15	312	69	47	17.5	8.1	25	69
22	20	21	18.5	h11	15	239	65	42	19	8.3	22	78
23	15	26	16	h9.1	14.5	186	62	37	20	8.3	17.5	76
24	19	24	14.5	h8.5	14	168	60	34	20	7.7	36	70
25	21	21	15.5	9.4	13	141	58	34	17.5	8.1	114	65
26	18	25	17.5	8.8	14.5	101	55	31	17	14.5	250	64
27	26	18.5	20	9.1	14.5	78	48	28	17	17	480	57
28	23	23	20	8.3	14.5	85	48	30	18.5	15	480	54
29	20	25	18.5	8.5	14.5	724	64	27	18	19	480	49
30	19	21	17.5	8.3	-	718	64	34	15.5	29	399	45
31	20	-	15	8.1	-	800	-	20	-	21	312	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	583.5	26	10.5	18.8	0.035	0.04
November	642.5	30	16	21.4	.040	.04
December	602.0	30	12.5	19.4	.036	.04
Calendar year 1939	55,448.1	2,760	9.1	152	.284	3.84
January	329.2	14.5	8.1	10.6	.020	.02
February	345.6	15	8.1	11.9	.022	.02
March	4,377.5	800	14.5	141	.264	.30
April	4,323	615	48	144	.269	.30
May	1,201	62	20	38.7	.072	.08
June	1,264	239	15.5	42.1	.079	.09
July	392.4	29	7.7	12.7	.024	.03
August	3,763.5	480	17.5	121	.226	.26
September	3,867	357	45	129	.241	.27
Water year 1939-40	21,691.2	800	7.7	59.3	.111	1.49

a No gage-height record; discharge interpolated.
h Computed from once-daily gage readings.

Lakes in Iowa River Basin

Upper Pine Lake at Eldora, Iowa

Location.- Staff gage, lat. 42°22', long. 93°04', in SE¼ sec. 4, T. 87 N., R. 19 W., at Pine Lake State Park at Eldora.

Records available.- June 1936 to September 1940.

Extremes.- Maximum gage height observed during year, 2.14 feet June 23; minimum observed, -1.18 feet Dec. 16-18.
1936-40: Maximum gage height observed, 3.76 feet June 13, 1937; minimum observed, that of Dec. 16-18, 1939.

Remarks.- Crest of spillway is at gage height 1.0 foot. Gage read once daily.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-0.49	-	-1.06			-	1.05	0.99	0.87	0.91	1.08	1.00
2	-.53	-	-1.06			-	1.05	1.01	.85	.89	1.06	.98
3	-.55	-0.87	-1.06			-	1.05	1.01	.83	.87	1.06	.98
4	-	-.89	-1.06			-	-	.99	-	.85	1.04	.98
5	-	-.93	-1.08			-	-	.99	.79	.83	1.00	.98
6	-.58	-.95	-1.08			-	1.05	-	-	.79	-	.98
7	-.59	-.97	-1.08			-	1.05	-	-	.75	.98	.96
8	-.61	-.99	-1.08			-	1.05	-	.79	.73	.98	.94
9	-.49	-	-1.10			-	1.07	-	-	.71	1.00	.92
10	-.51	-	-1.10			-	1.05	-	.73	.69	1.02	.90
11	-.53	-	-1.12			-	1.05	-	.73	.71	1.12	.90
12	-.55	-	-1.12			-	1.05	-	-	.67	1.04	.88
13	-.57	-	-1.14			-	1.05	-	-	.65	1.02	.86
14	-.57	-	-1.16			-	1.03	-	.65	.61	1.22	-
15	-.60	-	-1.17			-	1.03	-	.63	.59	1.18	.80
16	-.62	-1.01	-1.18			-	1.03	-	-	-	1.16	.78
17	-	-1.01	-1.18			0.79	-	-	-	-	1.18	.78
18	-	-1.01	-1.18			1.53	1.03	-	-	-	1.10	.76
19	-	-1.03	-			1.39	1.03	1.05	-	-	-	-
20	-	-1.03	-			1.23	1.03	1.15	-	-	-	.74
21	-	-1.00	-			1.11	.99	-	-	.45	-	.72
22	-	-1.02	-			1.07	.97	1.09	.37	.43	-	.70
23	-	-	-			1.05	.97	1.07	1.98	.37	-	.68
24	-	-	-			1.05	-	1.03	1.33	.35	1.00	.68
25	-	-	-			1.05	.95	1.01	1.11	.35	1.02	.64
26	-	-1.06	-			-	.93	.99	1.05	1.43	1.52	.62
27	-	-1.08	-			-	.91	.97	1.03	1.17	1.64	.60
28	-.75	-1.10	-			1.05	.91	-	1.01	1.13	1.30	.58
29	-.77	-1.12	-			1.05	.95	-	.99	1.65	1.10	.58
30	-.79	-1.12	-			1.05	.95	-	.93	1.23	1.06	.56
31	-	-	-			1.05	-	-	-	1.15	1.02	-

Lower Pine Lake at Eldora, Iowa

Location.- Staff gage, lat. 42°22', long 93°05', in NW¼ sec. 9, T. 87 N., R. 19 W., at Pine Lake State Park at Eldora.

Records available.- June 1936 to September 1940.

Extremes.- Maximum gage height observed during year, 3.62 feet June 23; minimum observed, 1.60 feet Oct. 2.
1936-40: Maximum gage height observed, 4.90 feet June 13, 1937; minimum observed, 1.54 feet Sept. 25, 1939.

Remarks.- Crest of spillway is at gage height 2.00 feet. Gage read once daily.

Lakes in Iowa River Basin

Gage height, in feet, of Lower Pine Lake at Eldora, Iowa, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.62	-	2.06	2.10	2.08	-	2.18	2.10	2.00	2.08	2.20	2.08
2	1.60	-	2.06	2.10	2.08	-	2.18	2.10	2.00	2.08	2.20	2.06
3	-	1.90	2.06	2.10	2.08	-	2.18	2.10	2.00	2.04	2.20	2.06
4	-	1.90	2.06	2.10	2.06	2.04	2.18	2.10	-	2.00	2.16	2.06
5	-	1.90	2.08	2.10	2.06	2.04	2.18	2.10	2.00	1.98	2.10	2.06
6	1.64	1.92	2.08	2.10	-	-	2.18	-	-	1.96	-	2.06
7	1.66	1.92	2.08	2.10	-	2.04	2.18	-	-	1.96	2.06	2.04
8	1.66	1.92	2.08	2.10	-	2.04	2.18	-	2.00	1.96	2.00	2.02
9	1.78	-	2.08	2.10	2.06	2.04	2.20	-	1.88	1.94	2.04	1.98
10	1.80	-	2.08	2.10	2.06	2.04	2.20	-	1.88	1.94	2.00	1.96
11	1.80	-	2.08	-	2.06	-	2.18	-	1.88	1.94	2.00	1.96
12	1.80	-	2.08	2.10	2.06	-	2.18	-	-	1.92	2.00	1.94
13	1.80	-	2.08	2.10	2.06	-	2.18	-	-	1.90	2.00	1.92
14	1.80	-	2.06	2.10	2.06	2.04	2.18	-	1.88	1.88	2.20	-
15	1.80	-	2.06	2.10	2.06	2.04	2.18	-	1.88	1.86	2.18	1.90
16	1.80	2.02	2.06	2.10	-	-	2.16	-	-	-	2.20	1.90
17	-	2.02	2.04	2.10	2.06	2.60	2.14	-	-	-	2.18	1.90
18	-	2.00	2.04	2.10	2.06	2.60	2.14	2.12	-	-	2.12	1.92
19	-	2.02	-	2.10	-	2.38	2.12	2.20	-	-	-	-
20	-	2.02	-	2.10	2.06	2.28	2.12	2.22	-	-	-	1.94
21	-	2.04	-	2.10	-	2.06	2.12	-	-	1.78	-	1.92
22	-	2.04	-	2.10	-	2.06	2.10	2.18	1.69	1.70	-	1.92
23	-	-	-	2.10	2.06	2.06	2.10	2.14	3.31	1.70	-	1.94
24	-	-	-	2.08	-	2.04	-	2.10	2.66	1.68	2.04	1.94
26	-	-	-	2.08	2.04	2.06	2.10	2.08	2.30	1.68	2.04	1.92
26	-	2.04	-	2.08	2.04	-	2.10	2.08	2.26	2.50	2.44	1.92
27	-	2.04	-	2.08	2.04	-	2.08	2.08	2.22	2.33	2.52	1.90
28	1.72	2.04	-	2.08	2.04	2.10	2.10	-	2.20	2.30	2.32	1.90
29	1.76	2.06	-	2.08	2.04	2.14	2.10	-	2.14	2.80	2.24	1.90
30	1.80	2.06	-	2.08	-	2.18	2.10	-	-	2.33	2.10	1.90
31	-	-	-	2.08	-	2.18	-	-	-	2.30	2.10	-

Lake McBride near Solon, Iowa

Location.- Float gage in concrete well, lat: 41°48', long. 91°34', in NE¼ sec. 29, T. 81 N., R. 6 W., in McBride State Park, about 3 miles west of Solon. Datum of gage is 675.54 feet above mean sea level (general adjustment of 1912).

Records available.- October 1936 to September 1940.

Extremes.- Maximum gage height observed during year, 8.80 feet Mar. 3; minimum observed, 7.16 feet Sept. 30.

1936-40: Maximum gage height observed, 10.05 feet Feb. 21, 1937; minimum observed, -0.50 foot Dec. 5, 1936 (gate in dam open).

Remarks.- Crest of spillway is at gage height 8.00 feet. Gage read once daily.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.02	8.05	8.06	8.04	8.04	8.07	8.15	8.04	8.05	7.96	7.35	7.60
2	8.03	8.05	8.07	8.04	8.04	8.07	8.14	8.04	8.05	7.93	7.40	7.50
3	8.03	8.05	8.07	8.04	8.04	8.80	8.14	8.04	8.05	7.97	7.40	7.40
4	8.04	8.06	8.07	8.04	8.04	8.76	8.13	8.04	8.05	7.97	7.40	7.30
5	8.04	8.06	8.06	8.04	8.04	8.68	8.12	8.04	8.04	7.98	7.35	7.30
6	8.04	8.06	8.06	8.04	8.04	8.54	8.12	8.04	8.04	7.98	7.30	7.25
7	8.04	8.06	8.06	8.03	8.04	8.42	8.12	8.04	8.04	7.99	7.30	7.25
8	8.04	8.07	8.07	8.03	8.04	8.34	8.13	8.04	8.05	8.00	7.20	7.20
9	8.03	8.07	8.08	8.03	8.04	8.38	8.12	8.04	8.06	8.00	7.20	7.25
10	8.03	8.09	8.08	8.03	8.04	8.25	8.14	8.05	8.06	8.01	7.20	7.30
11	8.03	8.07	8.08	8.02	8.06	8.20	8.14	8.05	8.06	8.01	7.40	7.38
12	8.03	a8.07	8.07	8.02	8.06	8.21	8.15	8.05	8.06	8.05	7.35	7.40
13	8.02	a8.06	8.06	8.02	8.06	8.18	8.15	8.05	8.06	8.05	7.30	7.44
14	8.02	a8.06	8.06	8.02	8.06	8.16	8.16	8.05	8.06	8.03	7.35	7.48
15	8.02	8.06	8.06	8.02	8.06	8.15	8.18	8.05	8.07	8.02	7.40	7.35
16	8.03	8.06	8.07	8.02	8.06	8.15	8.18	8.05	7.90	8.01	7.65	7.20
17	8.03	8.06	8.06	8.02	8.06	8.15	8.17	8.05	7.90	8.00	7.80	7.20
18	8.03	8.07	8.06	8.02	8.06	8.15	8.18	8.03	8.06	8.00	7.85	7.20
19	8.04	8.06	8.05	8.02	8.06	8.15	8.18	8.03	8.06	8.00	7.90	7.20
20	8.04	8.06	8.05	8.02	8.06	8.15	8.20	8.04	8.06	7.90	8.00	7.20
21	8.03	8.06	8.05	8.02	8.06	8.15	8.22	8.04	8.06	7.90	8.00	7.20
22	8.03	8.06	8.05	8.03	8.06	8.15	8.23	8.03	8.06	7.90	7.90	7.20
23	8.03	8.08	8.05	8.03	8.05	8.15	8.24	8.03	8.06	7.80	7.90	7.20
24	8.03	8.08	8.04	8.03	8.05	8.14	8.24	8.04	8.06	7.70	8.00	7.20
25	8.03	8.07	8.04	8.03	8.05	8.14	8.25	8.04	8.06	7.60	8.00	7.20
26	8.03	8.07	8.04	8.03	8.05	8.14	8.26	8.04	8.06	7.50	7.90	7.20
27	8.03	8.06	8.04	8.03	8.06	8.14	8.28	8.05	7.97	7.46	7.85	7.20
28	8.03	8.06	8.04	8.03	8.06	8.14	8.20	8.05	7.97	7.40	7.80	7.20
29	8.04	8.06	8.04	8.04	8.06	8.16	8.04	8.05	7.96	7.35	7.75	7.18
30	8.04	8.06	8.04	8.04	-	8.16	8.04	8.05	7.96	7.30	7.70	7.16
31	8.04	-	8.04	8.04	-	8.15	-	8.05	-	7.30	7.65	-

a Gage heights interpolated.

Note.- Gage-height record doubtful Mar. 3 to July 1.

Lakes in Iowa River Basin

Clear Lake at Clear Lake, Iowa

Location.- Staff gage, lat. 43°07', long. 93°24', in sec. 25, T. 96 N., R. 22 W., at Clear Lake State Park at town of Clear Lake.

Records available.- May 1933 to September 1940.

Extremes.- Maximum gage height observed during year, 3.40 feet Sept. 9-11; minimum observed, 2.50 feet July 18-21.
1933-40: Maximum gage height observed, 5.02 feet May 20, 22, 23, 1937; minimum observed, 1.44 feet Aug. 12, 1936.

Remarks.- Crest of outlet dam is at gage height 4.5 feet. No discharge from lake during year. Gage read once daily.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.08	2.92	-				-	3.30	3.00	2.80	3.02	3.14
2	3.08	2.92	2.84				-	3.30	2.96	2.80	3.02	3.14
3	3.06	2.92	2.84				-	3.20	2.96	2.80	3.02	3.14
4	3.06	2.92	-				-	3.00	2.96	2.70	3.02	3.14
5	3.08	2.90	-				-	3.10	3.00	2.70	3.10	3.10
6	3.06	2.90	2.84				-	3.00	2.96	2.70	3.02	3.10
7	3.06	2.88	-				-	3.00	3.10	2.64	2.98	3.10
8	3.06	-	-				-	3.10	3.08	2.64	2.96	3.10
9	3.08	-	2.84				-	3.00	3.06	2.60	2.98	3.40
10	3.10	2.88	2.84				-	3.10	3.08	2.60	3.00	3.40
11	3.10	2.88	-				-	3.10	3.00	2.64	3.00	3.40
12	3.10	2.88	2.84				-	3.20	3.00	2.64	3.00	3.30
13	3.08	-	-				-	3.05	2.90	2.60	3.00	3.30
14	3.08	2.88	-				-	3.00	3.00	2.60	3.00	3.28
15	3.06	2.88	-				-	3.30	3.00	2.64	3.00	3.28
16	3.06	-	2.84				-	3.30	2.90	2.58	3.00	3.26
17	3.04	2.88	-				-	3.00	2.90	2.58	3.02	3.22
18	3.04	2.88	2.84				-	3.10	2.90	2.50	3.02	3.22
19	3.02	2.88	-				-	3.10	2.90	2.50	2.98	3.24
20	3.02	2.88	2.83				-	3.00	2.90	2.50	2.98	3.24
21	3.00	2.88	-				-	3.10	2.86	2.50	2.90	3.26
22	3.00	2.86	-				-	3.10	2.80	2.58	2.90	3.26
23	3.00	-	2.83				-	3.10	3.00	2.56	2.90	3.24
24	2.98	-	2.83				3.10	3.10	3.00	2.52	2.92	3.28
25	2.98	2.86	-				3.10	3.10	3.00	2.52	3.04	3.26
26	2.96	2.86	-				3.10	3.10	3.00	2.74	3.08	3.24
27	2.96	-	2.82				3.00	3.05	3.00	2.74	3.08	3.24
28	2.94	-	-				3.00	3.00	3.00	2.76	3.14	3.22
29	2.94	2.86	-				3.25	3.00	2.90	2.82	3.14	3.16
30	2.94	-	2.83				3.25	3.00	2.80	2.80	3.20	3.14
31	2.94	-	2.82				-	3.00	-	2.80	3.20	-

Edwards River near New Boston, Ill.

Location.- Wire-weight gage, lat. 41°11', long. 90°58', at quarter corner between secs. 21 and 28, T. 14 N., R. 5 W., at bridge on State Highway 83, about 1½ miles northeast of New Boston and 5 miles upstream from mouth. Datum of gage is 529.92 feet above mean sea level (general adjustment of 1912).
Drainage area.- 434 square miles.
Records available.- November 1934 to September 1940.
Extremes.- Maximum discharge observed during year, 1,680 second-feet Mar.7 (gage height, 16.71 feet); minimum observed, 6 second-feet July 26 (gage height, 8.75 feet).
1934-40: Maximum discharge observed, 4,500 second-feet Mar. 12, 14, 1939; maximum gage height observed, 19.95 feet, backwater from ice Feb. 27, 29, Mar. 1, 1936; minimum discharge observed, that of July 26, 1940; minimum gage height observed, 8.59 feet Oct. 8, 1937.
Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read once daily.
Cooperation.- Records collected in cooperation with Corps of Engineers, U. S. Army.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Dec. 1 to Dec. 26, Jan. 31 to Feb. 9, Feb. 11-23, Feb. 28 to Mar. 23)

8.7	4	9.2	28	10.2	119	12.0	415	15.0	1,150
8.8	8	9.4	42	10.6	171	12.5	520	16.0	1,450
8.9	12	9.6	58	11.0	231	13.0	632	17.0	1,820
9.0	17	9.9	86	11.5	319	14.0	875		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	150	34	14	9	44	102	117	42	158	18	40
2	34	42	36	13	10	97	91	119	39	123	44	23
3	29	39	37	12	10	1,240	86	96	38	112	18	25
4	27	38	34	11	12	1,120	85	88	35	20	15	22
5	32	35	33	10	11	872	94	86	32	18	83	20
6	31	35	29	9	11	1,200	85	72	30	17	28	18
7	28	34	30	9	11	1,680	85	66	29	14	16	18
8	22	34	30	9	12	692	107	66	29	15	22	16
9	24	34	29	9	12	409	119	72	28	14	14	18
10	26	38	28	9	11	321	107	69	27	14	12	92
11	32	49	27	9	11	278	112	67	29	13	12	72
12	30	48	26	9	11	188	111	63	50	14	12	43
13	26	42	26	9	12	123	96	60	96	14	30	28
14	25	38	25	9	12	93	94	57	61	16	242	21
15	23	36	24	9	12	167	88	57	50	13	119	17
16	24	34	23	8	12	192	86	56	38	12	47	15
17	23	35	24	8	12	170	88	53	33	11	29	15
18	23	32	24	8	21	450	218	53	27	10	171	12
19	23	32	25	8	34	389	407	60	38	10	609	12
20	23	34	*24	8	167	262	241	60	27	10	209	12
21	23	32	21	8	125	204	184	53	31	9	75	11
22	23	32	18	8	99	164	154	50	25	10	45	10
23	23	31	20	8	79	138	145	44	23	8	32	10
24	27	31	18	*8	71	91	164	44	23	8	28	10
25	29	31	18	8	64	42	188	42	22	7	26	8
26	25	32	16	8	56	33	157	58	22	6	23	11
27	55	32	16	8	48	126	140	76	20	10	26	14
28	431	31	16	8	44	120	124	62	19	121	272	12
29	139	31	15	8	46	126	114	56	20	241	134	11
30	358	29	15	8	-	126	129	50	147	73	111	10
31	326	-	15	9	-	112	-	47	-	28	67	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,993	431	22	64.3	0.148	0.17
November	1,171	150	29	39.0	.090	.10
December	756	37	15	24.4	.056	.06
Calendar year 1939	78,066	4,010	15	214	.493	6.68
January	279	14	8	9.0	.021	.02
February	1,045	167	9	36.0	.083	.09
March	11,269	1,680	33	364	.839	.97
April	4,001	407	85	133	.306	.34
May	2,019	119	42	65.1	.160	.17
June	1,130	147	19	37.7	.087	.10
July	1,149	241	6	37.1	.085	.10
August	2,589	609	12	83.5	.192	.22
September	646	92	8	21.5	.050	.06
Water year 1939-40	28,047	1,680	6	76.6	.176	2.40

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 27 to Jan. 30, Feb. 10, 24-27.

Pope Creek near Keithsburg, Ill.

Location.- Wire-weight gage, lat. 41°08', long. 90°55', in SE¼ sec. 11, T. 13 N., R. 5 W., about 2 miles northeast of Keithsburg and 3.3 miles upstream from mouth. Datum of gage is 524.07 feet above mean sea level (general adjustment of 1912).

Drainage area.- 171 square miles.

Records available.- December 1934 to September 1940.

Extremes.- Maximum discharge observed during year, 753 second-feet Mar. 3 (gage height, 19.13 feet); minimum observed, 2 second-feet Jan. 13, July 24-26, Sept. 21-30; minimum gage height observed, 14.53 feet Jan. 13.

1934-40: Maximum discharge observed, 3,860 second-feet Mar. 12, 1939; maximum gage height observed, 26.94 feet Feb. 21, 1937 (affected by ice); minimum discharge observed, 2 second-feet Sept. 11, 1936, Sept. 9, 16-23, 1937, Jan. 13, July 24-26, Sept. 21-30, 1940; minimum gage height observed, 14.53 feet Jan. 13, 1940.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read once daily, oftener during high stages.

Cooperation.- Records collected in cooperation with Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	12	10	4	7	25	23	44	18	12	28	13
2	12	12	9	4	6	111	22	42	17	12	14	9
3	12	11	8	4	7	753	22	39	16	9	7	6
4	11	9	10	4	5	532	26	35	15	7	6	5
6	11	9	12	4	4	378	23	31	15	7	5	5
6	10	9	11	4	4	188	22	30	14	5	48	3
7	9	8	9	4	4	134	29	28	14	5	26	3
8	9	8	9	4	5	101	38	28	14	5	11	3
9	14	8	8	4	5	85	32	26	14	5	9	5
10	13	14	8	5	6	84	28	24	14	4	8	152
11	11	12	8	4	6	45	28	22	18	5	7	48
12	11	12	8	5	5	33	32	22	92	6	6	20
13	9	11	7	2	5	19	30	21	41	4	8	11
14	8	11	7	6	5	35	28	20	22	4	246	8
15	8	10	7	6	6	35	26	20	18	4	41	6
16	7	10	7	5	6	40	25	20	18	4	27	5
17	7	9	7	5	8	81	26	20	17	4	16	4
18	7	9	7	5	14	146	118	20	14	4	281	4
19	6	9	8	4	17	87	116	27	27	3	261	3
20	6	9	*7	4	60	39	49	22	16	3	57	3
21	8	8	7	4	56	53	59	22	10	3	30	2
22	7	8	6	4	41	30	51	20	9	3	20	2
23	7	8	6	4	36	17	49	20	9	3	14	2
24	7	10	6	4	27	16	81	19	12	2	14	2
25	8	9	5	*4	26	12	73	18	9	2	12	2
26	8	9	5	4	25	27	67	50	8	2	10	2
27	29	9	5	4	24	42	53	35	8	74	11	2
28	45	7	5	5	23	35	48	27	6	124	20	2
29	29	9	4	5	22	38	46	25	6	15	45	2
30	18	9	4	5	-	23	52	21	5	14	16	2
31	13	-	4	6	-	26	-	20	-	9	32	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	373	45	6	12.0	0.070	0.08
November	288	14	7	9.6	.056	.06
December	224	12	4	7.2	.042	.05
Calendar year 1939	28,139	3,000	4	77.1	.451	6.12
January	136	6	2	4.4	.026	.03
February	465	60	4	16.0	.094	.10
March	3,270	753	12	105	.614	.71
April	1,322	118	22	44.1	.258	.29
May	818	50	18	26.4	.154	.18
June	516	92	5	17.2	.101	.11
July	370	124	2	11.9	.070	.08
August	1,336	281	5	43.1	.252	.29
September	336	152	2	11.2	.065	.07
Water year 1939-40	9,454	753	2	25.8	.151	2.05

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 27 to Jan. 9, Jan. 15-31, Feb. 25, 26.

Henderson Creek near Oquawka, Ill.
(Formerly published as Henderson River near Oquawka, Ill.)

Location.- Wire-weight gage, lat. 41°00', long. 90°51', in sec. 33, T. 12 N., R. 4 W., at bridge on State Highway 94, 1 mile south of Bald Bluff, 6½ miles northeast of Oquawka, and 22 miles upstream from mouth. Datum of gage is 541.67 feet above mean sea level (general adjustment of 1912).

Drainage area.- 428 square miles.

Records available.- December 1934 to September 1940.

Extremes.- Maximum discharge observed during year, 2,240 second-feet Mar. 4 (gage height, 22.75 feet, backwater from ice); minimum observed, 1.7 second-feet Sept. 22, 23 (gage height, 10.01 feet).

1934-40: Maximum discharge observed, about 6,580 second-feet Feb. 27, 1936; maximum gage height observed, 25.60 Mar. 13, 1939; minimum discharge observed, that of Sept. 22, 23, 1940; minimum gage height observed, 9.76 feet Aug. 4, 1936.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read once daily.

Cooperation.- Records collected in cooperation with Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	14	19	4	8	90	67	102	33	15	3.9	14
2	12	12	13	4	8	500	61	83	30	11	5.3	7.9
3	11	11	30	4	9	1,700	61	84	27	9.0	4.7	6.3
4	8.3	8.1	14	4	9	2,200	80	68	25	9.2	6.3	5.1
5	7.9	6.9	20	4	9	900	66	54	24	7.3	22	4.2
6	7.7	11	19	4	9	240	49	64	22	7.3	28	4.0
7	6.9	11	14	4	10	550	70	66	22	6.9	9.2	4.0
8	5.9	13	19	5	10	440	82	59	19	5.9	4.9	4.0
9	8.3	11	16	5	10	340	88	56	22	6.9	4.2	4.2
10	7.3	26	17	5	11	270	67	54	25	9.0	4.2	17
11	15	40	15	5	11	220	70	52	52	7.1	5.3	31
12	8.8	49	16	5	11	*160	76	46	60	11	5.5	16
13	8.3	21	14	5	11	125	67	46	104	7.1	10	7.9
14	8.1	13	6.7	5	12	170	60	45	59	7.1	304	4.7
15	7.3	12	16	5	12	190	62	45	39	6.3	52	3.0
16	8.1	13	17	4	14	323	59	40	70	4.2	22	3.3
17	8.1	12	16	4	22	185	56	41	26	4.5	9.8	2.8
18	8.1	14	15	4	44	307	226	42	25	4.2	771	2.6
19	6.9	14	15	4	100	286	244	51	52	5.1	286	2.4
20	7.7	14	*16	4	200	203	145	56	37	4.9	52	1.8
21	9.2	13	3.6	4	170	160	117	51	22	4.7	24	1.8
22	8.8	14	4	4	140	126	103	40	20	3.8	12	1.7
23	9.5	12	4	4	110	42	98	37	20	3.6	8.3	1.7
24	11	16	4	4	95	32	219	38	20	3.4	7.1	2.9
25	10	11	4	4	90	42	180	36	16	3.0	8.1	2.6
26	13	13	4	*4	85	60	140	51	16	3.0	7.5	2.6
27	114	13	4	4	80	84	118	65	12	22	6.5	2.1
28	130	12	4	4	80	88	103	58	13	50	8.3	2.6
29	52	14	4	5	80	98	108	45	12	101	75	2.6
30	22	13	4	6	-	85	120	37	14	11	72	2.6
31	19	-	4	7	-	74	-	33	-	4.9	40	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	573.2	130	5.9	18.5	0.043	0.05
November	457	49	6.9	15.2	.036	.04
December	371.3	30	3.6	12.0	.028	.03
Calendar year 1939	68,442.7	5,260	3.6	188	.439	5.96
January	138	7	4	4.5	.011	.01
February	1,460	200	8	50.3	.118	.13
March	10,310	2,200	32	333	.778	.90
April	3,062	244	49	102	.238	.27
May	1,645	102	33	53.1	.124	.14
June	938	104	12	31.3	.073	.08
July	359.4	101	3.0	11.6	.027	.03
August	1,881.1	771	3.9	60.7	.142	.16
September	169.4	31	1.7	5.65	.012	.01
Water year 1939-40	21,364.4	2,200	1.7	58.4	.136	1.85

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 22 to Mar. 12, Mar. 25, 26.

Skunk River near Ames, Iowa

Location.- Water-stage recorder and concrete control, lat. 42°04'06", long. 93°37'02", in SW¼ sec. 23, T. 84 N., R. 24 W., 2½ miles north of Ames, 3½ miles downstream from Keigley Branch, and 5 miles upstream from Squaw Creek.

Drainage area.- 320 square miles.

Records available.- July 1920 to August 1927 and March 1933 to September 1940.

Average discharge.- 13 years (1920-26, 1933-40), 97.9 second-feet.

Extremes.- Maximum discharge during year, 2,320 second-feet Aug. 13 (gage height, 7.23 feet); minimum, 0.10 second-foot (occurred during period of ice effect) Jan. 11 to Feb. 1; minimum gage height, 1.60 feet Jan. 28.

1920-27, 1933-40: Maximum discharge, 3,540 second-feet Sept. 17, 1921 (gage height, 9.2 feet), from rating curve extended above 2,500 second-feet; no flow at times in June, July, and August 1934 and on Jan. 25, 1937.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are poor, and those below 5 second-feet, which are fair.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

1.6	0.13	2.0	2.40	2.4	27	3.3	259
1.7	.26	2.1	5.40	2.6	54	3.6	394
1.8	.46	2.2	11.2	2.8	95	4.0	596
1.9	1.10	2.3	18	3.0	151	5.0	1,120

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.46	2.0	2.3	0.70	0.10	0.80	65	52	22	4.8	60	184
2	.32	2.0	2.4	.65	.15	.90	52	46	20	3.9	45	154
3	.26	.84	2.3	.55	.20	1.2	52	39	17	3.0	73	121
4	.40	.72	2.3	.50	.20	1.6	46	33	a21	2.4	50	98
5	.42	.76	2.3	.45	.20	5.0	38	32	a20	2.1	29	80
6	.32	.78	2.3	.40	.20	20	33	28	a20	1.9	19	75
7	.42	.84	2.4	.30	.20	50	42	39	a26	1.6	13	67
8	.84	.91	2.3	.25	.20	110	73	77	a27	1.5	16	56
9	2.1	1.1	2.1	.15	.20	150	88	82	a26	1.4	17	51
10	2.0	1.4	2.3	*.13	.20	145	80	71	a25	1.4	17	44
11	1.0	1.0	2.1	.10	.20	75	86	58	a26	2.7	33	37
12	.65	.97	2.0	.10	.25	34	75	48	a30	1.9	31	34
13	.46	.91	1.8	.10	.25	20	69	44	a26	1.8	768	31
14	.44	.97	1.9	.10	.25	27	60	38	a22	1.5	414	28
15	.42	.97	1.9	.10	.30	34	52	35	a18	1.9	276	24
16	.42	1.1	1.9	.10	.35	45	44	24	a14	1.1	174	22
17	.65	1.1	1.9	.10	.40	145	38	27	a12	1.0	136	21
18	1.4	1.1	2.0	.10	.50	433	34	37	a8	.78	113	20
19	1.0	1.1	2.1	.10	.55	342	32	88	a4	.72	91	18
20	.84	1.4	1.8	.10	.60	195	29	113	2.7	.72	62	16
21	.65	1.4	1.5	.10	.60	139	27	88	2.7	.78	45	15
22	.46	1.4	1.4	.10	.60	84	29	73	5.2	.78	25	13
23	.59	1.5	1.1	.10	.60	48	39	58	18	.58	24	13
24	1.5	1.5	1.1	.10	.55	42	39	51	44	.44	113	13
25	1.8	1.6	1.1	.10	.50	42	38	46	33	.36	116	17
26	1.8	2.0	1.1	.10	.50	38	38	42	21	.65	457	16
27	1.1	1.9	1.0	.10	.50	45	35	38	15	.84	710	14
28	.78	1.8	1.0	.10	.50	45	33	34	12	.84	1,000	13
29	.84	1.8	.90	.10	.60	98	42	31	8.3	214	622	13
30	.78	1.8	.90	.10	-	121	56	27	6.0	346	404	11
31	.64	-	.80	.10	-	86	-	25	-	113	272	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	25.96	2.1	0.26	0.837	0.0026	0.003
November	38.69	2.0	.72	1.29	.0040	.004
December	54.30	2.4	.80	1.75	.0055	.006
Calendar year 1939	23,702.99	2,420	.21	64.9	.203	2.74
January	6.18	.70	.10	.199	.00062	.0007
February	10.45	.60	.10	.360	.0011	.001
March	2,622.50	433	.80	84.6	.264	.30
April	1,464	88	27	48.8	.152	.17
May	1,524	113	24	49.2	.154	.18
June	551.9	44	2.7	18.4	.058	.06
July	716.40	346	.36	23.1	.072	.08
August	6,225	1,000	13	201	.628	.72
September	1,319	184	11	44.0	.138	.15
Water year 1939-40	14,558.38	1,000	.10	39.8	.124	1.67

Peak discharge.- Mar. 18 (6 p.m.) 580 sec.-ft.; Aug. 13 (11 a.m.) 2,320 sec.-ft.; Aug. 28 (1:30 a.m.) 1,390 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records.

Note.- Stage-discharge relation affected by ice Dec. 28 to Mar. 9.

Skunk River at Coppock, Iowa

Location.- Wire-weight gage, lat. 41°09'26", long. 91°43'05", in sec. 1, T. 73 N., R. 8 W., at bridge on State Highway 78, half a mile west of Coppock and about three-quarters of a mile upstream from Crooked Creek.
Drainage area.- 2,890 square miles.
Records available.- October 1913 to September 1940.
Average discharge.- 26 years (1914-40), 1,292 second-feet.
Extremes.- Maximum discharge observed during year, 3,230 second-feet Aug. 29 (gage height, 7.87 feet); minimum daily, 8 second-feet (occurred during period of ice effect) Jan. 27, 28.

1913-40: Maximum discharge observed, 25,200 second-feet June 15, 1930 (gage height, 22.13 feet), from rating curve extended above 10,300 second-feet; minimum, that of Jan. 27, 28, 1940.

A stage of about 22 feet occurred about May 31, 1903.

Remarks.- Records fair except those for period of ice effect, which are poor. Gage read once daily during low and medium stages, oftener during high stages.
Cooperation.- Results of one discharge measurement, services of observer, and assistance in computation of records furnished by Mississippi River Power Co.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

1.8	14	2.8	119	4.5	725
2.0	28	3.0	161	5.0	990
2.2	45	3.3	244	6.0	1,620
2.4	64	3.6	343	7.0	2,450
2.6	89	4.0	496	8.0	3,350

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	85	76	82	36	14	90	842	1,400	394	217	68	2,240
2	81	74	80	30	13	120	755	1,550	361	168	2,940	1,690
3	79	79	76	26	12	800	686	1,030	350	156	2,470	1,300
4	81	79	72	23	12	1,300	755	902	312	100	1,840	1,120
5	79	77	75	20	13	1,500	610	795	306	74	896	946
6	74	58	74	19	13	1,370	521	1,300	279	65	666	825
7	77	69	70	17	14	1,230	496	666	250	117	710	a745
8	74	69	*71	16	15	1,250	500	686	250	109	492	666
9	66	68	75	15	16	1,400	521	780	238	106	383	596
10	75	80	74	*13	17	1,420	569	858	309	75	336	547
11	66	70	57	13	18	1,410	633	765	316	103	902	500
12	71	68	68	13	18	1,400	642	686	386	99	2,080	467
13	62	61	70	12	*18	1,270	596	657	292	89	2,240	432
14	61	106	75	12	20	1,120	578	610	238	90	1,320	394
15	64	125	68	11	22	970	547	556	220	89	1,070	372
16	72	92	65	11	25	950	525	517	206	81	1,540	354
17	72	85	61	10	30	950	642	480	197	84	2,680	329
18	59	88	64	10	35	1,750	596	480	186	82	1,960	312
19	68	80	68	10	50	2,400	852	538	192	79	2,960	296
20	68	79	66	10	70	3,090	725	657	211	68	2,020	266
21	71	75	62	10	60	2,640	662	610	156	69	1,330	257
22	70	74	56	10	50	2,280	578	740	147	66	1,020	241
23	66	72	50	9	40	1,450	725	681	140	65	830	226
24	71	72	46	9	40	1,100	1,190	633	134	63	720	235
25	72	71	45	9	40	858	1,190	578	127	63	657	211
26	72	72	60	9	45	745	1,250	638	197	59	587	203
27	79	70	40	8	50	745	1,000	587	496	164	896	208
28	98	70	43	8	60	710	908	525	424	176	1,610	197
29	54	70	45	9	70	740	852	484	319	80	3,230	192
30	85	72	40	10	-	790	805	443	229	64	3,170	186
31	90	-	38	15	-	810	-	428	-	64	2,640	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,260	96	54	72.9	0.025	0.03
November	2,301	125	58	76.7	.027	.03
December	1,936	82	38	62.5	.022	.02
Calendar year 1939	330,160	15,500	38	905	.313	4.23
January	433	36	8	14.0	.005	.01
February	900	70	12	31.0	.011	.01
March	38,658	3,090	90	1,250	.433	.50
April	21,751	1,250	496	725	.251	.28
May	22,260	1,550	428	718	.248	.29
June	7,862	496	127	262	.091	.10
July	2,984	217	59	96.3	.033	.04
August	46,263	3,230	68	1,490	.516	.60
September	16,553	2,240	186	552	.191	.21
Water year 1939-40	164,161	3,230	8	449	.155	2.12

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 22 to Mar. 18.

Skunk River at Augusta, Iowa

Location.- Water-stage recorder, lat. 40°46', long. 91°17', in NE¼ sec. 28, T. 69 N., R. 4 W., 300 feet upstream from bridge on State Highway 16 at Augusta, 2 miles upstream from Long Creek and 12.2 miles upstream from mouth. Datum of gage is 521.69 feet above mean sea level (general adjustment of 1912).

Drainage area.- 4,290 square miles.

Records available.- September to November 1913, May 1915 to September 1940.

Average discharge.- 25 years (1915-40), 1,999 second-feet.

Extremes.- Maximum discharge during year, 11,800 second-feet Aug. 17 (gage height, 11.87 feet); minimum daily, 13 second-feet Jan. 25; minimum gage height recorded, 1.10 feet Jan. 3.

1913, 1915-40: Maximum discharge observed, 44,500 second-feet June 17, 1930 (gage height, 22.55 feet); minimum observed, 7 second-feet Aug. 27 to Sept. 1, 1934 (gage height, 1.0 foot).

Remarks.- Records good except those for period of ice effect, which are fair. Slight diurnal fluctuation at low flow caused by hydroelectric plant 25 miles above station.

Cooperation.- Results of four discharge measurements furnished by Mississippi River Power Co. and results of one discharge measurement furnished by Corps of Engineers, U. S. Army.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.0	10	2.3	436	5.0	3,300
1.2	27	2.6	685	6.0	4,400
1.4	57	2.9	980	8.0	6,790
1.6	103	3.3	1,420	10.0	9,320
1.8	168	3.7	1,890	12.0	12,000
2.0	253	4.3	2,550		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	100	47	83	42	16	115	1,010	1,260	498	328	226	2,600
2	83	32	93	32	19	133	970	1,770	474	248	147	2,220
3	112	40	144	19	20	1,100	920	1,770	380	192	2,160	1,770
4	103	115	80	45	18	2,150	820	1,300	415	204	2,330	1,410
5	100	109	78	28	17	2,990	830	1,120	366	150	1,340	1,200
6	100	86	103	17	18	2,560	732	1,040	348	154	970	1,020
7	98	40	103	19	20	2,280	676	920	329	158	800	900
8	76	127	103	19	21	1,870	658	870	305	86	770	800
9	96	59	88	23	19	2,060	649	850	269	144	623	704
10	98	106	96	25	21	2,110	640	960	269	132	429	667
11	100	103	83	25	21	*1,930	732	1,010	274	124	429	623
12	52	96	96	*27	23	1,710	770	940	394	118	850	546
13	103	88	90	28	21	1,830	752	860	429	124	3,740	482
14	98	112	70	26	24	1,710	752	790	415	100	4,870	429
15	57	127	*88	24	*30	1,400	623	714	305	88	2,060	436
16	80	124	93	24	42	1,330	685	676	284	109	4,160	380
17	76	158	65	21	47	1,310	761	605	258	109	9,450	348
18	93	136	86	19	70	2,820	2,160	588	258	100	8,020	342
19	52	112	88	17	93	4,510	2,440	649	230	90	4,750	329
20	59	98	88	16	103	3,960	1,590	752	380	92	3,300	284
21	106	136	70	15	100	3,630	1,230	723	360	65	2,220	300
22	80	63	61	14	109	3,080	1,050	761	244	72	1,590	284
23	83	121	74	17	103	2,440	1,180	830	222	80	1,220	258
24	86	72	34	16	124	1,710	2,440	770	140	86	1,120	258
25	109	88	96	13	112	1,300	2,660	732	192	40	1,350	248
26	192	96	74	14	106	1,050	2,160	800	158	72	1,040	235
27	212	96	27	16	118	930	2,000	870	144	752	920	222
28	130	61	50	14	106	930	1,650	810	474	1,480	1,510	212
29	124	100	68	15	98	930	1,480	714	459	732	2,160	217
30	121	86	57	*16	-	980	1,350	623	380	317	2,970	176
31	109	-	48	14	-	1,010	-	554	-	188	2,970	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	3,088	212	52	99.6	0.023	0.03
November	2,834	158	32	94.5	.022	.02
December	2,477	144	27	79.9	.019	.02
Calendar year 1939	565,379	27,400	27	1,549	.361	4.90
January	660	45	13	21.3	.0050	.006
February	1,639	124	16	56.5	.013	.01
March	57,868	4,510	115	1,867	.435	.50
April	36,370	2,660	623	1,212	.283	.32
May	27,631	1,770	554	891	.208	.24
June	9,673	498	140	322	.075	.08
July	6,737	1,480	40	217	.051	.06
August	70,514	9,450	147	2,275	.530	.61
September	19,900	2,600	176	663	.155	.17
Water year 1939-40	239,391	9,450	13	654	.152	2.07

Peak discharge.- Apr. 18 (12 p.m.) 2,850 sec.-ft.; Apr. 25 (2 a.m.) 3,040 sec.-ft.; Aug. 3 (11 p.m.) 2,780 sec.-ft.; Aug. 13 (12 p.m.) 7,270 sec.-ft.; Aug. 17 (6 a.m.) 11,800 sec.-ft.; Aug. 18 (12 m.) 9,010 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 26 to Mar. 18.

Lake Keomah near Oskaloosa, Iowa

Location.- Staff gage, lat. 41°17'20", long. 92°32'20", in sec. 24, T. 75 N., R. 15 W., at Lake Keomah State Park, 6 miles east of Oskaloosa, Mahaska County.

Records available.- June 1936 to September 1940.

Extremes.- Maximum gage height observed during year, 6.26 feet May 19, 20, 26; minimum observed, 4.82 feet Dec. 15-27.
1936-40: Maximum gage height observed, 7.00 feet Aug. 16, 1938; minimum observed, 3.50 feet Nov. 24 to Dec. 3, 1936.

Remarks.- Crest of spillway is at gage height 6.12 feet. Gage read twice daily.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.27	4.98	4.87	4.86	4.90	5.07	5.68	6.16	6.12	5.72	5.24	5.74
2	5.24	4.97	4.88	4.86	4.92	5.09	5.69	6.14	6.12	5.70	5.23	5.74
3	5.22	4.95	4.88	4.86	4.92	5.14	5.70	6.14	6.10	5.70	6.21	5.72
4	5.20	4.94	4.88	4.86	4.92	5.12	5.71	6.12	6.10	5.68	5.21	5.72
5	5.18	4.92	4.88	4.86	4.92	6.18	5.73	6.12	6.08	5.66	5.20	5.70
6	5.17	4.92	4.88	4.86	4.92	5.24	5.82	6.13	6.07	5.64	5.18	5.70
7	5.16	4.90	4.88	4.84	4.92	5.29	5.85	6.16	6.06	5.62	5.16	5.68
8	5.15	4.89	4.86	4.84	4.92	5.33	5.86	6.20	6.06	5.60	5.20	5.68
9	5.19	4.88	4.85	4.86	4.92	5.35	5.88	6.25	6.07	5.58	5.34	5.68
10	5.20	4.96	4.84	4.86	4.92	5.36	5.88	6.23	6.09	5.56	5.45	5.67
11	5.18	4.96	4.84	4.87	4.92	5.36	5.90	6.21	6.10	5.55	6.48	5.66
12	5.16	4.96	4.84	4.88	4.92	5.38	5.90	6.19	6.10	5.54	5.49	5.65
13	5.14	4.94	4.84	4.88	4.92	5.38	5.90	6.18	6.09	5.52	5.51	5.64
14	5.12	4.94	4.84	4.88	4.92	5.38	5.90	6.16	6.08	5.52	5.53	5.62
15	5.10	4.94	4.83	4.90	4.94	5.40	5.90	6.17	6.08	5.50	5.65	5.60
16	5.09	4.94	4.82	4.90	4.94	5.45	5.95	6.18	6.06	5.48	5.57	5.58
17	5.08	4.92	4.82	4.90	4.94	5.49	5.99	6.17	6.05	5.45	5.59	5.57
18	5.06	4.92	4.82	4.90	4.96	5.52	6.01	6.16	6.03	5.42	5.60	5.55
19	5.04	4.92	4.82	4.90	4.96	5.52	6.04	6.26	6.02	5.40	5.60	5.52
20	5.04	4.92	4.82	4.90	4.98	5.53	6.04	6.26	5.99	5.38	5.60	5.50
21	5.03	4.90	4.82	4.90	4.98	5.54	6.05	6.24	5.97	5.36	5.58	5.50
22	5.00	4.90	4.82	4.90	5.00	5.54	6.06	6.25	5.96	5.34	5.58	5.47
23	4.98	4.90	4.82	4.90	5.00	5.54	6.06	6.23	5.85	5.31	5.58	5.45
24	4.98	4.88	4.82	4.90	5.02	5.54	6.08	6.22	5.79	5.29	5.59	5.43
25	4.97	4.88	4.82	4.90	5.02	5.55	6.10	6.20	5.77	5.29	5.60	5.41
26	5.01	4.88	4.82	4.90	5.02	5.57	6.11	6.26	5.76	5.25	5.60	5.39
27	5.02	4.86	4.82	4.90	5.02	5.58	6.10	6.24	6.74	5.28	5.60	5.37
28	5.02	4.86	4.84	4.90	5.03	5.60	6.08	6.22	5.74	5.25	5.67	5.34
29	5.01	4.86	4.84	4.90	5.05	5.61	6.13	6.20	5.72	5.23	5.71	5.32
30	5.00	4.86	4.84	4.90	-	5.65	6.16	6.17	5.72	5.24	5.73	5.31
31	5.00	-	4.85	4.90	-	5.67	-	6.14	-	5.22	5.74	-

West Fork of Des Moines River near Jackson, Minn.

Location.- Chain gage, lat. 43°42', long. 95°03', in sec. 28, T. 103 N., R. 35 W., 6 miles northwest of Jackson. Datum of gage is 1,304.85 feet above mean sea level (general adjustment of 1929).

Drainage area.- 1,170 square miles.

Records available.- August 1930 to September 1940 (winter records incomplete prior to 1936). May 1909 to December 1913 at site 8 miles downstream.

Extremes.- Maximum discharge observed during year, 574 second-feet Aug. 25 (gage height, 4.48 feet); maximum gage height observed, 5.70 feet Mar. 30 (affected by ice); no flow Jan. 7 to Mar. 25.

1909-13, 1930-40: Maximum discharge observed, 2,320 second-feet Mar. 22, 1936 (gage height, 9.60 feet); no flow at times.

Remarks.- Records good except those for periods of ice effect which are poor. Gage read once daily. Flow partly regulated by storage above station in Yankton, Long, Shetek, and Heron Lakes.

Rating tables, water year 1939-40, except periods of backwater from ice (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 25

0.8	0	1.1	3.8
.9	.4	1.2	7.0
1.0	1.6	1.3	12

Mar. 26 to Sept. 30

0.9	.7	1.6	34.0	3.0	222
1.0	3.5	2.0	73.5	3.5	331
1.2	11	2.5	134	4.0	449
1.4	20.8				

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	5.7	4.0	0.8		0	220	157	30	21	1.8	26
2	9.8	6.4	4.0	.5		0	*130	121	27	17	1.8	19
3	8.8	5.1	4.0	.4		0	140	121	30	15	1.8	16
4	8.8	4.4	4.0	.3		0	202	109	40	13	1.8	13
5	7.9	3.8	4.4	.2		0	202	109	38	11	4.2	12
6	7.9	3.8	4.4	.1		0	202	115	43	10	4.9	11
7	7.0	3.8	3.8	0		*0	*232	115	45	9.4	4.9	10
8	6.4	3.4	3.8	0		0	243	109	43	10	4.2	10
9	7.9	3.4	3.8	0		0	243	109	42	10	3.5	322
10	9.8	2.9	3.4	0		0	243	103	38	10	2.9	228
11	8.8	2.9	3.4	0		0	183	97	35	9.4	2.9	97
12	8.8	3.4	3.4	0		0	149	91	29	9.4	2.9	74
13	9.8	2.9	2.8	0		0	149	91	27	8.6	3.5	63
14	8.8	3.4	2.8	0		0	183	97	25	7.8	4.9	42
15	7.0	3.4	2.8	0		0	183	103	21	7.0	4.2	35
16	6.4	3.8	2.8	0		0	165	91	21	6.3	3.5	30
17	6.4	3.8	2.9	0		0	149	91	20	6.3	3.5	a22
18	5.7	3.8	2.5	0		0	149	80	19	6.3	2.9	15
19	5.7	3.4	2.5	0		0	142	74	18	5.6	50	14
20	5.7	3.4	2.0	0		0	134	71	16	4.9	23	13
21	5.7	2.9	1.4	0		0	142	67	13	4.9	9.0	16
22	6.4	3.4	1.4	0		0	142	63	10	4.9	7.8	16
23	5.7	3.4	1.4	0		0	149	59	19	4.2	5.6	41
24	5.7	3.8	1.5	0		0	142	57	21	a3.3	146	29
25	5.7	3.8	1.6	0		0	134	55	33	2.4	449	19
26	5.1	4.4	1.8	0		a20	128	49	33	1.5	174	15
27	4.4	4.4	*2.0	0		100	121	42	32	.7	91	11
28	3.8	3.8	1.8	0		190	142	38	30	1.3	63	11
29	5.1	3.8	1.5	0		300	149	33	36	1.3	55	10
30	5.1	*4.1	1.2	0		*300	149	35	22	1.3	40	9.4
31	5.7	-	1.0	*0		320	-	35	-	1.5	33	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	216.8	11	3.8	6.99	-	-
November	114.7	6.4	2.9	3.82	-	-
December	84.1	4.4	1.0	2.71	-	-
Calendar year 1939	25,065.8	474	1.0	68.7	0.059	0.80
January	2.3	.8	0	.074	-	-
February	0	0	0	0	-	-
March	1,230	320	0	39.7	-	-
April	5,041	243	121	168	-	-
May	2,587	157	33	83.5	-	-
June	854	45	10	28.5	-	-
July	225.3	21	.7	7.27	-	-
August	1,206.5	449	1.8	38.9	-	-
September	1,248.4	322	9.4	41.8	-	-
Water year 1939-40	12,810.1	449	0	35.0	.030	0.41

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 1-4, 13-16, Dec. 20 to Jan. 10, Mar. 27 to Apr. 3.

Des Moines River near Boone, Iowa

Location.- Water-stage recorder upstream from dam of Boone Water Department, lat. 42°04'40", long. 93°55'55", in NW¼ sec. 24, T. 84 N., R. 27 W., 2 miles northwest of Boone and 2 miles upstream from Bluff Creek. Datum of gage is 871.52 feet above mean sea level (general adjustment of 1912).
Drainage area.- 5,490 square miles.
Records available.- October 1924 to September 1927, October 1933 to September 1940. April 1920 to September 1924 at site 1.3 miles upstream.
Average discharge.- 14 years (1920-27, 1933-40), 1,240 second-feet.
Extremes.- Maximum discharge observed during year, 5,410 second-feet Aug. 27 (gage height, 3.38 feet); minimum daily, 17 second-feet Jan. 28.
1920-27, 1933-40: Maximum discharge, 24,500 second-feet Sept. 18, 1938 (gage height, 16.00 feet); no flow for a short time Jan. 9, 25, 1938, caused by manipulation of gates in control dam; minimum daily, that of Jan. 28, 1940 (unaffected by gate operation).
Highest stage observed at present site, 17.03 feet Apr. 2, 1933 (control dam destroyed). A stage of about 20.5 feet, from flood-marks, occurred June 6, 1918, at site 1.3 miles upstream (discharge, 32,000 second-feet, from rating curve extended above 17,000 second-feet). A stage of 23.6 feet occurred in 1903 at U. S. Weather Bureau gage on Chicago and Northwestern R. R. bridge 2.5 miles downstream (discharge, 32,000 second-feet, from rating curve extended above 28,000 second-feet).
Remarks.- Records excellent except those for periods of use of staff gage, or ice effect or sluggish intake, and those below 100 second-feet, all of which are fair. Slight diurnal fluctuation caused by power plants above station.
Cooperation.- Water-stage recorder inspected by employee of Boone Water Department.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-6)

0.1	24	0.4	252	0.8	878	2.0	3,570	4.0	6,090
.2	74	.5	375	1.0	1,314	2.5	4,340		
.3	151	.6	522	1.5	2,560	3.0	4,980		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68	74	102	56	24	56	1,290	556	198	274	878	2,260
2	81	68	117	52	26	62	1,660	522	188	252	803	1,910
3	74	74	95	46	28	74	1,460	490	178	208	606	1,560
4	62	88	125	34	28	88	1,290	474	169	198	572	1,250
5	68	88	133	32	28	102	1,070	459	219	188	572	1,070
6	74	68	110	30	30	95	765	430	310	160	490	878
7	88	88	117	28	32	95	765	459	286	142	459	746
8	95	68	117	26	32	110	784	539	1,300	133	298	656
*9	110	88	102	26	32	125	784	506	1,460	125	336	606
10	95	88	117	26	32	133	765	490	1,430	110	416	490
11	117	102	102	*25	32	142	822	474	1,700	125	1,560	416
12	110	95	110	25	36	117	784	402	1,430	110	1,860	402
13	110	74	88	24	40	142	709	375	1,110	133	1,780	336
14	88	81	88	18	45	110	656	362	878	117	1,730	349
15	74	74	74	20	51	102	640	336	709	95	1,390	416
16	62	102	117	22	53	110	556	362	556	95	1,200	490
17	62	95	102	22	56	178	506	349	416	88	1,460	506
18	51	74	117	22	56	274	490	362	362	88	1,560	444
19	56	88	110	22	56	690	459	416	336	81	1,460	375
20	74	95	74	22	*62	920	444	430	286	74	1,110	549
21	142	102	51	22	68	920	402	402	230	68	765	298
22	133	95	62	22	72	920	402	375	230	51	556	263
23	102	81	62	22	64	822	444	362	252	46	474	252
24	81	102	51	20	58	728	444	323	522	32	784	252
25	56	88	68	20	54	709	459	310	1,000	51	1,910	263
26	46	102	51	20	57	623	474	310	765	88	3,460	263
27	46	95	62	20	58	606	459	286	690	81	4,270	230
28	46	95	51	17	56	606	459	263	522	117	3,530	208
29	88	81	62	18	62	746	474	263	444	286	3,020	198
30	110	95	62	19	-	840	522	252	362	556	2,700	188
31	95	-	58	20	-	982	-	230	-	1,020	2,560	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,564	142	46	82.7	0.015	0.02
November	2,608	102	68	86.9	.016	.02
December	2,757	133	51	88.9	.016	.02
Calendar year 1939	354,544	12,700	46	971	.177	2.41
January	798	56	17	25.7	.0047	.01
February	1,328	72	24	45.8	.0083	.01
March	12,227	982	56	394	.072	.08
April	21,238	1,660	402	708	.129	.14
May	12,169	556	230	393	.072	.08
June	18,538	1,700	169	618	.113	.13
July	5,192	1,020	32	167	.030	.03
August	44,569	4,270	298	1,438	.262	.30
September	17,924	2,260	188	597	.109	.12
Water year 1939-40	141,912	4,270	17	388	.071	.96

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 30 to Feb. 16, Feb. 22-28. Intake action sluggish June 8, July 25 to Aug. 31; discharge computed from graph based on gage readings. Discharge Dec. 9, 10, 14-17, Dec. 21 to Jan. 7 based on once-daily gage readings.

Des Moines River at Des Moines, Iowa

Location.- Float gage in pipe well, lat. 41°35'30", long. 93°37'05", in sec. 4, T. 78 N., R. 24 W., just upstream from dam of Des Moines Electric Co. in Des Moines, 1 mile upstream from Raccoon River.

Drainage area.- 6,180 square miles.

Records available.- October 1902 to August 1903 (gage heights only), May 1905 to July 1906, October 1914 to February 1915 (gage heights only), March 1915 to September 1927, and October 1932 to September 1940 in reports of Geological Survey. 1893, 1894, 1897-1927 in report of Iowa State Planning Board entitled, "Stream flow records of Iowa, 1873-1932."

Average discharge.- 20 years (1915-27, 1932-40), 1,823 second-feet.

Extremes.- Maximum discharge observed during year, 6,810 second-feet Aug. 28 (gage height, 3.00 feet); minimum observed, 24 second-feet Jan. 29, 30 (gage height, -0.90 foot).

1915-27, 1932-40: Maximum discharge, about 41,500 second-feet June 7, 1918 (gage height, 16.5 feet, site and datum then in use); minimum discharge, that of Jan. 29, 30, 1940; operation of sluice gates in dam at gage has caused brief periods of no flow at times.

Maximum gage height known, about 23 feet, original site and datum, sometime in May 1903 (affected by backwater from Raccoon River).

Remarks.- Records fair. Gage read once or twice daily.

Cooperation.- Gage readings furnished by Des Moines Electric Co.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	95	99	104	61	27	80	1,080	615	305	447	2,010	3,620
2	87	95	116	60	28	88	1,190	690	296	35[illegible]	1,740	3,110
3	83	87	99	59	30	86	1,490	645	286	30[illegible]	1,580	2,650
4	87	87	116	55	33	86	1,490	585	267	28[illegible]	1,010	2,100
5	87	87	104	53	36	88	1,450	585	267	25[illegible]	788	1,740
6	83	99	130	50	39	92	1,150	555	248	24[illegible]	645	1,600
7	80	95	130	40	38	99	1,010	555	276	22[illegible]	570	1,370
8	80	87	116	36	38	107	905	555	351	21[illegible]	555	1,210
9	123	116	116	36	35	130	905	645	555	21[illegible]	528	1,150
10	130	95	116	38	36	146	888	645	1,340	18[illegible]	420	1,120
11	130	95	109	36	38	178	870	600	1,260	18[illegible]	1,030	975
12	104	99	116	34	39	194	922	585	1,540	15[illegible]	2,630	837
13	116	104	104	32	43	178	888	555	1,340	13[illegible]	3,450	804
14	109	104	87	31	48	154	870	488	1,150	13[illegible]	5,010	705
15	104	95	87	30	59	138	771	447	940	16[illegible]	4,550	675
16	87	99	116	30	68	178	738	420	771	13[illegible]	3,210	615
17	87	95	104	30	74	220	705	408	645	11[illegible]	3,050	585
18	80	99	95	30	72	514	585	501	542	10[illegible]	3,320	615
19	80	104	109	29	77	738	585	542	447	10[illegible]	2,850	528
20	80	95	109	29	74	820	555	600	408	10[illegible]	2,510	460
21	77	99	63	29	77	1,150	555	645	351	10[illegible]	1,930	434
22	80	104	68	28	74	1,210	514	585	328	10[illegible]	1,450	397
23	116	109	80	28	80	1,240	630	528	351	9[illegible]	1,150	374
24	116	104	80	28	74	940	675	488	328	8[illegible]	975	351
25	104	95	80	25	72	645	675	474	351	8[illegible]	3,210	316
26	87	99	80	24	72	645	675	420	837	6[illegible]	3,050	328
27	87	95	74	24	70	1,040	645	397	905	6[illegible]	5,420	340
28	74	104	74	26	72	1,040	615	386	705	8[illegible]	6,320	305
29	77	104	74	24	74	870	615	362	600	11[illegible]	5,010	276
30	68	116	68	24	-	854	645	351	528	2,46[illegible]	4,880	248
31	80	-	63	24	-	1,060	-	328	-	2,16[illegible]	4,420	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,878	130	68	92.8	0.015	0.02
November	2,965	116	87	98.8	.016	.02
December	2,987	130	63	98.4	.016	.02
Calendar year 1939	383,399	13,400	63	1,050	.170	2.31
January	1,083	61	24	34.9	.0056	.006
February	1,597	80	27	55.1	.0089	.009
March	15,008	1,240	80	484	.078	.09
April	25,291	1,490	514	843	.136	.15
May	16,185	690	328	522	.084	.10
June	18,518	1,540	248	617	.100	.11
July	9,496	2,460	68	306	.050	.06
August	79,271	6,320	420	2,560	.414	.48
September	29,838	3,620	248	995	.161	.18
Water year 1939-40	205,117	6,320	24	560	.091	1.24

Note.- No gage-height record Jan. 7, 9-23, Feb. 4; discharge computed on basis of weather records and records for station at Boone. Stage-discharge relation affected by ice Dec. 2[illegible] to Jan. 6, Feb. 25-29.

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Des Moines River near Tracy, Iowa

Location.- Water-stage recorder, lat. 41°16'55", long. 92°51'30", in SE¼ sec. 19, T. 75 N., R. 17 W., at old Bellfountaine highway bridge a third of a mile downstream from bridge on State Highway 92, 1 mile east of Tracy, 3 miles upstream from Cedar Creek, and 6 miles downstream from English Creek. Datum of gage is 671.78 feet above mean sea level (general adjustment of 1912). Prior to June 27, 1940, wire-weight gage at same site and datum.

Drainage area.- 12,400 square miles.

Records available.- March 1920 to September 1927 (winter records fragmentary), March 1933 to December 1935, February to September 1940. April to December 1910, gage-height records collected at same site by Corps of Engineers, U. S. Army. Fragmentary gage-height records since 1920 available in reports of U. S. Weather Bureau.

Extremes.- Maximum discharge during period Feb. 26 to Sept. 30, 1940, 11,600 second-feet Aug. 15 (gage height, 9.23 feet); minimum observed, 95 second-feet Feb. 28.

1920-27, 1933-35, 1940: Maximum discharge observed, 54,600 second-feet June 28, 1935 (gage height, 20.20 feet); minimum, that of Feb. 28, 1940.

Maximum stage since 1851, about 25 feet May 31, 1903 (discharge, about 100,000 second-feet).

Remarks.- Records good except those for period of ice effect, which are fair. Gage read twice daily Feb. 26 to June 26.

Rating table, period February to September 1940, except period of ice effect (gage height, in feet, and discharge, in second-feet)

2.0	186	2.6	583	4.0	2,450	8.0	8,960
2.2	282	2.8	788	5.0	3,940	10.0	13,200
2.4	414	3.4	1,560	6.5	6,090		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					-	105	2,080	2,020	745	869	7,820	9,180
2					-	118	2,050	1,730	702	777	7,720	7,770
3					-	117	2,060	1,640	642	713	5,700	5,990
4					-	116	2,200	1,570	622	642	4,390	5,000
5					-	120	2,230	1,490	593	574	3,500	4,290
6					-	125	1,990	1,390	583	512	2,580	3,740
7					-	132	1,780	1,340	462	486	2,180	3,370
8					-	137	1,700	1,330	1,190	462	1,840	3,050
9					-	167	1,670	1,390	1,840	446	1,640	2,710
10					-	200	1,620	1,370	1,880	478	3,450	2,370
11					-	225	1,590	1,390	2,240	486	2,890	2,110
12					-	243	1,600	1,410	2,310	446	4,500	1,880
13					-	225	1,560	1,360	2,350	430	7,620	1,710
14					-	205	1,630	1,290	2,260	622	10,400	1,560
15					-	200	1,590	1,200	2,140	530	10,900	1,430
16					-	240	1,480	1,110	1,840	400	9,360	1,320
17					-	300	1,450	1,070	1,570	378	7,600	1,220
18					-	600	1,530	1,030	1,370	350	5,540	1,240
19					-	2,340	1,530	1,120	1,200	325	5,450	1,200
20					-	2,980	1,340	1,450	1,060	294	4,980	1,160
21					-	3,220	1,250	1,500	917	282	4,670	1,060
22					-	3,320	1,130	1,390	869	272	4,040	980
23					-	3,320	1,280	1,290	834	267	3,370	917
24					-	2,770	1,590	1,210	788	272	2,930	881
25					-	2,450	1,710	1,110	1,030	256	2,950	834
26					110	2,020	1,710	1,030	1,160	251	3,760	811
27					*104	1,670	1,640	980	1,060	241	5,300	777
28					95	1,660	1,840	904	1,190	241	6,560	767
29					100	1,900	2,050	658	1,110	231	9,300	734
30					-	2,290	2,050	623	992	267	9,140	692
31					-	2,220	-	756	-	2,290	9,260	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	35,735	3,320	105	1,153	0.093	0.11
April	50,930	2,230	1,130	1,698	.137	.15
May	39,551	2,020	756	1,276	.103	.12
June	37,549	2,350	462	1,252	.101	.11
July	15,090	2,290	231	487	.039	.05
August	173,140	10,900	1,640	5,585	.450	.52
September	70,753	9,180	692	2,358	.190	.21
The period	-	-	-	-	-	-

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Feb. 25 to Mar. 18.

Des Moines River at Ottumwa, Iowa

Location.- Water-stage recorder, lat. 41°00', long. 92°24', in NE¼ sec. 25, T. 72 N., R. 14 W., at Vine Street Bridge in Ottumwa, 5½ miles upstream from Village Creek and 10 miles downstream from South Avery Creek. Datum of gage is 622.77 feet above mean sea level (general adjustment of 1929).
Drainage area.- 13,200 square miles.
Records available.- March 1917 to September 1927, January 1929 to September 1930, October 1930 to March 1935 (at site at Eldon), and March 1935 to September 1940 in reports of Geological Survey. March 1917 to September 1930 in report of Iowa State Planning Board entitled, "Stream Flow Records of Iowa, 1873-1932."
Average discharge.- 18 years (1917-30, 1935-40), 4,010 second-feet.
Extremes.- Maximum discharge during year, 14,000 second-feet Aug. 17, 1940 (gage height, 5.57 feet); minimum daily, 30 second-feet (regulated) Jan. 27-29, 31, Feb. 2, 3, 5-7.
1917-30, 1935-40: Maximum discharge observed, 58,700 second-feet June 11, 1917 (gage height, 16.5 feet, site then in use); minimum daily, that of Jan. 27-29, 31, Feb. 2, 3, 5-7, 1940.
Remarks.- Records good except those for period Jan. 2 to Mar. 17, which are fair. Diurnal fluctuation at low stages caused by power plant above gage.
Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

-0.4	26	0.4	392	2.6	4,750
-.3	36	.7	723	3.0	5,850
-.2	51	1.0	1,170	3.5	7,300
-.1	80	1.4	1,910	4.0	8,830
0	120	1.8	2,760	5.0	12,070
.2	232	2.2	3,720	6.0	15,430

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	284	303	316	62	70	160	2,220	2,780	819	980	4,540	9,280
2	284	211	209	90	30	300	2,170	2,170	792	920	8,210	8,800
3	216	151	204	180	30	650	2,190	1,910	792	764	6,970	7,030
4	226	199	240	40	100	820	2,130	1,870	698	711	6,290	5,460
5	259	238	228	180	30	930	2,260	1,750	674	674	4,410	4,720
6	264	212	182	120	30	1,110	2,240	1,620	674	625	3,160	4,100
7	112	193	*255	140	30	1,300	2,070	1,690	686	589	2,560	3,520
8	165	204	206	140	180	1,380	1,890	2,130	532	524	2,190	3,130
9	262	204	218	90	70	1,340	1,730	2,130	1,770	526	2,540	2,740
10	220	304	261	50	40	1,220	1,750	1,870	2,070	514	2,810	2,360
11	276	306	236	*180	60	1,130	1,690	1,620	2,320	641	4,830	2,220
12	778	275	228	40	40	1,040	1,650	1,580	2,500	428	3,210	2,010
13	68	308	223	220	*80	1,020	1,670	1,580	2,520	604	6,280	1,850
14	462	300	198	40	140	990	1,630	1,520	2,540	468	10,430	1,650
15	74	147	223	40	60	1,010	1,650	1,430	2,360	668	12,760	1,500
16	149	198	228	180	180	1,270	1,670	1,190	2,240	600	11,210	1,520
17	96	283	203	40	40	1,900	1,710	1,190	1,890	408	11,440	1,270
18	722	214	203	70	240	2,850	1,870	1,270	1,750	751	9,600	1,270
19	38	177	202	160	40	3,820	1,710	1,150	1,430	130	6,820	1,190
20	62	276	173	60	200	3,450	1,650	1,380	1,320	80	5,540	1,220
21	84	193	159	40	40	3,700	1,410	1,620	950	151	4,880	1,190
22	104	186	42	60	220	3,620	1,340	1,670	1,010	346	4,570	1,040
23	130	186	204	40	180	3,720	1,660	1,520	890	81	3,770	1,030
24	192	272	137	100	90	3,350	1,830	1,380	876	304	3,210	965
25	294	203	180	60	140	2,390	2,050	1,410	750	160	3,060	890
26	100	192	206	40	120	2,500	2,130	1,200	1,220	324	3,180	833
27	444	266	166	30	170	2,220	1,910	1,140	1,090	170	4,650	833
28	328	203	42	30	220	1,670	1,950	1,040	1,170	251	7,630	750
29	286	191	151	30	100	1,950	2,500	1,010	1,220	134	9,340	750
30	276	178	149	140	-	2,130	2,990	950	1,140	166	9,280	737
31	128	-	110	30	-	2,470	-	905	-	1,210	9,020	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	7,373	778	38	238	0.018	0.02
November	6,773	308	147	226	.017	.02
December	5,982	316	42	193	.015	.02
Calendar year 1939	983,269	39,200	38	2,694	.204	2.78
January	2,722	220	30	87.8	.0067	.008
February	2,970	240	30	102	.0077	.008
March	67,210	3,720	160	1,845	.140	.16
April	57,310	2,990	1,340	1,910	.145	.16
May	47,675	2,730	905	1,538	.117	.13
June	40,692	2,540	532	1,356	.103	.11
July	14,810	1,210	80	478	.036	.04
August	186,390	12,760	2,190	6,013	.456	.53
September	75,858	9,280	737	2,529	.192	.21
Water year 1939-40	505,765	12,760	30	1,382	.106	1.42

* Winter discharge measurement made on this day.
Note.- No continuous gage-height record Jan. 2 to Mar. 17; discharge computed on basis of Ottumwa power-plant records, once-daily gage readings, and records for station at Keosauqua.

Des Moines River at Keosauqua, Iowa

Location.- Water-stage recorder, lat. 40°44', long. 91°57', in sec. 36, T. 69 N., R. 10 W., at bridge on Stage Highway 1 at Keosauqua, 4 miles downstream from Chequest Creek. Datum of gage is 558.10 feet above mean sea level (general adjustment of 1912).
Drainage area.- 13,900 square miles.
Records available.- May 1903 to July 1906, April 1910 to September 1940.
Average discharge.- 31 years (1903-5, 1911-40), 4,641 second-feet.
Extremes.- Maximum discharge during year, 15,600 second-feet Aug. 18 (gage height, 6.28 feet); minimum daily, 40 second-feet (regulated) Jan. 30.
1903-6, 1910-40: Maximum discharge, about 97,000 second-feet June 1, 1903 (gage height, 27.85 feet); minimum daily, that of Jan. 30, 1940.
Flood of June 1, 1851, reached a stage of about 24 feet (discharge, about 80,000 second-feet).
Remarks.- Records good except those for periods of ice effect, no gage-height record, or backwater from aquatic vegetation, all of which are fair. Some diurnal fluctuation at medium and low stages caused by power plant at Ottumwa.
Cooperation.- Results of two discharge measurements furnished by Corps of Engineers, U. S. Army and results of two more furnished by Mississippi River Power Co.

Rating table, water year 1939-40, except periods of ice effect or backwater from aquatic vegetation (gage height, in feet, and discharge in second-feet)

-0.5	100	0	420	1.0	1,980	2.5	5,310	5.0	11,690
-.4	135	.2	655	1.3	2,600	3.0	6,470	6.0	14,690
-.3	185	.4	930	1.6	3,260	3.5	7,680		
-.2	250	.6	1,240	1.9	3,930	4.0	8,950		
-.1	330	.8	1,590	2.2	4,620	4.5	10,280		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	306	322	250	120	70	180	2,520	3,110	1,000	1,190	1,310	9,050
2	155	185	258	h130	80	218	2,240	2,840	902	1,040	6,160	9,080
3	314	339	330	h110	90	680	2,220	2,200	902	975	7,880	8,100
4	298	266	258	h110	80	780	2,200	2,000	888	818	6,470	6,520
5	244	211	250	h130	h70	820	2,180	1,880	818	776	5,150	5,290
6	250	237	290	h140	h60	1,220	2,260	1,800	776	709	4,390	4,760
7	290	282	274	h150	h60	1,400	2,330	1,720	790	696	3,150	4,020
8	314	250	244	h150	h110	1,500	2,180	2,220	818	642	2,540	3,550
9	170	218	290	h130	h100	1,550	1,980	3,000	618	568	2,350	3,130
10	266	282	237	h110	h80	1,440	1,860	2,500	1,670	592	2,800	2,710
11	322	266	244	h110	h100	1,360	1,960	2,040	2,080	618	3,950	2,370
12	306	330	298	*100	h130	1,280	1,840	1,780	2,350	722	4,620	2,180
13	818	330	258	100	h110	1,190	1,760	a1,690	2,450	431	4,210	1,960
14	348	298	274	120	110	1,040	1,650	a1,600	2,430	497	7,980	1,800
15	237	330	*306	90	*120	970	1,720	a1,510	2,430	486	11,700	1,660
16	348	330	244	100	130	1,100	1,720	1,410	2,240	668	12,000	1,500
17	165	204	266	90	140	1,760	2,430	1,290	2,100	682	12,400	1,460
18	165	237	274	h110	160	2,890	3,110	1,320	1,760	411	11,700	1,240
19	411	375	258	h110	170	3,790	2,350	1,540	1,650	605	8,180	1,260
20	357	274	250	h120	170	3,590	2,000	1,290	1,380	580	5,860	1,220
21	140	224	200	h100	170	3,480	1,800	1,460	1,240	250	5,450	1,240
22	110	322	140	h90	160	3,700	1,570	1,680	975	165	4,990	1,210
23	121	258	200	h100	160	3,590	2,080	1,650	1,050	314	4,320	1,080
24	128	250	160	h80	150	3,680	2,820	1,520	930	375	3,720	1,080
25	160	268	200	h80	150	3,130	2,310	1,540	916	211	3,410	1,020
26	266	314	100	h70	140	2,430	2,600	1,880	804	348	3,110	916
27	366	258	110	h70	140	2,410	2,600	1,360	1,240	1,540	3,500	860
28	366	230	170	h80	160	2,140	2,180	1,260	1,240	776	5,470	846
29	258	298	150	h60	170	1,780	2,260	1,180	1,210	237	8,530	818
30	339	258	140	40	-	2,040	3,000	1,100	1,290	330	9,130	832
31	330	-	110	*50	-	2,240	-	1,040	-	237	9,030	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	8,658	818	110	279	0.020	0.02
November	8,228	375	185	274	.020	.02
December	7,033	330	100	227	.016	.02
Calendar year 1939	1,059,204	44,600	100	2,902	.209	2.81
January	3,150	150	40	102	.0073	.008
February	3,540	170	60	122	.0088	.009
March	59,378	3,790	180	1,915	.138	.16
April	65,730	3,110	1,570	2,191	.158	.18
May	54,440	3,110	1,040	1,756	.126	.15
June	40,947	2,450	618	1,365	.098	.11
July	18,439	1,540	165	596	.043	.05
August	185,460	12,400	1,310	5,983	.430	.50
September	82,752	9,080	818	2,758	.198	.22
Water year 1939-40	537,805	12,400	40	1,469	.106	1.45

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
h Discharge computed from once-daily tape gage reading.
Note.- Stage-discharge relation affected by ice Dec. 21 to Mar. 17. Backwater from aquatic vegetation July 1-26, Sept. 19-30; discharge computed on basis of gage heights and two discharge measurements.

Heron Lake Outlet near Heron Lake, Minn.

Location.- Staff gage, lat. 43°48', long. 95°16', on line between secs. 21 and 22, T. 104 N., R. 37 W., half a mile downstream from dam at outlet of Heron Lake, 2 miles east of village of Heron Lake, and 12 miles upstream from Des Moines River.
Drainage area.- 457 square miles (revised).
Records available.- August 1930 to September 1940 (winter records incomplete prior to 1935).
Extremes.- Maximum daily discharge during year, 184 second-feet Apr. 8, 9; no flow at times.
1930-40: Maximum discharge observed, 1,660 second-feet July 5, 1938 (gage height, 8.53 feet); no flow at times in most years.
Remarks.- Records good except those for periods of backwater from aquatic vegetation, debris, or ice, and those estimated, all of which are poor. Gage read once daily. Flow completely regulated by Heron Lake with usable capacity of about 15,000 acre-feet.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.6	0	0			0	b6.5	82	24	11	4.2	0.2
2	4.4	0	0			0	*b7.0	82	24	11	3.8	.2
3	3.8	0	0			0	b24	73	23	11	4.0	.2
4	2.9	0	b.1			0	b70	91	30	10	4.2	.2
5	3.3	0	b.1			0	b95	91	32	10	1.8	.2
6	1.1	0	b.1			0	b120	78	35	9.8	1.6	.2
7	.4	0	b.2			*0	*b150	78	28	9.0	1.5	.2
8	.2	0	b.2			0	184	78	25	8.8	1.4	.2
9	1.2	0	b.2			0	184	73	26	8.2	.9	.2
10	2.4	0	b.2			0	162	69	28	7.6	.9	.2
11	3.3	0	b.1			0	105	69	27	7.0	.8	.2
12	2.0	0	b.1			0	140	65	25	6.6	.9	.2
13	2.4	0	0			0	151	65	23	6.0	.9	.2
14	1.7	0	0			0	151	65	25	5.4	.9	.2
15	2.4	0	0			0	140	62	18	5.0	.8	.2
16	1.5	0	0			0	140	58	17	4.7	.6	.3
17	1.2	0	b.1			0	151	54	14	4.4	.8	.3
18	1.0	0	b.1			0	120	51	8.3	4.4	.7	.3
19	.9	0	b.1			0	105	54	7.5	4.7	.7	.3
20	.8	0	0			0	100	47	8.3	4.4	.4	.2
21	.9	0	0			0	110	44	9.1	4.7	.3	.2
22	.9	0	0			0	110	44	10	4.2	a.3	.2
23	1.1	0	0			0	100	42	22	4.4	.3	.2
24	.6	0	0			0	96	38	21	4.2	.5	.2
25	.4	0	0			0	91	29	16	4.2	.4	.2
26	.2	0	0			a1.0	91	26	15	4.2	.4	.2
27	0	0	*0			a3.0	91	23	15	4.2	.3	.2
28	0	0	0			a5.0	110	33	23	4.0	.3	.2
29	0	0	0			b5.5	115	33	15	4.0	.2	.2
30	0	*0	0			*b6.0	91	29	12	4.2	.2	.2
31	0	-	0	(*)		b6.5	-	24	-	4.0	.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	44.6	4.4	0	1.44	0.0032	0.004
November	0	0	0	0	0	0
December	1.6	.2	0	.05	.00011	.0001
Calendar year 1939	12,865.1	323	0	35.2	†.077	†1.05
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	27.0	6.5	0	.87	.0019	.002
April	3,310.5	184	6.5	110	.241	.27
May	1,750	91	23	56.5	.12	.14
June	606.2	35	7.5	20.2	.044	.05
July	195.3	11	4.0	6.30	.014	.02
August	35.2	4.2	.2	1.14	.0025	.003
September	6.4	.3	.2	.21	.00046	.0005
Water year 1939-40	5,976.8	184	0	16.3	.036	.49

* Winter discharge measurement made on this day.
† Computed on basis of revised drainage area.
a No gage-height record; discharge interpolated.
b Stage-discharge relation affected by ice.
Note.- Backwater from aquatic growth or debris Oct. 6-10, Oct. 12 to Nov. 30, July 2 to Aug. 21, Aug. 23 to Sept. 30; discharge computed on basis of gage heights, three discharge measurements, and two estimates of low flow.

East Fork of Des Moines River near Hardy, Iowa

Location.- Wire-weight gage, lat. 42°48'10", long. 94°08'00", in NW¼NE¼ sec. 10, T. 92 N., R. 28 W., 4½ miles west of Hardy, 6 miles northeast of Dakota City, 7½ miles downstream from Lotts Creek, and 12 miles upstream from confluence with West Fork of Des Moines River.

Drainage area.- 1,230 square miles.

Records available.- March to September 1940.

Extremes.- Maximum discharge observed during period, 608 second-feet Aug. 30; maximum gage height observed, 4.83 feet Mar. 23 (affected by ice); minimum discharge observed, 18 second-feet July 24, 25 (gage height, 1.45 feet).

Maximum stage known, about 17.4 feet in September 1938, from information furnished by local residents.

Remarks.- Records good except those for period of ice effect, which are poor, and those below 30 second-feet, which are fair. No diversions or regulation. Gage read twice daily.

Rating table, period March to September 1940, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Sept. 1-30)

1.4	16	1.7	31	2.2	76	3.0	206	4.5	534
1.5	20	1.8	38	2.4	101	3.5	303	5.0	680
1.6	25	2.0	55	2.6	133	4.0	409		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	486	68	34	46	55	334
2						-	491	69	34	42	140	285
3						-	340	67	34	38	116	227
4						-	225	70	44	34	69	182
5						-	174	72	40	33	59	153
6						-	147	67	43	32	61	130
7						-	138	74	58	30	53	112
8						*23	138	68	135	27	49	96
9						23	133	61	476	27	48	81
10						23	133	59	385	27	59	69
11						35	130	57	295	27	110	66
12						50	128	52	275	27	118	97
13						35	119	50	217	27	113	206
14						30	104	46	140	25	244	229
15						25	93	49	107	24	173	a200
16						25	87	48	68	24	126	147
17						30	86	46	73	23	98	118
18						75	83	46	63	22	84	97
19						150	80	49	53	21	72	81
20						175	72	48	46	20	61	69
21						200	69	48	45	20	50	62
22						270	73	45	44	20	48	54
23						300	76	43	63	19	50	52
24						280	72	43	113	18	61	48
25						250	68	43	151	18	63	44
26						230	66	43	126	24	147	44
27						200	65	41	86	21	183	41
28						180	65	40	67	27	269	40
29						150	75	37	55	189	512	37
30						252	73	36	49	81	585	35
31						380	-	34	-	56	437	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March 8-31	3,391	380	23	141	0.115	0.10
April	4,089	491	65	136	.111	.12
May	1,619	74	34	52.2	.042	.05
June	3,439	476	34	115	.093	.10
July	1,069	189	18	34.5	.028	.03
August	4,313	585	48	139	.113	.13
September	3,436	334	35	115	.093	.10
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
a No gage-height record; discharge estimated.
Note.- Stage-discharge relation affected by ice Mar. 8-29.

North Lizard Creek near Clare, Iowa

Location.- Wire-weight gage, lat. 42°32'30", long. 94°20'40", in NE¼ sec. 11, T. 89 N., R. 30 W., at bridge on county road, 3 miles south of Clare, 8 miles upstream from confluence with South Lizard Creek, and 8 miles northwest of Fort Dodge.

Drainage area.- 257 square miles.

Records available.- March to September 1940.

Extremes.- Maximum discharge observed during period, 374 second-feet Aug. 26 (gage height, 4.83 feet); minimum observed, 0.2 second-foot Mar. 6 (discharge measurement); minimum gage height observed, 2.20 feet July 25.

Remarks.- Records fair except those for period of ice effect, which are poor. Gage read twice daily.

Rating table, March to September 1940, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Aug. 26 to Sept. 30)

2.2	1.0	2.6	4.0	3.0	31	3.6	122
2.3	1.5	2.7	6	3.1	42	3.9	187
2.4	2.0	2.8	12	3.2	55	4.2	258
2.5	2.5	2.9	21	3.4	86	4.6	360

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	31	33	5	12	50	75
2						-	29	33	4.0	10	25	41
3						-	27	29	4.6	6	23	28
4						-	23	25	24	4.8	23	17
5						-	17	19	25	4.2	27	13
6						*0.2	25	19	27	4.0	26	11
7						.3	29	21	47	3.7	17	10
8						.4	25	26	132	3.2	9	8
9						15	28	31	187	2.8	8	7
10						7	31	31	136	2.5	16	6
11						4	30	27	86	5	25	5
12						3	30	26	67	6	30	5
13						2	27	20	45	4.4	27	4.8
14						2	17	17	34	3.6	20	4.4
15						2	21	23	30	4.0	15	4.0
16						2	17	19	27	3.4	19	4.0
17						3	16	17	20	3.0	29	3.8
18						15	11	19	16	2.4	15	3.6
19						30	11	16	15	2.3	11	3.6
20						60	8	15	17	2.1	9	3.4
21						100	10	14	11	1.8	8	3.2
22						124	11	16	16	1.6	5	3.2
23						60	16	15	103	1.4	4.4	3.6
24						67	21	12	94	1.1	176	3.8
25						52	23	12	76	1.0	136	3.7
26						48	24	8	52	2.2	293	3.6
27						38	23	8	35	2.2	210	3.4
28						29	21	8	29	3.2	112	3.1
29						38	27	7	19	3.1	105	3.0
30						27	29	6	14	103	98	2.6
31						a29	-	6	-	68	83	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March 6-31	757.9	124	0.2	29.2	0.114	0.11
April	658	31	8	21.9	.085	.09
May	578	33	6	18.6	.072	.08
June	1,397.6	187	4.0	46.6	.181	.20
July	278.0	103	1.0	8.97	.035	.04
August	1,654.4	293	4.4	53.4	.208	.24
September	290.8	75	2.6	9.69	.038	.04
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Mar. 6-21.

Boone River near Webster City, Iowa

Location.- Water-stage recorder, lat. 42°25'50", long. 93°48'10", in sec. 18, T. 88 N., R. 25 W., at bridge on State Highway 60, 2 miles south of Webster City and 4½ miles downstream from White Fox Creek. Prior to June 26, 1940, wire-weight gage at same site and datum.

Drainage area.- 842 square miles.

Records available.- March to September 1940.

Extremes.- Maximum discharge during period, 657 second-feet Aug. 15 (gage height, 4.40 feet); minimum observed, 2.4 second-feet July 25 (gage height, 1.08 feet).

Remarks.- Records poor. Gage read twice daily Mar. 9 to June 25.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	358	40	17	24	262	374
2						-	169	42	21	19	255	300
3						-	98	38	28	15	255	h200
4						-	82	35	47	11	191	h143
5						-	58	33	55	5.9	217	h92
6						-	53	34	88	7.0	169	h84
7						-	68	64	438	6.2	116	h66
8						-	88	54	362	5.8	96	h51
9						*25	86	42	354	5.6	92	h43
10						24	86	39	217	5.4	119	h36
11						24	84	37	143	10	402	h34
12						25	55	34	100	8.0	441	h33
13						25	54	30	78	6.6	366	h27
14						26	53	27	55	6.2	337	h26
15						27	47	30	47	5.5	434	h22
16						30	40	26	37	h4.6	575	h20
17						40	36	26	30	h4.3	431	h18
18						100	34	22	25	h3.9	431	h17
19						200	33	25	19	h3.4	293	h17
20						250	28	24	15	h2.8	191	h16
21						200	27	26	12	h2.7	129	h15
22						150	28	25	11	h2.7	98	h15
23						125	36	27	110	h2.6	75	h15
24						200	36	28	178	h2.6	148	h23
25						175	38	27	90	h2.4	293	h22
26						100	35	26	64	5.8	354	h14
27						78	31	24	51	6.6	503	h15
28						61	27	24	40	73	531	h15
29						126	40	21	33	151	544	h13
30						227	42	21	27	559	451	h12
31						328	-	20	-	362	402	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March 9-31	2,566	328	24	112	0.133	0.11
April	1,950	358	27	65.0	.077	.09
May	971	64	20	31.3	.037	.04
June	2,792	438	11	93.1	.111	.12
July	1,330.6	559	2.4	42.9	.051	.06
August	9,202	576	75	297	.353	.41
September	1,778	374	12	59.3	.070	.08
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
h Computed from twice-daily wire-weight gage readings.
Note.- Stage-discharge relation affected by ice Mar. 9-26.

Raccoon River near Jefferson, Iowa

Location.- Wire-weight gage, lat. 42°00'30", long. 94°25'30", in SW¼ sec. 11, T. 83 N., R. 31 W., at bridge on U. S. Highway 30, 3 miles west of Jefferson and 8 miles upstream from Hardin Creek.

Drainage area.- 1,610 square miles.

Records available.- March to September 1940.

Extremes.- Maximum discharge observed during period, 3,660 second-feet Aug. 28 (gage height, 10.76 feet), from rating curve extended above 2,900 second-feet; minimum observed, 26 second-feet July 28 (gage height, 3.00 feet).

Remarks.- Records good except those for period of ice effect, which are poor. No diversion or regulation. Gage read twice daily.

Rating table, March to September 1940, except period of ice effect (gage height, in feet, and discharge, in second-feet)

3.0	26	3.4	50	4.4	247	7.0	1,290
3.1	29	3.5	61	4.8	364	8.0	1,810
3.2	34	3.7	91	5.4	576	9.0	2,410
3.3	41	4.0	150	6.0	818	11.0	3,850

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	420	358	105	95	1,580	1,410
2						-	339	364	98	88	905	1,070
3						-	269	327	91	79	649	870
4						-	234	315	146	72	448	705
5						*32	242	269	1,320	67	321	595
6						175	288	242	1,220	62	252	501
7						150	237	237	954	57	196	430
8						140	234	286	844	57	168	364
9						178	242	303	941	57	177	324
10						187	274	306	793	52	291	291
11						159	303	297	657	52	377	260
12						109	294	263	538	49	508	237
13						103	260	237	430	49	661	211
14						86	231	216	358	46	630	191
15						81	218	208	309	43	472	172
16						75	193	206	274	41	352	163
17						109	177	196	247	39	818	159
18						260	163	191	193	39	1,040	142
19						616	150	204	165	33	772	127
20						1,260	137	198	146	32	531	113
21						1,260	133	193	140	32	374	109
22						1,190	133	181	148	30	286	107
23						914	172	170	159	28	226	105
24						584	286	159	172	27	247	117
25						303	333	150	163	29	352	109
26						280	352	146	154	26	665	105
27						237	345	140	150	28	2,610	98
28						252	321	131	133	27	3,500	91
29						291	327	125	117	81	3,220	86
30						358	342	121	109	590	2,230	83
31						383	-	115	-	2,040	1,730	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March 5-31	9,772	1,260	32	362	0.225	0.23
April	7,649	420	133	255	.158	.18
May	6,854	364	115	221	.137	.16
June	11,274	1,320	91	376	.234	.26
July	4,051	2,040	27	131	.081	.09
August	26,588	3,500	168	858	.533	.61
September	9,345	1,410	83	312	.194	.22
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Mar. 5-19.

Raccoon River at Van Meter, Iowa

Location.- Water-stage recorder, lat. 41°32'00", long. 93°56'50", in SW¼ sec. 22, T. 78 N., R. 27 W., at highway bridge a third of a mile northeast of railroad station at Van Meter, 1 mile downstream from South Raccoon River, and 30 miles upstream from mouth. Datum of gage is 841.12 feet above mean sea level (general adjustment of 1912).

Drainage area.- 3,410 square miles.

Records available.- April 1915 to November 1927 and October 1932 to September 1940 in reports of Geological Survey. April 1915 to December 1932 in report of Iowa State Planning Board entitled "Stream Flow Records of Iowa, 1873-1932."

Average discharge.- 24 years (1915-32, 1933-40), 1,003 second-feet.

Extremes.- Maximum discharge during year, 5,770 second-feet July 31 (gage height, 9.18 feet); minimum daily, 10 second-feet Jan. 22-31; minimum gage height, 1.43 feet Dec. 14.
1915-40: Maximum discharge observed, 40,000 second-feet Sept. 20, 1926 (gage height, 18.96 feet), from rating curve extended above 22,000 second-feet; minimum discharge, that of Jan. 22-31, 1940.

Remarks.- Records good except those for period of ice effect, which are fair. Diurnal fluctuation caused by operation of power plant at Adel, 10 miles above station.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control adjustment of -0.03 foot used Mar. 18 to Sept. 30)

1.4	15	2.0	11e	3.0	523	5.0	1,800
1.5	25	2.2	177	3.5	801	6.0	2,600
1.6	3e	2.4	248	4.0	1,100	8.0	4,500
1.8	73	2.7	374	4.5	1,450	10.0	6,850

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	37	71	40	12	47	825	697	275	191	2,850	3,180
2	33	40	71	37	14	55	737	703	248	168	2,850	2,380
3	32	43	65	34	16	65	647	697	215	135	1,710	1,930
4	38	46	*64	31	18	80	523	664	215	149	1,290	1,580
5	32	4e	65	28	20	150	427	587	226	124	1,180	1,320
6	29	48	65	25	22	300	403	508	1,110	121	801	1,110
7	34	49	65	23	22	*350	452	498	1,600	116	f508	962
8	33	52	62	20	23	450	477	508	1,200	106	f393	842
9	58	56	64	19	21	500	492	581	1,110	118	f496	714
10	111	58	63	18	22	450	513	686	1,320	99	f560	641
11	94	52	64	18	23	400	523	603	1,080	106	1,810	571
12	67	52	65	17	25	360	598	528	962	132	2,140	513
13	60	52	56	16	27	340	587	492	980	104	2,330	467
14	52	51	49	16	30	320	518	447	842	116	3,900	437
15	49	52	54	15	35	310	498	403	703	118	2,300	398
16	48	54	56	14	38	350	442	388	550	86	1,670	370
17	46	56	62	14	40	500	379	365	487	73	1,890	334
18	41	56	62	13	41	1,000	384	398	422	69	1,940	300
19	44	56	60	12	42	1,460	329	498	342	64	2,080	295
20	43	56	58	12	*42	1,900	338	477	304	62	1,840	256
21	49	60	45	11	42	2,120	291	462	283	73	1,400	252
22	49	52	46	10	42	1,810	279	447	252	62	1,040	230
23	48	49	49	10	42	1,450	347	379	974	56	795	215
24	46	56	50	10	42	813	442	365	825	48	709	222
25	48	58	51	10	42	614	565	370	360	41	772	222
26	49	58	52	*10	42	614	703	329	334	33	1,150	226
27	52	56	51	10	42	571	692	325	295	32	1,440	194
28	49	52	50	10	43	726	658	304	268	67	3,430	184
29	51	58	48	10	44	872	680	279	233	302	4,580	180
30	44	67	46	10	-	726	697	304	204	2,200	5,200	152
31	43	-	43	10	-	878	-	264	-	4,400	5,160	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,506	111	29	48.6	0.014	0.02
November	1,580	67	37	52.7	.015	.02
December	1,772	71	43	57.2	.017	.02
Calendar year 1939	228,078	12,000	24	625	.183	2.50
January	533	40	10	17.2	.0050	.006
February	914	44	12	31.5	.0092	.01
March	20,581	2,120	47	664	.195	.22
April	15,446	825	279	515	.151	.17
May	14,556	703	264	470	.138	.16
June	18,019	1,600	204	601	.176	.20
July	9,571	4,400	32	309	.091	.10
August	60,216	5,200	393	1,942	.570	.66
September	20,677	3,180	152	689	.202	.23
Water year 1939-40	165,371	5,200	10	452	.133	1.82

Peak discharge.- July 31 (11 a.m.) 5,770 sec.-ft.; Aug. 11 (6 p.m.) 3,190 sec.-ft.; Aug. 14 (4 p.m.) 4,450 sec.-ft.

* Winter discharge measurement made on this day.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Note.- Stage-discharge relation affected by ice Dec. 20 to Mar. 18.

South Raccoon River at Redfield, Iowa

Location.- Wire-weight gage, lat. 41°34'30", long. 94°10'40", in SW¼ sec. 3 T. 78 N., R. 29 W., at bridge on county road at Redfield, three-quarters of a mile downstream from bridge on U. S. Highway 6, 1 mile downstream from Middle Raccoon River, and 14½ miles upstream from mouth.

Drainage area.- 995 square miles.

Records available.- March to September 1940.

Extremes.- Maximum discharge during period, 5,100 second-feet July 31 (gage height, 13.2 feet, from graph based on gage readings), from rating curve extended above 3,100 second-feet; minimum observed, 18 second-feet July 26 (gage height, 2.44 feet).

Remarks.- Records good except those for period of ice effect, which are poor, and those for August and September, which are fair. Gage read twice daily. Some diurnal fluctuation during low water caused by power plant at Panora.

Rating table, period March to September 1940, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Aug. 1 to Sept. 30)

2.4	16	2.9	63	4.0	360	9.0	2,600
2.5	22	3.0	80	4.5	535	11.2	3,060
2.6	29	3.2	122	6.0	721		
2.7	38	3.4	172	6.0	1,140		
2.8	49	3.7	261	7.0	1,600		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	267	197	70	48	246	107
2						-	194	175	63	42	124	78
3						-	172	154	57	37	111	56
4						*140	146	146	60	33	100	56
5						175	109	122	215	38	436	46
6						150	120	113	768	36	94	56
7						200	115	156	360	34	68	48
8						210	154	164	212	36	53	41
9						190	149	206	236	36	159	39
10						180	162	194	230	37	296	36
11						170	167	154	146	53	1,880	34
12						150	169	136	212	78	826	37
13						130	164	120	212	48	370	44
14						120	141	104	167	47	1,410	33
15						140	141	104	134	46	590	34
16						160	113	113	107	38	343	29
17						400	107	98	96	35	215	29
18						800	113	156	84	28	227	29
19						1,200	90	178	72	32	169	29
20						988	90	172	63	28	102	26
21						925	88	146	53	32	80	27
22						593	92	136	73	28	62	24
23						306	132	104	649	27	57	28
24						249	151	109	178	23	68	32
25						249	246	92	100	22	53	31
26						203	221	84	98	23	59	23
27						194	194	86	77	19	72	25
28						261	178	82	66	206	560	26
29						313	200	80	52	255	300	26
30						194	209	77	42	3,600	206	25
31						230	-	72	-	2,310	151	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year	-	-	-	-	-	-
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March 4-31	9,220	1,200	120	329	0.331	0.34
April	4,594	267	88	153	.154	.17
May	4,030	206	72	130	.131	.15
June	4,952	768	42	165	.166	.19
July	7,348	3,600	19	237	.238	.27
August	9,287	1,880	53	300	.302	.35
September	1,154	107	23	38.5	.039	.04
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Mar. 4-19.

North River near Norwalk, Iowa

Location.- Wire-weight gage, lat. 41°27'25", long. 93°39'10", in SW¼ sec. 20, T. 77 N., R. 24 W., at bridge on Warren County road S, about 1¾ miles southeast of Norwalk, 8 miles northwest of Indianola, 9 miles upstream from Middle Creek, and 10 miles south of Des Moines.

Drainage area.- 348 square miles.

Records available.- February to September 1940.

Extremes.- Maximum discharge observed during period, 986 second-feet Aug. 1 (gage height, 14.74 feet, from graph based on gage readings); minimum observed, 0.4 second-foot Sept. 20; minimum gage height observed, 3.31 feet July 27.

Remarks.- Records fair except those for period of ice effect, which are poor. Gage read twice daily, more often during high water.

Rating table, period February to September 1940, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Aug. 17 to Sept. 30)

3.1	0.4	3.9	6.3	4.9	27	6.5	115	10.0	408
3.3	1.4	4.1	8.9	5.2	40	7.0	149	12.0	637
3.5	2.7	4.3	12	5.6	61	8.0	223	14.4	940
3.7	4.4	4.6	18	6.0	85	9.0	309		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					-	1.5	36	24	3.1	4.8	932	4.9
2					-	*2.5	23	18	2.7	4.0	364	4.0
3					-	15	16	16	2.4	3.4	75	3.3
4					-	18	12	12	2.2	3.0	24	2.7
5					-	25	10	11	2.0	2.8	13	2.4
6					-	27	7.8	9.8	1.9	2.6	9.5	2.4
7					-	33	8.9	10	32	2.4	7.3	2.3
8					-	35	17	10	341	2.9	16	1.9
9					-	38	19	9.0	386	19	22	1.7
10					-	36	16	8.2	110	5.9	16	1.4
11					-	33	17	7.0	27	17	502	1.2
12					-	32	13	6.2	15	8.1	668	1.1
13					-	27	10	5.7	11	3.3	733	1.0
14					-	20	8.6	5.1	9.5	2.8	637	.9
15					-	15	7.8	4.6	18	2.3	231	.9
16					-	25	7.3	4.4	18	2.1	398	.8
17					-	75	11	4.0	12	4.5	154	.6
18					-	353	23	4.8	8.6	4.2	122	.6
19					-	*368	14	29	6.8	3.5	107	.5
20					-	213	7.8	30	5.7	2.9	36	.5
21					-	134	7.3	25	5.1	2.6	18	.5
22					-	114	6.3	26	4.8	2.4	12	.5
23					-	46	29	15	4.6	2.1	8.6	.6
24					-	23	77	9.5	4.3	1.9	61	.7
25					-	25	42	7.5	4.2	1.8	20	.6
26					-	21	41	6.0	4.0	1.6	27	1.0
27					-	23	40	5.1	5.1	1.5	99	.9
28					1.0	22	40	4.6	10	6.5	31	.9
29					1.0	174	35	4.0	7.9	8.9	14	.8
30					-	221	26	3.7	5.5	57	10	.6
31					-	82	-	3.3	-	679	6.3	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	2,277	368	1.5	73.5	0.211	0.24
April	628.8	77	6.3	21.0	.060	.07
May	338.5	30	3.3	10.9	.031	.04
June	1,070.4	386	1.9	35.7	.103	.11
July	866.8	679	1.5	28.0	.080	.09
August	5,373.7	932	6.3	173	.497	.57
September	42.2	4.9	.5	1.41	.0041	.005
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Feb. 28 to Mar. 17.

Middle River near Indianola, Iowa

Location.- Wire-weight gage, lat. 41°26'00", long. 93°33'25", in NW¼ sec. 31, T. 77 N., R. 23 W., at bridge on U. S. Highway 65 and 69, 5 miles north of Indianola, 10 miles south of Des Moines, and 13 miles upstream from mouth.

Drainage area.- 502 square miles.

Records available.- March to September 1940.

Extremes.- Maximum discharge observed during period, 2,210 second-feet July 31 (gage height, 12.08 feet); minimum observed, 1.3 second-feet July 27 (gage height, 2.93 feet).

Remarks.- Records fair except those for period of ice effect, which are poor. Gage read twice daily, more often during high stages.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						*3	45	43	6.1	10	1,780	22
2						10	34	43	5.5	9.4	349	20
3						35	26	33	5.2	7.8	95	17
4						25	21	26	4.6	6.1	42	14
5						26	18	20	4.6	4.6	31	14
6						28	17	18	4.6	4.0	47	14
7						32	21	24	4.6	3.6	151	11
8						37	26	19	49	3.0	117	10
9						39	28	20	87	29	115	10
10						42	26	21	53	3.6	254	9.0
11						45	21	18	33	14	f1,010	7.8
12						42	19	17	16	40	f1,460	5.8
13						35	15	14	25	495	1,200	4.6
14						27	14	12	106	130	498	4.0
15						24	14	10	44	40	646	4.0
16						35	14	9.0	24	25	608	4.0
17						100	43	8.2	16	16	185	3.8
18						382	122	20	10	13	161	3.6
19						335	42	58	7.8	12	103	3.4
20						*228	27	54	7.4	10	65	2.8
21						115	20	39	8.2	7.4	44	2.4
22						74	20	43	7.4	4.9	39	2.0
23						24	60	28	8.2	4.3	29	4.6
24						15	131	17	6.7	3.0	28	46
25						17	79	15	208	2.4	33	25
26						20	56	14	57	1.6	36	12
27						25	86	10	29	1.4	39	5.5
28						22	52	9.0	17	105	49	4.0
29						349	51	7.8	12	128	42	3.8
30						131	41	7.0	12	686	31	4.0
31						60	-	6.4	-	2,130	27	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	2,382	382	3	76.8	0.153	0.18
April	1,189	131	14	39.6	.079	.09
May	603.4	58	6.4	22.0	.044	.05
June	878.9	208	4.6	29.3	.058	.06
July	3,950.1	2,130	1.4	127	.253	.29
August	9,314	1,780	27	300	.598	.69
September	294.1	46	2.0	9.80	.020	.02
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
f Computed from estimated gage heights.
Note.- Stage-discharge relation affected by ice Mar. 1-17.

South River near Ackworth, Iowa

Location.- Wire-weight gage, lat. 41°22'20", long. 93°25'40", in sec. 19, T. 76 N., R. 22 W., at bridge on State Highway 92, 2 miles east of Ackworth, 4½ miles downstream from Otter Creek, and 6 miles east of Indianola.

Drainage area.- 475 square miles.

Records available.- February to September 1940.

Extremes.- Maximum discharge observed during period, 1,770 second-feet Aug. 11 (gage height, 8.32 feet); minimum observed, 0.3 second-foot July 21-25; minimum gage height observed, 1.37 feet Sept. 21, 22.

Remarks.- Records fair except those for period of ice effect and those below 5 second-feet, which are poor.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						3	10	59	5	0.6	278	16
2						12	9	36	4.8	.5	92	10
3						40	8	26	3.7	.5	30	8
4						35	7	19	4.0	.5	23	7
5						30	6	20	3.8	.6	25	6
6						35	6	14	3.0	.5	39	5
7						40	7	17	2.7	.4	7	4.8
8						38	14	18	3.4	.6	6	5
9						50	19	28	3.2	1.4	19	4.0
10						49	26	23	2.6	.7	81	2.9
11						47	16	14	2.9	2.9	1,200	2.4
12						40	10	12	2.7	.6	1,090	2.4
13						38	8	11	2.9	.7	505	2.2
14						30	7	10	3.0	.5	134	2.0
15						28	7	9	3.0	.5	340	2.0
16						45	7	7	1.6	.4	100	1.6
17						150	20	7	1.6	.4	60	1.5
18						294	26	19	1.2	.4	216	1.3
19						165	46	57	1.2	.4	76	1.2
20						*90	25	96	1.3	.4	32	1.2
21						48	12	35	.8	.3	12	1.2
22						30	12	21	1.2	.3	8	1.2
23						28	48	14	1.5	.3	7	1.2
24						23	125	10	1.3	.3	9	11
25						18	76	10	.7	.3	6	8
26						16	57	9	.7	.4	6	5
27						11	102	9	.8	.4	771	3.0
28						18	48	9	.8	1.4	1,060	2.3
29					*3	27	100	9	.5	.8	158	1.8
30						25	134	7	.7	28	52	1.5
31						22	-	6	-	372	28	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	1,525	294	3	49.2	0.104	0.12
April	998	134	6	33.3	.070	.08
May	641	96	6	20.7	.044	.05
June	66.6	5	.5	2.22	.0047	.005
July	418.0	372	.3	13.5	.028	.03
August	6,470	1,200	6	209	.440	.51
September	122.7	16	1.2	4.09	.0086	.01
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Feb. 29 to Mar. 17.

Lakes in Des Moines River Basin

Springbrook Lake near Guthrie Center, Iowa

Location.- Staff gage, lat. 41°46', long 94°28', in sec. 4, T. 80 N., R. 31 W., at Springbrook State Park, 7 miles northeast of Guthrie Center.

Records available.- June 1936 to September 1940.

Extremes.- Maximum gage height observed during year, 4.20 feet Feb. 10-12; minimum observed, 3.42 feet July 27, 28.
1936-40: Maximum gage height observed, 6.20 feet Sept. 13, 1938 and Aug. 10, 1939; minimum observed, 2.38 feet Aug. 31, 1936.

Remarks.- Crest of spillway is at gage height 4.00 feet. Gage read once daily.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.58	-	3.72	3.92	4.14	4.14	4.04	4.06	3.94	3.80	3.52	4.00
2	3.58	-	3.74	3.92	4.14	4.14	4.04	4.06	3.94	3.78	3.52	3.98
3	3.58	-	3.75	3.94	4.16	4.12	4.04	4.04	3.92	3.76	3.54	3.98
4	3.58	-	3.75	3.94	4.16	4.12	4.04	4.04	3.92	3.74	3.54	3.96
5	3.58	3.68	3.76	3.96	4.16	4.10	4.04	4.02	3.92	3.72	3.54	3.94
6	3.58	3.68	3.76	3.96	-	4.10	4.04	4.02	3.90	3.70	3.56	3.92
7	3.58	3.68	3.76	4.00	-	4.08	4.02	4.00	3.90	3.70	3.58	3.90
8	3.58	3.68	3.78	4.00	-	4.08	4.02	4.00	3.90	3.68	3.58	3.88
9	3.74	3.68	3.78	4.00	-	4.08	4.02	4.02	3.87	3.68	3.60	3.88
10	3.74	3.68	3.78	4.00	4.20	4.06	4.02	4.02	3.88	3.66	3.60	3.86
11	3.74	3.68	3.80	4.00	4.20	4.06	4.02	4.02	3.88	3.66	3.68	3.86
12	3.72	3.68	3.80	4.00	4.20	4.06	4.02	4.02	4.00	3.64	3.68	3.84
13	3.72	3.68	3.80	4.00	4.18	4.06	4.02	4.00	4.00	3.64	3.90	3.82
14	3.72	3.68	3.80	4.00	4.18	4.04	4.02	4.00	3.98	3.62	4.10	3.80
15	3.70	3.68	3.80	4.00	4.18	4.04	4.02	4.00	3.98	3.60	4.08	3.78
16	3.70	3.68	3.80	4.00	4.18	4.04	4.02	3.98	3.96	3.58	4.04	3.76
17	3.70	3.68	3.82	4.00	4.16	4.04	4.02	3.98	3.96	3.56	4.02	3.76
18	3.70	3.68	3.82	4.02	4.16	4.04	4.02	3.98	3.94	3.54	4.02	3.74
19	3.68	3.68	3.82	4.02	4.16	4.04	4.02	4.08	3.94	3.52	4.00	3.74
20	3.68	3.68	3.82	4.02	4.16	4.04	4.02	4.06	3.92	3.50	4.00	3.72
21	3.68	3.68	3.82	4.04	4.14	4.04	4.02	4.04	3.92	3.48	3.98	3.72
22	-	3.68	3.82	4.04	4.14	4.04	4.04	4.02	3.90	3.48	3.98	3.70
23	-	3.68	3.82	4.06	4.14	4.04	4.04	4.02	3.88	3.46	3.96	3.68
24	-	3.68	3.84	4.06	4.14	4.04	4.04	4.02	3.88	3.46	3.96	3.66
25	-	3.68	3.84	4.06	4.14	4.04	4.02	4.00	3.86	3.44	3.94	3.64
26	-	3.70	3.86	4.08	4.14	4.04	4.02	4.00	3.86	3.44	3.98	3.62
27	-	3.70	3.86	4.08	4.14	4.04	4.02	3.98	3.84	3.42	4.10	3.60
28	-	3.70	3.88	4.08	4.14	4.04	4.02	3.98	3.84	3.42	4.04	3.58
29	-	3.72	3.88	4.10	4.14	4.04	4.08	3.96	3.82	3.44	4.02	3.58
30	-	3.72	3.90	4.10	-	4.04	4.08	3.96	3.82	3.54	4.02	3.58
31	-	-	3.90	4.10	-	4.04	-	3.94	-	3.54	4.00	-

Lake Ahquabi near Indianola, Iowa

Location.- Staff gage, lat. 41°17'20", long. 93°35'25", in NW¼ sec. 23, T. 75 N., R. 24 W., at Lake Ahquabi State Park, 5 miles southwest of Indianola.

Records available.- June 1936 to September 1940.

Extremes.- Maximum gage height observed during year, 4.90 feet May 18, 19; minimum observed, 3.50 feet Dec. 22-25.
1936-39: Maximum gage height observed, 7.43 feet May 25, 1938; minimum observed, 3.50 feet Dec. 22-25, 1939.

Remarks.- Spillway crest found by levels of Aug. 1, 1938, to be at gage height 5.11 feet. Gage read once daily with occasional extra readings during periods of rapidly changing stage.

Lakes in Des Moines River Basin

Gage height, in feet, of Lake Ahquabi near Indianola, Iowa, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.29	3.85	3.67	3.52	-	3.74	4.33	4.80	4.79	4.32	4.11	4.73
2	4.26	3.83	3.66	3.52	-	3.86	4.33	4.79	4.78	4.30	4.09	4.72
3	4.24	3.82	3.64	3.52	3.59	3.90	4.32	4.78	4.77	4.28	4.08	4.71
4	4.21	3.81	3.64	3.52	3.59	3.91	4.32	4.76	4.78	4.26	4.06	4.69
5	4.20	3.79	3.63	3.51	3.59	3.92	4.31	4.74	4.77	4.23	4.03	4.68
6	4.19	3.78	3.62	3.51	3.59	3.93	4.31	4.76	4.75	4.20	4.00	4.67
7	4.18	3.76	3.61	3.52	-	3.96	4.36	4.80	4.72	4.18	3.98	4.66
8	4.16	3.75	3.60	3.54	-	4.01	4.38	4.79	4.70	4.17	3.97	4.64
9	4.19	3.74	3.59	3.54	3.64	4.02	4.37	4.78	4.70	4.17	4.24	4.62
10	4.17	3.85	3.58	3.56	3.64	4.02	4.36	4.78	4.69	4.16	-	4.59
11	4.16	3.84	3.68	3.56	3.64	4.03	4.35	4.78	4.68	4.20	4.59	4.56
12	4.14	3.83	3.57	3.56	3.64	4.04	4.34	4.78	4.67	4.16	4.58	4.54
13	4.11	3.82	3.56	3.56	3.64	4.04	4.33	4.77	4.66	4.14	4.68	4.52
14	4.09	3.80	3.56	3.56	3.64	-	4.32	4.75	4.64	4.12	4.76	4.50
15	4.08	3.79	3.55	3.57	3.64	-	4.31	4.73	4.63	4.10	4.75	4.49
16	4.06	3.78	3.55	3.57	3.64	4.15	4.31	4.71	4.61	4.08	4.74	4.48
17	4.04	3.77	3.54	3.57	3.66	4.20	4.41	4.70	4.59	4.06	4.75	4.47
18	4.02	3.77	3.54	3.57	3.67	4.24	4.40	4.81	4.57	4.04	4.74	4.46
19	4.00	3.76	3.53	3.58	3.68	4.26	4.40	4.90	4.54	4.02	4.71	4.45
20	3.99	3.75	3.53	3.58	3.68	4.27	4.40	4.89	4.51	4.00	4.68	4.44
21	3.98	3.74	3.52	3.58	3.68	4.30	4.39	4.88	4.49	3.98	4.66	4.42
22	3.97	3.72	3.50	3.58	3.68	4.30	4.39	4.87	4.48	3.96	4.66	-
23	3.96	3.71	3.50	3.58	3.68	4.28	4.49	4.86	4.51	3.94	4.63	-
24	3.95	3.70	3.50	3.59	3.68	4.27	4.49	4.85	4.47	3.92	4.64	-
25	3.94	3.68	3.50	3.59	3.68	4.27	4.50	4.85	4.46	3.90	4.64	-
26	3.92	3.68	3.52	3.59	3.68	4.27	4.54	4.85	4.44	3.88	4.66	-
27	3.91	3.67	3.57	3.59	3.69	4.29	4.58	4.84	4.41	3.86	4.79	-
28	3.90	3.66	3.56	3.59	3.69	4.32	4.62	4.83	4.40	3.99	4.78	-
29	3.89	3.66	3.55	3.59	3.73	4.34	4.76	4.82	4.36	3.96	4.77	4.34
30	3.88	3.65	3.54	3.59	-	4.34	4.84	4.81	4.34	4.08	4.76	4.33
31	3.86	-	3.53	3.59	-	4.34	-	4.80	-	4.14	4.75	-

Lake Wapello near Drakeeville, Iowa

Location.- Staff gage, lat. 40°49', long. 92°35', at quarter corner between secs. 33 and 34, T. 70 N., R. 15 W., at Lake Wapello State Park, 5½ miles northwest of Drakeeville.

Records available.- June 1936 to September 1940.

Extremes.- Maximum gage height observed during year, 99.96 feet May 11; minimum observed, 98.44 feet Dec. 18, Jan. 4-8, Feb. 8.
1936-40: Maximum gage height observed, 101.30 feet Mar. 12, 1939; minimum observed, 97.81 feet Sept. 9-11, 1936.

Remarks.- Crest of spillway is at gage height 100.00 feet. Gage read once daily. Water is diverted from lake for fish-rearing ponds below lake outlet.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	99.05	98.70	-	98.46	98.46	98.56	98.80	99.42	99.84	99.46	99.00	99.32
2	99.03	98.68	-	98.46	98.45	98.56	98.78	99.42	99.84	99.44	98.98	99.28
3	99.01	98.68	-	98.46	98.46	98.54	98.78	99.42	99.84	99.42	98.98	99.26
4	99.00	98.66	-	98.44	98.46	98.56	98.78	99.42	99.82	99.40	98.98	99.18
5	98.98	98.66	-	98.44	98.45	98.56	98.78	99.40	99.82	99.38	98.98	99.14
6	98.97	98.64	-	98.44	98.45	98.58	98.78	99.38	99.82	99.34	98.98	99.12
7	98.97	-	98.54	98.44	98.45	98.64	98.80	99.38	99.80	99.32	98.98	99.10
8	98.97	-	-	98.44	98.44	98.66	98.82	99.82	99.80	99.28	98.98	99.10
9	98.98	98.62	-	98.46	98.46	98.66	98.82	99.86	99.78	99.26	99.00	99.09
10	98.98	98.66	-	98.46	98.46	98.70	98.82	99.92	99.76	99.24	99.00	99.04
11	98.94	98.64	-	98.48	98.56	98.70	98.80	99.96	99.74	99.22	99.00	99.02
12	98.92	98.62	-	98.46	98.54	98.70	98.78	99.86	99.74	99.00	99.00	99.00
13	98.90	98.61	-	98.46	98.54	98.70	98.78	99.86	99.72	99.00	99.00	98.94
14	98.90	98.61	-	-	98.50	98.68	98.78	99.86	99.70	99.00	99.00	98.96
15	98.86	98.60	-	98.56	98.50	98.70	98.78	99.86	99.68	99.00	99.10	98.98
16	98.82	98.60	-	98.56	98.50	98.70	98.78	99.86	99.68	99.00	99.38	98.96
17	98.80	98.60	-	98.56	98.50	98.74	98.80	99.86	99.66	99.00	99.40	98.96
18	98.78	98.60	98.44	98.52	98.50	98.74	98.95	99.88	99.66	99.00	99.40	98.96
19	98.78	98.62	-	98.52	98.50	98.76	98.98	99.88	99.64	99.00	99.40	98.96
20	98.76	98.60	-	98.52	98.50	98.74	98.98	99.88	99.64	99.00	99.40	98.94
21	98.76	98.60	98.46	98.51	98.50	98.76	98.98	99.88	99.64	99.00	99.40	98.94
22	98.76	98.60	98.47	98.51	98.50	98.76	98.98	99.86	99.62	99.00	99.38	98.92
23	98.74	98.60	98.46	98.51	98.50	98.76	99.12	99.86	99.62	99.00	99.38	98.88
24	98.72	98.58	-	98.51	98.48	98.78	99.12	99.86	99.62	99.00	99.38	98.84
25	98.72	98.58	98.46	98.48	98.50	98.80	99.20	99.86	99.60	99.00	99.36	98.80
26	98.74	98.58	98.46	98.48	98.52	98.80	99.37	99.86	99.60	99.00	99.36	98.80
27	98.78	-	98.46	98.48	98.52	98.80	99.38	99.86	99.58	99.00	99.36	98.78
28	98.76	-	98.47	98.46	98.56	98.80	99.38	99.84	99.56	99.00	99.36	98.78
29	98.74	-	98.48	98.46	98.56	98.80	99.42	99.84	99.54	99.00	99.36	98.78
30	98.72	-	98.48	98.46	-	98.80	99.42	99.84	99.50	99.02	99.36	98.76
31	98.70	-	-	98.46	-	98.80	-	99.84	-	99.02	99.34	-

Fox River at Wayland, Mo.

Location.- Water-stage recorder, lat. 40°23'45", long. 91°35'50", in NW¼ sec. 31, T. 65 N., R. 6 W., at bridge on State Highway 4, three-quarters of a mile west of Wayland and 5 miles downstream from Brush Creek. Datum of gage is 501.52 feet above mean sea level (general adjustment of 1929).

Drainage area.- 400 square miles.

Records available.- October 1929 to September 1940. February 1922 to September 1929 at site 2 miles upstream.

Average discharge.- 11 years (1929-40), 174 second-feet.

Extremes.- Maximum discharge during year, 1,640 second-feet April 24 (gage height, 9.08 feet); no flow on many days.
1929-40: Maximum discharge, 25,000 second-feet June 29, 1933 (gage height, 21.53 feet); no flow on many days in 1930, 1934, 1936, 1939, 1940.

Remarks.- Records good except those below 5 second-feet, which are fair, and those for periods of ice effect, which are poor.

Cooperation.- Results of two discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	7	1.7	0.9	0.5	11	38	168	23	1.5	12	10
2	0	4.7	1.8	.4	.6	60	28	126	18	1.1	139	10
3	0	3.3	2.1	.1	.6	500	25	81	15	.9	149	4.6
4	0	2.6	2.5	0	.5	973	19	61	12	.8	659	3.3
5	0	2.2	3.1	0	.5	460	22	49	10	.7	106	2.4
6	0	1.8	4.0	0	.5	279	21	41	a9	.5	33	2.0
7	0	1.4	3.9	0	.6	210	19	36	a8	.4	14	1.8
8	0	1.2	3.3	.1	.8	160	19	33	6	.4	8	1.6
9	0	1.0	3.3	.2	.8	130	26	171	4.6	.3	18	1.1
10	.2	2.0	3.1	*.4	.9	120	33	357	4.2	.3	18	.8
11	0	1.7	3.0	.6	1.0	90	37	122	6	.3	33	.7
12	0	1.6	*2.8	1.0	1.0	70	55	72	10	1.1	87	.7
13	0	1.4	2.5	.9	1.2	40	45	52	10	.6	169	.5
14	0	1.2	2.3	.8	1.3	30	32	40	15	.4	231	.4
15	0	1.0	2.3	.7	1.7	37	28	31	13	.8	67	.4
16	0	1.4	2.3	.5	2.3	46	24	26	10	7	43	.4
17	0	1.8	2.3	.3	4.0	64	205	21	7	1.9	38	.3
18	0	2.1	2.5	.1	11	176	488	21	4.6	1.1	828	.3
19	0	6	2.5	.1	9	506	483	25	3.9	1.0	427	.2
20	0	9	2.2	.1	*8	*252	194	36	2.8	.7	132	.2
21	0	7	1.7	.2	7	140	108	40	2.4	.6	64	.2
22	0	10	2.0	.2	6	91	74	37	2.1	.4	37	.2
23	0	7	2.2	.2	6	62	404	27	2.4	.3	24	.2
24	0	4.2	2.0	.1	5	35	1,380	20	2.1	.2	16	.1
25	0	3.5	2.1	0	5	25	587	19	1.8	0	13	.1
26	4.4	2.5	2.1	0	6	25	270	120	1.5	0	10	.2
27	3.7	2.1	2.1	.1	7	31	306	270	1.4	77	8	.2
28	1.1	1.6	2.6	.2	8	35	252	94	1.6	50	8	.1
29	1.2	1.3	2.2	.3	8	37	173	60	1.4	14	6	.1
30	1.6	1.3	1.7	.4	-	54	153	42	1.5	10	5	0
31	7	-	1.3	.5	-	67	-	29	-	5	6	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	19.3	7	0	0.62	0.0016	0.002	38
November	94.9	10	1.0	3.16	.0079	.009	188
December	75.5	4.0	1.3	2.44	.0061	.007	150
Calendar year 1939	56,892.1	8,650	0	156	.390	5.27	112,850
January	9.4	1.0	0	.30	.00075	.0009	19
February	104.8	11	.5	3.61	.0090	.01	208
March	4,816	973	11	155	.388	.45	9,550
April	5,548	1,380	19	185	.462	.52	11,000
May	2,327	357	19	75.1	.188	.22	4,620
June	210.3	23	1.4	7.01	.018	.02	417
July	179.3	77	0	5.78	.014	.02	356
August	3,408	828	5	110	.275	.32	6,760
September	43.1	10	0	1.44	.0036	.004	85
Water year 1939-40	16,835.6	1,380	0	46.0	.115	1.58	33,390

Peak discharge.- Apr. 24 (9 a.m.) 1,640 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 29 to Jan. 6, Jan. 14-28, Feb. 21 to Mar. 3, Mar. 7-16, 24-28.

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Wyaconda River above Canton, Mo.

Location.- Water-stage recorder, lat. 40°08'30", long. 91°33'55", in SE¼ sec. 28, T. 62 N., R. 6 W., at bridge on State Highway 96, 1 mile upstream from Sugar Creek and 2 miles west of Canton. Datum of gage is 515.32 feet above mean sea level (general adjustment of 1929).

Drainage area.- 393 square miles.

Records available.- October 1932 to September 1940.

Extremes.- Maximum discharge during year, 2,300 second-feet Apr. 24 (gage height, 12.92 feet); no flow on many days.
1932-40: Maximum discharge, 17,700 second-feet June 30, 1933 (gage height, 30.00 feet, from floodmarks); no flow on many days in 1934, 1936, and 1940.

Remarks.- Records fair except those for periods of ice effect, which are poor.

Cooperation.- Results of two discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.3	4.1	3.4	0.6	0.5	36	43	139	15	1.1	0	2.2
2	.3	2.4	4.4	.4	.5	300	29	94	12	.9	10	1.7
3	.2	1.8	5	.3	.5	1,420	24	68	9	.7	25	2.2
4	.2	1.7	3.4	.2	.5	1,670	18	53	6	.6	89	2.2
5	.2	1.6	2.5	.2	.6	791	20	39	5	.5	209	1.7
6	.3	1.6	3.0	.2	.7	361	16	32	4.6	.4	65	1.5
7	.3	1.6	3.0	.2	.7	241	14	26	4.1	.3	21	1.2
8	.3	1.5	2.7	.3	.8	163	18	24	4.6	.2	11	.9
9	.4	1.5	2.9	.3	.8	134	25	26	3.9	.2	6	.8
10	.4	1.7	2.7	.4	.8	132	39	83	3.7	.2	7	.8
11	.3	1.8	2.4	*.4	.9	103	42	49	4.8	.2	11	.6
12	.3	3.7	*2.7	.4	1.3	85	74	32	10	.2	83	.4
13	.3	3.4	2.5	.4	1.8	65	64	26	16	.2	169	.3
14	.3	2.7	2.4	.3	2.6	45	40	20	13	.2	225	.3
15	.4	2.4	2.1	.3	3.0	30	32	15	10	.2	83	.2
16	.4	2.0	2.0	.2	8	45	25	13	7	.2	41	.2
17	.3	1.8	2.1	.2	9	74	277	10	5	.1	68	.1
18	.3	2.5	2.7	.1	25	143	1,070	10	7	0	341	.1
19	.4	4.4	2.7	.1	50	406	616	13	11	0	501	0
20	.4	15	2.5	.2	*45	*266	257	21	3.2	0	192	0
21	.3	18	2.5	.3	43	128	122	24	2.2	0	89	0
22	.3	10	2.2	.3	37	83	78	21	2.0	0	40	0
23	.3	5	2.0	.2	35	56	478	15	2.1	0	19	0
24	.3	4.6	1.7	.2	30	30	2,020	10	2.2	0	10	.1
25	.3	3.6	1.8	.1	27	20	747	13	2.2	0	6	.1
26	1.8	3.0	1.8	.1	28	20	325	32	2.0	0	6	0
27	9	2.9	2.0	.2	29	20	316	257	1.7	0	6	0
28	15	2.4	2.0	.3	30	24	217	111	2.0	0	5	0
29	7	2.1	2.1	.4	31	28	156	59	1.5	0	5	0
30	4.8	2.4	1.8	.5	-	47	178	35	1.4	0	3.0	0
31	4.1	-	1.1	.5	-	72	-	22	-	0	2.4	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	49.5	15	0.2	1.60	0.0041	0.005	98
November	113.2	18	1.5	3.77	.0096	.01	225
December	78.1	5	1.1	2.52	.0064	.007	155
Calendar year 1939	68,919.6	8,760	.2	189	.481	6.52	136,700
January	8.8	.6	.1	.28	.00071	.0008	17
February	442.9	50	.5	15.3	.039	.04	878
March	7,037	1,670	20	227	.578	.67	13,960
April	7,380	2,020	14	246	.626	.70	14,640
May	1,392	257	10	44.9	.114	.13	2,760
June	174.2	16	1.4	5.81	.015	.02	346
July	6.4	1.1	0	.21	.00053	.0006	13
August	2,348.4	501	0	75.8	.193	.22	4,660
September	17.6	2.2	0	.59	.0015	.002	35
Water year 1939-40	19,048.1	2,020	0	52.0	.132	1.81	37,790

Peak discharge.- Mar. 4 (4 a.m.) 1,960 sec.-ft.; Apr. 24 (9 a.m.) 2,300 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 30 to Mar. 2, Mar. 13-16, 24-27.

North Fabius River at Monticello, Mo.

Location.- Wire-weight gage, lat. 40°06'30", long. 91°42'55", in SW¼SE¼ sec. 6, T. 61 N., R. 7 W., at bridge on State Highway 96, 1 mile south of Monticello and about 19 miles upstream from Middle Fabius River. Datum of gage is 540.73 feet above mean sea level (general adjustment of 1929).

Drainage area.- 452 square miles.

Records available.- February 1922 to September 1940.

Average discharge.- 17 years (1923-40), 280 second-feet.

Extremes.- Maximum discharge during year, 2,360 second-feet Apr. 24 (gage height, 12.4 feet, from graph based on gage readings); no flow at times.
1922-40: Maximum discharge, 17,400 second-feet June 30, 1933 (gage height, 30.8 feet, from floodmarks), from rating curve extended above 14,000 second-feet; no flow at times.

Remarks.- Records fair except those for periods of ice effect and doubtful or no gage-height record, which are poor. Gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.7	4.8	5	1	1	125	45	192	16	3.5	1.8	6
2	2.5	3.9	4.6	.5	1	659	37	113	15	2.7	.6	3.6
3	2.3	3.5	4.6	.2	1	1,470	30	89	14	1.7	.1	2.4
4	2.1	3.3	4.3	.1	1	765	28	67	12	.9	16	2.7
5	1.8	3.5	4.8	0	1	380	42	59	9	.4	26	d3.3
6	1.7	3.3	5	0	1	322	32	a52	8	.1	14	3.9
7	1.5	3.3	4.8	0	1	287	27	46	10	0	10	3.6
8	1.5	3.7	4.6	0	1	238	89	138	10	0	6	3.3
9	2.0	3.3	4.3	0	1	207	69	178	9	0	18	2.7
10	1.8	3.9	4.3	.1	1	151	67	132	7	0	28	3.6
11	1.7	5	4.1	*.2	2	144	68	89	9	0	a18	3.9
12	1.8	4.3	*4.3	.3	3	113	70	59	16	0	8	2.4
13	2.5	3.7	3.9	.4	5	56	73	50	16	0	238	.6
14	2.3	3.7	3.9	.4	9	33	54	34	15	0	164	.4
15	2.3	3.5	3.9	.3	17	66	46	28	15	0	83	.2
16	a2.3	3.3	3.9	.2	30	68	283	25	11	1.2	47	.1
17	2.3	3.5	3.9	0	50	158	1,540	23	8	.9	138	.1
18	2.3	10	3.9	0	90	238	1,640	38	6	.9	421	.2
19	2.5	57	4.1	0	88	238	790	33	6	.1	270	.1
20	2.7	54	4.1	0	80	238	243	44	5	0	138	0
21	2.7	25	4.3	0	70	151	151	45	4.3	0	60	.1
22	2.7	9	4.1	0	60	107	107	34	3.7	0	38	.1
23	2.9	6	3.9	0	50	77	543	26	6	0	26	0
24	2.9	5	3.9	0	44	60	1,780	19	4.6	0	18	0
25	2.9	4.8	3.7	0	36	46	642	21	3.9	0	14	0
26	3.1	4.6	3.7	0	30	44	322	34	3.7	0	10	d.1
27	12	4.1	3.7	0	26	44	572	101	3.9	0	125	d.9
28	10	3.7	3.3	0	*33	45	463	67	4.1	0	30	d.6
29	9	3.5	3	.1	70	46	270	47	3.7	0	14	d.6
30	6	4.1	2	.2	-	60	192	29	3.5	.3	9	d.4
31	5	-	2	.4	-	83	-	20	-	2.5	8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	101.8	12	1.5	3.28	0.0073	0.008	202
November	254.3	57	3.3	8.48	.019	.02	504
December	123.9	5	2	4.00	.0088	.01	246
Calendar year 1939	73,537.7	9,680	1.2	201	.445	6.06	145,900
January	4.4	1	0	.14	.00031	.0004	8.7
February	803	90	1	27.7	.061	.07	1,590
March	6,719	1,470	33	217	.480	.55	13,330
April	10,315	1,780	27	344	.761	.85	20,460
May	1,932	192	19	62.3	.138	.16	3,830
June	258.4	16	3.5	8.61	.019	.02	513
July	15.2	3.5	0	.49	.0011	.001	30
August	1,997.5	421	.1	64.4	.142	.16	3,960
September	45.9	6	0	1.53	.0034	.004	91
Water year 1939-40	22,570.4	1,780	0	61.7	.137	1.85	44,760

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
d Gage-height record doubtful; discharge computed on basis of general information.
Note.- Stage-discharge relation affected by ice Dec. 29 to Feb. 29.

North Fabius River at Taylor, Mo.

Location.- Water-stage recorder, lat. 39°56'05", long. 91°31'35", in NE¼SE¼ sec. 2, T. 59 N., R. 6 W., at bridge on U. S. Highway 61 at Taylor, and 6.5 miles upstream from mouth. Datum of gage is 469.65 feet above mean sea level (general adjustment of 1929).

Drainage area.- 930 square miles.

Records available.- April 1930 to September 1940.

Average discharge.- 10 years, 500 second-feet.

Extremes.- 1938-39: Maximum discharge during water year, 16,200 second-feet Mar. 14 (gage height, 15.67 feet); minimum, 0.7 second-foot Oct. 11, 12, 16, 17 (gage height, 1.82 feet).

1939-40: Maximum discharge during water year, 3,790 second-feet Mar. 4 (gage height, 7.18 feet); minimum, 1.1 second-feet July 31 to Aug. 3 (gage height, 1.84 feet).

1930-40: Maximum discharge, 30,300 second-feet June 30, 1933 (gage height, 22.85 feet, from floodmarks); minimum, 0.1 second-foot July 23-25, 1934 (gage height, 1.72 feet).

Maximum stage known, 23.5 feet, from floodmarks, Nov. 19, 1928.

Remarks.- Records fair except those for periods of ice effect or no gage-height record, and the period Mar. 17 to Apr. 14, 1939, which are poor.

Cooperation.- Results of eight discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, 1938-40

1938-39

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	c6	1.9	26	b10	92	194	332	274	63	415	29	39
2	c5	1.7	35	9	143	116	301	237	53	221	29	36
3	5	1.9	58	11	168	98	278	217	61	150	31	30
4	4.3	175	58	23	77	179	237	186	43	270	38	25
5	3.1	1,850	53	30	63	619	221	175	40	2,330	29	23
6	2.3	2,380	51	42	65	1,610	209	164	38	1,520	23	23
7	2.1	3,480	53	77	53	1,320	206	167	39	541	23	21
8	2.1	3,080	56	74	48	589	209	190	49	257	1,120	19
9	1.9	1,520	53	84	81	400	186	164	39	164	92	19
10	1.3	710	61	79	494	364	175	221	133	113	86	19
11	.9	690	53	77	288	4,230	221	182	86	79	1,400	18
12	.9	595	51	79	217	10,100	729	154	51	61	1,100	16
13	1.5	346	36	81	130	13,500	677	136	56	53	940	16
14	1.3	241	28	79	110	16,400	378	116	63	49	430	16
15	1.1	175	28	72	110	9,560	3,500	89	60	46	229	16
16	.9	133	31	72	86	2,680	10,200	79	53	42	136	15
17	.9	98	28	61	49	677	13,900	74	51	39	116	15
18	19	81	23	46	48	420	11,700	70	45	36	1,290	15
19	20	72	21	38	56	337	6,230	58	63	36	1,570	13
20	8	63	21	46	48	296	1,990	51	342	33	1,470	12
21	5	56	20	53	48	283	1,280	51	2,680	31	783	11
22	6	51	17	38	46	261	a1,000	49	2,780	31	328	10
23	6	46	19	43	54	245	a800	51	2,580	31	253	10
24	5	42	18	51	43	225	a700	49	1,750	38	164	10
25	4.3	36	17	49	39	209	a640	45	607	72	265	9
26	2.3	30	b16	51	39	221	a660	48	314	48	209	9
27	1.9	23	b15	45	42	430	a1,000	1,850	241	61	175	8
28	1.7	24	b14	40	237	400	797	607	553	40	110	8
29	1.7	26	b13	40	-	324	466	194	1,800	38	72	7
30	1.9	26	b12	39	-	306	332	150	1,280	38	53	6
31	1.9	-	b11	40	-	324	-	84	-	32	45	-

Peak discharge.- Nov. 7 (7 p.m.) 3,900 sec.-ft.; Mar. 14 (6 a.m.) 16,200 sec.-ft.; Apr. 17 (12 m.) 14,600 sec.-ft.; June 21 (8 p.m.) 3,380 sec.-ft.; June 22 (9 p.m.) 3,680 sec.-ft.; Aug. 8 (4 a.m.) 3,380 sec.-ft.

a No gage-height record; discharge computed on basis of records for nearby stations.

b Stage-discharge relation affected by ice.

c Backwater from Mississippi River; discharge computed on basis of one discharge measurement, gage heights, engineer's and observer's notes, and records for station at Monticello.

Discharge, in second-feet, of North Fabius River at Taylor, Mo., 1938-40--Continued

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6	28	19	7	7	140	253	456	49	10	1.1	25
2	6	21	19	7	8	350	164	378	43	9	1.1	20
3	6	22	19	6	8	2,180	136	301	36	8	1.1	16
4	7	22	20	6	7	3,280	107	245	32	8	1.3	14
5	8	19	19	5	7	2,530	95	206	29	6	121	13
6	6	18	17	5	7	1,410	172	179	28	6	12	12
7	6	14	16	5	7	638	126	154	29	5	18	11
8	14	12	15	5	8	483	95	136	28	4.7	15	8
9	20	12	15	5	9	456	86	123	24	4.3	15	7
10	10	13	15	6	10	461	154	278	36	3.9	21	6
11	7	13	15	8	12	373	194	319	38	3.5	40	4.7
12	6	12	15	9	*15	314	209	213	33	3.1	29	4.7
13	6	12	15	8	18	288	288	157	32	3.1	592	4.3
14	8	14	15	9	22	233	213	123	35	2.7	217	4.3
15	7	13	14	8	25	168	157	95	38	2.7	168	3.5
16	6	12	13	*9	32	172	133	81	42	2.3	79	3.1
17	6	11	12	8	45	209	385	70	36	2.3	92	2.7
18	6	11	13	7	63	337	2,280	70	33	2.1	1,040	2.7
19	6	15	13	7	136	638	2,580	68	33	2.3	811	3.5
20	6	17	13	6	350	1,014	1,420	65	26	2.3	523	3.1
21	6	31	13	6	278	511	559	70	21	2.3	233	2.7
22	5	38	12	6	229	314	355	84	19	2.3	133	2.3
23	4.7	45	12	6	182	241	332	70	25	2.3	86	2.7
24	5	39	12	6	160	186	2,780	61	39	2.1	70	3.1
25	6	32	12	6	145	150	2,430	54	19	1.9	49	2.7
26	6	26	11	6	130	133	1,370	51	15	1.7	45	2.1
27	10	22	10	6	120	119	776	72	14	1.7	941	2.1
28	22	19	10	6	120	116	818	130	24	1.7	257	1.9
29	38	19	9	6	125	123	577	104	17	1.5	95	1.9
30	26	18	8	6	-	150	523	86	11	1.5	48	1.9
31	30	-	8	6	-	337	-	63	-	1.1	33	-

Peak discharge.- Mar. 4 (7 a.m.) 3,790 sec.-ft.; Apr. 19 (1 a.m.) 2,980 sec.-ft.; Apr. 24 (3 p.m.) 3,380 sec.-ft.; Aug. 18 (7 a.m.) 1,900 sec.-ft.; Aug. 27 (3 p.m.) 2,280 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 27 to Jan. 10, Jan. 18 to Feb. 17, Feb. 24 to Mar. 2.

Monthly discharge, in second-feet, 1938-40

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October 1938	125.3	20	0.9	4.04	0.0043	0.005	249
November	16,053.5	3,480	1.7	535	.575	.64	31,850
December	986	58	11	31.8	.034	.04	1,960
Calendar year 1938	113,633.8	6,450	0.9	311	.334	4.54	225,400
January 1939	1,579	84	9	50.9	.055	.06	3,130
February	2,974	494	39	106	.114	.12	5,900
March	65,917	15,400	98	2,126	2.29	2.64	130,800
April	59,554	13,900	175	1,985	2.13	2.38	118,100
May	6,172	1,850	45	199	.214	.25	12,240
June	16,013	2,780	38	534	.574	.64	31,770
July	6,914	2,330	31	223	.240	.28	13,720
August	12,638	1,570	23	408	.439	.51	25,070
September	494	39	6	16.5	.018	.02	980
Water year 1938-39	189,419.8	15,400	0.9	519	.558	7.58	375,800
October 1939	311.7	38	4.7	10.1	.011	.01	618
November	600	45	11	20.0	.022	.02	1,190
December	429	20	8	13.8	.015	.02	851
Calendar year 1939	173,595.7	15,400	4.7	476	.512	6.95	344,400
January 1940	202	9	5	6.5	.0070	.008	401
February	2,285	350	7	78.8	.085	.09	4,530
March	18,054	3,280	116	582	.626	.72	35,810
April	19,767	2,780	86	659	.709	.79	39,210
May	4,562	456	51	147	.158	.18	9,050
June	884	49	11	29.5	.032	.04	1,750
July	111.4	10	1.1	3.59	.0039	.004	221
August	5,787.6	1,040	1.1	187	.201	.23	11,480
September	192.0	25	1.9	6.4	.0089	.008	381
Water year 1939-40	53,185.7	3,280	1.1	145	.156	2.12	105,500

Middle Fabius River near Baring, Mo.

Location.- Water-stage recorder and concrete control, lat. 40°19'55", long. 92°12'50", in NW¼NW¼ sec. 26, T. 64 N., R. 12 W., at bridge on State Highway 15, 1 mile downstream from confluence of North and South Forks and 6 miles north of Baring. Datum of gage is 679.69 feet above mean sea level (general adjustment of 1929).

Drainage area.- 185 square miles.

Records available.- April 1930 to September 1940 (fragmentary prior to October 1934).

Extremes.- Maximum discharge during year, 2,130 second-feet Mar. 3 (gage height, 15.40 feet); no flow on many days.
1930-40: Maximum discharge, 7,730 second-feet June 29, 1933 (gage height, 24.23 feet, from floodmarks), from rating curve extended above 4,700 second-feet; no flow on many days.

Remarks.- Records good except for period of ice effect, which are poor.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 3

2.0	0.1	2.8	14	6.5	335
2.05	.5	3.0	24	8.0	510
2.1	1.0	3.2	36	9.5	715
2.3	3.2	3.5	56	12.0	1,150
2.5	6	4.0	94	14.0	1,610
2.6	8	5.0	181	14.7	1,850

Mar. 4 to Sept. 30

1.9	0	2.4	6	4.0	121
2.0	.2	2.5	10	5.0	213
2.1	.9	2.7	20	7.0	426
2.2	1.9	2.9	33	10.0	795
2.3	3.5	3.5	79	11.8	1,110

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.5	1.2	2.3	0.1	0.1	250	41	83	5	0.4	0	0.3
2	.5	.9	3.4	.1	.1	612	32	59	4.5	.4	0	.2
3	.5	.8	3.2	.1	.2	1,850	77	44	3.8	.3	.3	.1
4	.4	.8	2.5	.1	.3	1,110	84	33	3.5	.2	.3	.1
5	.3	.8	2.1	.1	.4	316	31	29	3.3	.2	0	.1
6	.4	.8	2	.1	.5	188	21	26	3.2	.2	0	.1
7	.3	.8	2	.1	.7	170	33	22	2.9	.1	0	.1
8	.3	.8	1.8	.1	.9	218	83	101	2.7	.1	13	0
9	.7	.9	1.8	.1	1	170	59	148	2.4	.1	1.5	0
10	.9	1.6	1.5	*.1	1.3	134	51	59	2.5	.1	.7	0
11	.9	1.6	1.5	.1	1.7	106	152	36	4.8	.1	.5	0
12	.9	2	1.5	.1	2	84	78	33	12	.1	1	0
13	.9	2	1.4	.1	3	59	48	21	9	.1	.9	0
14	.7	1.5	1.3	.1	4.1	53	39	17	7	.1	21	0
15	.6	1.3	1.3	.1	*8	85	35	14	6	.1	25	0
16	.7	1.3	1.3	.1	114	101	28	12	3.8	.1	23	0
17	.7	1.2	1.3	.1	335	134	508	12	2.7	.1	126	0
18	.7	4	1.4	.1	225	415	1,060	13	2.2	.1	148	0
19	.6	12	1.4	.1	150	360	360	18	1.8	.1	24	0
20	.7	11	1.3	.1	114	144	121	20	1.5	0	6	0
21	.8	5	1.2	.1	94	89	78	17	1.2	0	2.9	0
22	1	3.2	1.1	.1	70	59	59	12	1.2	0	1.7	0
23	1.1	2.4	1.1	.1	60	44	662	10	1.4	0	1.1	.1
24	1.1	2.2	1.1	.1	52	38	1,010	8	1.3	0	.8	.1
25	1	1.8	1	.1	46	34	294	8	1.1	0	.6	0
26	1.5	1.7	1	.1	40	36	233	22	1.1	0	.4	0
27	6	1.5	.8	.1	37	39	223	18	1	.2	.8	0
28	8	1.5	.6	.1	58	42	113	13	1.3	.1	6	0
29	3	1.5	.4	.1	114	236	116	9	.9	0	2.7	0
30	1.5	1.6	.3	.1	-	161	134	7	.5	0	1.4	0
31	1.5	-	.2	.1	-	61	-	6	-	0	.7	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	38.7	8	0.3	1.25	0.0068	0.008	77
November	69.7	12	.8	2.32	.013	.01	138
December	45.1	3.4	.2	1.45	.0078	.009	89
Calendar year 1939	44,988.5	6,270	.2	123	.665	9.06	89,230
January	3.1	.1	.1	.10	.00054	.0006	6.1
February	1,533.3	335	.1	52.9	.286	.31	3,040
March	7,398	1,850	34	239	1.29	1.49	14,670
April	5,883	1,060	21	195	1.05	1.17	11,630
May	930	148	6	30.0	.162	.19	1,840
June	95.6	12	.5	3.19	.017	.02	190
July	3.3	.4	0	.11	.00059	.0007	6.5
August	410.3	148	0	13.2	.071	.08	814
September	1.2	.3	0	.04	.00022	.0002	2.4
Water year 1939-40	16,391.3	1,850	0	44.8	.242	3.29	32,500

Peak discharge.- Mar. 3 (9 p.m.) 2,130 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 28 to Feb. 7 and Feb. 23-28.

South Fabius River near Taylor, Mo.

Location.- Wire-weight gage, lat. 39°53'50", long. 91°35'00", in NE¼ sec. 20, T. 59 N., R. 6 W., 4½ miles southwest of Taylor, 5 miles downstream from Grassy Creek, and 5.3 miles upstream from confluence with North Fabius River. Datum of gage is 483.29 feet above mean sea level (general adjustment of 1912).

Drainage area.- 620 square miles.

Records available.- May 1936 to September 1940. December 1934 to May 1936 at site 4 miles downstream.

Extremes.- Maximum discharge during year, 3,470 second-feet Mar. 3 (gage height, 7.8 feet, from graph based on gage readings); no flow Aug. 2-5.
1934-40: Maximum discharge observed, 12,400 second-feet June 19, 1935 (gage height, 23.38 feet, former site and datum); no flow July 17 to Sept. 1, 1936, Aug 2-5, 1940.

Remarks.- Records good above 3 second-feet and fair below except those for period of ice effect, which are poor. Gage read once daily.

Cooperation.- Results of three discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.8	3.8	16	7	10	120	70	280	30	8	a.1	45
2	3	7	15	5	10	800	120	216	28	7	a0	31
3	3	6	15	4	9	2,970	92	182	25	6	a0	22
4	2.8	6	14	4	8	2,870	70	145	21	4	a0	16
5	2.5	4.8	14	4	7	2,020	54	121	19	3.4	0	13
6	2.3	4.8	13	4	6	930	46	104	16	3.2	28	11
7	2.4	4.5	11	4	5	442	48	90	19	2.9	2.6	9
8	2.4	6	10	4	5	310	79	77	37	2.6	1.3	6
9	2.3	5	10	4	6	310	64	68	34	2.6	1	6
10	4.5	6	9	4	7	277	54	61	57	2.2	1.3	3.2
11	3	6	9	4	9	245	62	56	29	2	4.6	2.9
12	3.2	6	9	5	*12	200	95	46	81	1.8	350	2.4
13	5	6	8	5	16	214	157	44	36	1.7	472	2.3
14	4.5	5	8	5	22	214	141	41	24	1.3	164	2.3
15	4.2	4.8	8	6	26	141	114	41	18	1.3	231	2.2
16	4.2	6	8	6	38	160	83	33	16	1.3	364	2.2
17	2.5	6	8	6	70	200	467	31	15	1.2	263	2
18	2.8	5	9	6	104	261	2,220	35	16	1.1	1,260	1.8
19	2.5	8	8	6	124	277	2,220	34	18	1	880	1.5
20	2.2	17	9	5	130	462	1,260	35	19	1	435	1.3
21	2	40	8	4	130	364	435	36	52	.8	197	1.1
22	2.1	29	8	4	120	214	247	35	26	.7	194	.9
23	2	22	7	4	110	157	216	32	20	.6	119	.7
24	2	18	10	4	100	127	651	31	15	.5	72	.8
25	2.3	20	9	4	81	102	980	30	18	.4	46	.8
26	2.2	25	9	4	88	81	636	32	12	.3	37	1
27	3.5	21	10	5	99	73	364	32	10	.3	42	.7
28	2.8	19	11	5	105	75	313	35	18	.2	550	.7
29	3.2	15	12	6	110	79	296	32	13	.2	188	.7
30	3.8	14	10	8	-	81	435	28	9	.2	104	.6
31	3.8	-	8	9	-	73	-	28	-	a.1	54	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	91.8	5	2.0	2.96	0.0048	0.006	182
November	346.7	40	3.8	11.6	.019	.09	688
December	313	16	7	10.1	.016	.02	621
Calendar year 1939	132,549.4	8,630	2.0	363	.585	7.96	262,900
January	155	9	4	5.0	.0081	.009	307
February	1,567	130	5	54.0	.087	.09	3,110
March	14,849	2,970	73	479	.773	.89	29,450
April	12,089	2,220	46	403	.650	.73	23,980
May	2,091	280	28	67.5	.109	.13	4,150
June	751	81	9	25.0	.040	.04	1,490
July	59.9	8	.1	1.93	.0031	.004	119
August	6,060.9	1,260	0	196	.316	.37	12,020
September	191.1	45	.6	6.37	.010	.01	379
Water year 1939-40	38,565.4	2,970	0	105	.169	2.31	76,500

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Jan. 1 to Mar. 2.

North River at Bethel, Mo.

Location.- Wire-weight gage, lat. 39°52', long. 92°01', in NE¼NW¼ sec. 3[illegible] T. 54 N., R. 10 W., at bridge on State Highway 15 at Bethel, 2½ miles upstream from Messner Branch. Datum of gage is 683.37 feet above mean sea level (general adjustment of 1929).

Drainage area.- 58 square miles.

Records available.- April 1930 to September 1940 (prior to August 1936, fragmentary).

Extremes.- Maximum discharge during year, 596 second-feet Mar. 3 (gage height, 8.6 feet, from graph based on gage readings); no flow on many days.
1930-40: Maximum discharge, 5,950 second-feet Aug. 1, 1932 (gage height, 19.50 feet); no flow on many days.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0.2	0.6	0.1	0.4	29	3.0	12	1.2	0.5	0	0.3
2	0	.2	.6	.1	.5	153	3.0	8	1.2	.5	0	.2
3	.1	.2	.6	.1	.6	505	2.8	6	.9	.5	0	.2
4	0	.2	.6	.1	.7	231	2.0	4.6	1.0	.4	0	.2
5	.1	.2	.6	.1	.7	46	1.4	3.7	1.0	.4	0	.1
6	.1	.2	.6	.3	.7	32	1.7	2.8	1.0	.4	0	.1
7	.1	.2	.6	.8	.7	25	1.7	1.7	1.4	.4	0	.1
8	.1	.2	.6	*.6	.7	26	1.5	2.0	1.3	.4	0	.1
9	.1	.2	.6	.2	.7	24	1.5	2.0	.9	.4	0	.1
10	.1	.2	.6	.2	.7	22	1.5	1.8	.8	.4	10	0
11	.1	.2	.5	.2	.6	18	1.5	1.7	.8	.4	3.0	0
12	.2	.2	.6	.2	.6	12	3.1	1.7	2.7	.4	1.6	0
13	.2	.2	.6	.2	.6	21	2.8	1.7	3.7	.3	1.4	0
14	.2	.2	.6	.4	.6	18	6	1.7	2.1	.3	106	.1
15	.2	.2	.4	.4	7	26	3.1	1.6	2.7	.3	512	.1
16	.2	.2	.4	.4	78	22	2.7	.6	3.7	.3	38	.1
17	.2	.3	.4	.2	118	35	202	.6	2.7	.2	23	.1
18	.2	.3	.4	.1	46	34	404	.6	1.3	.2	156	0
19	.2	2.5	*.3	.1	22	29	80	2.1	1.0	.2	75	0
20	.2	.5	.5	.1	16	23	30	2.1	1.0	.2	23	0
21	.2	.6	.5	.2	*13	14	16	2.1	.8	.2	11	0
22	.2	.6	.4	.2	13	9	11	3.4	.6	.2	4.8	0
23	.2	.6	.3	.2	8	7	11	1.6	.8	.2	3.1	0
24	.2	.6	.2	.2	8	5	66	1.3	.6	.2	2.1	0
25	.2	.6	.1	.1	7	4.6	36	1.0	.4	.2	.9	0
26	.2	.6	.1	.1	6	3.7	19	1.0	.4	.2	2.1	0
27	.2	.6	.1	.1	4.6	3.7	13	1.4	.4	.2	.9	0
28	.2	.6	.1	.1	4.6	3.7	13	1.2	.9	.2	.6	0
29	.2	.6	.1	.2	25	3.1	12	1.0	.4	.2	.4	0
30	.2	.6	.1	.2	-	3.4	16	1.2	.4	.1	.4	0
31	.2	-	.1	.3	-	3.0	-	1.0	-	.1	.4	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	4.8	0.2	0	0.15	0.0026	0.003	9.5
November	12.8	2.5	.2	.43	.0074	.008	25
December	12.8	.6	.1	.41	.0071	.008	25
Calendar year 1939	15,708.4	2,410	0	43.0	.741	10.07	31,160
January	6.8	.8	.1	.22	.0038	.004	13
February	387.0	118	.4	13.3	.229	.25	768
March	1,391.2	505	3.0	44.9	.774	.89	2,760
April	968.3	404	1.4	32.3	.557	.62	1,920
May	75.2	12	.6	2.43	.042	.05	149
June	38.1	3.7	.4	1.27	.022	.02	76
July	9.1	.5	.1	.29	.0050	.006	18
August	775.7	312	0	25.0	.431	.50	1,540
September	1.8	.3	0	.06	.0010	.001	3.6
Water year 1939-40	3,683.6	505	0	10.1	.174	2.36	7,310

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 23 to Jan. 6, Jan. 17 to Feb. 3, Feb. 25.

North River at Palmyra, Mo.

Location.- Wire-weight gage, lat. 39°49'05", long. 91°31'10", in SE¼SW¼ sec. 13, T. 58 N., R. 6 W., at bridge on U. S. Highway 61, about 1 mile north of Palmyra and 10 miles upstream from mouth. Datum of gage is 465.18 feet above mean sea level (general adjustment of 1912).

Drainage area.- 373 square miles.

Records available.- December 1934 to September 1940.

Extremes.- Maximum discharge during year, 3,330 second-feet Mar. 3 (gage height, 12.4 feet, from graph based on gage readings); minimum, 0.1 second-foot Sept. 7-23, 25-30; minimum gage height observed, 3.58 feet Sept. 12.

1934-40: Maximum discharge observed, 16,200 second-feet Feb. 26, 1936 (gage height, 21.00 feet); no flow July 10 to Sept. 2, Sept. 7-10, 1936.

Maximum stage known, about 28.0 feet, from floodmarks, date unknown.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read once daily below 5.0 feet and twice daily above. Water diverted by city of Palmyra and by Chicago, Burlington and Quincy R. R. 1,000 feet upstream.

Cooperation.- Results of two discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6	7	8	3	2.5	122	53	112	12	10	0.4	0.8
2	6	6	8	3	2.8	1,020	47	106	11	5	.4	.6
3	6	6	7	2	3.1	2,470	47	77	10	2.9	.3	.4
4	6	4.8	7	2	3.4	853	74	63	9	1.9	.3	.3
5	6	4.0	7	2	3.7	327	56	50	9	1.7	1.5	.2
6	6	3.7	7	2	4.0	165	41	45	8	1.5	1.5	.2
7	6	3.7	6	2	4.8	127	44	40	12	1.5	.6	.1
8	6	3.7	6	2	4.8	104	57	37	13	1.6	.4	.1
9	6	3.7	6	3	6	90	56	35	67	1.5	.4	.1
10	6	7	4.8	4	6	81	46	31	20	1.5	.5	.1
11	7	7	4.8	5	7	77	39	28	18	1.1	.8	.1
12	7	7	4.8	5	8	104	41	26	45	1.2	.7	.1
13	6	6	4.8	6	9	280	39	24	45	1.3	.6	.1
14	6	6	6	6	27	145	37	22	37	1.3	.6	.1
15	6	6	4.8	6	30	119	37	21	17	1.1	1.0	.1
16	6	6	4.8	*6	50	88	36	19	13	1.1	212	.1
17	6	6	4.0	4	194	88	1,290	17	11	1.3	43	.1
18	6	7	4.0	3	171	96	1,410	21	8	1.4	199	.1
19	4.8	9	4.0	2	131	119	493	24	12	.9	115	.1
20	4.8	18	4.0	1	56	90	199	22	20	.6	64	.1
21	4.0	23	4.0	1	50	73	134	20	18	.5	24	.1
22	3.7	20	4.0	2	41	60	99	19	16	.5	9	.1
23	6	16	4.0	2	29	55	95	16	11	.5	3.1	.1
24	3.1	14	4.0	2	26	50	154	15	10	.4	2.1	.2
25	3.1	10	6	1	30	44	144	14	8	.4	1.6	.1
26	3.7	7	6	1	38	42	117	16	6	.4	1.4	.1
27	7	6	6	1	58	43	92	16	5	.4	1.5	.1
28	3.7	6	6	1	140	47	75	16	16	.4	1.2	.1
29	3.1	7	6	2	106	66	75	16	72	.4	1.6	.1
30	3.4	7	6	2	-	96	110	14	20	.4	1.2	.1
31	8	-	3.7	2	-	69	-	12	-	.3	1.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	168.4	8	3.1	5.43	0.015	0.03	334
November	243.6	23	3.7	8.12	.022	.03	483
December	168.5	8	3.7	5.44	.015	.03	334
Calendar year 1939	116,492.5	9,460	3.1	319	.855	11.63	231,100
January	86	6	1	2.8	.0075	.009	171
February	1,242.1	194	2.5	42.8	.115	.12	2,460
March	7,210	2,470	42	233	.625	.72	14,300
April	5,237	1,410	36	175	.469	.53	10,390
May	994	112	12	32.1	.086	.10	1,970
June	579	72	5	19.3	.052	.05	1,150
July	45.0	10	.3	1.45	.0039	.004	89
August	690.7	212	.3	22.3	.060	.07	1,370
September	5.0	.8	.1	.17	.00046	.0005	9.9
Water year 1939-40	16,669.3	2,470	.1	45.5	.122	1.63	33,050

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Jan. 1-15, 17-31.

Bear Creek at Hannibal, Mo.

Location.- Wire-weight gage, lat. 39°40'43", long. 91°24'41", in SE¼NW¼ sec. 1, T. 56 N., R. 5 W., at bridge on U. S. Highway 61 at Hannibal and 4¾ miles upstream from mouth. Datum of gage is 510.78 feet above mean sea level (general adjustment of 1929). Prior to Oct. 1, 1939, chain gage at same site and datum.

Drainage area.- 29 square miles.

Records available.- December 1938 to September 1940.

Extremes.- 1938-39: Maximum discharge during period, 4,670 second-feet June 21 (gage height, 9.5 feet, from graph based on gage readings); minimum, 0.1 second-foot Aug. 6, 7.

1939-40: Maximum discharge during year, 5,070 second-feet Aug. 5 (gage height, 9.86 feet); no flow on many days.

Flood of July 13, 1937, reached a stage of 10.8 feet, from graph based on gage readings (discharge, 6,050 second-feet).

Remarks.- Records poor. Gage read once daily below 5.0 feet and twice daily above.

Discharge, in second-feet, 1938-40

1938-39

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			2.3	0.8	2.1	11	3.5	7	2.8	3.5	31	3.6
2			2.3	1.1	13	8	3.0	7	2.3	2.3	439	4.2
3			77	1.3	11	7	2.8	7	2.1	35	6	3.5
4			6	1.7	8	7	2.6	7	1.7	229	1.6	3.8
5			2.6	1.9	6	11	9	7	1.5	6	.2	3.1
6			1.1	1.5	6	9	10	6	1.7	2.8	.1	d3.0
7			1.0	.8	5	7	4.6	6	1.5	1.5	.1	3.0
8			1.9	1.1	*4.3	6	3.8	12	2.6	2.1	46	3.1
9			1.9	1.7	3.9	6	3.3	16	3.3	1.5	3.0	2.8
10			1.7	1.5	26	7	2.8	8	3.6	1.6	2.1	2.5
11			.8	1.1	28	1,050	9	6	4.0	d1.2	1,090	2.3
12			.3	1.1	8	40	4.9	6	2.9	.9	140	2.1
13			.2	1.1	4.9	12	3.8	6	2.9	1.1	23	2.1
14			.2	1.3	4.3	8	3.3	5	2.3	1.1	12	2.0
15			.2	1.5	3.6	2.8	36	4.6	1.9	1.0	9	1.6
16			.2	1.5	b3.8	4.3	53	4.6	2.2	1.1	6	d1.6
17			*1.0	1.3	b4.3	3.3	859	4.9	2.1	1.0	813	1.5
18			1.0	b1.1	4.9	3.3	34	4.0	1.7	1.0	415	1.6
19			.8	b1.0	9	2.6	20	4.0	1,190	2.0	268	d1.2
20			.8	b1.0	8	3.0	14	4.0	1,440	.9	31	.9
21			.6	b1.1	7	2.6	21	4.9	2,010	.8	18	.8
22			.3	b1.4	7	2.6	13	3.8	26	1.6	12	.6
23			1.3	1.5	7	1.9	10	3.3	6	4.5	35	d.6
24			1.1	1.5	6	2.2	10	3.5	6	2.3	12	.5
25			1.1	1.3	6	3.0	9	3.0	5	72	9	.4
26			1.1	1.1	4.9	4.0	9	161	4.9	8	7	.9
27			b.8	1.1	5	3.0	9	11	4.5	3.5	6	.9
28			b.7	1.3	30	1.9	8	4.6	4.3	1.1	6	.8
29			b.6	1.5	-	6	6	4.0	3.3	.6	6	1.1
30			b.7	b1.6	-	6	8	3.3	3.6	1.1	5	1.1
31			.8	b1.6	-	3.5	-	3.0	-	.9	3.8	-

* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.
d Doubtful gage-height record; discharge interpolated.

Discharge, in second-feet, of Bear Creek at Hannibal, Mo., 1938-40--Continued

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.5	0.4	1.8	0.8	0.4	8	3.0	7	0.9	0.1	0.1	1.9
2	.4	.4	.9	.6	.5	73	2.6	6	.5	.1	.1	.5
3	.4	.5	.9	.5	.5	46	28	4.3	.4	.1	.1	.1
4	.3	a.6	.9	.4	.5	13	6	2.9	.4	.1	.1	.1
5	.3	.6	1.0	.4	.5	8	3.6	3.1	.4	.1	1,120	.1
6	.2	.6	1.0	*.4	.5	6	2.8	2.9	.9	.1	43	.1
7	.2	.6	1.0	.4	.5	6	4.5	2.6	1.5	.1	8	.1
8	.2	.6	.9	.5	.5	4.2	4.0	2.1	2.4	.1	3.1	.1
9	.2	.6	.9	.5	.5	4.3	4.0	1.7	.5	.1	1.7	.1
10	.2	.8	.9	.7	.6	4.0	3.1	1.7	.4	.1	1.9	.1
11	.2	.9	.9	1.0	1.2	3.5	3.8	1.7	2.1	.1	2.4	.1
12	.2	.6	.9	1.2	1.6	9	4.0	1.3	11	.1	1.1	.1
13	.2	.6	.9	1.5	1.7	17	3.3	1.3	4.1	.1	1.1	0
14	.2	.8	.8	1.4	2.5	8	3.1	1.1	2.1	.1	.9	.1
15	.2	.5	.8	1.2	3.8	6	3.1	.9	.5	.1	.5	0
16	.2	.6	.8	.8	8	6	2.8	.4	.7	.1	.3	0
17	.3	.6	.8	.6	10	6	468	.7	.4	.1	.2	0
18	.3	.9	.8	.5	4.9	4.7	410	1.3	.3	.1	6	0
19	.3	1.1	.8	.4	4.9	4.7	16	3.4	2.6	.1	1.5	.1
20	.4	2.5	.8	.4	6	3.8	10	1.9	.3	.1	.3	.1
21	.4	2.1	.8	.3	4.2	3.6	7	1.1	.3	.1	.1	.1
22	.3	.9	.6	.2	8	3.3	6	1.5	.2	.1	.1	.1
23	.3	.6	.5	.2	3.8	3.1	7	1.9	.3	.1	.1	.1
24	.3	.8	2.1	.2	20	2.8	7	.9	.3	0	.1	.1
25	.9	1.0	.9	.1	6	2.8	6	.9	.3	0	.1	.1
26	.6	.8	.9	.1	2.8	2.8	5	1.3	.2	0	.1	0
27	2.6	.6	1.0	.2	3.3	3.5	4.3	.7	.1	0	.1	0
28	.5	.6	1.1	.3	*6	3.3	4.1	1.9	4.8	.1	.1	0
29	.5	.9	1.5	.3	7	3.8	4.1	.5	.5	.1	22	0
30	.4	.9	1.1	.3	-	2.8	4.3	.5	.3	.1	6	0
31	.6	-	1.1	.4	-	3.0	-	.5	-	.1	2.4	-

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Jan. 1 to Feb. 14.

Monthly discharge, in second-feet, 1938-40

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	-	-	-	-	-	-	-
November	-	-	-	-	-	-	-
December 1938	112.4	77	0.2	3.63	0.125	0.14	223
Calendar year	-	-	-	-	-	-	-
January 1939	40.6	1.9	.8	1.31	.045	.05	81
February	237.2	30	2.1	8.47	.292	.30	470
March	1,245.2	1,050	1.9	40.2	1.39	1.60	2,470
April	1,187.4	859	2.6	39.6	1.37	1.53	2,360
May	337.5	161	3.0	10.9	.376	.43	669
June	4,746.7	2,010	1.5	158	5.45	6.08	9,410
July	393.0	229	.6	12.7	.438	.50	780
August	3,455.9	1,090	.1	111	3.83	4.42	6,850
September	57.4	4.2	.4	1.91	.066	.07	114
The period	-	-	-	-	-	-	23,430
October 1939	12.8	2.6	.2	.41	.014	.02	25
November	24.0	2.5	.4	.80	.028	.03	48
December	30.1	2.1	.5	.97	.033	.04	60
Calendar year 1939	11,767.8	2,010	.1	32.2	1.11	15.07	23,340
January 1940	16.8	1.5	.1	.54	.019	.02	33
February	110.7	20	.4	3.82	.132	.14	220
March	276.0	73	2.8	8.90	.307	.35	547
April	1,040.5	468	2.6	34.7	1.20	1.34	2,060
May	60.0	7	.4	1.94	.067	.08	119
June	39.7	11	.1	1.32	.046	.05	79
July	2.7	.1	0	.09	.0031	.004	5.4
August	1,223.6	1,120	.1	39.5	1.36	1.57	2,430
September	4.2	1.9	0	.14	.0048	.005	8.3
Water year 1939-40	2,841.1	1,120	0	7.76	.268	3.65	5,630

Salt River near Shelbina, Mo.

Location.- Water-stage recorder, lat. 39°44', long. 92°01', in SW¼NE¼ sec. 17, T. 57 N., R. 10 W., at bridge on State Highway 15, 3 miles north of Shelbina and 15 miles upstream from Black Creek. Datum of gage is 664.89 feet above mean sea level (general adjustment of 1929).

Drainage area.- 481 square miles.

Records available.- April 1930 to September 1940 (fragmentary prior to March 1934).

Extremes.- Maximum discharge during year, 3,560 second-feet Mar. 4 (gage height, 12.11 feet); no flow Sept. 21-30.

1930-40: Maximum discharge observed, 16,000 second-feet July 1, 1933 (gage height, 22.62 feet); no flow on many days.

Maximum stage known, 23.54 feet, from floodmarks, June 1928 (discharge, 18,000 second-feet, from rating curve extended above 15,500 second-feet).

Remarks.- Records good except those below 15 second-feet, which are fair, and those for periods of ice effect, which are poor.

Cooperation.- Results of one discharge measurement furnished by Corps of Engineers, U. S. Army.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-24, Oct. 31 to Dec. 29)

Oct. 1 to Feb. 16

3.2	0.1	3.7	14
3.3	.4	3.8	22
3.4	1.5	3.9	31
3.5	4	4.0	43
3.6	8	4.1	59

Feb. 17 to Sept. 30

2.2	0	3.3	15	4.0	144
2.3	.1	3.4	24	4.4	262
2.9	.4	3.5	36	5.0	470
3.0	1.2	3.6	51	7.0	1.290
3.1	3.4	3.7	69	11.5	3.280
3.2	8	3.8	91		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.1	5	4.4	2.8	0.8	252	89	206	10	13	0.2	0.7
2	.8	4.8	4.4	2.0	.8	704	58	152	8	5	.2	.9
3	1.0	3.8	4.8	1.4	1.0	1,940	50	106	6	2.5	.2	.9
4	1.2	2.8	3.8	1.2	1.1	3,280	40	87	6	1.4	.2	.4
5	1.0	4.4	3.2	1.2	1.3	2,460	80	65	6	1.0	.2	.4
6	.8	1.5	2.8	.7	1.3	828	46	56	6	.7	.2	.4
7	.8	1.4	3.2	.7	1.3	328	44	46	8	.6	.2	.3
8	1.2	1.4	3.2	*.7	1.5	268	42	39	8	.7	.2	.3
9	3.0	1.4	3.8	.6	2.8	259	78	34	7	.7	.3	.3
10	10	2.5	3.8	.7	3.0	212	78	31	8	.6	2.3	.3
11	12	2.5	3.8	1.0	3.2	164	87	30	36	.6	4.7	.3
12	6	3.0	3.8	1.2	7	180	194	29	30	.6	34	.2
13	3.8	4.4	3.2	1.1	9	278	138	24	60	.5	91	.2
14	1.3	3.8	3.0	1.4	8	197	87	21	31	.4	32	.2
15	.8	3.5	3.0	1.4	13	130	65	17	18	.4	13	.2
16	1.0	3.5	3.0	1.3	59	180	55	15	15	.4	114	.1
17	.7	3.8	2.5	1.1	380	262	232	15	12	.4	76	.1
18	.5	4.0	2.8	1.0	434	291	1,550	16	11	.3	147	.1
19	.3	9	*2.8	.8	355	489	2,410	20	11	.3	218	.1
20	.3	10	2.8	b.7	256	405	1,250	19	6	.3	158	.1
21	.2	11	2.5	b.6	*203	215	288	21	3.0	.3	46	0
22	.3	9	2.2	b.6	b130	138	172	18	2.3	.3	16	0
23	.2	8	3.0	b.6	b100	104	144	16	2.7	.3	9	0
24	.2	7	3.0	b.7	b85	82	514	15	2.7	.3	4.7	0
25	.1	6	3.0	b.7	b70	65	508	14	3.0	.3	2.7	0
26	.1	4.8	3.5	b.6	b90	58	243	15	3.4	.3	1.6	0
27	.2	4.4	3.5	b.6	b115	58	218	15	2.7	.3	1.6	0
28	.2	3.5	3.5	b.6	b130	62	206	18	45	.3	1.2	0
29	.2	3.0	4.0	b.6	192	67	152	22	175	.3	1.2	0
30	3.0	3.0	4.0	b.6	-	215	172	16	42	.3	1.6	0
31	4.4	-	3.5	.7	-	158	-	13	-	.2	1.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	56.7	12	0.1	1.83	0.0038	0.004	112
November	136.2	11	1.4	4.54	.0094	.01	270
December	103.8	4.8	2.2	3.35	.0070	.008	206
Calendar year 1939	100,912.6	7,690	.1	276	.574	7.80	200,200
January	29.9	2.8	.6	.96	.0020	.002	59
February	2,654.1	434	.8	91.5	.190	.20	5,260
March	14,329	3,280	58	462	.960	1.11	28,420
April	9,290	2,410	40	310	.644	.72	18,430
May	1,211	206	13	39.1	.081	.09	2,400
June	584.8	175	2.3	19.5	.041	.05	1,160
July	33.6	13	.2	1.08	.0022	.003	67
August	978.5	218	.2	31.6	.066	.08	1,940
September	6.5	.9	0	.22	.00046	.0005	13
Water year 1939-40	29,414.1	3,280	0	80.4	.167	2.28	58,340

Peak discharge.- Mar. 4 (4 p.m.) 3,560 sec.-ft.

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Salt River near Hunnewell, Mo.

Location.- Wire-weight gage, lat. 39°40'05", long. 91°54'10", in SW¼NW¼ sec. 10, T. 56 N., R. 9 W., 1½ miles downstream from Black Creek and 2 miles west of Hunnewell. Datum of gage is 615.64 feet above mean sea level (general adjustment of 1929).

Drainage area.- 626 square miles.

Records available.- April 1930 to September 1940 (discontinued, fragmentary prior to April 1931).

Extremes.- Maximum discharge during year, 3,600 second-feet Mar. 5 (gage height, 11.05 feet); no flow July 28 to Aug. 11, Sept. 19-23, 25-30.
1930-40: Maximum discharge observed, 15,400 second-feet July 1, 1933 (gage height, 21.20 feet); no flow on many days.
Maximum stage known, about 21.8 feet, from floodmarks, date unknown.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read once daily below 10.0 feet and twice daily above.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.8	1.7	4.9	4.8	1	500	126	263	18	47	0	3.5
2	1.9	1.8	4.3	4.2	1	1,080	90	228	16	22	0	3.2
3	2.0	4.3	4.3	4.2	2	2,200	80	150	14	15	0	3.2
4	2.2	4.0	3.8	3.8	2	3,210	56	102	13	11	0	2.5
5	1.9	4.0	3.5	4.0	2	3,150	45	77	11	8	0	2.0
6	1.7	2.9	4.3	3.0	2	1,500	83	65	9	7	0	1.7
7	1.7	2.9	4.0	2.2	2	524	58	55	45	4.8	0	1.7
8	2.6	2.7	4.0	3.2	2	369	55	48	18	4.0	0	1.6
9	2.7	2.7	3.2	2.5	3	340	46	42	14	2.8	0	1.4
10	4.9	4.0	3.2	2.8	4	313	92	36	10	2.5	0	1.0
11	2.9	4.6	3.5	3.5	5	240	79	33	11	1.8	0	.5
12	2.7	4.6	3.5	2	7	228	161	30	55	1.6	.1	.3
13	8	4.6	3.5	2	13	400	194	32	25	1.0	21	.2
14	6	4.0	3.2	2	22	354	130	26	56	.8	313	.2
15	3.5	3.5	3.1	2	40	216	85	24	34	.8	116	.2
16	3.1	3.8	3.5	2	120	161	65	21	24	.5	161	.1
17	2.6	4.6	3.2	2	390	313	147	20	20	.5	183	.1
18	1.9	5	3.5	2	776	384	1,550	21	17	.4	172	.1
19	1.7	10	3.8	2	605	416	2,550	19	18	.4	416	0
20	1.4	10	2.7	2	486	605	1,940	21	14	.3	313	0
21	1.1	10	2.4	2	*250	340	582	23	12	.3	126	0
22	.9	8	2.6	2	185	205	263	22	10	.2	61	0
23	1.4	8	2.7	2	160	140	194	22	7	.2	31	0
24	1.5	7	4.0	2	140	100	365	21	10	.2	20	.1
25	1.9	5	4.0	2	105	80	748	21	7	.1	15	0
26	2.3	5	3.5	1	110	69	416	21	4.8	.1	12	0
27	1.9	4.0	4.0	1	135	74	251	19	4.2	.1	10	0
28	1.9	3.8	5	1	160	71	300	19	31	0	8	0
29	2.8	4.3	5	1	183	183	216	19	55	0	7	0
30	2.7	3.8	5	1	-	136	183	24	134	0	5	0
31	1.9	-	6	1	-	294	-	22	-	0	4.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	77.5	8	0.9	2.50	0.0040	0.005	154
November	144.6	10	1.7	4.82	.0077	.009	287
December	117.2	6	2.4	3.78	.0060	.007	232
Calendar year 1939	148.155.0	8,320	.9	406	.649	8.80	293,900
January	71.2	4.8	1	2.30	.0037	.004	141
February	3,913	776	1	135	.216	.23	7,760
March	18,195	3,210	69	587	.938	1.08	36,090
April	11,150	2,550	45	372	.594	.66	22,120
May	1,546	263	19	49.9	.080	.09	3,070
June	717.0	134	4.2	23.9	.038	.04	1,420
July	133.4	47	0	4.30	.0069	.008	265
August	1,994.1	416	0	64.3	.103	.12	3,960
September	23.6	3.5	0	.79	.0013	.001	47
Water year 1939-40	38,062.6	3,210	0	104	.166	2.25	75,550

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Jan. 12 to Feb. 17, Feb. 21-28.

Salt River near Monroe City, Mo.

Location.- Water-stage recorder, lat. 39°32'25", long. 91°40'20", in NE¼N¼ sec. 22, T. 55 N., R. 7 W., at county highway bridge at Joanna, 2,500 feet downstream from Indian Creek, 2 miles upstream from Lick Creek, and 8 miles southeast of Monroe City. Datum of gage is 520.04 feet above mean sea level (general adjustment of 1929). Prior to Feb. 2, 1940, wire-weight gage at same site and datum.

Drainage area.- 2,230 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 12,600 second-feet Mar. 3 (gage height, 13.40 feet); minimum, 1.9 second-feet Sept. 28 (gage height, 2.21 feet).
Flood in June 1928 reached a stage of about 36 feet, from information furnished by local residents.

Remarks.- Records good above 400 second-feet and fair below, except those for periods of ice effect, or no gage-height record, which are poor. Gage read once daily prior to Feb. 2.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	13	47	21	25	1,560	460	412	58	588	8	94
2	13	13	45	19	25	4,170	279	494	55	259	7	72
3	13	15	37	19	25	11,900	312	462	50	156	6	55
4	13	16	36	19	24	9,780	395	366	48	104	5	a39
5	14	16	34	20	24	6,730	318	283	44	72	6	a30
6	13	16	33	20	25	4,070	223	236	40	58	8	a23
7	13	16	32	21	25	1,790	201	206	50	44	6	h18
8	12	16	31	21	26	1,000	185	180	101	37	6	a15
9	12	15	31	23	28	782	169	160	148	33	5	a12
10	13	20	30	24	29	688	144	148	140	30	12	a10
11	12	36	30	25	31	573	169	133	137	27	114	a9
12	11	36	30	*25	35	948	174	114	7,650	23	65	9
13	11	36	27	25	45	3,830	242	101	4,060	22	39	6
14	24	36	26	24	*165	2,740	266	91	867	18	27	a5
15	24	34	26	24	320	1,340	207	81	494	16	541	a4
16	31	34	25	22	500	867	169	72	323	16	406	a4
17	25	33	25	21	2,000	712	2,840	68	232	16	241	a3.5
18	21	37	25	20	3,000	766	8,430	68	168	16	350	5
19	21	62	25	20	2,190	789	5,690	228	156	12	696	4.4
20	21	62	25	19	1,470	945	3,710	867	137	12	627	3.8
21	20	70	25	19	1,160	821	1,890	366	104	12	442	3.5
22	18	140	25	20	920	550	891	255	78	12	273	2.9
23	17	359	25	20	820	388	619	168	70	11	172	3.2
24	16	92	25	19	760	279	544	122	65	10	111	2.8
25	19	70	25	18	740	218	883	104	78	9	72	2.3
26	15	62	27	18	710	174	922	94	58	9	50	2.6
27	17	60	27	20	700	156	588	88	58	13	46	2.6
28	15	53	27	22	1,600	144	456	78	1,330	12	778	1.9
29	15	51	26	24	2,000	359	468	70	2,040	10	537	2.3
30	14	47	25	25	-	727	412	68	1,240	8	293	2.3
31	13	-	23	25	-	543	-	60	-	8	152	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	509	31	11	16.4	0.0074	0.009	1,010
November	1,566	359	13	52.2	.023	.03	3,110
December	900	47	23	29.0	.013	.01	1,790
Calendar year	-	-	-	-	-	-	-
January	662	25	18	21.4	.0096	.01	1,310
February	19,442	3,000	24	670	.300	.32	38,560
March	60,339	11,900	144	1,946	.873	1.01	119,700
April	32,256	8,430	144	1,075	.482	.54	63,980
May	6,243	867	60	201	.090	.10	12,380
June	20,079	7,650	40	669	.300	.33	39,830
July	1,673	588	8	54.0	.024	.03	3,320
August	6,101	778	5	197	.088	.10	12,100
September	447.9	94	1.9	14.9	.0067	.007	888
Water year 1939-40	150,217.9	11,900	1.9	410	.184	2.50	298,000

Peak discharge.- Mar. 3 (12 m.) 12,600 sec.-ft.; Apr. 10 (7 a.m.) 9,330 sec.-ft.; June 12 (1:30 p.m.) 11,400 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for other stations in Salt River Basin.
h Computed from wire-weight gage reading.
Note.- Stage-discharge relation affected by ice Dec. 28 to Jan. 11, Jan. 16-27, Feb. 15-18, 22-29.

Salt River near New London, Mo.

Location.- Water-stage recorder, lat. 39°36'44", long. 91°24'30", in NE¼NW¼ sec. 36, T. 56 N., R. 5 W., 250 feet upstream from U. S. Highway 61, 2 miles north of New London, and 8 miles upstream from Spencer Creek. Datum of gage is 477.03 feet above mean sea level (general adjustment of 1929).

Drainage area.- 2,480 square miles.

Records available.- February 1922 to September 1940.

Average discharge.- 18 years, 1,523 second-feet.

Extremes.- Maximum discharge during year, 12,600 second-feet Mar. 3 (gage height, 13.97 feet); minimum, 8 second-feet Aug. 4 (gage height, 1.17 feet).
1922-40: Maximum discharge, 58,700 second-feet June 21, 1928 (gage height, 28.8 feet, from floodmarks), from rating curve extended above 51,000 second-feet; no flow Aug. 3-14, 1934, Aug. 21 to Sept. 1, 1936.

Remarks.- Records good except those for periods of ice effect, which are poor.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-10, 24-31; Nov. 1-25)

Oct. 1 to Mar. 3						Mar. 4 to Sept. 30							
1.3	10	2.3	218	6.0	2,650	1.1	4	1.6	71	3.0	489	6.0	2,350
1.4	20	2.6	320	8.0	4,750	1.2	10	1.8	109	3.5	690	7.0	3,300
1.6	51	3.0	492	10.0	7,100	1.3	21	2.0	151	4.0	930	8.0	4,400
1.8	89	3.5	741	12.0	9,650	1.4	36	2.3	235	4.5	1,210	10.0	6,750
2.0	135	4.0	1,030	13.0	11,000	1.5	53	2.6	339	5.0	1,550	12.9	10,700

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	15	75	30	23	3,900	567	470	80	905	12	176
2	30	14	65	30	24	3,200	443	508	73	481	12	123
3	29	15	65	30	26	11,000	387	548	71	278	9	94
4	24	16	62	*30	27	10,700	417	508	69	176	8	75
5	24	15	56	31	28	7,660	417	413	66	127	285	58
6	23	15	53	31	28	5,310	372	335	60	96	84	48
7	23	15	48	32	*28	2,800	310	278	60	79	20	38
8	24	16	46	32	29	1,300	289	242	57	66	12	30
9	26	16	*43	32	30	955	268	204	80	57	12	24
10	29	20	40	33	33	806	255	182	164	51	17	21
11	24	22	37	33	40	712	232	168	213	44	20	20
12	23	22	37	32	52	767	255	140	3,880	39	34	16
13	22	26	35	32	58	2,920	258	129	6,630	34	94	12
14	20	34	35	31	65	3,630	335	121	1,660	32	71	13
15	20	38	35	28	100	1,910	339	107	712	27	50	11
16	23	40	34	25	375	*1,090	292	98	470	28	495	10
17	35	40	32	24	1,330	830	1,900	96	325	22	350	9
18	43	38	32	23	3,300	758	7,920	107	232	19	242	9
19	40	49	29	23	3,200	806	6,750	107	193	18	417	11
20	35	60	28	24	2,150	830	4,290	489	164	17	648	11
21	34	71	26	24	1,750	930	2,530	712	151	14	548	10
22	32	77	26	25	1,550	712	1,210	398	127	17	394	11
23	30	135	27	25	1,300	485	830	268	109	16	265	12
24	28	148	28	22	1,100	343	648	193	92	14	176	13
25	34	123	30	21	950	282	587	154	82	14	129	12
26	29	109	31	21	875	275	1,000	136	88	16	100	10
27	28	91	32	21	1,000	258	781	119	90	13	90	10
28	26	83	31	21	1,280	245	567	109	359	13	138	9
29	23	79	31	22	2,700	229	528	103	2,530	11	775	9
30	22	75	31	22	-	489	508	94	1,590	11	508	9
31	17	-	30	22	-	648	-	90	-	12	303	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	852	43	17	27.5	0.011	0.01	1,690
November	1,517	148	14	50.6	.020	.02	3,010
December	1,210	75	26	39.0	.016	.02	2,400
Calendar year 1939	806,605	30,400	14	2,210	.891	12.08	1,600,000
January	832	33	21	26.8	.011	.01	1,650
February	23,451	3,300	23	809	.326	.35	46,510
March	66,770	11,000	229	2,154	.869	1.00	132,400
April	35,485	7,920	232	1,183	.477	.53	70,380
May	7,616	712	90	246	.099	.11	15,110
June	20,477	6,630	57	683	.275	.31	40,620
July	2,747	905	11	88.6	.036	.04	5,450
August	6,318	775	8	204	.082	.09	12,530
September	914	176	9	30.5	.012	.01	1,810
Water year 1939-40	168,189	11,000	8	460	.185	2.50	333,600

Peak discharge.- Mar. 3 (7 p.m.) 12,600 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 23 to Mar. 2.

South Fork of Salt River at Santa Fe, Mo.

Location.- Water-stage recorder, lat. 39°21'45", long. 91°49'05", in NW¼NE¼ sec. 20, T. 53 N., R. 8 W., at county highway bridge, a quarter of a mile south of Santa Fe and 1 mile upstream from Elm Creek. Datum of gage is 613.05 feet above mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army). Prior to Feb. 5, 1940, wire-weight gage at same site and datum.

Drainage area.- 298 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 5,460 second-feet June 11 (gage height, 13.97 feet); minimum, 0.1 second-foot Aug. 8, Sept. 25-30.

Remarks.- Records good except those below 100 second-feet, which are fair, and those for Nov. 21 to Feb. 27, which are poor. Prior to Feb. 5, gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.9	0.7	4.1	3	2	259	9	29	4.5	43	1.6	49
2	1.8	1.1	4.1	2	2	1,320	9	77	3.8	23	1.1	26
3	1.6	.7	4.1	*2	2	*2,030	10	83	3.5	12	.8	12
4	1.1	1.6	3.8	2	3	680	9	54	2.8	8	.5	8
5	.7	1.5	3.5	2	*3	240	8	35	3.1	7	.5	7
6	.7	1.3	4.1	2	3	162	8	23	3.1	6	.3	5
7	.4	1.6	4.5	3	4	120	8	19	6	4.8	.2	4.5
8	.4	1.3	3.8	3	4	92	9	14	52	4.5	.1	3.6
9	.5	1.1	4.1	3	5	75	9	12	24	4.5	.2	3.1
10	2.1	1.6	3.5	3	5	60	9	10	29	4.5	.3	3.0
11	2.4	2.1	4.5	3	6	47	10	8	784	4.6	.5	2.4
12	2.1	1.6	4.1	3	7	392	11	7	3,360	4.1	.5	2.1
13	8	1.6	3.8	3	20	652	11	6	819	3.9	1.2	1.7
14	6	4.5	3.8	3	25	252	14	5	140	3.2	322	1.4
15	4.5	4.8	2.8	3	60	118	19	4.5	82	3.6	503	1.1
16	3.1	3.5	3.5	3	150	75	21	4.5	54	4.3	134	.8
17	3.1	3.5	2.8	3	240	62	99	4.8	40	6	103	.6
18	1.9	2.8	3.1	3	160	52	380	11	27	6	565	.5
19	1.3	3.5	3.1	3	90	43	194	634	38	3.6	247	.3
20	.8	5	3.1	2	74	35	94	329	30	2.5	105	.3
21	.8	71	2.8	2	72	26	60	110	16	3.1	55	.2
22	.7	40	3.5	2	74	22	40	62	11	3.6	31	.2
23	1.1	23	4.1	2	77	19	32	36	12	13	17	.2
24	1.3	15	4.1	2	85	14	30	24	14	12	10	.2
25	1.0	11	4.1	2	96	14	28	19	31	7	7	.1
26	.7	7	3.8	2	115	13	23	13	38	6	6	.1
27	1.0	7	4	1	150	12	22	10	33	4.5	556	.1
28	1.3	5	3	1	1,310	11	18	9	592	3.1	394	.1
29	1.3	4.1	3	1	512	11	18	8	252	2.1	136	.1
30	1.5	3.8	3	2	-	11	18	6	67	1.8	73	.1
31	1.1	-	3	2	-	10	-	5	-	1.6	55	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	56.2	8	0.4	1.81	0.0061	0.007	111
November	232.3	71	.7	7.74	.026	.03	461
December	112.6	4.5	2.8	3.63	.012	.01	223
Calendar year	-	-	-	-	-	-	-
January	73	3	1	2.4	.0081	.009	145
February	3,356	1,310	2	116	.389	.42	6,660
March	6,929	2,030	10	224	.752	.87	13,740
April	1,230	380	8	41.0	.138	.15	2,440
May	1,671.8	634	4.5	53.9	.181	.21	3,320
June	6,591.8	3,360	2.8	220	.738	.82	13,070
July	218.9	43	1.6	7.00	.023	.03	430
August	3,326.8	565	.1	107	.359	.41	6,600
September	133.8	49	.1	4.46	.015	.02	265
Water year 1939-40	23,930.2	3,360	.1	65.4	.219	2.99	47,460

Peak discharge.- Mar. 2 (10 p.m.) 2,960 sec.-ft.; June 11 (12 p.m.) 5,460 sec.-ft.; June 28 (10 a.m.) 1,650 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 27 to Feb. 27.

Davis Creek near Mexico, Mo.

Location.- Wire-weight gage, lat. 39°10'45", long. 91°54'50", in NE¼SE¼ sec. 21, T. 51 N., R. 9 W., at bridge on State Highway 22, 2 miles northwest of Mexico and 3 miles upstream from South Fork of Salt River. Datum of gage is 728.52 feet above mean sea level (general adjustment of 1929).

Drainage area.- 59 square miles.

Records available.- April 1930 to September 1940 (prior to 1938, fragmentary).

Extremes.- Maximum discharge during year, 914 second-feet June 12 (gage height, 10.5 feet, from graph based on gage readings); no flow at times.
1930-40: Maximum discharge observed, 2,820 second-feet May 19, 1931 (gage height, 14.40 feet); no flow at times.
Maximum stage known, about 17 feet, from floodmarks, date unknown.

Remarks.- Records fair except those for period of ice effect, which are poor. Gage read once daily below 5.0 feet and twice daily above.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0	0.3	0	0	82	0.9	15	0.3	0.3	0	0.4
2	0	0	.4	0	0	138	1.0	19	.3	.2	0	.3
3	0	0	.4	*0	.1	419	.9	6	.2	.2	0	.2
4	0	0	.3	0	.1	57	.7	3.0	.2	.1	0	.1
5	0	0	.3	0	.1	28	.5	2.8	.2	.2	0	.1
6	0	0	.2	0	.1	19	.5	1.4	.2	.1	0	0
7	0	0	.2	0	.1	14	.7	1.0	5	.1	0	0
8	0	0	.2	0	.2	7	.8	.6	.6	.1	0	0
9	.1	0	.2	0	.3	5	.8	.7	.4	.1	.8	0
10	.3	0	.2	.1	.5	5	.8	.6	.4	0	2.1	0
11	.3	0	.2	.1	1.6	3.6	.9	.5	43	.1	.7	0
12	.2	0	.2	.1	7	40	1.2	.5	454	0	1.0	0
13	.1	0	.2	.1	*11	76	1.2	.4	30	0	.3	0
14	0	0	.2	.1	17	34	1.3	.4	11	0	15	0
15	0	0	.2	.1	26	24	1.6	.3	5	0	8	0
16	0	0	.2	0	37	9	2.1	.3	2.8	0	5	0
17	0	0	.2	0	75	8	10	.3	1.7	0	39	0
18	0	0	.2	0	16	7	57	70	1.3	0	57	0
19	0	2.0	.2	0	12	4.6	7	177	1.3	0	8	0
20	0	1.3	.2	0	9	3.7	9	26	.8	0	1.7	0
21	.1	.6	.2	0	9	3.0	4.5	7	.6	0	1.1	0
22	0	.3	.2	0	8	3.5	4.0	4.3	.6	0	.6	0
23	0	.3	.2	0	8	1.7	3.4	2.3	.6	0	.4	0
24	.1	.3	.2	0	10	1.0	2.9	1.6	2.3	0	.2	0
25	0	.3	.2	0	27	.9	2.8	.9	2.2	0	.2	0
26	0	.3	.2	0	41	1.6	2.4	.8	.9	0	.1	0
27	.1	.3	.2	0	64	1.3	1.9	.6	.6	0	12	0
28	.1	.3	.2	0	169	1.4	1.6	.6	1.2	0	10	0
29	0	.3	.2	0	61	1.3	1.8	.6	.5	0	3.5	0
30	.1	.3	.1	0	-	.8	1.5	.4	.3	0	1.0	0
31	.1	-	.1	0	-	.8	-	.3	-	0	.7	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	1.6	0.3	0	0.05	0.00085	0.001	3.2
November	6.6	2.0	0	.22	.0037	.004	13
December	6.7	.4	.1	.22	.0037	.004	13
Calendar year 1939	13,801.6	1,280	0	37.8	.641	8.69	27,370
January	.6	.1	0	.02	.00034	.0004	1.2
February	610.1	169	0	21.0	.356	.38	1,210
March	1,001.2	419	.8	32.3	.547	.63	1,990
April	125.7	57	.5	4.19	.071	.08	249
May	345.2	177	.3	11.1	.188	.22	685
June	568.5	454	.2	19.0	.322	.36	1,130
July	1.5	.3	0	.05	.00085	.001	3.0
August	168.4	57	0	5.43	.092	.11	334
September	1.1	.4	0	.04	.00068	.0008	2.2
Water year 1939-40	2,837.2	454	0	7.75	.131	1.79	5,630

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 29 to Feb. 15.

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Youngs Creek near Mexico, Mo.

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

Drainage area.- 67.4 square miles.

Records available.- April 1930 to September 1940 (prior to August 1936, fragmentary).

Extremes.- Maximum discharge during year, 2,030 second-feet June 11 (gage height, 7.0 feet, from graph based on gage readings), from rating curve extended above 1,000 second-feet; no flow at times.

1930-40: Maximum discharge, 5,000 second-feet Aug. 17, 1939 (gage height, 12.0 feet, from graph based on gage readings), from rating curve extended above 1,000 second-feet; no flow at times.

Maximum stage known, about 15.1 feet, from floodmarks, date unknown.

Remarks.- Records poor. Gage read once daily below 3.0 feet and twice daily above.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0	1.4	0.1	0	82	3.5	6	0.8	1.5	0	5
2	0	0	1.2	.1	.1	445	3.8	8	.8	1.1	0	3.5
3	0	0	1.2	*.1	.1	610	3.8	8	.8	.8	0	2.4
4	0	0	1.1	.1	.1	111	7	7	.7	.5	0	1.1
5	0	0	1.2	.1	.2	40	6	6	.5	.4	0	.5
6	0	0	1.0	.1	.2	25	3.8	4.9	.5	.2	0	.3
7	0	0	1.0	.1	.2	17	3.5	3.3	1.1	.1	0	.1
8	0	0	1.0	.1	.3	12	3.3	2.6	4.6	.1	0	.1
9	.1	0	1.0	.1	.3	10	3.0	2.2	19	0	0	0
10	.3	0	.8	.1	.4	8	2.8	1.9	8	0	0	0
11	.2	.1	.6	.1	.5	7	3.3	1.7	435	0	0	0
12	.2	.1	.6	.1	10	237	4.2	1.2	952	0	0	0
13	.1	.2	.6	.1	*22	251	4.6	1.0	90	0	0	0
14	0	.1	.6	.1	37	52	6	.8	38	0	0	0
15	0	0	.6	.1	59	21	7	.6	16	0	58	0
16	0	.1	.6	0	131	16	6	.5	11	0	15	0
17	0	.1	.6	0	185	12	197	.4	8	0	7	0
18	0	.2	.6	0	79	10	210	24	6	0	76	0
19	0	1.8	.5	0	49	*8	54	184	7	0	12	0
20	0	2.1	.4	0	44	6	26	34	6	0	7	0
21	0	2.6	.5	0	60	6	6	16	4.2	0	3.0	0
22	0	6	.6	0	38	4.9	8	12	3.0	0	1.5	0
23	0	10	.6	0	38	4.6	7	6	3.5	0	.8	0
24	0	6	.6	0	94	4.2	6	3.8	7	0	.6	0
25	0	4.3	.5	0	53	3.0	6	3.5	2.6	0	.2	0
26	0	3.9	.5	0	53	3.0	5	4.2	1.7	0	.1	0
27	0	2.6	.4	0	60	2.6	4.9	2.6	2.4	0	29	0
28	0	2.3	.4	0	251	2.4	4.2	2.4	36	0	61	0
29	0	1.8	.3	0	90	2.4	4.2	2.2	6	0	30	0
30	0	1.4	.2	0	-	3.5	4.6	1.7	3.0	0	11	0
31	0	-	.2	0	-	6	-	1.0	-	0	7	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	0.9	0.3	0	0.03	0.00045	0.0005	1.8
November	45.7	10	0	1.52	.023	.03	91
December	21.4	1.4	.2	.69	.010	.01	42
Calendar year 1939	27,037.6	2,930	0	74.1	1.10	14.92	53,630
January	1.5	.1	0	.05	.00074	.0009	3.0
February	1,355.4	251	0	46.7	.693	.75	2,690
March	2,022.6	610	2.4	65.2	.967	1.11	4,010
April	614.5	210	2.8	20.5	.304	.34	1,220
May	353.5	164	.4	11.4	.169	.19	701
June	1,675.2	952	.5	55.8	.828	.92	3,320
July	4.7	1.5	0	.15	.0022	.003	9.3
August	319.2	76	0	10.3	.153	.18	633
September	13.0	5	0	.43	.0064	.007	26
Water year 1939-40	6,427.6	952	0	17.6	.261	3.54	12,750

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 24 to Feb. 15.

Middle Fork of Salt River at Paris, Mo.

Location.- Water-stage recorder, lat. 39°29'00", long. 91°59'50", in SW¼SW¼ sec. 2, T. 54 N., R. 10 W., at Wabash R. R. bridge at Paris, 12¾ miles upstream from Elk Fork of Salt River. Datum of gage is 621.71 feet above mean sea level (general adjustment of 1929). Prior to Jan. 22, 1940, wire-weight gage at same site and datum.

Drainage area.- 356 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 2,070 second-feet Mar. 4 (gage height, 9.35 feet); no flow Aug. 5-8, Sept. 12-30.

Remarks.- Records poor prior to Mar. 1, good thereafter. Prior to Jan. 22, gage read once daily.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge in second-feet)
(Shifting-control method used Oct. 13 to Nov. 26, Dec. 4-29, Mar. 30 to Apr. 16)

2.2	0	2.5	6	2.8	18	3.1	40	3.6	111	4.2	238	6.0	755
2.3	1.3	2.6	9	2.9	24	3.2	51	3.8	148	4.5	313	7.0	1,120
2.4	3.3	2.7	13	3.0	31	3.4	78	4.0	191	5.0	445	9.0	1,900

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a2	4.4	a7	4	5	273	30	60	11	78	0.8	1.7
2	a2	4.4	a7	3	6	*614	29	68	9	31	.6	1.5
3	a2	4.1	a7	2	6	1,900	39	55	9	20	.4	1.3
4	†2.1	4.4	7	2	7	1,950	30	44	8	14	.3	1.0
5	a2	4.4	9	2	8	1,420	26	35	7	10	0	.9
6	a2	4.1	9	2	9	672	24	27	7	8	0	.6
7	a1	4.4	9	2	10	226	25	23	17	7	0	.5
8	a1	4.1	5	2	10	158	27	20	14	5	0	.3
9	a2	3.8	5	2	11	124	25	18	8	4.6	184	.3
10	a3	4.4	5	2	12	101	24	16	7	3.6	58	.4
11	a4	4.4	5	3	14	84	24	14	170	2.9	16	.3
12	a2	4.9	5	*3	17	202	23	13	772	2.3	9	0
13	1.2	3.8	5	3	22	639	23	12	219	2.1	6	0
14	1.3	5	5	3	*33	459	24	10	118	1.5	4.1	0
15	1.5	4.9	5	2	51	228	22	9	55	1.2	3.6	0
16	1.3	4.6	4.9	2	238	158	22	9	30	1.5	2.9	0
17	1.3	3.1	5	2	623	152	531	9	21	1.3	2.9	0
18	d1.2	3.6	*4.6	2	672	144	842	10	16	1.3	92	0
19	1.0	8	5	2	418	124	432	11	13	1.3	32	0
20	1.5	10	4.9	2	258	92	336	11	10	1.2	24	0
21	1.7	18	5	2	198	65	163	11	8	.9	38	0
22	2.3	8	4.9	2	152	55	81	11	7	1.0	19	0
23	2.5	4.6	5	2	130	41	65	11	8	.9	12	0
24	2.1	8	5	2	120	31	60	10	7	.8	8	0
25	2.5	8	4.9	2	120	26	52	10	6	.8	5	0
26	2.9	7	4.9	2	120	23	51	9	6	2.3	4.1	0
27	4.1	a7	4.9	2	130	24	51	9	5	3.3	5	0
28	3.6	a7	5	2	140	29	47	9	213	2.7	3.8	0
29	3.6	a7	4.9	3	180	138	47	9	576	1.9	2.7	0
30	2.9	a7	4	3	-	56	47	8	352	1.5	2.3	0
31	3.6	-	4	4	-	36	-	11	-	1.0	2.1	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	67.2	4.1	1.0	2.17	0.0061	0.007	133
November	176.4	18	3.1	5.88	.017	.02	350
December	171.9	9	4	5.55	.016	.02	341
Calendar year	-	-	-	-	-	-	-
January	73	4	2	2.4	.0067	.008	145
February	3,720	672	5	128	.360	.39	7,380
March	10,244	1,950	23	330	.927	1.07	20,320
April	3,222	842	22	107	.301	.34	6,390
May	582	68	8	18.8	.053	.06	1,150
June	2,709	772	5	90.3	.254	.28	5,370
July	214.9	78	.8	6.93	.019	.02	426
August	538.6	184	0	17.4	.049	.06	1,070
September	8.8	1.7	0	.29	.00081	.0009	17
Water year 1939-40	21,727.8	1,950	0	59.4	.167	2.28	43,090

Peak discharge.- Apr. 17 (11:30 p.m.) 1,380 sec.-ft.; June 11 (11 p.m.) 1,080 sec.-ft.
* Winter discharge measurement made on this day.
† Result of discharge measurement.
a No gage-height record; discharge computed on basis of records for Elk Fork of Salt River near Paris and South Fork of Salt River at Santa Fe.
d Gage-height record doubtful; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 30 to Feb. 12, Feb. 23-29.

The Sny at Atlas, Ill.

Location.- Wire-weight gage, lat. 39°30'20", long. 90°59'00", in NE¼NW¼ sec. 33, T. 6 S., R. 5 W., at bridge on U. S. Highway 54, three-eighths of a mile downstream from Ambrosia Creek and 1 mile west of Atlas. Datum of gage is 434.85 feet above mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army).

Drainage area.- 451 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 790 second-feet June 12 (gage height, 8.0 feet, from graph based on gage readings); minimum not determined (occurred during period of ice effect).

Flood in 1936 reached a stage of 14.5 feet, determined by Corps of Engineers, U. S. Army, from information furnished by local resident.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read once daily.

Cooperation.- Gage-height record for Oct. 1-22, 24-29, and results of 3 discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	43	48	25	28	66	74	99	78	74	34	49
2	43	43	50	26	28	104	74	176	74	74	34	45
3	43	37	50	27	29	624	78	136	70	70	33	42
4	43	37	48	28	30	559	78	104	66	70	36	40
5	43	37	46	29	31	324	74	94	62	66	45	38
6	43	39	46	30	33	198	70	86	62	66	50	37
7	43	39	46	30	34	156	78	86	62	66	54	40
8	43	39	44	30	34	126	90	82	62	66	62	39
9	74	39	42	30	37	112	90	a80	62	62	54	37
10	156	44	42	29	39	99	86	78	62	58	54	37
11	58	42	42	29	40	a94	86	74	82	54	54	36
12	50	42	41	30	40	90	90	74	664	50	50	36
13	50	40	41	33	58	117	90	74	520	50	46	37
14	50	40	40	36	66	108	94	e74	220	50	50	35
15	43	40	40	*40	66	99	94	e74	176	50	49	34
16	43	40	40	34	74	104	86	74	136	50	50	34
17	43	40	39	34	104	108	86	70	126	49	50	34
18	43	40	38	33	90	108	242	a74	104	48	54	32
19	36	44	38	30	82	94	242	78	99	46	86	32
20	36	50	38	30	74	94	166	126	90	46	66	32
21	36	58	*37	31	74	86	126	104	86	46	50	32
22	36	54	e36	32	a70	82	112	90	82	46	46	32
23	40	50	35	32	66	78	108	86	74	46	41	32
24	36	49	41	31	58	74	112	86	78	44	40	34
25	36	49	37	31	54	70	156	82	104	41	40	33
26	36	46	39	31	*58	70	126	86	82	42	39	32
27	36	44	37	31	58	74	117	86	74	40	50	32
28	43	44	34	30	62	78	108	86	94	39	104	34
29	43	44	30	29	62	78	104	82	99	37	70	33
30	43	44	27	29	-	a78	104	78	90	37	62	34
31	43	-	24	28	-	78	-	78	-	35	50	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	1,454	156	36	46.9	0.104	0.12	2,880
November	1,297	58	37	43.2	.096	.11	2,570
December	1,236	50	24	39.9	.088	.10	2,450
Calendar year	-	-	-	-	-	-	-
January	948	40	25	30.6	.068	.08	1,880
February	1,579	104	28	54.4	.121	.13	3,130
March	4,230	624	66	136	.302	.35	8,390
April	3,241	242	74	108	.239	.27	6,430
May	2,757	176	70	88.9	.197	.23	5,470
June	3,740	664	62	125	.277	.31	7,420
July	1,618	74	35	52.2	.116	.13	3,210
August	1,603	104	33	51.7	.115	.13	3,180
September	1,074	49	32	35.8	.079	.09	2,130
Water year 1939-40	24,777	664	24	67.7	.150	2.05	49,140

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
e Gage probably read in error; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 27 to Feb. 5, Feb. 10.

Bay Creek at Nebo, Ill.

Location.- Water-stage recorder, lat. 39°26'35", long. 90°47'45", in NW¼ sec. 19, T. 7, S., R. 3 W., at bridge on county road, a quarter of a mile upstream from Spring Creek, and 1.6 miles upstream from Chicago and Alton R. R. bridge. Prior to Dec. 9, 1939, wire-weight gage at same site and datum.

Drainage area.- 162 square miles, including that of Spring Creek.

Records available.- October 1939 to September 1940 (include flow of Spring Creek).

Extremes.- Maximum discharge during year, 1,140 second-feet Aug. 27 (gage height, 9.73 feet), from rating curve extended above 110 second-feet; no flow Aug. 15-17, Sept. 27-30.

Remarks.- Records good Feb. 13 to June 13; fair for remainder of the year. Prior to Dec. 9, 1939, gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3	3.0	2.7	0.76	1.4	14.5	8.8	36	3.9	2.1	e0.01	3.0
2	3	2.7	2.2	.50	1.7	175	8.0	41	3.4	1.8	e.01	1.7
3	3	2.6	2.4	.76	1.6	206	8.5	20	3.2	1.7	e.01	.43
4	3	2.4	2.1	.50	1.6	42	7.2	13.8	2.9	1.3	e.01	.29
5	3	2.6	2.0	.43	1.8	28	7.0	10.7	2.9	1.3	e.01	.35
6	2	2.7	2.0	.23	2.1	22	7.0	9.6	2.7	1.6	e.01	.43
7	2	3.0	2.2	.29	2.1	18.5	7.5	8.8	2.4	1.7	e.01	.35
8	2	3.2	2.0	.50	2.2	15.9	9.0	7.5	2.2	1.7	1.9	.35
9	4	3.6	2.0	.59	2.4	13.5	8.2	7.2	26	1.3	.29	.35
10	7	5.1	2.0	.67	2.7	11.9	8.8	6.3	6.3	.76	.29	.12
11	10	5.3	1.8	1.1	7.2	10.4	13.2	6.0	24	.67	.96	.08
12	4	5.3	1.8	1.3	28	16.7	18.5	5.6	123	.59	.23	.12
13	1	4.7	1.8	2.1	39	32	18.1	5.3	28	.59	.05	.08
14	.8	4.1	1.7	3.4	31	27	14.5	4.9	12.9	.59	.01	.12
15	.6	3.9	1.8	3.0	22	17.7	13.2	5.6	8.0	.59	0	.12
16	.5	4.9	1.8	2.4	25	15.5	10.7	5.1	5.8	1.4	0	.12
17	.5	5.1	1.7	2.0	31	14.1	10.2	4.3	4.5	.96	0	.12
18	.4	5.6	1.6	1.6	23	14.8	10.4	4.7	3.6	.67	85	.12
19	.4	7.5	1.4	1.2	18.9	13.5	16.6	8.8	2.9	.59	23	.12
20	.3	3.7	1.3	1.2	17.0	11.9	11.3	16.2	2.4	.43	6.0	.08
21	.3	3.2	1.3	1.1	16.3	10.2	8.8	11.3	1.8	.29	2.4	.08
22	.3	2.4	1.2	.96	14.8	9.0	7.7	7.0	1.6	.29	1.1	.05
23	.2	2.1	1.1	1.1	13.8	8.2	9.9	5.8	1.8	.23	.50	.05
24	.2	3.0	.96	.96	13.2	7.7	13.7	5.1	3.2	.12	.23	.08
25	.2	2.6	.86	.67	9.6	7.0	20	12.3	2.0	.05	.12	.08
26	.2	2.2	.86	.67	9.0	7.0	12.6	8.0	1.6	e.01	.05	.02
27	1	2.0	1.2	.59	10.4	7.7	9.9	8.0	1.6	e.01	323	0
28	9	1.7	1.3	.76	12.6	8.8	8.5	8.8	3.2	e.01	46	0
29	7	1.7	1.4	1.1	13.5	22	9.0	6.5	2.6	e.01	21	0
30	4.9	1.8	1.3	1.2	-	14.8	10.6	5.1	2.0	e.01	10.7	0
31	3.7	-	.96	1.2	-	11.0	-	4.3	-	e.01	5.8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	77.5	10	0.2	2.50	0.015	0.02
November	103.7	7.5	1.7	3.46	.021	.02
December	50.74	2.7	.86	1.64	.010	.01
Calendar year 1939	-	-	-	-	-	-
January	34.84	3.4	.23	1.12	.0069	.008
February	374.9	39	1.4	12.9	.080	.09
March	834.3	206	7.0	26.9	.166	.19
April	327.4	20	7.0	10.9	.067	.08
May	309.6	41	4.3	9.99	.062	.07
June	292.4	123	1.6	9.75	.060	.07
July	23.38	2.1	.01	.754	.0047	.005
August	528.70	323	0	17.1	.106	.12
September	8.81	3.0	0	.294	.0018	.002
Water year 1939-40	2,966.27	323	0	8.10	.0500	.685

Peak discharge.- Mar. 2 (11:30 p.m.) 542 sec.-ft.; June 9 (7 p.m.) 285 sec.-ft.; June 12 (9 a.m.) 328 sec.-ft.; Aug. 18 (1 p.m.) 322 sec.-ft.; Aug. 27 (10 a.m.) 1,140 sec.-ft.

e Stage-discharge relation not defined for such low flow; discharge estimated.

Note.- Discharge Oct. 1-29 computed on basis of results of two discharge measurements and records for Hadley Creek at Kinderhook.

Cuivre River near Troy, Mo.

Location.- Water-stage recorder, lat. 39°00'59", long. 90°59'00", in SE¼ sec. 14, T. 49 N., R. 1 W., at bridge on U. S. Highway 61, 1¼ miles downstream from confluence of North and West Forks and 2 miles north of Troy. Wire-weight gage at same site used during periods of low flow. Datum of each gage is 450.48 feet above mean sea level (general adjustment of 1929).

Drainage area.- 903 square miles.

Records available.- February 1922 to September 1940.

Average discharge.- 18 years, 697 second-feet.

Extremes.- Maximum discharge during year, 8,540 second-feet June 28 (gage height, 15.20 feet); minimum observed, 2.0 second-feet Sept. 30 (gage height, 1.47 feet).

1922-40: Maximum discharge, 52,600 second-feet May 18, 1929 (gage height, 25.75 feet, from floodmarks, site and datum then in use), from rating curve extended above 27,000 second-feet; no flow Aug. 29, 1936.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage-height record obtained from water-stage recorder at medium and high stages and from wire-weight gage at low stages. Wire-weight gage read once daily below 10.0 feet and twice daily above.

Revisions.- Revised figures of discharge, in second-feet, for the period Aug. 19 to Sept. 30, 1939, superseding those published in Water-Supply Paper 895, are given herein.

Aug. 19	5,820	Aug. 27	142	Sept. 4	43	Sept. 12	23	Sept. 20	13	Sept. 28	6
20	1,610	28	109	5	39	13	20	21	12	29	9
21	474	29	89	6	35	14	20	22	10	30	4.8
22	545	30	81	7	32	15	17	23	8		
23	3,510	31	74	8	25	16	15	24	8		
24	1,190	Sept. 1	67	9	25	17	13	25	8		
25	531	2	50	10	24	18	12	26	8		
26	257	3	52	11	24	19	11	27	6		

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches	Run-off in acre-feet
August	39,670	-	38	1,280	1.42	1.64	78,680
September	640.8	67	4.8	21.4	.024	.03	1,270
Water year 1938-39	301,293.0	28,500	1.7	825	.914	12.40	597,600

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5	8	24	11	10	560	101	265	21	262	5	84
2	4.4	7	21	13	10	1,470	91	500	19	144	6	46
3	6	4.4	24	13	11	5,910	77	302	17	101	5	38
4	5	4.4	18	6	11	1,830	255	190	16	68	4.8	35
5	3.8	4.6	15	7	11	710	167	133	15	55	8	28
6	3.6	4.4	15	*8	11	387	105	107	13	43	2,510	26
7	3.8	4.8	13	8	*11	297	70	85	18	37	430	23
8	4.2	4.0	10	9	12	233	85	74	13	32	87	21
9	3.6	4.2	9	9	14	192	70	63	77	30	81	16
10	324	13	12	10	15	156	91	55	114	24	188	13
11	35	8	10	11	18	120	93	49	2,030	22	85	12
12	20	8	11	12	204	410	326	44	3,000	17	179	9
13	40	14	10	12	515	2,450	387	42	1,290	15	895	8
14	17	6	8	12	374	1,040	267	44	762	13	750	7
15	13	6	9	12	324	412	209	37	248	12	656	7
16	20	7	8	11	485	282	167	37	150	145	530	6
17	13	7	9	11	710	224	133	28	176	267	839	5
18	13	8	10	10	530	190	199	103	112	188	264	4.9
19	11	34	9	10	337	167	362	257	77	118	158	4.6
20	12	32	8	9	284	158	204	312	67	89	172	4.6
21	4.4	81	9	9	350	135	149	151	55	109	118	4.2
22	4.6	89	10	9	362	118	109	97	43	105	43	3.8
23	4.2	83	12	9	297	109	101	67	101	107	31	3.5
24	3.8	50	10	9	267	85	87	50	552	97	16	3.1
25	6	43	11	9	302	81	85	43	197	37	8	3.5
26	8	37	13	9	264	77	81	42	91	28	5	2.4
27	10	21	15	9	575	70	74	35	58	17	755	2.4
28	12	18	17	9	2,440	63	57	32	4,520	13	1,020	2.3
29	13	23	15	9	1,090	67	60	30	3,000	10	550	2.2
30	12	22	11	10	-	137	58	28	687	8	247	2.0
31	7	-	11	10	-	89	-	26	-	6	105	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	642.4	324	3.6	20.7	0.023	0.03	1,270
November	655.8	89	4.0	21.9	.024	.03	1,300
December	387	24	8	12.5	.014	.02	768
Calendar year 1939	290,650.0	28,500	3.6	796	.882	11.98	576,500
January	305	13	6	9.8	.011	.01	605
February	9,844	2,440	10	339	.375	.40	19,530
March	18,229	5,910	63	588	.651	.75	36,160
April	4,320	387	57	144	.159	.18	8,570
May	3,328	500	26	107	.118	.14	6,600
June	17,549	4,520	13	585	.648	.72	34,810
July	2,219	267	6	71.6	.079	.09	4,400
August	10,760.8	2,510	4.8	347	.384	.44	21,340
September	427.5	84	2.0	14.2	.016	.02	848
Water year 1939-40	68,667.5	5,910	2.0	188	.208	2.83	136,200

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Jan. 11 to Feb. 6 and Feb. 8-10.

Des Plaines River at Lamont, Ill.

Location.- Chain gage, lat. 41°40'54", long. 88°00'09", in NW¼ sec. 20, T. 37 N., R. 11 E., at Stephens Street bridge, a quarter of a mile north of Lemont and 8 miles upstream from confluence with Chicago Sanitary & Ship Canal. Datum of gage is 583.67 feet above mean sea level (general adjustment of 1929).

Drainage area.- 687 square miles.

Records available.- November 1914 to September 1940.

Average discharge.- 25 years (1915-40) 431 second-feet (including overflow into Chicago Sanitary & Ship Canal).

Extremes.- Maximum discharge observed during year, 1,140 second-feet Mar. 5 (gage height, 3.95 feet); no flow Jan. 21-24.
1915-40: Maximum discharge, 5,520 second-feet Mar. 18, 1919; no flow on many days.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read twice daily. During high stages part of flow spills into Chicago Sanitary & Ship Canal at Willows Springs, 7 miles above gage, but there was no spill during the current year.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

2.45	0	2.8	84	3.4	544
2.5	3.3	2.9	133	3.6	763
2.6	22	3.0	200	3.8	990
2.7	51	3.2	361	4.0	1,180

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	42	13	7.3	4	69	320	180	180	146	11	706
2	2.2	30	17	4.5	2	187	344	413	146	127	11	638
3	3.3	*19	22	4.5	2	935	413	565	133	106	11	596
4	2.2	11	17	4.5	2	1,090	404	515	116	88	7.3	515
5	4.5	11	13	4.5	2	1,140	404	534	101	63	13	496
6	4.5	11	13	4.5	4	990	387	596	80	54	30	456
7	3.3	15	13	7.3	4	845	320	467	57	42	57	387
8	4.5	19	13	4.5	4	638	270	404	48	36	45	378
9	2.2	24	7.3	4.5	4	477	255	336	42	36	48	336
10	4.5	24	9.0	2.2	6	477	255	286	54	27	45	278
11	5.9	30	7.3	.8	9	413	239	255	133	66	51	255
12	13	24	4.5	2.2	9	387	216	239	88	223	57	216
13	11	19	4.5	1.4	11	370	200	180	66	166	63	166
14	13	15	4.5	9	13	370	187	140	54	140	72	133
15	7.3	17	4.5	9	19	328	180	166	48	116	76	121
16	4.5	17	4.5	7	19	255	166	153	48	72	69	101
17	4.5	22	5.9	6	17	208	153	153	36	51	69	92
18	3.3	17	7.3	3	19	255	160	153	30	36	69	84
19	1.4	9.0	7.3	1.4	19	286	180	153	30	33	69	72
20	4.5	7.3	*11	.4	22	370	193	146	22	27	60	66
21	5.9	3.3	19	0	30	336	180	173	22	22	45	54
22	4.5	3.3	17	0	36	286	166	231	36	15	36	33
23	7.3	4.5	19	0	45	223	153	255	60	11	27	27
24	7.3	9.0	22	0	76	193	140	247	166	7.3	33	33
25	13	13	15	.8	80	140	111	223	320	4.5	33	33
26	22	9.0	15	1.4	80	133	106	239	336	4.5	36	30
27	72	9.0	13	2	72	140	88	270	278	9.0	88	27
28	166	9.0	4.5	3	66	127	76	344	223	9.0	180	22
29	160	5.9	4.5	6	60	127	84	336	166	7.3	477	22
30	96	9.0	5.9	6	-	146	96	247	153	11	576	19
31	66	-	7.3	*7	-	208	-	223	-	11	596	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	720.0	166	0.4	23.2	0.034	0.04
November	458.3	42	3.3	15.3	.022	.02
December	340.8	22	4.5	11.0	.016	.02
Calendar year 1939	103,613.0	2,000	0	284	.413	5.59
January	114.7	9	0	3.70	.0054	.006
February	736	80	2	25.4	.037	.04
March	12,149	1,140	69	392	.571	.66
April	6,446	413	76	215	.313	.35
May	8,822	596	140	285	.415	.48
June	3,272	336	22	109	.159	.18
July	1,766.6	223	4.5	57.0	.083	.10
August	3,060.3	596	7.3	98.7	.144	.17
September	6,392	706	19	213	.310	.35
Water year 1939-40	44,277.7	1,140	0	121	.176	2.42

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Jan. 14 to Feb. 12.

Illinois River at Marseilles, Ill.

Location.- Water-stage recorder, lat. 41°19'40", long. 88°43'10", in SE¼SW¼ sec. 13, T. 33 N., R. 4 E., 0.4 mile downstream from dam in Marseilles, 6.9 miles upstream from Fox River, and 246.6 miles upstream from mouth. Datum of gage is 462.91 feet above mean sea level (general adjustment of 1929).

Records available.- October 1939 to September 1940. January 1903 to December 1904 at site near Monooka, and October 1919 to September 1939 at site at Morris, 16.6 miles upstream.

Average discharge.- 21 years (1919-40), 12,550 second-feet.

Extremes.- Maximum discharge during year, 21,100 second-feet Mar. 3 (gage height, 5.26 feet); minimum daily, 1,970 second-feet Jan. 30.

1919-40: Maximum discharge observed, 62,300 second-feet Apr. 2, 1933 (gage height, 19.1 feet, site and datum then in use); minimum daily, that of Jan. 30, 1940.

A stage of 26.2 feet at Morris occurred in 1831 and a stage of 25.4 feet (result of an ice jam), occurred at present site on Jan. 21, 1916.

Remarks.- Records good except those for periods of ice effect or fragmentary gage-height record, which are fair. Figures of daily discharge include flow through locks at gage.

Cooperation.- Results of fourteen discharge measurements furnished by Corps of Engineers, U. S. Army. Gage-height record furnished by Illinois Iowa Power Co.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,060	f4,270	3,740	4,840	2,520	4,310	5,870	13,000	9,450	6,710	4,980	6,200
2	4,650	f3,480	5,680	5,310	6,120	6,700	8,050	12,900	9,160	5,890	5,500	5,110
3	3,560	f3,450	4,480	3,830	4,650	13,400	6,780	15,100	8,470	6,760	4,880	5,610
4	4,020	4,730	4,980	3,560	2,630	15,600	6,270	15,500	8,050	5,570	4,710	4,890
5	4,210	3,020	5,050	b3,440	2,740	12,600	6,920	15,600	7,640	6,050	4,920	5,070
6	4,270	4,630	5,050	3,310	3,280	11,700	6,120	14,300	6,920	5,070	6,800	4,860
7	4,090	4,170	4,430	4,420	4,710	11,200	5,610	15,900	7,150	5,070	4,750	5,180
8	3,710	4,520	5,330	3,930	4,350	10,000	7,130	11,800	6,620	5,610	4,610	4,510
9	4,620	3,570	5,860	3,860	3,170	9,680	6,510	11,300	6,130	5,760	4,990	5,610
10	5,390	4,220	4,300	3,570	3,080	8,490	7,420	10,900	7,570	5,670	5,330	4,840
11	3,640	4,400	5,580	3,570	3,000	6,750	7,800	10,300	11,700	8,750	5,740	4,160
12	4,660	4,670	5,080	3,520	4,060	5,970	7,130	9,180	10,300	5,890	5,660	5,110
13	3,950	4,880	6,040	3,710	4,340	4,580	6,820	9,070	11,100	5,860	5,660	4,790
14	4,480	4,380	5,570	7,170	3,810	4,850	6,330	9,350	11,700	5,570	5,620	4,740
15	3,420	4,820	5,520	8,010	3,540	5,110	6,290	8,910	11,800	5,530	5,400	4,050
16	4,290	4,820	4,650	5,410	3,870	5,740	5,730	8,500	10,800	5,550	5,370	5,180
17	4,560	4,950	3,910	4,510	3,700	5,030	6,980	8,010	9,350	5,360	5,420	4,490
18	3,860	4,390	5,280	7,640	4,000	5,870	6,530	8,210	8,920	5,380	5,690	4,450
19	4,170	4,540	4,700	6,840	4,500	4,900	6,750	7,630	7,170	5,000	5,360	4,620
20	4,000	4,590	4,500	4,490	4,190	4,960	7,340	7,320	6,600	4,730	5,020	4,780
21	4,650	4,170	5,780	3,730	4,750	5,560	7,200	8,500	6,940	4,920	5,250	4,580
22	3,200	4,320	5,410	3,280	4,270	5,110	6,710	8,700	6,170	6,330	5,000	3,710
23	4,940	3,930	4,710	3,490	5,260	5,520	7,550	7,630	7,850	4,920	4,970	4,830
24	4,590	3,610	3,430	2,980	5,520	4,870	5,700	7,850	5,890	5,180	5,590	4,670
25	6,310	4,520	5,300	2,820	4,540	4,540	6,130	7,390	6,030	5,410	4,300	4,860
26	4,030	3,660	3,950	3,450	4,690	5,130	5,820	8,200	5,330	6,130	5,570	3,990
27	7,640	4,170	5,400	3,140	5,220	4,570	5,050	9,310	5,850	5,630	7,820	4,840
28	3,820	5,010	5,070	2,580	4,640	4,750	4,880	11,100	6,530	4,210	6,580	5,080
29	f7,420	3,690	5,310	2,010	4,060	3,860	5,690	11,300	6,560	5,420	8,980	3,760
30	f5,150	4,660	4,490	1,970	-	5,220	7,630	11,200	6,040	5,000	7,480	4,470
31	4,050	-	3,800	2,320	-	4,310	-	9,750	-	5,200	6,620	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	139,410	7,640	3,200	4,497		
November	128,240	5,010	3,020	4,275		
December	182,380	6,040	3,430	4,915		
Calendar year	-	-	-	-		
January	126,710	8,010	1,970	4,087		
February	119,210	6,120	2,520	4,111		
March	211,380	15,600	3,860	6,819		
April	196,640	8,050	4,880	6,551		
May	321,710	15,600	7,320	10,380		
June	239,590	11,800	5,330	7,986		
July	173,130	8,750	4,210	5,585		
August	174,570	8,980	4,300	5,631		
September	143,040	6,200	3,710	4,768		
Water year 1939-40	2,125,910	15,600	1,970	5,808		

b Backwater from ice jam; discharge interpolated.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Illinois River at Kingston Mines, Ill.

Location.- Staff gage, lat. 40°33'10", long. 89°46'40", in SE¼SE¼ sec. 26, T. 7 N., R. 6 E., at Kingston Mines, 2.3 miles downstream from Mackinaw River and 145.4 miles upstream from mouth. Auxiliary staff gage at abandoned Copperas Creek lock, 0.6 mile downstream from Copperas Creek, and 136.8 miles upstream from mouth. Datum of each gage is 430 feet above mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army).

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 19,700 second-feet Mar. 9; maximum gage height observed, 8.5 feet Mar. 6; minimum discharge observed, 3,100 second-feet Oct. 6, 19; minimum gage height observed, 0.1 foot Oct. 5, 6, 19.

Remarks.- Records good except those for periods of ice effect, which are poor. Gages read once daily.

Cooperation.- Results of 13 discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,010	5,940	4,010	5,400	4,400	5,000	7,570	6,800	12,000	6,540	5,310	9,200
2	3,920	5,480	4,930	5,100	4,100	7,800	7,300	8,640	11,500	8,090	5,000	9,050
3	3,240	5,370	4,680	5,000	3,900	11,800	6,180	12,600	11,600	8,350	5,190	8,930
4	3,630	5,040	5,370	4,500	4,100	12,300	6,770	12,200	11,600	7,960	5,190	8,510
5	3,530	3,820	5,940	4,500	4,200	15,300	8,640	12,400	10,900	7,810	5,500	8,480
6	3,100	4,160	4,930	4,500	4,700	19,400	8,920	13,700	10,500	6,770	5,770	8,330
7	3,620	3,630	5,120	4,200	5,100	18,300	8,090	15,600	8,470	6,850	6,280	7,050
8	3,190	3,630	4,810	3,900	5,400	19,100	7,680	15,900	7,190	6,720	5,940	7,050
9	5,940	4,920	4,470	3,800	5,800	19,700	9,210	16,400	6,900	6,790	5,480	6,770
10	5,970	4,460	3,830	3,400	6,100	19,400	8,370	15,300	10,500	7,270	5,120	7,540
11	7,170	5,840	4,990	3,400	6,600	15,300	8,930	19,500	8,470	6,560	5,120	8,090
12	5,160	5,030	4,610	3,400	6,900	17,100	10,100	17,100	11,300	11,500	5,970	6,670
13	4,920	5,250	5,610	4,000	7,600	10,500	7,930	18,800	11,600	8,370	6,150	5,770
14	4,700	4,920	4,790	3,500	7,900	9,000	8,220	10,300	14,200	7,270	5,940	5,310
15	4,810	4,590	4,790	3,600	8,400	8,000	8,370	10,700	12,900	5,370	6,540	5,500
16	4,260	4,920	4,310	3,800	9,400	7,520	8,360	11,300	17,200	5,120	4,840	5,000
17	4,160	4,590	4,580	4,100	10,200	8,650	8,240	11,300	15,900	5,310	6,540	5,190
18	4,050	4,920	4,210	4,500	11,400	6,920	8,220	11,300	12,000	5,120	5,690	5,190
19	3,100	5,940	3,920	4,600	10,000	5,300	8,090	10,300	8,300	5,120	8,500	5,190
20	3,820	7,970	4,810	4,700	8,800	5,810	8,090	9,120	8,640	5,120	7,960	4,880
21	3,420	5,470	4,680	5,100	8,000	6,080	8,650	9,800	8,370	5,120	5,940	5,190
22	4,480	4,590	5,030	4,600	7,000	6,670	7,440	9,500	6,030	5,120	5,040	5,700
23	4,210	3,840	4,410	4,800	6,700	5,850	7,310	9,920	6,660	5,120	5,120	5,000
24	4,480	3,190	5,850	4,700	6,000	6,930	7,830	9,600	6,770	4,920	5,500	5,000
25	4,690	3,280	4,680	4,600	4,930	6,670	7,570	10,100	8,650	4,920	5,000	5,310
26	4,580	3,840	4,210	4,300	5,270	6,670	7,440	10,700	9,070	5,440	5,000	5,700
27	5,850	3,840	3,920	4,200	5,480	5,270	7,310	10,500	7,570	5,120	5,500	3,620
28	9,200	3,840	6,310	4,400	3,910	6,690	7,190	9,050	6,660	3,920	7,270	4,530
29	7,810	3,840	5,000	4,300	3,910	6,200	7,540	10,200	7,040	5,240	6,450	4,530
30	8,360	3,370	5,590	3,900	-	5,370	6,280	11,400	8,090	5,120	10,200	4,990
31	7,810	-	5,920	3,900	-	6,850	-	11,100	-	4,920	9,940	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	151,190	9,200	3,100	4,877		
November	139,540	7,970	3,190	4,651		
December	150,310	6,310	3,830	4,849		
Calendar year	-	-	-	-		
January	132,700	5,400	3,400	4,281		
February	186,200	11,400	3,900	6,421		
March	311,450	19,700	5,000	10,050		
April	237,840	10,100	6,180	7,928		
May	371,130	19,500	6,800	11,970		
June	296,580	17,200	6,030	9,886		
July	192,970	11,500	3,920	6,225		
August	188,990	10,200	4,840	6,096		
September	187,270	9,200	3,620	6,242		
Water year 1939-40	2,546,170	19,700	3,100	6,957		

Note.- Stage-discharge relation affected by ice Jan. 1 to Feb. 24, Mar. 1-4, 14, 15.

Illinois River at Meredosia, Ill.

Location.- Water-stage recorder, lat. 39°49'36", long. 90°33'53", in SE¼NE¼ sec. 21, T. 16 N., R. 13 W., at the Wabash Ry. bridge in Meredosia, 4½ miles upstream from McKee Creek, and 71.1 miles upstream from mouth. Auxiliary water-stage recorder, lat. 39°42'24", long. 90°38'40", in NW¼ sec. 34, T. 15 N., R. 14 W., at Wabash Ry. bridge, half a mile east of Valley City, 1½ miles downstream from Mauvaise Terre Creek, and 61.6 miles upstream from mouth. Datum of each gage is 418.00 feet above mean sea level (general adjustment of 1929).

Records available.- October 1938 to September 1940. October 1933 to September 1938 in reports of Mississippi River Commission.

Extremes.- Maximum daily discharge during year, 25,600 second-feet Mar. 8; maximum gage height, 8.25 feet Mar. 9; minimum daily discharge, 3,810 second-feet Oct. 21; minimum gage height observed, 0.4 feet Jan. 11, 12.

1938-40: Maximum discharge, 69,500 second-feet Mar. 22, 1939 (gage height, 18.08 feet); maximum gage height, 18.27 feet Mar. 21, 1939; minimum discharge, 2,910 second-feet Sept. 21, 1939 (gage height, 1.15 feet).

Maximum etage known, 449.29 feet, Memphis datum, Oct. 12, 1926.

Remarks.- Records good except those for periods of ice effect or incomplete gage-height record, which are fair.

Cooperation.- Discharge measurements furnished by Corps of Engineers, U. S. Army.

Revisions.- Revised figures of discharge for water year 1939, superseding those published in Water-Supply Paper 875, are given herein.

Aug. 7	10,700	Aug. 10	15,600	Aug. 13	16,100
8	14,000	11	15,400	14	15,100
9	15,500	12	15,700	15	12,300
				Sept. 30	5,350

Month	Second-foot-days	Maximum	Minimum	Mean
August	355,860	16,100	7,970	11,480
September	154,940	8,290	3,660	5,165
Water year 1938-39	7,349,760	69,300	3,660	20,140

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,830	8,500	6,030	7,100	5,800	8,360	9,390	9,530	15,100	9,810	5,690	10,700
2	5,380	6,830	5.690	6,700	5,400	10,400	9,460	11,600	15,100	8,820	5,470	10,600
3	5,530	6,660	6,730	6,300	5,200	14,300	9,460	13,200	15,300	9,810	5,310	10,100
4	5,530	5,860	6,300	5,900	5,400	20,900	8,050	13,700	15,300	9,800	5,690	9,740
5	5,030	4,940	6,140	5,900	5,600	22,100	8,940	15,900	14,600	9,350	5,760	9,100
6	4,680	4,830	6,580	5,900	6,200	23,600	11,200	16,500	14,000	8,660	6,930	8,860
7	4,670	4,580	6,400	5,500	6,700	25,400	11,900	17,500	12,800	7,190	6,470	8,220
8	4,880	4,400	*5,860	5,200	7,100	25,600	11,400	18,400	12,000	7,360	7,060	8,270
9	5,290	4,510	6,190	5,000	7,700	25,500	11,100	18,900	10,000	7,200	7,340	7,540
10	6,360	5,320	5,530	4,500	8,100	25,300	11,100	19,500	9,810	7,460	6,030	7,050
11	5,830	5,760	6,580	4,500	8,700	24,900	11,500	21,800	11,800	7,840	6,030	6,520
12	6,080	6,860	6,640	4,500	9,070	24,400	11,300	21,600	13,500	8,760	5,920	8,460
13	5,920	7,590	5,150	5,200	9,920	23,600	11,500	20,300	14,300	9,410	6,340	6,280
14	5,750	6,930	6,960	4,700	10,300	20,900	11,800	18,600	15,500	8,790	6,730	6,220
15	5,090	5,740	7,150	4,800	11,100	15,500	10,800	16,600	16,200	7,230	7,130	5,780
16	5,410	5,690	6,590	5,000	12,500	14,700	11,800	15,300	16,700	6,750	7,800	5,430
17	5,310	5,810	5,920	5,300	13,400	14,300	11,000	14,900	17,600	6,190	7,710	5,430
18	5,310	5,920	6,140	5,900	14,800	13,100	11,600	14,700	17,900	6,250	8,190	5,430
19	4,070	6,170	5,370	6,000	13,100	11,600	12,100	14,000	16,700	5,650	9,450	5,370
20	4,680	7,560	5,850	6,200	11,600	10,400	11,200	14,400	14,400	5,920	10,400	5,230
21	3,810	7,670	6,020	6,700	10,500	10.100	11,200	13,500	13,000	5,920	8,630	4,950
22	4,160	6,530	6,460	6,100	9,140	9,610	10,900	12,700	11,500	5,970	6,810	5,130
23	5,130	5,190	6,830	6,300	8,800	9,170	11,200	12,100	10,500	5,640	5,970	5,160
24	5,480	4,740	6,880	6,200	7,960	9,080	11,700	13,100	8,940	5,970	5,520	4,990
25	6,140	4,540	6,520	6,000	7,080	9,210	12,100	13,200	10,700	5,930	5,230	4,620
26	5,330	4,400	6,280	*5,600	7,790	9,140	11,300	13,700	10,700	5,770	5,350	5,540
27	6,140	4,580	6,170	5,500	*7,810	8,910	10.700	14,100	10,700	6,020	5,280	4,910
28	9,050	4,460	6,680	5,800	7,650	8,860	10,300	13,700	9,260	6,090	6,470	4,630
29	11,700	4,640	7,460	5,700	7,810	9,000	10,800	13,600	8,000	6,140	8,370	4,660
30	10,200	4,420	7,410	5,400	-	8,380	9,460	14,200	9,410	6,190	8,630	4,680
31	9,260	-	7,630	5,400	-	8,430	-	14,300	-	5,860	10,200	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	182,030	11,700	3,810	5,872		
November	171,830	8,500	4,400	5,728		
December	196,140	7,630	5,150	6,392		
Calendar year 1939	6,802,180	69,300	3,660	18,640		
January	174,800	7,100	4,500	5,639		
February	252,230	14,800	5,200	8,698		
March	474,750	25,600	8,360	15,310		
April	326,280	12,000	8,050	10,880		
May	475,130	21,800	9,530	15,330		
June	391,320	17,900	8,000	13,040		
July	223,550	9,810	5,640	7,211		
August	213,910	10,400	5,230	6,900		
September	201,600	10,700	4,620	6,720		
Water year 1939-40	3,285,550	25,600	3,810	8,977		

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Jan. 1 to Feb. 11. Incomplete gage-height record Oct. 30 to Nov. 10, Jan. 5-26, June 17-19, July 12-17, 25-30; discharge computed on basis of staff-gage readings.

Chicago Sanitary and Ship Canal at Lockport, Ill.

Location.- Lat. 41°34'11", long. 88°04'42", in SW¼ sec. 27, T. 36 N., R. 10 E., at upper end of 9-foot navigation channel in Des Plaines River at Lockport.

Records available.- October 1936 to September 1940 in reports of Geological Survey. January 1900 to September 1936 in State report entitled "Stream-flow data of Illinois", 1937.

Average discharge.- 40 years, 7,132 second-feet.

Extremes.- Maximum total discharge during year, 13,694 second-feet Oct. 26; minimum total, 32.3 second-feet Feb. 3.
1900-40: Maximum total discharge, 19,182 second-feet Sept. 13, 1936; minimum, 91 second-feet Dec. 15, 1938.

Remarks.- Total daily discharge includes governmental and private pumpage, inflow from Des Plaines River at Willow Springs and Romeo, storm-water runoff draining into main channel, and diversion from Lake Michigan. This total discharge is obtained by adding the daily discharges, based on half-hourly discharge readings at dams, sluice gates, lockages, exciter turbines in operation, and main turbines in operation as corrected for variable efficiencies, and the leakage of lock gates, dams, sluice gates, and turbines not in operation.

Chicago pumpage includes water from Lake Michigan to supply Chicago metropolitan area, and water from wells within the main-channel drainage area including pumpage to municipalities served by Chicago, and approximately 90 second-feet for agencies not served by Chicago. Prior to May 1940, Chicago pumpage included runoff from Des Plaines River Basin which entered Sanitary District sewers.

Mean net diversion is obtained by deducting from the total discharge the Chicago pumpage and the inflow from the Des Plaines River. Subsequent to May 1940, this diversion includes runoff from Des Plaines River Basin entering Sanitary District sewers, and surface flow south of main channel, if any, as well as inflow at Willow Springs and at Romeo.

The Federal permit of June 26, 1930, issued by the Secretary of War, limits the diversion of water from Lake Michigan to an annual average of 1,500 second-feet, exclusive of pumpage for municipal supplies.

Cooperation.- Records furnished by Sanitary District of Chicago.

Discharge, in second-feet, water year October 1939 to September 1940

Day	October			November			December			January		
	Total*	Chicago pumpage	Net diversion	Total*	Chicago pumpage	Net diversion	Total*	Chicago pumpage	Net diversion	Total*	Chicago pumpage	Net diversion
1	2,897	1,492	1,403	2,587	1,552	1,029	3,279	1,529	1,746	2,849	1,432	1,414
2	2,748	1,660	1,066	2,627	1,537	1,085	3,348	1,470	1,874	2,849	1,582	1,264
3	2,760	1,702	1,056	2,653	1,531	1,118	3,059	1,379	1,675	2,835	1,604	1,218
4	2,824	1,722	1,100	2,547	1,502	1,041	3,282	1,520	1,758	2,896	1,585	1,308
5	3,142	1,723	1,416	2,570	1,416	1,150	3,559	1,532	2,023	2,930	1,606	1,321
6	2,888	1,725	1,160	2,677	1,554	1,119	3,184	1,523	1,657	2,845	1,564	1,278
7	2,889	1,686	1,201	2,793	1,563	1,226	3,073	1,519	1,550	2,795	1,461	1,331
8	2,769	1,584	1,182	2,679	1,553	1,122	3,841	1,517	2,320	2,900	1,586	1,311
9	3,487	1,737	1,748	2,657	1,544	1,108	3,543	1,465	2,074	2,870	1,573	1,294
10	3,016	1,694	1,319	2,880	1,541	1,334	3,029	1,373	1,652	2,805	1,570	1,233
11	3,202	1,679	1,520	3,038	1,482	1,551	3,293	1,514	1,775	2,736	1,568	1,216
12	2,762	1,652	1,106	3,027	1,412	1,610	3,706	1,514	2,189	2,911	1,569	1,340
13	3,087	1,648	1,435	2,902	1,558	1,340	4,112	1,503	2,606	2,839	1,530	1,306
14	2,781	1,597	1,180	3,053	1,558	1,491	3,746	1,507	2,236	6,100	1,435	4,658
15	2,734	1,490	1,241	3,131	1,562	1,565	3,537	1,515	2,019	4,237	1,581	2,699
16	2,818	1,650	1,165	3,180	1,569	1,607	3,171	1,463	1,705	3,891	1,584	2,300
17	2,935	1,647	1,285	3,134	1,560	1,569	3,082	1,384	1,695	2,876	1,590	1,277
18	2,874	1,655	1,217	3,028	1,491	1,533	3,328	1,526	1,798	2,751	1,620	1,125
19	2,855	1,658	1,195	2,834	1,404	1,426	3,244	1,536	1,704	2,715	1,668	1,041
20	2,903	1,643	1,257	2,856	1,542	1,310	3,546	1,524	2,018	2,553	1,609	939
21	2,801	1,565	1,213	2,787	1,564	1,220	4,082	1,506	2,571	2,647	1,522	1,120
22	2,782	1,462	1,317	2,862	1,567	1,292	3,720	1,522	2,194	2,640	1,633	1,003
23	2,911	1,601	1,307	2,530	1,407	1,120	3,116	1,465	1,646	2,673	1,625	1,044
24	2,996	1,586	1,407	2,714	1,528	1,182	3,117	1,387	1,725	2,661	1,635	1,022
25	4,255	1,580	2,671	2,697	1,497	1,196	2,956	1,351	1,601	2,672	1,645	1,023
26	4,169	1,611	2,553	2,751	1,394	1,353	3,529	1,509	2,016	2,832	1,644	1,165
27	4,069	1,600	2,461	2,674	1,548	1,322	3,693	1,538	2,351	2,704	1,607	1,094
28	2,927	1,517	1,398	2,795	1,552	1,239	4,126	1,527	2,596	2,531	1,513	1,015
29	2,812	1,428	1,372	2,938	1,534	1,401	3,787	1,530	2,254	2,542	1,627	912
30	2,768	1,580	1,178	2,815	1,529	1,285	3,667	1,504	2,160	2,607	1,625	980
31	2,819	1,566	1,245	-	-	-	3,569	1,441	2,124	2,641	1,615	1,025

*Total discharge of canal.

Discharge, in second-feet, of Chicago Sanitary and Ship Canal at Lockport, Ill., 1939-40--Continued

Day	February			March			April			May		
	Total*	Chicago pumpage	Net diversion	Total*	Chicago pumpage	Net diversion	Total*	Chicago pumpage	Net diversion	Total*	Chicago pumpage	Net diversion
1	3,129	1,624	1,504	3,094	1.603	1,482	2,987	1,612	1,357	7,630	1,539	5,905
2	5,641	1,627	4,014	4,361	1,547	2.800	5,477	1,603	3,856	2,856	1,533	1,147
3	2,112	1,572	540	6,846	1,475	5,339	4,124	1,605	2,499	3,003	1,527	1,310
4	2,379	1,472	907	4,994	1,595	3,363	3,105	1,595	1,491	2,721	1,488	1,096
5	2,649	1,609	1,040	3,415	1,597	1,781	3,210	1,596	1,595	2,508	1,413	959
6	2,489	1,610	878	2,984	1,600	1,351	2,788	1,538	1,231	3,001	1,562	1,315
7	4,915	1,610	3,304	2,901	1,588	1,283	3,405	1,460	1,928	3,331	1,550	1,671
8	2,636	1,598	1,037	3,213	1,584	1,603	3,586	1,588	1,982	3,050	1,552	1,379
9	2,493	1,598	894	3,214	1,540	1,652	3,352	1,588	1,749	3,118	1,556	1,466
10	2,554	1,546	1,007	3,026	1,466	1,538	3,681	1,606	2,060	3,381	1,559	1,742
11	2,567	1,468	1,097	2,873	1,579	1,274	3,480	1,595	1,870	3,078	1,518	1,484
12	2,768	1,589	1,176	2,748	1,576	1,153	3,227	1,588	1,625	2,911	1,454	1,398
13	2,629	1,586	1,039	2,802	1,592	1,191	3,202	1,545	1,643	3,016	1,645	1,293
14	2,564	1,584	976	2,574	1,593	962	2,692	1,467	1,212	3,245	1,632	1,531
15	2,462	1,582	875	2,680	1,606	1,056	2,545	1,592	940	3,414	1,569	1,742
16	2,468	1,584	879	2,973	1,559	1,398	2,672	1,604	1,055	3,155	1,539	1,504
17	2,419	1,541	873	3,049	1,474	1,561	3,009	1,596	1,401	3,146	1,537	1,511
18	2,452	1,450	997	2,887	1,591	1,280	2,638	1,587	1,039	3,109	1,487	1,531
19	2,661	1,582	1,074	2,557	1,599	942	2,691	1,605	1,073	3,730	1,416	2,143
20	2,946	1,586	1,355	2,794	1,590	1,185	2,429	1,548	867	3,085	1,565	1,409
21	2,763	1,592	1,165	2,771	1.593	1,160	2,381	1,472	896	3,388	1,558	1,693
22	2,585	1,557	1,022	3,381	1,606	1,758	2,535	1,605	917	4,015	1,564	2,287
23	2,563	1,578	978	2,893	1,553	1,325	2,557	1,610	935	2,970	1,557	1,299
24	2,441	1,543	889	2,849	1,488	1,347	2,533	1,608	913	3,122	1,557	1,473
25	2,564	1,479	1,076	2,969	1,599	1,358	2,542	1,607	924	3,631	1,501	2,056
26	2,481	1,590	882	2,789	1,604	1,173	2,596	1,605	981	3,389	1,406	1,838
27	3,690	1,580	2,101	2,888	1,613	1,263	2,458	1,567	882	3,353	1,539	1,690
28	2,514	1,595	910	2,819	1,597	1,210	2,511	1,444	1,058	3,655	1,550	1,965
29	2,724	1,584	1,132	2,987	1,616	1,359	3,134	1,604	1,521	3,326	1,561	1,645
30	-	-	-	2,945	1,563	1,370	3,231	1,617	1,604	3,001	1,415	1,472
31	-	-	-	2,895	1,472	1,409	-	-	-	3,332	1,518	1,701

Day	June			July			August			September		
1	2,841	1,527	1,202	3,242	1,741	1,467	3,740	1,886	1,843	3,101	1,478	1,527
2	2,752	1,483	1,185	3,336	1,743	1,559	3,745	1,960	1,771	3,074	1,497	1,490
3	2,966	1,668	1,196	3,249	1,745	1,474	3,575	1,875	1,685	3,206	1,709	1,426
4	2,951	1,737	1,155	3,314	1,584	1,701	3,655	1,655	1,992	3,068	1,733	1,276
5	2,810	1,767	985	3,252	1,783	1 441	4,182	1,907	2,237	3,105	1,745	1,306
6	2,916	1,825	1,043	3,284	1,803	1,454	4,125	1,811	2,270	3,161	1,756	1,352
7	3,080	1,788	1,244	3,406	1,643	1,735	3,511	1,852	1,636	3,305	1,737	1,518
8	2,756	1,656	1,012	3,343	1,866	1,449	3,608	1,885	1,702	3,078	1,601	1,441
9	2,709	1,508	1,140	3,738	1,746	1,927	3,747	1,887	1,841	3,066	1,690	1,339
10	3,032	1,653	1,319	3,504	1,879	1.579	4,760	1,746	2,983	3,115	1,673	1,416
11	2,846	1,631	1,164	6,444	1,738	4,562	3,923	1,560	2,341	3,114	1,664	1,425
12	2,722	1,632	1,032	4,064	1,696	2,285	3,848	1,805	2,020	3,078	1,676	1,381
13	2,696	1,647	1,020	3,732	1,654	2,019	3,914	1,822	2,059	2,951	1,705	1,218
14	2,646	1,693	919	3,557	1,564	1,943	4,056	1,804	2,205	3,113	1,627	1,468
15	2,670	1,707	928	3,458	1,817	1,604	3,977	1,792	2,149	3,076	1,491	1,567
16	2,550	1,587	936	3,628	1,773	1,824	3,924	1,823	2,060	3,042	1,689	1,331
17	2,618	1,843	748	3,239	1,812	1,391	3,635	1,774	1,806	3,087	1,725	1,343
18	2,892	1,789	1,070	3,227	1,837	1,368	4,192	1,532	2,576	3,120	1,772	1,332
19	2,725	1,690	988	3,304	1,986	1,287	3,746	1,714	1,990	3,116	1,828	1,272
20	2,699	1,683	983	3,506	1,979	1,502	3,701	1,708	1,955	3,123	1,855	1,253
21	2,791	1,724	1,053	3,376	1,825	1,529	3,670	1,722	1,926	3,068	1,770	1,281
22	3,690	1,579	2,060	3,588	2,152	1,410	3,747	1,705	2,013	3,064	1,560	1,487
23	4,120	1,499	2,522	3,517	2,247	1,248	3,726	1,699	1,995	3,091	1,740	1,341
24	3,423	1,618	1,705	3,629	2,288	1,312	3,728	1,602	2,100	3,409	1,698	1,677
25	2,793	1,666	1,048	3,709	2,204	1.488	3,672	1,489	2,100	3,199	1,642	1,536
26	2,834	1,670	1,130	4,272	1,932	2,290	4,654	1,698	2,090	3,146	1,635	1,479
27	2,812	1,712	1,070	3,829	1,765	2,000	4,326	1,688	2,529	3,226	1,662	1,552
28	3,014	1,685	1,286	3,402	1,713	1,663	3,887	1,735	2,096	3,179	1,617	1,537
29	2,404	1,665	715	3,489	2,073	1,393	4,810	1,734	2,896	3,070	1,541	1,508
30	2,514	1,508	983	3,533	1,993	1,516	3,759	1,750	1,887	3,205	1,673	1,515
31	-	-	-	3,715	1,907	1,797	4,082	1,623	2,346	-	-	-

*Total discharge of canal.

Monthly discharge, in second-feet, of Chicago Sanitary and Ship Canal at Lockport, Ill., with inflow from Des Plaines River, domestic pumpage, and net diversion from Lake Michigan watershed through Sanitary District at Lockport, Ill., for the water year 1939-40

Month	Total discharge			Mean inflow from Des Plaines River†	Mean pumpage	Net diversion		
	Maximum daily	Minimum daily	Mean			Maximum daily	Minimum daily	Mean
October	4,255	2,734	3,022	4	1,619	2,671	1,056	1,399
November	3,180	2,530	2,820	4	1,518	1,610	1,029	1,298
December	4,126	2,956	3,469	4	1,487	2,606	1,550	1,978
Calendar year 1939	8,342	2,075	3,132	13	1,620	6,748	412	1,499
January	6,100	2,531	2,949	4	1,581	4,658	912	1,364
February	5,641	2,112	2,802	4	1,570	4,014	540	1,228
March	6,846	2,557	3,167	19	1,570	5,339	942	1,578
April	5,477	2,381	3,026	14	1,575	3,856	867	1,437
May	7,630	2,508	3,344	118	1,528	5,905	959	1,698
June	4,120	2,404	2,876	53	1,662	2,522	715	1,161
July	6,444	3,227	3,609	38	1,854	4,562	1,248	1,717
August	4,810	3,511	3,923	47	1,750	2,983	1,636	2,126
September	3,409	2,951	3,125	32	1,673	1,567	1,218	1,420
Water year 1939-40	7,630	2,112	3,182	29	1,616	5,905	540	1,538

† Includes infiltration into sewers of Sanitary District of Chicago during period May to September.

Kankakee River at Davis, Ind.

Location.- Chain gage, lat. 41°24', long. 86°42', in sec. 13, T. 34 N., R. 3 W., at bridge on U. S. Highway 30 at Davis, half a mile downstream from Mill Creek and 4 miles east of Hanna. Datum of gage is 664.68 feet above mean sea level (general adjustment of 1929).

Drainage area.- 506 square miles.

Records available.- July 1905 to July 1906 and April 1931 to September 1940 in reports of Geological Survey. July 1925 to May 1929 in reports of Indiana Department of Conservation.

Average discharge.- 12 years (1925-28, 1931-40), 440 second-feet.

Extremes.- Maximum discharge observed during year, 1,140 second-feet May 3 (gage height, 8.95 feet), from rating curve extended above 750 second-feet; minimum observed, 197 second-feet on several days in August and September; minimum gage height observed, 3.63 on several days in August.

1925-29, 1931-40: Maximum discharge observed, 1,700 second-feet Dec. 15, 1927 (gage height, 9.50 feet, site and datum then in use), from rating curve extended above 520 second-feet; minimum observed, 168 second-feet Aug. 5, 6, 13, 14, 1934.

Remarks.- Records good except those for period of ice effect, which are poor. Gage read once daily.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Dec. 30, Aug. 13 to Sept. 30)

3.6	197	4.3	300	5.5	489	8.0	940
3.8	225	4.6	345	6.0	574	9.0	1,140
4.0	255	5.0	409	7.0	750		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	240	285	300	240	255	300	409	625	506	345	225	240
2	240	285	330	230	255	409	425	1,100	489	345	211	240
3	240	285	361	220	255	642	574	1,140	473	330	197	225
4	240	285	345	220	270	660	574	1,060	441	315	211	211
5	240	285	330	220	270	591	540	960	409	315	225	211
6	240	270	315	220	270	523	506	840	377	315	225	197
7	240	270	315	220	270	457	457	768	393	315	225	197
8	240	270	300	230	270	425	409	750	393	300	211	330
9	240	270	300	230	255	393	377	696	409	300	211	425
10	285	270	300	230	255	377	345	642	409	285	211	377
11	285	270	285	230	255	361	330	608	409	285	197	330
12	270	285	285	230	270	361	315	557	540	285	197	285
13	255	270	285	240	285	345	300	523	678	285	197	270
14	255	285	285	250	285	345	441	506	678	285	197	270
15	255	285	285	330	285	345	457	473	678	285	197	255
16	255	285	285	300	285	345	457	473	625	270	211	255
17	255	270	270	270	285	345	489	473	591	270	197	255
18	255	270	285	250	285	345	574	457	591	270	211	240
19	255	270	270	250	285	377	540	473	506	255	225	240
20	255	270	270	250	285	393	523	506	473	255	211	240
21	255	270	270	250	285	409	506	473	441	255	197	240
22	255	270	270	250	285	377	489	457	393	255	197	225
23	240	270	270	250	300	345	473	441	409	255	197	225
24	240	270	270	250	300	345	457	409	457	255	197	225
25	255	270	270	240	300	345	425	393	473	255	211	240
26	270	255	270	240	285	345	409	409	441	255	225	225
27	300	255	270	240	285	330	377	441	425	255	255	225
28	300	255	270	240	285	345	361	473	393	240	255	225
29	315	270	270	240	270	377	377	506	377	240	255	225
30	300	285	255	240	-	393	457	506	377	240	255	225
31	285	-	250	240	-	425	-	506	-	225	255	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	8,055	315	240	260	0.513	0.59
November	8,205	285	255	273	.540	.60
December	8,936	361	250	288	.569	.66
Calendar year 1939	161,551	1,210	229	443	.875	11.86
January	7,540	330	220	243	.480	.55
February	8,025	300	255	277	.547	.59
March	12,375	660	300	399	.789	.91
April	13,373	574	300	446	.881	.98
May	18,644	1,140	393	601	1.19	1.37
June	14,254	678	377	475	.939	1.05
July	8,640	345	225	279	.551	.64
August	6,691	255	197	216	.427	.49
September	7,573	425	197	252	.498	.56
Water year 1939-40	122,311	1,140	197	334	.660	8.99

Note.- Stage-discharge relation affected by ice Dec. 31 to Jan. 31.

Kankakee River at Shelby, Ind.

Location.- Water-stage recorder, lat. 41°11', long. 87°21', in sec. 33, T. 32 N., R. 8 W., at Chicago, Indianapolis & Louisville Ry. bridge, 1 mile south of Shelby and 9 miles upstream from Beaver Lake Creek. Datum of gage is 628.13 feet above mean sea level (general adjustment of 1929).
Drainage area.- 1,800 square miles.
Records available.- April 1930 to September 1940 in reports of U. S. Geological Survey; November 1922 to March 1930 in reports of Indiana Department of Conservation.
Average discharge.- 17 years (1923-40), 1,467 second-feet.
Extremes.- Maximum discharge during year, 3,600 second-feet May 9-11 (gage height, 8.2 feet); minimum discharge, about 400 second-feet Jan. 3 (gage height, 2.16 feet, affected by backwater from ice; minimum gage height, 1.57 feet Oct. 2.
1922-40: Maximum discharge observed, 5,540 second-feet Dec. 21, 1927 (gage height, 11.40 feet), from rating curve extended above 3,000 second-feet; minimum observed, 378 second-feet Aug. 4, 5, 1934 (gage height, 0.80 foot).
Remarks.- Records good except those for periods of no gage height record, which are fair, and those for periods of ice effect, which are poor.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Dec. 26, Aug. 12 to Sept. 30)

1.5	475	2.5	756	4.0	1,350	7.0	2,880
1.7	527	3.0	922	5.0	1,840	8.2	3,600
2.0	609	3.5	1,120	6.0	2,340		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	514	637	623	470	470	680	1,040	1,840	2,390	1,220	581	596
2	514	623	652	450	500	740	1,040	2,880	2,340	1,170	568	581
3	514	609	680	430	500	1,350	1,100	3,180	2,240	1,100	654	554
4	514	595	710	430	500	1,890	1,260	3,360	2,090	1,040	554	554
5	527	595	725	440	500	1,990	1,300	3,420	1,890	1,000	623	540
6	527	595	725	450	520	2,040	1,300	3,420	1,690	980	623	527
7	514	595	725	450	540	1,940	1,260	3,420	1,540	941	581	514
8	527	595	710	440	540	1,640	1,300	3,540	1,490	922	568	514
9	540	595	695	440	540	1,440	1,400	3,600	1,440	904	568	623
10	568	609	695	450	540	1,300	1,440	3,600	1,490	886	568	710
11	568	652	680	460	540	1,220	1,440	3,600	1,540	869	554	680
12	581	666	666	470	560	1,120	1,350	3,480	1,890	867	540	637
13	581	652	652	480	580	1,080	1,350	3,360	2,240	852	527	623
14	568	652	652	500	580	1,060	1,350	3,240	2,240	836	514	609
15	568	652	637	580	580	1,040	1,350	2,940	2,240	819	514	595
16	56e	637	637	560	580	1,060	1,350	2,660	2,090	803	514	581
17	554	637	637	500	590	1,020	1,350	2,390	1,890	787	501	568
18	540	637	637	470	620	980	1,440	2,190	1,740	773	514	a560
19	540	623	637	450	620	1,000	1,540	2,190	1,690	756	527	a540
20	554	623	623	450	620	1,020	1,640	2,240	1,590	740	527	a530
21	540	623	609	450	620	1,040	1.590	2,190	1,440	725	527	a510
22	540	623	595	450	620	1,000	a1,500	2,140	1,350	710	514	501
23	540	623	581	450	620	980	a1,420	1,990	1,300	695	514	501
24	540	623	595	450	660	941	a1,350	1,840	1,300	680	501	514
25	540	623	595	450	660	904	a1,300	1,740	1,350	666	514	527
26	56e	609	581	440	660	922	a1,210	1,840	1,350	652	527	527
27	623	609	560	440	680	922	a1,150	1,990	1,300	652	623	527
28	652	609	560	440	680	904	1,100	1,990	1,350	652	652	514
29	652	595	550	440	680	922	1,080	2,090	1,300	652	623	514
30	652	609	550	440	-	960	1,350	2,240	1,260	623	609	514
31	652	-	500	440	-	1,000	-	2,390	-	609	609	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	17,380	652	514	561	0.312	0.36
November	18,625	666	595	621	.345	.38
December	19,674	725	500	635	.353	.41
Calendar year 1939	535,273	4,020	497	1,467	.815	11.06
January	14,260	580	430	460	.256	.29
February	16,900	680	470	583	.324	.35
March	36,105	2,040	680	1,165	.647	.75
April	39,650	1,640	1,040	1,322	.734	.82
May	82,990	3,600	1,740	2,677	1.49	1.71
June	51,050	2,390	1,260	1,702	.945	1.05
July	25,582	1,220	609	825	.458	.53
August	17,233	652	501	556	.309	.36
September	16,784	710	501	559	.311	.35
Water year 1939-40	356,233	3,600	430	973	.541	7.36

a No gage-height record; discharge computed on basis of records for station at Lewis.
Note.- Stage-discharge relation affected by ice Dec. 27 to Mar. 2.

Kankakee River at Momence, Ill.

Location.- Water-stage recorder, lat. 41°09'38", long. 87°40'01", in NE¼ sec. 24, T. 31 N., R. 13 E., a quarter of a mile downstream from highway bridge in Momence and 1¼ miles upstream from Tower Creek. Datum of gage is 610.32 feet above mean sea level.

Drainage area.- 2,340 square miles.

Records available.- February 1905 to July 1906, December 1914 to September 1940.

Average discharge.- 25 years (1915-40) 1,722 second-feet.

Extremes.- Maximum discharge during year, 4,860 second-feet May 6; (gage height, 2.70 feet), minimum, 400 second-feet Jan. 2, result of low temperature; minimum gage height, 0.15 foot Oct. 25.

1905-6, 1915-40: Maximum discharge observed, 14,000 second-feet Jan. 22, 1916, from rating curve extended above 6,500 second-feet; maximum gage height observed, 7.5 feet Jan. 21, 1916 (ice jam); minimum discharge observed, 306 second-feet Sept. 1, 16, 17, 1919 (gage height, 1.37 feet, site then in use).

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	563	677	686	500	550	*850	1,150	2,520	a3,200	1,480	626	780
2	556	668	704	490	600	1,330	1,200	3,560	a3,000	1,380	610	740
3	556	659	731	*460	650	1,880	1,280	3,860	2,900	1,280	586	713
4	556	650	750	460	650	2,330	1,440	4,360	2,710	1,200	586	686
5	563	642	780	480	650	2,330	1,450	4,760	2,520	1,150	594	686
6	563	626	800	490	650	2,330	1,450	4,760	2,330	1,100	659	650
7	563	626	780	490	650	2,330	1,480	4,660	2,110	1,060	650	642
8	563	626	770	490	650	2,240	1,640	4,460	1,970	1,020	618	634
9	570	634	750	490	700	1,970	1,660	4,460	2,900	998	602	650
10	610	659	750	500	700	1,720	1,640	4,260	3,500	962	594	790
11	610	695	740	500	700	1,530	1,660	4,160	3,280	939	602	840
12	602	704	722	550	800	1,410	1,640	4,060	3,090	906	668	790
13	610	722	713	550	850	1,310	1,580	4,060	2,900	884	642	740
14	594	722	704	600	900	1,240	1,530	3,960	2,900	884	626	731
15	586	713	695	650	950	1,270	1,510	3,760	2,900	862	634	704
16	586	695	695	650	1,050	1,210	1,500	3,660	3,090	840	634	686
17	586	686	686	600	1,150	1,200	1,530	3,380	2,800	830	634	668
18	586	695	686	550	1,100	1,190	1,770	3,180	2,520	820	650	650
19	586	695	686	500	1,150	1,170	1,870	2,900	2,200	810	626	634
20	586	677	668	490	1,150	1,170	1,850	a2,600	1,970	790	610	618
21	594	677	668	490	1,300	1,170	1,870	a2,500	1,780	770	610	610
22	586	677	650	490	1,300	1,150	a1,700	a2,400	1,670	760	594	594
23	586	677	642	490	1,300	1,100	a1,600	a2,300	1,580	740	586	578
24	586	677	650	490	1,450	1,050	a1,500	a2,100	1,560	731	586	602
25	594	677	650	490	1,300	1,020	a1,400	a2,400	1,510	704	578	610
26	594	668	650	500	1,250	998	a1,300	a2,710	1,500	695	586	602
27	659	668	600	500	1,100	1,010	a1,300	a3,200	1,480	686	917	594
28	695	659	600	490	1,200	1,020	1,270	a3,700	2,010	668	1,340	578
29	695	659	600	490	1,250	1,050	1,280	a3,600	1,780	659	1,170	578
30	695	668	600	*490	-	1,070	2,200	a3,500	1,590	650	950	570
31	695	-	550	490	-	*1,100	-	a3,400	-	642	851	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	18,574	695	556	599	0.256	0.30
November	20,178	722	626	673	.288	.32
December	21,357	800	550	689	.294	.34
Calendar year 1939	673,257	5,860	542	1,845	.788	10.71
January	15,900	650	460	513	.219	.25
February	27,700	1,450	550	955	.408	.44
March	43,748	2,330	850	1,411	.603	.70
April	46,250	2,200	1,150	1,542	.659	.74
May	109,190	4,760	2,100	3,522	1.51	1.74
June	71,250	3,500	1,480	2,375	1.01	1.13
July	27,900	1,480	642	900	.385	.44
August	21,219	1,340	578	684	.292	.34
September	19,948	840	570	665	.284	.32
Water year 1939-40	443,213	4,760	460	1,211	.518	7.06

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for stations at Shelby, Ind., and near Wilmington, Ill.

Note.- Stage-discharge relation affected by ice Dec. 24 to Mar. 1, Mar. 25.

Kankakee River near Wilmington, Ill.

Location.- Water-stage recorder, lat. 41°20'48", long. 88°11'11", in NW¼ sec. 15, T. 33 N., R. 9 E., 0.4 mile downstream from Prairie Creek and 5 miles downstream from Wilmington. Datum of gage is 511.10 feet above mean sea level (general adjustment of 1929).

Drainage area.- 5,250 square miles.

Records available.- February 1935 to September 1940.

Extremes.- Maximum discharge during year, 11,100 second-feet May 4 (gage height, 3.93 feet); minimum daily, 270 second-feet Jan. 1, result of low temperature.

1935-40: Maximum discharge, 24,600 second-feet Mar. 14, 1939; maximum gage height, 9.54 feet Feb. 29, 1936 (ice jam); minimum discharge, 204 second-feet Aug. 1, 1936 (gage height, 0.79 feet); minimum daily, that of Jan. 1, 1940.

Maximum stage known, 16.75 feet in 1883 and 1887.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Slight diurnal regulation at low flow caused by power plants above station.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

0.8	400	1.6	1,540	2.4	4,140	3.5	8,820
1.0	530	1.8	2,100	2.6	4,910	4.0	11,400
1.2	740	2.0	2,720	2.8	5,720		
1.4	1,070	2.2	3,410	3.0	6,540		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	611	944	875	270	650	1,760	1,440	4,180	4,870	2,190	830	944
2	692	*770	a1,100	430	750	2,130	1,740	7,380	4,680	2,070	785	770
3	644	926	a900	420	800	3,300	1,740	9,820	4,370	1,900	620	740
4	644	728	a1,100	460	800	4,370	1,760	10,900	3,990	1,740	692	755
5	656	830	a1,200	550	800	5,030	1,820	10,600	3,590	1,620	704	728
6	632	845	a1,200	600	850	5,720	1,820	9,320	3,240	1,490	644	704
7	632	800	a1,150	600	850	5,520	1,900	8,080	2,960	1,420	656	692
8	656	830	a1,300	550	850	4,990	2,020	7,380	2,750	1,360	668	644
9	755	908	a1,100	500	900	4,410	2,220	6,750	3,480	1,320	632	716
10	716	755	a1,150	550	900	2,990	2,370	6,130	4,030	1,290	668	680
11	716	815	a1,100	600	900	2,430	2,460	5,520	7,170	1,220	704	692
12	716	962	1,020	650	1,100	2,130	2,430	5,070	6,540	1,200	728	890
13	755	830	1,030	700	1,150	1,990	2,340	4,720	7,380	1,160	704	800
14	770	1,020	980	850	1,300	1,880	2,280	4,600	8,080	1,160	680	668
15	785	890	1,020	1,050	1,450	1,820	2,340	4,410	8,080	1,180	704	716
16	785	944	962	1,200	1,600	1,760	2,500	4,140	6,960	1,110	692	740
17	740	908	926	1,300	1,700	1,650	2,530	3,840	5,720	926	668	716
18	740	845	840	1,200	1,600	1,650	2,620	3,590	4,560	998	785	692
19	704	926	770	1,050	1,600	1,620	3,060	3,380	3,810	1,090	785	680
20	704	890	908	1,050	1,600	1,570	3,480	3,380	3,300	1,030	728	668
21	680	830	*890	1,000	1,900	1,570	3,520	3,730	2,890	1,050	716	632
22	704	980	860	950	2,200	1,540	3,240	3,840	2,590	1,030	704	593
23	740	815	815	900	2,300	1,570	2,890	3,590	2,370	980	704	611
24	716	926	785	800	a2,400	1,600	2,560	3,240	2,190	962	656	593
25	944	815	860	800	a2,200	1,490	2,310	3,060	2,100	944	548	644
26	755	890	800	850	a2,000	1,320	2,130	3,300	1,990	890	692	668
27	770	830	850	850	a1,700	1,290	1,990	4,290	1,900	728	1,270	620
28	785	944	800	650	a1,700	1,290	1,880	5,030	2,820	962	1,900	575
29	998	785	800	650	1,790	1,290	1,850	5,920	3,130	908	1,760	656
30	926	944	750	600	-	*1,360	3,520	5,720	2,430	815	1,360	680
31	944	-	320	750	-	1,440	-	5,190	-	716	1,020	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	23,015	998	611	742	0.141	0.16
November	26,125	1,020	728	871	.166	.19
December	29,161	1,300	320	941	.179	.21
Calendar year 1939	1,402,242	24,600	320	3,842	.732	9.94
January	23,380	1,300	270	754	.144	.17
February	40,340	2,400	650	1,391	.265	.29
March	74,480	5,720	1,290	2,403	.458	.53
April	70,760	3,520	1,440	2,359	.449	.50
May	170,100	10,900	3,060	5,487	1.05	1.20
June	123,970	8,080	1,900	4,132	.787	.88
July	37,459	2,190	716	1,208	.230	.27
August	25,407	1,900	548	820	.156	.18
September	20,907	944	575	697	.133	.15
Water year 1939-40	665,104	10,900	270	1,817	.346	4.73

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records at Kankakee power plant.
Note.- State-discharge relation affected by ice Dec. 27 to Feb. 23.

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Iroquois River near Chebanse, Ill.

Location.- Chain gage, lat. 41°00'29", long. 87°49'22", in SW¼ sec. 10, T. 29 N., R. 13 W., at highway bridge 3 miles downstream from Beaver Creek, 4½ miles east of Chebanse, and 6 miles upstream from mouth. Datum of gage is 598.27 feet above mean sea level.

Drainage area.- 2,120 square miles.

Records available.- April 1923 to September 1940.

Average discharge.- 17 years, 1,514 second-feet.

Extremes.- Maximum discharge observed during year, 6,080 second-feet May 4 (gage height, 7.68 feet); minimum discharge, 14 second-feet Sept. 30 (gage height, 0.72 foot).

1923-40: Maximum discharge observed, 27,000 second-feet May 13, 1933 (gage height, about 18.1 feet); minimum observed, 11 second-feet Aug. 6-8, 1934 (gage height, 0.59 foot).

Maximum stage known, about 19.6 feet in spring of 1913 (discharge, 34,000 second-feet).

Remarks.- Records good except those for periods of ice effect, which are fair. Gage read twice daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	54	107	103	32	61	*536	536	1,070	1,650	434	65	65
2	52	96	96	32	69	635	464	3,830	1,480	441	58	63
3	54	93	103	*32	72	1,500	418	5,660	1,330	372	52	56
4	54	89	114	34	89	2,100	372	5,940	1,070	306	48	50
5	52	83	129	35	100	2,800	328	5,140	955	239	48	46
6	50	79	156	35	110	3,400	328	4,180	790	213	39	46
7	48	76	160	37	110	3,200	328	3,390	685	198	63	27
8	50	72	152	37	103	1,940	395	2,740	610	198	69	39
9	50	83	140	37	118	1,190	585	2,340	560	152	61	43
10	54	79	133	37	118	900	735	1,740	610	144	65	39
11	69	79	129	37	129	735	685	1,330	1,260	129	56	44
12	114	79	125	39	180	610	685	1,070	2,540	125	52	44
13	140	100	114	41	200	512	685	900	3,720	129	54	50
14	125	114	107	43	255	441	735	790	4,540	129	56	39
15	107	118	110	46	350	395	900	735	4,300	125	56	39
16	93	118	100	54	395	395	955	635	3,060	114	54	41
17	76	110	100	72	395	418	955	610	1,940	125	54	41
18	69	103	96	83	350	395	1,130	560	1,260	125	63	39
19	63	103	*93	96	328	395	1,480	560	1,010	122	63	30
20	58	89	93	96	328	372	1,740	845	790	129	63	30
21	58	100	93	89	441	395	1,560	1,190	685	122	63	25
22	58	96	96	76	735	395	1,190	1,130	585	114	56	25
23	54	96	96	69	845	350	955	955	488	103	46	28
24	54	96	100	65	790	306	790	790	441	89	54	24
25	61	96	93	61	735	284	685	685	395	76	52	27
26	67	103	96	58	585	263	610	685	372	76	50	30
27	83	103	83	58	464	255	536	1,070	328	83	96	25
28	96	103	69	58	395	255	488	1,740	441	100	129	25
29	103	103	56	58	395	306	464	1,940	418	100	118	20
30	93	100	44	*58	-	*395	441	1,840	395	76	100	19
31	114	-	35	58	-	560	-	1,650	-	65	89	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,273	140	48	73.3	0.035	0.04
November	2,866	118	72	95.5	.045	.05
December	3,214	160	35	104	.049	.06
Calendar year 1939	602,118	15,500	35	1,650	.778	10.56
January	1,663	96	32	53.6	.025	.03
February	9,245	845	61	319	.150	.16
March	26,633	3,400	255	859	.405	.47
April	22,158	1,740	328	739	.349	.39
May	57,740	5,940	560	1,863	.879	1.01
June	38,708	4,540	328	1,290	.608	.68
July	4,963	464	65	160	.075	.09
August	1,992	129	39	64.3	.030	.03
September	1,119	65	19	37.3	.018	.02
Water year 1939-40	172,574	5,940	19	472	.223	3.03

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 22 to Mar. 7.

Mazon River near Coal City, Ill.

Location.- Water-stage recorder, lat. 41°17'10", long. 88°21'35"' in SW¼SW¼ sec. 31, T. 33 N., R 8 E., just downstream from bridge on U. S. Highway 52, a quarter of a mile downstream from Johnny Run and 4 miles west of Coal City. Prior to Apr. 30, wire-weight gage at same site and datum.

Drainage area.- 470 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 1,090 second-feet Apr. 30 (gage height, 5.07 feet); no flow at times.

Remarks.- Records good except those for period of ice effect or no gage-height record, which are poor. Gage read twice daily to Apr. 30.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.9	0	2.3	3.2	2.8	45	3.6	250
2.0	.5	2.4	6.9	3.0	79	3.8	331
2.1	1.0	2.5	12.6	3.2	124	4.0	424
2.2	1.7	2.6	21	3.4	181	4.5	700

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0				0.9	2.1	530	110	72	0	14.9
2		0				.9	2.2	712	90	42	0	6.9
3		0				9.5	2.1	475	75	26	0	3.0
4		0		(*)		19.0	2.1	314	65	17.3	0	1.3
5		0				3.5	2.0	225	55	11.3	0	1.0
6		0				3.2	2.8	169	48	7.9	0	.8
7		0				3.6	4.1	124	41	5.6	0	.5
8		0			.1	2.1	10.1	110	38	4.1	0	.4
9		.2				1.5	10.7	90	45	3.5	0	.4
10		1.0				1.2	10.7	72	66	3.2	0	.4
11		2.1				.9	10.1	61	56	2.8	0	.3
12		1.2				.8	7.9	48	68	2.2	0	.3
13		1.3				.5	8.9	42	83	1.9	0	.2
14		.7				.6	8.4	38	87	1.7	0	.2
15		1.2			.4	.6	6.9	36	66	1.4	0	.2
16		.8	0.1	0.1	1.0	.6	5.6	35	53	1.2	0	.1
17		2.6			1.4	.6	6.4	30	38	.8	0	.1
18		1.9			1.4	.5	10.7	25	29	.8	0	.1
19		1.2			1.4	.5	19.0	25	29	.6	0	.1
20		1.2			1.0	.5	24	28	26	.4	0	.1
21		1.2			.9	.5	14.1	25	16.5	.2	0	0
22		1.1			.9	.5	16.5	24	11.3	.1	0	0
23		1.1			.9	.5	13.3	23	9.5	0	0	0
24		1.2			.9	.5	11.3	22	7.4	0	0	0
25		.1			.9	.5	11.3	24	6.9	0	0	0
26		.1			.9	2.0	9.5	66	6.4	0	0	0
27		.1			.9	2.0	7.9	277	5.6	0	0	0
28		.1			.9	2.0	6.9	266	90	0	71	0
29		.1			.9	2.0	10.1	211	297	0	51	0
30		.1			-	*2.0	544	160	151	0	44	0
31		-			-	2.0	-	129	-	0	30	0

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	0	0	0	0	0	0
November	20.6	2.6	0	.69	.0015	.002
December	3.1	.1	.1	.10	.00021	.0002
Calendar year	-	-	-	-	-	-
January	3.1	.1	.1	.10	.00021	.0002
February	16.1	1.4	.1	.56	.0012	.001
March	66.2	19.0	.5	2.14	.0046	.005
April	801.7	544	2.0	26.7	.057	.06
May	4,416	712	22	142	.302	.35
June	1,769.6	297	5.6	59.0	.126	.14
July	207.0	72	0	6.68	.014	.02
August	196.0	71	0	6.32	.013	.02
September	31.3	14.9	0	1.04	.0022	.002
Water year 1939-40	7,530.7	712	0	20.6	.044	.60

Peak discharge.- Apr. 30 (5 p.m.) 1,090 sec.-ft.; May 2 (3 a.m.) 606 sec.-ft.; May 27 (7 p.m.) 323 sec.-ft.; June 29 (6:45 a.m.) 327 sec.-ft.

* Winter discharge measurement made on this day.

Note.- No gage-height record Sept. 6-30; discharge computed on basis of weather records and recorded range in stage. Stage-discharge relation affected by ice Nov. 25 to Mar. 25.

Fox River at Wilmot, Wis.

Location.- Wire-weight gage, lat. 42°30'40", long. 88°10'45", in SW¼ sec. 30, T. 1 N., R. 20 E., 400 feet above Wilmot Dam, 1 mile north of Wisconsin-Illinois State line, and 6 miles upstream from Fox chain of lakes.

Drainage area.- 880 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 3,150 second-feet Aug. 29 (gage height, 7.84 feet); minimum observed, 54 second-fset Dec. 30, Jan. 2, 29 (gage height, 4.65 feet).

Remarks.- Records good above 500 second-feet and fair below. Control is a broad-crested concrete dam over which no ice forms during winter. Gage read twice daily.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

4.6	38	5.6	541	7.5	2,490
4.8	107	6.0	819	8.0	3,690
5.0	195	6.5	1,210		
5.3	355	7.0	1,720		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	67	186	124	77	92	128	607	471	403	1,500	277	2,300
2	60	181	167	57	81	128	675	541	344	1,400	225	1,980
3	100	177	136	77	88	128	819	641	256	1,300	256	1,720
4	92	167	149	85	96	107	819	675	235	1,050	298	1,500
5	107	163	167	64	77	141	782	641	186	930	272	1,210
6	115	158	141	64	107	132	675	574	177	819	215	1,050
7	88	141	136	85	92	132	574	541	145	746	177	856
8	92	111	154	64	107	167	574	477	132	607	141	746
9	92	145	149	77	100	177	607	403	158	509	132	607
10	85	167	158	92	107	172	452	391	149	385	141	574
11	77	132	124	85	100	158	509	373	181	304	141	477
12	77	92	141	92	92	177	477	309	195	287	111	391
13	100	132	132	81	103	158	391	293	235	225	141	367
14	103	149	136	107	100	149	373	277	266	190	136	344
15	96	158	115	107	107	167	315	277	266	167	167	344
16	100	167	132	132	107	177	315	287	277	190	167	321
17	92	167	136	96	111	240	332	321	245	158	158	321
18	100	177	100	85	107	321	415	277	225	141	230	287
19	107	195	124	88	96	403	471	326	220	145	293	256
20	88	163	141	96	115	415	427	397	200	124	266	264
21	107	163	64	107	107	415	344	421	163	124	210	266
22	100	154	100	85	107	277	315	452	186	100	149	250
23	100	132	141	107	107	272	309	421	440	115	177	215
24	115	186	120	96	132	245	272	391	1,070	92	177	277
25	158	136	96	100	107	256	277	332	1,400	88	332	397
26	141	132	92	107	107	277	235	321	1,300	132	894	391
27	186	103	100	85	136	245	205	321	1,300	338	1,720	332
28	205	132	115	88	141	287	177	379	1,300	367	2,780	261
29	181	115	124	57	107	344	154	434	1,500	326	3,150	282
30	210	132	70	92	-	782	293	440	1,500	315	2,910	235
31	215	-	96	85	-	819	-	415	-	304	2,690	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	3,556	215	60	115	0.131	0.15
November	4,513	195	92	150	.170	.19
December	3,930	186	64	127	.144	.17
Calendar year	-	-	-	-	-	-
January	2,720	132	57	87.7	.100	.12
February	3,036	141	77	105	.119	.13
March	7,996	819	107	258	.293	.34
April	13,190	819	154	440	.500	.56
May	12,819	675	277	414	.470	.54
June	14,654	1,500	132	488	.555	.62
July	13,480	1,500	88	435	.494	.57
August	19,133	3,150	111	617	.701	.81
September	18,818	2,300	215	627	.712	.79
Water year 1939-40	117,845	3,150	57	322	.366	4.99

Fox River at Johnsburg, Ill.

Location.- Water-stage recorder, lat. 42°22'35", long. 88°14'15", in SW¼SW¼ sec. 18, T. 45 N., R. 9 E., at highway bridge in Johnsburg, 5 miles upstream from dam of Illinois Division of Waterways. Datum of gage is 735.00 feet above mean sea level (general adjustment of 1929). Prior to Dec. 14, wire-weight gage at same site and datum.

Records available.- October 1939 to September 1940 (gage heights only).

Extremes.- Maximum gage height during year, 2.27 feet Sept. 1; minimum observed, 0.87 foot Oct. 5.

Remarks.- Stage regulated by dam below station. Prior to Dec. 14, wire-weight gage read twice daily.

Cooperation.- Water-stage recorder inspected by employee of State of Illinois, Department of Public Works and Buildings, Division of Waterways.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.08	1.20	1.58	1.65	1.57	1.67	1.86	1.53	1.42	1.98	1.70	2.25
2	b1.11	1.20	1.60	1.64	1.58	1.67	1.85	1.68	1.40	2.01	1.67	2.24
3	1.14	1.18	1.74	1.63	1.58	1.67	1.76	1.80	1.36	2.00	1.67	2.15
4	1.14	1.22	1.64	1.63	1.58	1.67	1.78	1.80	1.30	1.91	1.69	2.04
5	.90	1.16	1.75	1.63	1.60	1.67	1.78	1.81	1.35	1.87	1.69	1.90
6	1.18	1.17	1.69	1.63	1.61	1.66	1.78	1.86	1.31	1.91	1.73	1.79
7	1.18	1.14	1.36	1.63	1.62	1.66	1.77	1.92	1.35	1.90	1.70	1.62
8	1.14	1.15	1.76	1.63	1.64	1.66	1.75	1.88	1.45	1.89	1.67	1.64
9	1.21	1.14	1.68	1.63	1.65	1.67	1.71	1.80	1.47	1.84	1.67	1.72
10	1.26	1.10	1.68	1.64	1.66	1.68	1.67	1.75	1.50	1.78	1.65	1.68
11	1.11	1.28	1.72	1.64	1.67	1.68	1.63	1.68	1.56	1.76	1.65	1.67
12	1.15	1.28	1.57	1.65	1.67	1.67	1.48	1.41	1.56	1.70	1.64	1.71
13	1.28	1.35	1.60	1.65	1.67	1.62	1.48	1.57	1.60	1.60	1.63	1.70
14	1.24	1.32	1.68	1.72	1.67	1.57	1.43	1.40	1.54	1.51	1.63	1.78
15	1.17	1.28	1.64	1.73	1.67	1.57	1.43	1.37	1.58	1.55	1.63	1.81
16	1.30	1.42	1.62	1.73	1.67	1.58	1.47	1.40	1.61	1.55	1.63	1.82
17	1.29	1.44	1.64	1.73	1.68	1.65	1.55	1.40	1.60	1.53	1.65	1.80
18	1.16	1.49	1.66	1.72	1.68	1.75	1.47	1.41	1.59	1.50	1.65	1.79
19	1.18	1.62	1.46	1.70	1.71	1.80	1.50	1.35	1.65	1.47	1.69	1.79
20	1.20	1.64	1.64	1.69	1.71	1.80	1.55	1.46	1.65	1.47	1.70	1.77
21	1.24	1.64	1.64	1.68	1.71	1.78	1.45	1.55	1.61	1.45	1.65	1.82
22	1.27	1.56	1.67	1.69	1.69	1.71	1.44	1.62	1.67	1.46	1.72	1.80
23	1.30	1.54	1.67	1.68	1.69	1.62	1.49	1.59	1.74	1.45	1.71	1.78
24	1.26	1.65	1.67	1.68	1.70	1.54	1.46	1.59	1.71	1.43	1.68	1.83
25	1.31	1.74	1.68	1.67	1.69	1.48	1.51	1.57	1.75	1.35	1.83	1.83
26	1.32	2.02	1.68	1.65	1.69	1.43	1.48	1.55	1.81	1.46	1.88	1.77
27	1.28	2.08	1.67	1.63	1.69	1.41	1.45	1.46	1.84	1.57	1.83	1.78
28	1.34	1.64	1.67	1.60	1.68	1.45	1.35	1.50	1.75	1.60	1.78	1.80
29	1.20	1.56	1.68	1.58	1.68	1.43	1.25	1.51	1.68	1.62	1.89	1.82
30	1.23	1.66	1.67	1.58	-	1.68	1.25	1.49	1.93	1.73	2.04	1.81
31	1.18	-	1.66	1.58	-	1.81	-	1.45	-	1.76	2.17	-

Fox River at Algonquin, Ill.

Location.- Water-stage recorder above concrete mill dam, lat. 42°09'59", long. 88°17'25", in NW¼ sec. 34, T. 43 N., R. 8 E., 20 feet upstream from Chicago Street Bridge in Algonquin and 400 feet upstream from Crystal Lake outlet. Datum of gage is 729.31 feet above mean sea level (general adjustment of 1929).

Drainage area.- 1,364 square miles.

Records available.- October 1915 to September 1940.

Average discharge.- 25 years, 775 eecond-feet.

Extremes.- Maximum discharge during year, 2,540 second-feet Sept. 2, 3; maximum gage height, 2.86 feet Sept. 2; minimum discharge, 1.3 second-feet Sept. 2? (gage height, 0.52 foot); minimum daily, 24 second-feet Oct. 6.
1915-40: Maximum discharge observed, 8,000 second-feet Mar. 31, 1916 (gage height, 5.3 feet); minimum discharge, 1 second-foot Aug. 23, 1934 (gage height, 0.50 foot); minimum daily, 12 second-feet Aug. 30, 31, 1934.

Remarks.- Records good except those for periods of no gage-height record, which are poor. Flow occasionally regulated at dam at McHenry, 16 miles above station.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

0.7	32	1.3	466	1.9	1,090
.8	74	1.4	562	2.0	1,220
.9	130	1.5	660	2.2	1,500
1.0	200	1.6	760	2.4	1,800
1.1	280	1.7	860	2.6	2,120
1.2	372	1.8	970	2.8	2,450

Discharge, in second-feet, water year October 1939 to September 1340

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	240	190	137	140	200	900	391	591	1,280	400	2,450
2	45	240	200	130	140	200	948	457	466	1,320	372	2,540
3	40	240	200	119	150	200	915	650	372	1,330	354	2,540
4	40	230	200	102	150	200	970	810	326	1,360	354	2,450
5	24	230	210	108	150	200	1,010	710	400	1,320	308	2,360
6	49	230	210	119	150	200	1,020	760	326	1,120	308	2,200
7	32	220	220	119	150	200	1,030	850	179	937	289	2,060
8	40	210	220	119	150	210	1,010	926	102	893	256	1,700
9	53	200	220	102	150	220	994	882	66	860	216	1,210
10	70	200	230	96	150	240	926	790	53	810	208	994
11	40	190	230	113	150	250	948	710	85	830	200	810
12	53	180	230	113	160	250	860	640	108	830	193	611
13	74	180	230	137	160	260	770	690	113	650	186	381
14	124	190	232	193	160	270	700	631	91	419	200	354
15	130	190	216	193	160	290	660	660	119	335	193	372
16	130	200	208	186	160	320	640	660	144	280	193	372
17	140	210	208	179	170	360	660	631	137	200	193	354
18	140	210	200	172	170	390	710	543	119	165	208	335
19	150	210	85	170	170	430	700	391	179	144	216	335
20	160	220	151	170	180	450	680	419	186	137	224	326
21	160	220	158	170	180	470	611	447	158	130	186	354
22	170	220	130	160	180	490	514	582	193	130	216	354
23	180	220	144	160	190	500	438	650	410	119	224	335
24	190	210	168	160	190	500	400	650	621	108	208	372
25	200	210	158	160	200	500	400	611	937	102	344	363
26	210	200	158	150	200	500	391	660	1,160	144	660	317
27	210	200	158	150	200	500	354	680	1,250	165	1,080	298
28	220	200	151	140	200	500	298	660	1,280	165	1,520	308
29	220	200	151	130	200	650	280	680	1,190	165	1,910	326
30	230	190	144	120	-	800	298	690	1,190	224	2,120	326
31	230	-	137	130	-	900	-	660	-	317	2,360	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	3,799	230	24	123	0.090	0.10
November	6,290	240	180	210	.154	.17
December	5,737	237	85	185	.136	.16
Calendar year 1939	178,530	1,680	24	489	.359	4.97
January	4,407	193	96	142	.104	.12
February	4,860	200	140	168	.123	.13
March	11,650	900	200	376	.276	.32
April	21,035	1,030	280	701	.514	.57
May	20,171	926	391	651	.477	.55
June	12,551	1,280	53	418	.306	.34
July	16,989	1,360	102	548	.402	.46
August	15,699	2,360	186	513	.376	.43
September	28,107	2,540	298	937	.687	.77
Water year 1939-40	151,495	2,540	24	414	.304	4.12

Note.- No gage-height record Oct. 15 to Dec. 13, Jan. 19 to Apr. 1; discharge computed on basis of records for station at Wilmot, Wis.

Fox River at Dayton, Ill.

Location.- Float gages above and below dam, lat. 41°23'14", long. 88°47'21", in SE¼ sec. 29, T. 34 N., R. 4 E., at plant of North Counties Hydro-Electric Co. in Dayton, 6 miles upstream from mouth.

Drainage area.- 2,570 square miles.

Records available.- April 1925 to September 1940. November 1914 to February 1925 at site at Wedron, 4 miles upstream.

Average discharge.- 25 years (1915-40), 1,466 second-feet.

Extremes.- Maximum daily discharge during year, 9,900 second-feet Mar. 3; minimum daily, 222 second-feet Nov. 23.

1925-40: Maximum daily discharge, 19,900 second-feet Jan. 25, 1938; minimum daily, 1 second-foot Aug. 29, 1934, when plant was shut down; lowest minimum daily with plant operating, 145 second-feet Sept. 4, 1918.

Remarks.- Records fair. Discharge computed from records of electrical output of power plant and from flow over dam.

Cooperation.- Records of mean daily elevations of head and tail water, and total daily electrical output furnished by North Counties Hydro-Electric Co., under general supervision of Geological Survey, in connection with a Federal Power Commission project.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	219	585	385	250	372	1,050	869	794	1,150	1,450	342	2,280
2	222	503	406	307	378	7,690	1,100	1,080	954	1,510	368	2,480
3	188	456	372	348	334	9,900	1,440	1,380	776	1,570	464	2,330
4	219	384	344	328	364	5,110	1,380	1,350	786	1,480	454	2,540
5	263	382	322	311	329	3,850	1,400	1,440	622	1,560	431	2,400
6	238	378	373	290	378	1,980	1,360	1,430	637	1,560	461	2,520
7	297	425	385	291	319	2,370	1,470	1,360	622	1,300	393	2,190
8	238	438	372	299	318	2,300	1,660	1,100	920	1,130	378	2,040
9	239	431	378	238	348	1,760	1,650	1,400	722	1,120	383	2,010
10	238	402	361	238	357	1,530	1,540	1,320	941	1,060	406	1,440
11	240	401	378	356	338	1,240	1,480	1,140	807	989	315	1,200
12	261	331	410	369	378	766	1,470	866	848	976	369	954
13	270	331	426	356	406	654	1,320	888	618	1,010	543	815
14	276	324	396	474	398	484	1,180	972	505	802	804	606
15	262	343	397	422	550	864	1,130	1,080	476	612	476	399
16	238	308	363	444	676	970	1,040	962	329	618	362	382
17	239	299	397	415	726	946	1,340	972	378	430	423	501
18	230	330	371	346	648	992	1,890	944	467	416	432	433
19	324	299	391	348	581	1,110	1,870	892	496	385	380	411
20	297	291	435	348	794	1,110	1,500	788	589	328	406	409
21	278	279	324	334	810	1,360	1,040	914	501	263	361	409
22	269	256	279	311	728	1,230	1,180	1,110	458	290	376	391
23	278	222	385	356	693	1,140	1,090	1,160	578	315	334	385
24	239	290	342	357	550	974	868	1,120	1,470	327	340	466
25	300	279	324	332	497	1,100	743	1,140	1,270	286	327	407
26	704	265	279	328	419	1,130	658	1,260	1,370	316	426	409
27	1,160	309	438	328	508	996	734	1,340	1,540	278	926	409
28	799	338	364	291	691	963	582	1,530	1,700	298	1,300	406
29	616	391	338	273	802	856	561	1,360	1,670	228	1,640	372
30	608	373	250	334	-	769	656	1,230	1,410	332	2,120	356
31	660	-	310	371	-	769	-	1,080	-	374	1,990	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	10,909	1,160	188	352	0.137	0.16
November	10,643	585	222	355	.138	.15
December	11,295	438	250	364	.142	.16
Calendar year 1939	458,057	9,820	162	1,255	.488	6.62
January	10,393	474	238	335	.130	.15
February	14,690	810	318	507	.197	.21
March	57,963	9,900	484	1,870	.728	.84
April	36,201	1,890	561	1,207	.470	.52
May	35,402	1,530	788	1,142	.444	.51
June	25,610	1,700	329	854	.332	.37
July	23,613	1,570	228	762	.296	.34
August	18,730	2,120	315	604	.235	.27
September	32,350	2,540	356	1,078	.419	.47
Water year 1939-40	287,799	9,900	222	786	.306	4.15

Vermilion River at Lowell, Ill.

Location.- Chain gage, lat. 41°15'18", long. 89°00'49", in SE¼ sec. 8, T. 32 N., R. 2 E., at highway bridge, a quarter of a mile northwest of Lowell and 10 miles upstream from mouth. Datum of gage is 500.90 feet above mean sea level.

Drainage area.- 1,230 square miles.

Records available.- May 1931 to September 1940.

Extremes.- Maximum discharge observed during year, 2,520 second-feet Mar. 3 (gage height, 4.72 feet); minimum daily, 6 second-feet Jan. 4, 5, 24; minimum gage height, 1.22 feet Sept. 23-26.

1931-40: Maximum discharge observed, 22,200 second-feet May 12, 1933 (gage height, 10.76 feet); minimum observed, 5.9 second-feet Aug. 2-4, 1934 (gage height, 1.13 feet).

Highest stage known, 16 feet during ice jam, date unknown.

Remarks.- Records good except those for periods of ice effect, which are fair. Gage read twice daily. Auxiliary wire-weight gage at Oglesby, 4 miles downstream, used during periods of ice effect.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.2	6.8	1.8	90	2.8	560
1.3	9.5	2.0	145	3.0	710
1.4	16.5	2.2	220	3.5	1,140
1.5	32	2.4	315	4.0	1,640
1.6	50	2.6	430	4.5	2,230

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.9	9.5	16.5	a8	9	200	50	670	184	58	7.7	43
2	9.2	9.5	19.6	a7	11	300	48	830	162	46	7.4	24
3	9.2	9.5	16.5	a7	17	*1,980	56	960	145	34	7.0	23
4	9.2	9.5	16.5	a6	a16	1,230	58	915	133	32	8.9	18.0
5	9.2	8.9	15.2	*6	15	870	56	710	115	29	15.2	13.3
6	8.6	9.2	15.2	7	13	790	41	525	98	26	9.2	10.7
7	8.3	9.5	15.2	a7	12	595	52	525	84	23	8.0	9.5
8	8.3	9.5	15.2	8	11	388	56	430	76	23	7.7	9.2
9	8.9	10.3	14.2	10	14	285	48	348	76	21	7.7	11.8
10	8.9	12.5	13.3	9	11	208	52	256	80	18.0	7.4	12.5
11	9.5	12.5	14.2	10	a70	204	56	242	300	16.5	7.7	11.8
12	9.5	13.3	12.5	12	250	220	54	200	166	13.3	7.7	9.9
13	9.2	12.5	13.3	12	210	166	58	180	1,000	11.5	10.7	8.9
14	8.3	11.2	15.2	a70	50	85	56	166	1,280	10.7	11.2	8.3
15	8.3	11.2	11.2	80	180	100	54	170	1,000	9.5	26	8.3
16	8.0	12.5	11.2	32	220	75	52	159	870	9.5	10.3	8.0
17	8.3	12.5	11.2	16	250	a80	60	142	630	10.3	9.9	7.7
18	8.3	12.5	11.8	8	a240	88	88	130	430	10.3	10.7	7.7
19	8.3	13.3	11.8	9	220	88	92	127	342	9.5	9.9	8.3
20	8.3	12.5	12.5	11	200	76	90	139	238	8.5	11.8	8.0
21	8.9	12.5	13.3	a9	180	68	90	162	192	8.5	30	7.7
22	8.9	12.5	12.5	7	140	60	102	184	156	8.3	16.5	7.4
23	8.9	12.5	12.5	7	80	62	100	184	121	8.3	14.2	7.2
24	8.9	12.5	12.5	6	65	50	90	170	95	8.3	11.8	7.2
25	10.7	11.8	11.8	7	65	48	80	148	80	7.7	12.5	7.2
26	12.5	14.2	12.5	8	65	39	68	164	72	7.4	26	7.2
27	70	12.5	11.2	8	200	48	64	270	62	8.0	229	7.4
28	30	13.3	a10	a7	a220	43	58	354	86	7.4	162	7.7
29	14.2	12.5	a10	7	220	46	54	285	84	8.0	260	7.4
30	10.7	12.5	a9	7	-	48	670	256	72	8.3	166	7.7
31	10.3	-	a8	8	-	48	-	216	-	7.7	82	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	369.7	70	8.0	11.9	0.0097	0.01
November	348.7	14.2	8.9	11.6	.0094	.01
December	405.6	19.6	8	13.1	.011	.01
Calendar year 1939	245,425.2	8,490	7.6	672	.546	7.42
January	416	80	6	13.4	.011	.01
February	3,254	250	9	112	.091	.10
March	8,588	1,980	39	277	.225	.28
April	2,553	670	41	85.1	.069	.08
May	10,237	960	127	330	.268	.31
June	8,429	1,280	62	281	.228	.25
July	508.1	58	7.4	16.4	.013	.02
August	1,212.1	260	7.0	39.1	.032	.04
September	336.0	43	7.2	11.2	.0091	.01
Water year 1939-40	36,657.2	1,980	6	100	.081	1.11

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated or computed on basis of backwater diagram.
Note.- Stage-discharge relation affected by ice Dec. 28 to Mar. 2, Mar. 14-17.

Bureau Creek at Princeton, Ill.

Location.- Wire-weight gage, lat. 41°22'02", long. 89°29'52", in SW¼SE¼ sec. 18, T. 16 N., R. 9 E., at bridge on U. S. Highways 6 and 34, half a mile downstream from Epperson Run and 1½ miles west of Princeton. Prior to July 17, wire-weight gage at bridge 100 feet downstream and at datum 30.00 feet lower.

Drainage area.- 186 square miles.

Records available.- March 1936 to September 1940.

Extremes.- Maximum discharge during year, 3,680 second-feet Aug. 8 (gage height, 11.66 feet, from graph based on observer's readings); no flow during month of January.
1936-40: Maximum discharge, 11,800 second-feet Jan. 24, 1938 (gage height, 15.88 feet, present datum, from graph based on gage readings); no flow during month of January 1940.

Remarks.- Records good except those below 5 second-feet, which are poor. Gage read twice daily.

Cooperation.- Results of two discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.6	7.9	7.4		0.2	360	15	20	9.1	6.0	0.5	17
2	4.6	6.7	7.0		1.7	900	14	25	8.2	4.5	.5	9.6
3	4.2	5.6	6.0		1.2	2,890	15	26	6.9	3.4	.5	6.0
4	3.9	4.6	6.4		.7	*1,220	14	23	5.6	2.7	1.3	3.8
5	3.5	4.2	6.0		1.8	305	14	20	4.5	1.9	.6	2.4
6	3.5	3.5	5.6		3	161	12	19	3.8	1.9	.7	1.8
7	3.5	3.3	5.6		3	172	15	16	3.4	1.6	.3	1.5
8	3.9	3.1	4.6		*2	140	19	14	15	1.4	.4	1.3
9	6.7	6.0	4.6		1.0	114	32	12	75	1.3	.6	9.6
10	5.0	10	4.2		.9	96	29	15	37	1.2	.7	2.4
11	4.2	5.0	3.9		3	72	29	14	59	1.6	1.2	1.2
12	3.3	4.6	3.9		22	49	27	13	172	.9	57	.8
13	2.8	3.9	3.9		13	52	22	11	109	.8	8.2	.7
14	2.0	3.9	3.5		6	52	20	8.7	63	.8	4.5	.6
15	1.7	3.9	3.5		8	46	20	9.1	42	.7	20	.5
16	2.0	3.9	3.5		40	29	19	8.7	30	.8	6.0	.4
17	1.6	4.2	3.3		280	33	25	7.8	29	.6	3.4	.4
18	1.2	3.5	3.5		250	37	25	7.8	20	.6	14	.3
19	1.6	3.5	3.1		180	35	38	10	15	.7	27	.6
20	1.7	3.5	3.1		70	28	29	9.1	47	.7	7.8	.7
21	2.2	3.5	3.5		35	25	27	9.1	22	.6	3.8	.6
22	1.8	3.5	*2.6		30	24	24	8.7	17	.5	2.0	.5
23	1.5	3.5	2.6		*16	21	22	7.8	14	.6	1.5	.6
24	.8	6.4	2.2		25	18	20	6.9	40	.6	1.2	.7
25	1.0	4.6	2.8		16	15	18	8.7	38	.6	1.4	.6
26	2.0	4.2	3.1		15	15	16	12	22	.5	1.5	.4
27	23	3.9	3.1		8	14	14	12	15	5.6	9.6	.6
28	34	3.7	3.1		16	15	13	15	14	.7	80	.6
29	19	3.9	3.1		30	17	12	12	8.2	.7	35	.5
30	16	4.6	3.1		-	17	11	11	7.8	.6	96	.5
31	11	-	1.1		-	15	-	10	-	.6	34	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	177.8	34	0.8	5.74	0.031	0.04
November	136.6	10	3.1	4.55	.024	.03
December	122.9	7.4	1.1	3.96	.021	.02
Calendar year 1939	44,248.0	6,150	.8	121	.651	8.85
January	0	0	0	0	0	0
February	1,078.5	280	.2	37.2	.200	.22
March	6,987	2,890	14	225	1.21	1.40
April	610	38	11	20.3	.109	.12
May	402.4	26	6.9	13.0	.070	.08
June	952.5	172	3.4	31.8	.171	.19
July	45.7	6.0	.5	1.47	.0079	.009
August	421.2	96	.3	13.6	.073	.08
September	67.2	17	.3	2.24	.012	.01
Water year 1939-40	11,001.8	2,890	0	30.1	.162	2.20

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Jan. 1 to Feb. 29.

West Bureau Creek at Wyanet, Ill.

Location.- Water-stage recorder, lat. 41°21'54", long. 89°34'08", at northeast corner of sec. 21, T. 16 N., R. 8 E., on highway bridge half a mile east of Wyanet.

Drainage area.- 83.3 square miles.

Records available.- March 1936 to September 1940.

Extremes.- Maximum discharge during year, 2,060 second-feet Mar. 2 (gage height, 7.74 feet); no flow on numerous days.
1936-40: Maximum discharge, 5,910 second-feet Jan. 24, 1938 (gage height, 12.90 feet, from reading at flood crest); no flow on several days in 1936, 1940.
Maximum stage known, 14.5 feet Oct. 11, 1931.

Remarks.- Records fair except those below 10 second-feet, which are poor. Discharge below 10 second-feet computed on basis of once-daily readings of wire-weight gage.

Cooperation.- Recorder graph and results of two discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	4.5	5.0	0.5	0.7	602	4.3	6.4	4.9	0.5	0	0
2	2.8	3.4	5.0	.5	.5	737	4.3	10	4.3	.4	0	0
3	2.6	3.4	5.0	0	.5	*1,120	4.3	7.3	2.5	.3	0	0
4	2.3	3.4	3.4	0	.5	196	4.6	4.9	2.2	.3	0	0
5	2.1	2.8	3.4	0	0	102	4.6	3.7	1.9	.3	0	0
6	2.0	2.8	3.4	0	0	77	4.0	3.7	1.9	.1	0	0
7	2.8	2.8	2.8	0	0	68	4.0	3.4	2.8	0	0	0
8	2.6	2.8	2.8	0	*.2	50	14	2.8	28	0	0	0
9	5.0	2.8	2.8	0	0	37	11	2.8	11	0	0	0
10	4.7	4.5	3.4	0	0	27	6.2	2.8	7.3	0	0	.9
11	3.4	5.6	2.8	0	0	19	10	6.0	27	.1	0	.3
12	2.1	4.5	2.8	0	7.7	12	8.2	4.6	85	0	0	0
13	1.8	3.4	2.8	0	8.0	22	7.3	2.8	38	0	.1	0
14	1.6	3.4	2.3	0	8.4	18	7.3	2.0	23	0	0	0
15	1.8	3.4	2.3	0	13	12	5.5	2.3	15	0	.9	0
16	1.6	3.4	2.3	0	36	9.6	5.5	3.4	11	0	.3	0
17	1.4	2.8	2.3	0	64	12	4.9	3.4	14	0	.1	0
18	1.2	2.8	2.0	*0	36	14	22	2.3	11	0	11	0
19	.9	2.8	2.8	0	13	12	15	4.0	6.0	0	1.5	0
20	1.2	2.8	2.8	0	12	10	11	3.4	4.0	0	.5	0
21	1.8	2.8	2.0	0	*13	8.2	8.2	2.8	2.8	0	.1	0
22	1.2	2.8	*1.2	0	14	8.6	7.3	4.0	2.2	0	0	0
23	.7	2.8	.9	0	16	10	5.5	2.8	.9	0	0	0
24	.2	2.8	.9	0	16	5.2	6.4	2.0	2.5	0	0	0
25	1.2	3.9	.9	0	8.4	5.2	5.5	1.7	1.7	0	.2	0
26	4.6	3.4	.9	0	12	3.7	4.3	4.0	1.7	0	.1	0
27	30	2.8	.9	0	8.4	4.0	4.3	8.6	1.7	.1	16	0
28	9.2	2.8	.9	0	31	4.0	3.1	5.2	2.3	0	1.9	0
29	6.2	2.8	.9	4.2	364	6.0	2.5	5.2	.8	0	.9	0
30	5.0	3.9	.9	1.6	-	4.3	3.7	4.6	.5	0	.5	0
31	5.0	-	.9	1.6	-	4.3	-	4.6	-	0	.1	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	112.9	30	0.2	3.64	0.044	0.05
November	98.9	5.6	2.8	3.30	.040	.04
December	75.1	5.0	.9	2.42	.029	.03
Calendar year 1939	16,945.9	2,510	.2	46.4	.557	7.55
January	8.4	4.2	0	.27	.0032	.004
February	683.3	364	0	23.6	.283	.31
March	3,220.1	1,120	3.7	104	1.25	1.44
April	210.8	22	2.5	7.03	.084	.09
May	127.5	10	1.7	4.11	.049	.06
June	317.9	85	.5	10.6	.127	.14
July	2.1	.5	0	.07	.00084	.0009
August	34.2	16	0	1.10	.013	.02
September	1.2	.9	0	.04	.00048	.0005
Water year 1939-40	4,892.4	1,120	0	13.4	.161	2.19

Peak discharge.- Mar. 2 (4 p.m.) 2,060 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 22 to Feb. 28.

East Bureau Creek near Bureau, Ill.

Location.- Wire-weight gage, lat. 41°20'06", long. 89°22'53", in SW¼SE¼ sec. 30, T. 16 N., R. 10 E., on county road bridge, half a mile downstream from Brush Creek, 2½ miles upstream from mouth, and 3½ miles north of Bureau. Prior to Oct. 1, 1939, gage at same site but at datum 30.00 feet lower.

Drainage area.- 109 square miles.

Records available.- March 1936 to September 1940.

Extremes.- Maximum discharge observed during year, 1,000 second-feet Mar. 3 (gage height, 11.09 feet); no flow on many days.
1936-40: Maximum discharge, 5,680 second-feet Jan. 24, 1938 (gage height, 16.90 feet, from graph based on gage readings), from rating curve extended above 2,300 second-feet; no flow on several days in each year.

Remarks.- Records poor. Gage read twice daily.

Cooperation.- Results of three discharge measurements furnished by Corps of Engineers, U. S. Army.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.3	1.8	2.9		0.3	271	2.3	10	2.1	0.8	0	
2	.3	1.7	2.0		.1	542	2.1	10	1.1	.4	0	
3	.3	1.4	2.0		.1	854	2.8	9.3	.5	.1	0	
4	.2	1.3	2.0		.1	*327	2.5	8.0	.5	.1	0	
5	.2	1.3	2.0		1.3	102	2.1	6.6	.5	.1	0	
6	.1	1.3	1.7		1.3	80	1.6	6.1	.7	.1	0	
7	.1	1.3	1.4		.8	68	6.4	5.0	.7	.1	0	
8	.1	.8	1.4		*.3	54	9.0	4.6	.7	.1	0	
9	.2	.5	1.6		0	40	13	3.6	14	.1	0	
10	.2	2.4	1.4		.1	14	11	4.8	3.2	.1	0	
11	.1	2.1	1.7		.3	10	13	4.3	184	0	0	
12	.1	1.8	1.6		4.6	*8.3	11	3.2	157	0	0	
13	0	1.6	.8		4.4	9.6	10	3.0	58	0	0	
14	0	1.6	1.2		4.0	6.1	9.6	2.5	47	0	1.6	
15	0	1.3	1.6		5.6	20	8.0	2.5	20	0	.6	
16	0	1.3	1.6		11.4	12	7.3	3.2	14	0	0	
17	0	1.4	1.6		10.2	12	17	2.5	10	0	0	
18	0	1.4	1.6		5.6	8.6	24	2.8	10	0	0	
19	0	1.3	1.4		2.9	8.0	23	3.4	6.4	0	0	
20	0	1.2	1.4		3.2	7.0	18	2.5	4.8	0	0	
21	0	1.2	.5		8.1	6.4	14	2.3	3.8	0	0	
22	0	1.2	*.1		10.2	2.8	13	2.1	3.4	0	0	
23	0	1.2	.3		*10.8	1.2	12	1.1	3.0	0	0	
24	.1	1.8	.3		10.8	2.8	10	1.0	3.0	0	0	
25	.2	1.7	.8		6.9	2.7	8.0	1.2	2.7	0	0	
26	1.7	1.7	.3		6.9	4.1	6.4	3.4	2.1	0	0	
27	10.2	1.7	.3		6.9	4.1	5.8	3.4	1.4	0	5.0	
28	4.6	1.2	.5		29	2.7	4.3	2.8	4.3	0	.4	
29	3.1	1.3	.1		117	3.6	5.3	2.8	1.4	0	1.4	
30	2.4	1.7	.3		-	2.3	4.6	2.5	1.1	0	.1	
31	2.1	-	.1		-	2.3	-	2.5	-	0	0	

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	26.6	10.2	0	0.86	0.0079	0.009
November	43.5	2.4	.5	1.45	.013	.01
December	36.5	2.9	.1	1.18	.011	.01
Calendar year 1939	17,736.4	1,570	0	48.6	.443	6.03
January	0	0	0	0	0	0
February	263.2	117	0	9.08	.083	.09
March	2,488.6	854	1.2	80.3	.737	.85
April	277.6	24	1.6	9.25	.083	.09
May	123.0	10	1.0	3.97	.036	.04
June	561.4	164	.5	18.71	.172	.19
July	2.0	.8	0	.06	.00055	.0007
August	9.1	5.0	0	.29	.0027	.003
September	0	0	0	0	0	0
Water year 1939-40	3,831.5	854	0	10.5	.096	1.29

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 31 to Feb. 28 and Mar. 10-13.

Mackinaw River near Green Valley, Ill.

Location.- Wire-weight gage, lat. 40°26'40", long. 89°38'00", in sec. 15, T. 23 N., R. 5 W., at bridge on State Highway 24, 3 miles north of hamlet of Green Valley. Datum of gage is 479.18 feet above mean sea level (general adjustment of 1929). Prior to May 14, chain gage at same site and datum.

Drainage area.- 1,100 square miles.

Records available.- March 1921 to September 1940.

Average discharge.- 19 years, 666 second-feet.

Extremes.- Maximum discharge observed during year, 2,180 second-feet Mar. 3 (gage height, 5.32 feet); minimum discharge, 21 second-feet Sept. 27-30 (gage height, 0.55 foot).
1921-40: Maximum discharge observed, 21,800 second-feet May 19, 1927 (gage height, 14.2 feet, site then in use), from rating curve extended above 16,000 second-feet; minimum discharge, 18 second-feet July 8-11, 1934.

Remarks.- Records good. Gage read twice daily.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet) (Shifting-control method used Aug. 16 to Sept. 30)

Oct. 1 to Mar. 2				Mar. 3 to Sept. 30			
0.7	22	1.6	200	0.5	21	2.2	420
.8	31	1.8	260	.7	38	2.6	545
1.0	58	2.0	320	.8	50	3.0	700
1.2	97	2.2	390	1.0	83	3.5	940
1.4	145	2.5	495	1.4	188	4.0	1,240
				1.8	304	5.0	1,940

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	52	41	35	27	230	110	620	137	50	34	25
2	36	48	43	35	26	478	105	660	126	49	40	25
3	36	46	43	33	24	2,100	108	580	115	46	38	25
4	36	43	42	31	25	2,100	115	480	115	45	33	25
5	36	43	42	31	26	1,500	113	391	105	44	62	24
6	43	41	42	31	26	580	101	348	96	44	79	24
7	39	42	42	31	25	420	96	304	92	43	62	24
8	38	41	42	30	27	362	101	260	83	40	42	23
9	54	41	42	29	26	304	96	232	79	40	36	23
10	43	44	41	29	27	275	103	217	76	39	33	24
11	41	42	41	29	28	246	101	202	79	38	31	34
12	38	42	41	29	135	217	96	188	318	40	29	29
13	38	42	41	30	115	202	96	176	420	37	33	27
14	37	41	39	36	95	188	90	171	260	38	43	24
15	36	41	39	33	91	217	87	171	188	38	168	23
16	36	41	38	29	125	162	85	202	151	40	62	23
17	36	41	38	29	130	159	92	165	131	38	53	23
18	36	42	38	29	130	165	121	153	113	37	45	23
19	36	44	38	29	111	151	126	159	115	36	38	23
20	36	43	38	29	93	142	113	217	92	36	38	23
21	38	43	38	28	80	128	105	182	81	35	50	23
22	36	42	37	28	71	115	105	171	76	35	39	22
23	36	41	37	28	69	110	115	246	76	34	34	22
24	36	41	37	28	65	103	131	188	74	34	30	22
25	39	41	37	28	55	96	115	176	70	34	30	22
26	38	41	37	28	58	92	108	171	69	34	29	22
27	76	41	39	28	65	96	96	179	59	34	28	22
28	130	41	38	28	86	96	92	171	56	34	28	21
29	86	41	37	27	86	110	87	171	56	33	28	21
30	76	41	36	24	-	118	188	159	52	33	27	21
31	55	-	36	25	-	110	-	148	-	33	25	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,413	130	36	45.6	0.041	0.05
November	1,273	52	41	42.4	.039	.04
December	1,220	43	36	39.4	.036	.04
Calendar year 1939	193,918	5,760	36	531	.483	6.55
January	917	35	24	29.6	.027	.03
February	1,947	135	24	67.1	.061	.07
March	11,372	2,100	92	367	.334	.38
April	3,197	188	85	107	.097	.11
May	7,858	660	148	253	.230	.27
June	3,560	420	52	119	.108	.12
July	1,192	50	33	38.5	.035	.04
August	1,347	168	25	43.5	.040	.05
September	712	34	21	23.7	.022	.02
Water year 1939-40	36,008	2,100	21	98.4	.089	1.22

Money Creek above Lake Bloomington, Ill.

Location.- Water-stage recorder and concrete control, lat. 40°37'13", long. 88°54'59", in SE¼SW¼ sec. 18, T. 25 N., R. 3 E., 200 feet north of line between secs. 18 and 19 and 1 mile upstream from Lake Bloomington.

Drainage area.- 45 square miles.

Records available.- June 1933 to September 1940.

Extremes.- Maximum discharge during year, 555 second-feet Mar. 3 (gage height, 4.97 feet); no flow on many days.
1933-40: Maximum discharge, 1,440 second-feet May 9, 1935, Feb. 26, May 2, 1936 (gage height, 7.22 feet); no flow at times in each year.
Maximum stage known, about 9 or 10 feet.

Remarks.- Records good except those for period of doubtful or no gage-height record, which are poor.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Dec. 19-28)

0.5	0	1.4	3.3
.6	.02	1.6	7.2
.7	.06	1.8	14.0
.8	.15	2.0	27
1.0	.58	2.4	75
1.2	1.5	2.8	144

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			0	0.01	0	10	4	6.0	5.7	0.51		
2			.23	0	0	40	4	32	4.6	.35		
3			.25	0	0	140	4	29	3.5	.23		
4			.23	0	0	70	4.4	21	3.0	.16		
5			.17	0	0	40	4.0	15.8	2.7	.07		
6			.15	0	0	30	3.5	13.6	2.5	.02		
7			.11	0	0	20	4.4	12.0	2.3	0		
8			.09	0	0	16	5.5	10.2	2.4	0		
9			.08	0	0	12	4.8	8.9	2.2	0		
10			.07	0	0	10	3.8	8.4	2.0	0		
11			.06	0	b2.0	8	3.5	7.4	2.5	0		
12			.06	0	20	7	3.4	7.7	25	1.7		
13			.06	0	10.6	7	3.5	7.0	15.3	1.4		
14			.04	0	5	6	3.4	7.0	8.6	.51		
15			.04	0	3	6	3.6	8.0	6.5	.21		
16			.05	0	2	6	3.5	6.5	6.9	.08		
17			.06	0	2	5	3.6	5.5	6.7	.02		
18			.05	0	2	5	4.8	5.3	4.2	0		
19			.05	0	1	5	4.6	7.4	3.5	0		
20			.04	0	1	5	4.4	9.2	2.8	0		
21			.04	0	.8	5	4.0	9.5	2.3	0		
22			.03	0	.6	5	3.6	8.0	2.2	0		
23			.03	0	.4	5	3.6	6.7	2.0	0		
24			.03	0	.3	5	4.2	6.5	2.1	0		
25			.02	0	.1	5	3.4	6.5	1.9	0		
26			.02	0	.1	4	3.0	7.0	1.6	0		
27			.03	0	1	4	2.6	6.5	1.2	0		
28			.06	0	3	4	2.5	5.3	1.0	0		
29			.10	0	5	4	2.4	5.1	.78	0		
30			.08	0	-	4	3.1	4.6	.48	0		
31			.05	0	-	4	-	5.1	-	0		

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	0	0	0	0	0	0
November	0	0	0	0	0	0
December	2.38	.25	.02	.077	.0017	.002
Calendar year 1939	10,228.37	823	0	28.0	.622	8.46
January	.01	.01	0	.0003	.00001	.00001
February	59.9	20	0	2.07	.046	.05
March	497	140	4	16.0	.356	.41
April	113.1	5.5	2.4	3.77	.084	.09
May	298.7	32	4.6	9.64	.214	.25
June	128.46	25	.48	4.28	.095	.11
July	5.26	1.7	0	.170	.0038	.004
August	0	0	0	0	0	0
September	0	0	0	0	0	0
Water year 1939-40	1,104.81	140	0	3.02	.067	.92

b Stage-discharge relation affected by ice.

Note.- No gage-height record Feb. 14 to Apr. 3; discharge computed on basis of records for Hickory Creek above Lake Bloomington. Discharge computed from doubtful gage heights June 18 to July 11.

Money Creek at Lake Bloomington, Ill.

Location.- Water-stage recorder in pumping plant just upstream from dam, lat. 40°39'38", long. 88°56'12", in SE¼ sec. 1, T. 25 N., R. 2 E., 2.8 miles upstream from mouth. Datum of gage is 700.00 feet above mean sea level.

Drainage area.- 61 square miles.

Records available.- October 1930 to September 1940.

Average run-off.- 7,035.7 million gallons per year, adjusted (equivalent second-feet, 29.8).

Remarks.- Flow regulated by Lake Bloomington (area of lake at level of crest of spillway, 531 acres). Discharge adjusted for storage and pumpage, but not for evaporation and seepage, and does not include water drawn off by three small diversions.

Cooperation.- Pumpage record furnished by city of Bloomington. Rainfall record (mean of three gages within Creek Basin) furnished by State Water Survey.

Monthly discharge and rainfall, water year October 1939 to September 1940

	Discharge from spillway (million gallons)	Pumpage (million gallons)	Change in contents (Million gallons)	Adjusted for change in reservoir contents and pumpage				Rainfall (inches)
				Run-off (million gallons)	Discharge per square mile: Million gallons per day†	Discharge per square mile: Second-feet†	Run-off (inches)†	
October	0	99.40	-114.6	-15.20	-0.0080	-0.012	-0.01	2.12
November	0	93.55	-100.8	-7.25	-.0040	-.0062	-.007	1.11
December	0	94.97	-91.7	3.27	.0017	.0026	.003	.85
Calendar year 1939	6,616.9	1,135.50	56.3	7,808.82	.351	.543	7.39	31.82
January	0	109.30	-108.7	.60	.0003	.00046	.0005	.83
February	0	99.08	0	99.08	.056	.087	.09	.71
March	113.55	97.80	684.2	895.55	.474	.733	.85	2.14
April	0	91.31	-30.4	60.91	.033	.051	.06	1.94
May	72.44	101.95	37.2	211.59	.112	.173	.20	3.39
June	9.59	108.22	-70.9	46.91	.026	.040	.05	2.22
July	0	113.14	-186.6	-73.46	-.039	-.060	-.07	1.42
August	0	101.21	-155.3	-54.09	-.029	-.045	-.05	2.36
September	0	101.49	-150.6	-49.11	-.027	-.042	-.05	.77
Water year 1939-40	195.58	1,211.42	-288.2	1,118.80	.050	.077	1.07	19.86

† Minus sign indicates that the evaporation and seepage from the reservoir exceeded the inflow.

Hickory Creek above Lake Bloomington, Ill.

Location.- Water-stage recorder and concrete control, lat. 40°38'15", long. 89°57'00", in SE¼ sec. 11, T. 25 N., R. 2 E., 100 yards downstream from an unnamed tributary, a quarter of a mile upstream from backwater from Lake Bloomington, and 3 miles northeast of Hudson. Datum of gage is 716.0 feet above mean sea level.

Drainage area.- 10.1 square miles.

Records available.- October 1938 to September 1940.

Extremes.- Maximum discharge during year, 111 second-feet Mar. 2 (gage height, 2.60 feet), from rating curve extended above 88 second-feet; no flow for several months.
1938-40: Maximum discharge, 350 second-feet Apr. 15, 1939 (gage height, 3.98 feet), from rating curve extended above 88 second-feet; no flow for several months each year.

Remarks.- Records excellent.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

0.06	0	0.5	1.4	1.0	8.6
.1	.02	.6	2.2	1.2	14.0
.2	.12	.7	3.4	1.4	21
.3	.35	.8	4.8	1.7	37
.4	.74	.9	6.5		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					0	3.3	0.29	3.4	0.38			
2					0	23	.26	3.4	.29			
3					0	34	.35	3.4	.23			
4					0	10.6	.21	2.4	.19			
5					0	7.1	.15	1.9	.13			
6					0	4.8	.12	1.6	.06			
7					0	3.5	.35	1.2	.05			
8					0	2.6	.41	1.1	.05			
9					0	1.9	.32	.90	.02			
10					0	1.6	.23	.90	0			
11					4.3	1.2	.26	.74	1.9			
12					5.1	1.1	.19	.65	8.4			
13					1.8	.96	.21	.65	4.2			
14					.65	.84	.19	.68	2.7			
15					.65	.74	.21	.79	1.8			
16					.69	.74	.12	.61	1.3			
17					.45	.79	.23	.49	1.0			
18					.21	.84	.26	.53	.74			
19					.13	.74	.19	.96	.49			
20					.31	.69	.17	.90	.29			
21					.45	.61	.13	.79	.21			
22					.26	.45	.13	.84	.13			
23					.13	.35	.17	.74	.12			
24					.08	.26	.15	.69	.12			
25					0	.26	.12	.69	.02			
26					0	.29	.09	.79	0			
27					2.3	.49	.05	.65	0			
28					1.5	.61	.04	.61	0			
29					3.1	.61	.12	.53	0			
30					-	.45	.26	.49	0			
31					-	.41	-	.49	-			

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	0	0	0	0	0	0
November	0	0	0	0	0	0
December	0	0	0	0	0	0
Calendar year 1939	1,791.65	144	0	4.91	.486	6.59
January	0	0	0	0	0	0
February	22.11	5.1	0	.762	.075	.08
March	105.83	34	.26	3.41	.338	.39
April	5.98	.41	.04	.199	.020	.02
May	34.51	3.4	.49	1.11	.110	.13
June	24.82	8.4	0	.827	.082	.09
July	0	0	0	0	0	0
August	0	0	0	0	0	0
September	0	0	0	0	0	0
Water year 1939-40	193.25	34	0	.528	.052	.71

Peak discharge.- Feb. 11 (5 p.m.) 14.3 sec.-ft.; Mar. 2 (11:30 p.m.) 111 sec.-ft.; June 11 (11 p.m.) 15.7 sec.-ft.

Spoon River at Seville, Ill.

Location.- Wire-weight gage, lat. 40°29'10", long. 90°20'34", in SW¼ sec. 24, T. 6 N., R. 1 E., at highway bridge in Seville. Datum of gage is 467.78 feet above mean sea level.

Drainage area.- 1,600 square miles.

Records available.- July 1914 to September 1940.

Average discharge.- 26 years, 961 second-feet.

Extremes.- Maximum discharge observed during year, 8,060 second-feet Mar. 3 (gage height, 17.30 feet); minimum discharge, 9.2 second-feet Sept. 29; minimum gage height, 2.89 feet Oct. 3.

1914-40: Maximum discharge observed, 28,900 second-feet Aug. 22, 1927 (gage height, 30.5 feet), from rating curve extended above 18,000 second-feet; minimum observed, 3.8 second-feet July 31, Aug. 27-29, 1914 (gage height, 1.35 feet).

Remarks.- Records good except those below 40 second-feet and those for period of ice effect, which are fair. Gage read twice daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	94	55	19	20	210	206	299	129	129	63	78
2	23	69	62	19	18	2,390	192	266	112	96	91	60
3	24	64	57	18	20	7,710	192	250	82	59	140	47
4	24	59	62	*17	22	*7,080	192	220	74	45	68	36
5	23	55	62	14	22	7,150	179	206	64	38	250	32
6	22	54	59	14	22	5,050	159	179	62	31	515	28
7	24	54	57	16	22	1,410	166	161	64	31	402	26
8	24	52	55	15	24	1,010	192	147	70	29	179	24
9	26	51	54	15	24	865	220	138	62	27	79	22
10	28	57	54	16	26	775	220	133	64	26	62	20
11	24	59	52	16	44	655	220	124	82	25	54	129
12	24	64	51	18	123	575	220	112	333	84	52	129
13	31	72	*50	18	94	515	206	102	266	57	54	81
14	31	65	49	24	102	368	179	98	299	57	76	45
15	29	58	48	16	162	333	166	96	220	39	79	33
16	28	59	49	19	240	385	164	89	152	32	96	30
17	26	55	51	20	330	495	166	87	112	30	166	26
18	26	54	49	18	475	515	220	110	79	27	1,310	24
19	25	59	51	18	510	515	316	124	64	25	1,270	21
20	26	196	51	16	375	438	282	112	62	24	538	18
21	26	132	47	18	225	368	250	129	58	21	240	16
22	25	64	46	17	130	350	220	159	52	21	116	16
23	25	54	49	18	76	299	316	98	54	21	74	15
24	27	54	44	18	78	235	385	89	57	20	56	14
25	36	52	40	18	69	206	385	159	47	20	102	13
26	36	51	46	18	59	192	316	316	45	19	90	12
27	1,010	51	46	18	57	250	299	266	38	22	150	12
28	1,410	46	45	20	56	266	250	206	41	21	49	11
29	510	45	39	19	102	282	220	152	38	20	212	10
30	255	47	28	20	-	250	235	135	36	60	212	11
31	135	-	18	20	-	235	-	127	-	116	102	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	4,007	1,410	22	129	0.081	0.09
November	1,946	196	45	64.9	.041	.05
December	1,526	62	18	49.2	.031	.04
Calendar year 1939	231,988	7,640	18	636	.398	5.38
January	550	24	14	17.7	.011	.01
February	3,527	510	18	122	.076	.08
March	41,377	7,710	192	1,335	.834	.96
April	6,933	385	159	231	.144	.16
May	4,889	316	87	158	.099	.11
June	2,918	333	36	97.3	.061	.07
July	1,272	129	19	41.0	.026	.03
August	6,947	1,310	49	224	.140	.16
September	1,039	129	10	34.6	.022	.02
Water year 1939-40	76,931	7,710	10	210	.131	1.78

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 29 to Mar. 1.

Brush Creek at Lake Bracken, near Galesburg, Ill.

Location.- Water-stage recorder and 23 V-notch weirs in lake outlet, lat. 40°51'30", long. 90°20'57", in NE¼ sec. 14, T. 10 N., R. 1 E., in outlet channel below spillway of Lake Bracken, 6 miles south of Galesburg. Lake gage is staff gage on intake tower near pumping plant, across lake and about 1 mile northwest of lake outlet. Datum of lake gage is 670.00 feet above mean sea level (general adjustment of 1912).

Drainage area.- 9.14 square miles.

Records available.- April 1932 to September 1940.

Remarks.- Records fair. Flow regulated by Lake Bracken (area at level of crest of lake spillway, 700 feet above mean sea level, 184 acres). Records adjusted for change in contents and leakage from lake around outlet channel, as determined from readings on lake gage, but not for evaporation and seepage losses.

Cooperation.- Pumpage and lake level records furnished by Chicago, Burlington & Quincy R. R. Rainfall record (mean of three gages within basin) furnished by State Water Survey.

Monthly discharge and rainfall, water year October 1939 to September 1940

	Discharge from spillway (million gallons)†	Pumpage (million gallons)	Change in contents (million gallons)	Adjusted for change in reservoir contents‡			Run-off (inches)	Rainfall (inches)
				Run-off (million gallons)	Discharge per square mile			
					Million gallons per day	Second-feet		
October	0.78	36.26	+19.1	56.14	0.198	0.306	0.35	4.11
November	.77	34.92	-28.1	7.49	.027	.042	.05	0.98
December	.75	36.29	-31.3	5.74	.020	.031	.04	0.50
Calendar year 1939	240.39	404.42	14.4	659.21	.198	.306	4.15	30.71
January	.69	44.00	-39.0	5.69	.020	.031	.04	1.09
February	.61	36.67	+13.0	50.28	.190	.294	.39	0.13
March	.86	37.83	+123.3	161.99	.572	.885	1.08	1.60
April	.85	34.10	0.0	34.95	.127	.196	.28	2.87
May	.87	33.56	-14.5	20.03	.071	.110	.13	1.87
June	.80	33.74	-42.5	-7.96	-.028	-.045	-.05	1.38
July	.73	37.70	-57.5	-19.07	-.067	-.104	-.12	1.35
August	.66	38.59	-34.6	4.45	.016	.025	.03	3.17
September	.56	36.88	-33.1	-15.96	-.056	-.090	-.10	0.53
Water year 1939-40	8.93	440.04	-145.2	303.77	.091	.141	1.68	19.46

† Including leakage through dam around station, varying between 0.01 and 0.036 million gallons per day, depending on stage of lake.
‡ Figures with minus sign indicate that the evaporation and seepage from the reservoir exceeded the inflow.

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Sangamon River at Monticello, Ill.

Location.- Chain gage, lat. 40°01'40", long. 88°35'15", in SW¼ sec. 12, T. 18 N., R. 5 E., at Illinois Central R. R. bridge half a mile west of Monticello. Datum of gage is 625.89 feet above mean sea level (general adjustment of 1929).

Drainage area.- 550 square miles.

Records available.- February 1908 to December 1912, June 1914 to September 1940.

Average discharge.- 30 years, 395 second-feet.

Extremes.- Maximum discharge observed during year, 3,000 second-feet Mar. 5 (gage height, 11.88 feet); minimum discharge, 0.4 second-feet Sept. 22 (gage height, 2.57 feet).
1908-12, 1914-40: Maximum discharge observed, 15,400 second-feet Oct. 4, 1926 (gage height, 18.4 feet); minimum discharge, that of Sept. 22, 1940.

Remarks.- Records fair except those for period of ice effect or doubtful gage-height record, which are poor. Gage read twice daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.6	15	18	10	2.0	276	199	975	199	66	8.4	6.6
2	9.6	14	23	*10	2.5	299	167	1,500	177	60	8.0	5.7
3	8.8	14	21	10	5	731	157	1,640	167	56	7.6	5.4
4	8.4	12	20	9	6	1,430	147	1,370	137	52	7.2	5.1
5	8.0	12	19	9	6	2,870	127	906	127	49	6.8	4.8
6	7.2	12	27	9	7	2,370	105	656	118	43	81	4.5
7	6.0	11	24	9	8	845	109	533	114	41	49	3.6
8	7.2	10	21	9	9	434	118	434	109	39	18	3.3
9	9.6	9.6	20	8	14	390	137	376	105	38	11	3.0
10	46	18	19	8	16	299	137	336	101	37	9.6	2.6
11	39	20	18	8	20	287	147	299	101	35	7.2	2.2
12	36	16	18	10	125	265	157	276	766	42	6.4	1.6
13	34	18	18	14	135	243	177	243	1,370	37	5.4	1.6
14	22	18	17	16	125	221	221	232	1,640	36	5.1	1.4
15	16	23	16	18	125	188	243	221	1,800	33	4.5	1.2
16	14	20	16	14	135	167	232	210	731	29	4.2	1.0
17	13	18	16	13	120	157	199	188	404	26	3.6	.9
18	12	18	15	12	90	147	221	177	323	24	4.2	.8
19	12	17	14	12	75	137	243	336	265	22	6.8	.7
20	11	16	14	12	*110	137	243	481	243	20	6.4	.6
21	9.6	16	14	11	170	137	210	404	199	19	6.0	.5
22	9.2	15	13	10	180	118	188	311	167	18	5.7	.4
23	8.8	14	13	*10	170	109	177	254	147	17	4.8	2.6
24	8.0	17	13	9	160	101	167	232	177	16	4.5	2.4
25	7.6	17	12	9	140	93	157	210	137	14	4.2	2.2
26	6.8	16	12	8	90	85	147	232	118	13	3.6	2.0
27	10	16	12	7	75	109	127	299	105	12	77	1.8
28	10	15	12	6	75	127	114	265	97	11	12	1.8
29	10	14	11	4.5	125	167	109	232	81	10	10	1.6
30	16	14	11	3.5	-	221	390	221	74	9.2	6.8	1.6
31	16	-	11	2.5	-	232	-	210	-	8.8	7.6	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	444.6	46	7.2	14.3	0.026	0.03
November	467.6	23	9.6	15.6	.028	.03
December	508	27	11	16.4	.030	.03
Calendar year 1939	176,313.2	14,000	7	483	.878	11.95
January	300.5	18	2.5	9.69	.018	.02
February	2,320.5	180	2.0	80.0	.145	.16
March	13,392	2,870	65	432	.785	.91
April	5,272	390	105	176	.320	.36
May	14,261	1,640	177	460	.836	.96
June	10,319	1,800	74	344	.625	.70
July	933.0	66	8.6	30.1	.055	.06
August	404.6	81	3.6	13.1	.024	.03
September	73.9	6.8	.4	2.46	.0045	.005
Water year 1939-40	48,696.7	2,870	.4	133	.242	3.30

* Winter discharge measurement made on this day.

Note.- Gage-height record doubtful Dec. 21 to Jan. 1, Jan. 3-10; discharge computed on basis of weather records. Stage-discharge relation affected by ice Jan. 16 to Feb. 29.

Sangamon River at Riverton, Ill.

Location.- Chain gage, lat. 39°50'34", long. 89°32'52", in NE¼ sec. 16, T. 16 N., R. 4 W., at bridge on U. S. Highway 36 at Riverton, 4½ miles downstream from South Fork. Datum of gage is 508.76 feet above mean sea level.

Drainage area.- 2,560 square miles.

Records available.- February 1908 to December 1912, August 1914 to September 1940.

Average discharge.- 30 years, 1,703 second-feet.

Extremes.- Maximum discharge observed during year, 2,840 second-feet May 6 (gage height, 10.60 feet); minimum daily discharge, 13 second-feet Jan. 7.

1908-12, 1914-40: Maximum discharge observed, 30,200 second-feet Oct. 4, 1926 (gage height, 32.0 feet, site and datum then in use), from rating curve extended above 12,000 second-feet; minimum discharge, 3 second-feet Oct. 3-15, 1914 (gage height, 6.9 feet, site and datum then in use).

Remarks.- Records good except those for period of ice effect, which are fair. Some regulation at municipal reservoir at Decatur. Gage read twice daily.

Rating tables, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to May 6

1.8	11	3.5	264	e.0	1,690
2.0	25	4.0	384	9.0	2,090
2.2	46	5.0	652	10.0	2,540
2.5	85	6.0	945	11.0	3,040
3.0	164	7.0	1,290		

May 7 to Sept. 30

1.9	22	3.0	190	7.0	1,340
2.0	35	3.5	285	e.0	1,690
2.2	63	4.0	405	9.0	2,090
2.4	93	5.0	691	10	2,540
2.7	141	6.0	990		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	42	54	37	39	410	384	825	900	216	45	157
2	44	36	54	37	37	410	462	2,540	810	162	45	109
3	45	38	58	*31	39	1,610	436	2,640	750	173	42	88
4	40	40	56	16	42	2,270	410	2,740	662	165	48	74
5	40	38	50	15	39	2,400	358	2,790	575	141	56	64
6	43	40	48	14	43	2,450	333	2,790	517	133	70	64
7	45	38	50	13	44	2,400	333	2,590	460	125	68	69
8	52	36	47	14	48	*2,500	309	2,180	460	101	76	74
9	70	38	52	14	51	2,360	309	1,620	488	101	93	64
10	253	40	53	14	53	2,010	309	1,340	604	93	101	53
11	211	a48	52	18	63	1,290	333	1,130	691	93	93	42
12	156	56	*47	37	201	915	384	990	1,160	109	87	38
13	147	62	48	48	515	885	384	870	1,380	133	80	39
14	139	51	47	64	596	885	384	780	1,270	149	72	39
15	123	45	45	67	596	e85	410	780	1,410	125	64	41
16	66	43	45	75	515	885	488	780	1,550	109	63	41
17	71	45	47	75	436	738	542	720	1,620	101	69	39
18	75	50	45	71	410	569	542	691	1,620	101	70	38
19	67	54	42	72	309	542	515	691	1,270	101	68	36
20	50	52	40	62	266	515	515	900	e70	92	63	35
21	40	50	38	51	264	468	515	1,060	662	86	62	35
22	39	47	37	48	309	436	488	1,100	517	81	57	38
23	36	45	36	46	309	384	488	960	432	76	55	41
24	38	50	36	44	309	358	569	870	405	74	53	38
25	36	52	34	43	309	333	569	900	330	69	50	32
26	45	47	31	39	309	309	542	930	330	64	60	25
27	52	43	31	39	333	286	515	1,060	307	59	74	22
28	52	46	30	37	358	309	488	1,130	307	53	691	25
29	52	47	34	35	384	333	436	1,130	264	50	517	27
30	54	50	35	37	-	358	436	1,060	244	48	488	25
31	45	-	35	39	-	358	-	990	-	48	264	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,271	253	36	73.3	0.029	0.03
November	1,369	62	36	45.6	.018	.02
December	1,357	58	30	43.8	.017	.02
Calendar year 1939	685,449	25,700	30	1,878	.734	9.93
January	1,252	75	13	40.4	.016	.02
February	7,246	596	37	250	.098	.11
March	31,081	2,500	286	1,003	.392	.45
April	13,186	569	309	440	.172	.19
May	41,577	2,790	691	1,341	.524	.60
June	22,865	1,620	244	762	.298	.33
July	3,251	216	48	105	.041	.05
August	3,734	691	42	120	.047	.05
September	1,512	157	22	50.4	.020	.02
Water year 1939-40	130,701	2,790	13	357	.139	1.89

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 26 to Feb. 10.

Sangamon River near Oakford, Ill.

Location.- Water-stage recorder and steel sheet piling control, lat. 40°07'25", long. 89°59'05", in NW¼SE¼ sec. 3, T. 19 N., R. 8 W., at bridge on State Highway 97, just upstream from Chicago & Illinois Midland R. R. bridge, three-quarters of a mile downstream from Crane Creek, and 1¾ miles northwest of Oakford. Datum of gage is 453.00 feet above mean sea level (Biloxi datum; levels by Corps of Engineers, U. S. Army). Prior to May 15, staff gage at same site and at datum 453.00 feet lower. Former gage at site 2.4 miles upstream and at different datum.

Drainage area.- 5,120 square miles.

Records available.- October 1939 to September 1940. October 1909 to March 1912, August 1914 to June 1919, March 1921 to August 1922, October 1928 to December 1933 at site 2.4 miles upstream.

Extremes.- Maximum discharge observed during year, 6,720 second-feet Mar. 5 (gage height, 9.8 feet, present datum); minimum discharge, 122 second-feet Sept. 30 (gage height, 2.20 feet).

1909-12, 1914-19; 1921-22; 1929-33; 1939-40: Maximum discharge recorded, 42,800 second-feet, Mar. 16, 1939 (gage height, 20.92 feet, present datum), result of discharge measurement furnished by Corps of Engineers, U. S. Army; minimum observed, 85 second-feet Aug. 30, 31, Nov. 27, Dec. 2, 1914.

Floods of February and March 1907, May 1908 and October 1911 are reported to have reached a stage of 21 feet at old station 2.4 miles upstream. On the basis of measured fall during discharge measurement of Mar. 16, 1939, those floods reached a stage of 23 feet at present site.

Remarks.- Records good. Prior to May 15, staff gage read once daily.

Cooperation.- Gage-height record prior to May 15 and results of five discharge measurements furnished by Corps of Engineers, U. S. Army.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to May 14						May 15 to Sept. 30					
2.4	186	3.0	415	5.0	1,800	2.2	122	3.2	490	6.0	2,530
2.5	220	3.2	515	6.0	2,650	2.4	179	3.5	645	7.0	3,540
2.6	255	3.4	615	7.0	3,500	2.6	245	4.0	925	7.5	4,100
2.7	291	3.6	730	8.0	4,500	2.8	315	4.5	1,270		
2.8	329	3.8	860	9.0	5,700	3.0	400	5.0	1,650		
2.9	370	4.0	1,000	10.0	6,980						

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	255	186	220	220	220	790	790	1,000	1,530	550	194	560
2	255	186	220	220	220	790	790	1,470	1,410	515	194	422
3	255	186	220	220	220	4,500	790	3,770	1,270	472	188	323
4	255	186	220	220	220	5,460	790	3,870	1,200	445	185	270
5	255	186	220	220	220	6,720	790	3,870	1,100	432	191	242
6	255	186	220	220	220	5,820	790	3,870	990	404	210	220
7	255	186	220	220	220	4,980	730	3,680	895	378	198	207
8	255	186	220	220	220	4,980	730	3,420	838	355	217	198
9	255	186	220	220	220	3,590	730	3,300	838	339	210	191
10	291	186	220	220	220	3,420	730	2,740	838	335	204	182
11	370	186	220	220	220	3,160	730	2,220	990	319	256	176
12	415	186	220	220	255	2,650	730	1,880	2,440	315	280	176
13	465	220	220	220	291	2,220	730	1,720	3,760	327	259	173
14	415	220	220	220	291	1,880	730	1,550	2,710	364	252	167
15	370	186	220	220	370	1,550	730	1,380	2,170	360	228	160
16	291	186	220	220	860	1,550	730	1,340	2,080	360	217	157
17	291	186	220	220	860	1,550	730	1,340	2,080	323	228	154
18	291	186	220	220	790	1,390	730	1,270	2,170	308	312	148
19	255	186	220	220	670	1,310	730	1,240	2,170	294	242	143
20	255	186	220	220	670	1,150	860	1,240	1,770	280	242	145
21	255	186	220	220	615	1,070	930	1,450	1,340	270	214	143
22	255	186	220	220	565	1,000	930	1,650	1,130	262	201	138
23	255	186	220	220	565	930	930	1,730	958	248	191	135
24	255	186	220	220	565	860	1,000	1,570	895	234	182	135
25	255	186	220	220	670	790	1,070	1,450	838	228	182	130
26	255	186	220	220	730	790	1,070	1,810	728	217	179	130
27	255	186	220	220	730	790	1,070	1,690	694	214	194	130
28	255	186	220	220	730	730	1,070	1,690	662	207	191	130
29	220	186	220	220	730	790	1,000	1,690	628	204	386	127
30	186	186	220	220	-	790	930	1,650	590	198	728	125
31	186	-	220	220	-	790	-	1,610	-	201	689	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	8,636	465	186	279	0.054	0.06
November	5,648	220	186	188	.037	.04
December	6,820	220	220	220	.043	.05
Calendar year	-	-	-	-	-	-
January	6,820	220	220	220	.043	.05
February	13,377	860	220	461	.090	.10
March	68,790	6,720	730	2,219	.433	.50
April	25,090	1,070	730	836	.163	.18
May	64,160	3,870	1,000	2,070	.404	.47
June	41,712	3,760	590	1,390	.271	.30
July	9,958	550	198	321	.063	.07
August	7,844	728	179	253	.049	.06
September	5,737	560	125	191	.037	.04
Water year 1939-40	264,592	6,720	125	723	.141	1.92

La Moine River at Ripley, Ill.

Location.- Water-stage recorder, lat. 40°01'31", long. 90°37'55", in NE¼ sec. 33, T. 1 N., R. 2 W., at highway bridge a quarter of a mile east of Ripley and 2 miles upstream from Town Branch. Datum of gage is 431.1 feet above mean sea level (general adjustment of 1929).

Drainage area.- 1,310 square miles.

Records available.- March 1921 to September 1940.

Average discharge.- 19 years, 714 second-feet.

Extremes.- Maximum discharge during year, 3,140 second-feet Mar. 5 (gage height, 14.29 feet); minimum, 6.4 second-feet Sept. 23 (gage height, 3.35 feet).
1921-40: Maximum discharge observed, 12,500 second-feet July 25, 1924, and Feb. 28, 1936 (gage height, 25.94 feet); minimum, that in September 1940.
Maximum stage known, 26.0 feet, date unknown.

Remarks.- Records good.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	72	30	16	16	140	150	513	101	26	27	34
2	18	52	30	14	16	948	131	465	87	23	24	28
3	19	42	30	12	15	2,830	129	317	77	21	20	26
4	19	37	32	13	14	3,010	164	249	73	20	215	25
5	18	34	37	*12	14	*3,100	154	209	66	20	383	21
6	18	31	39	12	14	2,560	144	183	59	20	175	18
7	18	30	37	12	14	1,480	122	168	56	18	205	16
8	19	28	34	12	14	825	116	159	57	19	103	14
9	44	28	31	12	14	675	120	145	72	18	53	12
10	54	28	30	13	15	575	137	134	54	18	56	11
11	39	28	28	14	16	477	147	126	57	17	89	10
12	23	28	30	14	18	417	139	118	170	18	51	9.4
13	18	28	28	14	18	361	137	111	144	18	123	9.4
14	16	28	25	14	24	328	135	104	209	16	211	9.4
15	16	33	24	12	42	255	124	97	172	17	108	8.2
16	16	34	24	13	94	239	117	92	107	165	82	7.4
17	17	34	23	13	130	275	228	90	85	52	69	7.0
18	16	32	24	12	190	361	625	93	68	42	394	7.0
19	16	31	24	12	250	350	513	104	57	31	775	6.8
20	16	30	23	12	260	328	394	101	51	25	700	6.8
21	17	33	22	13	190	269	265	103	47	21	350	6.8
22	17	35	19	13	130	225	211	128	43	18	122	6.6
23	17	46	20	13	90	202	342	111	45	17	67	6.4
24	17	46	21	14	70	179	1,340	92	37	16	43	6.8
25	18	39	16	15	65	150	1,000	83	38	16	34	7.0
26	18	34	21	14	60	140	550	80	34	14	30	6.6
27	17	31	20	14	55	139	417	82	30	14	30	6.6
28	513	28	18	15	55	173	350	111	32	14	44	6.8
29	687	28	20	15	60	190	306	139	30	14	140	6.8
30	231	28	17	16	-	183	383	114	28	14	38	6.8
31	101	-	15	17	-	168	-	105	-	17	27	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,092	687	16	67.5	0.052	0.06
November	1,037	72	28	34.6	.026	.03
December	794	39	15	25.6	.020	.02
Calendar year 1939	220,900	8,200	15	604	.461	6.26
January	417	17	12	13.5	.010	.01
February	1,963	260	14	67.7	.052	.06
March	21,552	3,100	139	695	.531	.61
April	9,091	1,340	116	303	.231	.26
May	4,726	513	80	152	.116	.13
June	2,186	209	28	72.9	.056	.06
July	779	165	14	25.1	.019	.02
August	4,788	775	20	154	.118	.14
September	353.6	34	6.4	11.8	.0090	.01
Water year 1939-40	49,778.6	3,100	6.4	136	.104	1.41

Peak discharge.- Oct. 29 (3 a.m.) 825 sec.-ft.; Feb. 20 (6 a.m.) 429 sec.-ft.; Mar. 5 (3 p.m.) 3,140 sec.-ft.; Apr. 24 (5 p.m.) 1,480 sec.-ft.; Aug. 19 (3 p.m.) 880 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Feb. 17-29.

Lakes in Illinois River Basin

Eagle Lake near Kansasville, Wis.

Location.- Staff gage, lat. 42°42'30", long. 88°06'55", in sec. 22, T. 3 N., R. 20 E., attached to post in lake near pier of Eagle Lake Resort, at northeast end of lake, 1¾ miles north of Kansasville.
Drainage area.- 6.1 square miles.
Lake-surface area.- 480 acres.
Records available.- August 1936 to September 1940 (fragmentary).
Extremes.- Maximum gage height observed during year, 6.17 feet Sept. 10, 14, 17, 21; minimum observed, 5.26 feet Apr. 16, 20, 23.
1936-40: Maximum gage height observed, 7.24 feet Mar. 31, Apr. 3, 1937; minimum observed, 5.19 feet Nov. 2, 6, 16, 20, 23, 1937.
Remarks.- Sheet-piling dam with crest at elevation 86.72 feet at lake outlet. Lake level not artificially controlled.

Gage height, in feet, water year October 1939 to September 1940

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-	-	-	-	-	-	16	5.26	-	-	5.42	-	-
2	-	-	-	5.58	-	-	17	-	-	-	-	5.40	6.17
3	-	-	-	-	5.40	6.00	18	-	5.44	5.54	-	-	-
4	-	-	5.48	-	-	-	19	-	-	-	-	-	-
5	-	-	-	-	-	-	20	5.26	-	-	5.38	5.50	-
6	-	-	-	5.54	5.42	-	21	-	5.46	-	-	-	6.17
7	-	5.32	-	-	-	6.00	22	-	-	5.62	-	-	-
8	-	-	5.50	-	-	-	23	5.26	-	-	5.34	-	-
9	-	-	-	5.52	-	-	24	-	-	-	-	5.78	6.08
10	-	-	-	-	5.40	6.17	25	-	5.48	5.64	-	-	-
11	-	5.34	5.50	-	-	-	26	-	-	-	-	-	-
12	-	-	-	-	-	-	27	5.28	-	-	5.36	5.88	-
13	-	-	-	5.46	5.36	-	28	-	-	-	-	-	6.08
14	-	5.38	-	-	-	6.17	29	-	-	5.60	-	-	-
15	-	-	5.54	-	-	-	30	5.28	-	-	5.36	-	-
							31	-	-	-	-	5.92	-

Note.- Add 80 feet to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

Holden Lake near Elkhorn, Wis.

Location.- Staff gage, lat. 42°44'40", long. 88°37'15", in sec. 5, T. 3 N., R. 16 E., attached to oak post 50 feet from shore line adjacent to property of W. T. Sherman, 5½ miles northwest of Elkhorn.
Drainage area.- 1 square mile.
Lake-surface area.- 350 acres.
Records available.- May 1937 to September 1940 (fragmentary).
Extremes.- Maximum gage height observed during year, 11.80 feet Aug. 25-31; minimum observed, 10.20 feet June 16-22.
1937-40: Maximum gage height observed, 12.45 feet Mar. 25, 1939; minimum, 7.83 feet Oct. 15-17, 1937.
Remarks.- Lake has no surface outlet.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10.68	10.63	10.52	10.40	10.48	10.56	10.57	10.54	10.50	10.40	10.65	11.70
2	10.68	10.62	10.52	10.40	10.48	10.56	10.59	10.54	10.40	10.40	10.65	11.70
3	10.68	10.61	10.52	10.40	10.48	10.58	10.47	10.55	10.40	10.40	10.65	11.70
4	10.67	10.61	10.52	10.40	10.48	10.58	10.58	10.55	10.40	10.40	10.60	11.70
5	10.66	10.61	10.51	10.40	10.48	10.61	10.57	10.54	10.40	10.40	10.60	11.70
6	10.66	10.62	10.51	10.40	10.48	10.61	10.57	10.54	10.40	10.40	10.60	11.70
7	10.66	10.62	10.51	10.40	10.48	10.61	10.57	10.54	10.40	10.40	10.60	11.70
8	10.64	10.62	10.50	10.40	10.48	10.61	10.59	10.54	10.40	10.40	10.60	11.70
9	10.62	10.61	10.50	10.40	10.48	10.65	10.57	10.54	10.30	10.40	10.60	11.70
10	10.62	10.61	10.50	10.40	10.48	10.65	10.57	10.54	10.30	10.40	10.60	11.70
11	10.60	10.61	10.50	10.40	10.50	10.64	10.57	10.54	10.30	10.40	10.70	11.70
12	10.60	10.60	10.50	10.40	10.50	10.64	10.57	10.55	10.30	10.40	10.70	11.70
13	10.58	10.60	10.50	10.40	10.50	10.65	10.58	10.55	10.30	10.40	10.70	11.70
14	10.58	10.58	10.50	10.40	10.50	10.64	10.57	10.55	10.30	10.45	10.70	11.70
15	10.58	10.58	10.48	10.44	10.50	10.64	10.47	10.55	10.30	10.45	10.70	11.65
16	10.58	10.58	10.48	10.46	10.50	10.64	10.52	10.55	10.20	10.45	10.70	11.65
17	10.57	10.58	10.48	10.48	10.50	10.66	10.52	10.55	10.20	10.45	10.70	11.65
18	10.57	10.58	10.48	10.48	10.50	10.66	10.50	10.55	10.20	10.45	11.60	11.65
19	10.56	10.57	10.48	10.48	10.50	10.65	10.51	10.50	10.20	10.45	11.60	11.65
20	10.56	10.57	10.48	10.48	10.50	10.65	10.51	10.50	10.20	10.45	11.60	11.65
21	10.56	10.57	10.48	10.48	10.50	10.67	10.50	10.50	10.20	10.60	11.60	11.65
22	10.56	10.56	10.48	10.48	10.50	10.67	10.52	10.50	10.20	10.60	11.60	11.70
23	10.56	10.56	10.48	10.48	10.50	10.67	10.52	10.50	10.30	10.60	11.60	11.70
24	10.56	10.56	10.46	10.48	10.50	10.65	10.51	10.50	10.30	10.60	11.60	11.70
25	10.58	10.56	10.46	10.48	10.50	10.65	10.51	10.50	10.30	10.60	11.80	11.70
26	10.60	10.56	10.44	10.48	10.50	10.65	10.51	10.50	10.30	10.60	11.80	11.70
27	10.62	10.55	10.44	10.48	10.51	10.61	10.51	10.50	10.30	10.60	11.80	11.70
28	10.66	10.54	10.44	10.48	10.51	10.61	10.50	10.50	10.30	10.65	11.80	11.70
29	10.66	10.52	10.42	10.48	10.52	10.61	10.52	10.50	10.30	10.65	11.80	11.70
30	10.65	10.52	10.42	10.48	-	10.59	10.52	10.50	10.40	10.65	11.80	11.70
31	10.64	-	10.40	10.48	-	-	-	10.50	-	10.65	11.80	-

Lakes in Illinois River Basin

Browns Lake near Burlington, Wis.

Location.- Staff gage, lat. 42°40'50", long. 88°14'30", in sec. 34, T. 3 N., R. 19 E., attached to southwest piling inside boathouse on estate of T. B. McGinnis; 2 miles east of Burlington.

Drainage area.- 2.5 square miles.

Lake-surface area.- 390 acres.

Records available.- August 1936 to September 1940 (fragmentary).

Extremes.- Maximum gage height observed during year, 5.70 feet Aug. 31, Sept. 2, 7; minimum, 4.82 feet several days December to February.
1936-40: Maximum gage height observed, 6.46 feet Sept. 12, 1938; minimum, 4.75 feet Aug. 11, 18, 1936.

Remarks.- Small concrete dam in outlet creek with crest at elevation 99.09 feet. Lake level not artificially regulated.

Cooperation.- Gage readings furnished by Wm. De Voe.

Gage height, in feet, water year October 1939 to September 1940

Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height
Oct. 2	5.04	Dec. 18	4.82	Mar. 4	4.68	May 18	5.30	Aug. 3	5.22
7	4.98	23	4.84	9	4.88	20	5.30	5	5.20
9	4.98	25	4.84	11	5.08	25	5.36	10	5.14
14	4.94	30	4.82	16	5.08	27	5.38	12	5.14
16	4.92	Jan. 1	4.82	18	5.08	June 1	5.38	17	5.12
21	4.90	6	4.82	23	5.00	3	5.36	19	5.14
23	4.90	8	4.82	25	5.00	8	5.30	24	5.20
28	4.92	13	4.82	30	5.00	10	5.30	26	5.64
30	4.90	15	4.82	Apr. 1	5.16	15	5.28	31	5.70
Nov. 4	4.90	20	4.82	6	5.16	17	5.28	Sept. 2	5.70
6	4.90	22	4.82	8	5.20	22	5.30	7	5.70
11	4.88	27	4.82	13	5.22	24	5.40	9	5.64
13	4.86	29	4.82	15	5.20	29	5.40	14	5.60
18	4.86	Feb. 3	4.82	16	5.19	July 2	5.38	16	5.60
20	4.84	5	4.82	20	5.22	6	5.34	21	5.58
25	4.84	10	4.82	22	5.22	8	5.32	23	5.54
27	4.84	12	4.88	27	5.22	13	5.24	28	5.60
Dec. 2	4.86	17	4.88	29	5.20	15	5.24	30	5.60
4	4.84	19	4.88	May 4	5.30	20	5.16		
9	4.83	24	4.88	6	5.30	22	5.16		
11	4.83	26	4.88	11	5.30	27	5.24		
16	4.82	Mar. 2	4.88	13	5.28	29	5.24		

Note.- Add 93.00 feet to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

Silver Lake at Silver Lake, Wis.

Location.- Staff gage, lat. 42°33'00", long. 88°09'55", in sec. 17, T. 1 N., R. 20 E., attached to piling of pier in village of Silver Lake.

Drainage area.- 5.0 square miles.

Lake-surface area.- 580 acres.

Records available.- August 1936 to September 1940 (fragmentary).

Extremes.- Maximum gage height observed during year, 8.96 feet Sept. 14; minimum observed, 7.75 feet Dec. 30, Jan. 3, 6.
1936-40: Maximum gage height observed, 9.74 feet June 23, 1937; minimum observed, that of Dec. 30, 1939, Jan. 3, 6, 1940.

Remarks.- Small concrete dam in outlet, elevation of crest, 99.13 feet. Lake level not artificially regulated.

Gage height, in feet, water year October 1939 to September 1940

Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height	Date	Gage height
Oct. 4	7.99	Dec. 20	7.79	Mar. 6	7.93	May 15	8.58	July 27	8.56
7	7.95	23	7.77	9	7.93	18	8.58	31	8.52
11	7.93	27	7.77	13	8.09	22	8.60	Aug. 3	8.50
14	7.91	30	7.75	16	8.13	25	8.62	7	8.48
18	7.87	Jan. 3	7.75	20	8.15	29	8.64	10	8.48
21	7.85	6	7.75	23	8.17	June 1	8.66	14	8.48
25	7.87	10	7.77	27	8.17	5	8.66	17	8.46
28	7.91	13	7.79	30	8.21	8	8.68	21	8.50
Nov. 1	7.89	17	7.79	31	8.21	12	8.68	24	8.60
4	7.85	20	7.79	Apr. 3	8.23	15	8.66	28	8.76
8	7.85	24	7.81	6	8.25	19	8.66	31	8.84
11	7.83	27	7.81	10	8.27	22	8.68	Sept. 4	8.90
15	7.83	31	7.83	13	8.29	26	8.66	7	8.94
18	7.81	Feb. 3	7.85	16	8.38	29	8.64	11	8.94
22	7.79	7	7.85	17	8.42	30	8.64	14	8.96
25	7.77	10	7.85	20	8.44	July 3	8.62	18	8.94
29	7.77	14	7.87	24	8.44	6	8.58	21	8.90
Dec. 2	7.79	17	7.87	27	8.46	10	8.56	25	8.88
6	7.79	21	7.89	May 1	8.48	13	8.56	28	8.86
9	7.81	24	7.91	4	8.54	17	8.54	30	8.84
13	7.81	28	7.91	8	8.56	20	8.52		
16	7.81	Mar. 2	7.93	11	8.58	24	8.56		

Note.- Add 90 feet to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

Lakes in Illinois River Basin

Channel Lake near Antioch, Ill.

Location.- Water-stage recorder, lat. 42°28'20", long. 88°08'50", in NW¼NE¼ sec. 14, T. 46 N., R. 9 E., at dredged channel outlet of Channel Lake, three-quarters of a mile southwest of the natural outlet, and 3 miles west of Antioch. Datum of gage is 735.00 feet above mean sea level (general adjustment of 1929). Prior to Dec. 14, chain gage at same site and datum.

Records available.- October 1939 to September 1940.

Extremes.- Maximum gage height during year, 3.16 feet Aug. 31; minimum observed, 1.20 feet Oct. 2, Apr. 17, Nov. 3.

Remarks.- Stage of lake controlled to some extent by stage of Lake Marie, to which it is connected by a dredged channel. Prior to Dec. 14, chain gage read twice daily. Records excellent. During the rapid rise of Aug. 29, a reverse flow into Channel Lake was measured by current meter. It was found to be 21 second-feet in dredged channel, 114 second-feet in natural channel.

Cooperation.- Water-stage recorder inspected by employee of State of Illinois, Department of Public Works and Buildings, Division of Waterways.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.25	1.28	1.86	1.68	1.64	1.72	1.97	1.55	1.55	2.48	1.79	3.14
2	1.20	1.21	1.80	1.67	1.65	1.72	1.96	1.71	1.58	2.48	1.81	3.09
3	1.22	1.20	1.80	1.67	1.65	1.72	1.98	1.77	1.61	2.46	1.79	3.01
4	1.24	1.28	1.80	1.67	1.67	1.72	1.99	1.89	1.61	2.42	1.80	2.87
5	1.34	1.31	1.80	1.67	1.68	1.73	1.95	2.04	1.56	2.36	1.82	2.71
6	1.24	1.28	1.80	1.66	1.69	1.73	1.94	2.02	1.47	2.28	1.77	2.54
7	1.29	1.30	1.80	1.66	1.70	1.73	1.89	1.95	1.48	2.23	1.76	2.36
8	1.30	1.34	1.81	1.66	1.72	1.74	1.86	1.90	1.49	2.15	1.74	2.17
9	1.32	1.41	1.87	1.67	1.73	1.75	1.80	1.90	1.48	2.09	1.72	2.04
10	1.30	1.46	1.85	1.67	1.74	1.76	1.83	1.87	1.53	2.03	1.69	1.92
11	1.32	1.42	1.83	1.68	1.75	1.76	1.61	1.84	1.52	1.94	1.69	1.87
12	1.33	1.40	1.81	1.69	1.75	1.73	1.65	1.95	1.55	1.77	1.68	1.84
13	1.28	1.45	1.79	1.70	1.74	1.73	1.60	1.78	1.61	1.72	1.66	1.90
14	1.26	1.49	1.76	1.78	1.75	1.72	1.62	1.79	1.55	1.75	1.66	1.87
15	1.39	1.56	1.73	1.80	1.75	1.69	1.53	1.75	1.75	1.66	1.71	1.86
16	1.34	1.56	1.74	1.78	1.74	1.68	1.44	1.59	1.71	1.59	1.71	1.87
17	1.23	1.55	1.72	1.78	1.74	1.73	1.34	1.54	1.73	1.60	1.69	1.89
18	1.39	1.59	1.71	1.78	1.74	1.86	1.44	1.54	1.77	1.65	1.73	1.90
19	1.35	1.59	1.64	1.77	1.76	1.95	1.51	1.65	1.73	1.65	1.71	1.90
20	1.34	1.53	1.71	1.75	1.77	1.95	1.42	1.68	1.69	1.64	1.73	1.89
21	1.41	1.54	1.70	1.74	1.76	1.93	1.51	1.72	1.70	1.65	1.82	1.86
22	1.30	1.59	1.71	1.74	1.77	1.87	1.54	1.75	1.79	1.60	1.78	1.85
23	1.33	1.65	1.71	1.73	1.76	1.77	1.50	1.72	1.92	1.57	1.72	1.85
24	1.34	1.68	1.72	1.74	1.77	1.68	1.53	1.68	2.09	1.56	1.73	1.81
25	1.38	1.64	1.71	1.74	1.75	1.61	1.49	1.64	2.21	1.60	1.95	1.75
26	1.42	1.65	1.71	1.72	1.75	1.55	1.48	1.63	2.28	1.59	2.01	1.84
27	1.46	1.67	1.70	1.69	1.75	1.50	1.51	1.64	2.31	1.64	2.16	1.87
28	1.35	1.71	1.70	1.67	1.74	1.51	1.59	1.64	2.35	1.69	2.44	1.27
29	1.53	1.73	1.71	1.65	1.73	1.66	1.66	1.57	2.36	1.73	2.76	1.84
30	1.28	1.78	1.71	1.65	-	1.78	1.62	1.56	2.44	1.82	3.02	1.82
31	1.35	-	1.69	1.64	-	1.92	-	1.54	-	1.81	3.14	-

Lakes in Illinois River Basin

Nippersink Lake at Fox Lake, Ill.

Location.- Water-stage recorder, lat. 42°24'10", long. 88°10'55", in SE¼SE¼ sec. 4, T. 45 N., R. 9 E., a hundred yards upstream from Chicago, Milwaukee and St. Paul R. R. bridge in the village of Fox Lake. Datum of gage is 735.00 feet above mean sea level (general adjustment of 1929). Prior to Dec. 16, staff gage at same site and datum.

Records available.- October 1939 to September 1940.

Extremes.- Maximum gage height during year, 2.97 feet Sept. 1; minimum observed, 1.22 feet Oct. 1-4.

Remarks.- Discharge from lake regulated by dam on Fox River at McHenry. Prior to Dec. 16, staff gage read twice daily.

Cooperation.- Water-stage recorder inspected by employee of State of Illinois, Department of Public Works and Buildings, Division of Waterways.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.28	1.34	1.76	1.71	1.68	1.74	1.95	1.68	1.56	2.35	1.81	2.94
2	1.22	1.33	1.80	1.70	1.68	1.74	1.97	1.85	1.56	2.36	1.76	2.89
3	1.22	1.31	1.83	1.69	1.68	1.74	1.99	1.95	1.53	2.36	1.76	2.81
4	1.22	1.30	1.82	1.70	1.69	1.75	2.00	1.94	1.48	2.30	1.81	2.68
5	1.24	1.28	1.84	1.69	1.71	1.75	1.99	1.98	1.47	2.22	1.82	2.53
6	1.28	1.28	1.81	1.68	1.75	1.75	1.94	2.05	1.44	2.18	1.85	2.37
7	1.28	1.26	1.81	1.68	1.72	1.75	1.90	2.07	1.47	2.14	1.79	2.17
8	1.26	1.27	1.80	1.69	1.72	1.75	1.88	2.01	1.53	2.10	1.77	2.05
9	1.30	1.28	1.79	1.69	1.73	1.76	1.84	1.93	1.56	2.04	1.76	1.97
10	1.29	1.28	1.80	1.70	1.74	1.76	1.76	1.89	1.58	1.98	1.74	1.91
11	1.32	1.39	1.80	1.72	1.75	1.75	1.79	1.83	1.63	1.95	1.73	1.85
12	1.32	1.43	1.77	1.72	1.75	1.73	1.68	1.73	1.65	1.85	1.72	1.83
13	1.34	1.44	1.78	1.72	1.75	1.72	1.65	1.75	1.69	1.73	1.72	1.85
14	1.32	1.45	1.78	1.79	1.75	1.71	1.58	1.63	1.68	1.66	1.72	1.86
15	1.31	1.48	1.76	1.81	1.75	1.71	1.56	1.59	1.71	1.67	1.73	1.90
16	1.31	1.51	1.74	1.80	1.75	1.68	1.53	1.56	1.72	1.65	1.73	1.90
17	1.51	1.56	1.75	1.80	1.76	1.75	1.59	1.54	1.72	1.63	1.75	1.89
18	1.28	1.59	1.75	1.80	1.77	1.88	1.57	1.51	1.73	1.82	1.76	1.88
19	1.30	1.65	1.69	1.75	1.78	1.94	1.61	1.55	1.76	1.61	1.79	1.88
20	1.32	1.65	1.77	1.76	1.79	1.97	1.63	1.62	1.73	1.60	1.80	1.87
21	1.33	1.65	1.74	1.75	1.79	1.95	1.55	1.68	1.70	1.59	1.78	1.88
22	1.37	1.64	1.75	1.74	1.79	1.90	1.54	1.75	1.78	1.59	1.80	1.87
23	1.37	1.66	1.75	1.74	1.79	1.82	1.57	1.73	1.90	1.56	1.80	1.85
24	1.39	1.71	1.75	1.75	1.78	1.78	1.57	1.72	2.01	1.55	1.77	1.90
25	1.42	1.72	1.74	1.75	1.77	1.67	1.58	1.69	2.11	1.51	1.94	1.88
26	1.41	1.72	1.74	1.74	1.77	1.57	1.56	1.69	2.16	1.57	2.03	1.85
27	1.42	1.72	1.74	1.71	1.76	1.54	1.55	1.63	2.19	1.67	2.14	1.86
28	1.42	1.72	1.73	1.70	1.76	1.63	1.48	1.65	2.18	1.71	2.32	1.87
29	1.35	1.72	1.73	1.68	1.75	1.68	1.43	1.64	2.24	1.74	2.57	1.88
30	1.35	1.75	1.73	1.67	-	1.66	1.48	1.68	2.30	1.84	2.77	1.87
31	1.33	-	1.72	1.67	-	1.90	-	1.58	-	1.86	2.91	-

Indian Creek at Wanda, Ill.

Location.- Water-stage recorder, lat. 38°50'30", long. 90°01'59", in SE¼NW¼ sec. 31, T. 5 N., R. 8 W., at bridge on State Highway 159, three-quarters of a mile northeast of Wanda, 2¼ miles upstream from Cahokia Creek, and 5 miles west of Edwardsville.

Drainage area.- 37.0 square miles.

Records available.- April to September 1940.

Extremes.- Maximum discharge during period, 535 second-feet Aug. 28 (gage height, 9.32 feet); no flow on many days.

Remarks.- Records good.

Rating table, Apr. 17 to Sept. 30 (gage height, in feet, and discharge, in second-feet)

0.92	0	1.4	4.1	2.5	41
1.0	.06	1.6	9.4	3.0	61
1.1	.40	1.8	17.3	4.0	114
1.2	1.2	2.0	24		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							-	106	1.0	a0.1	0	0.10
2							-	22	.88	a.1	0	.06
3							-	12.4	.72	a.1	0	.03
4							-	8.8	.58	a.1	0	.02
5							-	7.3	.52	a.1	0	.01
6							-	6.2	.46	a.1	0	0
7							-	5.2	.46	a.1	0	0
8							-	4.6	.46	a.1	0	0
9							-	3.7	.40	a.1	0	0
10							-	3.4	.35	a.1	0	0
11							-	3.2	.46	a.1	0	0
12							-	2.7	4.6	a.1	0	0
13							-	2.5	1.7	0	2.0	0
14							-	3.0	.72	0	.06	0
15							-	5.7	.52	0	.02	0
16							-	3.0	.35	0	.01	0
17							8.2	2.4	a.30	0	0	0
18							12.4	4.2	a.25	0	.01	0
19							8.8	29	a.2	0	4.2	0
20							7.3	6.8	a.2	0	.30	0
21							6.0	3.2	a.2	0	.06	0
22							5.7	2.8	a.2	0	.01	0
23							12.4	2.2	a.2	0	0	0
24							14.0	2.0	a.2	0	0	0
25							7.9	2.0	a.1	0	0	0
26							6.2	3.4	a.1	0	0	0
27							5.7	2.2	a.1	0	278	0
28							4.8	1.6	5.9	0	102	0
29							6.4	1.4	2.6	0	2.0	0
30							11.2	1.2	.40	0	.64	0
31							-	1.0	-	0	.30	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April	117.0	14.0	5.7	8.36	0.226	0.12
May	265.1	106	1.0	8.55	.231	.27
June	25.13	5.9	.1	.838	.023	.03
July	1.2	.1	0	.04	.0011	.001
August	387.61	276	0	12.5	.338	.39
September	.22	.10	0	.007	.00019	.0002
Water year	-	-	-	-	-	-

Peak discharge.- May 1 (6:30 a.m.) 187 sec.-ft.; Aug. 28 (12:30 a.m.) 535 sec.-ft.
a No gage-height record; discharge computed on basis of records of nearby stations.

Kaskaskia River at Vandalia, Ill.

Location.- Wire-weight gags, lat. 38°57'35", long. 89°05'20", in SE¼ sec. 16, T. 6 N., R. 1 E., at Gallatin Street Bridge in Vandalia, 3½ miles upstream from Hickory Creek. Datum of gage is 453.30 feet above mean sea level (gensral adjustment of 1929). Prior to Sept. 25, chain gage at same site and datum.

Drainage area.- 1,980 square miles.

Records available.- February 1908 to December 1912, August 1914 to September 1940.

Average discharge.- 30 years, 1,395 second-feet.

Extremes.- Maximum discharge observed during year, 6,760 second-feet May 3 (gage height, 18.90 feet); minimum observed, 17 second-feet Sept. 29 (gage height, 1.23 feet).
1908-12, 1914-40: Maximum discharge, 40,700 second-feet Mar. 31, 1937; maximum gage height, 25.0 feet June 5, 1917; minimum discharge observed, 3.5 second-feet Aug. 22, 1911.

Remarks.- Records good except those for period of ice effect, which are poor. Gage read twice daily.

Rating tables, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 4				Mar. 5 to Sept. 30					
2.0	30	5.0	500	1.2	13	2.6	108	10.0	2,100
2.2	48	6.0	725	1.4	21	3.0	162	12.0	2,700
2.6	83	7.0	975	1.6	31	4.0	358	14.0	3,400
3.0	155	8.0	1,230	1.8	42	5.0	600	16.0	4,250
3.5	212	10.0	1,530	2.0	55	6.0	900	18.0	5,700
4.0	300	12.0	2,450	2.2	70	8.0	1,800	19.0	6,900

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	36	46	42	50	580	336	4,050	780	272	52	37
2	51	37	50	39	50	420	338	5,350	660	242	48	78
3	81	37	60	33	50	1,350	358	6,620	575	222	45	62
4	48	36	*67	30	80	2,340	404	5,700	550	204	48	55
5	46	36	60	30	58	1,620	358	3,840	525	178	45	42
6	46	36	57	30	55	1,260	336	2,850	475	154	36	39
7	46	36	55	30	60	1,140	336	2,430	427	147	37	34
8	43	36	54	30	65	1,050	336	2,190	427	140	38	31
9	46	36	52	*30	95	1,020	475	1,950	475	138	31	28
10	53	45	51	30	158	930	336	1,710	500	126	32	26
11	41	50	51	38	245	810	427	1,440	720	120	33	24
12	40	50	51	40	400	690	1,170	1,260	1,380	140	34	24
13	39	50	55	45	520	930	1,350	1,140	1,950	126	34	22
14	39	51	53	60	500	1,170	930	1,020	1,770	108	34	23
15	47	50	55	90	420	960	870	930	1,650	120	36	24
16	55	47	54	120	320	690	780	870	1,500	126	36	22
17	39	43	56	150	300	630	780	780	1,470	102	34	21
18	39	43	55	130	300	630	2,370	720	1,500	108	35	21
19	43	47	51	100	340	600	3,360	690	1,500	108	42	21
20	83	51	50	90	520	575	3,540	870	1,380	102	40	21
21	54	53	48	70	600	525	3,720	780	1,140	92	33	21
22	49	51	47	65	500	*451	2,370	690	900	82	30	19
23	43	49	43	65	420	427	1,830	660	690	82	30	19
24	42	52	42	60	380	404	1,770	575	600	78	29	19
25	44	49	43	60	340	358	1,620	550	525	70	26	20
26	41	49	52	55	340	314	1,380	720	451	66	22	18
27	47	50	56	55	340	314	1,250	900	381	62	272	17
28	48	48	50	55	420	336	1,140	960	358	58	427	17
29	43	47	45	50	625	381	1,050	900	336	55	336	17
30	41	45	43	50	-	404	1,350	960	293	52	178	17
31	43	-	45	50	-	404	-	900	-	52	114	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,435	83	39	46.3	0.023	0.03
November	1,346	53	36	44.9	.023	.03
December	1,596	67	42	51.5	.026	.03
Calendar year 1939	556,113	16,000	36	1,524	.770	10.43
January	1,819	150	30	58.7	.030	.03
February	8,518	625	50	29.4	.015	.16
March	23,713	2,340	314	765	.386	.45
April	36,978	3,540	336	1,233	.623	.69
May	55,005	6,620	550	1,774	.896	1.03
June	25,888	1,950	293	863	.436	.49
July	3,727	272	52	120	.061	.07
August	2,267	427	22	73.1	.037	.04
September	889	87	17	29.6	.015	.02
Water year 1939-40	163,181	6,620	17	446	.225	3.07

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Jan. 5 to Feb. 8.

Kaskaskia River at Carlyle, Ill.

Location.- Wire-weight gage, lat. 38°36'42", long. 89°21'22", in SE¼ sec. 18, T. 2 N., R. 2 W., at bridge on U. S. Highway 50 at Carlyle, 16.5 miles upstream from Crooked Creek. Datum of gage is 402.92 feet above mean sea level (general adjustment of 1929).

Drainage area.- 2,680 square miles.

Records available.- March 1908 to December 1912, August 1914 to September 1915, May 1938 to September 1940.

Extremes.- Maximum discharge observed during year, 5,510 second-feet May 8 (gage height, 21.61 feet); minimum observed, 22 second-feet Sept. 19 (gage height, 5.01 feet).
1908-12, 1914-15, 1938-40: Maximum gage-height observed, 30.75 feet Aug. 24, 1915; minimum discharge observed, that of Sept. 19, 1940.
Maximum stage known, about 32.5 in 1882.

Remarks.- Records good except those for period of ice effect, which are poor. Gage read once daily except during periods of rapidly changing stage, when it is read twice daily.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Jan. 16 and Sept. 1-30)

4.9	21	5.7	116	13.0	1,930
5.0	26	6.2	204	17.0	3,400
5.1	33	7.0	364	21.0	5,110
5.2	43	8.0	575	22.0	5,860
5.4	70	10.0	1,050		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	106	68	68	73	100	972	490	2,530	972	406	89	214
2	105	86	70	70	100	896	469	4,210	872	364	86	214
3	100	64	74	67	100	921	448	4,630	800	343	80	167
4	98	59	82	58	100	2,570	490	4,860	754	303	76	124
5	95	59	85	58	116	3,360	619	5,060	685	283	83	98
6	92	58	88	53	142	2,820	532	5,230	619	253	84	80
7	88	58	88	46	124	1,930	490	5,360	575	233	78	69
8	87	59	87	45	124	1,370	448	5,510	532	214	73	59
9	87	57	82	44	158	1,180	469	5,360	511	204	133	61
10	84	62	78	43	167	1,080	490	5,000	553	194	116	44
11	85	64	74	46	194	998	490	4,130	553	185	87	38
12	90	72	73	51	283	921	872	2,780	641	176	73	32
13	88	82	74	55	385	921	2,570	1,860	1,430	167	67	30
14	79	76	74	98	619	1,270	2,350	1,460	1,860	263	64	28
15	74	73	76	112	708	1,460	1,540	1,270	1,830	233	98	26
16	72	70	78	140	641	1,400	1,130	1,130	1,730	185	63	24
17	70	72	76	185	575	1,020	1,050	1,020	1,570	167	59	24
18	70	70	78	185	490	824	1,400	946	1,460	176	62	24
19	82	67	78	133	469	754	3,360	896	1,480	167	74	30
20	79	74	76	116	553	777	4,210	872	1,510	158	108	39
21	72	72	76	133	848	731	4,550	896	1,430	167	97	42
22	66	76	74	133	998	663	4,720	946	1,290	158	70	43
23	73	79	74	133	872	619	4,810	872	1,080	150	57	43
24	76	79	80	116	754	553	4,630	754	872	133	50	46
25	73	68	58	84	532	511	4,010	708	872	124	44	44
26	73	66	72	*84	532	469	3,010	663	777	133	41	37
27	72	66	85	70	532	446	2,140	663	597	116	253	37
28	67	66	64	70	511	427	1,690	777	532	108	323	32
29	67	66	84	70	824	427	1,460	946	469	100	1,130	31
30	68	66	53	70	-	427	1,320	972	427	98	619	31
31	66	-	66	84	-	490	-	896	-	94	343	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	2,504	106	66	80.8	0.030	0.03	4,970
November	2,034	82	57	67.8	.026	.03	4,030
December	2,345	88	53	75.6	.028	.03	4,650
Calendar year 1939	754,551	17,600	53	2,067	.771	10.45	1,497,000
January	2,723	185	43	87.8	.033	.04	5,400
February	12,551	998	100	433	.162	.17	24,890
March	33,209	3,360	427	1,071	.400	.46	65,870
April	56,257	4,810	448	1,875	.700	.78	111,600
May	73,207	5,510	663	2,362	.881	1.02	145,200
June	29,303	1,860	427	977	.365	.41	58,120
July	6,055	406	94	195	.073	.08	12,010
August	4,680	1,130	41	151	.056	.06	9,280
September	1,801	214	24	60.0	.022	.02	3,570
Water year 1939-40	226,669	5,510	24	619	.231	3.13	449,600

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Jan. 17 to Feb. 5.

Kaskaskia River at New Athens, Ill.

Location.- Water-stage recorder, lat. 38°19'22", long. 89°52'57", in SW¼ sec. 28, T. 2 S., R. 7 W., 0.5 mile downstream from highway bridge at New Athens. Datum of gage is 359.50 feet above mean sea level (general adjustment of 1929).

Drainage area.- 5,220 square miles.

Records available.- January 1935 to September 1940. January 1907 to December 1912 and June 1914 to September 1921 at site 0.66 mile upstream.

Average discharge.- 17 years, 4,057 second-feet.

Extremes.- Maximum discharge during year, 6,950 second-feet May 4 (gage height, 18.00 feet); minimum, 75 second-feet Sept. 30 (gage height, 1.53 feet).

1907-12, 1914-21, 1935-40: Maximum discharge observed, 63,100 second-feet Aug. 26, 1915 (gage height, 35.7 feet, site then in use); minimum daily discharge, 35 second-feet Oct. 4, 1938, affected by backwater from Mississippi River; minimum discharge unaffected by backwater, 61 second-feet Sept. 26, 1936 (gage height, 1.56 feet).

Remarks.- Records good except for those periods of ice effect or fragmentary gage-height record, which are fair.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	226	125	142	120	130	1,380	662	cf3,730	1,080	529	145	c1,220
2	217	124	142	120	130	1,420	714	cf6,250	1,020	518	139	670
3	209	124	142	120	130	1,420	688	f6,650	1,020	518	134	432
4	202	124	142	120	140	c1,620	662	f6,890	933	485	130	340
5	198	122	142	120	160	c3,460	662	f6,890	877	432	c336	293
6	193	122	142	*120	240	4,380	714	f6,710	797	390	797	240
7	188	122	151	110	350	4,540	767	f6,530	745	350	1,110	200
8	205	120	156	110	500	c3,450	767	f6,170	695	330	c734	176
9	363	119	157	110	600	c2,330	688	5,810	720	302	340	158
10	257	126	157	110	767	1,780	637	5,580	646	293	321	146
11	198	131	*157	110	905	1,460	662	5,420	646	284	350	135
12	226	131	156	110	933	1,320	c1,210	5,140	646	293	266	127
13	205	154	151	110	821	1,210	c2,320	c4,130	622	248	257	120
14	181	173	144	110	821	1,580	c3,630	c2,920	c848	231	198	114
15	173	159	140	140	849	1,980	3,900	2,150	1,420	222	160	110
16	165	166	137	280	991	2,200	c3,040	1,740	1,740	284	203	105
17	154	152	136	380	1,050	2,100	c2,060	1,500	1,730	360	240	102
18	146	149	134	410	933	1,740	2,330	1,380	1,660	302	179	100
19	142	151	132	390	905	1,350	c2,870	1,320	1,540	248	155	97
20	138	157	130	420	1,210	*1,110	c4,540	1,240	1,460	240	187	94
21	136	156	130	320	1,660	1,020	5,260	1,210	1,460	248	174	93
22	136	152	126	280	1,700	1,020	5,480	1,180	1,420	360	156	90
23	137	162	126	250	1,580	962	5,530	1,180	1,350	350	164	89
24	134	162	130	220	1,420	877	5,580	1,140	1,180	266	151	88
25	131	156	130	190	1,210	821	5,580	1,020	1,020	222	132	85
26	134	152	130	170	991	740	5,420	905	877	195	121	84
27	136	149	132	150	877	688	4,980	850	823	182	118	81
28	137	148	134	140	962	637	c3,750	850	745	176	c283	80
29	136	144	132	140	1,240	624	2,850	850	670	168	c1,230	78
30	134	142	130	140	-	600	2,150	1,020	586	156	2,060	75
31	128	-	130	130	-	600	-	1,110	-	149	2,100	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	5,465	363	128	176	0.034	0.04
November	4,264	173	119	142	.027	.03
December	4,321	157	126	139	.027	.03
Calendar year 1939	1,338,731	18,400	119	3,668	.703	9.53
January	5,750	420	110	185	.035	.04
February	24,205	1,700	130	835	.160	.17
March	50,619	4,540	600	1,633	.313	.36
April	80,103	5,580	637	2,670	.511	.57
May	99,465	6,890	850	3,209	.615	.71
June	31,026	1,780	586	1,034	.198	.22
July	9,331	529	149	301	.058	.07
August	13,070	2,100	118	422	.081	.09
September	5,822	1,220	75	194	.037	.04
Water year 1939-40	333,441	6,890	75	911	.175	2.37

* Winter discharge measurement made on this day.
c Computed using rate of change of stage as a factor
f Fragmentary gage-height record; discharge computed from partly estimated gage heights and engineer's observations.
Note.- Stage-discharge relation affected by ice Dec. 30 to Feb. 9.

Centralia Reservoir Creek near Centralia, Ill.

Location.- Water-stage recorder and concrete control, lat. 38°33'34", long. 89°00'23" in NW¼NE¼ sec. 5, T. 1 N., R. 2 E., at bridge over outlet of Centralia Reservoir, 1 mile upstream from confluence with Crooked Creek, and 7½ miles northeast of Centralia. Datum of gage is 479.74 feet above mean sea level (general adjustment of 1929).

Drainage area.- 7 square miles.

Records available.- March 1932 to September 1940.

Remarks.- Flow regulated by reservoir (area at crest of spillway, 261 acres). Discharge adjusted for storage but not for evaporation and seepage.

Cooperation.- Pumpage record furnished by city of Centralia. Rainfall record (mean of three gages within basin) furnished by State Water Survey.

Monthly discharge and rainfall, water year October 1939 to September 1940

Month	Discharge from spillway (million gallons)	Pumpage (million gallons)†	Change in contents (million gallons)	Adjusted for change in reservoir contents ‡			Run-off (inches)	Rainfall (inches)
				Run-off (million gallons)	Discharge per square mile			
					Million gallons per day	Second-feet		
October	0	57.67	-83.4	-25.73	-0.119	-0.184	-0.21	0.95
November	0	60.83	-67.8	-6.97	-.033	-.051	-.06	2.07
December	0	66.14	-50.4	15.74	.073	.113	.13	1.39
Calendar year 1939	407.8	694.15	46.5	1,148.45	.449	.695	9.44	40.05
January	0	78.55	-53.2	25.35	.117	.181	.21	1.59
February	0	71.08	-76.0	-4.92	-.024	-.037	-.04	1.92
March	0	71.69	-5.9	65.79	.303	.469	.54	2.17
April	0	68.50	95.3	163.80	.780	1.21	1.35	4.46
May	0	66.60	36.9	103.50	.477	.738	.90	2.15
June	0	62.35	-83.4	-21.05	-.100	-.155	-.17	2.44
July	0	58.13	-89.1	-30.97	-.143	-.221	-.25	1.32
August	0	63.08	-95.0	-31.92	-.147	-.227	-.26	2.36
September	0	45.06	-78.8	-33.74	-.161	-.249	-.28	.59
Water year 1939-40	0	769.88	-550.8	218.88	.085	.132	1.86	23.41

† Includes pumpage to oil companies as well as metered pumpage.
‡ Figures with minus sign indicate that evaporation and seepage from reservoir exceeded inflow.

Big Muddy River at Plumfield, Ill.

Location.- Water-stage recorder, lat. 37°54'05", long. 89°00'50", in NW¼ sec. 20, T. 7 S., R. 2 E., three-quarters of a mile upstream from bridge on State Highway 149 at Plumfield and 1.9 miles downstream from Middle Fork. Auxiliary wire-weight gage at pumping plant at Zeigler, 4 miles downstream. Datum of each gage is 358.30 feet above mean sea level (general adjustment of 1929).

Drainage area.- 753 square miles.

Records available.- August 1914 to September 1940. June 1908 to December 1912 at Chicago, Burlington & Quincy R. R. bridge 1.7 miles upstream.

Average discharge.- 26 years (1914-40), 694 second-feet.

Extremes.- Maximum discharge during year, 5,350 second-feet Apr. 22 (gage height, 16.96 feet); no flow on several days in September.
1914-40: Maximum discharge observed, 16,300 second-feet Feb. 1, 1916 (gage height, 30.2 feet, site and datum then in use); no flow several times in 1914, 1936, 1940.

Remarks.- Records good except those for period of no gage-height record, which are poor.

Rating table, water year 1939-40, except period of backwater effect (gage height, in feet, and discharge, in second-feet)

0	0	0.6	11.7	1.4	86	3.5	455	10.0	1,840
.1	.2	.7	16.9	1.6	115	4.0	525	11.0	2,260
.2	.7	.8	23	1.8	153	5.0	681	14.0	3,750
.3	2.3	.9	30	2.2	241	6.0	860	17.0	5,350
.4	4.5	1.0	39	2.6	329	8.0	1,260		
.5	7.6	1.2	60	3.0	390	9.0	1,500		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.3	4.3	34	11.7	5.4	1,240	39	1,650	11.3	2.3	0.6	2.1
2	2.1	5.7	36	10.5	6.0	1,240	42	2,350	10.1	2.1	.5	1.8
3	2.1	6.0	38	9.2	7.0	977	40	3,350	9.6	2.1	.4	1.5
4	2.1	5.7	42	9.2	8.4	841	34	3,450	9.2	1.8	.4	a1.1
5	1.8	5.1	46	9.2	10.5	957	29	e2,960	8.8	1.5	.2	a.8
6	1.5	5.1	48	8.8	10.5	879	24	e2,420	8.0	1.3	.2	a.6
7	.9	5.7	45	7.6	12.2	555	26	e1,690	7.3	1.0	.2	a.4
8	.6	6.4	31	3.8	14.8	319	41	e1,140	6.7	1.0	.2	.3
9	.6	7.3	21	3.2	19.3	177	62	e410	6.0	1.0	.2	.3
10	.6	10.1	6.7	3.2	29	119	102	e220	5.7	.9	.2	.2
11	.5	12.7	7.0	3.6	40	95	190	98	5.1	1.0	.2	a.2
12	.4	11.3	8.0	4.8	68	86	664	70	4.3	4.8	.2	a.2
13	.4	10.9	10.1	6.7	248	98	1,060	53	4.1	11.7	.2	a.1
14	.4	12.2	11.7	23	347	143	1,240	43	3.8	13.8	.4	a.1
15	.3	12.2	13.3	53	255	162	1,260	35	e4.0	11.3	.7	.1
16	.3	8.4	13.8	167	160	186	1,100	30	18.1	13.8	.6	0
17	.3	8.0	11.3	298	105	145	e599	26	16.9	13.8	.7	0
18	.3	8.0	7.0	160	144	117	860	22	11.3	12.7	.9	0
19	.2	10.5	5.7	84	610	137	1,720	22	8.4	9.6	10.1	0
20	.2	24	5.7	49	997	171	3,250	22	6.4	6.4	58	0
21	.2	39	6.0	31	1,200	145	4,740	21	4.8	4.8	32	0
22	.2	47	6.0	24	1,400	115	5,300	18.1	3.8	4.8	20	0
23	.2	48	7.3	18.1	1,500	88	5,130	16.9	3.8	4.3	13.3	0
24	.2	45	10.5	12.2	1,470	67	e4,360	18.7	4.3	3.8	8.4	0
25	.2	43	10.9	10.5	e1,120	54	e3,610	18.7	4.1	3.8	5.7	0
26	.4	45	12.2	8.8	e492	45	e3,010	20	3.4	3.6	4.3	0
27	.6	38	14.8	7.6	416	37	e2,310	18.7	2.5	2.7	3.8	0
28	1.0	34	15.3	6.4	841	34	e1,490	15.3	2.5	2.1	3.4	0
29	1.3	31	14.8	5.7	1,120	32	e660	13.3	2.5	1.7	a3	0
30	1.8	29	13.3	5.4	-	34	e248	11.3	2.3	1.2	a3	0
31	2.5	-	12.2	5.1	-	36	-	10.9	-	.7	a2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	26.5	2.5	0.2	0.85	0.0011	0.001
November	578.6	48	4.3	19.3	.028	.03
December	564.6	48	5.7	18.2	.024	.03
Calendar year 1939	203,340.2	10,600	.2	557	.740	10.06
January	1,060.3	298	3.2	34.2	.045	.05
February	12,656.1	1,500	5.4	436	.579	.53
March	9,351	1,240	32	302	.401	.46
April	43,240	5,300	24	1,441	1.91	2.14
May	20,443.9	3,450	10.9	659	.875	1.01
June	199.1	18.1	2.3	6.64	.0088	.01
July	147.4	13.8	.7	4.75	.0063	.007
August	174.0	58	.2	5.61	.0075	.009
September	9.8	2.1	0	.33	.00044	.0005
Water year 1939-40	88,451.3	5,300	0	242	.321	4.38

a No gage-height record; discharge computed on basis of records at Murphysboro.
e Stage-discharge affected by backwater; discharge computed using fall as a factor.

Big Muddy River at Murphysboro, Ill.

Location.- Water-stage recorder, lat. 37°44'55", long. 89°20'45", in SE¼ sec. 8, T. 9 S., R. 2 W., at Illinois Central R. R. bridge across mouth of Lewis Creek at Murphysboro. Auxiliary wire-weight gage at bridge on State Highway 13, 7,700 feet upstream. Datum of each gage is 335.5 feet above mean sea level (general adjustment of 1929).

Drainage area.- 2,170 square miles.

Records available.- December 1916 to September 1940(prior to 1931, fragmentary).

Average discharge.- 10 years (1930-40), 1,601 second-feet.

Extremes.- Maximum discharge during year, 10,100 second-feet Apr. 24 (gage height, 21.20 feet); minimum, 1.3 second-feet Sept. 14 (gage height, 1.16 feet).

1917-40: Maximum discharge, 25,100 second-feet Jan. 18, 1937; maximum gage height, 34.08 feet Mar. 15, 1935 (affected by backwater); no flow Aug. 13 to Sept. 1, 1936, July 7, 8, 1939.

Maximum stage known, 34.9 feet, present datum, Feb. 2, 1916 (discharge, 28,000 second-feet).

Remarks.- Records good. Auxiliary gage read twice daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.2	13.8	19.9	16.9	8.7	2,860	130	8,530	50	13.8	959	10.6
2	4.8	14.8	19.9	16.9	9.3	2,540	116	6,420	42	16.9	113	8.0
3	4.1	14.8	19.9	14.8	10.0	2,460	113	6,740	33	13.8	55	8.9
4	4.1	13.2	19.9	14.8	11.2	2,230	108	7,030	29	21	22	4.8
5	3.7	11.2	16.9	13.8	11.9	2,000	100	7,220	26	50	10.6	3.7
6	3.5	10.6	16.9	13.2	13.2	1,840	131	6,710	22	40	8.9	3.1
7	4.1	8.7	14.8	13.2	13.2	1,690	508	8,790	23	28	6.3	2.7
8	3.5	8.7	14.8	13.8	13.2	1,390	686	8,320	37	33	40	2.3
9	4.1	8.0	13.2	13.2	13.8	878	684	4,520	94	21	30	2.3
10	4.1	9.8	13.2	12.5	21	453	677	3,900	138	23	12.8	2.1
11	4.1	11.2	13.2	13.2	29	330	968	2,980	144	21	27	1.7
12	3.7	10.6	12.3	16.9	61	512	2,230	1,740	121	128	26	1.7
13	3.5	10.0	12.6	19.7	83	622	2,750	747	80	817	26	1.5
14	3.5	8.7	14.8	78	108	596	2,780	258	37	754	28	1.4
15	3.8	8.7	14.8	121	187	376	2,770	174	42	287	16.9	1.5
16	3.1	8.0	14.8	174	250	479	2,650	138	29	150	10.0	1.3
17	3.5	7.4	14.8	168	246	403	2,640	121	24	103	6.7	1.6
18	3.5	8.7	13.8	210	397	472	3,210	103	22	73	3.9	1.6
19	3.7	11.2	12.5	302	1,220	910	4,030	108	22	52	3.2	1.7
20	4.1	14.8	12.3	262	1,680	773	6,170	97	26	37	8.7	1.9
21	3.7	14.8	12.3	190	2,230	550	7,600	90	26	28	11.9	1.9
22	4.1	14.8	11.9	135	2,490	446	8,460	83	22	22	8.0	1.9
23	3.7	14.8	13.8	96	2,350	323	9,500	82	22	21	8.9	1.9
24	3.7	18.9	17.9	63	2,240	246	10,000	77	26	22	10.0	2.1
25	4.8	18.9	15.8	40	2,160	203	9,850	77	22	29	22	2.3
26	5.2	18.9	14.8	26	1,990	171	9,080	80	18.9	38	28	2.3
27	6.7	17.9	13.8	19.9	1,700	147	8,760	82	14.8	24	34	2.1
28	12.5	18.9	13.8	15.8	1,640	138	7,420	77	14.8	13.8	38	1.7
29	12.5	16.9	15.8	13.2	2,210	133	6,180	70	13.8	11.9	22	1.8
30	13.8	16.9	17.9	10.6	-	127	6,950	70	13.2	8.7	16.9	1.6
31	13.2	-	17.9	9.3	-	133	-	39	-	212	13.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	161.3	13.8	3.1	5.20	0.0024	0.003
November	384.6	18.9	7.4	12.8	.0059	.007
December	473.3	19.9	11.9	15.3	.0071	.008
Calendar year 1939	673,581.9	16,200	0	1,845	.850	11.53
January	2,120.7	302	9.3	68.4	.032	.04
February	23,300.8	2,490	8.7	803	.370	.40
March	26,354	2,660	127	850	.392	.43
April	116,238	10,000	100	3,876	1.79	1.99
May	66,500	7,220	39	2,145	.988	1.14
June	1,261.8	144	13.2	41.7	.019	.02
July	8,123.9	817	8.7	101	.047	.05
August	899.6	239	3.2	29.0	.013	.02
September	81.4	10.6	1.4	2.71	.0012	.001
Water year 1939-40	240,891.0	10,000	1.4	658	.303	4.13

Note.- Stage-discharge relation affected by backwater Feb. 19 to Mar. 8, Apr. 11 to May 12; discharge computed using fall as a factor.

Tilley Creek near West Frankfort, Ill.

Location.- Water-stage recorder and concrete control, lat. 37°53'40", long. 88°48'45", in SW¼SW¼ sec. 19, T. 7 S., R. 4 E., 200 feet downstream from outlet of West Frankfort Reservoir and 6 miles east of West Frankfort. Datum of gage is 420.98 feet above mean sea level (general adjustment of 1929).

Drainage area.- 3.9 square miles.

Records available.- October 1938 to September 1940.

Remarks.- Flow regulated by West Frankfort Reservoir. Discharge adjusted for storage but not for evaporation and seepage.

Cooperation.- Pumpage record furnished by city of West Frankfort. Rainfall record (mean of three gages within basin) furnished by State Water Survey.

Monthly discharge and rainfall, water year October 1939 to September 1940

Month	Discharge from spillway (million gallons)	Pumpage (million gallons)	Change in contents (million gallons)	Adjusted for change in reservoir contents‡			Run-off (inches)	Rain-fall (inches)
				Run-off (million gallons)	Discharge per square mile			
					Million gallons per day	Second-feet		
October.....	0	17.87	-36.4	-18.53	-0.153	-0.237	-0.27	1.30
November.....	0	16.67	-26.7	-10.03	-.086	-.133	-.15	1.48
December.....	0	17.22	-22.8	-5.58	-.046	-.071	-.08	1.88
Calendar year 1939	449.88	180.71	-10.3	620.16	.436	.676	9.14	37.89
January.....	0	22.16	-22.8	-.64	-.0053	-.0082	-.009	1.38
February.....	0	19.43	+26.3	47.73	.422	.653	.70	3.71
March.....	0	13.83	+10.8	24.63	.204	.316	.36	1.79
April.....	0	12.19	+162.8	174.99	1.50	2.32	2.59	5.45
May.....	11.01	12.26	+17.7	40.97	.339	.526	.61	2.82
June.....	0	13.34	-40.3	-26.96	-.230	-.356	-.40	1.13
July.....	0	16.74	-36.6	-18.86	-.156	-.241	-.28	2.44
August.....	0	17.86	-36.8	-16.94	-.157	-.243	-.28	1.63
September.....	0	17.47	-36.8	-19.33	-.165	-.255	-.28	.58
Water year 1939-40	11.01	197.04	-38.6	169.45	.119	.184	2.51	25.26

‡ Figures with minus sign indicate that the evaporation and seepage from the reservoir exceeded the inflow.

Note.- Raw water main broken Dec. 24-30, loss not estimated.

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In addition to the records of stream flow obtained at gaging stations in the Hudson Bay and upper Mississippi River Basins and reported in the preceding pages, measurements of flow were made at other points, as shown in the following table:

Miscellaneous discharge measurements in the Hudson Bay and upper Mississippi River Basins during water year October 1939 to September 1940

Red River of the North Basin

Date	Stream	Tributary to or diverting from-	Locality	Discharge (sec.-ft.)
Nov. 9	Sheyenne River...	Red River of the North	4.2 miles south of West Fargo, N. Dak.	20.2
June 6	Red Lake River...	....do.....	Neptune Bridge, near reservation line, Minn.	†482
6	....do.....	....do.....	....do.....	†460
Aug. 7	....do.....	....do.....	....do.....	†166
7	....do.....	....do.....	....do.....	†126
June 4	Clearwater River.	Red Lake River.....	Near Oaklee, Minn.....	†112
5	....do.....	....do.....	Near Berner, Minn.....	†106
5	Drainage ditch...	Clearwater River...	....do.....	†10.4
Apr. 19	Tongue River.....	Red River of the North	Bathgate, Minn.....	†149

† Results furnished by Corps of Engineers, U. S. Army.

Mississippi River main stem

Jan. 4	Mississippi River	Gulf of Mexico.....	Dam 3, near Red Wing, Minn.....	3,510
31	....do.....	....do.....	....do.....	3,440
Feb. 27	....do.....	....do.....	....do.....	3,590
Mar. 16	....do.....	....do.....	....do.....	4,360
Apr. 16	....do.....	....do.....	....do.....	32,000
18	....do.....	....do.....	....do.....	40,100
Oct. 12	....do.....	....do.....	3.7 miles below dam 10.....	18,300

Minnehaha Creek Basin

June 8	Minnehaha Creek..	Miesissippi River..	At railroad bridge above Minnehaha Falls, Minneapolis, Minn.	24.7
8	....do.....	....do.....	....do.....	43.3

Minnesota River Basin

Apr. 13	Little Chippewa River.	Chippewa River.....	Highway bridge 4 miles west of Starbuck, Minn.	12.8
18	....do.....	....do.....	....do.....	5.38

St. Croix River Basin

Aug. 24	Wood River.....	St. Croix River....	At Grantsburg, Wis.....	28.1
24	....do.....	....do.....	....do.....	30.3

Vermilion River Basin

Mar. 30	Vermilion River..	Mississippi River..	Railroad bridge, at Hastings, Minn....	670
31	....do.....	....do.....	....do.....	1,910
Apr. 16	Vermilion Slough.	....do.....	Eggleston, Minn.....	610

Trimbelle River Basin

Mar. 31	Trimbelle River..	Mississippi River..	Highway bridge 1½ miles southeast of Diamond Bluff, Wis.	337
June 4	....do.....	....do.....	....do.....	72.4
Aug. 3	....do.....	....do.....	....do.....	60.9

Hay Creek Basin

Mar. 31	Hay Creek.....	Mississippi River..	Red Wing, Minn.....	85.6
May 20	....do.....	....do.....	....do.....	16.1
June 4	....do.....	....do.....	....do.....	17.6
24	....do.....	....do.....	....do.....	38.4
Aug. 3	....do.....	....do.....	....do.....	†874
3	....do.....	....do.....	....do.....	†230
10	....do.....	....do.....	....do.....	15.2
Sept. 9	....do.....	....do.....	....do.....	11.0

† Results furnished by Corps of Engineers, U. S. Army.

Chippewa River Basin

Oct. 20	Manitowish River.	Flambeau River.....	3/4 mile north of Boulder Junction, Wis.	60.3
Nov. 24	....do.....	....do.....	....do.....	65.6
Apr. 12	....do.....	....do.....	....do.....	90.2
May 10	....do.....	....do.....	....do.....	109
23	....do.....	....do.....	....do.....	136
Sept. 10	....do.....	....do.....	....do.....	67.2
Oct. 22	Squaw Creek.....	....do.....	1½ miles north of Phillips, Wis.....	3.45
Nov. 23	....do.....	....do.....	....do.....	2.78
Apr. 27	....do.....	....do.....	....do.....	35.0
May 22	....do.....	....do.....	....do.....	128
Aug. 20	....do.....	....do.....	....do.....	22.8
Oct. 23	South Fork of Jump River.	Jump River.....	Near Ogema, Wis., about 2 miles downstream from Mondeaux River.	33.9
Nov. 24	....do.....	....do.....	....do.....	36.7
Apr. 28	....do.....	....do.....	....do.....	334
May 21	....do.....	....do.....	....do.....	3,640
22	....do.....	....do.....	....do.....	2,890
Aug. 20	....do.....	....do.....	....do.....	102

Miscellaneous discharge measurements in the Hudson Bay and upper Mississippi River Basins during water year October 1939 to September 1940--Continued

Whitewater River Basin

Date	Stream	Tributary to or diverting from-	Locality	Discharge (sec.-ft.)
Dec. 17	Whitewater River.	Mississippi River..	Weaver, Minn.	76.4
Jan. 16	....do	....do	....do	66.4
Feb. 9	....do	....do	....do	54.8
Mar. 5	....do	....do	....do	77.2
June 25	....do	....do	....do	87.5
Aug. 4	....do	....do	....do	78.5
Sept.10	....do	....do	....do	64.9
Oct. 17	South Branch of Whitewater River.	Whitewater River...	Highway bridge, 2 miles west of Altura, Minn.	12.6
Nov. 9	....do	....do	....do	12.2
Dec. 16	....do	....do	....do	12.3
Jan. 10	....do	....do	....do	10.6
Feb. 8	....do	....do	....do	11.0
Mar. 5	....do	....do	....do	11.0
30	....do	....do	....do	505
30	....do	....do	....do	171
Apr. 3	....do	....do	....do	26.7
19	....do	....do	....do	12.2
May 21	....do	....do	....do	12.2
June 8	....do	....do	....do	12.5
25	....do	....do	....do	11.2
July 29	....do	....do	....do	10.4
Sept.10	....do	....do	....do	10.3

Cedar Creek Basin

Apr. 3	Cedar Creek.....	Mississippi River..	Lamoille, Minn.	23.0

Black River Basin

June 20	Halls Creek.....	Black River.....	2 miles upstream from Merrillan, Wis.	6.68
Aug. 14	....do	....do	....do	8.49
Feb. 11	Hobinson Creek...	....do	At Fall Hall Glen Bridge, 7 miles south of Black River Falls, Wis.	45.0
Jan. 12	Black River Slough.	....do	Onalaska, Wis.	669

La Crosse River Basin

Jan. 12	La Crosse River..	Mississippi River..	West Salem, Wis.	170

Root River Basin

Dec. 13	Root River.....	Mississippi River..	Highway bridge, 3 miles north of Lanesboro, Minn.	100
Jan. 10	....do	....do	....do	54.7
Feb. 10	....do	....do	....do	105
Mar. 6	....do	....do	....do	121
30	....do	....do	....do	3,770
31	....do	....do	....do	1,770
Apr. 2	....do	....do	....do	757
19	....do	....do	....do	163
May 24	....do	....do	....do	127
June 26	....do	....do	....do	115
July 11	....do	....do	....do	3,430
Dec. 13	South Branch of Root River.	Root River.....	Lanesboro, Minn.	15.0
Feb. 10	....do	....do	....do	15.9
Mar. 6	....do	....do	....do	78.3
30	....do	....do	....do	1,190
24	....do	....do	....do	13.6
June 28	....do	....do	....do	89.1
July 11	....do	....do	....do	2,960
Sept. 7	....do	....do	....do	69.4
May 24	Rush Creek.....	....do	Highway bridge, 1½ miles upstream from Rushford, Minn.	33.8
June 26	....do	....do	....do	31.8
26	....do	....do	....do	33.7
Aug. 3	....do	....do	....do	34.5
Sept. 7	....do	....do	....do	32.3
Oct. 21	South Fork of Root River.	....do	Mouth, near Houston, Minn.	77.3
Dec. 14	....do	....do	....do	58.7
Jan. 14	....do	....do	....do	61.7
Feb. 13	....do	....do	....do	76.8
Mar. 6	....do	....do	....do	78.7
30	....do	....do	....do	2,350
31	....do	....do	....do	543
Apr. 18	....do	....do	....do	120
May 23	....do	....do	....do	82.9
June 9	....do	....do	....do	88.5
July 12	....do	....do	....do	548
Aug. 2	....do	....do	....do	1,110

Miscellaneous discharge measurements in the Hudson Bay and upper Mississippi River Basins during water year October 1939 to September 1940--Continued

Upper Iowa River Basin

Date	Stream	Tributary to or diverting from-	Locality	Discharge (sec.-ft.)
Aug. 13	Upper Iowa River.	Mississippi River..	Below Route 52 bridge, Decorah, Iowa..	46.5
21	....do.....	....do.....	Above Bear Creek, south of Dorchester, Iowa.	158
Dec. 13	....do.....	....do.....	....do.....	80.4
Jan. 11	....do.....	....do.....	....do.....	99.6
Mar. 7	....do.....	....do.....	....do.....	100
31	....do.....	....do.....	....do.....	3,520
Apr. 2	....do.....	....do.....	....do.....	840
May 23	....do.....	....do.....	....do.....	162
July 3	....do.....	....do.....	....do.....	90.8
Aug. 19	....do.....	....do.....	....do.....	127
26	....do.....	....do.....	....do.....	701
Oct. 21	Bear Creek.....	Upper Iowa River...	Route 13 bridge south of Dorchester, Iowa.	37.9
Dec. 13	....do.....	....do.....	....do.....	32.5
Jan. 11	....do.....	....do.....	....do.....	12.5
Mar. 7	....do.....	....do.....	....do.....	42.3
31	....do.....	....do.....	....do.....	96.7
May 23	....do.....	....do.....	....do.....	34.4
July 3	....do.....	....do.....	....do.....	28.4

Galena River Basin

Mar. 14	Galena River.....	Mississippi River..	Galena, Ill.....	59.6
May 10	....do.....	....do.....	....do.....	51.2

Rock River Basin

June 20	Rock River.....	Mississippi River..	Below power canal intake at Rockton, Ill.	23.9
Nov. 22	....do.....	....do.....	Above mouth of Illinois & Mississippi Canal near Colona, Ill.	1,300
June 20	Head race.....	Rock River.....	Hydroelectric plant at Rockton, Ill....	1,320
Mar. 30	Pecatonica River.	....do.....	At Lattice Bridge, near Browntown, Wis.	1,610
Oct. 18	....do.....	....do.....	At Pecatonica, Ill.....	326
Mar. 20	....do.....	....do.....	....do.....	967
May 15	....do.....	....do.....	....do.....	347
June 21	....do.....	....do.....	....do.....	412
24	....do.....	....do.....	....do.....	1,520
July 30	....do.....	....do.....	....do.....	1,985
Aug. 29	....do.....	....do.....	....do.....	3,440
30	....do.....	....do.....	....do.....	3,040
Oct. 6	Sugar River.....	Pecatonica River...	At mouth, near Shirland, Ill.....	149
Mar. 21	....do.....	....do.....	....do.....	597
May 16	....do.....	....do.....	....do.....	283
June 20	....do.....	....do.....	....do.....	525
25	....do.....	....do.....	....do.....	819
July 30	....do.....	....do.....	....do.....	579
Aug. 28	....do.....	....do.....	....do.....	6,270
June 18	Keith Creek†.....	Rock River.....	At Rockford, Ill. (1:01 p.m. to 1:37 p.m.).	468
18	....do.....	....do.....	At Rockford, Ill. (1:38 p.m. to 2:26 p.m.).	530
18	....do.....	....do.....	At Rockford, Ill. (2:50 p.m. to 3:24 p.m.).	540
18	....do.....	....do.....	At Rockford, Ill. (3:52 p.m. to 4:40 p.m.).	357
18	....do.....	....do.....	At Rockford, Ill. (5:44 p.m. to 6:28 p.m.).	606
18	....do.....	....do.....	At Rockford, Ill. (7:09 p.m. to 7:43 p.m.).	620
18	....do.....	....do.....	At Rockford, Ill. (8:20 p.m. to 9:11 p.m.).	668
18	....do.....	....do.....	At Rockford, Ill. (9:55 p.m. to 10:33 p.m.).	524
18	....do.....	....do.....	At Rockford, Ill. (11:18 p.m. to 11:54 p.m.).	298
19	....do.....	....do.....	At Rockford, Ill. (12:15 a.m. to 12:38 a.m.).	295
19	....do.....	....do.....	At Rockford, Ill. (12:47 a.m. to 1:13 a.m.).	263
19	....do.....	....do.....	At Rockford, Ill. (1:35 a.m. to 1:58 a.m.).	242
19	....do.....	....do.....	At Rockford, Ill. (2:43 a.m. to 2:56 a.m.).	202

† Drainage area, 13.7 square miles.

Des Moines River Basin

Apr. 2	Tuttle Lake outlet.	East Fork of Des Moines River.	Outlet of Tuttle Lake, 3 miles southeast of Ceylon, Minn.	8.57
May 1	....do.....	....do.....	....do.....	25.4
16	....do.....	....do.....	....do.....	1.55
June 5	....do.....	....do.....	....do.....	2.07
July 26	....do.....	....do.....	....do.....	.15
May 28	Beaver Creek.....	Des Moines River...	Route 64, 5 miles northwest of Des Moines.	39.7
July 9	....do.....	....do.....	....do.....	1.14
31	....do.....	....do.....	....do.....	573
Aug. 14	....do.....	....do.....	....do.....	1,190

Miscellaneous discharge measurements in the Hudson Bay and upper Mississippi River Basins during water year October 1939 to September 1940--Continued

Salt River Basin

Date	Stream	Tributary to or diverting from-	Locality	Discharge (sec.-ft.)
Nov. 3	Peno Creek.....	Salt River.....	NW¼SW¼ sec. 1, T. 54 N., R. 4 W., at bridge on U. S. Highway 61, one mile southeast of Frankford, Mo., and 7 miles upstream from mouth.	0.42
Dec. 6	....do.....	....do.....	....do.....	.64
Jan. 6	....do.....	....do.....	....do.....	.44
Feb. 7	....do.....	....do.....	....do.....	.72
Mar. 16	....do.....	....do.....	....do.....	13.4
Apr. 16	....do.....	....do.....	....do.....	11.4
Apr. 17	....do.....	....do.....	....do.....	46.4
May 17	....do.....	....do.....	....do.....	2.94
June 19	....do.....	....do.....	....do.....	1.46
July 22	....do.....	....do.....	....do.....	.04
Sept. 12	....do.....	....do.....	....do.....	.01

Illinois River Basin

Nov. 1	Illinois River...	Mississippi River..	At Morris, Ill.....	4,370
14	....do.....	....do.....	....do.....	4,620
14	....do.....	....do.....	....do.....	4,740
27	....do.....	....do.....	....do.....	3,800
Feb. 23	....do.....	....do.....	....do.....	4,990
Mar. 6	....do.....	....do.....	....do.....	11,460
19	....do.....	....do.....	....do.....	5,360
31	....do.....	....do.....	....do.....	5,120
Apr. 9	....do.....	....do.....	....do.....	6,140
May 22	....do.....	....do.....	....do.....	10,750
June 1	....do.....	....do.....	....do.....	7,660
11	....do.....	....do.....	....do.....	11,920
21	....do.....	....do.....	....do.....	7,335
July 10	....do.....	....do.....	....do.....	5,710
18	....do.....	....do.....	....do.....	5,185
Aug. 1	....do.....	....do.....	....do.....	5,190
Sept. 11	....do.....	....do.....	....do.....	4,207
Nov. 15	....do.....	....do.....	At Hennepin, Ill.....	4,160
Mar. 1	....do.....	....do.....	....do.....	5,930
21	....do.....	....do.....	....do.....	6,960
Apr. 8	....do.....	....do.....	....do.....	9,590
26	....do.....	....do.....	....do.....	6,120
Nov. 16	....do.....	....do.....	At Pekin, Ill.....	4,490
Feb. 7	....do.....	....do.....	....do.....	4,950
16	....do.....	....do.....	....do.....	5,390
28	....do.....	....do.....	....do.....	6,500
Mar. 5	....do.....	....do.....	....do.....	19,620
16	....do.....	....do.....	....do.....	7,470
25	....do.....	....do.....	....do.....	6,420
Nov. 16	....do.....	....do.....	At Havana, Ill.....	5,680
Feb. 13	....do.....	....do.....	....do.....	5,750
19	....do.....	....do.....	....do.....	7,340
Mar. 8	....do.....	....do.....	....do.....	21,710
22	....do.....	....do.....	....do.....	7,040
Apr. 2	....do.....	....do.....	....do.....	8,000
24	....do.....	....do.....	....do.....	9,370

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